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Evaluation of Determinants of Economic Disparities in the Agricultural Sector: An Empirical Study in Bengkulu Province

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Abstract

This study aims to analyze the effect of Gross Regional Domestic Product (GRDP) in the agricultural sector, productivity, agricultural labor, Human Development Index (HDI), and investment on economic inequality, as represented by GRDP per capita in Bengkulu Province. This research employs a quantitative approach using multiple linear regression analysis. The data used are secondary data obtained from official publications of Statistics Indonesia (BPS) and related reports. The results of the analysis indicate that both partially (t-test) and simultaneously (F-test), all five independent variables do not have a statistically significant effect on the dependent variable. All significance values of the variables are above 0.05, and the F-test significance value is 0.115 (> 0.05). These findings suggest that the research model has not been able to capture the main factors influencing economic inequality in the region. The differences between these results and previous studies indicate that the relationships among economic variables are highly contextual and influenced by regional characteristics and the period of observation. Other factors such as institutional quality, infrastructure, market access, and government policies are likely to play a more dominant role.

Keywords: Agricultural GRDP, Agricultural labor, Economic inequality, Human Development Index (HDI), Productivity.

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INTRODUCTION

The agricultural sector continues to play a strategic role in regional economic development, particularly in agrarian-based areas. Its contribution is reflected not only in the formation of Gross Regional Domestic Product (GRDP) but also in employment absorption and food supply. Several studies indicate that factors such as investment, labor, and government expenditure influence the performance of the agricultural sector, both directly and indirectly (Abbas & M, 2021). This underscores the importance of agriculture as a fundamental pillar in driving regional economic growth.

However, increases in agricultural GRDP are not always accompanied by equitable improvements in societal welfare. This phenomenon is evident in the persistence of economic disparities across regions despite relatively significant economic growth. Recent studies reveal that increases in GRDP and human development indicators have not fully succeeded in reducing regional economic disparities (Akbar Nurul Hidayah et al., 2025). This suggests that economic growth has not been fully inclusive and still faces various structural constraints.

In addition, agricultural productivity is a key factor in determining regional economic performance. Theoretically, increased productivity should positively impact economic output. In practice, however, productivity is often influenced by the quality of human resources, technology, and access to capital. Therefore, improvements in productivity do not always generate significant impacts unless supported by a well-integrated economic system.

On the other hand, labor in the agricultural sector also plays a crucial role in promoting economic growth. Several studies show that labor contributes positively to GRDP, although in certain conditions its contribution is not optimal due to low labor quality and the dominance of the informal sector (Safri et al., 2021). This condition indicates that labor quantity alone is insufficient and must be complemented by improvements in quality and skills.

Furthermore, the Human Development Index (HDI), as an indicator of human resource quality, is closely related to economic growth. Improvements in HDI are expected to enhance labor productivity and competitiveness. Research shows that HDI influences regional economic performance, although its effects are not always direct and may require time to produce significant impacts (Adinata Ariyadi & Nilasari, 2025). This highlights the importance of long-term investment in human development.

Moreover, investment is one of the key drivers of regional economic growth. It can increase production capacity, create employment opportunities, and stimulate innovation.

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However, several studies suggest that the impact of investment on economic growth may vary depending on the effectiveness of allocation and the targeted sectors (Safri et al., 2021). Thus, not all investments automatically generate positive outcomes for economic development.

Based on these phenomena and previous research findings, the relationships among agricultural GRDP, productivity, labor, HDI, and investment in shaping regional economic performance remain varied and inconsistent. Therefore, further research is required to empirically examine the effects of these variables within a comprehensive analytical framework.

This study is important as it seeks to analyze the influence of these economic variables both simultaneously and partially on the observed economic performance. By employing a quantitative approach using multiple linear regression analysis, this research is expected to provide empirical contributions and serve as a basis for formulating more effective and evidence-based regional economic development policies.

DATA ANALYSIS METHOD

This study employs a quantitative approach using multiple linear regression analysis. The quantitative approach is applied to empirically examine the relationships among variables and to generate generalizable conclusions based on numerical data. Multiple linear regression is selected because it enables the simultaneous measurement of the effects of several independent variables on a single dependent variable (Halif et al., 2025).

Multiple linear regression is a statistical method used to identify causal relationships between independent and dependent variables and to measure the magnitude of each independent variable's contribution in explaining the dependent variable (Erjisun et al., 2024).

