

## **Analysis of Factors Affecting Gross Regional Domestic Product (GRDP) on the Island of Kalimantan 2014 – 2023**

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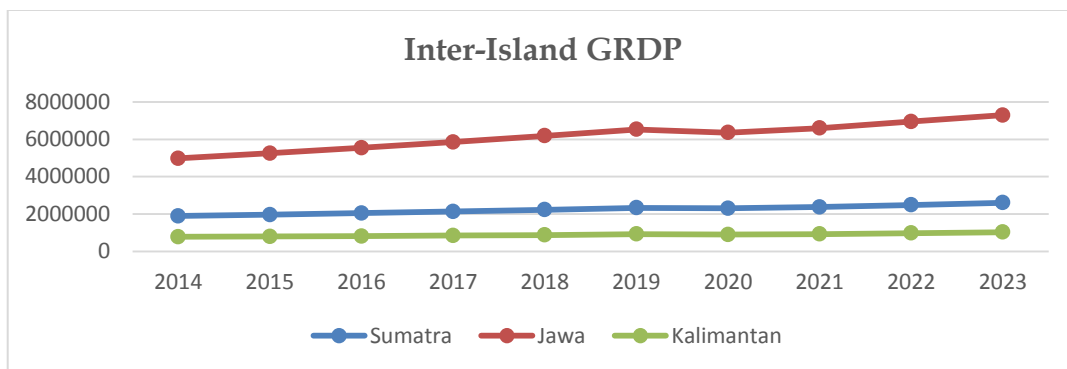
### ABSTRACT

This study aims to identify the factors that affect the GRDP on the island of Kalimantan in the period 2014–2023. The data used is panel data from five provinces on the island of Kalimantan. The dependent variable in this study is GRDP, while the independent variables include domestic investment (DI), foreign investment (FDI), and labor force (LF). Data analysis was carried out using the panel data regression method. Based on the study's results, it was found that FDI did not significantly influence the GRDP on the island of Kalimantan. In contrast, domestic investment and labor force significantly influenced GRDP during the study period.

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## INTRODUCTION

Economic growth is one of the main issues that various countries often face in the global economy. As a crucial indicator, economic growth is used to assess a country's stability and economic performance. National growth can be achieved by increasing national income or production. Along with the development of economic growth, this can help improve people's welfare (Amdan & Rafi, 2023). One way to evaluate the economic condition of a country is through Gross Domestic Product (GDP). At that same time, at the regional or regional level, the indicator is Gross Regional Domestic Product (GRDP) (Ridwan et al., 2022). The gross domestic product is the final value of goods and services produced by all economic units or the amount of added value created by all economic units (Anfasa, 2021).



**Graph 1. Inter-Island GRDP 2014 - 2023**

Data Source: Data Processed by the Author (2024)

Kalimantan is the second largest island in Indonesia, with an area of about 743,330 km<sup>2</sup>. The island has abundant natural resources, such as forest products, plantations, gas, oil, and coal, which should have great potential to support its economic growth. However, in 2014-2023, the GRDP of Kalimantan Island was still relatively low compared to Jawa and Sumatra. In 2023, the GRDP of Kalimantan Island was recorded at 1,025,270.09 billion rupiah, which is much lower than the GRDP of Jawa Island of 7,293,308.76 billion rupiah and Sumatra Island of 2,603,911.41 billion rupiah.

The low GRDP in Kalimantan is caused by the limitations of the industrial sector compared to Jawa and Sumatra. In addition, the infrastructure in Kalimantan is not as good as on the two islands, so accessibility and connectivity between regions are still challenging. The more advanced infrastructure in Jawa and Sumatra makes the two islands centers of economic activity with a large concentration of population and a larger skilled workforce. The existence of abundant natural resources in Kalimantan should be an excellent opportunity to increase GRDP, especially if it is accompanied by the development of the industrial sector and adequate infrastructure.

