



# The Roles of Agriculture, Forestry, and Fishery Sectors in the Economy of Banyumas Regency

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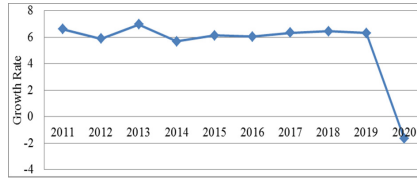
**Abstract.** Regional development is an effort to maximize resources to improve community welfare. Local governments must identify the leading sector to facilitate the formulation of appropriate policies to achieve development goals. This study aims to identify the contribution trend, growth rate trend, and factors influencing the roles of the agriculture, forestry, and fishery sectors in Banyumas. The study employs secondary time series data from 2011 to 2020 of gross regional domestic income (GRDI) contribution in the agriculture, forestry, and fishery sectors and GRDI at constant 2010 prices. This analysis results show that time variable influences the contribution and growth rate of this sectors. Its value is expected to decrease each year. Agriculture, forestry, and fishery are classified as non-basic sectors with stars. Based on the Klassen typology analysis, these sectors are included in the category of potential sectors. According to the shift-share analysis, the roles of these sectors are influenced by the growth of national and regional shares. The government must develop priority sector development policies based on sector classification results analysis to maximize regional potential. It is critical to increase the motivation of the young generation to work in agriculture.

**Keywords:** Non-basis · Klassen typology · Economy · Agriculture

## 1 Introduction

Economic development is an effort to improve the quality of life of the community so that it is more prosperous. Development planning can be accomplished by analyzing the potential of the regional existing economic sectors, allowing the government to determine the best policy for implementing the development of the priority/potential sector. Potential sector development, based on [1, 2], serves as a driver of economic development by optimizing the value of the regional economic growth rate as well as its contribution of total Gross Regional Domestic Product (GRDP).

One of the regencies actively developing its regional economy is Banyumas. According to data from [3], the average growth rate of GRDP at 2010 constant prices in Banyumas Regency from 2011 to 2020 was 5.476% (Fig. 1). A positive growth rate value



**Fig. 1.** Growth Rate of the GRDP at 2010 constant prices in Banyumas Regency. Source: Statistics Banyumas Regency, 2022

indicates that the area is capable of increasing the amount of GRDP and the rate of economic growth by utilizing the existing potential [4].

The trend of the growth rate value shows a decrease. According to [5], the value of the declining growth rate indicates that the area’s economic performance is poor. Household consumption, investment, government spending, as well as exports, and imports have a significant effect on the economic growth of Banyumas Regency [6]. Household consumption and investment have a significant influence on economic growth through their effect on total expenditure [7]. Spending more than income results in a financial deficit and a slowing of growth. Higher-valued imports will be affected on economic growth is adversely affected because they reduce domestic demand, causing national income to fall; this is inversely proportional to exports, which have a positive impact [8].

The growth rate of the GRDP at 2010 constant prices in Banyumas Regency in 2013 was 6.97%, the highest value during the years of analysis, while the lowest value in 2020 was -1.65%. According to data [3] the high growth rate is the result of an increase in the growth rate of the country’s economic sectors. The Covid-19 pandemic caused sharp slump in the GRDP growth rate in 2020. The loss of employment during the pandemic reduced people’s income, causing economic growth to fall and the economic sector to deteriorate [3].

The development of the economic sectors in Banyumas Regency influences its economic growth. The economic sector in Banyumas Regency consists of 17 business sectors [9]. Agriculture, forestry, and fishery contribute to the economic growth of the regency. This is demonstrated by the agriculture, forestry, and fishery sectors growing at a rate of 1.51% in 2020. This industry has saved the economy during the Covid-19 pandemic.

Agriculture, forestry, and fishery sectors require comprehensive policies from the Banyumas government to continue to develop. For policy consideration, an examination of the sector’s role is required. According to the background description, the purpose of this research is to analyze the contribution trend, the growth rate trend, classification, and the factors that influence the roles of the agriculture, forestry, and fishery sectors in Banyumas Regency. This is used by local governments to determine their economic development policies.

## 2 Research Method

Descriptive analysis was used as the primary method in this study. Secondary data, including data on the growth rate of GRDP at 2010 constant prices, the contribution of GRDP at 2010 constant prices, and the GRDP at 2010 constant prices on business fields

from 2011 to 2020 of Banyumas Regency, were utilized. The contribution and growth rate of the agricultural, forestry, and fishery sectors were estimated using linear trend analysis with the following equation:

$$Y = \beta_0 + \beta_1 T + \mu \quad (1)$$

where

$Y$  = sector growth rate/sector contribution.

$\beta_0$  = constant.

$\beta_1$  = regression coefficient.

$T$  = time (2011–2020).

$\mu$  = error factor.

The results of the analysis using Location Quotient,  $\Delta LQ$ , shift-share, and class typology show the classification of the agriculture, forestry, and fishery sectors in Banyumas Regency. LQ is a basic analysis [10], that can be used in the research in development economics to determine whether the economic sector in a particular region is included in the basic category if the LQ is greater than 1 or less than 1 [11]. The LQ calculation formula in this study was as follows:

The Approach of Value Added

$$\text{Revenue LQ} = \frac{V_i/V_t}{Y_i/Y_t} \quad (2)$$

where

$V_i$  = GRDP of Banyumas Regency's agriculture, forestry, and fishery sectors.

