

Tax Revenue Inequality Analysis Using Williamson Index (Comparison Between Cities in West Sumatera Province-Indonesia)

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Abstract

This research aims to evaluate, describe and mapping the level of inequality of tax revenues using the Williamson's Index between cities in West Sumatera Province for the period of 2014-2016. The research was conducted in all cities in West Sumatera Province. The method is by analyzing tax revenues using tax ratio, then the results are analyzed using the Williamson Index. The results showed; 1) Analysis of inter-cities tax ratio in West Sumatera for the period 2014-2016 was at an average of 0.28% with the medium category, 2) The analysis of tax revenues with Williamson's Index of inter-cities tax ratio for the 2014-2016 period showed inequality-category. It is suggested to government of all cities in West Sumatera to develop and optimize revenue of taxes.

Keywords: *Williamson Index, inequality, tax revenue*

Introduction

West Sumatera as one of the provinces in Indonesia that accepted the government policy of regional autonomy which is a form of decentralization. Rosidin (2010), Regional autonomy is directed to accelerate regional independence in order to realize community welfare. The implementation of fiscal decentralization which has been implemented for approximately 15 years has significantly grown the regional economy of each city, but on the other hand the inequality that occurs between cities has also increased especially on tax revenues.

Indonesia Law Number 32 year 2004, concerning financial balance between regional and central government (fiscal decentralization) expects that each region is able to regulate and manage its finances and hoped that regional governments will be able to reduce income inequality between regions. We analyzes inequality between cities in West Sumatera because the urban areas are a potential of local tax revenue such as tax of advertisement, hotel, restaurant, etc. that is making urban areas develop more rapidly compared to rural areas. However, this does not mean that there is no disparity between cities, this is due to the different potential of each city in Indonesia.

Regional independence measure by analyze the regional tax ratio. The tax ratio can be used to measure the level of community compliance in paying taxes, measuring tax performance, and seeing the potential tax that is owned. According to Rachim (2015) the tax ratio is a ratio that describes the comparison of the amount of tax revenue with a country's Gross Domestic Product (GDP) in one year.

Akita (2011), Overall regions in Indonesia are still in the unequal category measured in income per capita by Williamson Index. Analysis using the Williamson Index was carried out to see how far the equality of tax revenue between cities in West Sumatera Province was evenly distributed after the implementation of regional autonomy in Indonesia. The problem that the regional financial equality has not yet achieved because the financial capabilities of each region vary according to their potential, thus making areas with high potential grow rapidly compared to areas that do not have the potential to be developed, this makes the gap between regions widening which is significantly increases the rate of inequality between regions.

One of the benchmarks to assess inequality of a region According to Putong (2010) is to use the Williamson Index. Daniel (2016), Using the Williamson index for analyze the evolution of Spanish economic development by measuring regional income differences from year to year. Portnov (2010), from various indices/coefficients, the Williamson Index can be chosen and reliable to measure inequality of regional income with different population numbers. In general, the Williamson Index is

used in economics to assess differences in the level of income per capita of each region. Because this study aims to see the level of inequality of regional financial independence in equalizing regional tax revenues, per capita income is replaced by the tax ratio of an area. Thus the higher the Williamsom Index value the greater the level of regional financial independence in equalizing local tax revenues, and vice versa.

Methods

This research is a qualitative descriptive study and conducted in all cities in West Sumatera Province. The data used is obtained in the form of reports of *Sumatera Barat Dalam Angka (SBDA)*, financial statistics reports for 2014-2016 obtained from the West Sumatra Provincial Statistics Agency, and data of Implementation of Regional Budgets obtained from the Regional Finance Agency of each city in West Sumatera province. The population in this study are all cities in West Sumatera Province. The sampling uses the total sampling method. Data analysis consists of Tax Ratio Analysis and Williamson Index Analysis. Tax revenues is analyze using tax ratio, then the results are analyzed using the Williamson Index.

$$\text{Tax Ratio} = \frac{\text{Regional Tax Revenue}}{\text{Gross Regional Domestic Product}} \times 100\%. \text{ (Rachim, 2015)}$$

Williamson Index can be formulated as follow (Williamson JG, 1965):

$$WI = \sqrt{\left(\frac{y_i - Y_i}{Y_i}\right)^2 \frac{P_i}{P_n}}, 0 < WI < 1$$

where y_i is Tax ratio per capita, Y_i is mean of y_i , P_i number of total population of a city and P_n is number of total population of West Sumatera.

