



Research Paper

Analysis of the Influence of Labor Force and Human Development Index on Economic Growth in Aceh Province

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Abstract

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This study aims to analyze the influence of the Labor Force and Human Development Index (HDI) on Economic Growth in Aceh Province. The research method used is quantitative with a multiple linear regression approach, using time series data from 2017-2024. Panel data from 23 districts/cities from the Statistics Indonesia (BPS) of Aceh Province was used. EViews 13 was used, with the Common Effect Model approach, selected based on the results of the Chow and Lagrange Multiplier tests. The analysis results indicate that the Labor Force and HDI simultaneously have a significant influence on Economic Growth in Aceh Province. The regression model indicates that these two independent variables can explain most of the variation in Economic Growth. The coefficient of determination (R-square) value of 0.619226 indicates that 61.92% of the variation in Economic Growth can be explained by the Labor Force and HDI. Partially, the increase in the Labor Force shows a strong positive relationship, confirming the role of labor availability as a primary driver of production.

Keywords: Labor Force; Human Development Index; Economic Growth; Aceh Province

1. Introduction

The Population growth and the growth of the working labor force are traditionally considered to be one of the positive factors that spur economic growth. The more the labor force works, the greater the level of production produced and has an impact on rising economic growth. Neoclassical theory divides three types of inputs that affect economic growth, namely the influence of capital, technology, and the labor force that works on economic growth [1]. The labor force is the part of the population that is able and willing to do work [2]. UNDP defines –



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human development as a process to expand choices for the population in terms of income, health, education, physical environment, and so on. Four main things that need to be considered in human development are productivity, equity, sustainability, empowerment [3].

One of the indicators used to determine the economy of a region is the Gross Regional Domestic Product (GRDP), both nationally, provincially and per district/city. Economic growth or GDP growth (Gross Regional Domestic Product) is one of the measures and indications that are very important to assess the success of the economic development of a region according to its economy. According to Kusumawati, (2021) the higher the economic growth, the higher the likelihood of successful development and a strong economy in the country [4].

Sustainable economic growth is one of the significant ways in improving the poverty situation because it increases people's income, economic growth of a country will stimulate the public and private sectors in increasing the level of consumption, spending, and quality of society so as to positively affect poverty alleviation [5].

The labor force is a major component in the economic growth model because it directly affects the production capacity and economic output of a region. Economic growth theory states that an increase in the number of productive workers has the potential to increase economic growth through increased production of goods and services. Empirically, research on the level of labor force participation in Indonesia shows that the labor force affects the rate of national economic growth [6].

The Human Development Index (HDI) is a composite indicator used to measure the success of the development of human development through the dimensions of health, education, and living standards decent living standards, HDI is used to assess the extent to which the population of a region is able to access the results of development in order to improve the quality of life in a sustainable manner [7] the increase in HDI reflects the increasing quality of human resources which has an impact on increasing labor productivity and adaptability to economic development thus, HDI has a close relationship with economic growth because good human quality will increase the output and economic performance of a region [8].

Economic growth is a process of increasing the capacity of the production capacity of an economy that is reflected in an increase in output or national income in the long run economic growth shows the success of a region in managing resources to produce goods and services in a sustainable manner the basis for increasing medium-term economic growth reflects an increase in public welfare and the ability of the regional economy to create added value [9]. In another study, the labor force participation rate had a positive influence on economic growth in the short term [10] and contributing to economic growth along with investment and poverty variables, the results of this study reinforce these findings by showing that the labor force has a positive and significant effect on the economic growth of districts / cities in Aceh province [11].

Labor force with regional economic growth, increasing the number and participation of the labor force proved to have a positive effect on regional economic growth through increased output and regional economic activity. regional economic activity [12]. Development Index The Human Development Index (HDI) has a significant effect on economic growth because it reflects the quality of education, health, and living standards that increase productivity and efficiency labor efficiency [13]. Simultaneously, the labor force and HDI have a significant effect on regional economic growth, [14] which shows that the large number of workers must be balanced with the quality of human resources so that economic growth is optimal and sustainable [15].

