Manufacturing Sector Competitive Advantage: Case Study of South Sumatra Province using the Dynamic Shift Share Method

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Abstract

The manufacturing industry sector is one of the sectors that has become a priority and has become a reference for other sectors in the Province of South Sumatra. The manufacturing industry sector consists of 16 sub-sectors. This study aims to analyze the competitive advantage of the manufacturing sub-sector in South Sumatra Province in 2017-2021. The method used in this study uses dynamic shift share analysis. The results of this study obtained ten processing industry sub-sectors that have competitive advantages, namely coal and oil refining; food and Drink; textiles and apparel; leather goods from leather and footwear; paper and articles of paper for printing and reproduction of recorded media; chemical, pharmaceutical and traditional medicine; rubber, goods made of rubber and plastics; non-metal mineral goods; base metal; as well as furniture, and the remaining six sub-sectors do not have a competitive advantage. This competitive advantage assessment can be seen from the results of dynamic shift share analysis calculations which have positive and negative values. This means that if the value of competitive advantage is positive, it can be said that the sub-sector has a competitive advantage, while those that have a negative value then the sub-sector does not have a competitive advantage so that a development strategy is needed.

Keywords: *Processing Industry, Dynamic Shift Share Analysis, South Sumatra.*

A. INTRODUCTION

Regional economic development focuses on the government and society working together in utilizing their natural resources (Khusaini, 2015). In developing natural resources, local governments take an important role in determining regulations including infrastructure (Pambudi et al, 2022). The existence of proper regulations will provide benefits to regional development, especially community welfare (Kalensang et al., 2012). Community welfare through regional economic development can be through sustainable development (Cieslak et al., 2019; Khusaini, 2015). One of the instruments in sustainable development is the level of regional competitiveness, the higher the regional competitiveness, the higher the social welfare (Santoso, 2009).

South Sumatra is one of the provinces that has potential with high competitiveness. Regional economic sources consist of various sectors with various economic potentials (Herath et al., 2013). One of the potentials that is focused on is to continue to develop the manufacturing sector (Saputri & Boedi, 2018 in Dhora et al., 2022). Regional economic growth and industrial structure have an interrelated relationship, if the industry increases, regional economic growth will also increase (Labib et al, 2013; Gravitiani, 2006). With the occurrence of a structural transformation from the primary to the secondary sector, the manufacturing industry sector in South Sumatra continues to be developed (Dhora et al, 2022). Even though in 2020 it has decreased due to the Covid-19 pandemic, in 2021 it has increased by 2.30 percent compared to 2020 which only experienced growth of 0.72 (Central Bureau of Statistics, 2021).