National economic development depends on Jawa and Sumatra's islands. It must involve other regions, such as Kalimantan and its five provinces, to support economic growth and equitable welfare distribution. To achieve economic growth, sources of financing are urgently needed to encourage the business world, one of which is through investment realization. Investment

plays a role as a source of additional capital for the government in supporting economic development in the regions, which can be in the form of Domestic Investment (DI) and Foreign Direct Investment (FDI) (Ain, 2023; Haq & Yuliadi, 2018; Filzah & Damanik, 2023).

Investment is the first step to development. Domestic Investment (DI) and Foreign Direct Investment (FDI) are equally important and influential on a country's economic growth. Not only is the private sector trying to make investments, but the government also plays a role (Humaini & Umayati, 2017). Additionally, investment can boost the transfer of technology, expertise, and skills, boosting efficiency and productivity (Prakoso & Purmini, 2023). However, high investment does not automatically accelerate economic growth. The investment must be managed (Setijawan et al., 2021).

Various studies have examined the influence of investment on economic growth. (Meilanwati & Tannia, 2021; K. T. Nguyen & Nguyen, 2021; Siregar, 2023) discovered that investment boosts economic expansion. However, the findings differ (Maulida et al., 2022; Meliani et al., 2021; Prakoso & Purmini, 2023) and show that investment negatively impacts economic growth. This shows that there is much debate about the extent of the impact of investment on economic growth. In addition, domestic and foreign investment distribution has been uneven since the island of Kalimantan. With this condition, this study becomes interesting to re-examine how investment encourages economic growth on the island of Kalimantan.

In addition to investment, the labor force is another variable affecting economic growth. The labor force is also an essential factor that affects economic growth. The development of the employment opportunity rate shows how much goods and services are produced in society, which will determine income generation (Winarto et al., 2022). The role is crucial because there are positive and negative sides. An increasing number in the labor force will automatically increase the number of labor quantities and ultimately affect productivity. However, when the availability of jobs does not follow the growth of the employment rate, it will have an impact on increasing the number of unemployed in each region (Haq & Yuliadi, 2018).

The purpose of this study is to analyze factors that affect GRDP on the island of Kalimantan, as well as literature related to the regional economy in 5 provinces of Kalimantan Island, namely West Kalimantan, Central Kalimantan, South Kalimantan, East Kalimantan, and North Kalimantan. This study is also different from the previous research because the focus of this research is more complex; this study examines the impact of Foreign Investment, Domestic Investment, and Labor Force on economic growth across five provinces on the island of Kalimantan. As recommended, a more extended period of 10 years should include more than 5 years of research (Nasution, 2020) to improve data quality.

## **THEORETICAL REVIEW**

### ***Economic Growth***

According to Dwi & Jalungono (2022), economic growth is an advance in activities that focus on improving goods and services whose output comes from the community and improving people's welfare. Boediono (Fajri, 2016) claimed that economic growth per capita necessitates a long-term process, emphasizing in the research that this process entails changes in economic growth indicators tracked over an extended period. In addition, Rostow Economic growth could be viewed as the first step toward a significant advancement, according to (Rori et al., 2016).

According to Harrod-Domar (Gandhi et al., 2022), the accumulation of capital or investment influences economic growth investment. The increasing wealth will encourage an increased reduction of goods and services. This theory also emphasizes that capital or investment is essential for a country's economic growth in the long term. Todaro & Smith (Riyandi & Woyanti, 2022) claimed that Solow's economic growth model is an update of Harrod-Domar's original Economic Growth Model. The fundamental change substitution between labor and capital. This theory holds that the degree of technological improvement and the expansion of the supply of the factors of production—labor, capital accumulation, and population—drive economic growth.

The Solow-Swan theory can be expressed as:  $Y(t) = f [ K(t), L(t), A(t) ]$

In this context, K refers to capital accumulation, L represents labor, and A describes the rate of technological advancement (Nababan & Armelly, 2024).  
Gross Regional Domestic Product (GRDP)

Generally, GRDP is the sum of the final value of products and services (net) produced by all economic units in a given area or the total added value created by all business units (BPS, 2024). According to Solow-Swan's hypothesis, Gross Regional Domestic Product (GRDP) is the primary indicator that characterizes a region's economic state within a specific period. The GRDP indicates the added value of all economic activity in an area.

