Economic Performance on Sumatra Island

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Abstract. The island of Sumatra is Indonesia's second-largest contributor to economic growth. However, the contribution of performance between provinces on the island is still quite diverse. This study aims to analyze the economic performance between provinces in Sumatra Island from 2011 to 2020. Economic performance is proxied into real income per capita and economic growth. The analytical method used is the Klassen typology, Williamson index, and historical convergence. Data processing with Klassen Typology shows that there is only one province in quadrant 1 and quadrant 2, namely Riau Islands Province and Riau Province. Most provinces belong to the potential quadrant. The results of the Williamson index illustrate a decrease in real GDP per capita inequality between regions on the island of Sumatra. This situation also reflects the emergence of the effect of economic convergence between provinces, where a slowdown in economic performance in one region is followed by economic development in other regions. This conclusion is strengthened by the historical convergence method, which shows a negative slope line. This line indicates that most of the relatively poorer provinces have high real per capita income growth performance, except for Aceh. On the other hand, the provinces of Riau and Riau Islands, which are classified as rich, experienced a significant slowdown in growth. This line indicates that most of the relatively poorer provinces have high real per capita income growth performance, except for Aceh. On the other hand, the provinces of Riau and Riau Islands, which are classified as rich, experienced a significant slowdown in growth. This line indicates that most of the relatively poorer provinces have high real per capita income growth performance, except for Aceh. On the other hand, the provinces of Riau and Riau Islands, which are classified as rich, experienced a significant slowdown in growth.

Keywords: Economic Performance, Sumatra Island, Klassen Typology, Williamson Index.

1. Introduction

Economic disparities between regions are common in the economic development of a country. There is a tendency that development policies made to increase economic growth to worsen the condition of economic inequality. The economic disparity between regions is a serious problem because some regions can achieve economic growth quickly, while other regions grow very slowly. This triggers population migration from underdeveloped areas to developed areas, causing socio-economic problems in developed areas. In addition, uneven economic progress in each region often creates social jealousy that triggers conflicts between regions. If left unchecked, it can disrupt the stability of the country's economy.

According to BPS data, the provinces in Indonesia's Western Region account for over 80% of the country's GDP, with the remaining portion being shared by all of the provinces in Eastern

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Indonesia (BPS, 2019). In the Western Region of Indonesia, inclusive growth is more prevalent in terms of lowering poverty, decreasing inequality, and raising employment absorption (Sholihah: 2014). Whereas according to Todaro (2006), the fundamental problem is not only growing GDP but rather who will grow the GDP, the number of people in a country or only a few people. If only a handful of people grow their GDP or only a few rich people, then the benefits of GDP growth are only enjoyed by them so poverty and income inequality will get worse. For that, the most important thing in growth is who is involved in it

Arsyad (1999) states that a country's rapid GDP development does not always translate into higher living standards for its citizens. In other words, the so-called “trickle-down effects” of the benefits of economic growth for the poor did not occur as expected. If there is no equity, then those who will enjoy the benefits of this economic growth are people who have large capital and people from the upper classes. During the initial development process, there was a dilemma between high economic growth and income distribution, this is a long-standing problem that poor and developing countries have to face. Trade-offs or exchanges between economic growth and income distribution in each region always occur.

Sumatra is emerging as a prominent cluster in Indonesia, boasting the second highest economic distribution behind Java. According to the convergence theory, the development of growth centers in important locations on Sumatra Island will result in poorer regions experiencing both a delay in development and an effort to catch up with more developed parts. Figure 1 below illustrates the varying intensities of each region depending on the average real income growth per capita from 2011 to 2020. This distinction is particularly evident in the provinces of Aceh, Riau, Bangka Belitung, and Riau Islands compared to other provinces. Several provinces encompass regions characterized by the highest per capita income but also have sluggish growth rates. Riau is one of the regions that experienced a negative growth rate of -0.13 percent during the observed year. Concurrently, the provinces of North Sumatra, West Sumatra, and Lampung exhibit the most elevated average growth..

