

Analysis of Differences in Leading Sectors in Gunung Kidul Regency and Yogyakarta City Using Location Quotient (LQ), Shift Share (SS), and Klassen Typology Methods

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ABSTRACT

This study aims to identify the leading sectors that make a significant contribution to the economy of Gunungkidul Regency and Yogyakarta City. Using a descriptive quantitative approach, the study utilizes secondary data in the form of Gross Regional Domestic Product (GRDP) at constant prices from 2012 to 2023, obtained from the Central Statistics Agency (BPS) of Gunungkidul Regency, Yogyakarta City, and the Special Region of Yogyakarta Province. The analytical methods employed include Location Quotient (LQ), Shift Share, and Klassen Typology to measure comparative advantage, growth, competitiveness, and the classification of economic sectors. The analysis results indicate that there are six leading sectors in Gunungkidul Regency and twelve leading sectors in Yogyakarta City. These findings reflect the differences in economic structure and development dynamics between the two regions. Based on the results of this study, it is expected that local governments can optimize the development of sectors that are not yet leading but have potential, thereby encouraging more balanced and equitable economic growth across all regions.

INTRODUCTION

Economic development has many sides and covers all parts of people's lives, not just the economy (Arsyad, 2015). This action not only boosts regional competitiveness at the national level, but also supports a fairer distribution of economic growth. Improved community welfare in an area is generally reflected in its economic growth (Bunyamin, 2011). Economic growth helps improve access to basic services such as education and healthcare. As regional income from taxes and other sources increases, the government can invest more in social and economic infrastructure, upgrade educational facilities, and improve health services.

Essentially, GRDP (Gross Regional Domestic Product) represents the total value of final output. The estimation of the value of goods and services output is carried out using two approaches: based on constant prices and current market prices (Hasibuan et al., 2019). A high GRDP value indicates dynamic and productive economic activity, which generally comes from the contributions of various sectors such as agriculture, industry, trade, and services. The annual growth of GRDP reflects an increase in production capacity and economic efficiency in utilizing regional resources, which contributes to higher regional income and improved community welfare.

Cities generally contribute more to GRDP than regencies due to the dominance of industry, trade, and services. With better infrastructure, skilled labor, and higher demand from urbanization, city economies grow faster. Meanwhile, regencies rely on primary sectors like agriculture, forestry, and fisheries, which, despite their importance, generate lower added value compared to urban sectors.

Gunung Kidul Regency is dominated by karst landscapes, which pose specific challenges for agricultural development, particularly due to limited water availability for irrigation. This geographical condition forces most areas to rely on dryland farming, which is highly dependent on seasonal patterns and rainfall. Nevertheless, the agricultural sector remains one of the main pillars of the local economy in Gunung Kidul. Based on business fields from 2012 to 2023, the agriculture, forestry, and fisheries sector has continued to play a major role as a leading sector in the region's economic structure. The sector's contribution to GRDP increased steadily from Rp2,452,276.53 million in 2012 to Rp3,082,555.92 million in 2023. This growth reflects the resilience of the agricultural sector as the backbone of the local economy.

Meanwhile, the information and communication sector plays a significant role in the economic development of Yogyakarta City. This sector has shown rapid growth in line with technological advancements and the widespread use of the internet. Yogyakarta is home to many educational institutions and fast-growing tech startups, which have helped drive expansion in this sector. The digitalization of various aspects of life has further supported this growth. Between 2012 and 2023, the information and communication sector consistently ranked as the largest contributor to the city's GRDP. In 2012, it contributed Rp2,654,507.80 million, and by 2023, it had surged to Rp5,784,752.37 million.

The economic structure of Yogyakarta City is more diverse, with major contributions from the information and communication, trade, and manufacturing sectors. This is supported by the city's role as an educational and technological hub. In contrast, surrounding regencies still rely heavily on agriculture and other primary sectors due to limited infrastructure and access to technology. These differences highlight how regional development policies shape economic growth and the need for balanced strategies to support both urban and rural areas. The analysis methods used in this study are Location Quotient (LQ), Shift Share, and Klassen Typology to measure comparative advantage, growth, competitiveness, and the classification of economic sectors.