$V_t$  = the total GRDP of Banyumas Regency.

$Y_i$  = GRDP of Central Java Province's agricultural, forestry, and fishery sectors.

$Y_t$  = the total GRDP of Central Java Province.

$\Delta LQ$  analysis is a subset of LQ analysis.  $\Delta LQ$  is used to view the sector's criteria [12].  $\Delta LQ$  was calculated using the following formula:

$$\% \Delta LQ = \frac{LQ_{t+1} - LQ_t}{LQ_t} \times 100\% \quad (3)$$

where

$\% \Delta LQ$  = Percentage of change in LQ value.

$LQ_{t+1}$  = LQ value in the following year

$LQ_t$  = LQ value in year  $t$

Agriculture, forestry, and fishery sectors and sub-sectors were classified into four categories based on the combination of LQ and  $\Delta LQ$  values (Table 1).

The shift-share analysis of changes in GRDP at the beginning and end of the analysis years was used for identifying economic sectors affecting the changes in the amount of GRDP based on the growth components. The shift-share analysis calculation was completed in the following stages:

a. Calculating the GRDP rate using the formulas:

1) Calculating the GRDP growth of sector  $i$  of Banyumas

$$gir = (Eir^{(t+1)} - Eir^t) / Eir^t$$

2) Calculating the GRDP growth of sector  $i$  of Central Java

$$gin = (Ein^{(t+1)} - Ein^t) / Ein^t$$

3) Calculating the GRDP growth of Central Java

$$gn = (En^{(t+1)} - En^t) / En^t$$

where  $Eir^t$  = the total GRDP in the initial year of sector  $i$  of Banyumas

$Eir^{(t+1)}$  = the total GRDP in the end year of sector  $i$  of Banyumas

$Ein^t$  = the total GRDP in the initial year of sector  $i$  of Central Java

$Ein^{(t+1)}$  = the total GRDP in the end year of sector  $i$  of Central Java

$En^t$  = the total GRDP in the initial year of Central Java

$En^{(t+1)}$  = the total GRDP in the end year of Central Java

b. Calculating the national shift share

$$NS = Eir^t gn$$

c. Calculating the industrial mix

$$IM = Eir^t (gin - gn)$$

d. Calculating the regional share

$$RS = Eir^t (gir - gn)$$

e. Calculating the total shift-share

$$TS = Eir^t gn + Eir^t (gin - gn) + Eir^t (gir - gn)$$

Klassen typology was also used for agriculture, forestry, and fishery classification analysis (Table 2). The klassen typology was identified by comparing the economic growth of Banyumas and the economic growth of Central Java, as well as comparing the growth of GDRP per capita in Banyumas district to the growth of GDRP per capita in Central Java.

**Table 1.** Sector classifications by LQ and  $\Delta LQ$ 

	Positive % $\Delta LQ$	Negative % $\Delta LQ$
LQ > 1	Star	Mature
LQ < 1	Emerging	Transforming

Source: [13]

**Table 2.** Categories of Klassen Typology

GRDP per capita (y) GRDP growth rate (r)	$y_i > y$	$y_i < y$
$r_i > r$	Quadrant I (advanced & fast-growing)	Quadrant II (advanced & depressed)
$r_i < r$	Quadrant III (fast-growing)	Quadrant IV (left behind)

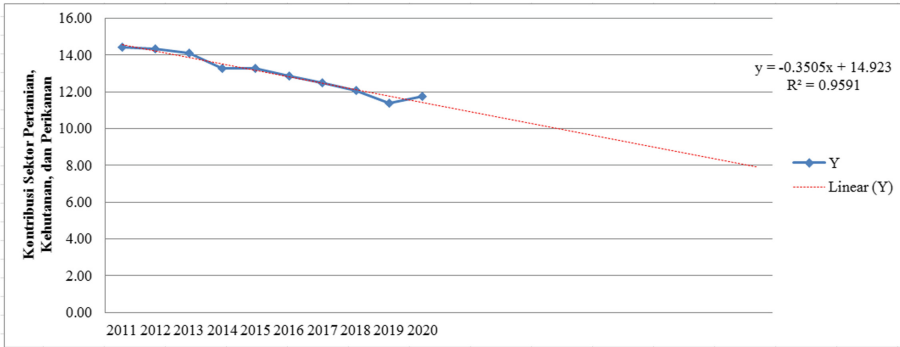
Source: [14]

### 3 Results and Discussion

#### 3.1 Trends in Agriculture, Forestry, and Fishery Contribution in Banyumas Regency

The GRDP value reflects the condition of a region's economic development. A region's GRDP value is made up of GRDP from the economic sectors that contribute to it. Contribution is an involvement with the goal of helping from any loss [15]. Agriculture, forestry, and fishery are other sectors that contribute to the economic development of Banyumas Regency. During the year of analysis (2011–2020), the GRDP contribution of the sectors tends to decline (Fig. 2).