Gross regional domestic product (GRDP) measures the added value of products and services based on current prices for the year. GRDP is based on constant prices; conversely, it displays the value of goods and services determined using prices from a specific base year. The current price of GRDP helps assess the capacity of economic resources, changes, and the economic structure of a region. On the other hand, constant price GRDP is used to measure actual economic growth from year to year, which is not affected by price fluctuations (Alwi & Aisyah, 2023)

### ***Foreign Direct Investment (FDI)***

Foreign Direct Investment (FDI) is a foreign investment made by foreign parties to run a business in a country. This investment is carried out by the government and foreign companies or using capital from abroad (Adi, 2020). FDI, one of the foreign capital flows to developing countries, offers incredible opportunities to start a business, build production facilities, purchase capital

goods, acquire land, and acquire supplies and raw materials where investors are actively involved in business operations (Ridha & Budi, 2020).

Foreign investment is an essential source of financing for developing regions and can significantly contribute to development (Kambono & Marpaung, 2020). The research conducted (Ali et al., 2024; Comes et al., 2018; Magdalena & Suhatman, 2020; Mahmood et al., 2018; K. T. Nguyen & Nguyen, 2021; Noori, 2019; Onafowora & Owoye, 2019) shows that foreign investment in the long term has a positive impact on economic growth. Meanwhile, a study conducted by (Belloumi & Alshehry, 2018; Shabbir et al., 2021; Sofien et al., 2019) shows that foreign investment hurts the economy.

### ***Domestic Investment (DI)***

Based on Law Number 25 of 2007, domestic investment is defined as investment from within the country, both state-owned and business actors, to carry out business activities in Indonesian territory. Domestic investment is among the most critical factors affecting output and income levels. The increase in domestic investment is hoped to encourage expanding household businesses and the private sector and optimizing regional resources (Damayanti, 2022).

According to Solow's theory, domestic investment can contribute to economic growth by increasing production capacity, creating new jobs, and modernizing technology. Through Domestic Investment, capital per worker, or what is known as "capital deepening," increases, thereby increasing labor productivity. In the long term, this increase in productivity can improve a region's Gross Regional Domestic Product (GDP). Investment in the form of domestic and foreign investment needs to be supported by the community to support the economy (Maulida et al., 2022).

Based on studies that several studies have been carried out (Ali et al., 2024; Magdalena & Suhatman, 2020; Mahmood et al., 2018; K. T. Nguyen & Nguyen, 2021; Shabbir et al., 2021; Sofien et al., 2019) found that domestic investment has a positive impact on a country's economic growth. Meanwhile, some studies have found domestic investment hurts the economy (Belloumi & Alshehry, 2018).

### ***Labor Force(LF)***

According to Law Number 13 of 2003, the labor force is any person who can do work to produce goods and/or services to meet the needs of individuals and society (Saputra & Rusdi, 2024). Meanwhile, according to the International Labor Organization (ILO), the labor force includes the working-age population between 15 and 64 years old. The number of actively working workers reflects the condition and availability of jobs. The more jobs available, the higher the total production in Indonesia.

According to Hang et al. (2021), a more effective workforce training program with adequate equipment and infrastructure investment is needed. A country's economic progress is highly dependent on the level of productivity of its population. This productivity must be supported by sufficient investment and good human resources quality. In addition to high productivity, rapid

economic growth also requires efficiency in the production process, thus allowing the economy to achieve optimal production capacity (Widayati et al., 2019).

For the business world, increasing labor productivity increases profits and opens up investment opportunities to expand production capacity. For workers, higher productivity impacts wages and improves working conditions. Increasing labor productivity is essential in creating new jobs in the long term. Meanwhile, for the government, increasing labor productivity can encourage increased tax revenue, support capital accumulation, expand the development of the production sector, and improve the community's welfare (Dung & Huy, 2024).

Previous research (Isnaini et al., 2023; Mamuane et al., 2021; Puspitasari, 2022; Saputra & Rusdi, 2024) stated that the workforce significantly affects economic growth. Meanwhile, research (Alvaro, 2021; Ningsih & Sari, 2018; Nufus & Nilasari, 2024; Winarto et al., 2022) found that the workforce has no (negative) impact on economic growth.