LITERATURE REVIEW

Economic Growth Theory

Economic growth is the process of increasing an economy's production capacity, as reflected by the overall rise in national income (Wibowo, 2003). This reflects a country's progress in enhancing productivity, innovation, and the efficiency of its economic system. Key factors that play a role in economic growth include the potential of natural resources and land, the capacity and competence of the labor force, the availability of physical capital, the level of technology applied, the prevailing social structure, and the mindset or behavior of the society (Soleh et al., 2011).

Adam Smith's theory of economic growth is characterized by an increase in population and the growth of total output or production, with both factors being closely interconnected (Martadinata, 2022). Population growth drives an increase in the available labor force, thereby expanding a country's production capacity. Adam Smith also emphasized that population growth and the overall increase in production must remain balanced. If population growth outpaces a country's production capacity, problems such as falling wages, unemployment, and resource scarcity may arise.

Sociological Theory of Economics

Smelser (2009) states that economic sociology is a branch of sociology that focuses on the study of how societies meet their needs for living. It examines how social interactions, institutions, and cultural contexts shape economic behavior and the organization of economic activities. Economic sociology places the economy within a broader social context, where human interactions, social norms, and societal structures play a crucial role in economic processes. It emphasizes that economic activities are not isolated, but are deeply influenced by the social environment in which they occur.

Schumpeter (2006) views economic sociology as the study of the institutional context of the economy. It examines institutions relevant to economic life, including customs and all forms of general social behavior. This includes systems of government, the role of the private sector, and actions based on both rational and irrational considerations. Economic sociology, in this view, explores how these social institutions shape and are shaped by economic activity.

Economic Development Theory

Arsyad (2010) states that economic development is a process that leads to an increase in real per capita income and the improvement of institutional systems to encourage economic activities and enhance the standard of living of the population in various aspects over the long term. Economic development includes social and environmental dimensions, where economic growth must be balanced with equitable distribution of development outcomes and the preservation of natural resource sustainability.

Walt Rostow argued that the economy develops in five stages: the traditional society stage, the preconditions for take-off stage, the take-off stage, the drive to maturity stage, and finally, the stage of high mass consumption (Easterly, 2002). In his theory, Rostow identified five stages of economic development that are interconnected and reflect structural transformation within an economy. The five-stage economic growth model proposed by Walt Rostow illustrates the structural changes a country must undergo to achieve economic prosperity.

Economic Base Theory

Saharuddin (2005) stated that in economic base theory, economic activities are classified into two main groups: export-oriented sectors (base) and sectors that serve local needs (non-base). The main idea of this theory states that export activities serve as the primary drivers of a region's economic growth (Indrawati, 2013). The non-base sector consists of economic activities focused on meeting the internal or domestic needs of the community, such as local trade, healthcare services, and education. This sector depends on the income generated by the base sector, as increased income boosts local consumption and strengthens the domestic economy. Both sectors are interconnected – while the base sector drives growth, the non-base sector supports overall economic sustainability in the region.

The base sector plays a significant role and has a substantial impact because it drives overall economic growth and development in the region (Tarigan, 2015). The income generated from exports creates a multiplier effect in the local economy, as the money flowing into the region circulates through various economic sectors, including the non-base sector.

METHODOLOGY

This study uses a quantitative descriptive approach to examine the pattern of potential sectors that contribute to economic growth in Gresik Regency. The analysis was conducted by combining four methods, namely Location Quotient (LQ), Shift Share, and Tipology Klassen.

Location Quotient Analysis

This quantitative analysis method is used to measure the level of economic sector advantage in a region by comparing the contribution of each sector to the local economy with its role at a broader level. The formula for calculating Location Quotient (LQ) is as follows:

$$LQ = \frac{V_{aji}/PDRB_j}{V_{a ii}/PDRB_i} \quad (\text{Tarigan, 2007})$$

Explanation:

LQ = Location Quotient

V_{aji} = GRDP value of sector i in the regency/city

$V_{a ii}$ = GRDP value of sector i in the province

$PDRB_j$ = Total GRDP of the regency/city

$PDRB_i$ = Total GRDP of the province

Based on the LQ calculation, there are three categories: $LQ > 1$ The sector is classified as a leading sector, indicating that sector i in Gunung Kidul Regency or Yogyakarta City has a higher level of specialization compared to the same sector at the provincial level (Yogyakarta Special Region). $LQ < 1$ The sector is considered a non-leading sector, suggesting that sector i in Gunung Kidul Regency or Yogyakarta City has a lower level of specialization than the same sector in the province. $LQ = 1$ Sector i has a comparable level of specialization to the same sector at the provincial level, indicating equal economic importance.