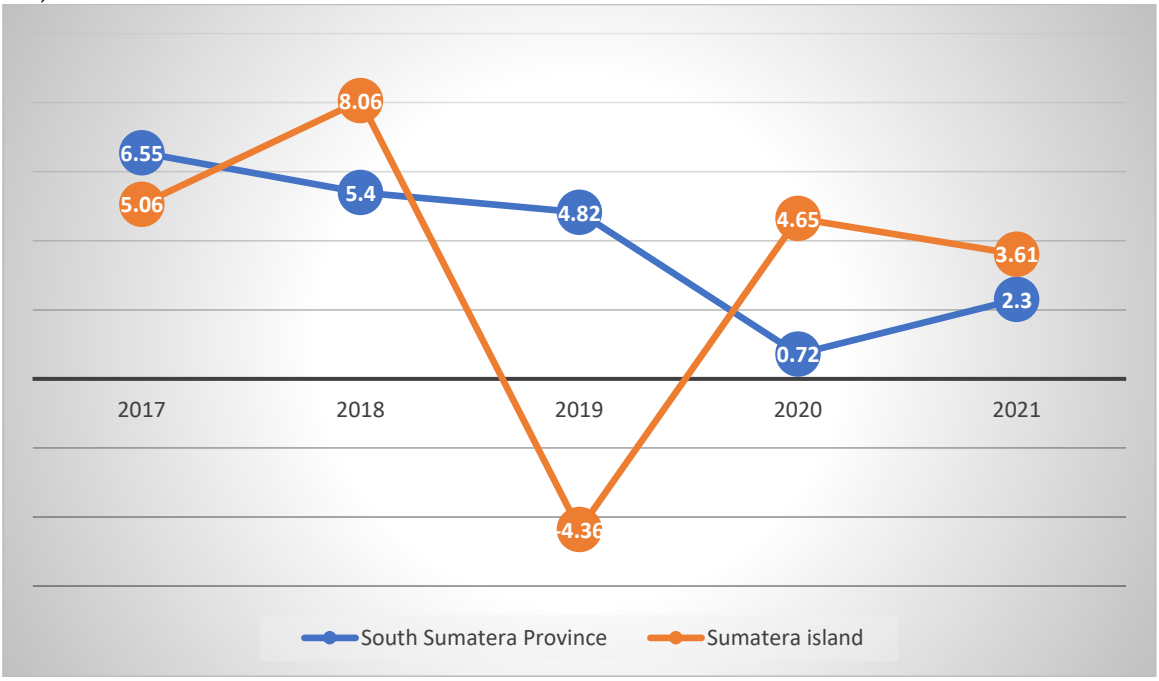

Figure 1. GRDP Growth Rate of Manufacturing Industry Sector of South Sumatra and Sumatra Island in 2017-2021 (in percent)

Source: Central Bureau of Statistics, 2021 (data processed)

It can be seen in Figure 1 that in 2017 the growth rate of the processing industry experienced a very large growth in the last five years, namely 6.55 percent. However, the following year experienced a decline with the peak of the largest decline in 2020 of 0.72 percent. The outbreak of the Covid-19 virus has hampered all growth rates in all fields, including the processing industry in South Sumatra Province. In 2021, give hope to the processing industry due to an increase in growth of 2.30 percent. When compared to the GRDP growth rate of the processing industry sector on Sumatra Island from 2017 to 2021 which also experienced fluctuations with the biggest decline occurring in 2019 of minus 4.36 percent. In 2020, amid the peak of the Covid-19 pandemic, there was an increase of 4.65 percent with the largest contribution to the chemical, pharmaceutical and traditional medicine industries due to vaccination (Central Bureau of Statistics, 2021). Then in 2021, even though the industrial sector has

experienced a decline, it will still experience positive growth of 3.61 percent. The local government is certainly trying to keep the economy running and operating even with the new normal policy (Central Bureau of Statistics, 2021). Therefore, in order for the growth of the processing industry to continue to increase, it must pay attention to the competitive advantages possessed by the industry.

In fact, the competitive advantage of the processing industry in South Sumatra is still relatively low due to the low quality of human resources, mastery of technology and infrastructure (Isventina et al, 2015). The use and management of resources that are not optimal will hamper the development and growth of the processing industry in South Sumatra Province (Zulkarnain et al, 2021; Saputri & Boedi, 2018). Industrial development that has a competitive advantage is very important for regional growth because it has added value (Hu, 2019; Rosnawintang, 2015). so that in this study the focus is on how much the competitive advantage of each processing industry sub-sector is; and which sub-sectors of the manufacturing industry have a competitive advantage.

B. METHOD

The research method used is quantitative descriptive research by explaining the data obtained with the results of the analysis carried out so as to provide an explanation of the existing problems (Hamzah, 2020). The type of data used is time series data from 2017 to 2021 with the data used is South Sumatra's GRDP data and Sumatra Island's GRDP.

The analysis tool used is Microsoft Excel to calculate the growth rate of the processing industry sub-sector. Mathematically, it can be calculated as follows:

$$\text{GSubProcessing} = \frac{GRDPSubIndProcessing_t - GRDPSubIndProcessing_{t-1}}{GRDPSubIndProcessing_{t-1}} \text{ x } 100 \quad (1)$$

Where GSub-Processing is the growth rate of the processing industry sub-sector that compares the difference in the processing industry sub-sector GRDP in the current year minus the previous year ($GRDPSubIndProcessing_t - GRDPSubIndProcessing_{t-1}$) divided by the GRDP of the processing industry sub-sector in the previous year ($GRDPSubIndProcessing_{t-1}$) times 100.

