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## **Agglomeration Analysis of The Processing Industry On Economic Growth In Bangka Barat District**

**Ayu Wulandari<sup>a\*</sup>, Hidayati Hidayati<sup>b</sup>**

<sup>a,b</sup>Universitas Bangka Belitung, Indonesia

\*awulandari0908@gmail.com

### **Abstract**

*One of the regencies in the Bangka Belitung Islands Province that has the highest contribution from the manufacturing sector to GRDP is West Bangka Regency. The large contribution of the manufacturing sector in West Bangka Regency will encourage grouping due to the encouragement of various factors called economic agglomeration. This study analyzes the agglomeration of the processing industry in West Bangka Regency on economic growth. With the documentation technique, namely by obtaining secondary data and information from written reports and published data and to increase the sharpness of the analysis, interviews (in-dept interviews) were also conducted to informants who were considered to have extensive information on the research conducted. In addition, quantitative data analysis through simple regression is also used to see the relationship between the agglomeration variables of the manufacturing industry and its economic growth. The results showed that the level of industrial agglomeration in West Bangka Regency was still low. The new industrial agglomeration was formed in 2020 because the index value was 2.9614 or categorized as medium agglomeration. Then the results of the t-count show that there is no significant influence between Industrial Agglomeration on economic growth in West Bangka Regency.*

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## 1. Introduction

One of the benchmarks for the success of a country's economic development is economic growth. Economic growth can be measured nationally through Gross Domestic Product (GDP) and regionally through Gross Regional Domestic Product (GRDP). So in other words, economic growth is an increase in GDP and GRDP of a country (Mankiw, 2007). GRDP is also one of the important indicators used to see the economic development of a region because it can be seen the rate of economic growth and changes in the economic structure of the region (Sadono, 2010). According to the Indonesian Standard Classification of Business Fields (KBLI), the economic sector in GRDP is grouped into 17 business fields, one of which is the manufacturing industry (Central of Statistics of West Bangka Regency, 2020).

Matitaputty (2010) states that increasing the competitiveness of the manufacturing industry sector by not forgetting the agricultural sector which incidentally is a labor-intensive sector or that uses a lot of labor and the agricultural sector is a provider of industrial raw materials in order to remain a strategic sector in national development. The important thing from the use of factors that influence regional economic growth is the pattern of concentration, where there is a collection of various types of industries in a certain place, resulting in the emergence of external benefits which in this case is agglomeration savings. This means that an industry can result in the accumulation of factors supporting the industry and the concentration of industrial activities in certain areas.

In the Province of the Bangka Belitung Islands, the development of the manufacturing sector is a long-term development. This is because the contribution of the manufacturing industry sector is very large to the formation of GRDP in the Province of the Bangka Belitung Islands. Although there was a decline in the distribution of the percentage of GRDP at constant prices by business field, the processing industry until 2020 was the highest contributor to GRDP.

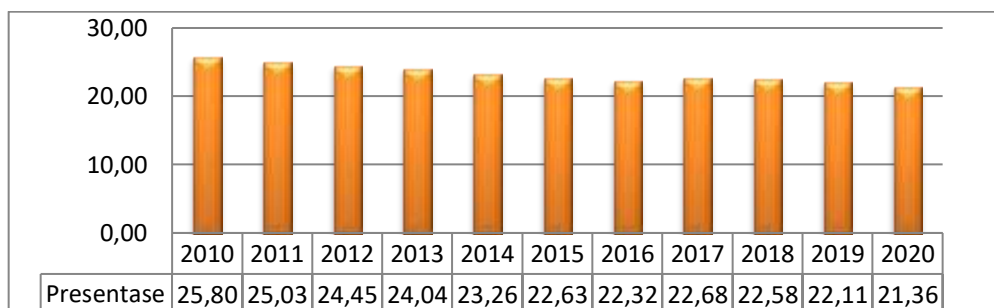


Figure 1. Percentage of Processing Industry Contribution to Gross Regional Domestic Product (GDP) at Constant Prices by Field of Business 2010-2020

Source: Data processed, 2021



Based on Figure 1. the contribution of the manufacturing sector to ADHK GRDP in the Province of the Bangka Belitung Islands from 2010 to 2020 decreased by 4.44 percent. The decline in the contribution of the manufacturing sector in 2020 was due to the large number of private smelters that were not yet operating and closed, while the performance of the processing industry in the Province of the Bangka Belitung Islands was supported by the metal (tin) base industry. The average contribution of the manufacturing industry sector in 2010-2020 is 23.30 percent, meaning that the manufacturing sector has an important role in the formation of the economic structure in the Province of the Bangka Belitung Islands. One of the regencies in the Bangka Belitung Islands Province that has the highest contribution from the manufacturing sector to GRDP is West Bangka Regency. West Bangka Regency has a government center in Mentok. West Bangka Regency is a strategic area in terms of its geographical location. This is because the position of West Bangka Regency is close to the island of Sumatra so that it becomes the gateway for the entry of goods and passengers from Sumatra Island that pass by the sea.