The data used is secondary data and was obtained from official publications of the Central Statistics Agency (BPS), including:

- a. Gross Regional Domestic Product by sector (2014-2023).
- b. Employment data per sector.
- c. Regional economic growth figures of Kabupaten Gresik and East Java Province.

Shift Share Analysis

Shift Share analysis is used to understand the dynamics of changes in a region's economic structure and its relationship to the area's overall economic growth (Basuki & Mujiraharjo, 2017). Shift Share can be calculated using the following formula (Tarigan, 2005):

Potential Regional:

$$PR = Q^{i0j} \left(\frac{Y^t}{Y^o} - 1 \right) \dots\dots\dots (1)$$

Based on the calculation results, if the value of $PR > Q_{ij}$, it means that the growth of the sector in the regency supports the development of the same sector at the provincial level through its contribution. Conversely, if $PR < Q_{ij}$, the sector's growth in the regency may actually hinder the growth of the same sector in the province.

Proportional Shift

$$PS = Q^{i0j} \left(\frac{Q^{it}}{Q^{io}} - \frac{Y^t}{Y^o} \right) \dots\dots\dots (2)$$

Based on the calculation results, if the PS value is positive, it indicates that the sector is experiencing faster growth compared to the same sector at the provincial level. Conversely, if the PS value is negative, it means the sector is growing more slowly than the corresponding sector in the province.

Differential Shift

$$DS = Qi^{0j} \left(\frac{Qt^{ij}}{Qi^{0s}} - \frac{Qt^i}{Qi^0} \right) \dots\dots\dots (3)$$

Based on the calculation results, if the DS value is positive, it means the sector is growing faster than the same sector in other regencies, indicating that the sector has a competitive locational advantage. Conversely, if $DS < 0$, the sector is growing more slowly than similar sectors in other regions, suggesting a lack of supportive locational advantage.

Typology Klassen

Klassen Typology is a method used to analyze the spatial patterns and development dynamics of a region based on its social, economic, and geographic characteristics. Using this method, sectors can be classified into four categories: advanced and fast-growing sectors, advanced but declining sectors, potential or developing sectors, and underdeveloped or lagging sectors. This classification helps in identifying the development status of each sector and determining appropriate regional development strategies (Safri, 2022).

Table 1. classification regional development strategies

Y R	$Y_i > Y$	$Y_i < Y$
$R_i > R$	Quadrant I Advanced and fast-growing sector	Quadrant III Rapidly developing sector
$R_i < R$	Quadrant II Advanced but depressed sector	Quadrant IV Relatively underdeveloped sector

Source: (Sjafrizal, 2014)

- y_1 = Contribution of the sector in the region
- y = Contribution of the sector in the reference area (province)
- r_1 = Growth rate of the sector in the region
- r = Growth rate of the sector in the reference area

RESEARCH RESULT

Location Quotient (LQ)

Based on the Location Quotient (LQ) analysis of Gunungkidul Regency from 2012 to 2023, six economic sectors are classified as base sectors, meaning they have an LQ value greater than 1. These sectors include: Agriculture, Forestry, and Fisheries (LQ 2.08); Mining and Quarrying (LQ 1.88); Water Supply, Waste Management, and Recycling (LQ 1.35); Wholesale and Retail Trade; Repair of Motor Vehicles and Motorcycles (LQ 1.08); Public Administration, Defense, and Compulsory Social Security (LQ 1.05); and Other

Services (LQ 1.18). The classification of these sectors as base sectors indicates that they have a comparative advantage and contribute more significantly to the local economy compared to the provincial average. This reflects their ability to compete effectively and highlights their strong potential to support regional economic development.

In conclusion, the comparison between Gunungkidul Regency and Yogyakarta City reveals distinct economic characteristics and sectoral strengths. Gunungkidul's economy is largely driven by primary sectors, with Agriculture, Forestry, and Fisheries showing the highest LQ value, supported by other base sectors such as Mining and Waste Management. This reflects the region's reliance on natural resources and traditional economic activities.

On the other hand, Yogyakarta City exhibits a more diversified and urban-oriented economic structure, with high LQ values in modern service sectors such as Financial and Insurance Services, Health, Education, and Information and Communication. These sectors highlight the city's role as an educational, administrative, and service hub with greater specialization in knowledge-based and professional industries. The differences in base sectors between the two regions indicate the varying economic potentials and development priorities that can guide regional planning and policy-making.

