Regional Disparity in West Kalimantan

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Abstract. This study analyzes disparity between coastal region, inland region and border region and disparity between districts as members of each region. To assess the disparity phenomena the Theil index formula is used. GDP per capita for this study is collected from Statistic Office Kalimantan Barat. Period of study is 2008-2016 and the number of District is 9 (nine). The use of Theil Index has some advantages: First, this index can calculate disparities within and between regions simultaneously; and second, the results can provide important policy implications. The Theil index value runs from 0 (zero) to 1. Where the index is close to 0 (zero) the regional disparities is very low, in other words the development is relatively even. However higher between-region disparities compared to within regions disparities provide proof of relative inequality between coastal region, inland region and border region. Less serious problem of disparity occurs within each region. Region with high concentration of economic activities tend to grow faster, while region with low concentration of economic activities tend to have lower levels of development and economic growth. As implication of the findings, development strategy should also consider other factors such as concentration of economic activity in each region in order to reduce disparity.

Keywords: Regional disparity · Theil index · Border region · Coastal region · Inland region

1 Introduction

Administratively, West Kalimantan Province consists of 12 Districts and 2 Cities. Four of those Districts are in the coastal region (bordering the sea), 3 in the Inland region, 5 together in the border region, and the 2 Cities are located in the coastal region. Districts included in the coastal region are Mempawah, Ketapang, Kayong Utara, and Kubu Raya; Districts in the Inland region are Landak, Sekadau, and Melawi; while Districts in the border region are Sanggau, Kapuas Hulu, Sambas, Sintang, and Bengkayang; while Singkawang City and Pontianak City are two coastal cities of West Kalimantan.

Each of these regions has different cultural characteristics, infrastructure needs, natural resources, and special treatment from the central government. Because of its more open geographical location which facilitates relations to the outside world, the coastal region has relatively more access to development compared to areas located in the Inland. Another advantage of the coastal region is mentioned in the Law of the Republic of Indonesia Number 32 Year 2004 on Regional Government, Article

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18 which states that "Regions that have sea areas are given the authority to manage resources in the sea area." From the management of Natural Resources (SDA) perspective, the coastal region receives profit sharing from the management of natural resources under the bottom and / or on the seabed in accordance with laws and regulations. This kind of opportunity is hardly available in Districts located in the Inland region.

On the other hand, only 2 (two) of those 5 border Districts have official border gates, namely Sanggau and Bengkayang. The other 3 border Districts namely Sintang, Sambas, and Kapuas Hulu do not have such border gates, except Sintang whose border gate is already under construction. Nevertheless, people along the border line have been using informal border doors to transport people and goods following ethnic and kinship ties established between people on both sides of the border.

In 2002, Akita and Alisjahbana conducted a study on disparities in Indonesia using the Theil index as a measure of development disparity between regions. Based on this study, in the period 1993-1998, the highest inter-provincial index on the island of Kalimantan was the province of West Kalimantan. West Kalimantan province has Theil index totals ranging from 0.103 to 0.110, while Central Kalimantan, South Kalimantan and East Kalimantan Provinces in the same period had total Theil index below 0.069. With reference to the indicators set by the World Bank in Inscription (2006), the level of equality in the Province of West Kalimantan has not shown a level of poor evenness, although it cannot be said to be too bad.

As explained earlier, regional disparity arises because of lack of equity in economic development caused by a number of interrelated factors. Alisjahbana (2005) suggested that one of the prominent disparity problems in Indonesia is the concentration of economic activities in Java and Bali. The development of new provinces since 2001 and decentralization is thought to have pushed disparities between regions wider. At the provincial level, there are still significant disparities in the interval between the 1990s and 2000.

2 Literature Review

2.1 Regional Economic Development and Economic Growth

Regional economic development is a process whereby the regional government and its people manage existing resources and form partnership with the private sector to create new job opportunity and stimulate development of economic activities (economic growth) in the region (Arsyad, 2010). Economic growth is influenced by four factors, namely population, number of capital goods, land area and natural wealth and the technology used.

According to Adam Smith in Suryana (2000) economic development is a process of integration between population growth and technological progress. Meier (in Adisasmita, 2005) defines economic development as a process of increasing real income per capita in a long period of time. The process leads to changes that occur continuously through a series of combinations of processes in order to achieve

something better, namely an increase in per capita income that continues over the long term.