The large contribution of the manufacturing sector in West Bangka Regency will encourage grouping due to various factors, which are called economic agglomeration. The term agglomeration originated from Marshall's idea of agglomeration economics or in Marshall's terms referred to as localized industries. Agglomeration economics arises when an industry chooses its location for long-term production activities so that people get benefits if they participate in establishing their business around that location (Damayanti, 2017).

Agglomeration has a positive influence on economic growth, where there is a collection of various types of industries in a certain place, resulting in external benefits, namely agglomeration savings. This means that an industry can result in the accumulation of factors supporting the industry and the concentration of industrial activities in certain areas. Agglomeration can have a positive influence on the rate of economic growth of a region. Industrial agglomeration is expected to provide a spread effect on the surrounding area so that it has a significant positive influence on the surrounding area (Kuncoro, 2002). With the background of the high contribution of the manufacturing sector to the GRDP in West Bangka Regency, the researchers are interested in researching and analyzing, with the research title "Agglomeration Analysis of Manufacturing Industry on Economic Growth in West Bangka Regency".

## **2. Literature Review**

### **Economic Growth Theory**

Economic growth is a benchmark for the success of a country's development, especially in the economic field. Economic growth is measured by the growth rate of Gross Domestic Product (GDP) for the national scope and Gross Regional Domestic Product (GDP) for the regional scope. In the understanding of



macroeconomics, economic growth is the addition of GDP or GRDP(Mankiw, 2007).

### **Agglomeration**

In the context of geographic economics, the concept of agglomeration is related to spatial concentration of the population and economic activities (Maskell, 1997). The notion of agglomeration economy is also related to the externality of geographical proximity of economic activities, that agglomeration economy is a form of positive externality in production which is one of the factors that causes the growth of a city. (Bradley, Rebecca & Gans, 1996). Meanwhile, Markusen stated that agglomeration is a location that is "not easy to change" due to external savings that are open to all companies that are located close to other companies and service providers, and not due to the calculations of companies or individual workers (Kuncoro, 2002).

The advantages of spatial concentration as a result of economies of scale are called agglomeration economies.(Mills, Edwin S. Hamilton, 1989). Hoover economists also classify agglomeration economies into 3 types, namely: large scale economies are the benefits that a company gets due to the company's enlarged production scale in a location, localization economies are the profit accruing to all firms in the same industry in a location and urbanization economies are benefits for all industries at one the same location as a consequence of increasing economies of scale (population, income, output or prosperity) from that location (Sodik & Iskandar, 2007). According to Perroux, industrial agglomeration has certain advantages, namely economies of scale (business in large quantities) and cost-saving advantages (Arsyad, 2016), namely:

1. Company Internal Profit
2. Localization Economies
3. External Benefits (urbanization advantages)

### **The Relationship of Agglomerations to Economic Growth**

Concentration of industry in one area will accelerate economic growth, because industrial concentration will create different consumption patterns between regions so that industrial development in that area will affect the development of other regions. In addition, the pattern of concentration, where there is a collection of various types of industries in a certain place, thus resulting in the emergence of external benefits which in this case is agglomeration savings. This means that an industry can result in the accumulation of factors supporting the industry and the concentration of industrial activities in certain areas which will create agglomerations that have a positive influence on the rate of economic growth of a region (Kuncoro, 2002).

The positive relationship between geographic agglomeration of economic activities and economic growth has been widely demonstrated (Ottaviano, 2001). Agglomeration produces a spatial difference in the level of income. The more



agglomerated spatial area of an economy, the more increased growth. Areas which many processing industries grow more faster than areas that only has a few processing industries. The reason is that areas that have processing industry has more capital accumulation. In other words, areas with a concentration of processing industry grow faster than areas without industrial concentration processing (Sodik & Iskandar, 2007)

### 3. Research Methods

#### Time and location

This research was conducted in West Bangka Regency, Bangka Belitung Islands Province, with the scope of processing industry agglomeration and economic growth and carried out in 2021.