## METHODOLOGY

West Kalimantan, East Kalimantan, South Kalimantan, Central Kalimantan, and North Kalimantan are the five provinces on the island of Kalimantan that are included in this study. Both independent and dependent variables are used in the study. The study's dependent variable is the Gross Regional Domestic Product (GRDP). In the meantime, the labor force and investment—both domestic and foreign—are the independent factors. The Central Statistics Agency (BPS) provided the secondary data and sources. The data is in the form of a time series and cross-sector called panel data, which combines information from 5 provinces on the island of Kalimantan for 10 years (2014-2023) and is analyzed using the Eviews 12 application. The expected effect, fixed effect, and random effect model techniques are used to estimate the equation for this panel data model. Meanwhile, the Chow, Hausman, and LM Tests were used to determine the most suitable method for this study. The F-test, T-test, and R-squared test hypotheses can then be analyzed and regressed.

The following models were employed in this study:

$$\text{Ln\_GRDP}_{it} : \beta_0 + \text{Ln\_}\beta_1\text{FDI}_{it} + \text{Ln\_}\beta_2\text{DI}_{it} + \text{Ln\_}\beta_3\text{LF}_{it} + \text{eit}$$

Information

GRDP : GRDP ADHK last 10 years (Billion Rupiah)

FDI : Foreign Direct Investment (US\$ Million)

DI : Domestic Investment (Billion Rupiah)

LF : Labor Force (Soul)

$\beta_0$  : Constant

i : Kalimantan Province

t : Time series unit 2014-2023

e : Error Rate / Random Error

**RESULTS**

**Model Estimation**

The model estimation test identifies the best model among the three regression approach models. The following are the test results:

Table 1: Results of Chow Test and Hausman Test

Chow Test			
Effects Test	Statistic	d.f.	Prob.
Cross-section F	651.281787	(4,42)	0.0000
Cross-section Chi-square	207.178031	4	0.0000
Hausman Test			
Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	44.564831	3	0.0000

Source: Research Results

Based on the table above, the results of the Chow test show a  $p < 0.05$ . This indicates that the Fixed Effects Model (FEM) is more appropriate compared to the General Effects Model (CEM). In addition, the results of the Hausman test also showed a  $p < 0.05$ . This indicates that a Fixed Effect Model (FEM) was chosen instead of a Random Effects Model (REM). Thus, both the Chow test and the Hausman test confirm that the most suitable model for this study is the Fixed Effects Model (FEM).

**Classic Assumption Testing**

**Multicollinearity Test**

Multicollinearity tests ensure that independent variables do not have a strong correlation with one another and that there is no perfect or solid linear relationship. Comparing correlation values derived from panel regression computations is the test approach if there is less than 0.85 correlation between the variables.

