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INDUSTRIALIZATION IN EAST JAVA PROVINCE

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ABSTRACT

The manufacturing industry's contribution to East Java's economy is high. Still, the trend continues to decline, while the contribution of the trade, hotel, and restaurant sectors is increasing. This indicates that there has been a shift in the economic structure from industry to trade. This research uses a quantitative approach based on the classification carried out by UNIDO (United Nations Industrial Development Organization) and the World Bank. The results of secondary data from Central BPS and East Java Province BPS show that East Java Province is categorized as a semi-industrial area. East Java's industrial development is experiencing a decline from the "semi-industrialization" stage to the "towards industrialization" stage. This is an early indication of a decline in industrialization or deindustrialization in East Java. If the stages of industrialization in East Java have decreased, but not for commodity industrialization (the ratio of the manufacturing industry's contribution to the commodity sector), the value of commodity industrialization continues to increase. The commodity sector includes agriculture, mining, industry, construction, electricity, gas & drinking water.

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Introduction

The development of the world economy in the global era has increased economic openness and competition. According to the Global Competitiveness Report (GCR) on global competitiveness, Indonesia's competitiveness ranking increased rapidly in 2010, fell until 2012, and increased in 2013 (Astuti, 2010; World Economic Forum, 2012). Competitiveness indicators include the condition of infrastructure, institutions, and the quality of human capital as measured by education. These poor conditions can affect the high cost of production. In Asia, countries with high levels of global competitiveness are Singapore and Taiwan.

In terms of economic structure, the Indonesian economy is dominated by three sectors: the manufacturing industry; trade, hotel & restaurant; and agriculture, animal husbandry, forestry & fisheries (BPS, 2011). During the 2003-2011 period, the output value of

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the manufacturing industry continued to increase. The manufacturing industry's contribution to national GDP is the highest, between 25.75% - 27.83%, but the problem is that the trend is decreasing. Meanwhile, the contribution of the trade, hotel, and restaurant sectors to GDP is increasing. This indicates that there will be a shift in the economic structure from industry to trade.

The policy for the development of the manufacturing industry in East Java must be in line with the direction of the national economic development policy, which places industrialization as the grand design for national economic development, especially for the Java economic corridor with the distribution of main activities in the food and beverage industry, textiles, transportation machinery, shipping, defense equipment, and telematics. This industrial policy is contained in the Master Plan for the Acceleration and Expansion of Indonesia's Economic Development (MP3EI) for 2011-2025 (Cabinet Secretariat, 2014).

Industrialization is a process of economic modernization that covers all economic sectors that are related to each other and the manufacturing industry. That is, industrialization aims to increase the added value of all economic sectors, with the manufacturing industry as the leading sector (Nazara, 2005). The East Java manufacturing industry sector has forward and backward linkages with other sectors. So it is necessary to direct resources to develop the industrial sector. Based on this background, this research focuses on the role and identification of the East Java manufacturing industry capable of being a leader in driving economic growth in East Java.

This research aims to analyze the categorization of industrialization in East Java. Moreover, how to formulate a strategy for the development of the manufacturing industry and the industrialization process in East Java to support the development and competitiveness of the national economy.

Literature Review

Regional Potential-Based Economic Development and Competitiveness

In the context of welfare economics, modern development refers to three pillars: the efficiency of resource allocation, an increasingly equitable distribution of opportunities for society, and economic activities based on environmental sustainability (Aboelmaged, 2018; Setiono, 2011). The distribution pillar explains that the success of development if it does not have an equalizing effect, will lead to a decrease in the quality of life of the people.

According to the theory of stages of development by Capello (2007), development goes through several phases or stages. Each phase is marked by growth in the factors of production and an increase in the capital-per-labor ratio, which results in higher per capita income and welfare than the previous phases. Identification of each of these development phases is as follows:

1. Autarchy is when the economy is in a state of subsistence. That is, everything that is produced locally is sufficiently used and produced for local consumption,
2. Specialization, when the creation of transportation infrastructure that allows trade in agricultural goods and the economy begins to specialize in certain main products,
3. The economic transformation from agriculture to industry is due to the development of industrial activities closely related to the processing of primary goods (agriculture and mining) and building construction (the impact of an increase in population). These industrial activities are often built based on knowledge and expertise external to the region,

4. Diversification of manufacturing activities due to increased demand for semi-finished goods, income growth, and the result of the emergence of new sectors (serving consumption needs) as a result of the increase and growth of an increasingly diverse population,
5. Tertiarization is the development of tertiary activities due to the growth of a more advanced industrial system.

