

THE INFLUENCE OF FISCAL DECENTRALIZATION ON THE ECONOMIC GROWTH IN SUMATRA

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Abstract

This study is entitled “The Influence of Fiscal Decentralization on the Economic Growth in Sumatra”. The research problem was how the factors of fiscal decentralization influenced the economic growth in Sumatra. The objective of the research was to determine the influence of fiscal decentralization factors on the economic growth in Sumatra. The independent variables were revenue, expenditure, revenue autonomy, expenditure autonomy and balancing autonomy, while the dependent variable was economic growth.

The analysis period was thirteen years starting from 2001 to 2013, and the panel data were from each province in Sumatra. The data were analyzed by using multiple regression model with Pooled Least Squares method and the Fixed Effects model by using Eviews 6; then, evaluating or testing the model specification with econometric, statistical, and economic criteria.

The research results showed that the overall fiscal decentralization factor significantly affected the regional economic growth in Sumatra in that period by 85.4%. Of the five independent variables, only the expenditure autonomy was not significant. It was due to the fact that regional governments in Sumatra had not been optimally allocating locally-generated revenues to finance regional expenditures, thus providing less stimulus for economic growth and being highly dependent on the transfer of funds from the central government.

From the above research conclusions, the regional governments should be more effectively improving the fiscal independence by increasing locally-generated revenues and providing a stimulus for regional economic growth. The roles of regional governments are not only increasing locally-generated revenues but also managing the economy of the communities in order to better develop and improve the welfare of the communities.

Keywords: *fiscal decentralization, economic growth*

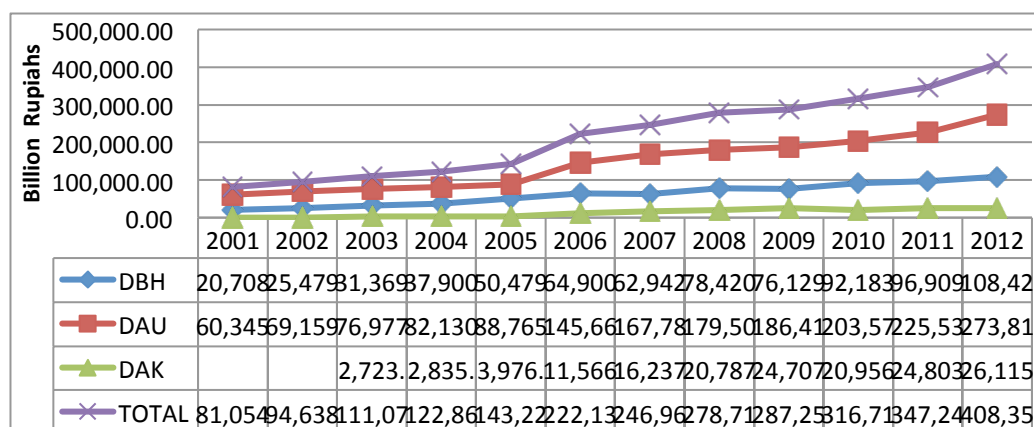
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INTRODUCTION

Fiscal decentralization and regional autonomy began with the enactment of regional autonomy laws, namely Law No. 22 of 1999 on regional government and Law No. 25 of 1999 on financial balance between the central and regional governments. Centralized government combined with an authoritarian political system during the New Order Era resulted in regional dissatisfaction which was initially expressed covertly. Finally the central government was willing to decentralize its authority, with the birth of the two laws in 1999. Therefore, the year 1999 was an important turning point in the history of decentralization in Indonesia (Karim, 2003: 34).

After the collapse of the New Order government, the centralized government system was considered incapable of bringing prosperity and welfare for the society, giving rise to the demand for greater regional authority to implement the development. Fiscal decentralization in Indonesia in the era after the New Order was more effectively implemented in 2001. In 2004, the government passed new laws on regional autonomy, namely Law No. 32 of 2004 in lieu of Law No. 22 of 1999 on regional government and Law No. 33 of 2004 in lieu of Law No. 25 of 1999 on financial balance between the central and regional governments (Hariyanto, 2012: 2).

The implementation of fiscal decentralization in Indonesia was marked by the transfer of financial resources to the regions consisting of Balancing Fund, Special Autonomy Fund (SAF), and Adjustment Fund. Special Autonomy Fund and Adjustment Fund were allocated to finance the implementation of special autonomy in the provinces of Aceh, Papua, and West Papua, as well as to finance the programs related to improving the quality of education. Balancing Fund includes Revenue-Sharing Fund (DBH), General Allocation Fund (DAU) and Special Allocation Fund (DAK), which are allocated to the regions in an integrated system of transfer of funds from the central government to regional governments in order to reduce inequality in funding resources between the central and regional governments and to reduce the gap of funding governmental affairs among the regional governments (the Financial Note of 2013 Draft State Budget). Balancing fund development in Indonesia is as follows.