Shift Share

The Shift Share analysis based on the PR component highlights differences in the structure of sectoral economic growth between Gunungkidul Regency and Yogyakarta City. A PR score of 1 indicates that the sector contributes positively to the overall economic growth of the Special Region of Yogyakarta (DIY). In Gunungkidul Regency, sectors with a PR score of 1 include: manufacturing, construction, trade and vehicle repair, transportation, accommodation and food services, information and communication, financial services, and education. This advantage shows that Gunungkidul has a fairly broad economic potential – not only limited to traditional sectors but also expanding into industrial, distribution, and modern service sectors. The growth of these sectors reflects an economic transformation in Gunungkidul, driven by infrastructure development, expanded communication access, and increased public purchasing power.

Meanwhile, in Yogyakarta City, a PR score of 1 appears in sectors such as financial and insurance services, education, health and social services, and various other service activities. This reflects the city's economic orientation toward modern service sectors, in line with its role as a center of education, culture, and public services in the province. The growth of these sectors demonstrates their significant contribution to strengthening a knowledge-based and service-driven economy.

Thus, the different PR growth patterns between Gunungkidul and Yogyakarta City reflect each region's economic strengths. Gunungkidul excels in distribution and supporting industries, while Yogyakarta City dominates in high-quality service sectors. These differences open opportunities for interregional economic synergy, where integrating each region's leading sectors can strengthen the economic structure of the DIY Province in a more balanced, inclusive, and sustainable manner.

The Shift Share PS (Proportional Shift) analysis for Gunungkidul Regency and Yogyakarta City reveals differing patterns of sectoral economic growth between the two areas. Based on the data: In Gunungkidul, the Electricity and Gas Supply sector recorded the highest PS value at 61.52, indicating significant growth compared to the regional average. The Water Supply, Waste Management, and Recycling sector also showed positive growth with a PS value of 134.53. In contrast, the Agriculture, Forestry, and Fisheries sector experienced a decline with a PS value of -70.43, signaling challenges in that sector.

In Yogyakarta City, the Health Services and Social Activities sector showed strong growth with a PS value of 9.063, followed by Other Services with a PS value of 3.323. These sectors indicate higher-than-average growth potential compared to the region. This difference reflects distinct economic characteristics: Gunungkidul focuses more on resource supply and management sectors, while Yogyakarta City excels in the service sector, especially in health and social services.

The Shift Share DS (Differential Shift) analysis from 2012 to 2023 further highlights variations in sectoral economic growth dynamics between the two regions. In Gunungkidul Regency, the Manufacturing sector showed significant growth with a DS value of 141.884, indicating strong potential to drive regional economic development. On the other hand, the Water Supply, Waste Management, and Recycling sector experienced a decline with a DS value of -608.61, pointing to challenges that need to be addressed to improve efficiency and sustainability in this sector.

In Yogyakarta City, the Education Services sector showed strong performance with a DS value of 44.957, followed by Other Services, although slightly negative, with a DS value of -3.560. These values demonstrate relatively better growth performance than the regional average. These results further reinforce the distinction in economic profiles: Gunungkidul is more focused on industrial sectors, while Yogyakarta City is more dominant in service sectors, particularly in education.

Typology Klassen

Based on the Klassen Typology analysis from 2012 to 2023, Gunungkidul Regency and Yogyakarta City exhibit distinctly different economic structures in terms of sectoral growth and contribution. In Gunungkidul Regency, several sectors are categorized in Quadrant I (advanced and rapidly growing sectors), such as Wholesale and Retail Trade; Repair of Motor Vehicles and Motorcycles* with an average growth rate of 6.74% and a contribution of 8.78%, and Public Administration and Social Security with 4.12% growth and 7.65% contribution. These sectors outperform the provincial average in both growth and contribution, indicating their strong and growing role in the local economy.

A large portion of Gunungkidul's economy also falls under Quadrant III (fast-growing sectors with relatively low contribution). These include Manufacturing (14.13% growth; 10.63% contribution), Construction (7.52%; 9.18%), Transportation and Warehousing (6.68%; 4.87%), Accommodation and Food Services (17.31%; 7.37%), Information and Communication (13.39%;

11.85%), Real Estate (18.60%; 4.57%), Company Services (8.31%; 0.49%), and Education Services (9.93%; 7.01%). These sectors show strong growth momentum, but their contributions are still catching up, suggesting high development potential.

