POTENTIAL FOR A LEADING AGRICULTURAL SECTOR WEST JAVA PROVINCE

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ABSTRACT The agricultural sector plays an important role in the economy of West Java Province. Despite the contribution and potential of agricultural resources, this sector is starting to be replaced by the industrial sector. This is reflected in the GRDP by business field in West Java Province, the industrial sector is ranked first while agriculture is ranked fourth. This study aims to (i) Identify the basis between agricultural subsectors of West Java Province in the present and the future, (ii) Know the contribution of each agricultural subsector to the GRDP of West Java Province, (iii) Know the changes or shifts in the structure between agricultural subsectors in the West Java economy towards the national economy. The analytical tools used are LQ, DLQ, Klassen Typology, and Shift Share. The results showed (i) The current and future base subsector is food crops, the current and future non-base subsector is horticulture, the current non-base subsector and the future base is animal husbandry, the non-base subsector without change is plantation and fishery. (ii) The contribution of subsectors to West Java GRDP shows that the food crops and horticulture subsectors are developing sectors. Livestock is a potential sector, while plantations and fisheries are lagging sectors. (iii) Changes in subsector structure show that the livestock subsector has a competitive advantage and specialization, food crops and horticulture are specialized but not competitive, plantations and fisheries have no competitive advantage and specialization.

***Keywords**:* agriculture sector; dynamic location quotient; klassen typology; location quotient; shift share

1 Introduction

Regional economic development is an effort by local governments and communities to optimize the resources and potential of the region to achieve mutual prosperity [1]. Regional development needs proper planning and strategies because each region has different circumstances, characteristics, and potential. According to [2], the success of development can be assessed based on several factors, namely sustainable economic growth, balance of economic structure between sectors, and reduction of income inequality between population, regions, and economic sectors. The contribution of each sector to the Gross Regional Domestic Product (GRDP) is one indicator of the prosperity of a region. GRDP can be calculated at current prices or at constant prices. According to [3], current price GRDP refers to the value of goods and services calculated based on prices prevailing in that year. Meanwhile, constant price GRDP describes the value of goods and services calculated using prices in a particular year that is used as a reference year or base year. The agricultural sector has an important role in development, especially in regions such as West Java Province. However, along with industrialization, the agricultural sector began to be replaced by the industrial sector [4]. In 2020-2022, this sector ranks fourth in the structure of GRDP by business field in West Java Province [5]. In 2022, the agricultural sector ranked third in the percentage of working population by main employment in West Java Province [6]. This shows that the agricultural sector has a major contribution to economic development in West Java Province. A more detailed picture can be seen in Figure 1 showing that the percentage contribution of the agricultural sector in West Java Province in 2022. Food crops have the largest contribution with 57.40%, horticultural crops are ranked second with a contribution of 35%, livestock 5.92%, fisheries 1.57%, and plantations 0.10%. This data shows the important role of the agricultural sector in supporting the economy in West Java, with the dominance of food crops and horticulture significantly driving agricultural productivity in the area.

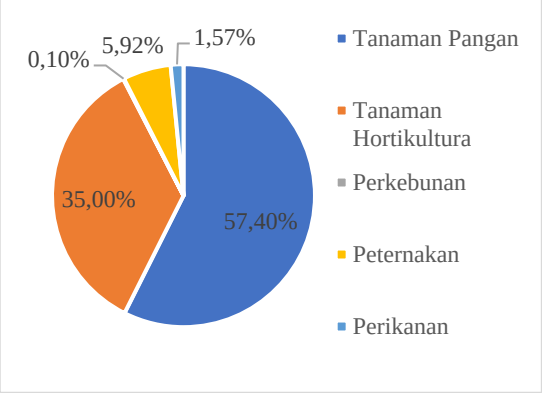

Figure 1. Contribution of agriculture sector to West Java Province in 2022
Source: [5] (data processed)

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In an effort to increase the contribution of the agricultural sector, the Ministry of Agriculture together with the International Fund for Agricultural Development (IFAD) supports the development of young farmers in West Java through the Youth Entrepreneurship and Employment Support Services (YESS) Program, which aims to improve the skills and quality of human resources in the agricultural sector so as to produce advanced, independent, and modern agriculture [7]. Sumedang Regency's participatory food estate program was developed by providing 10 hectares of land per village, which is expected to improve food security and agricultural productivity [8]. In addition, various National Strategic Projects (PSN) such as the construction of irrigation and dams also contribute significantly to boosting West Java's economy, by creating good water and encouraging food self-sufficiency [9].

