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COMPETITIVENESS AND ECONOMIC STRUCTURE OF BASIC FOOD CROP COMMODITIES IN GUNUNGKIDUL REGENCY

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ABSTRACT

Optimizing local potential in food crop-based commodities can increase regional economic development, including in Gunungkidul Regency. Food crop commodities in the area include up land rice, peanuts, cassava, corn, and soybeans. This research aimed at 1) analyzing the competitiveness of food crop base commodities and 2) analyzing the pattern and structure of growth of food crop base commodities in Gunungkidul Regency. The first objective was solved using the Location Quotient (LQ) and Shift-Share Analysis (SSA) overlay method. LQ is used to determine commodities that have comparative advantages. SSA is used to determine commodities that have competitive advantages. The second objective was solved using the Klassen Typology method. Commodities that have comparative advantages and competitive advantages are peanuts and up land rice. Corn and cassava only have competitive advantages, while soybeans have no competitive or comparative advantages. Peanuts and up land rice have excellent growth structures, while corn and cassava are developing, and soybeans are relatively underdeveloped, with growth rates and economic contributions that are relatively lower than at the provincial level.

Keywords *:Food Crops, Klassen Typology, Location Quotient, Shift Share Analysis.*

INTRODUCTION

Regions in Indonesia have been given the opportunity by the central government to develop local potential in order to support regional economic development, including in Gunungkidul Regency. In line with this, regional development needs to be based on the potential and commodity base of the region (Darlen et al., 2015). Determining base commodities is important as a way to optimize local potential in the region (Dinc, 2015). Basic commodities are considered capable of competing with similar products in other regions because they have comparative and competitive advantages (Firdaus et al., 2022).

Gunungkidul Regency has the potential to support the availability and sufficiency of food for the population at both the district and provincial levels. Gunungkidul Regency is known as the highest contributor to food crop production in the Special Region of Yogyakarta (DIY) Province. This is supported by favorable agroecosystems and available land with an area of 1,485.36 km2 in Gunungkidul Regency. This area is equivalent to 46.63% of the total area of Yogyakarta Province (Central Bureau of Statistics of Gunungkidul, 2022). When compared to other types of land, farmland dominates in Gunungkidul Regency.

The commodities that are relatively widely cultivated in Gunungkidul Regency are food crops. The commodities in question are cassava, peanuts, corn, upland rice, and soybeans. The harvest area of peanuts is the highest of the other food crop commodities. The average harvest area of peanuts reaches more than 60,000 hectares, while the harvest areas of other food crop commodities are less than 60,000 hectares per year. Cassava, corn, and upland rice have harvest areas ranging from 40,000 hectares to 55,000 hectares per year, while soybeans are only less than 10,000 hectares per year.

Cassava production in Gunungkidul Regency is relatively high because there is a regional policy to develop cassava in all subdistrict, besides that cassava can be used as a food substitute for rice and processed into regional specialties. Meanwhile, based on Gunungkidul Regent Regulation No. 66/2018 on Agricultural Area Development, it can be seen that only 6 out of 18 subdistricts predominantly develop soybean commodities. Nevertheless, Gunungkidul Regency is capable of exporting 851,388 tons of cassava, 105,805 tons of peanuts and 11,349 tons of rice in 2021 (Dinas Pertanian dan Pangan Kabupaten Gunungkidul, 2022).

Food crops are one of the local potentials of Gunungkidul Regency. The export of food crops can increase income from outside the region. The local potential should be optimally developed and utilized in supporting regional economic development (Wijaya, 2017). Moreover, the existing agroecosystem conditions

can support the cultivation or farming of food crops.

Food crops play an important role in meeting the needs of the population in Gunungkidul Regency and at the provincial level. Food crops are a driving factor in the realization of regional food security and regional economic development (Haris et al., 2018). It is necessary to synchronize regional economic development and food security policies with local potential (Maria & Irham, 2018).

