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Research Article

Analysis of the Influence of Population and Unemployment on Economic Growth in Central Kalimantan

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Abstract: This study aims to investigate the empirical impact of population size and unemployment rates on economic growth in Central Kalimantan Province. The research focuses on the regional context of Central Kalimantan, utilizing a longitudinal dataset covering the eleven-year period from 2013 to 2024. To achieve the research objectives, the study employs quantitative analysis through the SPSS software package, utilizing multiple linear regression as the primary analytical tool to examine the relationship between the dependent variable (economic growth) and the independent variables (population and unemployment). The findings of the analysis reveal a divergent impact between the two independent variables. The results indicate that the population has a significant and positive influence on economic growth in Central Kalimantan during the 2013-2024 period, suggesting that demographic factors play a crucial role in regional expansion. Conversely, the unemployment rate was found to have no significant effect on economic growth within the same timeframe. Furthermore, the study conducted a comprehensive suite of classical assumption tests to ensure the validity and reliability of the statistical model. The results of these diagnostics confirm that the regression model adheres to the assumption of normality, shows no evidence of multicollinearity among the variables, and is free from symptoms of heteroscedasticity. Additionally, the analysis concludes that the model does not exhibit any issues related to autocorrelation. Consequently, the regression model is deemed statistically robust and appropriate for providing an accurate representation of the economic dynamics in Central Kalimantan.

Keywords: Economic Growth; Employment Opportunity; Population; Productivity; Unemployment

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1. Introduction

The population in a region or area will inevitably affect population density, and this is inevitably related to the limited job opportunities available. Because available job opportunities are few and job seekers are abundant, an unmet workforce will create unemployment.

Population is a crucial element in economic activity and efforts to build an economy because it provides labor, experts, company leaders, and entrepreneurs in generating economic activity (Sukirno, 2006). In his population theory, Thomas Robert Malthus stated that population growth will exceed the required food supply. Malthus was deeply concerned that the time required for a population to double in size was very short. He described that if no restrictions were imposed, population growth would tend to grow geometrically. These series indicate that an imbalance between population growth and food supply will occur within 200 years, with the ratio becoming 256:9 (Mantra, 2000) (Michelle G. Karauan1, 2023).

One important indicator of a country's economy is its population. A region has the potential to become a market due to its large population, which can boost economic growth (Amelia, 2024).

Classical economists, pioneered by Adam Smith, even considered population a potential input that could be used as a factor of production to increase the output of households and companies. A larger population means a greater workforce. However, another economist,

Robert Malthus, argued that, under initial conditions, population growth can indeed increase economic growth, but under optimal conditions, population growth will not increase economic growth and may even decrease it (Mustika, 2011) (Silastri, 2017).

Population is both a resource and a challenge in economic development. In the context of economic growth, the population represents a potential workforce, but without improving its quality, a large population can become a burden. Dahliah and Nur (2021) emphasize that population growth that is not accompanied by growth in the Human Development Index (HDI) and job availability can increase poverty levels and slow economic growth. Therefore, population quality is a crucial variable in analyzing its impact on GRDP (Hidayat, 2025).

Population is a key resource that significantly influences development in a region. According to the Population Reference Bureau (Nurhayati & Rahman, 2003), population plays a crucial role in economic development. Population is the number of people occupying a specific area at a specific time. Population size is typically linked to a country's growth (income per capita), which roughly reflects its economic progress (Persaulian et al., 2013) and (Lailani, 2022).

A country's success in solving its own economic problems can be seen from the country's macro and microeconomics. Macroeconomics is the study of activities that discuss a country's economy. One macroeconomic indicator used to see/measure a country's economic stability is the unemployment rate. Changes in this indicator will impact the dynamics of economic growth (Wicaksana & Rachman, 2018). Based on the unemployment rate, a country's condition can be seen, whether its economy is growing or slowing or even declining. In addition, the unemployment rate can also be seen in the inequality or gap in the distribution of income received by a country's people. Unemployment can occur as a result of a high rate of change in the workforce that is not balanced by the availability of sufficient employment opportunities and a relatively small percentage of labor absorption. This is due to the low growth rate of job creation to accommodate the workforce ready to work (Kusumawati et al., 2021; Pakaya et al., 2023; Mokoagow, 2023).