Some previous studies that analyzed the potential of the leading agricultural sector in West Java Province according to [4], there was a downward trend in the contribution of agricultural sector GRDP in West Java Province between 2003 and 2012. This was caused by the faster development of the industrial sector, thus shifting the role of the agricultural sector. During this period, in the Location Quotient (LQ) analysis only the foodstuff and horticulture subsectors were basic, while in the Dynamic Location Quotient (DLQ) analysis only the forestry subsector became the basis in the future. Research conducted by [10], the analysis is limited to identifying the agricultural economic potential of each Regency/City in West Java. While in the research of [11], only used the LQ and Shift Share analysis methods.

Based on these problems, it is necessary to analyze LQ, DLQ, Klassen Typology, and Shift Share using time series data 2013-2022, to determine the basis between agricultural subsectors in the present and in the future, determine the contribution of each agricultural subsector to the GRDP of West Java Province and know the potential agricultural subsectors. As expressed by Martono in [12], by understanding its potential, an area has a greater chance of competing than an area that does not realize its potential. This opinion is reinforced by [13], who emphasized that agricultural potential will not contribute to the progress of the sector without the right strategy to optimize and develop existing potential. Therefore, this research is expected to be an important guiding material for the West Java Provincial government in prioritizing the development of agricultural potential, by looking at the efforts that have been made such as the YESS program in encouraging young farmers, participatory food estate development, and various national strategic projects that boost the economy of West Java.

2 Research Method

This research uses a quantitative descriptive approach, which is a method that combines numerical data collection techniques with the aim of describing the current condition of a symptom or event [14]. This approach aims to analyze the economic subsectors that are the basis in West Java Province, so that they can spur regional economic development and make these subsectors the flagship of West Java Province.

This research uses secondary data obtained from Badan Pusat Statistik (BPS) of West Java Province and Badan Pusat Statistik (BPS) National, which are based on constant prices. This study examines five agricultural subsectors in West Java Province including food crops, horticultural crops, plantation crops, livestock, and fisheries. The data were obtained from ADHK 2010 GDP, ADHK 2010 GDP growth rate, ADHK 2010 GRDP, and ADHK 2010 GRDP rate.

The analysis techniques used to identify bases, namely Location Quotient (LQ) and Dynamic Location Quotient (DLQ). Knowing the contribution of each subsector, namely Klassen Typology. Meanwhile, changes and shifts in structure were analyzed using Shift Share. Data processing in this study used software, namely Microsoft Excel.

2.1 Location Quotient (LQ)

Location quotient is a measure that compares the contribution of a sector in a region with the contribution of that sector nationally [15]. This analysis aims to identify the potential in a region, especially in determining sectors that are included in the basic and non-basic sectors [16]. Basically, this analysis compares the capabilities of the sector in the area under study with the same sector in a larger area [17]. The calculation of location quotient can be formulated as follows:

$$LQ = \frac{PDRB^{ip}/PDB^{in}}{\frac{PDRB^{p}}{PDB^{n}}} \quad [1]$$

Description:

LQ : Location quotient value
ip : GRDP of Sector i in Province (West Java)
p : Total GRDP in the Province (West Java)
in : GDP of Sector i in National
n : Total GDP in National

If the calculation shows LQ > 1, this indicates that the sector has a more dominant role in the region than nationally. Conversely, if the LQ < 1, it means that the sector has a smaller role in the region compared to the role of the sector nationally.

2.2 Dynamic Location Quotient (DLQ)

Dynamic location quotient (DLQ) analysis has the same principle as LQ, but with more emphasis on growth rate (Nurmayenti et al., 2023). DLQ introduces that each sector and GRDP is assumed to have an average growth rate per year over a certain period [17]. The calculation can be formulated as follows:

$$DLQ = \frac{[\frac{1+g_{ij}}{1+g_j}]^t}{[\frac{1+G_i}{1+G}]^t}$$ [2]

Description:
DLQ : Dynamic location quotient index
gij : Average growth rate of sector i in the province (West Java)
gj : Total average growth rate of sector i in the province (West Java)
Gi : Average growth rate of sector i in National
G : Total average growth rate of sector i in National
t : Difference between final and initial year (10 years)

If the calculation results show DLQ > 1, this indicates that the growth rate of sector i in the Provincial GRDP is faster than the growth rate of the same sector in the National GDP. Conversely, if DLQ < 1, it means that the growth of sector i in the Provincial GRDP is slower than the growth of sector i in the National GDP.