However, it is not yet known what are the basic commodities, how competitive and comparative they are, and how their economic structure can lead to less than optimal alignment of regional development policies with the local potential of the region. Therefore, the problem formulation of this research is how is the competitiveness of basic food crop commodities and how is the economic structure of basic food crop commodities in Gunungkidul Regency?

Several previous studies have been conducted. The analysis of base commodities in various regions was conducted using the LQ method. The LQ method is an indirect measurement in determining base commodities because direct measurement requires a lot of time, energy, and costs (Balirante et al., 2020). LQ analysis can also be used to determine comparative advantage, while SSA is used to determine food crop commodities that have competitive advantage (Suharno, 2012; Keratorop et al., 2016; and Siradjuddin et al., 2021).

Each region has different potential base commodities (Indahsari & Listiana, 2021). Rice was the base commodity in Jember District in 2009 (Firdaus et al., 2009) and 2022 (Firdaus et al., 2022). Meanwhile, rice, paddy uplands, corn, and cassava have comparative and competitive advantages and therefore have the potential to be developed in Wonosobo District (Suharno, 2012). In East Ogan Komering Ulu District, rice is a basic commodity that has a pattern and structure of advanced growth and is growing rapidly (Ogari et al., 2014). The method used to determine the pattern and structure of growth of a commodity is Klassen Typology.

Paddy rice, upland rice, corn, sweet potatoes, soybeans, peanuts, and cassava have a comparative advantage because the LQ value is more than 1, but upland rice and soybeans do not have a competitive advantage in Bantul Regency based on SSA results (Mulyono & Munibah, 2016). Meanwhile, in Anambas Island, it is known that commodities that have both comparative and competitive competitiveness are paddy rice and sweet potatoes. Research in Anambas used the LQ, DLQ, SSA, and Klassen Typology analysis methods (Mariana et al., 2018). Commodities that have LQ>1 and positive SSA values are said to be comparatively competitive because they have financial efficiency (Suryani et al., 2020).

In related research that has previously been conducted, it is known that the method that can be used to determine the base commodity is the LQ Overlay method between LQ and SSA can be used to determine the comparative and competitive competitiveness of a commodity (Ibrahim et al., 2015). Meanwhile, Klassen Typology analysis can be used to determine the pattern and structure of economic growth of a commodity.

This study has similarities in the type of data and analysis methods used. However, there are several research novelties, namely the location of the research, the range of years, and the focus of the commodities studied. In this study, the type of rice analyzed is upland rice because the agroecosystem conditions in Gunungkidul Regency are more supportive for the development of dry-resistant rice.

Meanwhile, the data used in some previous studies were data on commodity production and harvest areas, while in this study data on production value obtained from multiplying production quantity with producer prices were used. The consideration for the use of data is that the basic commodities cultivated are not only competitive, but are able to improve the welfare of farmers as food crop producers.

METHODS

This research uses a descriptive method with a quantitative approach. The research location is in Gunungkidul Regency. Gunungkidul Regency was chosen because it is the most extensive area with the highest food crop production in Yogyakarta Province. This research uses secondary data. The data used are data on the production value of cassava, corn, peanuts, upland rice and soybeans obtained using the literature study method from the publications of the Central Bureau of Statistics and the Agriculture and Food Service Office of Gunungkidul Regency. The range of research years is 2015 to 2021. The analysis methods used to answer the research objectives are Location Quotient (LQ), Shift Share Analysis (SSA), Klassen Typology.

The first objective was analyzed using the LQ and SSA methods. The advantages of the LQ method are simple, easy, and do not require complicated data processing programs (Hendayana, 2003). LQ can be used to estimate base commodities by comparing the relative value of production to the value of production of the same commodity in the larger economy (Stimson et al., 2006). An LQ value of more than one

indicates a comparative advantage possessed by a commodity (Nganji et al., 2018).

$$LQ = \frac{pi/pt}{Pi/Pt}$$

Description:
pi = production value of commodity i at the district level
pt = total production value of commodity at district level
Pi = production value of commodity i at province level
Pt = total production value of commodity at province level

Basis for Decision Making:
LQ>1, Commodity i is a flagship at this time. This means that commodity i has a comparative advantage and is able to be exported outside the region.
LQ<1, Commodity i is not a flagship at this time and is not able to meet the needs within the region.
LQ=1, Commodity i is not a superior commodity and can only fulfill the needs in the region.