Industrialization is a process of economic modernization that covers all economic sectors related to each other and the manufacturing industry. Industrialization aims to increase the added value of all economic sectors, with the manufacturing industry sector as the leading sector (Capello, 2007). The manufacturing industry sector is a sector that has high forward and backward linkages. Thus, some resources are directed toward developing the industrial sector (Nazara, 2005). However, it is necessary to consider several other factors, such as the availability of experts, capable entrepreneurs, infrastructure, market availability, and technology (Budiono et al., 2021; Yavuz et al., 2023). Economic development programs on a large scale but ignoring these factors will eventually result in the development of the industrial sector, which is inefficient and wastes limited resources (Djingan, 1996). Sonis et al., (1995), through a literature study, offers how to identify critical sectors and sources of economic change using impact or multiplier analysis (Harun & Canon, 2006; Nobuhiro et al., 2005; Olsen, 2000; Toyomane, 2012).

In previous studies, research on the manufacturing industry was conducted by Gatfield & Yang, (2006); Landiyanto, (2005); McDougall & O'Connor, (2005); and Suman & Joesoef, (2006). Suman & Joesoef, (2006) conducted research on the manufacturing industry in Indonesia using the input-output model. The study results show that there is dualism in the manufacturing industry sector in terms of size and export-import structure as well as between groups of capital-intensive and labor-intensive industries. Landiyanto, Mc Dougall, and Gatfield conducted research on the manufacturing industry from the aspect of location proximity. This research shows that the location factor is considered important in choosing industrial locations. McDougall's research concluded that proximity is a way to increase competitiveness.

The key to understanding regional potential-based competitiveness lies in its ability to become a leader based on its resources. Becoming a leader is a management process starting from planning, organizing, implementing, and evaluating the resources owned by the region to benefit the local community (Abdullah, 2002; Kuncoro, 2004).

A common approach to developing regional potential is examining the components of GRDP, human resources, technology, and institutional systems (Sumihardjo, 2008). Regional potential includes:

1. Agriculture, forestry, fisheries, and animal husbandry
2. Marine sector, biological and non-biological resources
3. Industry and trade sector
4. The field of energy and mineral resources

The prominent role of industry and trade in the economy is characteristic of the urban economy (Hohenberg & Lees, 1995; Sinulingga, 1999). This is reflected in the output value in GRDP.

The concept of regional competitiveness is to measure and compare how good a region is in providing a conducive business climate to maintain domestic and global competitiveness from competitors in the region (Hill, 2008). Regional competitiveness is related to the ability

of the regional economy to utilize regional potential to produce and market its products and services in the market consistently (Capello, 2007; Morgan, 1975; Sumihardjo, 2008).

The word "competitiveness" means "power" or strength, and the word "competitiveness" means achieving more than others, or being different from others in terms of quality, or having certain advantages. That is, competitiveness can mean the power to try to lead in certain things carried out by a person, group, or specific institution. The word competitiveness is often used in an economic context and is defined as the ability to compete.

Another concept of competitiveness, according to Bank Indonesia's Center for Education and Central Banking Studies (PPSK-BI), is the concept of productivity, defined as the output value produced by a worker (Abdullah, 2002; Porter, 1990). According to the World Bank, the definition of competitiveness is the magnitude and rate of change of added value per unit of input a company achieves. However, both the World Bank and Porter view that competitiveness is not only the level of efficiency in a company but also in a broader aspect. Not only at the micro-company level but also outside the company, such as the business environment. These aspects can be firm-specific, region-specific, and country-specific.

The institution that routinely publishes the level of global competition "Global Competitiveness Report" is the World Economic Forum (WEF) defines national competitiveness as the ability of the national economy to achieve high and sustainable economic growth. The focus is on the right policies, appropriate institutions, and other economic characteristics that support the realization of high and sustainable economic growth. Another institution that publishes the "World Competitiveness Yearbook" is the Institute of Management Development (IMD) which defines national competitiveness as the ability of a country to create added value in order to increase national wealth by managing access and processes of attraction, aggressiveness, globality, and proximity, by integrating these relations into an economic and social model. Many factors can determine a country's competitiveness from the various definitions of competitiveness above.