Source: Financial Notes of 2009 and 2013 Draft State Budgets

Figure 1. Balancing Fund Development in 2001-2012

Based on the figure above, generally each balancing fund increased. In 2001 the balancing fund was only 81.054 billion rupiahs and increased by 16.8 percent in 2002 to 94.638 billion rupiahs. Until 2012 the balancing fund reached 408.352 billion rupiahs, an increase of 17.6 percent over the previous year. An increase in the balancing fund happened because of the growing funding need for the provision of infrastructure and facilities of regional public services. A sizable increase in balancing fund was of General Allocation Fund (DAU) which increased in 2006 to 145,664.2 billion rupiahs or 64.1 percent compared to that of the previous year which was 88,765.4 billion rupiahs. In 2012 DAU reached 273,814.4 billion rupiahs, an increase of 21.4 percent compared to that of 2011.

In addition to a drastically increased transfer of funds to the regions, decentralization and regional autonomy was marked by the phenomenon of regional expansion or new region formation. Following the national phenomenon, the implementation of decentralization in Sumatra was also characterized by the euphoria of regional expansion. Sumatra was one of the regions that responded rapidly to the enactment of the Regional Autonomy Law of 1999.

Relating to fiscal decentralization, there is an interesting phenomenon of the regional economy in Sumatra: the macroeconomic conditions are relatively better after the implementation of fiscal decentralization when compared to those before the fiscal decentralization. However, there are still problems of economic growth in Sumatra, such as the developmental gap among the provinces, investment being concentrated in certain provinces, and a relatively small added-value of competitive commodities which can be a major potential driver of economic growth in Sumatra.

It can be concluded that economic growth in Sumatra tends to flourish and looks better and is supported by a wealth of natural resources, but is still not able to provide a greater contribution than Java to national economic growth. There is still a problem of income inequality among the provinces in Sumatra so that the development process is uneven. Actually, income inequality among regions or provinces is inevitable due to the differences in potentials of each region; however, it could be offset by the transfer of funds or balancing funds from the central government to reduce income inequality. Furthermore, the regional governments should be able to manage the existing revenues for development of their provinces in order to boost the economic growth in Sumatra in particular and to give a major contribution to the national growth.

The above description indicates that decentralization can affect the economic growth of a region. Several studies, such as Davoodi and Zou (1998), Zhang and Zou (1998), Woller and Phillips (1998), Jin and Zou (1999) and Xie, et al (1999) conclude that fiscal decentralization gives a negative impact on economic growth. However, different results are shown by the studies of Akai and Sakata (2002), Thiessen (2003), Wibowo (2008), Sumarsono and Sugeng (2009), and Manik and Hidayat (2010), which conclude that fiscal decentralization has a positive influence on economic growth. From various studies that have been conducted, how was the influence of fiscal decentralization factors on the economic growth in Sumatra? The objective of this study was to determine the influence of fiscal decentralization factors on the economic growth in Sumatra.

LITERATURE REVIEW

Fiscal Decentralization

One of the objectives of decentralization and regional autonomy is to make government closer to the people, so that the government can more efficiently and effectively serve the people. It is based on the assumption that the local and city governments have a better understanding of the needs and aspirations of the people (Kuncoro, 2003: 546). In addition, there are four objectives of regional autonomy development (Suparmoko, 2001: 18), namely: a) empowering the people, b) fostering initiative and creativity, c) increasing community participation; and d) developing the roles and functions of the Regional House of Representatives.

Fiscal decentralization is part of the decentralization process in Indonesia. Fiscal decentralization is a process of budget distribution from a higher level of government to a lower level of government to support the functions or tasks of government and public services in accordance with the amount of delegated governmental authority (Sasana, 2009: 52). There are two variables often used to measure fiscal decentralization in a region, namely regional expenditure and revenue (Ebel and Yilmaz, 2002 in Siagian, 2010: 20).

Economic Growth

In classical growth theory pioneered by Adam Smith, David Ricardo, Malthus, and John Stuart Mill, economic growth is influenced by four factors, namely population, capital, land, and natural resources as well as technology used. They pay more attention to the effects of population growth on economic growth, providing that land and natural resources as well as technology are constant. A theory that explains the relationship between income per capita and population is called the optimum population theory. According to this theory, initially growing population will cause an increase in income per capita. However, if the number of people continues to grow, it will decrease the rate of economic growth (Kuncoro, 2003: 46).