The data used in this study are secondary data obtained from official publications such as Statistics Indonesia (BPS), regional government reports, and other relevant sources. Secondary data are widely used in economic research due to their broad time coverage and high reliability for empirical analysis (Timbuleng et al., 2024). This study employs the following variables :

Dependent Variable (Y):

Y = GRDP per Capita

Independent Variables (X):

X1 = GRDP of the Agricultural Sector

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X2 = Productivity
X3 = Agricultural Labor
X4 = Human Development Index (HDI)
X5 = Investment

The selection of these variables is based on economic development theory and previous studies indicating their relationship with regional economic growth (Kusnul Khotimah et al., 2024).

Data collection is conducted through documentation, namely by gathering data from statistical reports, official publications, and available databases. The documentation method is commonly used in quantitative research because it is efficient and allows for time series or cross-sectional data analysis.

a. Multiple Linear Regression Analysis

The main analytical method used is multiple linear regression with the following general equation:

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \varepsilon$$

Multiple linear regression is used to determine the linear relationship between two or more independent variables and one dependent variable, as well as to test the research hypotheses (Fitriyah et al., 2021).

b. Hypothesis Testing

Hypothesis testing is conducted through:

- **t-test (partial test):** Used to determine the effect of each independent variable on the dependent variable individually.
- **F-test (simultaneous test):** Used to determine the joint effect of all independent variables on the dependent variable.

Data processing in this study is carried out using SPSS version 27, a statistical software widely used in regression analysis due to its ability to process data systematically and generate comprehensive outputs for hypothesis testing (Muthahharah & Inayanti Fatwa, 2022).

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RESULTS AND DISCUSSION

The results of the multiple linear regression analysis presented in Table 1 show the relationship between the independent variables—namely agricultural sector GRDP, productivity, agricultural labor, Human Development Index (HDI), and investment—and the dependent variable.

Table 1. Results of Multiple Linear Regression Analysis

Variabel Independen	Koefisien (B)	Std. Error	Beta	t-Count	Sig.
Konstanta	-2,756	8,611	-	-0,32	0,75
PDRB Pertanian	-0,234	0,413	-0,492	-0,567	0,574
Produktivitas	0,774	0,725	0,377	1,066	0,292
Tenaga Kerja	0,165	0,356	0,356	0,463	0,646
IPM	0,924	2,272	0,134	0,407	0,686
Investasi	-0,045	0,04	-0,202	-1,122	0,268

Source: Processed Secondary Data, 2026

Based on Table 1, the results of the partial test (t-test) indicate that all independent variables have significance values greater than 0.05. This implies that, individually, none of the independent variables have a statistically significant effect on the dependent variable. Nevertheless, the direction of the coefficients remains important for economic interpretation.

The Effect of Agricultural Sector GRDP

The agricultural sector GRDP variable has a negative coefficient of -0.234 with a significance value of 0.574 (> 0.05), indicating that it does not have a statistically significant effect on the dependent variable. This suggests that increases in agricultural sector GRDP have not yet been able to generate a tangible impact. Theoretically, GRDP is expected to have a positive effect on economic indicators. This is supported by previous studies showing that agricultural sector GRDP has a positive and significant impact on labor absorption (Simanjuntak et al., 2018). However, the inconsistency found in this study may be attributed to unequal income distribution or the low value-added of the agricultural sector in the study area.

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The Effect of Productivity

The productivity variable has a positive coefficient of 0.774 with a significance value of 0.292 (> 0.05), indicating that it does not have a statistically significant effect. Theoretically, productivity plays an important role in increasing economic output. However, these results suggest that improvements in productivity have not been accompanied by significant enhancements in economic performance. This may be due to limited market access, inadequate technology, or suboptimal production efficiency. This finding is consistent with several empirical studies indicating that certain economic variables are not always significant due to structural and institutional constraints that have not yet been adequately addressed.

The Effect of Agricultural Labor

The labor variable has a positive coefficient of 0.165 with a significance value of 0.646 (> 0.05), indicating that it is not statistically significant. This finding suggests that an increase in the number of workers does not necessarily lead to higher economic output. This condition may be attributed to the low quality of labor or the dominance of traditional labor practices. In contrast to other studies that find labor to have a significant effect on GRDP (Syafii et al., 2017), the results of this study indicate that the quality of human resources is more important than the quantity of labor.