Comparative and Competitive Advantages of Regions

The term comparative advantage began at the time of David Ricardo. Ricardo corrected the analytical weaknesses of Adam Smith's international trade theory. Adam Smith's theory is still straightforward and does not question countries that do not have an absolute advantage in producing goods over other countries (e.g. developing countries against developed countries).

Ricardo distinguished trade into domestic and foreign trade (Hill, 2008). Domestic trade is measured based on labor costs only. This is due to free competition and freedom of movement of the factors of production, labor, and capital. So, if the price of goods is above the cost of labor, producers will earn high profits. However, there is competition in producing and selling these goods, so prices will be forced down and realigned to match the labor cost. Thus, for domestic trade, the principle of absolute advantage, as stated by Adam Smith, applies. Each place will specialize in producing certain goods with the lowest labor costs compared to other places and exchange them for goods produced in other places.

On the other hand, foreign trade, according to Ricardo, is not based on absolute advantage. This is as explained by Ricardo: "The same rule which regulates the relative values of commodities in one country does not regulate the relative values of the commodities exchanged between two or more countries". This difference is because the factors of production cannot move freely between countries (Soelistyo, 2003). Thus, the goods produced by a country will be exchanged for other goods from other countries even though the labor cost is different.

In international trade, labor costs do not determine the basis of exchange for goods. According to Ricardo, the basic exchange of goods is determined by comparative cost. According to comparative cost theory, each country will specialize and export the goods it produces with a comparative advantage. Comparative advantage is measured in real costs, which reflect labor costs. Thus, although trade between countries is not determined, it is still based on the labor theory of value.

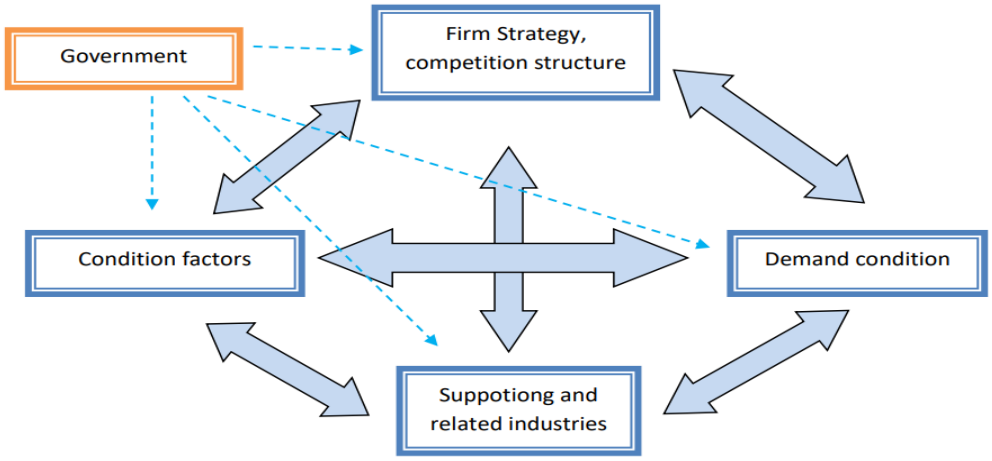
Traditionally, comparative advantage in an area is a location-specific factor such as natural resources, population, culture, Etc. However, only having a comparative advantage is not enough to guarantee the economic sustainability of a region (Setiono, 2011). The ever-increasing population must be anticipated by efforts to provide employment opportunities and adequate socio-economic facilities. Suppose the regional economy can develop appropriate and sustainable industries. In that case, it can create jobs and increase people's income so that they can buy consumer goods for their daily needs. For this reason, industrial development is an important goal that must be planned and implemented by each country/region.

Comparative advantage emphasizes ownership of natural resources, human resources, infrastructure, regional institutions, etc. Meanwhile, competitive advantage places more emphasis on the efficient management of the use of these resources. Economic development will reach its optimum if it is based on comparative and competitive advantages. Economic development based on competitive advantage will be more sustainable than one based only on comparative advantage.