2.3 Klassen Typology

Klassen typology analysis helps understand the pattern and structure of regional economic sector growth. This analysis aims to determine and identify the category of agricultural subsectors in West Java Province [19]. The calculation can be formulated as follows:

$$r_{ik} = \frac{P_{ikt} - P_{iko}}{P_{iko}} \times 100\%$$ [3] $$r_i = \frac{P_{it} - P_{io}}{P_{io}} \times 100\%$$ [4]

$$y_{ik} = \frac{P_{ik}}{P_{tk}} \times 100\%$$ [5] $$y_i = \frac{P_i}{P_t} \times 100\%$$ [6]

Description:
rik : Growth rate of sector i in West Java Province
ri : Growth rate of sector i in National
yik : Contribution of sector i to production value of West Java Province
yi : Contribution of sector i to National production value
Pikt : Production value of sector i at West Java Province level in year t
Piko : Production value of sector i at West Java Province level at the beginning of the year
Pit : Production value of sector i at National level in year t
Pio : Production value of sector i at the national level at the beginning of the year
Pik : Total production value of sector i at West Java Province level
Ptk : Total production value of sector i at West Java Province level
Pi : Total production value of sector i at National level
Pt : Total production value of sector at National level

Regional economic classification can be analyzed using Klassen Typology. According to [20], the classification of regions is divided into four quadrants based on per capita income and economic growth rate, namely:

Table 1. Classification of economic sectors based on Klassen typology

Sectoral contribution / Growth rate	Above average contribution	Below average contribution
Growth above average	Quadrant I Mainstay Sector	Quadrant III Potential Sector
Below average growth	Quadrant II Developing Sector	Quadrant IV Lagging Sector

Source: [20]

2.4 Shift Share

Shift share analysis is an analytical technique in the regional economy used to identify the main factors that determine and influence economic growth in a region [20]. The shift share calculation is as follows:

$D_{ij} = N_{ij} + M_{ij} + C_{ij}$ [7]

Description:
Dij : Change in GRDP of sector/subsector i in West Java Province
Nij : Changes in GRDP of sector/subsector i in West Java Province influenced by economic growth at the national level
Mij : Change in GRDP of sector/subsector i in West Java Province is influenced by the growth of sector i at the national level
Cij : Changes in GRDP of sector/subsector i in West Java Province influenced by competitive advantage of sector i in West Java Province

3 Results and discussion

3.1 Agricultural Subsector Bases

The current and future bases of agricultural subsectors in West Java Province can be identified through LQ and DLQ analysis. LQ analysis is used to identify current base and non-base subsectors while DLQ analysis is used to identify future repositioning of base subsectors. Base subsectors are activities that produce goods and services that are exported outside the region. Meanwhile, non-base subsectors are activities that produce goods and services that are only able to meet the needs within the region (Ambardi & Prihawantoro (2002) in [21]). According to [22], a base sector is a sector that plays an important role in supporting overall economic development in a region.

Table 2. Results of LQ and DLQ analysis

Subsector	LQ	DLQ	Notation	Description
Food Crops	1,14	3,80	LQ > 1 and DLQ > 1	Subsector that is a base at present and still a base in the future
Horticultural Crops	1,03	0,08	LQ > 1 and DLQ < 1	Subsectors that are currently basic but will not be basic in the future
Plantation	0,17	$0{,}01 \times 10^{-2}$	LQ < 1 and DLQ < 1	Subsector has not been repositioned and remains a non-base subsector
Livestock	0,69	4,82	LQ < 1 and DLQ > 1	Subsector is not basic at present and becomes basic in the future
Fisheries	0,37	0,05	LQ < 1 and DLQ < 1	Subsector has not repositioned and remains a non-basic subsector

Source: [5] (data processed)

3.1.1 Food Crops

The food crop subsector of West Java Province currently and in the future shows its important role in the regional economy as a basic subsector (Table 2). The subsector has advantages in supporting food needs, both at the local and national levels. This is also supported by [23], that food crops in West Java Province are utilized for local needs and supplied to other regions due to their high economic value.