However, the neoclassical growth theory developed by Solow (1970) and Swan (1956) in Kuncoro (2003: 76) uses elements of population growth, capital accumulation, technological progress, and the magnitude of output mutually interacting in the model. The growth rate is derived from three sources, namely capital accumulation, increased labour supply, and technology improvements. These technology improvements can be seen from increased skills or technical progress, so that the capital productivity increases. In such a model, technology is considered as a function of time.

Relationship between Fiscal Decentralization Factors and Economic Growth

Fiscal decentralization has an indirect relationship with economic growth because it can improve efficiency in resource allocation. This is because (1) the regional government has a better advantage than the central government in providing services and public goods suitable for the preferences and needs of the region. (2) stimulating regional governments to be more creative, innovative and accountable to their regions in order to respond to the needs of people and to increase prosperity of the regions through the optimization of existing resources and reducing extravagance. Therefore, regional governments are expected to develop all the existing potentials, both natural and human resources, in order to increase the prosperity of their people, which will indirectly result in increased economic growth. (3) decentralization policy is characterized by the provision of regional infrastructure which indirectly is highly sensitive to regional conditions, and which will be more effective in stimulating economic development rather than the often-ignored policies set forth by the central government due to geographical differences among regions (Sobari, 2011: 57).

According to Tiebout (1956) in the Journal of Economics and Development Studies (Vol.1 No.3, 2009: 158), if public goods and services are provided by a centralized government, it will result in low competition in the state decision-making relating to the provision of public goods and services; in addition, the decision-making process itself must go through a long bureaucratic system so that the resulting decisions become inefficient at all.

However, there is another view showing weaknesses in the implementation of fiscal decentralization by Thiessen (2003). Fiscal decentralization can lead to increased regional injustice or disparity and hamper economic growth because of the differences in the provision of infrastructure and public goods/services as a result of the different levels of income and taxes among regions, where rich regions have a tendency to provide better public services.

Various negative views on decentralization do not significantly affect the development of fiscal decentralization because positive opinions and arguments on fiscal decentralization that can increase efficiency and promote economic growth tend to be more widely accepted. Fiscal decentralization is widely implemented in many countries, including Indonesia. This implies that there is a strong belief of these countries to continue implementing fiscal decentralization in order to boost economic growth.

Research Framework

Based on the background, theories and previous studies, the framework of this study can be described as follows:

