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Shift-Share Analysis Of The Manufacture Industry Sector In Lampung Province 2010-2023

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Abstract

Structural transformation is characterized by a gradual decline in the dominance of the primary sector accompanied by the increasing contribution of the secondary and tertiary sectors to economic development. Understanding the magnitude and direction of these structural changes is essential for identifying regional growth drivers. This study employs the Shift–Share analysis to identify leading economic sectors in Lampung Province and to examine the contribution of national economic growth and regional competitiveness to sectoral performance. The results indicate that national economic growth positively influences all economic sectors in Lampung Province, as reflected by the positive National Share values across sectors. Furthermore, the Industry Mix and Competitive Share analyses reveal that the construction sector and the wholesale and retail trade sector possess relatively strong competitive advantages, making them key contributors to regional economic growth. In contrast, although the agriculture, forestry, and fisheries sector remains an important contributor to Lampung's economy, its competitive performance is weaker than that of the same sector at the national level. These findings suggest that strengthening sectoral competitiveness, particularly in traditional sectors, while promoting high-performing industries, is crucial for accelerating sustainable regional economic growth in Lampung Province.

Keywords: Structural transformation, Shift–Share analysis, Regional competitiveness, Leading sectors, Economic growth, Lampung Province.

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INTRODUCTION

Economic development is a process aimed at improving community welfare through increased income, employment opportunities, and sustainable economic growth (A et al. 2023). One indicator commonly used to measure the success of a region's economic development is Gross Regional Domestic Product (GRDP) growth (Wardani Umi & Yoga Kundhani, 2023). High economic growth indicates increased production capacity, which can drive improvements in community welfare (Samosir et al., 2023).

In the context of regional development, the manufacturing sector plays a crucial role as a key driver of economic growth (Imrani & Jafarov, 2023). According to the structural transformation theory proposed by W. Arthur Lewis, economic development is characterized by a shift in economic activity from the primary sector to the secondary and tertiary sectors, which have higher productivity (Tri Nugraha et al., 2023). This shift generally occurs through three main stages: the agricultural sector, the manufacturing sector, and finally the service sector. Therefore, the development of the manufacturing sector is an important indicator in the economic transformation process of a region, as development in the manufacturing sector is a shift in the economy that generally becomes the largest supporter of economic growth (Samosir et al., 2023).

Lampung Province is a province on the island of Sumatra, with a geographical location and natural conditions that support an economic structure dominated by the agricultural sector. However, in recent years, the manufacturing sector has shown significant growth and is one of the sectors that makes a significant contribution to the formation of the regional GRDP (Imrani & Jafarov, 2023).

Shift-Share analysis is used to identify sources of economic growth in Lampung Province and assess the competitiveness of each economic sector compared to the development of the same sector at the national level (Nurul & Alvaro, 2021a; Rachmawati et al., 2020). The components analyzed consist of National Share (Nij), Industry Mix (Mij), and Competitive Share (Cij). The data used is Gross Regional Domestic Product (GRDP) data by business sector in Lampung Province and Indonesia for the period 2010–2023 obtained from the official publication of the Central Statistics Agency (BPS). The analysis method used is Shift-Share which consists of the National Share (Nij), Industry Mix (Mij), and Competitive Share (Cij) components.

In the context of the national processing industry, the research of Samosir S., Primanthi M., and Wulandari R. focuses more on productivity and determinants of industrialization nationally, without specifically examining sectoral competitive advantages at the provincial level. However, there are still limitations to research that

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specifically examines the processing industry sector in Lampung Province using long-term data (2010–2023) with the Shift-Share approach as a tool for identifying structural transformations of the regional economy.

This study is novel in its use of a longer analysis period, namely during the period 2010–2023, thus providing a more comprehensive picture of the dynamics of the growth of the processing industry sector in Lampung Province. Beyond simply looking at the numbers, this study attempts to interpret the analysis results to be able to explain the factors behind the research results and see the potential of Lampung Province as one of the regions that contributes to national food security. In addition, this study also considers the importance of growth and development oriented towards sustainability in accordance with the principles of the Sustainable Development Goals (*SDGs*).