The development of the global economy encourages every producer to seek the broadest possible market for the goods they produce throughout the world (Hill, 2008). This creates global competition, not only at the country level but also at the local/regional level. Therefore, global competition began to lead to the local economy. The local industry does not only compete against regional competitors but also has to face international competitors to compete in the market. Thus, industrial competition and competitiveness are important factors in developing the regional economy in the 21st century (Setiono, 2011).

Regarding the issue of global competition, Porter (1990) said that sustainable industrial growth is challenging to expect if a country only depends on comparative advantage. For this reason, Porter proposed the diamond model as a basic model for a country's competitive advantage. With the diamond model, it is possible to evaluate the position of a country/region's position in global competition and formulate a strategy for industrial development in the future to increase its competitiveness. Porter's diamond model consists of four main interrelated factors, namely: (a) company strategy, structure, and competition, (b) demand conditions, (c) related supporting industries, and (d) condition factors. See Figure 1.

Regarding conditional factors, Porter (1985) emphasizes that the critical factors of production must be created and not something that is inherited. Factors of specialization of production include skilled labor, capital, and infrastructure. Non-key factors or general factors such as unskilled labor and raw materials can be obtained from other companies, so they do not generate and involve extensive and sustainable investments. Thus, they are more difficult to duplicate or imitate. According to Porter, this can create a competitive advantage because if other companies cannot easily duplicate these factors, they become precious (Setiono, 2011). The government's role in the diamond model is as a catalyst and challenger to encourage companies to raise their aspirations and move to higher competitive ground. The government should push to focus on creating specialization factors and stimulating local competition.



Source: Setiono (2011)

Figure 1: Diamond Porter Model

Porter's concept of competitive advantage is similar to Schumpeter's concept in several ways. Innovation is the main driving force for increasing the productivity and competitiveness of a company, industry or nation (Porter, 1985). The difference is that adherents of Schumpeterian tend to view monopoly power and large company size as prerequisites for the success of companies or entrepreneurs to be able to play a role as a driving force for the economy. Whereas in the concept of competitive advantage the condition is not always the case. In some cases, the advantages of an industry are built by the combination and synergy of several small companies that together form an industry's value chain and complement each other in a location/region/country. In this case, the complementary factors between industry players can become the leading force for forming a group's competitiveness.

Data and Research Methods

This research was conducted during the period 2003-2011. The data used is secondary data from BPS and BPS East Java. The research focuses on analyzing the stages of the industrialization process in East Java. The manufacturing industry in East Java includes nine sub-sectors, namely: (1) the food, beverage, and tobacco industries, (2) the textile, apparel, and leather industries, (3) the wood and similar industries, (4) the paper, printing, and publishing, (5) chemical, petroleum, rubber and plastics industry, (6) non-metal mineral goods industry, (7) basic metal industry, (8) metal goods, machinery, and equipment industry, and (9) industrial other processing. The stages of industrialization based on calculations by UNIDO (United Nations Industrial Development) and the World Bank are as follows:

Table 1: Stage of Industrialization

No.	Stages of industrialization	Added Value Contribution (%)	
		to PDB	To Commodity Sectors
1	Non-industrialization	<10	<20
2	Towards the process of industrialization	10-20	20-40
3	Semi-industrialization	20-30	40-60
4	Full Industrialization	>30	>60

Note: The commodity sector includes agriculture, mining, industry, construction, electricity, gas & drinking water.
Source: Widodo (2006:84)

Finding and Discussion

Manufacturing Industry in East Java

East Java Province has a strategic position in a geographical and economic context. Based on the geographical aspect, the position of East Java is the gateway to the Eastern Region of Indonesia (KTI). It has a strategic role in boosting the economy in the Eastern Region of Indonesia. Meanwhile, from an economic perspective, East Java's GRDP is one of the most significant contributors to national GDP, which has an increasing value and proportion. East Java's GRDP contribution to the national GDP in 2011 was 15.53%. This value is greater than the sum of the GRDP of the islands of Kalimantan (8.46%), Sulawesi (4.87%), and Maluku and Papua (1.73%). East Java's GRDP contribution to national GDP is the second highest after DKI Jakarta.