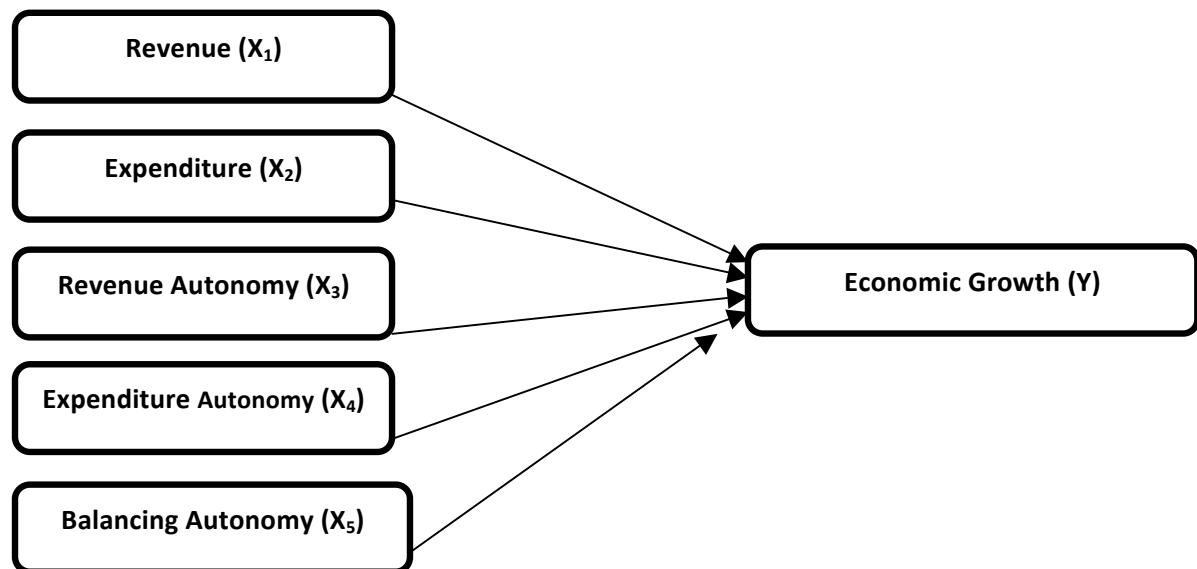


Figure 2. Research Framework

Based on the theories and the results of previous empirical studies on the effects of fiscal decentralization on economic growth, there are three variables indicating the magnitude of fiscal decentralization of a region, namely the variables of revenue, expenditure, and autonomy. They are the variables of the studies by Akai and Sakata (2002), Davoodi and Zou (1998), Thiessen (2003), Zhang and Zou (1998), Woller and Phillips (1998), Wibowo (2008), and Solechah (2013). The revenue variable is the percentage of total revenues of regional government to the central government's revenues. This ratio is similar to the indicator devised by Woller and Phillips (1998). The

revenue indicator can show the level of financial capability of a region to support its regional development. The expenditure variable is the ratio of regional expenditure to the central government's expenditure, which was adopted by Zhang and Zou (1998), Thiessen (2003), and Davoodi and Zou (1998). If the economic growth of regions varies with the differences in the levels of fiscal decentralization, this indicates that regional government's expenditure could spur regional development through the provision of public facilities and infrastructure. The revenue autonomy variable takes into account the total locally-generated revenues to total revenues as developed from the research on fiscal decentralization in the United States by Akai and Sakata (2002). One of the arguments underlying the use of this indicator is that a region could obtain a small balancing fund from the central government, but the regional government would be highly regarded if it could manage its regional wealth and have locally-generated revenue. The expenditure autonomy variable is the ratio of locally-generated revenue to total expenditures, showing a degree of regional independence in financing its regional expenditure. The greater the ratio is, the higher the degree of regional autonomy will be. The balancing autonomy variable is the ratio of locally-generated revenue to balancing fund, measuring the regional capacity to reduce its dependence on balancing fund from the central government. The greater the locally-generated revenue of a regional government is, the smaller the degree of regional dependence on the central government is, and the better the degree of fiscal decentralization is.

Hypothesis

Based on the background along with the research framework, the five variables reflecting fiscal decentralization, namely the variables of revenue, expenditure, revenue autonomy, expenditure autonomy, and balancing autonomy, overall significantly affected the economic growth in Sumatra.

RESEARCH METHODOLOGY

This study observed and examined the influence of fiscal decentralization factors on the regional economic growth among the provinces in Sumatra. The analysis period was 13 years starting from 2001 to 2013 by using 10 provinces in Sumatra. Sumatra is one of the islands in Indonesia that have natural wealth very potential to boost national economic growth. However, in reality, Sumatra accounted for only 23.77% of the national economic growth in 2012. This was due to an indication of revenue inequality in Sumatra so that the regional economic growth had not contributed more to the national economic growth.

After estimating the model with one of the panel-data regression methods, the next step was to evaluate or test the model specification. This step was necessary to prove that the model specification was correctly designed in accordance with econometric, statistical, and economic criteria.

Econometric Criteria (Classical Assumption Test)

Linear regression is a model that seeks to minimize the deviation of calculated result (regression) from the actual (real) condition. Therefore, it must be tested with several assumption tests: normality, autocorrelation, multicollinearity, and heteroscedasticity tests.

Statistical Criteria

To get a good model, there should be some evaluation based on statistical criteria which include:

1. Coefficient of determination (R^2) test: coefficient of determination shows the magnitude of influence of all independent variables on the dependent variable.
2. t-test: partial test (t-test) is used to determine whether the independent variables included in the model individually has a significant effect on the dependent variable.
3. F-test: F-test is used to determine whether the independent variables together have a significant effect on the dependent variable.

Economic Criteria

The model was evaluated on the basis of economic criteria to see if the model had been estimated in accordance with economic theories and previous related studies, by looking at the direction and magnitude of the parameter coefficients indicating the direction and magnitude of the effects of independent variables on the dependent variable.

RESULTS AND DISCUSSION

In the implementation of regional autonomy, regional finance is one of the criteria to determine the regional capability to manage its own government. The regional capability in question relates to the regional capability to optimize existing revenue sources, both revenue from the central government and locally-generated revenue, and to use the revenues to finance the regional development programs which are reflected in the realization of annual regional budget.

Financial capability generally differs from one region to another. Similarly, each province in Sumatra has some differences in both regional revenues and expenditures. In general, the total revenues in Sumatra and Indonesia increase every year. The regional revenue development in each province can be seen in the table below.