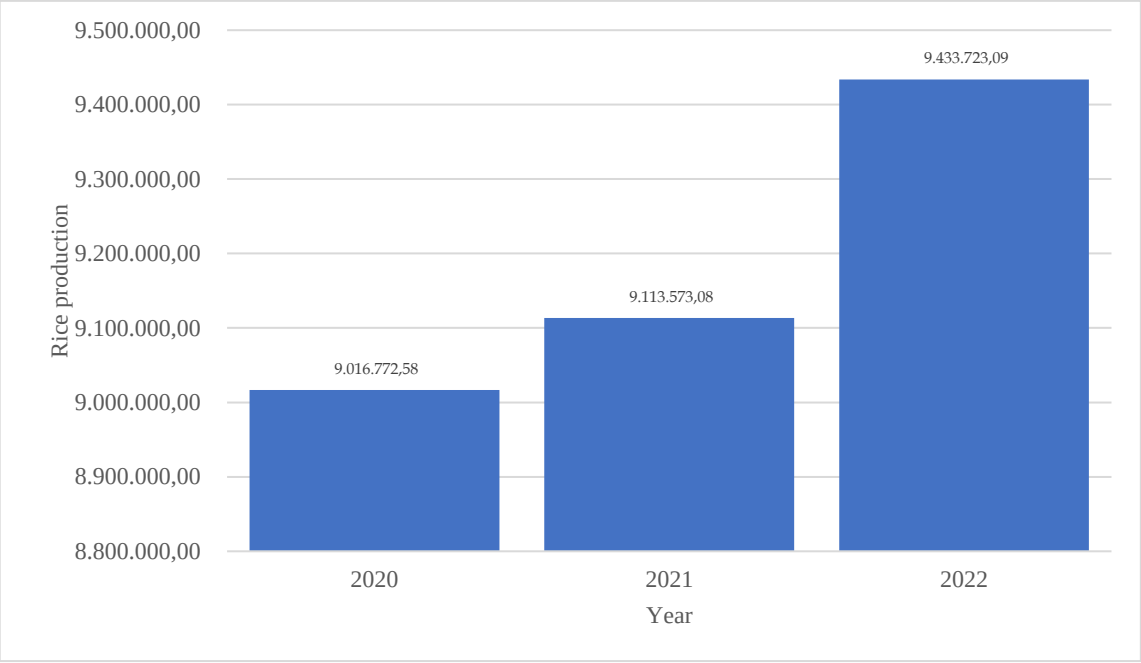

Figure 2. Rice production in West Java Province
Source: [24]

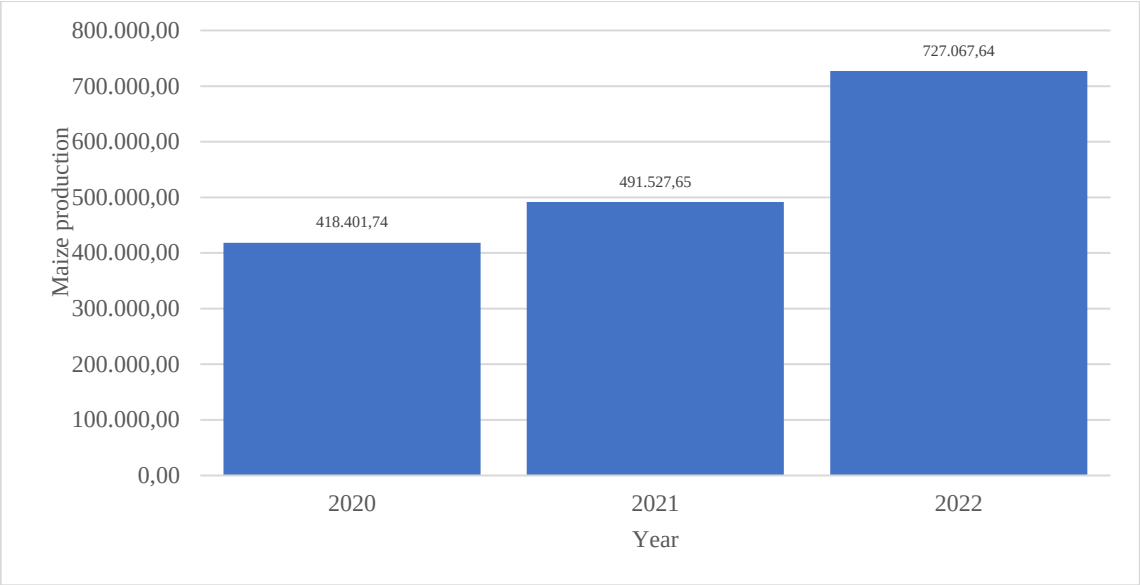

Figure 3. Maize production in West Java Province
Source: [25]

Based on Figures 2 and 3, rice and maize production in West Java Province shows an increasing trend in the last three years, reflecting positive growth in the food crop subsector. One of the factors supporting this increase is the implementation of the Food Estate Program, which began in 2023 with the aim of boosting national rice and maize production. The program provides various forms of assistance, including seeds, fertilizers, and agricultural production facilities, which are used to increase food crop productivity [8]. With policy support and optimization of agricultural resources, the food crop subsector in West Java has the potential to grow further in meeting national food needs.

3.1.2 Horticultural Crops

The horticultural crops subsector of West Java Province is a current base subsector with an LQ value of 1.03 (Table 2). This is in line with the research of [11], the average LQ value from 2016-2020 was 1.02 and became a basic sector. However, based on future projections this subsector is expected to experience a change in status to non-base with a DLQ value that decreases dramatically to 0.08 (Table 2). This change illustrates that the horticulture subsector, which initially had a significant role in exports, will later focus more on meeting local needs.

The largest production of horticultural crops of superior fruit commodities from 2020-2022 is bananas with a total production value of 4,230,290 tons, in ornamental plants the largest production is chrysanthemums with a total production of 385,515,623 stalks. In vegetable crops dominated by large chili plants with a total production of 966,829 tons, while for biopharmaca plants the largest production is cardamom and ginger with a total production of 227,161,984 kg and 133,485,119 kg respectively [26].