Results and Discussion

Tax Ratio

The complete tax ratio between cities in West Sumatra province in 2014-2016 showed below:

Table 1. Tax ratio of cities in West Sumatera province

Cities in West Sumatera Province	Tax Ratio (%)			Average(%)	Category
	2014	2015	2016		
Bukit Tinggi	0,48	0,47	0,45	0,471	High
Padang	0,47	0,52	0,52	0,504	High
Padang Panjang	0,23	0,22	0,22	0,223	Moderate
Payakumbuh	0,25	0,24	0,22	0,237	Moderate
Sawahlunto	0,17	0,15	0,16	0,159	Low
Solok	0,20	0,21	0,21	0,207	Moderate
Pariaman	0,14	0,16	0,17	0,157	Low
Max	0,48	0,52	0,52		
Min	0,14	0,15	0,16		
Average	0,31	0,33	0,34	0,327	Moderate

Source: Statistic Central Agency, data processed

From the table above shows that the highest tax ratio from 2014-2016 was obtained by Padang and Bukittinggi while the lowest tax ratio was obtained by Pariaman. Padang is the city that has the highest tax ratio with an average tax ratio of 0.50% in the high category. Padang is the Capital of West Sumatra Province as well as the center of government, economy, education and tourism, making

Padang grow into an area that has high economic activity. One of them can be seen from the number of Padang Gross Regional Domestic Product (GRDP) which is very high compared to other cities in West Sumatra. High GRDP has been able to boost the tax revenue of Padang so that it makes Padang have the highest tax revenue in each year, from 2014-2016.

Rachim (2015), GRDP is closely related to regional taxes because the GRDP describes potential income that can be taxed and describes the economic activities of the community which, if developed well, is a good potential for taxation in the region. So that the higher the tax ratio of an area, the higher the independence of an area. The more independent an area means the higher the community participation in paying regional taxes, the better the tax performance of an area and the more potential regional taxes that can be obtained by the regional government.

As the region that has the highest regional tax ratio compared to other cities in the province of West Sumatra, Padang is the region with the most population compared to all cities in West Sumatra. thus making the economic sector grow and develop rapidly, such as restaurants, entertainment venues, advertisements, Hotels and many others so that this will bring a positive impact on the regional tax revenues.

Besides Padang, Bukittinggi is one of the cities that has a high tax ratio compared to other cities in West Sumatra. From 2014-2016 the average tax ratio obtained by Bukittinggi was 0.45% in the high category. Bukittinggi is one of the cities that has succeeded in developing its regional potential in the tourism sector. In addition, Bukittinggi is also known as a central area of trade, education, culinary tourism. The success of Bukittinggi in developing the potential of its region, certainly brings a breath of fresh air to the Bukittinggi's government in exploring regional tax revenues, especially from the local tax sector. Such as hotel, restaurant, entertainment tax, parking, billboards, street lighting, and many other types of taxes.

It can also be observed that the lowest Cities tax ratio was obtained by Pariaman and Sawahlunto where the average tax ratio (tax ratio) from 2014-2016 was in the range of 0.16% in the low category. Pariaman is one of the cities in West Sumatra Province which was officially established on July 2, 2002 which was previously part of Padang Pariaman Regency, as a relatively new city with a less extensive area. The Pariaman's GRDP has increased almost every year which should be able to support the tax revenue. However, the increase in GRDP has not been able to support the optimization of tax revenues, making the regional tax ratio of Pariaman was the lowest when compared to other cities in West Sumatra. Rachim (2015), one of the causes of the low tax ratio of a region is due to several things, including the first low taxpayer compliance in paying its obligations, secondly the tax performance is still not optimal in increasing local tax revenues, and the third is the lack of tax potential that can be collected by an area.

