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Determinants Of Economic Growth In Central Java 2018 - 2023

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Abstract

The economy of a region is assessed based on its economic growth, which is a measure of the success of development in the region. Economic growth is a long-term increase in per capita production that reflects the dynamics of the economy. Evaluating economic growth is an important metric to assess the progress of a region, where the economy of a region will be better if its economic growth is faster. This study aims to analyze four factors that influence economic growth, namely: 1) the influence of the labor force, 2) the influence of years of schooling, 3) the influence of population density, and 4) the influence of the Human Development Index (HDI). This research is a quantitative study using secondary data from BPS for the period 2018-2023 and panel data regression analysis with Eviews 12. The results showed that: 1) the labor force has a significant positive effect on economic growth, 2) length of schooling has a significant positive effect on economic growth, 3) population density has a significant negative effect on economic growth, and 4) HDI has a significant positive effect on economic growth.

Keywords*: Economic growth, human development index, labor force, population density, years of schooling*

INTRODUCTION

Economic growth is essential for evaluating the effectiveness of development initiatives in a certain area. A nation's economic landscape undergoes alterations and transformations due to economic expansion. Developed and developing nations have demonstrated a strong interest in accelerating economic development. Economic growth is regarded as one of the critical metrics to consider when evaluating a country's economic performance and efforts toward economic advancement. (Chirwa & Odhiambo, 2017) Many developed and developing countries have regarded high and sustained economic growth as a measure of success and a key priority. Active labor force participation is essential for countries to achieve prolonged economic growth. Growth is defined as the long-term rise in output per capita that includes the dynamic elements of the economy. Economic growth is seen as a crucial indicator of the development and prosperity of a certain area. A region will have a better economy if its economic growth is higher (Lucya & Anis, 2019). Economic growth refers to the process by which the economic conditions of a country continue to progress and enhance over an extended period (Yunianto, 2021).

Economic growth refers to the long-term improvement and advancement of a country's economic conditions over time. This involves increasing the economy's productive capacity, leading to a rise in national income. Consistent economic growth indicates a region's effective attempts at economic development. Regional economic development is an endeavor that requires collaboration between local governments and the general public to manage available resources effectively. This entails governmental and commercial sectors working together to provide fresh employment possibilities and boost economic development. The process includes establishing new organizations, starting rival companies, and enhancing the capacity of the present workforce to produce better goods and services. It also entails spotting fresh markets and supporting businesses to improve the area's economy's competitiveness.

For an economy to experience growth over time, three essential elements are required: the expansion of product supply. Sustained economic growth reflects the efforts made by both central and local governments to promote the well-being and prosperity of the population. If actual services offered to factors of production are higher in a given year than in prior years, a region's economy is said to be increasing. The process of fostering economic activity that increases a community's output of goods and services and raises overall social prosperity is known as

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"economic growth." According to (Sukirno, 2016), Economic development is primarily driven by changes in economic activity that cause society's internal production of goods and services to increase. Economic advancement is defined as economic activity that exceeds historical levels. Although they have different meanings, economic development and economic growth are connected; the former is the process by which output per capita rises steadily over the long run. Robert M. Solow and T.W. Swan developed the neoclassical theory of economic growth in 1956. The interaction components of production, capital accumulation, technological advancement, and population growth affect economic development in the Solow-Swan model.

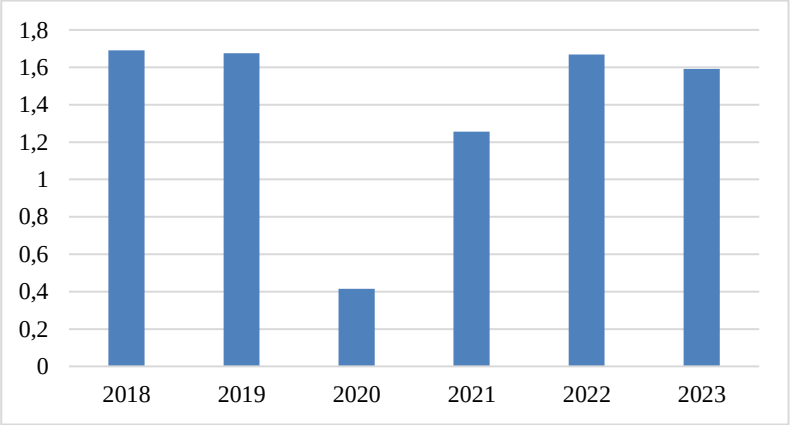

Figure 1 Indonesia's Economic Growth Rate 2018-2023 (percent)
Source: BPS

Fluctuations over several years are influenced by several factors, such as in 2020, there was a decrease of 1.26 per cent; in 2021, it became 0.41 per cent. From 2021 to 2023, there were fluctuations after the COVID-19 pandemic; there was a significant growth rate of 1.25 per cent (BPS, 2023). Population density, length of schooling, labor force participation, and the human development index are a few factors that affect economic growth swings.

