



Determination of The Growth Rate of Gross Domestic Regional Product (GDRP) of the Agricultural Sector in Indonesia, Period 2012 – 2021

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Abstract. This study aims to determine the impact of land area, labor, foreign direct investment (FDI), domestic direct investment (DDI) in the agriculture sector, and farmer's term of Trade (FTT) on the growth rate of Gross Domestic Regional Product (GDRP) of the agricultural sector. The sample was taken from five agricultural sectors in the provinces with low growth rates, i.e., Riau Island, Banten, West Java, East Java, and East Kalimantan, during the 2012 to 2021 period. The forecasting method used Ordinary Least squares with panel data. The selected model is the Fixed Effect Model. The results showed that labor and Domestic Direct Investment (DDI) in the agricultural sector had a significantly positive effect on the growth rate of GDRP. While land area, Foreign Direct Investment (FDI) in the agricultural sector, and Farmer's Term of Trade (FTT) have no significant effect on the GDRP growth rate in the agricultural sector in Indonesia.

Keywords: FDI, DDI, FTT, GDRP in Agricultural Sector.

1 Introduction

The agricultural sector is a strategic pillar of Indonesia's economic support. During the pandemic, the agricultural sector was the only sector that experienced positive growth and was the most significant contributor to Indonesia's gross domestic product (GDP). As shown in Fig. 1. the following.

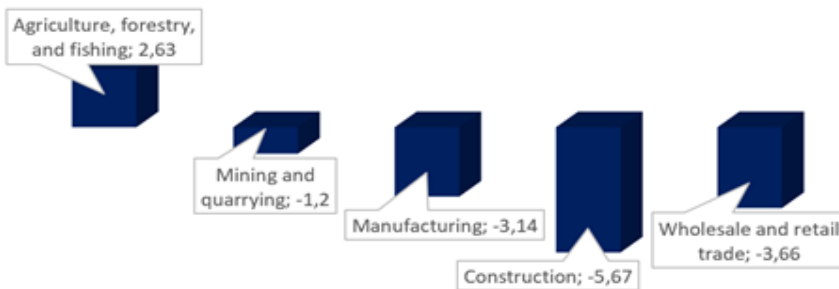


Fig. 1. GDP growth (percent) five largest sectors indonesia fourth quarter 2020 (yoy)
Source: Central Bureau of Statistics, (2021)



Fig. 2. Contribution of the five largest sectors in Indonesia in 2021 (percent).

Before the pandemic, the agricultural sector had always been the mainstay of the second largest contributor to the Indonesian economy after the manufacturing sector. The contribution of the agricultural sector to Indonesia's GDP in 2021 is 13.28 percent. This contribution is higher than the trade sector at 12.97 percent, the construction sector at 10.44 percent, and the mining sector at 8.98 percent, as shown in Fig. 2. This proves that Indonesia as an agricultural country can optimize its abundant natural wealth and take advantage of the tropical climate and fertile land to increase agricultural production to encourage national economic growth.

Improvements experienced by the agricultural sector are also marked by an increase in the Farmer's Exchange Rate (NTP), one measure of farmers' welfare. The NTP in December 2021 was 108.34, an increase of 1.08 percent compared to November 2021, as shown in Fig. 3.

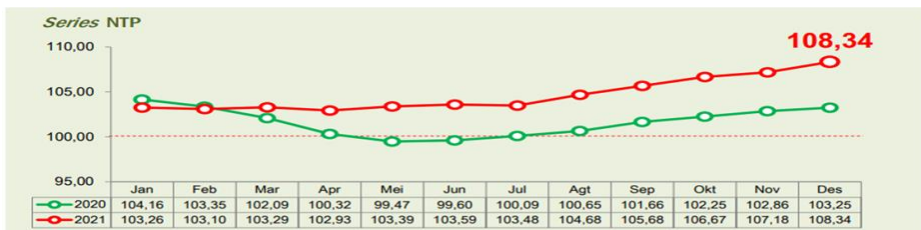


Fig. 3. Development of NTP in 2020 and 2021.