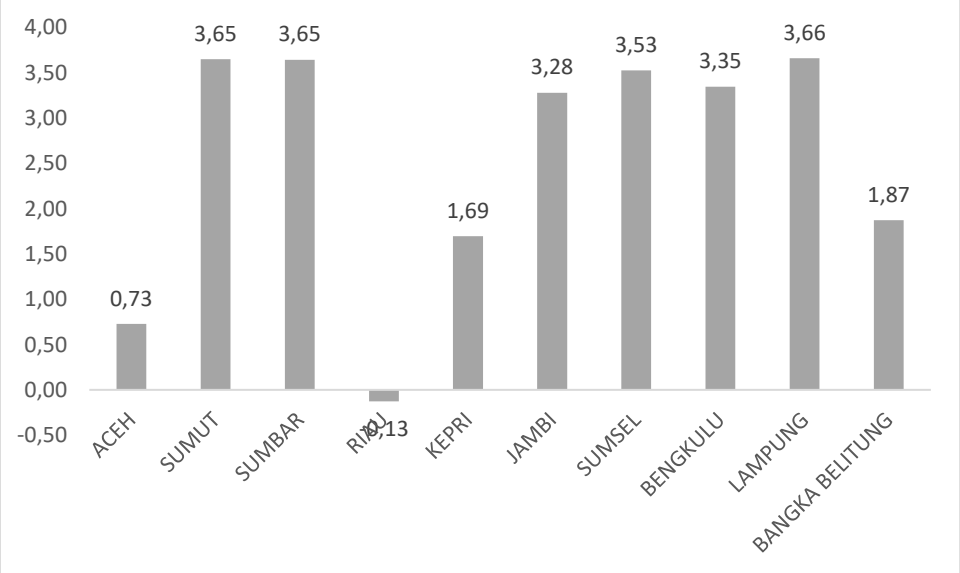

Fig 1. Average Real GDP Growth Per Capita Between Provinces on the island of Sumatra 2011-2020

Based on the background, the issue of the economic performance of a region has always been a discussion that has attracted the attention of various groups, including related researchers and policymakers, for this reason, a study was conducted that aims to measure and analyze empirically the economic performance between regions in the provinces on the island of Sumatra.

2 Literature Review

2.1 Economic Gap Between Regions

Economic growth refers to the progressive expansion of the real gross national product or real national income. Economic growth or development is often determined by the presence of an increase in real production. Real production growth is determined by various factors, namely: political stability, economic policy, the natural wealth owned, the number and ability to work, and the availability of entrepreneurs who can develop and use modern technology. Economic growth is achieved when there is a greater increase in the ratio between inputs and outputs as well as economic development. So an increase in output per unit of input can produce a larger output. This means an increase in efficiency and productivity (Todaro, 2006).

The problem of economic disparity between regions is explained using the Neoclassical Hypothesis. Adherents of the Neoclassical Hypothesis state that at the beginning of the development process of a country, economic disparities between regions tend to increase. This process will occur until the gap reaches the saturation point. If the development process continues, the economic gap between regions will gradually decrease. This is because when the new development process begins, the existing development opportunities are generally utilized by areas with better development conditions. Meanwhile, underdeveloped regions are unable to take advantage of this opportunity due to limited facilities and infrastructure and the low quality of Human Resources (HR). Because economic growth is faster in areas with better conditions, while underdeveloped regions have not made much progress, the economic disparity between regions tends to increase. A different situation occurs in developed countries where regional conditions are generally in better condition in terms of facilities and infrastructure as well as the quality of human resources. Under such conditions, every development opportunity can be utilized more equitably between regions. As a result, the development process in developed countries will reduce economic disparities between regions (Anggraeni, 2012). every development opportunity can be utilized more equitably between regions. As a result, the development process in developed countries will reduce economic disparities between regions (Anggraeni, 2012). every development opportunity can be utilized more equitably between regions. As a result, the development process in developed countries will reduce economic disparities between regions (Anggraeni, 2012).

Kuznets (1955) posited that during the initial phases of economic development, there is a tendency for income distribution to worsen, resulting in high levels of inequality (Todaro, 2000). Nevertheless, in subsequent phases, there will be a noticeable enhancement. The idea is commonly referred to as the Kuznets "Inverted-U" hypothesis. The relationship between income distribution, as measured by the Gini coefficient, and per capita GDP growth can be represented by an inverted U-shaped curve. Kuznets posits that income distribution will correspondingly expand alongside economic expansion. The clustering of economic activity in specific places is a key element contributing to regional differences in development. those characterized by a

significant concentration of economic activity typically see more fast economic growth compared to those with a lower concentration of economic activity. Similarly, the clustering of people in and around major urban areas typically leads to imbalances in population distribution among different regions.