The labor force is essential for the economy since it has both good and negative features. Expanding the labor force will raise the employment count and result in production. However, if the availability of jobs does not match the growth of the labor force, this will affect growth. A more significant labor force increases the production level, and a more substantial number of employees can mean more productive employees. The contributions of abilities, expertise, and discipline constitute a significant and indispensable aspect of economic expansion. A country or region can buy sophisticated equipment but cannot employ a skilled and well-trained workforce. A professional and educated workforce cannot use these capital goods efficiently (Eliza, 2015).

Meeting and satisfying consumer needs and employment opportunities are only possible with increased total output (goods and services) or sustained economic growth. According to macroeconomic understanding, economic growth is economic growth, which means national income growth. One of the things that contributes to economic growth is the number of school years. Education improves technical progress and entrepreneurship as well as labor productivity and inventiveness. Furthermore, education guarantees social and economic development and enhances income distribution. It shows that the potential of an economy to embrace current technologies and boost its capacity for sustainable development and expansion depends much on education. In principle, education issues are never separated from economic problems, either directly related or secondary. The concept of education as an investment in creating quality human beings has become a particular concern in all countries worldwide. In addition, development that focuses on education will undoubtedly impact other development sectors (Widiansyah, 2017). Years of schooling encourage individuals to continue to improve their ability

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to attend formal schooling. The 9-year basic education program should be extended to 12 years and supported by expanding secondary school facilities and infrastructure so that high school graduates can continue their studies reasonably (Hepi & Zakiah, 2018). Therefore, a unique system is needed to achieve the goal of making people's lives brighter.

Apart from economic growth, population density is a factor influencing economic growth. Population growth can stimulate economic growth by increasing market size and boosting economic specialization. Apart from economic growth, population density is a factor influencing economic growth. Market expansion and economic specialization are two ways population growth and economic growth are related. One of the relationships between economic growth and the labor force is that additional employment opportunities will lead to further income distribution inequality, which will create poverty and reduce economic growth (Anggoro & Soesatyo, 2015). In addition to economic growth, population density also affects the economy. Economic growth can be driven by population growth, and as the market grows, economic growth will increase as the size of the market increases. The inhabitants' quality of life may be impacted by population density. Improving the quality of life in highly populated places is significantly more difficult.

In addition to economic growth, additional factors affect population increase and density. Population increases can boost economic growth by increasing market size and boosting economic specialization. As a result of specialization, the level of economic activity increases. Specialization and division of labor among workers accelerate economic growth, as specialization increases labor productivity and encourages technological development. The problem of population density is an uneven distribution. Population density can affect people's quality of life (Yunianto, 2021).

Human development indices and quality of life indices can be used to assess a country's human resources. A low Human Development Index (HDI) indicates low labor productivity within the population. Eventually, this poor output results in smaller incomes and a more underprivileged population. When people of a country enjoy a long and healthy life and the useful information acquired inside the region or nation, then humans are said to be the real riches of that nation. This helps to enable a fair quality of living. A region's or nation's high Human Development Index indicates effective efforts at human development. Measuring a nation's human resource quality requires an important statistic, HDI. More outstanding human resources are accessible for greater economic development when the HDI is higher. A region's human resources are of higher quality when measured by its HDI rating (Alkhoiriyah et al., 2021).

This study has four goals. The first is to look into the relationship between the labor force and economic development. Secondly, to ascertain how average years of education affect economic development. Third, to assess how population density shapes economic development. Moreover, it aims to find how the Human Development Index (HDI) influences economic progress. Finding key research topics helps to show the significance of these particular characteristics, offers guidance for policymaking, and inspires more study. The study uses panel data regression analysis to evaluate the correlations between the labor force, years of education, population density, HDI, and economic growth. This research is anticipated to add to the results of earlier investigations and offer more thorough policy recommendations to boost Central Java's economic growth.