The contribution value of this sector tends to decrease. This is in line with the results of the research [16, 17] that the shift in economic structure from traditional agriculture to industry and services has an impact on decreasing the contribution of agriculture. The study on the contribution of the agricultural sector in West Java Province conducted by [18] also showed uniform results, where the contribution of the agricultural sector during the analysis years (2002 to 2013) experienced a significant decline influenced by the advancement of the manufacturing sector. This sector experienced the largest decline in its contribution of 0.83% in 2014. According to the Statistics of Banyumas Regency, this decline occurred due to natural conditions. During the years of analysis, the contribution of the agriculture, forestry, and fishery sectors was constantly above 10% of the GRDP of the regency, while 90% came from other sectors. In 2020, the contribution of these sectors to the GRDP increased by 0.37%. This condition confirms that this sector can be used as the foundation sector for Banyumas Regency in Covid-19 pandemic.



**Fig. 2.** Trends in Agriculture, Forestry, and Fishery Contribution in Banyumas Regency. Source: Secondary Data Analysis, 2022

**Table 3.** Results of the statistical test on contribution trend

Variable		Coefficient	t	Sig.
Constant		14.924	94.114	0.00
X		-0.351	-13.717	0.00
R-squared	0.959			

Source: Secondary Data Analysis, 2022

Statistical tests were carried out to examine the effect of the time variable on the GDRP contribution value in the agriculture, forestry, and fishery sectors (Table 3). The results of the tests show that time influences the contribution of the agriculture, forestry, and fishery sectors in Banyumas Regency.

As presented in Table 3, the  $R^2$  is 0.959, indicating that the time variable has a 95.9% effect on the contribution of the agriculture, forestry, and fishery sectors. The general model of the contribution trend is  $Y = 14.923 - 0.3505X$ , where Y is the contribution of the agriculture, forestry, and fishery sector and X is the time variable. This indicates the contribution of the three sectors in Banyumas Regency is predicted to decrease by 0.351% per year in the future.

This decline is explained in the research by [19] over the last 50 years, which reveals a decrease in the relative contribution of agriculture to GRDP due to economic sector transformation. According to [20, 21], the impact of agriculture is also influenced by a decrease in the size of agricultural land ownership, unequal access to modern technology, and the provision of limited agricultural facilities.

### 3.2 Trends in Agriculture, Forestry, and Fishery Growth Rate in Banyumas Regency

Development success as the rate of economic growth in a certain area over a certain period [22]. Economic growth demonstrates how a region employs available resources

to meet production capacity [23]. The growth rate can also be used to guide future development policies. The data of GRDP at a constant price are used to calculate the growth rate. Figure 3 shows that during the years of analysis, the value of the growth rate of the agriculture, forestry, and fishery sectors in Banyumas Regency fluctuated similarly to the growth rate of the agricultural sector in Trenggalek [24]. According to [25], the limiting factors are the harvest price inequalities and ineffective agricultural product marketing. The sector's growth rate in 2013 was 6.49% (the highest value). [26] recorded that in 2013, agricultural land use was greater than non-agricultural land use, making its value increase. This is consistent with [27], which found that land area, agricultural capital such as facilities and infrastructure, and labor are those affecting the growth rate value because those factors are related to agricultural productivity; if the value increases, the growth rate will also rise [28]. This is in line with the research [29] in Banyumas Regency, which reveals that the rate of agricultural growth is influenced by the growing population, which leads to an increase in demand for food consumption and a decrease in agricultural land, reducing agricultural production and employment.

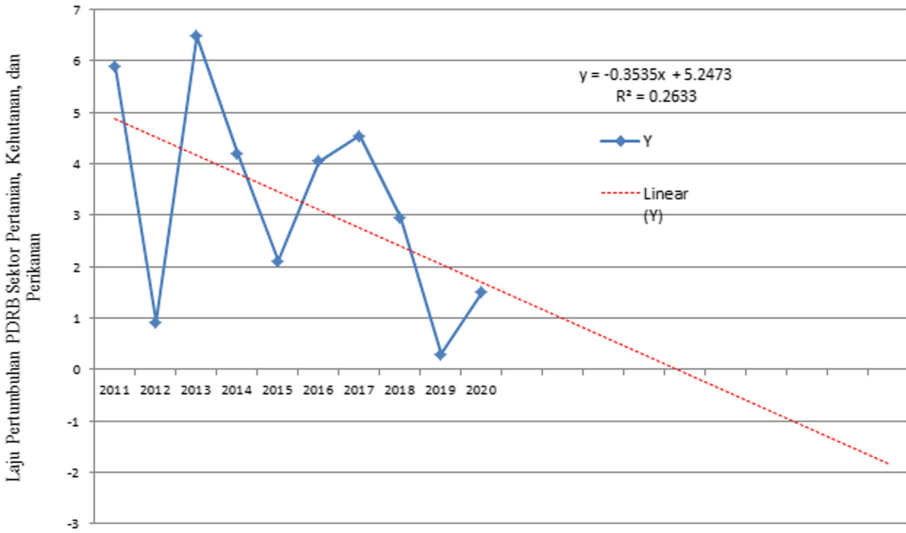
The increasing growth rate during the pandemic has made agriculture, forestry, and fishery sectors support the economy, although the size has decreased in the previous year [30]. Table 4 presents the effect of the time variable on the growth rate of the agriculture, forestry, and fishery sectors.