Table 2. Multicollinearity Test Results

	LN_FDI	LN_DI	LN_LF
LN_FDI	1.000000	0.458726	0.502973
LN_DI	0.458726	1.000000	0.571544
LN_LF	0.502973	0.571544	1.000000

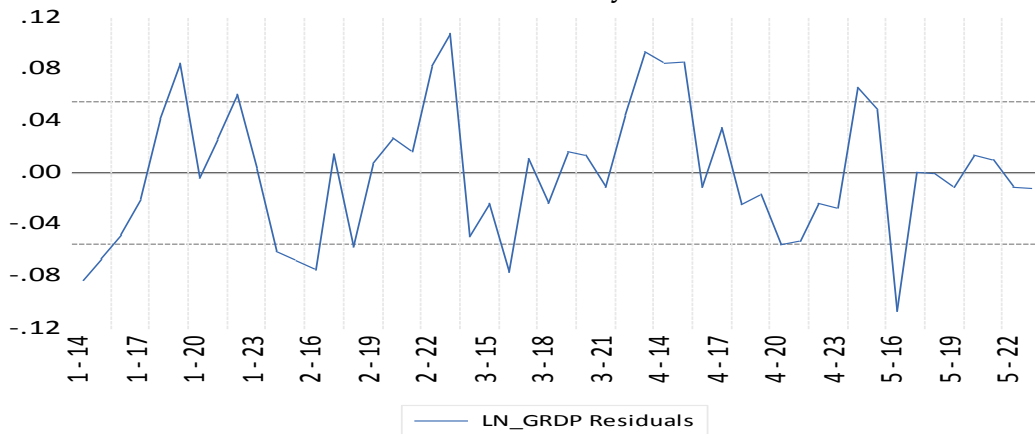
Source: Research Results

Based on the results in the table above, there is no correlation between variables that exceed 0.85, meaning that the regression model is accessible from the multicollinearity problem.

**Heteroscedasticity Test**

The heteroscedasticity test was employed to determine whether the residual value variance varied amongst the regression model observations.

Table 3. Heteroscedasticity Test Results



Source: Research Results

The results of the heteroscedasticity test displayed in the residual graph indicate no heteroscedasticity problem. The graph shows a random residual spread around the horizontal line without a specific pattern; no values exceed the limit (500 and -500). Thus, the regression model can be considered reliable, and the model estimation results are more valid and robust.

**Regression Results**

In the regression analysis, the t-test was carried out to assess the partial influence of the independent variable, the F test to see the simultaneous influence, and the determination coefficient test to measure the ability of the independent variable to explain the dependent variable.

Table 4. Regression Test Results

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-2.376050	2.147116	-1.106624	0.2748
LN_FDI	-0.000943	0.013015	-0.072487	0.9426
LN_DI	0.046730	0.016616	2.812316	0.0074
LN_LF	0.977028	0.159007	6.144569	0.0000
Effects Specification				
Cross-section fixed (dummy variables)				
R-squared	0.994883	Mean dependent var	11.80050	
Adjusted R-squared	0.994030	S.D. dependent var	0.712381	
S.E. of regression	0.055042	Akaike info criterion	-2.815780	
Sum squared resid	0.127246	Schwarz criterion	-2.509856	
Log likelihood	78.39450	Hannan-Quinn criter.	-2.699282	
F-statistic	1166.542	Durbin-Watson stat	1.003725	
Prob(F-statistic)	0.000000			

Source: Research Results



### *Test t (partial)*

The significance of each independent variable's influence on the dependent variable was partially tested using the t-statistical test, which involved determining whether each independent variable's probability value (p-value) was less than 0.05, indicating that the variable had a significant influence on the dependent variable. The findings are as follows:

1. FDI: With a probability of 0.9426 (less than 0.05), H<sub>0</sub> is accepted, and H<sub>1</sub> is rejected. This shows that foreign direct investment (FDI) does not significantly influence the GRDP on the island of Kalimantan.
2. DI: With a probability of 0.0074 (less than 0.05), H<sub>0</sub> is rejected, and H<sub>2</sub> is accepted. This means that Domestic Investment (DI) significantly influences the GRDP on the island of Kalimantan.
3. LF: With a probability of 0.0000 (less than 0.05), H<sub>0</sub> is rejected, and H<sub>3</sub> is accepted. This shows that the Labor Force (LF) significantly affects the GRDP on the island of Kalimantan.

### *Test f (simultaneous)*

The simultaneous test was carried out by observing the probability value of the F-statistic to assess whether all independent variables affected the dependent variable together. With a probability ( $0.0000 < 0.05$ ), H<sub>0</sub> was rejected, and H<sub>4</sub> was accepted, which shows that statistically, the variables FDI, DI, and LF together have a significant influence on the GRDP on the island of Kalimantan in the 2014-2023 period

### *Coefficient Test*

The regression results show an R-squared value of 0.994883, or 99.48%, which means that the FDI, DI, and LF variables together explain 99.48% of the GRDP variation on the Kalimantan island. In other words, only 0.52% of the GRDP variation was influenced by factors outside the variables analyzed in this study.