Labor force and Human Development Index the Human Development Index simultaneously has a significant effect on regional economic growth, because the large number

of workers needs to be supported by good quality human resources in order to increase productivity and economic output sustainably [16].

2. Method

Research Approach

The research used is quantitative data sources secondary data sources. with a multiple linear regression approach, using time series data from 2017-2024. With panel data from 23 districts / cities from the Central Statistics Agency (BPS) of Aceh province and using 13 EViews.

Data types and sources Data

Data sources in this study are secondary data sources. In the form of panel data from year 2017-2023. The Data was obtained from the Central Statistics Agency (BPS) in Aceh province.

Data Analysis Techniques

Regression panel data regression is a regression technique that combines sequential Time series data with cross section data. This study uses panel data which is a combination of cross-region and Time series data. The use of panel data was chosen because it has several advantages, including:

1. Able to combine information from differences between regions and changes between times to produce more accurate estimates.
2. Increase the number of available observations, thereby increasing the degree of freedom and the efficiency of model estimation.
3. Can control the heterogeneity of individuals or regions that are not observed (unobserved heterogeneity), thus minimizing bias in research results.
4. Allows a more comprehensive analysis of the dynamics of economic variables between years and between regions [17].

3. Result and Discussion

Descriptive Statistical Test

Descriptive statistics Statistics uses numerical methods and graphical methods to recognize patterns from several data, summarize the information contained in the data set, and present the information in the desired form.

Table 1. Descriptive Statistics Test Results

	GRDP	AK	IPM
Mean	3.308587	108.4485	71.99310
Maximum	8.500000	274.1210	87.17000
Minimum	-4.870000	16.08300	62.88000
Std. Dev.	2.271056	64.75103	5.737915
Observations	184	184	184

Source: Data Processing Results Using Eviews 13 (2025)

The results of the analysis for three variables from the range of 2017 to 2024. Variables observed include AK (labor force), HDI (Human Development Index) and real economic growth (GDP growth rate) descriptive statistics statistical tests above, the average value (mean) of the variable GDP growth rate is 3.308587, while the maximum value is 8.500000, the minimum value

recorded is -4.870000, with a deviation Booth Dar of 2.271056, AK has a significant variation with a maximum value of 274.1210, mean of 108.4485, with a deviation of 64.75103, while the minimum value of 16.08300, The average value of HDI value 71.99310, showing the largest value of 87.17000, with the smallest value of 62.88000, and the standard deviation of 5.737915.

Selection Of the Best Models

The second step is to determine the best method among the three methods of calculation that has been done. Here are the test results of the testing model of:

Table 2. Chow Test Results (Redundant Fixed Effects)

Effects Test	Statistics	d.f.	Prob.
Cross-section F	0.950429	(22,159)	0.5299

Source: results of data management eviews 13 (2025)

The probability of a chow Test of 0.5299, is 0.5299, greater than a 0.05, considering the best Chow test model is Common Effect.

Table 3. Of Hausman Test Results

Test Summary	Chi-Sq. Statistics	Chi-Sq. d.f.	Prob.
Cross-section random	1.528356	2	0.4657

Source: Results Of Data Management Eviews 13 (2025)

The probability of Hausman testhausman of 0.4657, greater than 0.05, considering the best model is the Common Effect.

Uji Lagrange Multiplier

Table 4. Lagrange Multiplier Test Results

Null (no rand. effect)	Cross-section	Period	Both
Alternative	One-sided	One-sided	
Honda	-0.324314	-1.262663	-1.122162
	(0.6271)	(0.8966)	(0.8691)

Source: Results of Data Management Eviews 13 (2025)

From the above LM measurement results show that the value of LM is 0.6271. so, we can conclude that the value of $0.6271 > \chi^2$ (0.6271 > 0.05), which means regret where the most appropriate regret model used in this study is the common effect.