Source: Central Bureau of Statistics, (2022)

In addition to contributing to GDP, the agricultural sector is also a sector with high employment absorption. BPS stated that the number of workers in the agricultural sector in Indonesia was 28.33 percent of the total workforce or reached 37.1 million people in August 2021. The agricultural sector is a place to accommodate workers from other sectors who experienced layoffs during the COVID-19 pandemic. 19 in August 2020, the workforce in the agricultural sector increased to 29.76 percent from 27.53 percent in 2019.

When compared with the data above, different conditions are found in several provinces where the growth of the agricultural sector tends to be low. This can be seen from the distribution and growth rate of Gross Domestic Regional Product (GDRP) in the agricultural sector in Fig. 4. Based on BPS data, over the last ten years, the provinces

of Banten, West Java, East Kalimantan, and Riau Islands have the lowest average distribution of GDRP in the agricultural sector compared to other provinces in Indonesia.

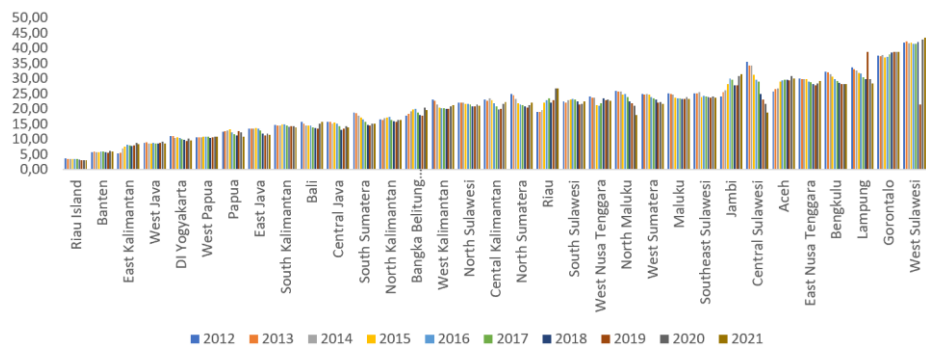


Fig. 4. Distribution of the agricultural sector to GDRP over the last ten years in all provinces in Indonesia. Source: Central Bureau of Statistics, (2022)

In addition, the provinces of West Java, D.I. Yogyakarta, East Java, and the Archipelago have the slowest average GDRP growth rates in the agricultural sector, as shown in Fig. 5. This raises the question of how the agricultural sector's performance in these provinces supports the GDP of the agricultural sector in Indonesia.

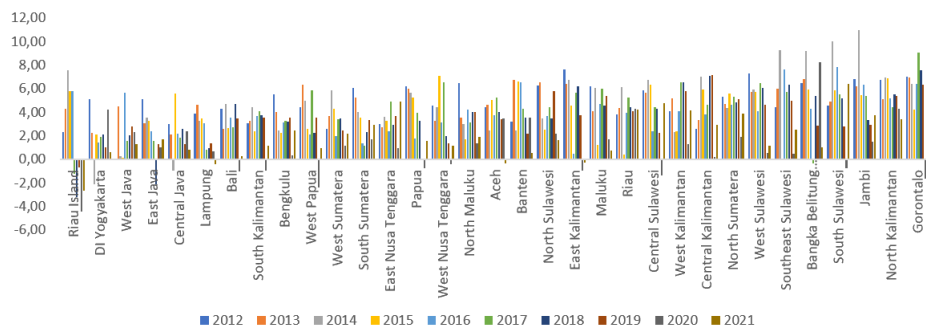


Fig. 5. The growth rate GDRP of the Agriculture sector over the last ten years in all provinces in Indonesia.

Source: Central Bureau of Statistics, (2022)

The GDRP of the agricultural sector is still positively influenced by the area of agricultural land despite a decrease in land area [6]. Increased land productivity, which is influenced by better soil fertility, is a factor causing this. Land productivity can be increased through fertilizers and superior seeds, as well as the use of technology in cultivation.