#### Data collection technique

The research method used in this research is literature study and documentation. The literature study technique is carried out by collecting previous research and previous theories related to research problems. Documentation technique is by obtaining data and information from written reports and published data. To increase the sharpness of the analysis, in-dept interviews were also conducted to informants who were considered to have extensive information on the research conducted.

#### Data sources and types

The type of data in this study is quantitative data, namely the type of data that can be measured or calculated directly as a variable number or number with a time period of 2010-2019. The source of data in this study is secondary data, namely data obtained from the Central Bureau of Statistics of the Bangka Belitung Islands Province as well as literature that is considered relevant to this research.

#### Data analysis technique

This study uses quantitative data analysis, namely to find out how the independent variable (independent variable) can affect the dependent variable (dependent variable). So that the analytical method used is the simple regression method. Simple regression model as follows

$$Y = \alpha + \beta X + e$$

Information:

- Y : Economic Growth (dependent variable)
- X : Industrial Agglomeration (independent variable)
- $\alpha$  : Constant
- $\beta$  : Coefficient
- e : Error



## 4. Results

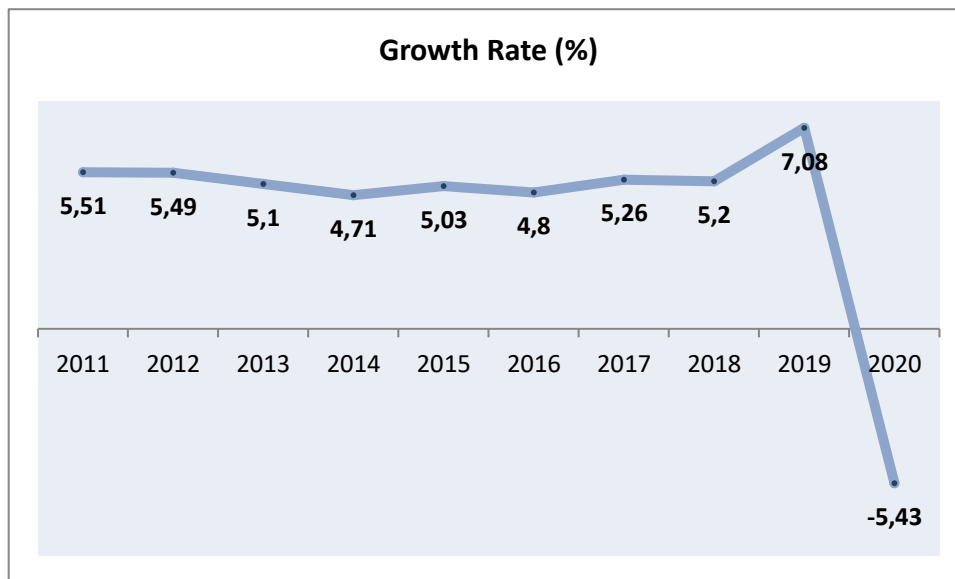
### Analysis of the Development of Economic Growth in West Bangka Regency

Economic growth in West Bangka Regency in real terms based on ADHK's GRDP in 2011-2020 shows fluctuations. The following table shows the Economic Growth Rate in West Bangka Regency in 2011-2020

**Table 1. Economic Growth Rate in West Bangka Regency in 2011-2020**

Year	GDRP (Million Rp)	Growth Rate (%)
2011	7.191.751	5,51
2012	7.586.484	5,49
2013	7.972.792	5,10
2014	8.349.260	4,71
2015	8.769.643	5,03
2016	9.190.201	4,80
2017	9.673.709	5,26
2018	10.177.199	5,20
2019	10.897.397	7,08
2020	10.306.008	-5,43
<b>Rata-Rata</b>	<b>9.011.444</b>	<b>4,28</b>