Williamson Index

The complete measures by Williamson Index between cities in West Sumatra province in 2014-2016 showed in below:

Table 2. Complete measures by Williamson Index

N o	Cities	Tax Ratio	Total Population	Tax Ratio Percapita	y_i	$\frac{y_i - Y_i}{Y_i}$	$\left[\frac{y_i - Y_i}{Y_i}\right]^2$	$\frac{P_i}{P_n}$	$\left[\frac{y_i - Y_i}{Y_i}\right]^2 \frac{P_i}{P_n}$
1	Bukittinggi	0,45	124.715	0,00000365	0,00000365	0,428731	0,1838	0,087	0,01598
2	Padang	0,52	914.968	0,00000057	0,00000057	(0,77706 4)	0,6038	0,638	0,38501
3	Padang Panjang	0,22	51.712	0,00000428	0,00000428	0,674763	0,4553	0,036	0,01641
4	Payakumbuh	0,22	129.807	0,00000171	0,00000171	(0,33201 8)	0,1102	0,090	0,00997
5	Sawahlunto	0,16	60.778	0,00000262	0,00000262	0,027520	0,0008	0,042	0,00003
6	Solok	0,21	67.307	0,00000311	0,00000311	0,219515	0,0482	0,047	0,00226
7	Pariaman	0,17	85.691	0,00000194	0,00000194	(0,24144 7)	0,0583	0,060	0,00348

1.434.978

0,00000225

0,43314

Source: Statistic Central Agency, data processed

Table 3. Result of Tax ratio measured by Williamson Index

Year	Williamson Index	Interpretation
2014	0,68	Inequality
2015	0,67	Inequality
2016	0,66	Inequality
Average	0,67	Inequality

Source: Statistic Central Agency, data processed

Although from 2014 to 2016 experienced a decrease in the value of the Williamson index which means it is better, but the average value of 0.67 is still in the moderate category, meaning that the tax revenue between cities is still unequal. It can also be seen that there are still several cities with low tax revenues while some other cities are already in the high category.

The high rate of inequality between cities in West Sumatra in 2014-2016 was caused by the high gap between regions as seen from cities tax ratio in West Sumatra, as one example of the high tax ratio of Padang and Bukittinggi was not comparable with the Sawahlunto and Pariaman tax ratios as one with the lowest tax ratio.

The high gap between these regions is due to the potential of different regions so that it can affect the tax potential that can be collected by a region, Padang and Bukittinggi that have succeeded in developing their regional potential in the fields of tourism, education, culinary and trade makes tax revenue ability increasing every year from several types of potential taxes, such as hotel, entertainment, restaurant, advertising, parking taxes, etc. This situation will certainly bring a positive impact on the tax revenues. While this situation is contrary to Pariaman area. As a city that is still relatively new, Pariaman is still in the process of structuring and has just begun to develop its potential, one of which is in the field of beach tourism and historic heritage. Nevertheless, Pariaman has not succeeded in making tax as the primary source of regional-generated revenue. This is supported by the data of regional budget and expenditure of Pariaman, which explains that each year can only rely on street lighting tax as the highest source of tax revenue. While hotel, parking, restaurant, billboard, property tax and other types of taxes are still relatively low if we compare them to other regions.

Conclusions

Williamson Index have been used in the study to measures regional tax revenue inequality. However, the result showed us that the tax revenue between cities in Sumatera Barat province is still not equally. It is suggested to government of all cities in West Sumatera to develop and optimize tax potential by exploring the local potential, especially the cities with the lowest taxes.

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