Looking at the DLQ value for the horticultural crops subsector which is less than 1 indicates a repositioning from a base subsector to a non-base subsector. Although bananas as a leading fruit commodity increased in terms of production, if you look at other commodities, namely pineapples over the past three years, there has been a 35.7% decrease in production. In addition, the commodities that also experienced a decline were roses, carrots, and turmeric, which amounted to 16.68%; 15.73%; and 17.65%, respectively. According to [27], the decline in horticultural subsector production is due to changes in rainy weather which is characterized by the El Nino phenomenon, namely reduced rainfall and prolonged drought. This triggers an increase in air temperature, consequently increasing the potential for attacks by plant pest organisms (OPT) and has implications for the decline in horticultural crop production.

3.1.3 Plantation

The plantation subsector of West Java Province currently and in the future has not shown a significant role in the regional economy as a base subsector because it is less than 1 (Table 2). This subsector is not a basic sector, which means that its contribution to the regional economy is still lower than the national average [28]. This indicates that the plantation subsector has not experienced structural repositioning and remains a non-base sector, so its role in supporting the economic growth of West Java Province is still limited.

Coconut is the leading commodity in this category, with total production reaching 259.92 thousand tons during the 2020-2022 period. However, the production trend showed a decline of 1.16%, which continued in 2023 with a further decline of 1.64% [29]. According to [30], the decline in coconut production is also related to the productivity of coconut plants, which are mostly old, affected by pests and diseases, lack of plant maintenance, use of poor varieties, and land conversion to other crops (tea, coffee, and rubber).

3.1.4 Livestock

The livestock subsector in West Java Province is currently still classified as a non-basic sector, as indicated by the LQ value which is below 1, at 0.69 (Table 2). This indicates that the contribution of the livestock subsector to the regional economy is still lower than the national average. However, with a high DLQ value of 4.82 (Table 2), this subsector shows potential for rapid growth in the future. This increase indicates that the livestock subsector has a great opportunity to undergo structural repositioning and develop into a base sector.

Table 3. Population of cattle, buffaloes, goats and sheep

Year	Population (head)	Growth rate (%)
2020	13.964.193	
2021	12.060.654	-13,63
2022	10.393.030	-13,83

Source: [31]

Based on Table 3, the livestock populations of cattle, buffaloes, goats and sheep have decreased during the 2020-2022 period. One of the main factors causing this decline was the outbreak of foot and mouth disease (FMD), which had a significant impact on the livestock subsector. The outbreak also hampered trade activities in livestock and livestock products [32]. The impact of FMD on dairy milk production in West Java is significant, as evidenced by the realization of only half of the production in 2022 [33].

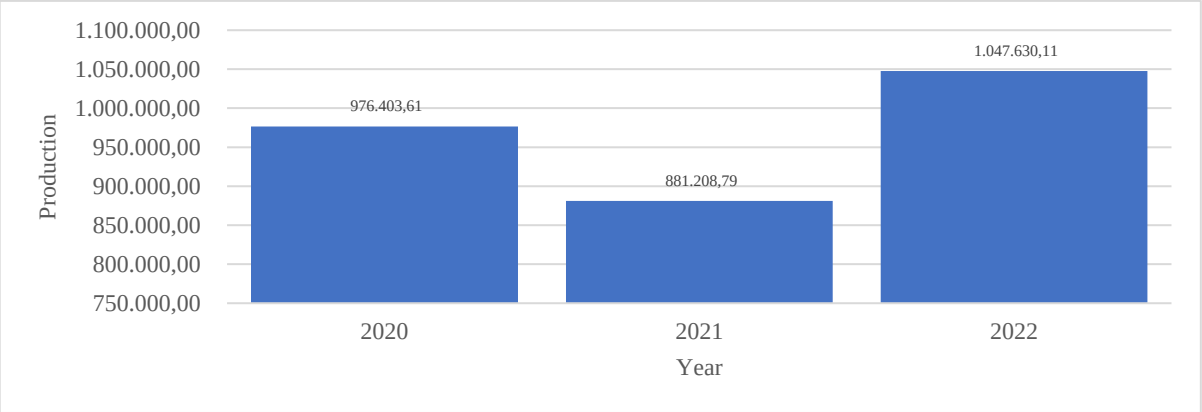

Figure 4. Livestock meat production in West Java Province
Source: [31]

Although in 2022 West Java experienced an FMD outbreak, overall livestock meat production showed an increase of 18.89% as shown in Figure 4. This increase is in line with the DLQ value of more than 1, which reflects the potential for rapid growth of the livestock subsector. Efforts made by the government, namely policies in Presidential Regulation No. 177 of 2022, emphasize the availability of quality food, increasing added value and competitiveness of the livestock industry, and strengthening management [34]. As a preventive measure against FMD, the West Java DKPP carried out livestock vaccination with 52 thousand doses given free to farmers in two stages for optimal protection [35]. Despite the FMD outbreak, the West Java livestock subsector continues to show high competitiveness and growth potential.