METHOD

The panel data regression technique is applied in this investigation. For this study, secondary data was obtained from pertinent organizations, governmental bodies, and other relevant sources, including the Central Statistics Agency (BPS). The collected data is subsequently subjected to quantitative analysis. Quantitative data, which can be quantitatively scaled, is used in this study. This data is better suited for statistical analysis. Two types of statistics are used in the analysis: descriptive and inferential. Tables and graphs help with the descriptive analysis. We will use a panel data regression model technique for the inferential analysis. This dataset covers the

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years 2018–2023 and 35 districts in the province of Central Java. Eviews 12 is the program that processes the data. The human development index (HDI), population density, number of workers, and education level are the independent variables that we will use to analyze the association between Central Java Province's GDP growth using the panel data regression model. Central Java's economic development may be seen using the function model. What follows is the formulation:

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \varepsilon \ldots\ldots\ldots\ldots\ldots (1)$$

Where :

Y	: Economic Growth
β_0	: Constanta
X_1	: Labor Force
X_2	: Years of schooling
X_3	: Population Density
X_4	: HDI
$\beta_1 - \beta_4$	: Regression coefficient of $X_1 - X_4$
ε	: error

RESULTS AND DISCUSSION

This research used data from BPS on the labor force, years of schooling, population density and HDI for 2018-2023 in Central Java Province, which has 35 districts.

Table 1. Descriptive Statistics Results

	N	Minimum	Maximum	Mean
labor force (X1)	210	63418	21069	1090592
years of schooling (X2)	210	6,19	11,24	7,49
population density (X3)	210	450,00	11878,00	1898.367
HDI (X4)	210	65,67	84,99	72,77
economic growth (Y)	210	-10,28	6,81	3,80

Source: Secondary Data, 2024

As can be seen from Table 1 above, 210 research samples were employed in this investigation. The dependent variable, or economic growth, has a mean value of 3,80 and a range of values from -10,28 to 6,81. The labor force is the independent variable with a minimum value of 63418, a maximum value of 21069, and an average of 1090592. The years of schooling variable ranges from 6,19 to 11,24 at its highest and 7,49 at its lowest points. The population density variable has an average value of 1898,367, a minimum value of 450,00, and a maximum value of 11878. The HDI variable ranges from a minimum of 65,67 to a maximum of 84,99, with an average value of 72,77.

Table 2. Estimation Results of the Joint Effect Model

	Coefficient	Std.Error	t-statistic	Prob
labor force (X1)	0,038	0,009	4,08	0,000
years of schooling (X2)	0,172	0,054	3,15	0,001
population density (X3)	-0,017	0,006	-2,69	0,007
HDI (X4)	0,145	0,034	4,23	0,000

Source: Secondary Data, 2024

$$Y = \beta_0 + 0{,}038X_1 + 0{,}172X_2 + (-0{,}017)X_3 + 0{,}145X_4 + \varepsilon$$

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Table 2 above illustrates some findings, one of which is that economic growth (Y) is positively impacted by the labor force variable (X1); for every rise in X1, Y will increase by 0.038. Economic growth (Y) is positively impacted by the variable years of schooling (X2); a one-year increase in X2 will result in a 0.1733% increase in Y. Economic growth (Y) is negatively impacted by the population density variable (X3); for every unit increase in population density (X3), economic growth (Y) is reduced by 0,017. Economic growth (Y) is positively impacted by the HDI variable (X4); a one-point increase in the HDI (X4) will result in a 0.145 increase in Y.

Table 3. Normality Test Results

Kolmogorov-Smirnov Z	0,659
Asymp. Sig. (2-tailed)	0,778

Source: Secondary Data, 2024

The adoption of a significance threshold of 0.778 > 0.05, as indicated in Table 3, suggests that the data does not follow a normal distribution.

Table 4. Heteroscedasticity Test Results

Heteroskedasticity Test: Glejser			
F-statistic	1,54	Prob. F(4,205)	0,19
Obs*R-squared	6,13	Prob. Chi-Square(4)	0,19
Scaled explained SS	7,00	Prob. Chi-Square(4)	0,14

Source: Secondary Data, 2024

The Prob value is shown in Table 4 above. Homoscedasticity is satisfied when Chi-Square of Obs *R-squared = 0.1900 > 0.05. In other words, there are no indications of heteroscedasticity in the residuals.

Table 5. Multicollinearity Test Results

	Coefficient variance	**Uncentered VIF**	**Centered VIF**
labor force (X1)	4,05	1,14	1,02
years of schooling (X2)	0,04	73,3	1,74
population density (X3)	1,64	3,66	2,12
HDI (X4)	0,00	534,64	1,96
Coefficient (C)	17,80	464,05	NA

Source: Secondary Data, 2024

Based on the multicollinearity test results in Table 5, which show that the centered VIF value is less than 10, it may be assumed that there are no indications of multicollinearity between independent variables.

Table 6. Autocorrelation Test Results

Breusch-Godfrey Serial Correlation LM Test:			
F-statistic	0,55	Prob. F(2,5)	0,88
Obs*R-squared	200,87	Prob. Chi-Square(2)	0,47

Source: Secondary Data, 2024

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Based on the results of the autocorrelation test shown in Table 6, the probability Chi-Square of Objectives *R-squared = 0.4692 > 0.05 indicates that the autocorrelation assumption is satisfied. Stated otherwise, there is no autocorrelation present in the residuals.