East Java's economic growth continues to increase rapidly. Since 2009, East Java's economic growth has exceeded that of the national economy and DKI Jakarta. In 2011, East Java's economic growth rate was 7.22%, while the national economic growth was only 6.46%. The achievements of East Java's development and economic growth are related to the strategic position of the East Java region, which is at the gateway to the Eastern Region of Indonesia, and the rapid flow of trade in and out through the province of East Java. To support trade flows in the East Java region, the East Java government has the second largest port and international airport infrastructure (after DKI Jakarta), namely Tanjung Perak Port and Juanda Airport. Ports and airports are gateways for goods and services to enter and exit East Java, both domestic trade (between districts/cities and between islands) and international trade (export-import).

The most significant contributors to East Java's economy are provided by three economic sectors: trade, hotels & restaurants, manufacturing industry, and agriculture. The contribution of the three sectors is more than 70% of East Java's total GRDP. Since 2004 the contribution of the manufacturing industry sector to East Java's GRDP has continued to decline. During the 2003-2011 period, the manufacturing industry's contribution to East Java's GRDP decreased by 2.9%. The decline in the ratio of the manufacturing industry and the increase in the ratio of trade, hotels & restaurants to GRDP in East Java indicates a change in the structure of the economy in East Java from the primary to tertiary sectors.

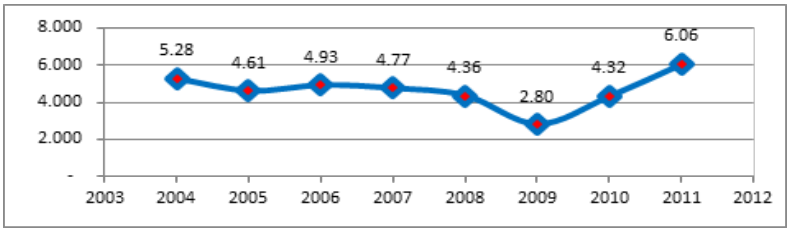


Figure 2: Manufacturing Industry Output Growth, 2003-2011 (%)

During the 2003-2011 period, the development of East Java's manufacturing industry output continued to increase, but its growth slowed down from 2006 to 2009 (Figure 2). This may be due to the influence of the Lapindo mud disaster (erupting since May 26, 2006), which disrupted the distribution of the logistics system from the southern and eastern parts of East Java to the growth center in Surabaya, where the port of Tanjung Perak and Juanda airport is located. The slowdown in economic growth at the world level due to the global recession is also suspected to be the cause. However, the growth of the East Java manufacturing industry has increased rapidly since 2009. Several types of manufacturing industries are developing

more rapidly than other types of manufacturing industries, such as the food and beverage industry, the paper industry, the chemical industry, and the metal goods industry.

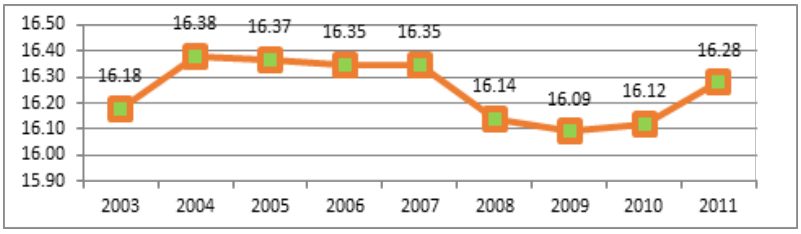


Figure 3: Output Contribution of the East Java Manufacturing Industry to the National Manufacturing Industry, 2003-2011 (%)

The shift in the economic structure from industry to trade will result in the direction, goals, and policies of economic planning in East Java which must also be changed. Because the two sectors have different characteristics and influences on the effects of employment, added value, production processes, marketing distribution channels, and supporting infrastructure (Budiono, 2021). The manufacturing industry sector in East Java's GRDP is divided into 9 types of industrial sub-sectors. One of the nine types of industrial sub-sectors contributes the greatest output value, which is more than 50% of the total output of the manufacturing industry in East Java, namely the food, beverage and tobacco industries.