3.1.5 Fisheries

The fisheries subsector of West Java Province currently and in the future has not shown a significant role in the regional economy as a base subsector because it is less than 1 (Table 2). This subsector is not a base sector, which means that its contribution to the regional economy is still lower than the national average [36]. This indicates that the fisheries subsector has not been repositioned and remains non-basic, so its role in West Java's economic growth is still limited.

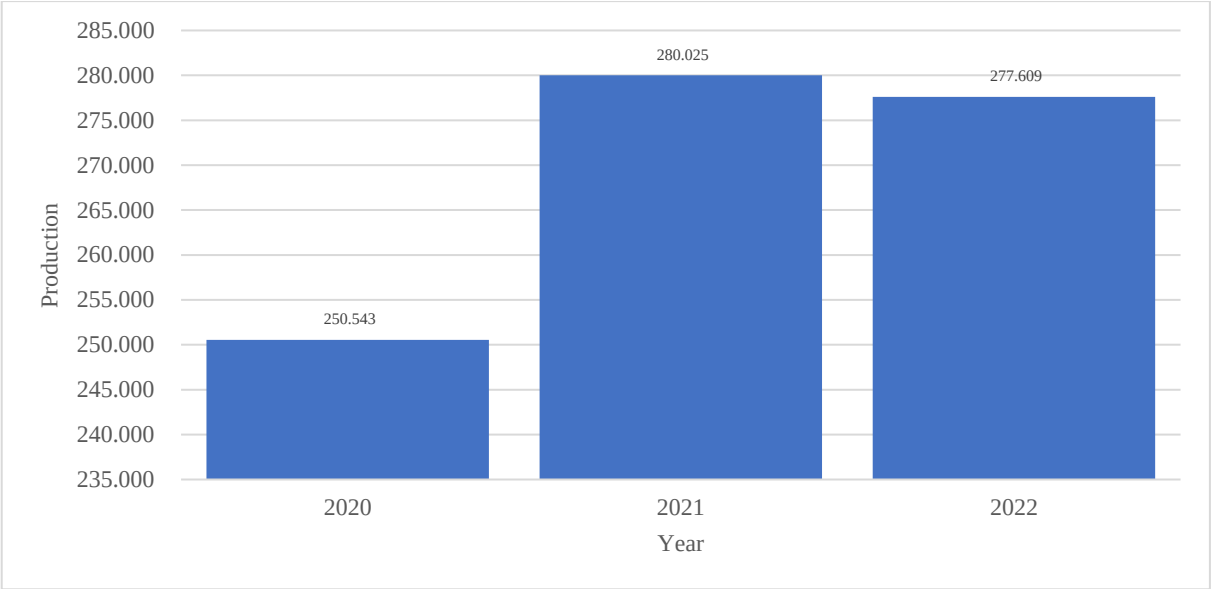

Figure 5. Fisheries production of West Java Province
Source: [58]

Based on Figure 5, the production of capture fisheries in West Java Province increased by 11.77% from 2020 to 2021, but slightly decreased by 0.86% in 2022. Despite fluctuations in production, this subsector has not been able to become a significant base sector in the regional economy. This is due to overexploitation of the sea and high pollution that has reduced fish catches and damaged coastal ecosystems. Utilization of fishing ports in West Java is still not optimal, exacerbated by limited infrastructure, cultivation facilities, and capture fisheries. Marketing of fishery products is still individual without an integrated system, while the low mastery of fishermen's technology hampers efficiency and productivity [38].

3.2 Contribution of Agriculture Subsector

The contribution and growth of subsectors in the total GRDP of a region can be analyzed using Klassen Typology. Klassen Typology is used to classify agricultural subsectors in West Java Province based on their growth patterns [39]. The results of the Klassen Typology analysis can be seen in Table 4 as follows:

Table 4. Klassen typology analysis results

Subsector	Value	Notation	Description
Food Crops	10,33 < 11,62 ; 3,28 > 2,89	rik < ri ; yik > yi	Developed subsector
Horticultural Crops	30,27 < 41,41 ; 1,46 > 1,42	rik < ri ; yik > yi	Developed subsector
Plantation	5,69 < 35,20 ; 0,64 < 3,79	rik < ri ; yik < yi	Lagging subsector
Livestock	61,91 > 42,14 ; 1,06 < 1,52	rik > ri ; yik < yi	Potential subsector
Fisheries	36,26 < 56,37 ; 0,84 < 2,30	rik < ri ; yik < yi	Lagging subsector

Source: [5] (data processed)

3.2.1 Food Crops

The food crop subsector in West Java Province is classified as developing (Table 4), which means that the sector is showing good growth, but still faces various obstacles that hinder its development. Data from [37], shows that West Java's rice production in 2020-2021 ranked third after East Java and Central Java. However, in 2022 it increased to the second position with total production reaching 9,433,723 tons. Despite positive growth, this subsector still faces pressures, one of which is the conversion of agricultural land, especially paddy fields. In the period 2022 to 2024, the rice harvest area in West Java continued to decrease by 11.25%.