**Table 1. Regional Revenue Development in Sumatera by Province
(in trillion rupiahs) in 2001-2012**

No	PROVINCE	`2001	`2002	`2003	`2004	`2005	`2006	`2007	`2008	`2009	`2010	`2011	`2012
`1	ACEH	3.4	3.5	5.6	5.2	8.0	11.1	8.5	16.3	15.6	17.5	20.2	22.5
`2	NORTH SUMATRA	5.2	6.4	8.2	7.0	7.9	12.3	14.2	17.7	18.9	21.3	26.3	29.5
`3	WEST SUMATRA	2.5	3.3	3.8	3.8	4.3	7.2	7.6	10.0	10.6	11.1	13.2	15.5
`4	RIAU	6.5	8.2	8.4	8.9	11.2	14.7	12.8	18.1	14.0	18.2	22.5	26.5
`5	RIAU ISLANDS	1.3	1.7	1.9	1.4	1.2	4.9	4.2	5.6	5.9	6.7	7.8	9.4
`6	JAMBI	1.5	2.2	2.9	2.5	2.6	5.0	5.8	6.5	6.7	8.0	9.6	11.5
`7	SOUTH SUMATRA	3.1	3.9	4.5	5.1	5.9	9.4	11.0	12.5	12.4	15.5	19.2	22.5
`8	BANGKA BELITUNG ISLANDS	0.5	0.9	0.9	1.1	1.2	2.4	2.9	3.7	3.5	3.5	4.8	5.4
`9	BENGKULU	0.8	1.0	1.3	1.3	1.1	2.4	3.4	4.6	4.5	5.0	5.9	6.7
`10	LAMPUNG	2.4	3.2	3.4	3.3	3.7	6.5	7.3	8.3	8.3	10.5	13.4	15.5
	SUMATRA	27.4	34.3	40.8	39.7	47.1	76.1	77.6	103.4	100.4	117.3	143.0	165.5

INDONESIA	109.4	136.3	155.2	157.8	180.0	247.5	285.4	376.4	393.1	448.8	546.8	629
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Source: Adapted from the Director General of Financial Balance

The table above shows an increase in annual revenue, even the regional revenue in Sumatra in 2012 was six times the revenue in 2001. On average the largest regional revenue was of North Sumatra Province followed by the provinces of Riau, Aceh and South Sumatra. This shows that the greater the population and region, the greater the regional revenue. The average contribution of regional revenue in Sumatra to the total central revenues was 26.52%.

In addition to revenue realization, regional expenditure realization would normally follow the revenue realization, where the region with greater regional revenue capacity tends to have greater regional expenditure realization as well. The following table shows the regional expenditure development for each province in Sumatra.

**Table 2. Regional Expenditure Development in Sumatera by Province
(in trillion rupiahs) in 2001-2012**

PROVINCE	`2001	`2002	`2003	`2004	`2005	`2006	`2007	`2008	`2009	`2010
ACEH	3.12	2.99	1.36	1.77	4.34	5.80	10.57	15.58	17.73	19.12
NORTH SUMATRA	4.74	5.83	7.05	0.79	0.89	1.49	12.17	17.21	18.68	20.12
WEST SUMATRA	2.24	2.72	0.73	0.46	0.57	1.38	8.04	9.86	10.47	11.12
RIAUI	4.68	6.41	6.56	3.13	4.49	5.07	16.85	16.93	17.64	18.12
RIAUI ISLANDS	1.06	1.48	1.56	0.48	0.22	1.96	5.14	4.85	6.19	5.12
JAMBI	1.35	1.92	2.50	0.88	0.45	0.92	5.46	6.84	6.98	7.12
SOUTH SUMATRA	2.73	3.38	2.11	0.52	1.44	1.79	11.25	12.65	12.05	13.12
BANGKA BELITUNG ISLANDS	0.42	0.75	0.10	0.33	0.46	0.81	2.68	3.45	3.65	3.12
BENGKULU	0.78	0.89	0.81	0.35	0.09	0.31	3.66	4.74	4.52	4.12
LAMPUNG	2.22	2.85	3.07	0.43	0.61	0.72	7.61	8.18	8.34	9.12
SUMATRA	23.34	29.22	25.83	9.12	13.56	20.25	83.41	100.31	106.25	111.12
INDONESIA	93.27	116.87	70.93	28.72	36.26	48.42	307.40	366.95	395.59	421.12

Source: Adapted from the Director General of Financial Balance

The regional expenditure realization in Sumatra also increased annually. The expenditure realization of Sumatra in 2012 was 6.5 times that in 2001. On average the greatest expenditure realization was of North Sumatra, followed by the provinces of Riau, Aceh, and South Sumatra. The percentage of regional expenditure to regional revenue in Sumatra was 83.2%, higher than the national percentage 80.78%.