Table 2: Distribution of Types of Manufacturing Industries in East Java GRDP at Constant Prices, 2003-2011(%)

Code	Industry	2003	2004	2005	2006	2007	2008	2009	2010	2011	Growth(%)
3.1	The food, beverage, and tobacco industries	54.35	53.57	53.90	55.31	54.46	54.22	54.23	54.29	54.39	0.01
3.2	Textile, apparel, and leather industries	4.11	3.95	3.87	3.71	3.64	3.29	3.08	3.09	3.01	-3.40
3.3	Wood industry and similarity	3.61	3.31	3.21	2.59	2.48	2.36	2.22	2.07	2.13	-5.68
3.4	Paper, printing, and publishing industries	12.78	14.40	14.27	16.07	16.66	17.16	17.61	17.74	17.45	3.52
3.5	Chemical, petroleum, rubber, and plastics industries	8.16	7.91	8.12	9.64	9.72	9.69	9.74	9.60	9.79	2.03
3.6	Non-metallic mineral goods industries	3.46	3.49	3.45	3.40	3.29	3.35	3.27	3.16	3.40	-0.17
3.7	Base metal industry	7.82	7.73	7.40	3.96	4.00	3.95	3.88	3.96	3.95	-7.32
3.8	metal goods industry, machinery and equipment	1.81	1.77	1.91	2.79	3.24	3.49	3.50	3.48	3.37	7.16
3.9	Other manufacturing industries etc	3.90	3.86	3.88	2.52	2.51	2.49	2.50	2.61	2.51	-4.78
	TOTAL	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	

Industrialization Ratio in East Java

The industrialization ratio is measured by the manufacturing industry's contribution to GRDP. The ratio of industrialization in East Java continues to decline. According to UNIDO

(United Nations Industrial Development), East Java's industrial development is experiencing a decline from the "semi-industrialization" stage to the "towards industrialization" stage. This is an early indication of a decline in the industrialization process or de-industrialization in East Java, also known as the "sunset industry".

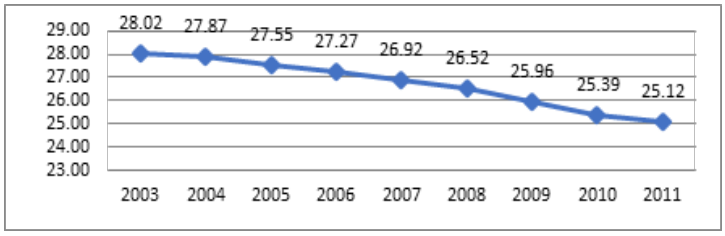


Figure 4: Industrialization Ratio in East Java, 2003-2011 (%)

If the industrialization ratio in East Java has decreased, this is not the case for the commodity industrialization ratio (the ratio of the manufacturing industry's contribution to the commodity sector). The value of commodity industrialization continues to increase by 52-54%. The commodity sector includes agriculture, mining, industry, construction, electricity, gas & drinking water. The increasing contribution of the manufacturing industry to the commodity sector indicates that the manufacturing industry has a positive performance in the commodity sector regarding its industrialization process. See Figure 5 below.

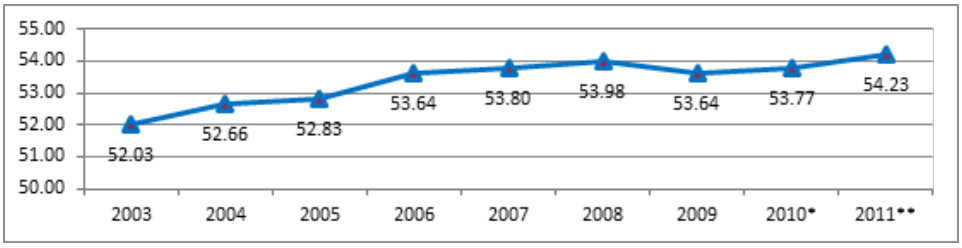


Figure 5: Ratio of Manufacturing Industry to Commodity Sector, 2003-2011 (%)

Based on the achievements of the value of the industrialization ratio and the ratio of industrialization to the commodity sector, East Java Province will experience difficulties entering the whole industrialization stage because its industrialization ratio continues to decline. Several factors contributed to the decline in the industrialization ratio due to the fact that the growth of the manufacturing industry was slower than that of the trade, hotel, and restaurant sectors. In order to increase its position from the stage of East Java as a semi-industrial area to an industrial area, it must be able to increase the value of the manufacturing industry's contribution to East Java's GRDP to more than 30%. For this reason, industrial development policies must be able to utilize the potential of its resources, both physical resources and human resources supported by more advanced technology, including through patents and research, in order to obtain optimal results so that industrialization in the economy and specifically in the commodity sector can grow significantly.