Source: West Bangka Regency in Figures, Processed by Researchers, 2021



**Figure 2. Economic Growth Rate in West Bangka Regency in 2011-2020**

Source: West Bangka Regency in Figures, Processed by Researchers, 2021

The economic growth of West Bangka Regency is generally supported by the manufacturing sector; Agriculture Forestry and Fisheries Sector; and the Mining and Quarrying sector. In 2011 the economic growth rate of West Bangka Regency





was 5.51 percent, from 2012 to 2014 the rate of economic growth in West Bangka Regency decreased by 0.8 percent compared to the previous year. The main factor causing this to happen was the decline in tin ore production in 2013 and 2014. In 2015 the economic growth rate of West Bangka Regency gradually increased to 5.03 percent and in 2019 to 7.08 percent. However, in 2020 there was a decline in economic growth to minus 5.43 percent. The average economic growth in West Bangka Regency in 2011-2020 is 4.27 percent and the average GRDP at constant prices is Rp. 9,011.44. This condition is caused by the economic structure in West Bangka Regency which is supported by the Mining and Quarrying sector, the Agriculture, Forestry and Fisheries sector and the Manufacturing Industry sector where each the average contribution of these three sectors in 2011-2020 was 12.719 percent, 12.91 percent and 47.33 percent.

The average contribution of the manufacturing sector in West Bangka Regency in 2011-2020 is 47.32 percent. The economic structure of West Bangka Regency still has a high dependence on the basic metal processing industry sector, namely tin processing. The sustainability of the tin processing industry is supported by the production of tin commodities from the mining sector as the main raw material, but the trend of tin production from year to year is decreasing, in line with natural resources that cannot be renewed. This needs to be a concern, because West Bangka Regency will not forever depend on the economy to produce non-renewable natural resources such as tin.

The input of raw materials for the manufacturing sector comes from the agricultural, plantation and fishery sectors and the mining sector. Large-scale industries in the form of tin ore base metal processing industry and palm oil CPO industry. The tin ore processing industry is carried out by PT Timah, Tbk which is located in Muntok District, while the CPO industry is provided by a private oil palm plantation company. The industrial area in West Bangka Regency is located in Tanjung Ular, Air Putih Village, Mentok District. The determination of this industrial area is expected to have a positive impact on attracting investors in various fields to immediately build or invest in the area. The establishment of various leading processing industries will require a lot of manpower and is expected to absorb local workers.

### **Analysis of the Development of Industrial Agglomeration in West Bangka Regency**

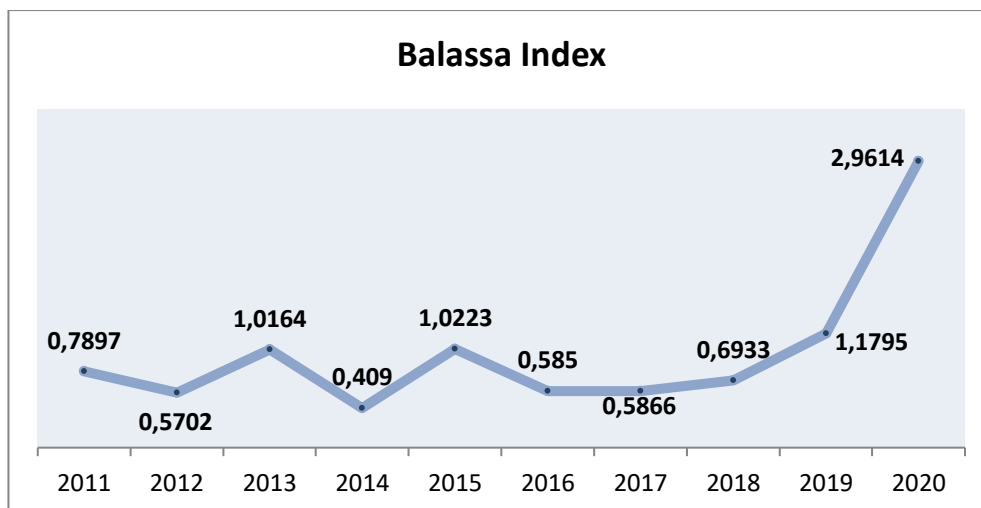
Agglomeration analysis or spatial concentration of an industry uses the Ballast Index. The Balassa Index is a measure to determine an agglomerated industry in a region. An increase in the index in an industry indicates an increase in industrial specialization in that region. Industry specialization occurs when the industry share in a region is greater than the industry share in the aggregate region. The industry will agglomerate at a location if the share of labor for the industry is greater than the share of industrial power in the aggregate (Tian, 2013)