Economic development cannot be separated from economic growth; economic development encourages economic growth, and vice versa, economic growth accelerates the process of economic development. Economic growth refers to an increase in the value of everything produced in the economy, while economic development is defined as an increase in the economic wealth of a region, for the welfare of its population.

Regional economic growth that varies in intensity will cause economic disparities in income and disparities between regions. Myrdal (1968) and Friedman (1976) state that regional growth or development will lead to divergence. Therefore, equitable development that is more oriented towards equitable economic growth, becomes a very important strategic issue in determining the direction of economic development in West Kalimantan going forward. The Solow growth model attempts to explain long-run economic growth by looking at accumulation of capital, population growth, and productivity increases. Mankiw NG, Romer and Weil (1992) augmented the model to include human as well as phisical capital and find that by holding population growth and capital accumulation constant, countries converge at about the rate the augmented Solow model predicts.

About the relationship between regional economic productivity and allocation of central government spending Lee and Roger said that “economic productivity across subnational regions as a factor explaining the level and allocation of central government expenditure. As regional productivity becomes more dispersed, the preferences influencing national decision making should diverge, thus impeding agreement to expand the central state.“ So, regional government will expand productivity potential as central government do not feel the need to target local community.

2.2 Development Disparity

Development disparities come in different disguises, social, economic, political, and cultural development. Yifan Ding wrote that “… large economic and social disparities may lead to social instability, thus damaging economic development”. Therefore in order to safeguard government sponsored regional development such disparity needs to be remedied.

Information about development disparities in the European Union comes from Postoiu and Busega who write that Solow (1956) posted a neoclassical paradigm that “disparities tend to decrease as result of faster economic growth recorded by the poorer countries”. On the other hand, Romer’s (1986) and Lucas's (1988) argue that “inequalities are more likely to grow (endogenous growth theories)”. Krugman's (1991) new geographical economics, or Myrdal's theory (1957), however suggests that “economic growth is leveraged by a cumulative causation effect.” Quah's analysis (1996) argues that “economic disparities arise because poor countries do not have the same ability to implement new technologies as developed countries. That will lead to more development gaps, dividing countries into "convergence clubs".

A study was conducted by Karimi, Yusof, and Hook (2010) to find out gap and rank of regional disparities among major states during the Seventh and Eights

Malaysian development Plan. They attempted to assess whether balanced regional development which is one of the key objectives of Malaysian regional development can be established. They used new methodology they called TOPSIS and Shannon enthropy to do the ranking, and the analysis only showed small result in reducing development gaps, where Wilayah Persekutuan Kuala Lumpur stays at the top and Sabah stays at the bottom in term of achieved development.

Andhiani, Erfit, and Bhakti (2018) analyze regional economic growth and inequality of development in the provinces of Sumatra using panel data and regression analysis. The result shows that economic growth in the region of Sumatra tend to decrease, whereas development inequality ranges from IW (Williamson Index) 0.406-0.446. The highest level of inequality occured in 2012 in South Sumatra Province of 0.876 and the lowest occured in 2014 in Lampung Province in 0.103. Based on the result of panel data regression, it is known that simultaneously investment, government expenditure, agglomeration, and labor influence to economic growth. Likewise, simultaneously investment, government spending, agglomeration, and labor also have an effect on development inequality

The determinants of regional income disparity in Indonesia for the period of 1993-2002 was investigated by Resosudarmo and Vidyattama (2006). Their findings suggest that there is a conditional regional income per capita growth convergence, and such growth is mainly determined by saving of physical capital, trade openness and the contribution of the gas and oil sectors.

A study conducted by Siswanto et al. (2014) attempted to find out whether shifting development toward the outskirt of urban area will affect economic and social disparity of urban, peri-urban, and rural areas involved. The result shows that “urban and peri-urban areas have medium and high level of social and economic disparity compare with rural areas which have low levels of disparity”.

The effect of economic growth toward regional disparity was analyzed by Kurniasih (2013) to prove whether the Kuznet hypothesis on inverted U curve is applicable to West Kalimantan for the period of 2001 – 2010. She uses the Klasen typology for classifying the regions. Her analysis finds that economic growth influences disparity significantly but negatively. Higher economic growth is followed by lower disparity. In other words Kuznet hypothesis about high economic growth is followed by high disparity does not apply for West Kalimantan.