There are allegations that the manufacturing industry in East Java is experiencing de-industrialization or dimming the industry, which is also called the sunset industry (Kompas, 2012). The Deputy Head of the Regional Bank of Indonesia for Monetary Economics assessed the downward trend in the industrialization process due to the global recession. However, another possibility that caused the decline in the industrialization ratio was the disruption in the distribution of goods (both input and output) due to the Lapindo mudflow, which disrupted the smooth flow of logistics of goods and services from the Eastern and Southern

regions of East Java. This phenomenon also indicates a shift in the economic structure in East Java which is faster than the national level, namely from the manufacturing industry to trade, hotels & restaurants.

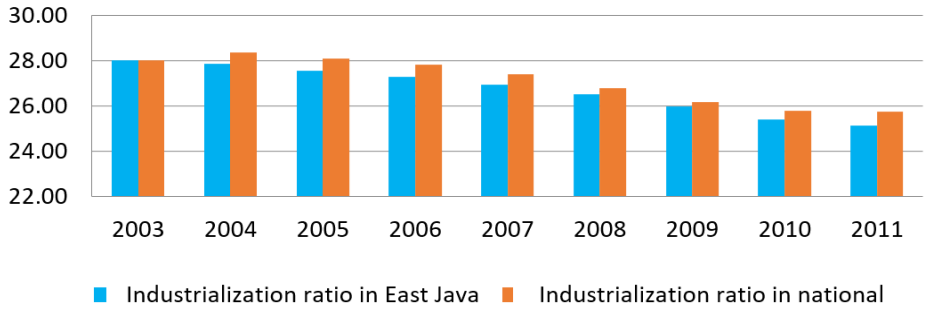


Figure 6: Industrialization Ratio in East Java and National, 2003-2011 (%)

The challenge the East Java manufacturing industry must face and the national economy, in general, is increasing competition. The threat is that East Java becomes a market for other countries products. The entry of products from outside East Java that are similar to those produced in East Java will increase competition for similar local commodities.

Conclusion

East Java's industrialization ratio is between 20-30%. Meanwhile, the ratio of the manufacturing industry to the commodity sector is 52-54%. Therefore, based on the classification carried out by UNIDO (United Nations Industrial Development Organization) and the World Bank, East Java province is categorized as a semi-industrial area. To increase the position of the East Java stage from a semi-industrial area to an industrial area, it must be able to increase the contribution value of the manufacturing industry to East Java's GRDP by more than 30%. Thus, industrial development policies must be able to utilize the potential of its resources, both physical resources and human resources, with the support of more advanced industrial technology, including through patents and research, in order to obtain optimal results so that industrialization in the economy and industrialization of commodities can grow exponentially significant.

The East Java manufacturing industry is a sector that has great potential to be developed and is a driving force for the economy in East Java. If the East Java manufacturing industry increases, other economic sectors will also increase. However, the manufacturing industry has several weaknesses and challenges from these various potentials. The broader global market opportunity is a potential, while the increasing global competition is challenging. It is necessary to formulate a manufacturing industry development strategy that is integrated with other sectors, especially the commodity sector, so that the industrialization process in East Java can support the development and competitiveness of the national economy.

The limitation of the analysis in this study is that it does not differentiate the manufacturing industry into capital-intensive and labor-intensive industries. The conclusions might differ if the industry data were separated into these two categories.

Declaration

Conflict of Interest

No potential conflict of interest was reported by the authors. The authors have no significant competing financial or non-financial, personal or professional relationship interests, in the subject matter or material discussed in this manuscript.

Availability of Data and Materials

The datasets used and/or analyzed during the current study are available from the corresponding author on reasonable request.

Authors' Contribution

All authors contributed to the study conception and design. Material preparation, data collection and analysis were performed by Nurul Istifadah, Maryunani, Candra Fajri Ananda, and Susilo. The first draft of the manuscript was written by Nurul Istifadah and all authors commented on previous versions of the manuscript.

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