Objectives

This article intends

1. To understand the competitiveness of Lampung Province's manufacturing sector compared to the national manufacturing sector using the Shift-Share method
2. To understand the position and potential of the manufacturing sector in driving economic growth, increasing the added value of local commodities, and sustainable economic development in Lampung Province.

DISCUSSION

Economic Growth Due to National Factors (National Share)

In the Shift Share analysis, *the National Share component* reflects the influence of external regional factors, namely how national economic developments contribute to changes in sectoral output at the regional level.

The sectors with the largest National Share value are:

Table 1. National Share

Sector	N_{ij}
Agriculture, Forestry and Fisheries	41,221.73
Processing industry	20,485.31
Wholesale and Retail Trade	14,567.15
Construction	10,740.13

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Based on the analysis, all economic sectors in Lampung Province have a positive National Share (N_{ij}) value. This indicates that national economic growth during the 2010–2023 period has had a positive impact on the development of economic sectors in Lampung Province.

Economically, the high National Share value in the agricultural sector indicates that the sector's growth in Lampung Province is still heavily influenced by national macroeconomic conditions, such as national food policy, commodity price stability, and domestic market demand. This is in line with Lampung's economic structure, which has so far been dominated by the primary sector, particularly agriculture as the main contributor to the region's GRDP. Meanwhile, the relatively large National Share value in the manufacturing industry sector indicates that the development of the manufacturing sector in Lampung is also being driven by national industrial growth. This can occur through increased national demand for industrial products, the development of national investment, and industrialization policies implemented by the central government. These conditions indicate that the manufacturing industry sector in Lampung Province has a close relationship with the development of the national manufacturing sector.

Growth Based on Industry Structure (Industry Mix)

The Industry Mix (M_{ij}) component indicates the extent of a sector's growth in a region, influenced by the sector's growth structure at the national level. This component is used to identify whether a sector is growing faster or slower than the national average. Thus, the Industry Mix reflects the structural advantages of a sector within the economy. Based on the calculation results, the sector with the largest M_{ij} value is:

Table 2. Industry Mix

Sector	M_{ij}
Processing industry	13,474.49
Wholesale and Retail Trade	10,725.83
Construction	9,475.42
Information and Communication	8,532.37

Based on the Shift Share analysis, the Manufacturing Industry sector in Lampung Province has a positive Industry Mix (M_{ij}) value of 13,474.49. This positive value indicates that the manufacturing industry sector is among those growing faster than the average

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national economic growth during the 2010–2023 period. In other words, the manufacturing industry sector has good growth prospects and plays a significant role in the national economic structure.

Economically, the positive Industry Mix value indicates that the growth of the manufacturing sector in Lampung Province is supported by the characteristics of the sector itself, which is currently experiencing rapid growth at the national level. This indicates that the manufacturing sector is a progressive sector with greater expansion potential than other sectors. The development of the manufacturing sector at the national level is influenced by increasing demand for manufactured products, industrial investment growth, advances in production technology, and government policies promoting downstreaming and industrialization. These conditions have a positive impact on regions with a manufacturing industry base, including Lampung Province.

Regional Competitiveness (Competitive Share)

The Competitive Share component (C_{ij}) shows the ability of a sector in Lampung Province to grow faster than the same sector at the national level.
Sectors that have a positive Competitive Share value include:

Table 3. Competitive Share

Sector	C_{ij}
Wholesale and Retail Trade	6,814.09
Processing industry	4,386.34
Transportation and Warehousing	3,130.44
Construction	2,620.58
Education	1,401.49

This positive value indicates that these sectors have a competitive advantage and are able to grow faster than the national average. Based on the results of the Shift Share analysis, the Manufacturing Industry sector in Lampung Province has a Competitive Share (C_{ij}) value of 4,386.34 and is positive. This value indicates that the manufacturing industry sector in Lampung Province has better competitiveness than the national manufacturing industry sector during the period 2010–2023. In other words, the growth of the manufacturing industry sector in Lampung Province is faster than the growth of the same sector at the national level.

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Economically, a positive Competitive Share value indicates a competitive advantage held by Lampung Province in developing the manufacturing industry sector. This advantage can stem from various factors, such as the abundant availability of local raw materials, relatively more efficient production costs, a strategic geographic location, access to markets, and support from local government policies to encourage industrial development. Lampung Province has a strong economic base in the agricultural sector, thus providing advantages for the manufacturing industry sector, particularly agro-based industries. The availability of raw materials such as plantation, agricultural, and fishery products is a crucial factor in strengthening the competitiveness of the manufacturing industry sector in the region.