In seeing disparities between regions within a country or region is not easy. There are times when people think that the inequality of an area is quite high after seeing many poor groups in the area concerned or the presence of a handful of groups in the midst of a generally poor community. In contrast to income distribution that looks at inequality between community groups, development inequality between regions sees differences between regions so that the issue is not between rich and poor groups but the difference between developed and underdeveloped regions (Sjafrizal, 2008).

2.3 The Theil Index

Theil Index is an index that is widely used in calculating and analyzing regional income distribution. The main character of this index is its ability to see the gap between regional groups (between inequality) and inequalities within a regional group (within inequality), according to Kuncoro (2001).

Theil Index uses the Gross Regional Domestic Product (GRDP) per capita as a baseline. The reason is clear, because what is being compared is the level of development between regions and not the level of prosperity between groups. The values range from zero to one, where zero states that the distribution of GRDP by constant prices is perfectly evenly distributed between groups of regions, whereas if it is close to one it means that the distribution of GRDP by constant prices is not evenly distributed between groups of regions. Theil entropy index which is getting bigger indicates that inequality is getting bigger too, and vice versa, if the index gets smaller, the inequality will get lower/smaller or in other words more evenly distributed.

The use of Theil Index as a measure of disparity or economic inequality between regions has certain advantages, including:

1. Its nature is not sensitive to the scale of the area and is not affected by extreme values.
2. Independent of the number of regions so that it can be used as a comparison of different regional systems.
3. Can be decomposed into an index of inequality between groups and intra-group regions simultaneously.

Theil Index is a static analysis used to measure income disparity by using a measure of entropy from inequality. Theil's coefficient can be interpreted as the logarithm of the weighted geometry average of regional per capita income which is deflated by Etharina's national average per capita income (2005).

In addition to those mentioned earlier, Theil's index also has several other advantages when compared to other disparity indices. These advantages are: (1) can calculate inequality within regions and between regions simultaneously, so that the scope of analysis is broader. In the case of Indonesia, using this method can be calculated inequality within provinces and districts / cities and between provinces, districts and cities, (2) can calculate the contribution (in percentages) of each region to the imbalance of overall regional development so as to have policy implications which is quite important (Sjafrizal; 2008).

3 Research Methodology

Judging from the purpose of this study which is pure research background theory (theory gap) and empirical, namely research conducted to evaluate or develop a theory or findings that already exist. Viewed from the relationship between variables, it is an associative research on causality, which is research that aims to determine the relationship or influence between two or more variables (Suliyanto, 2006). The data used is a combination of quantitative and qualitative data. Qualitative data is used to sharpen the discussion.

Development policies are usually based on the specificity of the region concerned (endogenous development) by using the potential of human resources, institutions, and physical resources locally (regional). Each region basically has a style of economic growth that is different from one region to another. The difference in growth was due to differences in the economic, social and physical character of the region itself, including its interactions with other regions.

The implementation of regional development in West Kalimantan Province, aimed at the realization of economic growth and welfare of the community in accordance with the third mission of the development of the Province of Kalimantan as set out in the 2013-2018 West Kalimantan Regional Medium-Term Development Plan (RPJMD), namely "Carry out equitable and balanced development in a sustainable manner to reduce disparities between regions while taking into account ecological aspects in the use of natural resources ".

Based on the theoretical foundation and empirical study, the following hypothesis is formulated:

1. There has been a disparity in development between and within groups of Districts in West Kalimantan Province, namely groups of Districts in the coastal region, group of Districts in the inland region, and group of Districts in the border region in West Kalimantan Province.
2. Inland district group have the highest disparity compared to coastal and border district groups.

The data used in this study are secondary data obtained from the Central Statistics Agency (BPS). This study uses panel data, which is a combination of times-series and cross-sections. The number of individuals used is 9 Districts in the province of West Kalimantan and within a period of 7 years (2010-2016).

Descriptive Analysis is an analysis conducted to assess the characteristics of a data in this study. Descriptive analysis is a form of simple analysis that aims to describe and facilitate the interpretation carried out by providing exposure in the form of tables, graphs, and diagrams. This analysis provides a current overview of the socioeconomic conditions of the districts in West Kalimantan Province.