The  $R^2$  is 0,263, denoting that the time variable has not affect significantly on the growth rate of the agriculture, forestry, and fishery sectors in Banyumas Regency. The model of the linear trend of the growth rate of the three sectors is  $Y = 5.247 - 0.3535X$ , where  $X$  is the time variable, and  $Y$  is the growth rate. The growth rate value in the future is projected to decrease by 0.354 each year. The lack of manpower, particularly the younger generation, who considers agriculture unprofitable and prefers to work in the industrial sector, will hamper agricultural growth [31]. The decline in the value of the growth rate of the agricultural sector due to land conversion into housing development and the influence of weather/climate changes [32].

### 3.3 Classification of Agriculture, Forestry, and Fishery in Banyumas Regency

Regional governments have the authority to manage regional potential at an optimal level [33], allowing them to achieve the welfare of the local community. Agriculture, forestry, and fishery sectors are classified to identify potential sectors and assist local governments in formulating appropriate policies for their development. The classification of the agriculture, forestry, and fishery sectors using Location Quotient,  $\Delta LQ$ , and Klassen typology has produced the following results.

The LQ value of agriculture, forestry, and fishery sectors and their sub-sectors was calculated using the data on the GRDP in 2010 constant prices from 2011 to 2020, as detailed in Table 5. The agriculture, forestry, and fishery sectors in Banyumas are classified as non-basic because the LQ value was less than 1 each year, similar to the LQ value of the agriculture sector in Padang [34]. According to [35], the non-basic sector's contribution is less dominant when compared to similar sectors in the reference area.



**Fig. 3.** Trends in Agriculture, Forestry, and Fishery Growth Rate in Banyumas Regency. Source: Secondary Data Analysis, 2022

**Table 4.** Results of the statistical test on growth rate

Variable		Coefficient	T	Sig.
Constant		5.247	94.114	0.004
X		-0.354	-13.717	0.129
R-squared	0.263			

Source: Secondary Data Analysis, 2022

**3.3.1 Location Quotient and ΔLQ Analysis**

The agriculture, forestry, and fishery sectors are supported by their sub-sectors, which are as follows: (1) agriculture, livestock, hunting, and agricultural services, (2) forestry and logging, and (3) fishery. The findings of this study are consistent with the findings of [36], which have highlighted agriculture, livestock, hunting, and agricultural services as the basis for their research. During the years of analysis, these sub-sectors were supported by the plantation and animal husbandry commodities from the basic category.

ΔLQ is an advanced analysis of LQ that divides a sector into several categories such as star, mature, emerging and transforming (Table 6). Agriculture, livestock, hunting, and agricultural services are said to be the only basic sub-sectors in the future, along with plantation and livestock commodities, and are included in the star category based on the location quotient value. This signifies that agriculture, animal husbandry, hunting and agricultural services, plantation crops, as well as livestock commodities are more concentrated in Banyumas Regency and will become more concentrated in the future than in Central Java Province. These sub-sectors are highly concentrated because they



**Table 5.** Location quotient of agriculture, forestry, and fishery sectors of Banyumas Regency in 2011–2020

Business Field	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
1	0.91	0.93	0.94	0.94	0.94	0.94	0.94	0.93	0.92	0.90
2	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
A	0.91	0.92	0.87	0.87	0.87	0.86	0.83	0.84	0.80	0.82
B	0.44	0.40	0.39	0.38	0.38	0.38	0.38	0.39	0.39	0.39
C	1.98	1.94	1.92	1.95	2.01	2.02	2.01	1.99	2.00	2.05
D	1.65	1.61	1.68	1.64	1.61	1.61	1.63	1.61	1.63	1.68
E	1.04	1.02	1.00	0.98	0.95	0.93	0.92	0.91	0.92	0.91
3	0.75	0.72	0.71	0.70	0.72	0.71	0.70	0.69	0.70	0.71
4	0.87	0.84	0.86	0.83	0.82	0.81	0.80	0.80	0.79	0.79

Notes:

1 = agriculture, forestry, and fishery sectors

2 = agriculture, livestock, hunting, and agricultural service sub-sectors

A = food crops

B = horticultural crops

C = plantation crops

D = animal husbandry

E = agricultural and hunting services

3 = forestry and logging sub-sectors

4 = fishery sub-sector

are supported by commodities, particularly plantation crops, including coconut, and superior livestock, such as goats, dairy cattle, and beef cattle in the regency. Agriculture, forestry, and fishery sectors, food crop commodities, horticultural crops, agricultural and hunting services, forestry, and logging sub-sectors, and fishery sub-sector are classified as non-basic and transformative (Table 6).

According to [37], the food crops, horticulture, and fishery sub-sectors fall into the basic category in Deli Serdang Regency. This is supported by the condition of natural resources, as reported by [38] that an area close to where resources grow has a positive impact on the sector's development. This signifies that transforming sectors and sub-sectors are currently less concentrated in Banyumas Regency and will be less concentrated than other similar sectors/sub-sectors in Central Java in the future. The lack of concentration is due to the loss of cultivation activities, particularly rice commodities for food crops. The agricultural services and hunting commodities are less concentrated due to the sluggish market and the Covid-19 pandemic for 2020, while the forestry and logging sub-sectors are affected by relatively little land ownership.