Unemployment is a situation in which a person in the labor force wants to find work but is unable to do so. A person who is unemployed but not actively seeking work is not considered unemployed. Unemployment can occur due to an imbalance in the labor market. This indicates that the number of workers offered exceeds the number of workers demanded (Mankiw, 2013). In internationally defined standards, unemployment is defined as a person who is classified as part of the labor force and is actively seeking work at a certain wage level but is unable to find the job they desire (Sugianto, 2020).

Unemployment is a major problem that frequently occurs in a country. The term "unemployment" refers to the government's inability to provide jobs for every resident within its jurisdiction. Unemployment occurs as a result of the imbalance between the workforce and the number of job opportunities (vacancies). Unemployment only occurs when the workforce in a country is significantly larger than the number of job opportunities or vacancies available. Consequently, some workers become unemployed and are forced to remain unemployed temporarily or until new job openings become available that match their qualifications (Marini, 2019).

Economic growth is a crucial component of analyzing economic development in a region. This is because economic growth is a key element in economic development and has broad policy implications, both for the region itself and for other regions. In Classical Theory, Adam Smith stated that one of the determining factors of economic growth is population growth. An increasing population will expand market share, and market expansion will increase specialization within the economy (Iqbal, 2018).

One indicator that can be used as a macro-level benchmark for the success of economic development in a region is economic growth, which is measured by changes in Gross Regional Domestic Product (GRDP). As explained by the Central Statistics Agency (2021), GRDP is the sum of the added value generated by all business units within a region during a specific period (Saniah, 2023).

The increasing number of unemployed in a country will impact the economic growth in that country/region. From an economic perspective, unemployment will increase the number of poor people, this has an impact on low economic income, and a high unemployment rate can lead to an increase in homelessness, begging, and increased crime such as theft, robbery, and others to survive. One of the causes of high unemployment is the lack of job opportunities and the lack of skills of job seekers, including educated job seekers. Indonesia, as a developing country, faces complex challenges in maintaining a balance between economic growth, inflation stability, and controlling the unemployment rate. Unemployment is one of

the social and economic issues that has become a concern in various countries, including Indonesia. The high unemployment rate reflects the suboptimal utilization of existing human resources. A situation where someone is classified as a workforce who does not have a job even though that person has the ability and desire to work. The productive age of the workforce is usually 15 years - 64 years. A high unemployment rate indicates an imbalance between the number of jobs and job seekers (Vasha, 2025).

Central Kalimantan, as one of the largest islands in Kalimantan, has a population that increases annually, as shown in Table 1 below. In 2016, the population was approximately 2,550.19 million people, and by 2023, it was expected to reach approximately 2,928.5 million people. Furthermore, unemployment has also increased, reaching 52,937,000 people in 2018 and 58,631,000 people in 2024. Furthermore, economic growth has also increased, reaching Rp 83,900.00 billion in 2016 and Rp 109,094.7 billion in 2023.

Table 1. Population and Unemployment Rates on Economic Growth in Central Kalimantan

Year	Total Population	Number of Unemployed (Thousand/Person)	Economic Growth (Billion)
2013	2384733	34.817	69410
2014	2439858	38.682	73724
2015	2495035	57.780	78890
2016	2550192	63.238	83900
2017	2605274	53.962	89541
2018	2660209	52.937	94566
2019	2714859	55.473	100349
2020	2669969	63.309	98933
2021	2822900	63.874	102294
2022	2876100	59.829	102481
2023	2773750	57.762	109094
2024	2809700	58.631	113611

Source: Central Kalimantan in Figures 2020, 2016, 2022, 2024, 2025

Based on the description above, the author wishes to conduct a more in-depth study of the influence of population size and unemployment on economic growth in Central Kalimantan.

2. Literature Review

Population

The population is generally defined as the total number of people residing in a country's geographic area during a specific period and meeting the requirements stipulated by state regulations (https://ekspektasia.com.2019). Population is the number of people occupying a territory at a specific time (Mulyadi, 2008). Population is the group of people who reside and reside within a country (Nurdiman, 2008). Based on the above experts, it can be concluded that population is the number of people living in a territory and settling in that area at a specific time (Fitri Yenny, 2020).

Population and economic growth are closely linked and are considered one of the many positive factors driving economic growth. Population growth can boost economic growth and expand markets. Furthermore, population growth maximizes labor productivity and fosters technological advancement. Population growth, coupled with increased knowledge resulting from technological advancement, will lead to increased demand for goods and services. In essence, population growth does not always have a positive impact on economic growth. Population growth, which should be a factor in increasing economic growth, can actually have the opposite effect, creating factors that can lead to a decline in economic growth (Desmawan, 2023).