The analysis technique used to measure development disparities between regions in this study is the Theil index. The use of Theil index as a measure of disparity has certain advantages. First, this index can calculate disparities within regions and between regions simultaneously, so the scope of analysis is broader. Secondly, using this index we can also calculate the contribution (in percentage) of each region to the overall regional development disparity so that it can provide significant policy implications (Sjafrizal, 2008).

This study uses the Theil index formula which is applied based on per capita GRDP and population to analyze the level of economic disparity (GRDP per capita) in Districts located in coastal region, Districts in inland region, and Districts in border region in the province of West Kalimantan.

Theil index formulation (Td) as follows:

$$Td = \sum_{i=1}^{n} \sum_{j=1}^{n} \{y_{ij}/\,Y\}\ log\ log\ [\{y_{ij}/\,Y\}/\{n_{ij}/\,N\}\,]$$

where:

Td = Theil Index
yij = GRDP per capita district i in the province j
Y = GRDP per capita province j
ij = total population of district i in the province j
N = total population of province j

Theil index coefficient (level of disparity) lies between 0 to 1, getting closer to zero means that income disparity between districts / cities in West Kalimantan Province is getting lower or in other words the GDP per capita is evenly distributed, but if the Theil index coefficient is close to 1 (one) then the disparity in income between districts / cities in West Kalimantan Province is higher and indicates the unequal distribution of GDP per capita (Sjafrizal, 2008).

Calculation of Theil index in this study is the sum of Theil index between groups and within groups with the following formula:

$$ITheil = I(between) + I\ (within)$$

where:

I(between) = level of disparity between groups in West Kalimantan Province
I(within) = level of disparity within groups in the Province of West Kalimantan

Theil index within region in West Kalimantan Province can be searched by the following formula:

$$I_{(within)} = \sum_{i=1}^{n} \{y_i / Y\}\ log\ log\ [\{y_i / Y\}/\{n_i / N\}]$$

where:

I(within) = level of disparity within groups in the Province of West Kalimantan
yij = GRDP per capita district i in the Province of West Kalimantan
Y = GRDP per capita of the Province of West Kalimantan
nij = total population of district i in the Province of West Kalimantan
N = total population of the Province of West Kalimantan

Theil index between region in West Kalimantan Province can be searched by the following formula:

$$I_{(between)} = \sum_{i=1}^{n} \{y_i / Y\}\ log\ log\ [\{y_i / Y\}/\{n_i / N\}]$$

where:

I(between) = level of disparity between groups in West Kalimantan Province
yij = GRDP per capita district i in the Province of West Kalimantan
Y = GRDP per capita of the Province of West Kalimantan
nij = total population of district i in the Province of West Kalimantan
N = total population of the Province of West Kalimantan

4 Result and Discussion

Analysis of the level of development disparity that occurs between Districts in the three research areas in West Kalimantan Province was carried out using the Theil

Entropy Index method. The disparity or inequality analyzed is in the form of economic development disparity, which is reflected in the value of District GRDP in the three regions studied, namely coastal region, inland region, and border region in West Kalimantan Province. Theil Entropy Index Analysis is conducted to see disparities that occur between regions (coastal, inland, and border regions) and disparities within each of the three regions (between districts in each region).

In the period between 2008 and 2016, within region disparities in West Kalimantan expressed in Theil Index fluctuated from year to year, ranging from 0.00118 to 0.00281, while disparities between groups ranges from 0.00623 to 0.01029. Disparity fluctuations expressed in the index are illustrated in Table 2.1 and Graph 2.1 on the next page.

Tabel 1. Decomposition of Disparities in West Kalimantan Province.