### 3.3.2 Klassen Typology Analysis

Klassen typology analysis according to [39], seeks to see a description of a region's sectoral growth structure. Table 7 presents the Klassen typology matrix. The agricultural,

**Table 6.** Classification of agriculture, forestry, and fishery sectors/sub-sectors in Banyumas Regency

Sectors/Sub-sectors	Average LQ	$\Delta$ LQ	Classification
Agriculture, forestry, and fishery sectors	0.9	-0.02	Transforming
Agriculture, forestry, and fishery sub-sectors	1.01	0.00	Star
a. Food crops	0.82	-0.09	Transforming
b. Horticultural crops	0.39	-0.10	Transforming
c. Plantation crops	2.05	0.04	Star
d. Animal husbandry	1.68	0.02	Star
e. Agricultural and hunting services	0.91	-0.12	Transforming
Forestry and logging sub-sectors	0.71	-0.06	Transforming
Fishery sub-sector	0.79	-0.10	Transforming

forestry, and fishery sectors/sub-sectors are divided into four categories by Klassen typology analysis: prime sector, developing sector, potential sector, and underdeveloped sector.

The results of the classification are as follows.

#### a. Prime Sectors

The prime sectors include two sub-sectors (agriculture, livestock, hunting, and agricultural services; and fishery) and three commodities (horticultural crops, plantation crops, and livestock). The growth rate value of agriculture, forestry, and fishery sectors is supported by the sub-sectors. Moreover, the two sub-sectors and three commodities have more advantages over other sub-sectors and commodities because they have relatively fast growth rates and high contributions to the GRDP of Banyumas Regency. The research by [40] reported contradictory results that none of the agriculture sub-sectors of Cilacap Regency are in the prime category. The two sub-sectors and three commodities listed are among Banyumas Regency's strengths and competitiveness. According to [41], a sector is classified as a prime sector because it plays an important role in economic development and must be maintained so that it does not shift to a potential sector. The prime sector proves the government's efforts in managing a region's potential are effective, and these efforts must be increased or at least maintained to ensure that growth does not slow. Banyumas has superior commodities such as durian and bananas, with bananas already having a Banana Agribusiness Sub Terminal in Ajibarang Sub-district. Plantation crops have superior commodities such as coconut, with the derivative products, like crystal sugar, exported to Singapore, America, and Europe. The main commodities of livestock in Banyumas are goats, dairy cattle, and beef cattle. According to the Banyumas Fisheries and Animal Husbandry Service, livestock can be a prime sector because the area is a center for superior breeds for dairy cows, and the farmers receive

assistance from the Fisheries and Livestock Service to establish partnerships for marketing their products, such as selling milk to PT Sari Husada in Yogyakarta. The superior commodity in the fishery sector is carp. Further, fish farm fostered villages, including Beji, Singasari, and Karanglewas, are established as the centers of fish cultivation to yield superior products.

#### b. Developing Sectors

The developing sector is an economic sector with fast growth but has a small contribution to GRDP. In this study, there is one sub-sector classified as a developing sector, namely agricultural services, and hunting, suggesting that this sub-sector has fewer advantages compared to other sectors. This is contrary to the results of research by [42] that the agricultural and hunting service sub-sector is classified as an advanced and fast-growing sector. The developing sector can be upgraded into a potential sector by improving the performance of an economic sector. Some of the efforts to develop agricultural services are providing agricultural equipment, such as hand tractors, tractors, and transverters, as well as educating about post-harvesting agricultural product management, including clearing, storage, and packaging. Moreover, in the field of hunting, conservation is one of the strategies to protect wild animal populations, such as Javanese eagles and leopards.

#### c. Potential Sectors

The potential sector is an economic sector with a slow growth rate, but its contribution is larger than that of the GRDP. The potential sectors of Banyumas include one sector (agricultural, forestry, and fishery) and one commodity (food crops). The potential commodity of food crops is rice, and in relation to this, the local government encourages healthy rice cultivation and facilitates organic certification management to produce rice at competitive price. Research by [43] reported a consistent result, that the food crop sub-sector is included in the potential category in Sleman Regency. The growth of the sector and commodity needs to be paid more attention to maintain its position in the potential sector.

#### d. Underdeveloped Sectors

The underdeveloped sector is the economic sector with slow growth and a small contribution to GRDP. The underdeveloped sector in this regency consists of one sub-sector (forestry and logging). This is in contrast to research by [44] where there is not a single sector/sub-sector that falls into the underdeveloped category in Parigi Moutong Regency. Some efforts can be made to improve the sub-sector into a developing sector, such as by optimizing the potential of forestry and logging by planting albasia, teak, and mahogany trees for critical land conservation; making use of wood for house construction (albasia wood for boards, doors, and battens; teak and mahogany wood for furniture and boards); cultivating honeybees for health and facial/skin beauty supplements; and maximizing the use of productive workers.