Labor utilization is an element that must be met for the sustainability of farming [12]. By utilizing human resources efficiently, an optimal production process can be realized. An excessive number of labor, on the other hand, can create an unfavorable working environment and make it easier to monitor and manage the quality of labor. The same results are shown through research [15], where the workforce of the

agricultural sector does not significantly influence the GDRP of the agricultural sector. The production process of the agricultural sector is very dependent on the level of labor productivity in the agricultural sector, so if the level of labor productivity is low, the GDP of the agricultural sector will not experience growth.

The growth of the agricultural sector is also strongly influenced by the availability of capital as one of the factors of production that is no less important. The status of capital in Indonesia is divided into two, namely (1) Domestic Direct Investment (DDI) and (2) Foreign Investment (FDI). The capital status as described in Law No. 25 of 2007 concerning investment. The Ministry of Agriculture stated that the value of DDI in the agricultural sector increased to IDR 43.6 trillion in 2019, or an increase of 47.5 percent from IDR 29.6 trillion in 2018. In addition, the value of FDI investment in the agricultural sector has yet to experience a significant movement. Total investment in the agricultural sector only increased by 5.4 percent in 2019 to IDR 57 trillion from IDR 54.1 trillion in 2018. Investment can increase added value, production capacity, and job opportunities for the population. Research [16] also shows the same results through their research, where the growth of the agricultural sector is positively influenced by investment in the agricultural sector.

Another study [1] states that the growth of the agricultural sector is not significantly influenced by investment in the agricultural sector. Research [13] explained that FDI in the agricultural sector has a more critical role than DDI in the agricultural sector. Countries that invest through FDI are generally developed, and countries that receive these investments are developing countries. Investments originating from foreign capital offer better opportunities for business development, namely through new technologies and strong networks with financial institutions and global markets. PMDN still has a positive effect on economic growth, although not significantly.

Based on the background and research [1, 7, 14, 12, 17, 15, 16, 6, 13], this study will examine and analyze the factors that influence the economic growth of the agricultural sector in several areas with low performance of the agricultural sector. This contradicts the data above that the agricultural sector is the backbone of the national economy, as evidenced by how it contributes to maintaining economic growth during the COVID-19 pandemic, which is a novelty in this research. For this reason, this study aims to examine and analyze the effect of Land Area, Labor, FDI, DDI, and NFT on the growth rate, in this case, the GDRP of the Agricultural Sector. The limitation of this research is Province with a Low Agricultural Sector Growth Rate, as illustrated in Fig. 5.

2 Hypothesis

In determining the amount of production, land area as a factor of production has a strong role. The resulting production will increase if the area of land planted is more remarkable because the land is where farming activities are carried out. Based on research [7], the economic growth of the agricultural sector is positively and significantly influenced by land area. However, several other studies [14, 12, 15, 6] state that economic growth is negatively affected by land area.

H1: The land area has a positive influence on the growth rate of GRDP in the agricultural sector.

The productivity of the agricultural sector will increase if it is driven by the availability of agricultural sector workers who are utilized effectively and efficiently by the needs of farming production [14]. The more the number of workers deployed,

the more production will increase and, in turn, will make a more significant contribution to the economic growth of the agricultural sector. The same results were also found in the research [17;13], where the agricultural sector workforce positively and significantly influenced the economic growth of the agricultural sector. Another study [1] showed different results where the economic growth of the agricultural sector was not significantly influenced by agricultural sector labor.

H2: Labor in the Agricultural Sector has a positive influence on the growth rate of GDRP in the Agricultural Sector

Another factor that is no less important in the development of the agricultural sector is working capital. Investment is one form of working capital that is very influential on the economic growth of the agricultural sector. Output will increase significantly due to investment activities, automatically boosting input demand. This will improve the community's welfare because job opportunities will be more comprehensive to meet the demand for these inputs. As explained in the calculation of GDP, investment is a factor that increases economic growth. Other studies [15] and [16] also show the same results, where DDI in the agricultural sector has a positive and significant effect on economic growth in the agricultural sector. Different results were found in another study [13], where the economic growth of the agricultural sector was not significantly influenced by domestic investment in the agricultural sector.