Table 7. Model Feasibility Test Results (f)

F-statistic	15,68
Prob (F-statistic)	0,00

Source: Secondary Data, 2024

The results of the model feasibility test in Table 7 above show that obtained an f statistic of 15,68 with an f statistical probability of 0.00000 < α 5%, which means Ho is rejected. Independent variables, namely X1, X2, X3, and X4, significantly affect the dependent variable, Y.

Table 8. Determination Coefficient Test Results

R-squared	0,23
Adjusted R-Squared	0,22

Source: Secondary Data, 2024

As shown in Table 8 above, where the R-squared value is 0.23, the independent variables X1, X2, X3, and X4 may explain the dependent variable Y by 21.9%. A different group of non-model elements explains the remaining 78.1%.

Table 9. Hypothesis Test (t-test)

	Coefficient	Prob.
labor force (X1)	0,038	0,000
years of schooling (X2)	0,172	0,001
population density (X3)	-0,017	0,007
HDI (X4)	0,145	0,000

Source: Secondary Data, 2024

The first hypothesis focuses on the connection between economic growth and the labor force. The regression coefficient is 0.038, and the probability value is 0,000 < α (prob. = 0,000 < 0,05). The hypothesis is accepted because statistical testing demonstrates that the labor force positively impacts economic growth. The findings of this investigation are further supported by research done by Supartoyo et al (2013) in the results (Ramadhan et al., 2017), the positive effects of the labor force variable extend to economic development and growth. Because a large number of people in the productive age group will raise the availability of labor, which will inevitably increase the number of workers, the productive age population can play a major role in the economy. Human development will also impact the raising of the standard of labor.

The second hypothesis focuses on the connection between economic growth and the number of years of education. The years of education are displayed in the test results with a regression coefficient of 0,172 and a probability of 0.001 < α (prob. = 0,001 < 0,05). The hypothesis is supported because statistical testing demonstrates the positive relationship between years of education and economic growth. Research by (Hanifah et al., 2023) bolsters the conclusions. Years of education had a major impact on Indonesia's economic growth between 2015 and 2021. The rise in average schooling demonstrates the value of education in enhancing the quality of human resources, which is beneficial for economic productivity in the long run. Considering the rising demand for education, the educational component of extended schooling will support economic growth by producing more professional Human Resources (HR) useful in various industries. These findings align with other research, such as (Mariana, 2015), (Handayani, et al. 2016) and

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(Wau, 2021), which demonstrates the enormously beneficial effect projected years of education have on economic growth.

The relationship between economic growth and population density is the subject of the third hypothesis. The test findings indicate a population density with a regression coefficient of -0,017 and a probability of 0.007 < α (prob. = 0,007 < 0,05). The theory is accepted because statistical testing demonstrates that population density considerably reduces economic growth. According to (Yunianto, 2021), an increase in population has a substantial and adverse effect on Samarinda's economic growth. The study's findings support this theory. The study showed a negative relationship between economic growth and population density. To sustain economic growth, the research sector may need to prioritize improving people's quality of life, as suggested by the negative relationship. Numerous concerns, such as social, economic, and environmental ones, can arise from unchecked population expansion.

The fourth hypothesis focuses on the relationship between HDI and economic growth. The test findings indicate an HDI with a probability of 0.000 < α (prob. = 0.000 < 0.05) and a regression coefficient 0.145. Statistical testing reveals that HDI considerably promotes economic growth hence the hypothesis is accepted. The findings of this study are consistent with (Bahasoan et al, 2019), with HDI and economic growth having a favorable and significant impact on Central Sulawesi Province.

CONCLUSION

The human development index (HDI), population density, years of schooling, and labor force participation were the four primary factors in economic growth that were examined. The research's data came from the 35 districts of Central Java Province. What came out of the testing and data analysis was that the labor force significantly impacted GDP growth. The years spent in education have significantly impacted the economy's growth. The density of the population had a detrimental effect on economic growth. The HDI had a big impact on economic growth.

The researchers believe that the province of Central Java's regional and municipal governments can encourage and support economic growth initiatives. Given that the two most significant factors influencing regional economic development are the labor force and economic growth, this can be accomplished by closely monitoring the crucial variables that have been established. The researchers acknowledge the need for long-term research to obtain more diverse and higher-quality data when interpreting economic growth variables using different research methodologies. This would provide deeper insights into the region's economic growth dynamics.

This scientific research explores strategies to improve economic growth with several influencing factors. However, there are still many things that could be improved. Therefore, future research should add other factors to determine the differences. The expected result of this research is that it can be used to formulate appropriate policies, plans, and strategies that contribute to its efficiency and provide profitable results.

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