**Table 7.** Klassen typology matrix of agriculture, forestry, and fishery sectors/sub-sectors in Banyumas Regency

Average sectoral contribution	$Y_{\text{sector}} \geq YPDRB$	$Y_{\text{sector}} < YPDRB$
Average sectoral growth rate		
$r_{\text{sector}} \geq rGRDP$	Prime sectors:	Developing sectors:
	Agriculture, farming, hunting, and agricultural services	e. Agricultural and hunting services
	b. Horticultural crops	
	c. Plantation crops	
	d. Animal husbandry	
	Fishery	
$r_{\text{sector}} < rPDRB$	Potential sectors:	Underdeveloped sectors:
	Agriculture, forestry, and fishery	Forestry and logging
	a. Food crops	

**Table 8.** Results of shift-share analysis of agriculture, forestry, and fishery sectors in Banyumas Regency (Million Rupiahs)

Sector/Sub-sector	NS	IM	RS	TS
Agriculture, forestry, and fishery sectors	1478887.70	140392.16	424565.00	2043844.86
Agriculture, forestry, and fishery sub-sectors	706443.62	-9726.21	286283.48	983000.89
a. Food crops	255705.60	-213086.80	-34634.39	7984.41
b. Horticultural crops	90812.45	12359.41	-22051.42	81120.44
c. Plantation crops	141076.89	79264.54	91233.32	311574.75
d. Animal husbandry	204756.80	235582.51	117982.42	558321.73
e. Agricultural and hunting services	14091.88	15155.40	-5247.72	23999.56
Forestry and logging sub-sectors	23268.81	-23603.61	954.63	619.84
Fishery sub-sector	42731.65	44446.93	-9955.34	77223.24

### 3.4 Factors Affecting the Roles of the Agriculture, Forestry, and Fishery Sectors in Banyumas

According to [45] the results of the shift-share analysis (SSA) show the factors influencing the growth of the agriculture, forestry, and fishery sectors and their sub-sectors. As

presented in Table 8, three components, including national growth (NS), industry mix (IM), and regional share growth (RS), were analyzed in this study.

Positive NS values in the agriculture, forestry, and fishery sectors suggest that these sectors are growing more rapidly than the other sectors in Central Java. The negative IM value signifies that the growth of agriculture, forestry, and fishery sectors between 2011 and 2020 is low. According to the Banyumas Agriculture and Food Security Service, this can happen due to the shift from agricultural areas to tourism areas, such as the case in Baturaden Sub-district. The IM component describes the size of differential growth attributed to the sector composition of the analyzed area than the wider areas [46]. The RS value of agriculture, forestry, and fishery sectors is also positive, suggesting that these sectors are competitive during the years of analysis.

Research by [47] gives the opposite result where the agricultural sector in Sukoharjo Regency has a negative RS value, making this sector uncompetitive. The TS value of the agriculture, forestry, and fishery sectors in Banyumas Regency is 2,043,844.86, showing that from 2011 to 2020, the added value of GRDP in these sectors reached 2,043,844.86 million rupiahs. Positive TS value in this sector is also shown in the research by [48] in their study in Pekalongan. National economic growth (NS) and other factors originating from the region, such as government policies, natural resources, and population (RS), affect the contribution of the agricultural, forestry, and fishery sectors.

## 4 Conclusion

Agriculture, forestry, and fishery are non-basic sectors in Banyumas, which means that they can only meet the needs of the area. The sectors are influenced by the sub-sectors of agriculture, animal husbandry, hunting, and agricultural services, particularly plantation crops, such as coconut, which becomes an exported commodity, and livestock as superior dairy cattle. The potential of the area has received assistance in the production process from the relevant government agency. Further, the trend of declining contribution and growth in the agriculture, forestry, and fishery sectors require serious attention from the government.

## 5 Suggestion

Based on the discussion of results and conclusions, we offer the following recommendations. The agriculture, forestry, and fishery sectors should be given more attention for development because the contribution and growth of the three sectors are predicted to be decreasing each year in the future. The need for food also the market is very large and will always grow. Innovation is needed that can optimize the efficiency of the production process as well as the quality of food ingredients that are affordable, while at the same time improving the carrying capacity of the environment, as well as the welfare of farmers and their supporting sectors. The government can formulate some relevant policies, such as developing potential sectors/sub-sectors that become the basis and excellence of the sub-sectors of agriculture, animal husbandry, hunting, and agricultural services, such as providing adequate infrastructure, ensuring land availability, and educating the younger generation and giving them the motivation to work in the field of agriculture.