Conversely, some sectors have negative Competitive Share values. Negative values indicate that these sectors are growing slower than their counterparts at the national level, including:

Table 4. Competitive Share

Sector	C_{ij}
Agriculture, Forestry and Fisheries	-9,471.71
Information and Communication	-850.12
Financial Services	-800.22

The analysis results show that the manufacturing industry sector has a National Share value of 20,485.31, an Industry Mix value of 13,474.49, and a Competitive Share value of 4,386.34. A high Industry Mix value indicates that the manufacturing industry is a rapidly growing sector nationally. Furthermore, a positive Competitive Share value indicates that the manufacturing industry sector in Lampung Province has better competitiveness than the national average.

These findings indicate that the manufacturing industry is a leading sector that plays a significant role in driving economic growth in Lampung Province during the 2010–2023 period. This aligns with the structural transformation theory, which states that increasing the contribution of the manufacturing sector can accelerate regional economic growth through increased added value, employment, and productivity.

In addition to the manufacturing industry, the trade and construction sectors also performed well. Both sectors had positive Industry Mix and Competitive Share values.

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This indicates that their growth is influenced not only by national economic development but also by Lampung Province's competitive advantages.

Total Shift (D_{ij})

Table 5. Total Shifts

Sector	D_{ij}
Agriculture, Forestry, and Fisheries	53,241.37
Processing industry	38,346.14
Wholesaler and Vehicle Repairer	32,107.07

Based on the Shift Share analysis, all economic sectors in Lampung Province showed positive Total Shift (D_{ij}) values, indicating that all sectors generally experienced growth during the analysis period. This indicates that the Lampung Province economy has experienced quite good development, with contributions from various economic sectors.

In the Manufacturing Industry sector, the Total Shift value of 38,346.14 indicates that this sector has experienced significant growth and has made a significant contribution to regional economic development. This value is the result of the accumulation of the influence of national economic growth (National Share) of 20,485.31, the influence of sectoral structure (Industry Mix) of 13,474.49, and regional competitive advantage (Competitive Share) of 4,386.34. Economically , the positive Total Shift value in the manufacturing industry sector indicates that this sector is in a progressive and developing condition. This growth is not only driven by external factors in the form of national economic growth, but also by the good structural conditions of the sector and strong internal regional competitiveness. This indicates that the manufacturing industry sector has a relatively complete growth foundation, both in terms of macroeconomics, sectoral prospects, and regional competitive advantage.

Lampung Province holds a strategic position in supporting the national development agenda, particularly through strengthening food security. As one of the nation's food barns, Lampung produces various agricultural commodities, such as rice, corn, cassava, sugarcane, coffee, and other plantation commodities. This potential makes Lampung Province play a crucial role in supporting government policies oriented towards strengthening food self-sufficiency and downstreaming agricultural commodities. However, this substantial agricultural resource potential has not been fully matched by

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increased productivity and competitiveness in the agricultural sector. This is reflected in the agricultural sector's still-low competitiveness compared to similar sectors at the national level, resulting in relatively limited added value.

On the other hand, the manufacturing industry plays a crucial role as a link between the agricultural sector and increasing economic added value through downstream processing. Developing a manufacturing industry based on superior regional commodities is expected to increase the added value of agricultural products, expand employment opportunities, and strengthen the regional economic structure. However, the manufacturing industry in Lampung Province still faces challenges in increasing its competitiveness at the national level, both in terms of productivity, innovation, technology, and industrial efficiency.

Lampung Province is also known as one of the national coffee production centers, particularly Robusta coffee, which contributes significantly to Indonesian coffee production and exports. This potential demonstrates that Lampung's agricultural sector plays a significant role not only in providing food but also offers significant opportunities to increase added value through the development of agro-industries based on superior commodities. Therefore, the agricultural sector should be a key pillar in supporting food security and improving public welfare.