H3: The DDI of the Agricultural Sector has a positive influence on the GDRP Growth Rate of the Agricultural Sector

Like DDI, economic growth in the agricultural sector is also influenced by investment in the form of FDI. If the capital obtained from this FDI activity is managed optimally, the resulting output can also be maximized. The increase in national production can be stimulated by increased production capacity, which will also increase if the use of FDI investment drives it. Research [16; 13] showed the same results where FDI positively and significantly influenced the economic growth of the agricultural sector in the agricultural sector, while research [15] stated different results where the economic growth of the agricultural sector was not significantly affected by FDI in the agricultural sector.

H4: FDI in the Agricultural Sector has a positive influence on the GDRP growth rate in the Agricultural Sector

Farmer's Term of Trade (FTT) is the ratio between the price index received by farmers and the price index paid by farmers, which is expressed as a percentage and is one of the indicators in determining the level of farmers' welfare. In other words, the price that farmers receive is less than the price they have to pay. This difference reflects the exchange rate of farmers. Suppose the purchasing power of farmers is greater than the increase in the price of goods purchased because of the income received from the increase in the price of agricultural production. In that case, this indicates that the power and ability of farmers are better or the level of income of farmers is increasing. So, when farmers are prosperous, the rate of growth of the agricultural sector will also increase.

H5: The Agricultural Sector Exchange Rate has a positive effect on the GDRP Growth Rate of the Agricultural Sector

2 Methods

The method in this study used descriptive and quantitative analysis. It aims to determine the determinants of the Growth Rate of Gross Domestic Regional Product (GDRP) of the Agricultural Sector in Indonesia, Period 2012 – 2021. Based on previous studies, this research model used FTT. The regression model in this study is as follows:

$$RGDRP_{it} = \beta_0 + \beta_1 LAND_{it} + \beta_2 LABOR_{it} + \beta_3 DDI_{it} + \beta_4 FDI_{it} + \beta_5 FTT_{it} + \mu_{it} \quad (1)$$

Description of variables:

RGDRP = the rate of Growth of Gross Domestic Regional Product in the Agricultural Sector

LAND = land area in the agriculture sector

LABOR = Labor in the agriculture sector

DDI = Domestic Direct investment in the agriculture sector

FDI = Foreign Direct investment in agriculture sector

FTT = Farmer term of trade in the agriculture sector

β_0 = constants

$\beta_{1,2,3,4,5}$ = regression coefficient

μ = error

The data in this study is secondary data obtained from several sources, including the Central Bureau of Statistics, the Investment Coordinating Board, and the Ministry of Agriculture. The data is processed using a panel data approach (time series and cross section) in five provinces with low growth rates in the agricultural sector with a time series of 2012 to d. 2021. These provinces include East Java, West Java, Banten, East Kalimantan, and the Riau Islands.

3 Results and Discussion

The Chow test aims to see the results of F Fixed Effect probability. This is a possibility value where Alpha is less than 0.05 or 5% on a significant level, and H_0 is rejected. The result of the probability F of the Fixed Effect on the Chow Test is 0.0000. Hence, Chow's test states that the best model is the Fixed Effect Model. Estimation results using the Fixed Effect Model, the value of Adj R-squared is 0.297417. This means that the variation of the independent variables consisting of land area, labor in the agricultural sector, DDI in the agricultural sector, FDI in the agricultural sector, and FTT in provinces with a low level of growth in the agricultural sector can explain 29.74% of the variation of the dependent variable, namely the rate of GDRP in the agricultural sector. In provinces with low growth rates in the agricultural sector. The rest is influenced by variations of other independent variables not used in the model.

Partially, the influence of the Agricultural Sector labor and the DDI of the Agricultural Sector has a significant effect on the GDRP Rate of the Agricultural Sector in the provinces with low agricultural sector growth rates. At the same time, Land Area, FDI, and FTT do not affect the Agricultural Sector GDRP Growth Rate, as shown in Table 1.