## References

1. Novita, D, & Hartono, G. (2017). Penentuan Sektor Unggulan Dalam Perekonomian Wilayah Kabupaten Langkat Pendekatan Sektor Pembentuk PDRB. *Jurnal Agrium* 21(1): 49-54.
2. Novita, Elfryanty. (2021). Kajian Ekonomi Subsektor Peternakan di Kawasan Sulampua (Data 2014-2019). *Jurnal Ekonomi Pertanian dan Agribisnis (JEPA)* 5(4): 998-1011.
3. Badan Pusat Statistik. (2022). Laju Pertumbuhan PDRB ADHK 2010 Kabupaten Banyumas. <https://banyumaskab.bps.go.id/indicator/52/58/4/laju-pertumbuhan-pdrb-kabupaten-banyumas-atas-dasar-harga-konstan-2010-menurut-lapangan-usaha.html>.
4. Erawati, N.K., & I.N.M. Yasa. (2011). Analisis Pola Pertumbuhan Ekonomi Dan Sektor Potensial Kabupaten Klungkung. *Jurnal Ekonomi*. h 1–21.
5. Kusumawati, L., & I.Gusti, B.W. (2018). Pengaruh Pendapatan Daerah Terhadap Pertumbuhan Ekonomi di Wilayah Sarbagita Provinsi Bali. *E-Jurnal Manajemen Unud* 7(5): 2592-2620.
6. Wahyuni, A., & Marif, S. (2020). “Kajian Daya Tarik Investasi Berdasarkan Aspek Kewilayahan Di Kabupaten Banyumas”. Skripsi. Semarang: Universitas Diponegoro.
7. Alper, Ali Eren. (2018). *The Relationship of Economic Growth with Consumption, Investment, Unemployment Rates, Saving Rates and Portfolio Investments in The Developing Countries*. *Gaziantep University Journal of Social Sciences* 17(3): 980-987.
8. Hodijah, S, & Grace, P.A. (2021). Analisis Pengaruh Ekspor Dan Impor Terhadap Pertumbuhan Ekonomi Indonesia. *Jurnal Manajemen Terapan Dan Keuangan* 10(1): 53-62.
9. Wicaksana, A.Z. (2022). Analisis Peran Sektor Pertanian Dalam Mendukung Pemulihan Ekonomi Masa Pandemi Covid-19 Di Kota Batu. *Jurnal Ekonomi dan Bisnis* 10(1): 269-276.
10. BPS. (2021). Banyumas Dalam Angka 2021. Banyumas: BPS.
11. Riptanti, et al. (2018). *The Development Of Leading Food Commodities Based On Local Wisdom In Food-Insecure Area In East Nusa Tenggara Province, Indonesia*. *Applied Ecology and Environmental Research* 16(6): 7867-7882.
12. Jumiyan, K.R. (2018). Analisis Location Quotient Dalam Penentuan Sektor Basis Dan Non-Basis di Kabupaten Gorontalo. *Gorontalo Development Review* 1(1): 29-43.
13. Sambidi, Pramod. (2008). *Regional Industry Cluster Analysis for The Gulf Coast Economic Development District*. Texas: Department of Community and Environmental Planning Houston-Galveston Area Council.
14. Masbiran, V.U.K. (2019). Analisis Tipologi Daerah Berdasarkan Indikator Fundamental Ekonomi. *Jurnal Kebijakan Pembangunan* 14(2): 195-211.
15. Nugraheni, H.R., & Ninik Sudarwati. (2021). Kontribusi Pendidikan Dalam Pembangunan Ekonomi. *Jurnal Pendidikan Ekonomi* 6(1): 1-11.
16. Todaro, M.P., & Smith, S. (2012). *Economic Development* (11<sup>th</sup> Edition) ISBN: 978–0–13–801388–2.
17. Tajuddin., Muhammad, S., M.Natsir, dan Syamsir, N. (2020). Dampak Transformasi Struktur Ekonomi Indonesia Terhadap Mobilitas Pekerja Antar Sektor. *Jurnal Progres Ekonomi Pembangunan (JPEP)* 5(1): 83-94.
18. Widianingsih, W., & Irham, A.S. (2015). Kontribusi Sektor Pertanian Pada Pertumbuhan Ekonomi Di Provinsi Jawa Barat. *Jurnal Agro Ekonomi* 26(2): 206-218.
19. FAO. (2017). *The Future of Food and Agriculture; Trends and Challenges*. Food and Agriculture Organizations of United Nations, Roma.
20. Khoer, Miftahul. (2016). Ini Penyebab Sektor Pertanian Kurang Berkontribusi Untuk Ekonomi Jawa Barat. <https://ekonomi.bisnis.com/read/20160510/99/546013/ini-penyebab-sektor-pertanian-kurang-berkontribusi-untuk-ekonomi-jabar->.
21. Deshpande, T. (2017). State Agriculture in India.
22. Raqib, M., & Mohammad, R. (2018). *Determination of Leading Sector Sukoharjo Regency: Location Quotient and Shift-share Esteban Marquilles Approach*. *International Journal of Economics, Business and Accounting Research (IJEBAR)* 2(2): 107–118.