According to classical economists, the driving factors that can influence economic growth are generally population growth, the availability of capital goods, land area and natural resources, and the level of progress and technology currently in use. However, they focused on the added value of population growth, which can influence economic growth. This is reinforced by Malthusian economic theory, which also states that economic development is related to population growth in a region. If population growth occurs in the future, it can affect the demand for goods and services (Sari, 2021).

One of the production factors that influences productivity and economic growth is population growth. Production activities are inseparable from the population, which is the driving force in the production of goods and services (Martadinata, 2022). Population growth

can increase the workforce and demand for goods and services, resulting in significant output and continued economic growth (Utomo et al., 2022). West Java Province experienced the highest population growth rate in 2018, at 1.34%. Subsequently, there was a sharp decline in population growth, from 1.30% to -2.11% in 2020. This sharp decline in population growth was due to the influence of migration and increased mortality rates due to the pandemic. The population growth rate then increased in 2021 due to the increasing birth rate, indicating a growing population (Arina, 2024).

Based on research conducted by Handayani et al. (2016), it was found that population has a positive and significant influence on economic growth. This means that when the population of a region increases, it is associated with increased economic growth in that region. These findings indicate that population plays a significant role in influencing the economic conditions of a region. This is supported by research conducted by Yenny & Anwar (2020) and Rahajeng (2021), which shows that population has a significant and beneficial impact on economic development. These results indicate that higher market demand and higher investment opportunities are two ways in which population expansion can drive stronger economic development. These findings suggest that population growth may be associated with rapid economic expansion. Population growth can lead to increased consumer demand and market potential, which in turn spurs economic expansion (Nurul, 2024).

Unemployment Rate

Unemployment is a common problem faced by developing countries, including Indonesia. In Indonesia, unemployment is a crucial issue to address, given the annual increase in unemployment rates, coupled with the increase in the population and workforce. Unemployment can lead to reduced productivity, leading to social problems (Andrik & Putu 2017). Furthermore, unemployment results in resources being wasted because they are not used for productivity-enhancing activities, which ultimately leads to a lack of income and reduced purchasing power (Jeray, 2023).

Consequently, unemployment can impact the economic growth of a country or region. This has highlighted the importance of economic growth as a crucial indicator in assessing the performance of an economy, particularly in analyzing the results of economic development within a country or region. An economy is considered to be experiencing growth if the production of goods and services increases compared to the previous year. Economic growth indicates the extent to which economic activity can generate additional income and improve the well-being of its citizens over a specific period. The continued increase in the economic growth of a country, region, or area indicates that the country's or region's economy is growing and developing (Meiriza, 2024).

The relationship between unemployment and economic growth is complex and interconnected. High unemployment is often associated with slow economic growth, as the number of unemployed indicates inefficiencies in human resource utilization. Conversely, slow economic expansion can exacerbate unemployment, creating a cycle that is difficult to break. Previous research shows that countries with low unemployment rates generally experience more consistent and resilient economic expansion (Syafii, 2020; Ahmad, 2024).

Unemployment is generally caused by the disproportionate number of jobs available to absorb them. Unemployment often becomes an economic problem because it reduces productivity and income, which can lead to poverty and other social problems. The lack of income forces the unemployed to reduce their consumption spending, leading to a decline in prosperity and well-being. Prolonged unemployment can also have negative psychological effects on the unemployed and their families. Excessively high unemployment rates can also lead to political, security, and social unrest, thus disrupting the development process (Sejati, 2020).

Economic Growth

Economic growth is a crucial factor in assessing the performance of an economy. A country's economic growth is a key indicator of economic development success (Ndawareha et al., 2024). If economic growth in a region increases, it is expected to reduce the unemployment rate. However, if rapid population growth creates a potential workforce, it will stimulate economic growth. If rapid population growth does not create a potential workforce, it will hinder economic growth (Neno et al., 2024). The increasing and decreasing unemployment rate will be influenced by a number of factors, including economic growth (Safitri & Endang, 2024; Nurningsih, 2025).