Fiscal Decentralization Implementation in Sumatera

Fiscal decentralization in Indonesia has effectively been implemented since 2001. Under the principle of *money follows function* in fiscal decentralization, the implementation of regional government affairs is funded by some funding sources, primarily by balancing fund from the central government. So it will have a direct impact on the increase in

revenue and expenditure capacity of all regional governments in Indonesia.

The previous tables, Tables 1 and 2, show a significant increase in regional revenues and expenditures. However, an increase in revenue of each province was not accompanied by regional expenditure autonomy. It can be seen from the composition or structure of regional revenues and locally-generated revenues in 2001 and 2012, indicating regional dependence on transfer of balancing funds from the central government, as shown in the following table.

Table 3. Development of Revenues from Balancing Funds and Locally-Generated Revenue and Contribution to Total Regional Revenues of the Provinces in Sumatra in 2001 and 2012

PROVINCE	Balancing Fund Development				Locally-Generated Revenue Development			
	2001		2012		2001		2012	
	Total (trillion Rp)	Percentage to Regional Revenue	Total (trillion Rp)	Percentage to Regional Revenue	Total (trillion Rp)	Percentage to Regional Revenue	Total (trillion Rp)	Percentage to Regional Revenue
ACEH	3.07	89.95	12.59	56.00	0.10	2.91	1.58	7.01
NORTH SUMATRA	3.88	74.41	18.27	61.24	0.64	12.37	6.14	20.57
WEST SUMATRA	2.02	79.97	10.83	72.28	0.24	9.48	2.03	13.56
RIAU	5.73	88.75	19.91	75.28	0.47	7.30	4.06	15.35
RIAU ISLANDS	0.97	74.16	7.05	74.96	0.16	11.84	1.69	17.95
JAMBI	1.25	82.44	8.61	75.58	0.16	10.32	1.46	12.80
SOUTH SUMATRA	2.56	82.71	16.59	72.67	0.29	9.28	3.27	14.30
BANGKA								
BELITUNG ISLANDS	0.42	79.42	4.03	74.04	0.05	9.76	0.76	14.01
BENGKULU	0.75	88.34	5.27	78.94	0.06	7.17	0.67	10.05
LAMPUNG	2.10	86.24	10.80	67.89	0.21	8.53	2.41	15.16
SUMATRA	22.76	83.21	113.96	68.90	2.37	8.68	24.06	14.55
INDONESIA	83.74	76.57	391.98	62.30	15.16	13.86	130.83	20.79

Source: Adapted from the Director General of Financial Balance

The table above shows that the dependence on balancing funds for Sumatra was 68.9% and above the national average. Although the dependence on balancing funds decreased, but not a big percentage, the degree of dependence on the central government was still very high. On the other hand, the regional revenue in the form of locally-generated revenue increased in nominal value. However, the contribution of Sumatra in 2012 was

still below the national percentage, indicating that the independence of Sumatra in financing its regions was still below the national average.

Results of Testing Analysis Methods

Considering that the number of cross-sectional data of ten provinces and the number of time series for thirteen years, the multiple regression analysis used was the Fixed Effects method. To ensure the accuracy of Fixed Effects method, there should be some statistical tests, namely: (1) fixed-effects significance test by Chow test or F-test, and (2) random-effects significance test by Hausman Test.

(1) Chow Test Results

Chow test or F-test was used to determine whether the Common-Effects method or Fixed-Effects method was the appropriate method to perform panel data analysis. The following table shows the results of Common-Effects and Fixed-Effects regression:

Table 4. Chow Test Results

Effects Test	Statistic	d.f.	Prob.
Cross-section F	6.828972	(9,115)	0.0000
Cross-section Chi-square	55.661620	9	0.0000

Source: Processed from EViews

The table above shows that the probability value for the cross section <0.0000 so that the model chosen was the Fixed-Effects.

(2) Hausman Test Results

Furthermore, to determine whether the Fixed-Effects or Random-Effects was the appropriate method to perform panel data analysis, Hausman test was used. The following table shows the results of Hausman test:

Table 5. Hausman Test Results

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	20.030366	5	0.0012

Source: Output of EViews

Table 5 shows that the probability value <0.05 , so that the model chosen was the Fixed-Effects.

Results of Testing Model Evaluation Methods

1. Econometric Criteria (Classical Assumption Testing)

Before making the estimation, several classical assumption tests were conducted in this study. The results of classical assumption tests show that the regression results

were free from the problems of normality, heteroscedasticity, multicollinearity, and autocorrelation.