Table 1. Result of hypothesis test.

Variable	Hypothesis	coefficient	t-Statistic	Prob.
LAND	Positive (+)	7.543300	0.701085	0.4873**
LABOR	Positive (+)	44.80243	2.780611	0.0082*
DDI	Positive (+)	11.06855	2.052080	0.0467*
FDI	Positive (+)	-21850.85	-1.556673	0.1274**
FTT	Positive (+)	-0.110679	-1.305399	0.1992**

description: *) Significant α 5%, **) in-significant

Sources: processed data result, Eviews 9

The land area has a positive and insignificant effect on the growth rate of GDRP in the agricultural sector in provinces with low growth rates in the agricultural sector. Land is one of the conditions for the production process in agriculture to take place. This condition is suspected to be the area of agricultural land which is decreasing every year due to the increasing number of housing developments and factories. Along with the development process in other sectors, the availability of agricultural land as one of the production inputs is decreasing and causing land functions to become infertile and unproductive. The results of this study are in line with the results of research by [14, 15, 6].

Labor in the Agricultural Sector has a positive and significant impact on the growth rate of GDRP in the Agricultural Sector in provinces with low growth rates in the agricultural sector. These results are by the hypothesis. Every increase in the number of laborers can increase the production or output of the agricultural sector. Increasing the capacity of labor in the agricultural sector needs to be considered not only in terms of quantity but also in terms of quality. The increasing number of laborers needs to be followed by an increase in the expertise of each individual so that they can make a greater contribution to economic growth in the agricultural sector. The results of this study are in line with the results of research by [17, 6, 13].

DDI in the Agricultural Sector has a positive and significant impact on the GDRP growth rate in the Agricultural Sector in provinces with low growth rates in the agricultural sector. Farmers can use investment activities through DDI to develop their farming businesses, increase farmer capacity, utilize adequate technology, and expand market share. The capital obtained can encourage adding production capacity, vital in increasing GDRP. The results of this study align with the research results [15; 16], which state that the DDI of the Agricultural Sector has a positive and significant effect on the GDRP of the Agricultural Sector.

FDI in the Agricultural Sector has a negative and insignificant effect on the growth rate of GDRP in the Agricultural Sector in provinces with low growth rates in the agricultural sector. The development of investment in the agricultural sector tends to be low, so the investment does not affect GDRP. The realization of FDI in the agricultural sector rarely reaches IDR 1,000,000.00 million annually. The government's focus on infrastructure development has also led to a need for more access for farmers to obtain capital from foreign investors. The results of this study align with the results of research [7; 15], which state that FDI in the Agricultural Sector has a positive and significant impact on the GDRP of the Agricultural Sector.

Farmer's Term of Trade (FTT) has a negative and insignificant effect. This is different from the existing hypothesis. The relatively weak development of the agricultural sector, both in terms of production diversification and the rate of output growth, resulted in the actual income received by farmers on average being lower than

the actual income received by workers in the non-agricultural sector, such as the industrial sector. In addition, empirically, changes in the FTT are more detrimental to farmers, where the income ratio in the agricultural sector to income in the non-agricultural sector often has a negative impact.

Based on the research that has been carried out to examine the effect of the variables of Land Area, Agricultural Sector Labor, Domestic Direct Investment, Foreign Direct Investment, and Farmer's Term of Trade on the Agricultural Sector GDRP Growth rate in provinces with low agricultural sector growth rates in 2012 to 2021, it can be obtained.

4 Conclusion

Labor and domestic investment in the agricultural sector affect the rate of GDRP growth in provinces with low agricultural sector growth rates, while land area, FDI, and FTT have no effect. For this reason, it is hoped that foreign investors' interest in investing in agricultural businesses in Indonesia can be increased. In addition, FDI activities provide more opportunities for farmers to develop their farming businesses because they are supported by a reasonably strong network in the international market. Farmers can use this to gain better access to farmer capacity building, technology utilization, and export share.

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