The rapid development of national projects has accelerated the conversion of agricultural land into non-agricultural areas [9]. This large-scale infrastructure development has indirectly reduced the area of available agricultural land. An estimated 70% of paddy fields in West Java are now controlled by non-agricultural parties, mainly residents from Jakarta or Bandung. As a result, many farmers who were previously landowners have now turned into tenants or workers in the agricultural sector [40].

3.2.2 Horticultural Crops

The horticultural crops subsector in West Java Province is classified in the developing category (Table 4), meaning that West Java has a higher contribution, but its economic growth rate is slower than the national average [41]. This is reflected in the fluctuations in the contribution of several leading commodities, namely large chili peppers, bananas, ginger, and chrysanthemums, in the 2020-2022 period. Chili peppers consistently ranked first nationally, with a contribution of 21.05% in 2020, increasing to 25.21% in 2021, and decreasing slightly to 24.24% in 2022 [42]. The decline in horticultural subsector production in West Java Province is due to changes in rainy weather due to the El Nino phenomenon, namely reduced rainfall and prolonged drought. This change triggers an increase in air temperature, thereby increasing the potential for plant pest organism (OPT) attacks and has implications for decreasing horticultural crop production [27].

Banana's contribution consistently ranked second in the national contribution, although it decreased from 15.44% in 2020 to 14.25% in 2022, indicating the need to strengthen production efficiency (increasing labor, land, water, fertilizer, and technology) that is used optimally for maximum production results. Meanwhile, ginger, which was not in the top three nationally in 2021, recorded a significant increase in 2022 with a contribution of 22.12%, returning to the first position. Chrysanthemum also experienced fluctuations in contribution, from first place in 2020 (36.52%), down to third place in 2021 (29.13%), before returning to dominate in 2022 with the highest contribution of 36.82% [42].

3.2.3 Plantation

The plantation subsector in West Java Province is classified as underdeveloped (Table 4), meaning that the region is experiencing slow economic growth and has a relatively low contribution [43]. This is based on the fact that in 2022, West Java had an agrarian conflict. The West Java region is adjacent to DKI Jakarta as a metropolitan city that can attract companies to develop business (property and infrastructure). National strategic projects and large developments often utilize land in West Java, which has the potential to cause conflicts with local communities [44]. In 2020, the Farmer Exchange Rate (NTP) of the Smallholder Plantation subsector was recorded at 92.73. This value increased by 2.65% in 2021 to 95.19, then rose again by 1.33% in 2022 to reach 96.45. Even though it continues to increase, the NTP of this subsector remains lower than the base year, meaning that the welfare of smallholder plantation farmers has not fully recovered, and they are still facing economic pressure due to product selling prices that are not high enough or production costs that continue to increase [45].

3.2.4 Livestock

The livestock subsector in West Java Province is classified in the potential category (Table 4), meaning that the GDRP growth rate of the livestock subsector in West Java Province is higher than the national level, but its contribution is smaller than the national level [46]. The economic growth of the livestock subsector in West Java can be analyzed through GRDP based on constant prices, which reflects the dynamics and potential development of this subsector in supporting the regional economy [47].

Table 5. Economic growth rate of livestock subsector

Year	GRDP	Percentage (%)
2013	11327,95	
2014	11801,30	4,18
2015	12304,76	4,27
2016	12810,01	4,11
2017	13518,87	5,53
2018	14398,21	6,50
2019	15351,25	6,62
2020	17037,46	10,98
2021	16656,00	-2,24
2022	18340,90	10,12

Source: [48]

Based on Table 5, the economic growth rate of the livestock subsector in West Java Province shows a fluctuating pattern during the 2013-2022 period. In 2021, there was a decrease in growth of 2.24%. Meanwhile, the highest growth was recorded in 2020 with an increase of 10.98%, followed by 2022 which reached 10.12%. Overall, the average growth of the livestock subsector in West Java experienced an increasing trend from year to year. Supporting the processing industry in West Java, 118 livestock farmer groups, Gapoktan, and cooperatives have developed livestock product processing businesses. Various products are produced, such as meatballs, shredded meat, beef jerky, rendang, pasteurized milk, yoghurt, and other processed products such as leather crafts and organic compost. The established market provides opportunities for livestock groups to expand their business and increase the scale of production [36]. Based on data from [49], West Java Province has a total of 329 companies engaged in agriculture in the livestock subsector. This shows that the livestock subsector has a great opportunity to continue to grow in the future. In accordance with the opinion of [50], that fluctuations in the growth of a subsector indicate an opportunity for the subsector to continue to develop and increase in the future.