The Effect of the Human Development Index (HDI)

The HDI variable has a positive coefficient of 0.924 with a significance value of 0.686 (> 0.05), indicating that it is not statistically significant. Theoretically, HDI reflects the quality of human resources, which should have a positive impact on economic development. However, in this study, this effect is not statistically evident. In contrast to other studies that find HDI to have a significant effect on economic variables such as poverty, this result suggests that improvements in HDI may require time (lag effect) before producing a tangible impact on the dependent variable.

The Effect of Investment

The investment variable has a negative coefficient of -0.045 with a significance value of 0.268 (> 0.05), indicating that it is not statistically significant. This suggests that incoming investment has not been effective in driving economic change. Possible reasons include misallocation of investment, a capital-intensive nature, or the lack of direct impact on the sector under study. This finding is supported by studies indicating that investment

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does not always have a significant effect on certain economic variables (Risfia Anggraini & Alfiyana, 2024). However, other studies have found that investment has a significant impact on GRDP, suggesting that these differences may be attributed to regional characteristics and the types of investment involved.

Overall, the results of the t-test indicate that none of the independent variables have a statistically significant effect on the dependent variable. This condition suggests that The research model has not yet been able to capture the main factors influencing the dependent variable. The economic variables used have limitations in explaining the local phenomenon. There is a possibility that other more dominant factors exist, such as: Institutional quality Infrastructure Market access Government policies Furthermore, the differences between these findings and previous studies indicate that the relationships among economic variables are highly contextual and influenced by regional characteristics as well as the period of observation. In addition to the partial testing, the analysis was also conducted simultaneously using the F-test. The results of this test can be seen in Table 2.

Table 2. Model Feasibility Test Results (F-Test)

Sumber Variasi	Sum of Squares	df	Mean Square	F	Sig.
Regresi	0,631	5	0,126	1,894	0,115
Residual	2,934	44	0,067	-	-
Total	3,566	49	-	-	-

Source: Processed Secondary Data, 2026

Based on Table 2, the calculated F-value is 1.894 with a significance level of 0.115. Since the significance value is greater than α = 0.05 (0.115 > 0.05), it can be concluded that, simultaneously, the independent variables—namely agricultural sector GRDP, productivity, agricultural labor, HDI, and investment—do not have a statistically significant effect on the dependent variable. Statistically, the F-test is used to determine whether all independent variables in the regression model jointly influence the dependent variable. If the significance value is less than 0.05, the model is considered significant and appropriate for use. Conversely, if it is greater than 0.05, the model is considered not significant or unable to adequately explain the relationships among variables simultaneously (Heni Meidiyan et al., 2025). Thus, the results of this study indicate that

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the regression model is not statistically adequate to explain the phenomenon under investigation. This is also reflected in the residual variation (2.934), which is greater than the variation explained by the model (0.631), indicating that most of the variation in the dependent variable is influenced by other factors outside the model.

The results of this study differ from several previous studies that found economic variables to have a significant simultaneous effect. For example, a study published in an economics journal reported an F-probability value of 0.048 (< 0.05), indicating that variables such as taxes, cash holding, and financial risk jointly have a significant effect on the dependent variable, thus confirming that the model is statistically feasible (Haliza et al., 2025). In addition, other studies have found that economic and social variables simultaneously have a significant influence on the Human Development Index (HDI), suggesting that the regression model has strong explanatory power for the dependent variable (Setyaningsih et al., 2024).

CONCLUSION

This study aims to analyze the effect of Gross Regional Domestic Product (GRDP) in the agricultural sector, productivity, agricultural labor, Human Development Index (HDI), and investment on economic inequality as measured by GRDP per capita in Bengkulu Province. Using a quantitative approach with multiple linear regression analysis, the findings reveal that both partially (t-test) and simultaneously (F-test), all five independent variables do not have a statistically significant effect on the dependent variable. The significance values of each variable (agricultural GRDP 0.574; productivity 0.292; labor 0.646; HDI 0.686; investment 0.268) are all above 0.05, as is the F-test significance value of 0.115 (> 0.05). This indicates that the regression model used has not been able to adequately explain the main factors influencing economic inequality in the agricultural sector of Bengkulu. These findings differ from several previous studies that reported significant relationships among economic variables. This inconsistency is likely due to local contextual factors such as institutional quality, infrastructure, market access, government policies, as well as the possible presence of a lag effect in variables such as HDI. Therefore, this study highlights the importance of considering regional characteristics and additional factors beyond the model in understanding economic inequality in the agricultural sector.

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