3 Research Methods

This research is characterized as descriptive and employs a quantitative methodology. Spanning a duration of 10 years, from 2011 to 2020, the observation period was conducted. The research observations are primarily conducted on the island of Sumatra, specifically focusing on the provinces of Aceh, North Sumatra, West Sumatra, Riau, Riau Islands, Jambi, South Sumatra, Bengkulu, Lampung, and Bangka Belitung. The data utilized is panel data, which is a composite of time series and cross-sectional data. The data analyzed consist of economic variables, specifically the growth of Gross Regional Domestic Product (GRDP) and GRDP per capita. The analytical model employed in this work is:

Klassen Typology

Table 1. Klassen Tip Typology

GRDP Per capita / **Rate Growth**	**Yi > y**	**Yi < y**
Ri > r	Advance and Grow Fast	Growing Fast
Ri < r	Forward and Depressed	Relatively Lagging

Information:
Ri : Provincial GRDP growth rate i
r : GDP growth rate
Yi : Provincial income per capita i
y : Average per capita income

Williamson Index

This index is used to measure the level of economic inequality between regions and is used to explain the condition of development in an area. The basis for calculating this indicator is to use per capita income which is linked to the number of residents per region. The Williamson index formula is:

$$V_w = \frac{\sqrt{\sum_i^n = 1 \ (Yi - Y)^2 \ (\frac{fi}{n})}}{Y}$$

Information:

Vw : Williamson Index
Yi : GRDP Per capita Province i
Y : GRDP per capita for all regions
fi : Total population of province i
n : Total population of the whole area

The range of this index extends from 0 to one. A zero number signifies a low level of income inequality between districts/cities in province X. Conversely, if this index approaches 1, it indicates a significant disparity in income distribution among districts/cities in province X. (Andhiani et al., 2018)

4 Results and Discussion

4.1 Performance Mapping

In mapping the economic position of each province on the island of Sumatra, this study uses The Klassen Typology method. The mapping presented here use economic growth and real per capita income as criteria to assess the economic performance of each region. The performance observation period spanned from 2011 to 2020. Klassen's typology categorizes performance conditions into four quadrants. Quadrant 1 is a province that is classed as advanced and experiencing rapid growth. This scenario is exemplified by a substantial increase in economic growth and the actual income per person. Quadrant 2 characterizes a province that is both developed and depressed, meaning that it has a high real per capita income but sluggish economic growth. Moreover, quadrant 3 is a province categorized as having significant potential for quick development.

The diagram illustrates that the Riau Islands Province is the sole province located in quadrant 1. In this province, the average economic growth is 4.69 percent, and the average real income per capita is 76.99 million rupiahs. Contrary to Riau Province, which has a per capita income of 71.13 million rupiahs or higher than the average, but its economic growth performance is lower than the average, Quadrant 3 is occupied by the Provinces of North Sumatra, West Sumatra, Jambi, Bengkulu, South Sumatra, Lampung, and Bangka Belitung. Certain provinces has the capacity for accelerated development. Only Aceh Province is classified as underdeveloped, exhibiting a meager average economic growth rate of 2.64 percent and a real per capita income of 23.35 million rupiahs.