However, the development of the agricultural sector still faces various challenges, one of which is the suboptimal implementation of sustainable agricultural practices. Efforts to increase productivity have been largely supported by the use of chemical or inorganic fertilizers, including through fertilizer subsidy programs. While these policies play a crucial role in maintaining productivity and food security, high reliance on inorganic fertilizers has the potential to impact soil quality and the environment if not balanced with the implementation of sustainable agricultural practices, such as the use of organic fertilizers, land conservation, and more environmentally friendly natural resource management. This situation poses a challenge in supporting the achievement of the Sustainable Development Goals (SDGs), particularly Goal 2 (Zero Hunger), which emphasizes sustainable food systems, and Goal 12 (Responsible Consumption and Production) and Goal 15 (Life on Land), which focus on sustainable natural resource management.

Although the manufacturing industry is one of the sectors with good growth prospects and competitiveness, its development must be carried out in a balanced manner, taking into account environmental sustainability. Industrial development solely focused on increasing output has the potential to increase environmental pressure

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through increased land use, natural resource exploitation, energy consumption, and industrial waste generation if not balanced with the application of sustainable development principles. Furthermore, the development of industrial areas also requires relatively large infrastructure investments, thus requiring significant government budget allocations.

On the other hand, Lampung Province has a comparative advantage in the agricultural sector, with various superior commodities, such as coffee, cassava, corn, sugar cane, and other plantation commodities. Therefore, regional development strategies should not only focus on industrial expansion but also strengthen the agricultural sector as a primary supplier of raw materials. Developing an agricultural-based processing industry (agroindustry) is a more appropriate alternative because it can increase the added value of local commodities without neglecting the agricultural sector's role as the foundation of the regional economy.

This approach also aligns with the concept of sustainable development (Sustainable Development Goals/SDGs), particularly in promoting inclusive economic growth, sustainable industrialization, and more responsible production patterns. Therefore, economic development in Lampung Province is expected to be oriented not only toward increasing economic growth but also toward maintaining a balance between increasing industrial value-added, food security, and environmental sustainability.

CONCLUSION

This study demonstrates that national economic growth has generated positive spillover effects across all economic sectors in Lampung Province, as reflected by the consistently positive National Share (NS) values. This finding confirms that regional economic performance remains closely linked to national economic expansion. Nevertheless, the Shift–Share decomposition reveals substantial differences in sectoral competitiveness. The manufacturing sector exhibits both a favourable industrial structure and a positive competitive advantage, indicating that it has become one of the most dynamic drivers of regional economic growth. In contrast, although the agriculture, forestry, and fisheries sector continues to play a dominant role in the provincial economy, its relatively weak Competitive Share (CS) suggests that its growth is driven primarily by its large economic base rather than by improvements in productivity or competitiveness.

These findings imply that future regional development policies should move beyond maintaining the dominance of the primary sector and instead accelerate structural transformation through agro-industrial development. Rather than promoting

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manufacturing expansion in isolation, Lampung should prioritize agricultural processing industries that create higher value-added from local commodities such as coffee, cassava, sugarcane, and other strategic agricultural products. Such an approach would strengthen the linkages between agriculture and manufacturing, increase farmers' incomes, expand employment opportunities, and improve regional competitiveness simultaneously.

Furthermore, enhancing the competitiveness of the agricultural sector remains essential for ensuring that structural transformation is both inclusive and sustainable. This requires technological modernization, productivity enhancement, stronger farmer institutions, wider adoption of environmentally sustainable farming practices, and better integration into agro-industrial value chains. Government support should gradually shift from production-oriented subsidies toward policies that encourage technological innovation, resource efficiency, and sustainable production systems.

Overall, the study suggests that Lampung's long-term economic development should be driven by an integrated strategy that combines agricultural modernization with downstream industrialization. Strengthening agro-industry not only increases regional value-added and economic resilience but also supports environmentally sustainable development and contributes directly to achieving the Sustainable Development Goals (SDGs).

From a broader perspective, this study provides empirical evidence that structural transformation at the regional level is determined not only by changes in sectoral composition but also by differences in sectoral competitiveness. The findings suggest that sustainable regional growth depends on strengthening competitive advantages in value-added industries while simultaneously improving the productivity of traditional sectors. Therefore, structural transformation should be viewed as a process of enhancing intersectoral linkages rather than merely shifting economic activity from agriculture to manufacturing.

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