Year 2008 -2016

n	WITHIN GROUP		BETWEEN GROUP		TOTAL
	THEIL INDEX	CONTRIBUTION (%)	THEIL INDEX	CONTRIBUTION (%)	
2008	0.00155	19.536	0.00640	80.464	0.00795
2009	0.00150	18.407	0.00665	81.593	0.00815
2010	0.00118	15.882	0.00623	84.118	0.00740
2011	0.00271	20.877	0.01029	79.123	0.01300
2012	0.00276	21.712	0.00997	78.288	0.01273
2013	0.00281	22.164	0.00986	77.836	0.01267
2014	0.00260	20.529	0.01006	79.471	0.01266
2015	0.00219	18.258	0.00982	81.742	0.01201
2016	0.00193	16.369	0.00988	83.631	0.01181
AVERAGE	**0.00214**	**19.304**	**0.00880**	**80.696**	**0.01093**

Source: processed data

Viewed from the perspective of the Theil Index decomposition perspective, the contribution between regions to disparity in the province of West Kalimantan in the 2008-2016 period was quite high, ranging from 77.836% - 84.118% with an average contribution of 80.669%, while the contribution within group of the total regional disparity in West Kalimantan Province in the period 2008 - 2016 only ranges from 15.882% to 22.164% with an average contribution of 19.304%.

In general, the Theil index value for within group, between group and total index approaching 0 indicates that regional disparity in West Kalimantan Province is very low, in other words its development is relatively evenly distributed. Disparity between groups (between groups) is higher compared to disparities within groups (within groups) due to differences in several factors. The main cause is the factors of economic development which are quite different from one region to another. High concentrations of economic activity in certain regions tend to grow faster, whereas regions with a low level of concentration of economic activity will tend to have lower levels of development and economic growth.

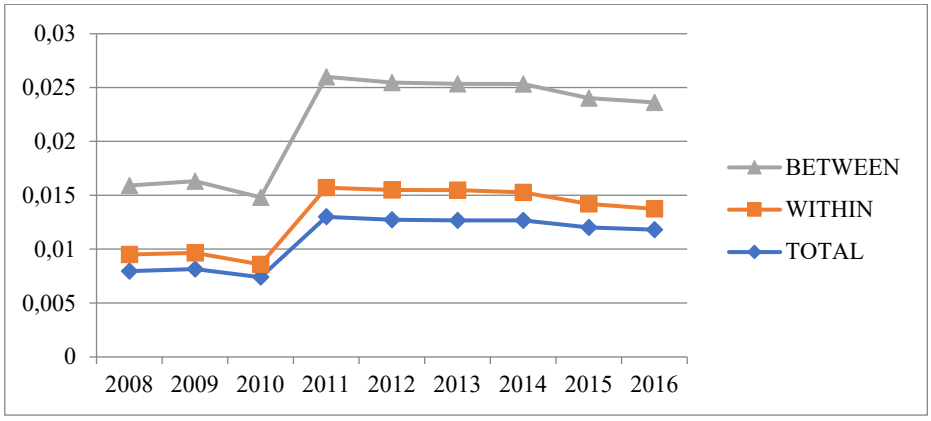

Fig. 1. Decomposition of Disparities in West Kalimantan Province. Year 2008 -2016

5 Conclusion & Recomendation

5.1 Conclusion

1. Between 2008 and 2016, there has been a disparity in development between regions (coastal, inland, and border regions) and disparity within each of the region (between districts falling under each region) in West Kalimantan.
2. In general, the Theil index value for within regions, between regions, and total indexes that are close to 0 indicates that regional disparity in West Kalimantan Province is very low, in other words its development is relatively evenly distributed.
3. Disparities expressed in the Theil Index in regions (within regionss) fluctuate from year to year, and the magnitude is relatively low compared to disparities between regions. In other words the contribution of disparity between regions is greater towards the disparity of the Province.
4. Although the difference is not significant, compared to districts in the other two regions, districts in the interior have relatively higher disparities. Geographical factors where their location is more isolated to economic access than the other two regions affect this condition.
5. Even if seen from Theil's low index, it can be seen that development in coastal districts, inland districts, and border districts in West Kalimantan Province is relatively evenly distributed, but if seen from the development components, for example the Index Human Development and its components, the numbers are still quite alarming, especially those related to educational issues

5.2 Recomendation

1. Although the level of disparity in West Kalimantan Province is relatively good, local governments need to pay attention to the problem of disparity through a spatial or regional approach.

2. Related to improving the quality of life, local governments need to improve policies aimed at improving human development such as the quality of education and health for the community.
3. Development Programs that aim to improve existing human resources, especially in the fields of education, health and economic improvement of the community, such as functional literacy programs, Special Assistance for Poor Students (BKSM), Jamkesda, service improvement at puskesmas and posyandu, and business improvement in the agriculture and SME sectors, needs to be further improved.

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