Meanwhile, the SSA method can be used to identify competitive advantage (Beer & Clower, 2020). An SSA value greater than zero or positive indicates that a commodity has a competitive advantage (Stimson et al., 2006). The combination of LQ and SSA values can be used in determining the growth pattern and structure of a commodity (Siradjuddin et al., 2021).

D_ij = N_ij+ M_ij+ C_ij

Description:
D_ij = production value of commodity i in j (district)
N_ij = growth component of commodity i in j (district)
M_ij= industry mix component of commodity i in j (district)
C_ij = competitive advantage component of commodity i in j (district)

If the value of Cij>0 and SSA>0 then it can be said that a commodity has a competitive advantage among other commodities. The Cij component in SSA analysis can measure the competitiveness of commodities in a region compared to the same commodity in other regions (Syahab et al., 2013). Through the Cij value, it can be known the superiority or superiority of a commodity in a region (Siregar, 2021). Shift Share Analysis can also be used to determine the performance of the regional economy by comparing to a wider area (Arsyad, 2010). The advantages of the Shift Share Analysis method include being simple, easy to obtain data, able to describe the performance of the regional economy, and the accuracy of the method has never been doubted (Zaini, 2019).

Table 1.1 Commodity Classification Based on LQ and SSA Combination

Criteria	LQ>1	LQ<1
SSA>0	Has comparative and competitive advantages	Has only competitive advantage
SSA<0	Has only comparative advantage	No comparative and competitive advantages

Source: Cipta *et al*., 2017.

If the LQ value is more than one and the SSA is positive then a commodity can be classified as a base due to comparative and competitive advantages. If the LQ value is more than one, but the SSA value is negative then a commodity has comparative advantage only. However, if the LQ value is less than one and the SSA is positive then it has a competitive advantage only. If the LQ and SSA values are negative, the commodity does not have either comparative or competitive advantage (Siradjuddin et al., 2021).
The Klassen Typology method can be used to determine the pattern and structure of growth of food crop subsector commodities by reviewing the contribution and growth rate of commodities (Ogari et al., 2014). The indicators used in Klassen Typology are the growth rate and contribution of commodities at the district level with the same commodities at the provincial level (Sjafrizal, 2008).

Table 1. 1 Klassen Typology Classification

Criteria	yb<yp	yb>yp
rb>rp	developed	Prime
rb<rp	Under developed	Potential

Source: Susanto (2014).

Where,

r_{ik} = $\frac{(P_{ikt} - P_{ik0})}{P_{ik0}} x\ 100\%$

r_{ip} = $\frac{(P_{it} - P_{io})}{P_{io}} x\ 100\%$

y_{ik} = $\frac{P_{ik}}{P_{tk}} x\ 100\%$

$y_{ip} = \frac{P_i}{P_t} x\ 100$

Description:
rik = Growth rate of commodity production value i Gunungkidul Regency
rip = Growth rate of commodity production value at DIY Province level
yik = Contribution of commodity production value to district subsector
yip = Contribution of commodity production value to DIY Province subsector
Pikt = Production value of commodity i of Gunungkidul Regency in year t
Pik0 = Production value of commodity i of Gunungkidul Regency at the beginning of the year
Pit = Production value of commodity i of DIY Province in year t
Pi0 = Production value of commodity i of DIY Province at the beginning of the year
Pik = Production value of commodity i of Gunungkidul Regency
Ptk = Production value of food crop subsector of Gunungkidul Regency
Pi = Production value of commodity i of DIY Province
Pt = Production value of food crop subsector of DIY Province

If yik>yip and rik>rip then it can be categorized as a prime commodity. The growth rate of production value and contribution of prime commodities is relatively higher than the same commodities at the provincial level. The performance of prime commodities needs to be developed because they have an important role in the regional economy.