2. Statistical Criteria

Statistical tests were performed to measure the accuracy of regression function in assessing the actual value. The statistical tests were the coefficient of determination (R^2), the individual regression coefficients (t-test), and the simultaneous coefficient (F test). The regression analysis can be found in Appendix.

a. Coefficient of Determination (R^2)

From the estimation, the value of R^2 was 0.854090, meaning that 85.4% of the variable Y (economic growth) in the model was influenced by the independent variables of revenue (X_1), expenditure (X_2), revenue autonomy (X_3), expenditure autonomy (X_4), and balancing autonomy (X_5). The remaining 14.6% was explained by other variables not included in this model and other factors.

b. Simultaneous Significance Test (F-test)

The value of F-calculated was 48.08276 while the value of F-table at $\alpha = 5\%$ for $n = 130$ and $k = 5$ ($df_{\text{numerator}} = k - 1$, $df_{\text{denominator}} = n - k$) is 2.44. Because F-calculated was higher than F-table, H_0 was rejected, so that all the independent variables together in the study significantly affected the economic growth.

c. Individual Significance Test (t-Test)

The value of t-table with $n = 130$ and $k = 5$ is 1.65714. The following table shows the results of t-test significance ($\alpha = 5\%$):

Tabel 5. t-Test Significance ($\alpha = 5\%$) of Capital Expenditure

Analysis	t-statistic	t-table	Conclusion
X_1	14.246	1,65714	Significant
X_2	17.03767	1,65714	Significant
X_3	5.047075	1,65714	Significant
X_4	0.204104	1,65714	not Significant
X_5	4.284139	1,65714	Significant

Source: Adapted from the regression results

The regression model in Appendix shows that the variables of revenue (X_1), expenditure (X_2), revenue autonomy (X_3), and balancing autonomy (X_5) individually had a significant effect, whereas expenditure autonomy (X_4) did not have any significant effect on the economic growth in Sumatra.

3. Economic Criteria

Influence of Fiscal Decentralization on Economic Growth in Sumatra

1. Ratio of Regional to Central Revenues

The estimation results in Appendix also show that the average coefficient of the ratio of regional to central revenues (X_1) was 1.763079, meaning that an average increase in the ratio of regional to central revenues by 1% would result in an increase in the economic growth among provinces in Sumatra for each province by 1.763079 units. The influence of the ratio of regional to central revenues was positive and significant with the significance value of 0.000000 (<0.05). This indicates that the fiscal decentralization having effectively been implemented since 2001 has provided a positive stimulus to improve the regional economic performance, especially in Sumatra.

The increase in the economic growth was also caused by a large increase in regional revenues, from both locally-generated revenue and fund transfer from the central government. The fiscal decentralization has given freedom to regional governments to increase their participation in economic activities by making regional development policies and programs that can provide a stimulus for regional economic growth.

The results of this study were in line with those of Akai and Sakata (2002), Thiessen (2003), and Wibowo (2008), which concluded that authority devolution to explore the sources of regional revenue would have a significant positive effect on the regional economic growth.

2. Ratio of Regional to Central Expenditures

The average coefficient of the ratio of regional to central expenditures (X_2) was 0.575391, meaning that an average increase in the ratio of regional to central government expenditures by 1% would result in an increase in economic growth among provinces in Sumatra for each province by 0.575391 unit. The influence of the ratio of regional to central government expenditures was negative and significant with the significance value of 0.000000 (<0.05).

This ratio was adopted from Zhang and Zou (1998), Thiessen (2003), and Davoodi and Zou (1998). The estimation shows a significant influence on but a negative correlation with the economic growth in Sumatra in the period of 2001 to 2013. This is in contrast to the theory stating that in general an increase in regional expenditure reflects an increase in public investment in the community, where public investment will have a direct impact on the economic productivity as will the private-sector investment. But the results of this study were in line with those of Davoodi and Zou (1998) which stated that fiscal decentralization in the ratio of regional to central government expenditures had a negative effect on the economic growth in developing countries. The research by Tao Zhang and Heng-fu Zou in 1998 in China and the research by Danyang Xie, Heng-fu Zou, and Hamid Davoodi (1999) in America concluded that fiscal decentralization on the expenditure side was less advantageous for the economic growth.

Fiscal decentralization in Indonesia currently focuses on expenditure for the purpose of increasing development. The autonomy of regional fiscal management is the freedom to spend the funds in accordance with the priorities and needs of each region. The influence of regional expenditure on regional economic performance will largely depend on the allocation and composition of regional expenditure which is largely used for capital expenditure. Increased spending on public services, especially capital expenditure, will certainly increase the regional capital stock, so that it will increase the regional economic capacity, expand employment opportunities, and enhance the economic growth.