To analyze competitive advantage using dynamic shift share analysis. Dynamic shift share analysis is a modification of the classic shift share, this analysis is more rational because the analysis technique is easy and fast which utilizes little data and is easily understood by people outside the economy (Balla, 2020; Goschin, 2014; Kleynhans and Sekhobela, 2011). According to Herzog and Olsen, dynamic shift share analysis has a regional share growth component which is broken down into a specialization component and a competitive advantage component, these two components are called the allocation effect component (Indrawati and Sugiharti, 2019; Prasetia et al, 2011). However, in this study it is only focused on the components of competitive advantage to see which sub-sectors have competitive advantages out of the 16 processing industry sub-sectors in South Sumatra Province. The analysis technique using dynamic shift-share contains a new element, namely homothetic

output in sector i (Manufacturing Industry) province j (South Sumatra Province), given the notation Y'ij and formulated as follows:

$$Y'_{ij} = Y_{ij} (Y_{in}/Y_n) \quad (2)$$

Where: Y'_{ij} is homothetic output (GRDP achieved by a sub-sector in a region) in percent units (%), Y_{ij} is the GRDP of the processing industry sub-sector in South Sumatra Province and (Y_{in}/Y_n) is the comparison between the GRDP of the processing industry sub-sector I and the GRDP of the processing industry sector on the island of Sumatra in units of billions.

Thus, this competitive advantage can be formulated:

$$C'_{ij} = Y'_{ij} (r_{ij} - r_{in}) \quad (3)$$

Where: C'_{ij} is the competitive advantage resulting from Y'_{ij} multiplied by the comparison between the GRDP Growth of the processing industry sub-sector in South Sumatra Province and the GRDP Growth of the processing industry sub-sector on Sumatra Island $(r_{ij} - r_{in})$.

It can be concluded that sub-sectors that have a competitive advantage have a positive value, and vice versa, a sub-sector that has a negative value does not have a competitive advantage.

C. RESULT AND DISCUSSION

1. Development of 16 Processing Industry Sub-sectors in South Sumatra Province

During the period 2017-2021 the growth rate of 16 sub-sectors of the processing industry in South Sumatra Province has always experienced fluctuating growth. As can be seen in Figure 2 in 2017, there were only four sub-sectors that experienced negative growth, with the leather goods and footwear industry having the largest decline, minus 14.04 percent. Meanwhile, the processing industry sub-sector that experienced the greatest growth was the food and beverage industry by 12.95 percent. In 2018 and 2019 the growth rate of the processing industry sub-sector has increased, in 2018 and 2019 the industrial sub-sector with the largest growth rate was the textile industry with a growth rate of 12.29 percent and 18.19 percent, the processing industry sub-sector in 2018 and 2019 experienced the biggest decline was the tobacco processing industry, each minus 12.30 percent and 12.15 percent.

Table 1. South Sumatra Processing Industry Subsector Growth Rate (%), 2017-2021

Processing Industry Subsector	2017	2018	2019	2020	2021
Coal Industry and Oil Refining	1.83	0.37	-0.01	-0.02	2.15
Food and Beverage Industry	12.95	11.2	9.81	-0.39	1.96
Tobacco Processing Industry	-10.9	-12.3	-12.15	-6.82	-0.96
Textile and Apparel Industry	7.08	12.29	18.19	1.6	1.95
Leather Industry, Leather Goods and Footwear	-14.04	-5.27	-2.76	-1.77	4.65
Wood Industry, Products from Wood and Cork and Woven Products from Bamboo, Rattan and the Like	-4.01	7.44	23.81	2.23	1.82
Paper and Paper Products Industry;	1.52	5.34	10.52	5.33	3.77