On the other hand, Quadrant II sectors in Gunungkidul, such as Agriculture, Forestry, and Fisheries (-0.15% growth; 18.42% contribution) and Mining and Quarrying (-3.04%; 1.04%), show high contribution but negative or slow growth, indicating structural constraints or limited capacity for expansion. Meanwhile, the Water Supply, Waste Management, and Recycling* sector falls into Quadrant IV with modest growth (2.01%) and minimal contribution (0.12%), indicating it is still underdeveloped and struggling to compete.

In contrast, Yogyakarta City shows a different pattern, with the majority of its key sectors falling into Quadrant II, meaning they contribute significantly to the economy but grow slower than the provincial average. These include Manufacturing (3.08% growth; 12.94% contribution), Information and Communication (7.43%; 15.39%), Financial Services (5.50%; 6.01%), Education Services (4.75%; 9.98%), Health and Social Services (7.06%; 4.20%), Real Estate (4.01%; 9.14%), Public Administration (3.49%; 8.75%), and Other Services (5.68%; 2.77%). These sectors form the backbone of Yogyakarta's knowledge-based economy and maintain strong influence despite their relatively slower growth.

Only a few sectors in Yogyakarta are in Quadrant III, such as Transportation and Warehousing (4.08% growth; 3.77% contribution), which indicates some growth potential. However, several sectors fall into Quadrant IV, including Agriculture (1.48%; 0.15%), Mining (0.00042%; 0.0034%), Trade (3.88%; 6.83%), and Construction (2.53%; 7.28%). These sectors are both low in growth and contribution, requiring strategic development efforts. In conclusion, Gunungkidul Regency demonstrates an economy in transition, with many fast-growing sectors that have yet to reach their full potential in contribution. Meanwhile, Yogyakarta City's economy is more mature, dominated by well-established service sectors that contribute greatly but are growing at a slower pace.

DISCUSSION

The impact of leading sectors in Gunungkidul Regency and Yogyakarta City on economic growth is significant and plays a strategic role in promoting regional development. In Gunungkidul Regency, key sectors such as agriculture, forestry, and fisheries, although still classified as traditional sectors, provide vital contributions by creating employment opportunities and maintaining regional food security.

Growth in this sector supports increased rural household incomes and strengthens the local economy, which is based on natural resource utilization. In addition, the tourism and accommodation sector has also begun to emerge as a new leading sector, generating positive impacts by encouraging investment, boosting demand for local products, and stimulating growth in related sectors.

Meanwhile, in Yogyakarta City, leading sectors are dominated by tertiary sectors such as education services, information and communication, as well as

financial and insurance services. These sectors contribute significantly to the city's Gross Regional Domestic Product (GRDP), reflecting a more advanced and knowledge-based urban economic structure. The strength of the service sector promotes increased productivity, innovation, and the creation of high-quality employment opportunities.

Moreover, the prominent sectors in Yogyakarta City enhance the region's competitiveness and attract investment from outside the area. Overall, the leading sectors in both regions not only directly drive economic growth but also generate multiplier effects on other sectors. This contributes to creating **more inclusive and sustainable economic development** across the region.

CONCLUSIONS AND RECOMMENDATIONS

1. Gunungkidul still depends on traditional sectors like agriculture, forestry, and mining, but shows positive signs of transformation through growth in construction, trade and Information and Communication Technology. The region should enhance productivity in its base sectors, develop downstream industries, and support non-base sectors like manufacturing and tourism to diversify and strengthen its economy.
2. Yogyakarta City has a more advanced, service-driven economy, led by sectors such as education, finance, ICT, and healthcare. To maintain its competitiveness, the city should continue fostering innovation through collaboration between government, academia, and the private sector, especially in creative and knowledge-based industries.
3. Both regions need tailored strategies: Gunungkidul should optimize its growing sectors with low contribution (Quadrant III), while Yogyakarta must improve productivity in its dominant but slower-growing sectors (Quadrant II). Empowering MSMEs in both areas through training, funding, and digital access is crucial for inclusive and sustainable economic growth.

ADVANCED RESEARCH

Future researchers are encouraged to expand their studies by incorporating additional variables, involving a broader range, and applying more varied research approaches along with advanced statistical analysis techniques.

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