If the value of yik<yip and rik>rip then the commodity has a fast growing growth pattern and structure. The growth rate of the production value of a developed commodity that is relatively higher than the same commodity at the provincial level causes the commodity to be able to compete. If the value of yik>yip and rik<rip then it can be known that the commodity has a pattern and structure of advanced but depressed growth so it is considered potential. Although the contribution of potential commodities is relatively high, it is not supported by the growth rate.

Meanwhile, if the commodity has a value of yik<yip and rik<rip, it can be known that the commodity has a relatively backward growth pattern and structure because both in terms of growth rate and contribution are still lower than the same commodity at the provincial level (Susanto, 2014).

RESULTS AND DISCUSSION

Upland rice has a positive Dij value. The growth of paddy production value is sometimes positive during the 2015 to 2021 time period. This was influenced by the value of upland rice production at the provincial level, which amounted to Rp. 332.95 billion. The negative Mij value indicates that the growth rate of upland rice production in Gunungkidul Regency has decreased. However, based on the value of Cij, it is known that upland rice has a competitive advantage. This means that the commodity has competitiveness against the same commodity and still has the potential to be developed.

Table 2.1 SSA Results

Commodities	Nij	Mij	Cij	Dij (SSA)
Upland rice	332	-421	308	219
Corn	260	446	10	717
Soybean	42	-95	-10	-64
Peanuts	409	-140	160	429
Cassava	429	53	524	1.006

Source: Secondary Data Analysis (2022).

Meanwhile, maize in Gunungkidul Regency also had positive production value growth from 2015 to 2021 and was influenced by the growth of maize production value at the DIY Province level of IDR 260.78 billion. Maize has a competitive advantage and has an increasing growth rate when regions concentrate on related industrial activities. Maize remains potential to be developed in the future and has the competitiveness to be marketed. Meanwhile, soybean is not known to have a competitive advantage and has a declining growth rate, although the growth of production value of the commodity is still positive from 2015 to 2021. Maize and soybean still need to be developed in Gunungkidul Regency in order to succeed the national program, namely the Special Effort to Increase Rice, Maize and Soybean Production (UPSUS PAJALE) in the Minister of Agriculture Regulation No. 03/permentan/OT.140/2/2015.

Peanuts and cassava production value growth is also known to be positive in the period 2015 to 2021. The effect of production value growth of the same commodities in Yogyakarta Province on peanuts in Gunungkidul Regency is relatively high at more than IDR 409.24 billion. Meanwhile, the growth of cassava production at the Gunungkidul Regency level was influenced by the growth of the same commodity in DIY by IDR429.12 billion. Both peanuts and cassava have a competitive advantage because the SSA value is positive (Table 2.1). This means that peanuts and cassava in Gunungkidul Regency have higher

economic competitiveness than the same commodities in other regions.

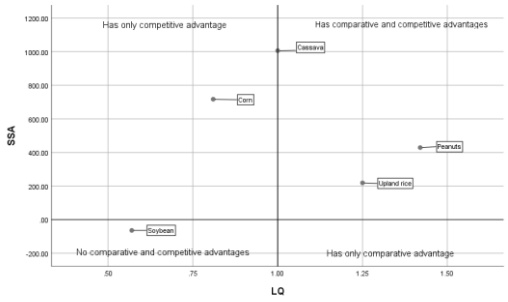

Figure 1. LQ and SSA Value of Commodities

Description:
LQ>1 and SSA>0 = Commodity have comparative and competitive advantages.
LQ>1 and SSA<0 = Commodity has comparative advantage only.
LQ<1 and SSA>0 = Commodity has competitive advantage only.
LQ<1 and SSA<0 = Commodity has no comparative and competitive advantage.