## **DISCUSSION**

### *The Effect of FDI on GRDP*

According to the regression test results, foreign investment has a negligible impact with a Prob value of 0.9426, higher than 0.05. FDI has an insignificant negative relationship with GRDP, with a coefficient of -0.000943. Foreign investment has limitations in encouraging economic growth due to several factors. One of them is the domestic market, which offers a low rate of return on capital and limited infrastructure to support the economy. In addition, the investment process takes a long time to achieve optimal results. The productivity and quality of human resources are still low, so investment and technology transfer have not been fully able to increase economic growth. Foreign investment generally only targets specific sectors that are less connected to other domestic sectors, so their impact on the economy as a whole is limited. The results of this study are also in accordance with the research conducted by (Al

Akbar, 2022; Sepriani et al., 2021), which also found that investment has an insignificant relationship with economic growth.

### ***The Effect of Domestic Investment on GRDP***

Based on the results of the regression t-test, a probability value (Prob) of 0.0074, which is less than 0.05, indicates that domestic investment (DI) significantly influences GRDP. Thus, the hypothesis that DI positively affects GRDP is acceptable. The regression coefficient of 0,0467 suggests that an increase in domestic investment of 1 percent will be followed by a rise in GRDP of 0,0467 percent, indicating that investment from domestic sources has a strong impetus for economic activity. This great influence shows that domestic investment is significant in driving economic sectors such as infrastructure, industry, and services, accelerating production, and increasing regional output. Domestic investment is often associated with creating local jobs, which increases GRDP and people's incomes. These positive outcomes can result in a sustainable economic cycle in which increased investment drives economic growth. This is to the initial theory that increased investment results in increased production output, which impacts economic growth. This is stated by research (Meilanwati & Tannia, 2021; Nguyen & Nguyen, 2021; Siregar, 2023), which states that DI impacts economic growth.

### ***The Effect of Labor Force on GRDP***

The labor force has a significant influence, according to the regression t-test results, with a Prob value of 0.0000, which is less than 0.05. The Labor Force (LF) variable shows a significant positive relationship with GRDP, with a coefficient of 0.97. This means that if the number of people in the labor force increases by 1 percent, the GRDP will increase by 0.97 percent. This supports the hypothesis that the Labor Force impacts the GRDP on the island of Kalimantan. An increase in the number of workers on the island of Kalimantan can be considered when planning to increase economic growth. It will increase labor productivity, improve the quality of the workforce, provide skills to the workforce, and increase the number of job opportunities available. Thus, the economic growth of Kalimantan Island can have a positive impact on economic growth. This is based on the slow theory, which states that the labor force affects economic growth by fulfilling it with productivity. This is because the number of workers and production output increase, which drives economic growth. This is by research (Isnaini et al., 2023; Mamuane et al., 2021; Saputra & Rusdi, 2024), which states that the labor force impacts economic growth..

## **CONCLUSIONS AND RECOMMENDATIONS**

The findings of this study demonstrate a strong and positive correlation between the island of Kalimantan's GRDP, labor force, and domestic investment. However, foreign investment does not significantly impact the GRDP. Simultaneously, this study shows that foreign investment, Domestic Investment, quality of human resources, and labor force positively and significantly influenced GRDP on the island of Kalimantan from 2014-2023. These components lend credence to the Solow-Swan hypothesis, which holds that improvements in

production inputs—labor, population, capital accumulation, and technology—allow for economic growth. Nevertheless, there are still issues with maximizing foreign investment to increase its effectiveness as a driver of economic growth. Therefore, more focused and all-encompassing policies are required to maximize the workforce's potential and people's quality of life while boosting the effectiveness of foreign investment to promote sustainable economic growth on the island of Kalimantan.

#### **FURTHER STUDY**

This research has several limitations that may concern future research. First, the data used is limited to five provinces on the island of Kalimantan for 10 years (2014-2023). Further studies could extend the study period and include a more comprehensive range of areas to reflect national conditions better and deepen the analysis. Moreover, while this study examines the impact of domestic investment (DI), foreign direct investment (FDI), and labor force (LF) on Gross Regional Domestic Product (GRDP), future studies could consider additional factors, such as infrastructure quality and technological accessibility, which are anticipated to contribute to economic growth significantly.

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