Printing and Reproduction of Recorded Media					
Chemical, Pharmaceutical and Traditional Medicine Industries	1.19	1.68	0.94	3.81	4.25
Rubber Industry, Rubber and Plastic Products	7.41	2.87	-0.74	1.22	2.07
Non-Metal Minerals Industry	4.56	4.64	8.96	-0.32	1.02
Basic Metal Industry	2.89	0.99	-1.02	-6.22	-1.75
Metal Goods Industry; Computers, Electronic Goods, Optics; and Electrical Equipment	0.88	1.09	3.07	-0.04	0.24
Machinery and Equipment Industry	8.65	-0.58	-0.33	-4.05	0.59
Transportation Equipment Industry	2.88	0.85	-1.41	-0.27	0.93
Furniture Industry	7.3	10.33	0.68	-1.62	0.38
Other Processing Industry; Machinery and Equipment Repair and Installation Services	-2.24	4.22	2.43	-0.81	-0.21

Source: Central Bureau of Statistics, 2021 (data processed)

It can be seen in Table 1 that even though the Covid-19 pandemic hit in 2020, there were several processing industry sub-sectors that experienced positive growth, namely the paper industry, paper goods, printing and reproduction of recording media (5.33 percent); chemical, pharmaceutical and traditional medicine industries (3.81 percent); wood industry, goods made of wood and cork and woven goods made of bamboo, rattan and the like (2.23 percent); rubber industry, rubber and plastic goods (1.22 percent); and the textile and apparel industry (1.60 percent). The tobacco processing industry in 2020 experienced a slow growth rate and the largest was minus 6.82 percent. In 2021 each sub-sector will experience positive growth, only three sub-sectors will contract, namely the base metal industry (minus 1.75 percent); tobacco processing industry (minus 0.96 percent); and other processing industries, repair services and installation of machinery and equipment (minus 0.21 percent). However, the growth rate is much better and has increased from 2020. The leather, leather goods and footwear industry sub-sectors (4.65 percent); as well as the chemical, pharmaceutical and traditional medicine industries (4.5 percent) which experience the largest growth in 2021. With the continuous growth of the processing industry sub-sector every year, it can increase competitiveness and added value, so that it will have a positive impact on regional growth (Rosnawintang et al., 2015; Hu, 2019).

2. Competitive Advantage with the Dynamic shift share Analysis approach

Dynamic Shift Share Analysis provides detailed value about the uniqueness of local economic growth and can detect manufacturing sub-sectors that have competitive advantages (Shuquan, 2019; Dekiawan and Asmarawati, 2017; Hassan et al, 2011). The processing industry sub-sector is said to have a competitive advantage if its growth in South Sumatra Province is higher than the growth in the processing industry sub-sector on Sumatra Island.

The results of calculating competitive advantage using dynamic shift share are shown in Table 2 that there are 11 processing industry sub-sectors in South Sumatra Province which have competitive advantages with positive values. This is because the growth of the processing industry sub-sector in South Sumatra Province is higher than

the growth of the processing industry sub-sector on Sumatra Island. While 5 sub-sectors have a negative value so that these sub-sectors do not have a competitive advantage because the growth rate of the processing industry sub-sector in South Sumatra Province is lower than the growth rate of the processing industry sub-sector on Sumatra Island.

Table 2. Analysis of Dynamic Shift Share Competitive Advantage of Manufacturing Industry Sub-sector 2017-2021 (in billions)

Processing Industry Subsector	Competitive advantage	Information
Coal Industry and Oil Refining	27.37	**Have a Competitive Advantage**
Food and Beverage Industry	1054.93	**Have a Competitive Advantage**
Tobacco Processing Industry	-0.002	No Competitive Advantage
Textile and Apparel Industry	0.41	**Have a Competitive Advantage**
Leather Industry, Leather Goods and Footwear	0.00	**Have a Competitive Advantage**
Wood Industry, Products from Wood and Cork and Woven Products from Bamboo, Rattan and the Like	5.45	**Have a Competitive Advantage**
Paper and Paper Products Industry; Printing and Reproduction of Recorded Media	21.48	**Have a Competitive Advantage**
Chemical, Pharmaceutical and Traditional Medicine Industries	8.90	**Have a Competitive Advantage**
Rubber Industry, Rubber and Plastic Products	66.00	**Have a Competitive Advantage**
Non-Metal Minerals Industry	4.50	**Have a Competitive Advantage**
Basic Metal Industry	0.14	**Have a Competitive Advantage**
Metal Goods Industry; Computers, Electronic Goods, Optics; and Electrical Equipment	-23.77	No Competitive Advantage
Machinery and Equipment Industry	-0.04	No Competitive Advantage
Transportation Equipment Industry	-0.11	No Competitive Advantage
Furniture Industry	0.02	**Have a Competitive Advantage**
Other Processing Industry; Machinery and Equipment Repair and Installation Services	-0.02	No Competitive Advantage