**Table 2. Balassa Index in West Bangka Regency**

Year	Babar Industrial Workers ( $\sum ij$ )	Number of Workers in Babar ( $\sum jEij$ )	Provincial Industrial Workforce ( $\sum iEij$ )	Number of Provincial Workers ( $\sum i \sum jEij$ )	Balassa Index
2011	3.623	84.044	32.186	589.634	<b>0,7897</b>
2012	2.875	81.732	35.971	583.102	<b>0,5702</b>
2013	5.457	88.601	36.162	596.786	<b>1,0164</b>
2014	2.024	84.219	35.500	604.223	<b>0,4090</b>
2015	4.991	86.480	35.225	623.949	<b>1,0223</b>
2016	4.284	91.343	55.056	686.830	<b>0,5850</b>
2017	3.576	96.205	42.623	672.618	<b>0,5866</b>
2018	4.344	103.102	42.623	701.366	<b>0,6933</b>
2019	32.676	100.563	197.213	715.927	<b>1,1795</b>
2020	23.775	98.071	57.293	699.881	<b>2,9614</b>

Source: Processed by Researchers, 2021



**Figure 3. Balassa Index in West Bangka Regency**

Source: Processed by Researchers, 2021

Based on Table 2, the level of industrial agglomeration in West Bangka Regency is still relatively low and weak in 2013 and 2015 because the values were 1.0164 and 1.0223 while in 2011, 2012, 2014, 2016 to 2018 there was no industrial agglomeration because the agglomeration value was less than 1. The new industrial agglomeration was formed in 2020 because the index value was 2.9614 or categorized as medium agglomeration. According to Robinson Tarigan (2005), agglomeration occurs because of the mutual need for products between various industries, such as the availability of facilities (electric power, water, workshops, roads, lodging, there is also a trained workforce) (Tarigan, 2005). The availability





of facilities that are not evenly distributed and not optimal and the lack of trained workers in West Bangka Regency causes the level of agglomeration is still very weak.

## Regression Analysis

**Table 3. Regression Analysis**

Model		Unstandardized Coefficients		Standardized	t	Sig.
		B	Std. Error	Coefficients		
1	(Constant)	16,007	,048		330,730	,000
	Agglomerasi Industri	,125	,088	,427	1,416	,190

Dependent Variable: PDRB

Source: Processed by Researchers, 2021

Partial test (t test) is used to see the effect of Industrial Agglomeration (X) on Gross Regional Domestic Product (GRDP) (Y). If the t-count value is greater than the t-table value, then there is a significant effect or it can also be seen from the t-statistical probability value which is smaller than the alpha ( $\alpha$ ) value of 5 percent. Based on the results of the t test, it can be seen that the industrial agglomeration variable partially or individually has no significant effect on the dependent variable of GRDP because the significant value is 0.190 which is greater than 0.05. Based on the results of t-count obtained a value of 1.416 and t-table of 2.262, which means the value of t-count < t-table means that there is no significant influence between Industrial Agglomeration on GRDP in West Bangka Regency. This result is in line with research conducted by (Nugraha, 2018) and (Sukri, 2021) that there is no significant relationship between industrial agglomeration and economic growth.

## 5. Conclusion and Suggestion

### Conclusion

Based on the analysis and discussion, it can be concluded that the economic growth in West Bangka Regency in 2011-2020 has fluctuated. The average economic growth in West Bangka Regency in 2011-2020 is 4.28 percent and the average GRDP at constant prices is Rp. 9,011,444. where the economic structure in West Bangka Regency is dominated by 3 sectors, namely the Agriculture, Forestry, Livestock and Fisheries sector, and the Manufacturing sector and the Wholesale and Retail Trade sector. Based on the calculation of the ballast index, the level of industrial agglomeration or the level of industrial concentration in West Bangka Regency is still very low with an average of 0.9898. Then from the results of simple linear regression calculations, the influence of industrial agglomeration on economic growth has a positive and insignificant effect. This is because the indicator to measure agglomeration in the form of industrial sector workforce in



West Bangka Regency is still very low. The workforce in West Bangka Regency is still focused on the primary sector rather than the secondary sector.

## Suggestion

The following are suggestions in this research, namely:

1. Local governments can optimize or add economic support facilities in West Bangka Regency in the form of roads and public facilities to increase industrial agglomeration. Considering that industrial agglomeration or grouping is driven by the availability of supporting facilities for economic activities. And the need for empowerment of workers in the industrial sector to be more skilled so that the absorption of labor in the industrial sector of West Bangka Regency can increase.
2. For further research related to industrial agglomeration and economic growth, it can add to the series of years studied and calculate industrial agglomeration per district/city so that the estimated data is quite a lot.

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