Economic growth is the process of continuously changing the condition of a country's economy towards a positive direction over a certain period of time (Putra, 2018). Economic growth is defined as the process of changing regional economic conditions over a certain

period of time (Hasyim, 2016). Meanwhile, in Sukirno (2015) economic growth is the development of economic activities that result in increased production in the region. Development carried out in every country has the same goal, namely achieving prosperity and public welfare. A country will implement various strategies in various fields, both long-term and short-term, to achieve optimal economic development. For a country, economic development is very important to determine the success of the development achieved. A country can be said to have achieved success in economic growth can be seen from its economic growth rate. Economic growth is one of the most important indicators in an economy, (Sukirno, 2015; Padang, 2019).

Economic growth reflects a country's economic development, as the rate of economic growth reflects the country's economic condition. Economic growth is considered a reflection of a country's economic development because it is an indicator of the success of economic development. Economic growth is the process of continuously changing a country's condition toward a better state over a certain period. This can be seen from the continuous increase in the supply of goods, advanced technology that influences the degree of growth in the ability to provide a variety of goods to the population, and the widespread and efficient use of technology. Governments around the world consider economic growth as a crucial aspect in maintaining economic stability and national progress. Stable and continuously increasing economic growth is expected to create better and more advanced economic conditions (Auxiliadora, 2024).

3. Research Method

Data and Data Sources

The data for this study are secondary data obtained from various sources related to the research, including the Central Statistics Agency (CSA) of Central Kalimantan. These data include population, unemployment, and economic growth in Central Kalimantan from 2013 to 2024.

Data Analysis Method

Multiple Regression Analysis

This study used multiple linear regression analysis to determine the influence of more than one independent variable on the dependent variable. In this study, the independent variables are population, unemployment, and economic growth.

Formula:

$Y = a + b1X1 + b2X2 + e$

Description:

Y = Economic growth
X1 = Population
X2 = Number of unemployed
a = Constant
b = Regression coefficient
e = Error Term

Classical Assumption Test

a. Normality Test

The normality test aims to determine whether the dependent and independent variables in the regression model both have a normal distribution. A good regression model has a normal or near-normal data distribution. One method to determine normality is by using graphical analysis, either by viewing the graph as a histogram or by viewing a Normal Probability Plot. Data normality can be seen from the distribution of data (points) on the diagonal axis of a normal P-Plot graph or by viewing the histogram of residuals (Manua, 2018).

b. Multicollinearity Test

Multicollinearity testing can be performed by examining the Tolerance and Variance Inflation Factor (VIF) values in the regression model. The decision-making criteria for multicollinearity testing are as follows (Ghozali, 2016):

If the VIF value is <10 or the Tolerance value is >0.1, multicollinearity is not present.

If the VIF value is >10 or the Tolerance value is <0.1, multicollinearity is considered present.

If the correlation coefficient of each independent variable is >0.8, multicollinearity is present. However, if the correlation coefficient of each independent variable is <0.8, then multicollinearity does not occur.

https://accounting.binus.ac.id/2021/08/06/memahami-uji-multikollinearitas-dalam-model-regresi/

c. Heteroscedasticity Test

The heteroscedasticity test is a crucial diagnostic used to identify unequal residual variances among the variables within a regression model. In statistical analysis, a robust and reliable regression model is characterized by homoscedasticity, meaning it does not exhibit any symptoms of heteroscedasticity. To evaluate this, researchers often utilize the Glejser Test as a primary decision-making guideline. According to Yusuf (2024), the presence of heteroscedasticity is determined by the significance value (Sig); specifically, if the significance value is greater than 0.05, it indicates that the model is free from symptoms of heteroscedasticity. Conversely, if the significance value is less than 0.05, it confirms that symptoms of heteroscedasticity are present within the model, potentially affecting the validity of the results.

d. Autocorrelation Test

The autocorrelation assumption is only tested on time series data or cross-sectional data that have a standard sequence pattern between observations. To determine the presence or absence of autocorrelation, a Run Test can be performed on the residual values to determine whether the residual signs (positive (+) and negative (-) signs) are random. If the residual signs are random, autocorrelation is absent; if they are not, autocorrelation is present. https://pelatihan-ui.com/uji-autokorelasi-dengan-run-test-dengan-spss-18/

4. Results and Discussion

Results

Classical Assumption Test

a. Normality Test

The graph below shows the results of the normality test:

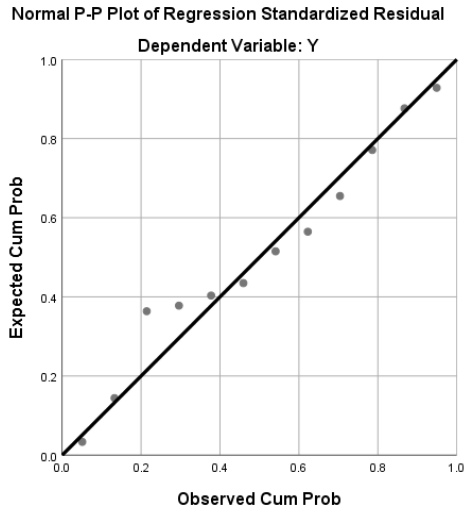

Figure 1. Normality Test Results

The graph above shows that the points in the P-Plot are spread around the diagonal line and follow the direction of the line. Therefore, it can be concluded that this regression model meets the assumption of normality.

b. Multicollinearity Test

The results of the classical assumption test in the multicollinearity test of the influence of population and unemployment on economic growth in Central Kalimantan can be seen in table 2 below.

Table 2. Multicollinearity Test

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	-5267.602	11868.937		-.444	.669		
	X1	-.001	.002	-.431	-.365	.724	.080	12.537
	X2	.008	.012	.727	.617	.555	.080	12.537

a. Dependent Variable: Y

c. Heteroscedasticity Test

The results of the classical assumption test using the Glejser test to determine the effect of population and unemployment on economic growth in Central Kalimantan are shown in Table 3 below.

Table 3. Heteroscedasticity Test

Coefficients[a]					
Model	Unstandardized Coefficients		Standardized Coefficients	T	Sig.
	B	Std. Error	Beta		
1 (Constant)	-125527.328	28156.443		-4.458	.002
X1	.081	.013	.916	6.074	.000
X2	.063	.229	.042	.277	.788

a. Dependent Variable: Y

Based on the output above, the sig. value for the population variable is 0.000. Meanwhile, the sig. value for the unemployment variable is 0.788. Since the significance values for X1 and X2 are greater than 0.05, according to the Glejser test, it can be concluded that there are no symptoms of heteroscedasticity in the regression model used.

d. Autocorrelation Test

The results of the classical assumption test for the autocorrelation test of the effect of population and unemployment on economic growth in Central Kalimantan can be seen in Table 4 below.

Table 4. Autocorrelation Test

Runs Test	
	Unstandardized Residual
Test Value[a]	-318.85030
Cases < Test Value	6
Cases >= Test Value	6
Total Cases	12
Number of Runs	4
Z	-1.514
Asymp. Sig. (2-tailed)	.130

a. Median

Based on the SPSS output above, the Asymp. Sig. (2-tailed) value is 0.130, or greater than (>) 0.05. It can be concluded that the regression model does not exhibit any autocorrelation issues.

Multiple Regression Analysis

The Multiple Linear Regression test of the influence of population and unemployment on economic growth in Central Kalimantan from 2013 to 2024 can be seen in Table 5 below.

Table 5. Multiple Linear Regression Results

Coefficients[a]								
Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	-125527.328	28156.443		-4.458	.002		
	X1	.081	.013	.916	6.074	.000	.513	1.949
	X2	.063	.229	.042	.277	.788	.513	1.949

a. Dependent Variable: Y

Based on the results of the multiple linear regression analysis, the study reveals distinct outcomes for the variables examined. The population variable (X_1) yielded a significance value of 0.000, which is considerably lower than the 0.05 threshold, thereby indicating that population size has a statistically significant influence on economic growth in Central Kalimantan. In contrast, the unemployment variable (X_2) produced a significance value of 0.788. Since this value exceeds the 0.05 alpha level, it is concluded that unemployment does not have a significant impact on the economic growth of the region within the observed period.

5. Conclusion

Based on the research findings and subsequent discussion, several key conclusions can be drawn regarding the economic landscape of Central Kalimantan between 2013 and 2024. Primarily, the analysis demonstrates that population size exerts a significant influence on economic growth, whereas unemployment does not show a statistically significant impact. This phenomenon likely stems from the role of the population as a vital workforce that contributes positively to regional productivity; conversely, the prevailing levels of unemployment during this period did not reach a threshold sufficient to fundamentally alter the trajectory of economic expansion. Furthermore, the statistical integrity of these findings is supported by comprehensive classical assumption testing. The results confirm that the regression model adheres to the requirements of normality, remains free from the complications of multicollinearity, and shows no symptoms of heteroscedasticity. Finally, the analysis concludes that the model is devoid of any autocorrelation issues, ensuring that the regression results are both reliable and robust for interpreting the relationship between demographic factors and economic performance.

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