Source: Central Bureau of Statistics, 2021 (data processed)

Based on Table 2, it can be seen that the processing industry sub-sector which has a competitive advantage is the coal and oil refining industries; food and beverage industry; textile and apparel industry; leather goods and footwear industry; wood

industry, goods made of wood and cork and woven goods made of bamboo, rattan and the like; chemical, pharmaceutical and traditional medicine industries; rubber industry of rubber and plastic goods; non-metal mineral goods industry; base metal industry; and the furniture industry. The results of this study are in line with the research of Wibisono et al (2019) using shift share analysis with research objects in Jambi Province that the wood industry, wood goods; paper product industry; rubber goods industry from rubber; and the furniture industry which also has a competitive advantage.

This sub-sector has an important role in the economic performance of the South Sumatra Province. The sub-sector that has the biggest competitive advantage is the food and beverage industry of 1054.93 billion, this is due to the growth of the food and beverage industry sub-sector in South Sumatra Province which is 24.01 percent higher than Sumatra Island which is only 16.20 percent (Central Bureau of Statistics, 2021). Sub-sectors that have the next greatest competitive advantage are the rubber, rubber and plastic goods industry; coal industry and oil refining; and the paper goods industry from paper and plastic amounting to 66 billion, 27.37 billion and 21.48 billion respectively.

Meanwhile, the processing industry sub-sector that does not have a competitive advantage is the tobacco processing industry; metal goods, computers, electronic goods, optical and electrical equipment industries; machinery and equipment industry; transportation equipment industry; and other processing industries, repair services, installation of machinery and equipment. The metal goods industry sub-sector, computers, electronics, optics and electrical equipment, was the sub-sector with the largest value without a competitive advantage of minus 23.77 billion. This value means that the growth rate of this sub-sector is very slow in South Sumatra, only 4.35 percent lower than growth in Sumatra Island of 48.65 percent. Of course, by knowing which sub-sectors have a competitive advantage or not, local governments can map out specific strategies for the development of the manufacturing sector. Sub-sectors that have advantages to continue to be developed and sub-sectors that do not have competitive advantages should be repaired immediately to add added value to be competitive both locally and outside the region.

D. CONCLUSION

Based on the results of the analysis and discussion that have been presented, the conclusion of this study is that the growth of 16 sub-sectors is fluctuating and in 2021 almost all processing industry sub-sectors in South Sumatra Province, there are only three sub-sectors that are experiencing negative growth, namely the tobacco processing industry, the basic metal industry and the metal industry. other processing, repair services, and installation of machinery and equipment. These three industrial sub-sectors have a small share so they do not affect the performance of the manufacturing industry sector in South Sumatra Province.

The results of the shift share analysis method conclude that of the 16 sub-sectors of the manufacturing industry in South Sumatra Province, 11 sub-sectors have a

positive value so that they can be categorized as having a competitive advantage, while 5 sub-sectors have a negative value which means that these sub-sectors do not have a competitive advantage. From the results of this analysis, in the future, apart from focusing on the development of the processing industry sub-sector which has the advantage to continue to be developed, the government of South Sumatra Province must also provide a strategy for developing competitiveness for the industrial sub-sector which does not have a competitive advantage. So that all sub-sectors of the processing industry in South Sumatra all have a competitive advantage and continue to make a large contribution to the economy of South Sumatra.

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