The implementation in Sumatra, according to the results of the regression estimation, indicates that there was a negative influence of the ratio of regional to central government expenditures on the economic growth where an increase in expenditure should have

increased the economic growth. The negative correlation indicates that Sumatra has not been able to allocate the regional expenditure to support the economic growth. In addition, Sumatra with its natural conditions having many mountains and disaster-prone regions could not maximize its expenditure to improve the economic growth.

3. Ratio of Locally-Generated Revenue to Regional Revenue

The average coefficient of the ratio of locally-generated revenue to regional revenue (X_3) was 0.175637, meaning that an average increase in the ratio of locally-generated revenue to regional revenue by 1% would result in an increase in the economic growth among provinces in Sumatra for each province by 0.175637 unit. The influence of the ratio of locally-generated revenue to regional revenue was positive and significant with the significance value of 0.000000 (<0.05). In accordance with the theory, a region is considered as capable and self-reliant when the huge contribution is from the locally-generated revenue, which is consistent with the purpose of the implementation of fiscal decentralization.

This ratio was developed from the research on fiscal decentralization in the United States by Akai and Sakata (2002). The greater the value of this ratio is, the more capable and successful the region is in tapping the potential of the region. This study concluded that the ratio of the locally-generated revenue to regional revenue had a positive influence and it is in line with the research by Akai and Sakata (2002).

4. Ratio of Locally-Generated Revenue to Regional Expenditure

The average coefficient of the ratio of locally-generated revenue to regional expenditure (X_4) was 0.000200, meaning that an average increase in the ratio of locally-generated revenue to regional expenditure by 1% would result in an increase in the economic growth among provinces in Sumatra for each province by 0.000200 unit. The influence of the ratio of locally-generated revenue to regional expenditure was positive and insignificant with the significance value of 0.8386 (> 0.05). The ratio of locally-generated revenue to expenditure in Sumatra had a positive influence on the economic growth in Sumatra. But, the result was not significant because the regional governments in Sumatra were still very dependent on the central government funding. So, the absence of central government funds will hamper the economic growth in Sumatra.

5. Ratio of Locally-Generated Revenue to Regional Balancing Fund

The average coefficient of the ratio of locally-generated revenue to regional balancing fund (X_5) was 0.106690, meaning that an average increase in the ratio of locally-generated revenue to regional balancing fund by 1% would result in an increase in the economic growth among provinces in Sumatra for each province by 0.106690 unit. The influence of the ratio of locally-generated revenue to regional balancing fund was negative and significant with the significance value of 0.000000 (<0.05). The greater the ratio is, the more self-reliant the regional government is in utilizing its regional financial capacity. However, in Sumatra the ratio was going in opposite direction of economic growth. This indicates that the regional governments in Sumatra were still very dependent on the central

government funding, which would affect the regional economic growth. The greater the locally-generated revenue of a regional government is, the less dependent the regional government is on the central government, and the better the degree of fiscal decentralization will be.

CONCLUSIONS AND SUGGESTIONS

Conclusions

The results of the analysis of fiscal decentralization effects in Sumatra simultaneously by using a multiple regression model and the Fixed-Effects method show that the fiscal decentralization factors in the period of 2001-2013 significantly affected the economic growth in that period. The coefficient of determination (R^2) was 0.854090, indicating that 85.4% of the economic growth was explained by the independent variables of the study, while the remaining percentage was explained by other variables outside the research. Partially, each variable had a direction consistent with the theory. However, there was one variable, expenditure autonomy (X_4), which did not significantly affect the economic growth. This indicates that the regional governments have not optimally allocated the locally-generated revenue to finance regional expenditure so as to provide a stimulus for economic growth, and they have been very dependent on the transfer of funds from the central government.

Limitations

This study has some limitations, among others:

1. The analysis period was only thirteen years from 2001 to 2013 so that the obtained results could not optimally be interpreted.
2. The comparison was based on general economic views due to the absence of similar studies.

Suggestions

Based on the conclusions, there are some suggestions for the regional governments. In general, there was an increase in financial management of the regional governments in Sumatra, which was indicated by an increase in revenues and expenditures of the provinces. However, the regional governments should be more effectively improving the fiscal independence by increasing locally-generated revenues and providing a stimulus for regional economic growth.

Future studies are expected to include other variables such as labour. The reason is that labour becomes a very important component to accelerate regional economic growth. A fast or slow increase in economic growth is also due to the quality and quantity of labour.

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