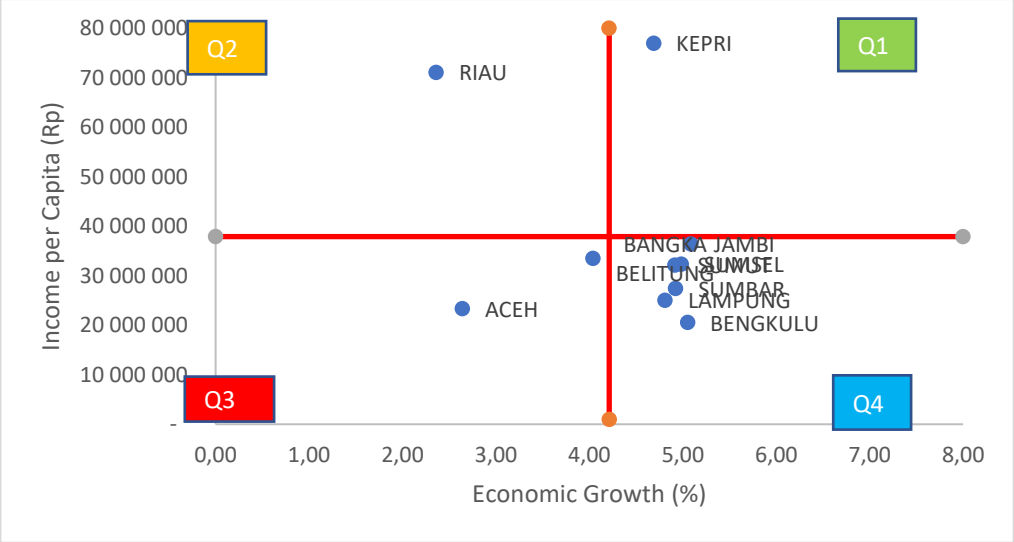

Fig 2. Klassen Typology of Real Per capita Income and Economic Growth Sumatra Island 2011-2020

Disparity

In addition, this study use the Williamson index as a precise instrument for detecting and quantifying the level of inequality. The metric employed to assess the performance of equity is the actual per capita income. From the above image, it is evident that there has been a decrease in the index number between the years 2011 and 2020. The initial index value at the start of the observation year was 0.491, and it steadily declined to 0.449 by 2013. The index value experienced a rise of 0.451 in 2014, followed by a gradual decline till it reached 0.370 in 2020. This image depicts a previous economic convergence that took place on the island of Sumatra.

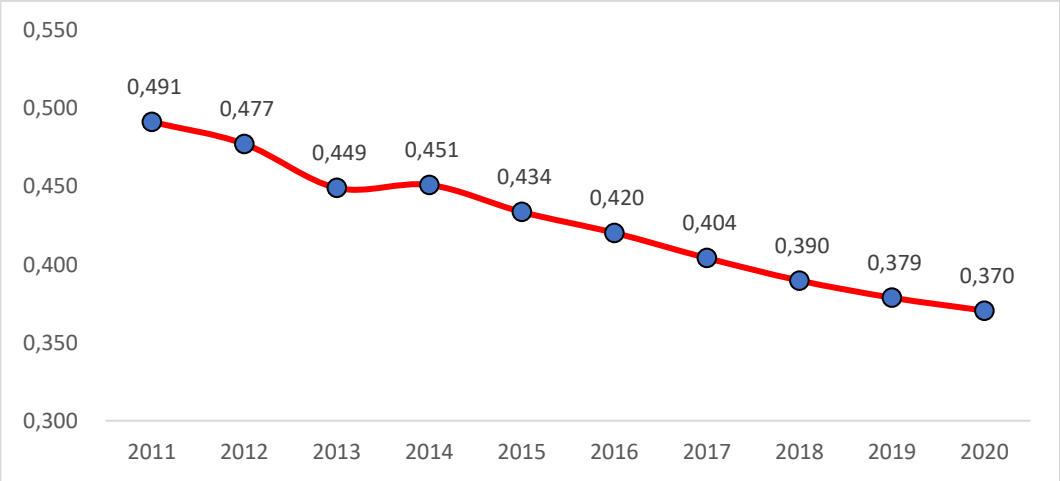

Fig 3. Williamson's Index of Real Income Per Capita Sumatra Island 2011-2020

5 Conclusion

Economic development on Sumatra Island for the period 2011-2020 through the classification typology shows that only the Riau Islands are classified as developed regions. Riau Province experienced a depressed economic phase, where the achievement of per capita income was high but the average economic growth was low. Most provinces fall into the potential quadrant, such as North Sumatra, West Sumatra, South Sumatra, Bengkulu, and Jambi. Meanwhile, Aceh Province is the only province that is still classified as an underdeveloped province.

Through the Williamson index, it can also be seen that there has been a decline in index numbers from 2011 to 2020 which is relatively stable. In other words, on the island of Sumatra, there has been a significant decline in real income per capita disparities between regions from year to year. This conclusion is further confirmed through the historical convergence method. The curve line shows the high performance of real per capita income growth in the relatively poorer provinces at the beginning of the observation year, except Aceh Province. On the other hand, provinces that are classified as rich, such as Riau and Riau Islands, have low growth performance.

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