Upland rice and peanuts are basic commodities because they have LQ values of more than one and positive SSA (Figure 1). Upland rice and peanuts can be said to have both comparative and competitive advantages. An LQ value of more than one indicates a comparative advantage, while a positive SSA value indicates a competitive advantage possessed by a commodity (Cipta et al., 2017). Maize and cassava have positive SSA values, but the LQ values of both commodities are less than one, so they are categorized as fast-growing commodities with only competitive advantages. Maize and cassava still need to be developed in Gunungkidul Regency due to government programs at the central level that direct maize development and both commodities have higher competitiveness than the same commodities in other regions.
Meanwhile, soybean is known to have an LQ value of less than one and a negative SSA value. These results indicate that soybeans still do not have both comparative and competitive advantages. Thus, soybeans are still relatively underdeveloped compared to other food crop commodities. This is because the overall contribution of the production value of soybean commodities in Gunungkidul Regency to DIY Province is still relatively lower when compared to upland rice, corn, peanuts, and cassava. The fact that occurred in Gunungkidul Regency is the decline in soybean production starting from 2018 along with the decline in the price of the commodity.

Table 2.2 Klassen Typology Results

	yb<yp	yb>yp
	Developed	Prime
rb>rp	Cassava Corn	Upland rice Peanuts
	Under developed	Potential
rb<rp	Soybean	-

Source: Secondary Data Analysis (2022).

Based on the results of the Klassen Typology analysis (Table 2.2), upland rice and peanuts are in quadrant I. Upland rice and peanuts are considered prime commodities. The growth rate of their production value is relatively faster than the same commodities at the provincial level. In addition, prime commodities are supported by relatively higher contributions. Therefore, upland rice and peanuts are among the most potential food crop commodities for further development in Gunungkidul Regency.

The economic contribution levels of upland rice and peanuts are also relatively high to the food crop subsector in Gunungkidul District. The contribution of production value of both commodities to the food crop subsector at the kabupaten level is relatively higher than at the provincial level. This needs to be considered in regional policy planning so that the potential of upland rice and groundnut commodities can support the development and growth of the economy in Gunungkidul Regency.

Meanwhile, maize and cassava fall into quadrant II. This indicates that maize and cassava are classified as developed commodities. The growth rate of production value of maize and cassava in Gunungkidul Regency is relatively faster than the growth rate of the same commodities at the DIY Province level. However, the contribution of maize and cassava to the district production value is relatively small compared to the contribution of the same commodities at the provincial level. This indicates that although the contribution of maize and cassava production value is relatively small, it can still be developed. The growth rates of maize and cassava are still relatively higher than those of the same commodities at the provincial level.

Meanwhile, soybeans are in quadrant IV. The growth rate of soybean production value in Gunungkidul Regency is relatively slower than the growth rate of the same commodity production value at the DIY Province level. Similarly, the contribution of soybean to the production value of the regency is relatively small compared to the contribution of the same commodity at the provincial level.

CONCLUSIONS AND SUGGESTIONS

Upland rice and peanuts have comparative and competitive competitiveness, while corn and cassava only have competitive competitiveness, while soybeans are still not competitive either comparatively or competitively in Gunungkidul Regency. Upland rice and peanuts are prime commodities with higher growth rates and production values than at the provincial level, cassava and corn are developing commodities that have faster growth rates of production values, but are not yet supported by their economic contributions, while soybeans are relatively underdeveloped with relatively lower growth rates and contributions than at the provincial level.

The local government of Gunungkidul Regency should support the further development of upland rice and groundnuts. The government needs to facilitate the export of upland rice and peanuts outside the region to generate income from outside the region and support the economy within the region. Meanwhile, corn, cassava, and soybeans also need to be developed. Maize and soybean are commodities that are directed in the Special Efforts for Rice, Corn and Soybean (UPSUS PAJALE) program at the national level. Cassava also has the potential to be developed because the quantity of cassava production in Gunungkidul Regency is relatively high. However, the producer price of the commodity is still relatively low, so the local government needs to set a reference producer price for cassava so that it can be competitive in the future.

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