23. Costanza, R. (2014). Changes In the Global Value Of Ecosystem Services. *Global Environmental Change. Elseveir*.
24. Zein, E.T.N., & Agus, S. (2022). Identifikasi Faktor-faktor Penentu Pertumbuhan Ekonomi Kabupaten Trenggalek Tahun 2010–2022
25. A.Musrifin., & T. Buana. (2019). Faktor-faktor Penghambat Kesejahteraan Petani Padi Sawah Di Desa Sangia Makmur Kecamatan Kabaena Utara Kabupaten Bombana. *Jurnal Ilmiah Membangun Desa Dan Pertanian* 4(1): 7-11.
26. Badan Pusat Statistik. (2015). Luas Wilayah dan Penggunaan Lahan Kabupaten Banyumas. <https://banyumaskab.bps.go.id/statictable/2015/03/17/5/luas-wilayah-kabupaten-banyumas-menurut-penggunaan-tahun-2013.html>.
27. Mose, Naftaly Gisore. (2019). Estimates Factors Affecting Economic Growth in The Agricultural Sector In The Development Plan. *International Journal of Environmental Chemistry* 3(2): 59-64.
28. Adhitya, F.W., Djoni, H., & Agni, A.A. (2013). Determinan Produktivitas Lahan Pertanian Subsektor Tanaman Pangan Di Indonesia. *Jurnal Ekonomi Pembangunan* 14(1): 110-125.
29. Nugroho, A.S. (2019). “Analisis Faktor-faktor Yang Mempengaruhi Konversi Lahan Pertanian di Kecamatan Purwokerto Timur Kabupaten Banyumas”. Skripsi. Surakarta: Universitas Sebelas Maret Surakarta.
30. Dunggio, I., Sofyan, A., & Risma, N. (2021). Impact of Pandemic Covid-19 On Environmental and Agriculture in The Province Of Gorontalo. *Journal Ecosoloum* 10(1): 82-96.
31. Rozaki, Z. (2020). Decrease of Agricultural land and Industry Growth in Special Region of Yogyakarta. *IOP Conference Series: Earth and Environmental Science* 458.
32. Lismawati. (2021). “Analisis Kontribusi Sektor Pertanian Terhadap Perekonomian Di Kabupaten Barru”. Skripsi. Makassar: Universitas Muhammadiyah Makassar. [35] Nasution, Anwar. (2016). Government Decentralization Program in Indonesia. ADBI Working Paper 601. Tokyo: Asian Development Bank Institute.
33. Nasution, Anwar. (2016). Government Decentralization Program in Indonesia. ADBI Working Paper 601. Tokyo: Asian Development Bank Institute.
34. Rusli, A.N., Angelalia, R., & Andi, M.R. (2021). Analisis Sektor Basis dan Sektor Non-Basis Dalam Upaya Peningkatan Sarana dan Prasarana Perkotaan di Kota Padang. *Jurnal Sainstis* 21(01): 45-52.
35. Maspaitella, M.R., S.M. Parinussa., & K.I.Tewwernussa. (2021). Applying Location Quotient and Shift-Share Analysis in Determining Leading Sectors In Teluk Bintuni Regency. *Journal of Developing Economies* 6(1): 55-65.
36. Lumikis, F., Celcius, T., & Sherly, G.J. (2021). Kontribusi Sektor Pertanian Terhadap Perekonomian Kabupaten Bolaang Mongondow Utara. *Jurnal Agri-Sosioekonomi UNSRAT* 17(2): 343-350.
37. Sari, F.W.A.W., & Rita, H.B.B. (2019). Analisis Peranan Sektor Pertanian, Kehutanan, dan Perikanan pada Perekonomian Kabupaten Deli Serdang. *Jurnal Agroland* 26(3): 198-211.
38. Rizani, A. (2017). Analisis Potensi Ekonomi di Sektor dan Subsektor Pertanian, Kehutanan, dan Perikanan Kabupaten Jember. *Jurnal Ekonomi Pembangunan* 15(2): 137-156.
39. Sjafrizal. (2012). *Ekonomi Wilayah dan Perkotaan*. Jakarta: Rajawali Pers.
40. Agustono. (2013). Analisis Sektor Pertanian Ditinjau Dari Peran Terhadap Pertumbuhan Dan Stabilitas Produk Domestik Regional Bruto Di Provinsi Jawa Tengah. *Jurnal SEPA* 9(2): 283-296.
41. Uchyani, R., Endang, S.R., & Nuning, S. (2011). Identifikasi Sektor Pertanian Di Kabupaten Boyolali Dengan Pendekatan Tipologi Klassen. *Caraka Tani XVII*(1): 8-13.
42. Puradireja, R.H., & Achmad, F. (2021). Peran Subsektor Peternakan Terhadap Sektor Pertanian Pada Perekonomian Wilayah Provinsi Lampung. *Jurnal Pemikiran Masyarakat Ilmiah Berwawasan Agribisnis* 7(2): 1161-1173.

43. Lubis, W.W., Listiyani., & Danang, M. (2018). Analisis Tipologi Dan Sektor Unggulan Pertanian Kabupaten Sleman. *Jurnal MASEPI* 3(2): 1-13.
44. Kalaba, Y., Laapo, A., Program, M., Magister, S., Pascasarjana, A., Tadulako, U., Tadulako, U. (2018). Penentuan Prioritas Pembangunan Sub Sektor Pertanian Terhadap Sektor Pertanian Di Kabupaten Parigi Moutong. *Jurnal Agroland* 25(April): 30-40.
45. Ridlo, A.R., & Dwi, S. (2018). Analisis Sektor Pertanian, Kehutanan, dan Perikanan Terhadap PDRB Di Kabupaten Lamongan. *Jurnal Ilmu Ekonomi* 2(1): 14-25.
46. Sirakaya, E., Muzaffer, U., & Lorin, T. (2015). Measuring Tourism Performance Using a Shift-share Analysis: The Case South Carolina. *Journal of Travel Research*. h 55–61.
47. Safira, E., Sri, M., & Wiwit, R. (2017). Peranan Sektor Pertanian Dalam Penyerapan Tenaga Kerja Di Kabupaten Sukoharjo. *Jurnal AGRISTA* 5(1): 97-105.
48. Ajie, K.B., Darsono., & Heru, I. (2021). Analisis Peranan Sektor Pertanian, Kehutanan, Dan Perikanan Dalam Perekonomian Kota Pekalongan. *Jurnal AGRISTA* 9(3): 23-37.

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