Table 5. Measurement Results

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-74.87221	6.435386	-11.63445	0.0000
LOGAK	2.377154	0.445933	5.330743	0.0000
LOGIPM	39.62163	3.702448	10.70147	0.0000

Source: Results PengelohanOf Data Management Eviews 13 (2025)

Thus, from the results of the CHOW Test, and LM can be concluded that the best model is the Common Effect Model chosen as the best model because the results of the Chow Test and

LM test show that the assumptions of this model there is no significant difference between individuals and time is the most appropriate with the analyzed data CHOW Test with a probability value of $0.5299 > 0.05$ or LM test with a probability value (0.6271) $>$ of 0.05 then the best model and the model chosen is Common Effect.

Coefficient Of Determination

Table 6. Coefficient of Determination Test Results

R-squared	0.619226	Mean dependent var	3.308587
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Source: Results Of Data Management EvIEWS 13 (2025)

The value of the coefficient of determination of 0.619226 which means that the independent variable consisting of the labor force, Human Development Index can explain the influence of the dependent variable on the PDP growth rate of 61.92% while the remaining 38.08% of other variables outside the model. Based on the tests that have been carried out, the probability of the labor force is 0.0000 with a coefficient of 2.377154 where the labor force affects the economic growth (GDP growth rate) of districts / cities in Aceh province. So, if there is a workforce of 2,377,154 billion people, it has a positive impact on economic growth in the future.

The influence of the labor force on economic growth

Empirical research research using panel data in Indonesia shows that the labor force has a positive and significant effect on long-term economic growth. The findings are in line with the results of this research which proves that the empowered workforce has a positive and significant effect on the economic growth of districts / cities in the province of Aceh province [18].

The results of this study are in accordance with the hypothesis that the labor force influences economic growth (economic growth rate). This is in accordance with research conducted Yulina [19] with the title 'Investment Management, Labor Force and government management of the impact of Economic Development in West Sumatra' where the labor force berpengaruh positif against the impact of economic development on the achievement of Economic Development Goals can have a positive impact on the economic impact it is caused by the amount of labor that will increase the level of production. A large amount of Labor can mean an increase in the amount of labor in the number of productive labors. Labor Input through skills, knowledge and discipline is an important element in economic growth.

Effect of Development Index on Human Development Index on economic growth

Based on the tests that have been done, the probability of the Human Development Index of 0.0000 with a coefficient of 39.62163 where the Human Development Index has an influence on the economic growth (GDP growth rate) District/City in the province of CEH province. The results of this study are not in accordance with the hypothesis that the Human Development Index on economic growth (economic growth rate). This is in accordance with research conducted by aris budi santoso [20] the results showed that the Human Development Index positive and significant relationship is in accordance with the hypothesis at the beginning of the study which states that the variable HDI provides a positive and significant relationship to economic growth. The existence of a positive and significant relationship between HDI and economic growth can occur due to an increase in HDI.

4. Conclusion

The results showed that the labor force and Human Development Index (HDI) have a positive and significant effect on long-term economic growth. An increase in the number of the labor force contributes to an increase in the output and activity of the economic activity of the region, especially if it is balanced by an adequate quality of human resources. A high HDI reflects better education, health, and living standards, thereby increasing work productivity and economic efficiency. These findings imply that regional economic development policies should not only focus on increasing employment opportunities but should also be directed at improving the quality of human quality through investment in education and health so that economic growth can run optimally and sustainably.

Recommendations

Local governments are advised to improve the quality of the workforce through increased access to education, health services, and skills training. In addition, economic development policies need to be more focused on labor-intensive sectors that are able to absorb labor optimally. For future research researchers, it is advisable to add other variables such as investment and government spending to obtain a more comprehensive picture of the factors that affect economic growth.

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Authors' contributions and responsibilities

Rahmasari: conceptualization, methodology, writing – original draft, supervision. Yuliana: supervision, writing – review & editing. Isthafan Najmi: supervision, writing – review & editing. Yulfrita Adamy: supervision, writing – review & editing.

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Availability of data and materials

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Competing interests

The authors declare no competing interest.

Additional information

No additional information from the authors.

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