3.2.5 Fisheries

The fisheries subsector in West Java Province is classified as lagging behind (Table 4), meaning that the growth rate and contribution of the fisheries subsector in the GRDP of West Java Province are lower than the same subsector in GDP at the national level [51]. According to [52], one of the main factors slowing the development of this sector is the lack of supporting infrastructure, especially in the southern region of West Java. The absence of ports in the region is a major obstacle in the distribution of fishery products, because without access to adequate transportation, the marketing process becomes slow, which risks reducing the quality of the fish produced. If the catch is too long in the distribution process, its freshness can decline, which ultimately impacts the selling value and welfare of fishermen.

3.3 Change or Shift Structure of Agricultural Subsect

Changes or shifts in the structure of the agricultural subsector can be analyzed using the Shift Share method, with the aim of knowing whether the area has a competitive advantage and specialization or not. The results of the Shift Share analysis can be seen in Table 6 as follows:

Table 6. Results of shift share analysis

Sub sector	National Growth	Industry Mix	Competitive Advantage	Specialized	Description
Food Crops	19.770,64	-14.710,83	-561,78	19.582,42	Competitive disadvantage, specialized
Horticultural Crops	7.765,73	-682,45	-1.904,61	6.545,16	Competitive disadvantage, specialized
Plantation	4.105,32	-901,85	-2.609,81	-19.702,92	Competitive disadvantage, not specialized
Livestock	5.142,60	-369,38	2.239,72	133,17	Competitive advantage, specialized
Fisheries	4.167,36	1.007,65	-1.846,51	-6.557,84	Competitive disadvantage, not specialized

Source: [5] (data processed)

The results of the shift share analysis in Table 6 show that the livestock subsector in West Java Province has a competitive advantage and is specialized, making it a leading sector with strong growth potential. According to [53], competitive advantage is the ability of a region to offer superior products that are better than other regions, while specialization is the focus of the region in producing goods or services that have advantages in production. Meat production in West Java accounts for 21.13% of the national total, with the sheep population as the largest contributor, reaching 60.22% [31]. With this significant contribution, the livestock subsector in West Java has the opportunity to further develop and increase competitiveness at the national level.

The food crops and horticulture subsectors are specialized, but do not have a competitive advantage (Table 6). According to [54], specialization but no competitive advantage means that a region or sector is highly focused on the production of certain goods or services, but is unable to compete effectively with other regions or sectors. Rice production in West Java increased by 4.62% between 2020 and 2022, placing the province in second place after East Java [37]. Meanwhile, in the horticulture subsector, leading commodities such as large chili peppers, ginger, and chrysanthemums managed to rank first nationally, while bananas ranked second at the national level in 2022 [42].

The plantation and fisheries subsectors have no competitive advantage and are not specialized (Table 6), indicating that this sector has not become a top priority in West Java Province. According to [55], not having a competitive advantage and not being specialized means that the sector does not have competitiveness compared to other regions and is not the main focus in the regional economic structure. This is due to the agrarian conflict in

West Java in 2022, which was triggered by the expansion of the property and infrastructure business and national strategic projects, affecting the plantation sector [56]; [44]. The absence of a port in the region and the limited infrastructure and technology of fishermen hinder the distribution of fishery products, slow down marketing, and reduce the quality of fish, which impacts the selling value and welfare of fishermen [52]. In addition, overexploitation of the sea and high pollution also reduce catches and damage coastal ecosystems, while unintegrated marketing further worsens the condition of the fisheries sector in West Java [38].

4 Conclusion and recommendation

The food crop subsector is a base now and is expected to remain a base in the future, while horticulture, which is now a base, is predicted to no longer be a base. Animal husbandry is not yet a base, but has the potential to become one, while plantations and fisheries remain non-bases without significant change. Contributions to GRDP show that food crops and horticulture are developing sectors, animal husbandry is a potential sector, while plantations and fisheries are underdeveloped sectors. Changes in economic structure, animal husbandry has a competitive advantage and specialization, food crops and horticulture have specialization but are not competitive, while plantations and fisheries have no competitive advantage or specialization so that they have not become an economic priority for West Java.

Further research could examine the potential of the agricultural sector in West Java by district/city. To promote animal husbandry, vaccination and disease prevention education are needed. Food crops need to control land conversion and increase agrarian literacy. Horticulture needs technological support, efficient irrigation systems, and research on climate- and pest-resistant varieties.

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