# Assessment of the Impact of the Relationship between the Human Development Index and the Unemployment Rate on Economic Growth

**Nufa Visca Amaratya**
nufaviscaamartya@aksibukartini.ac.id

**Wulan Apriliani**
wulanapriliani@aksibukartini.ac.id

**Abstract** This research aims to evaluate the impact of the relationship between the Human Development Index (HDI) and the unemployment rate on economic growth. The study was conducted by analyzing economic and social data from various countries over a specific period. Regression analysis methods are used to understand the significance of the relationship between HDI, unemployment rate, and economic growth. The results show a strong correlation between HDI and economic growth, as well as a significant influence of the unemployment rate on economic growth. The policy implications of these findings are also discussed to provide guidance in efforts to enhance human development and sustainable economic growth.

**Keywords** : *Economic Growth, Human Development Index (HDI), Unemployment Rate*

## BACKGROUND

As the dynamics of the global economy become increasingly complex, attention to the relationship between the Human Development Index (HDI) and the unemployment rate in the context of economic growth is growing. The Human Development Index, developed by the United Nations, is an important indicator in measuring the social and economic progress of a country, taking into account factors such as life expectancy, education, and standard of living. On the other hand, the unemployment rate is a key indicator of the economic health of a country, affecting consumption, investment, and labor productivity.

Previous studies have provided in-depth understanding of the individual impacts of HDI and the unemployment rate on economic growth. However, there is still a significant need to delve deeper into the relationship between these two factors simultaneously. Comprehensive research on how the interaction between HDI and the unemployment rate affects economic growth can provide valuable insights for policymakers in directing more effective development strategies.

Through comprehensive analysis of economic data from various countries, including HDI data, unemployment rates, and economic growth, this research aims to explore the complex relationship between HDI, the unemployment rate, and economic growth. Taking into account external and internal factors influencing this dynamics, this research seeks to provide a better understanding of how policies focusing on increasing HDI and reducing the unemployment rate can support sustainable and inclusive economic growth.

**THEORETICAL STUDY**

**Human Development Index**

Mathematically, the Human Development Index is a composite index calculated as a simple average of the life expectancy index, education index and decent living index. A high level of human development greatly determines the population's ability to absorb and manage sources of economic growth, both in relation to technology and institutions as an important means of achieving economic growth. At the macro level, life expectancy is used as an indicator of the success of development in the health sector. Community welfare will be directly related to the community's need for quality education so that literacy rates will increase.

**Unemployment**

Apart from that, with the unemployment rate, we can also see the inequality or disparity in the distribution of income received by the people of that country. Unemployment can occur as a result of the high rate of change in the labor force which is not balanced by the existence of quite extensive employment opportunities and labor absorption which tends to be a small percentage. This is due to the low rate of growth in job creation to accommodate a workforce that is ready to work. Based on BPS data, it shows that Indonesia's population has increased from year to year. Unemployment in Indonesia is a problem that continues to grow. The unemployment rate of 4.68 percent is still unemployment on a reasonable scale. The natural unemployment rate is a level of unemployment that is natural and cannot be eliminated.

**RESEARCH METHODS**

**Research Object and Scope**

The object and scope of this research is the Human Development and Unemployment Index on Economic Growth in Banten Province for the 2018-2021 period using data from the Central Statistics Agency.

**Method of collecting data**

The method used in this research is a descriptive method with a quantitative approach, namely a research method that emphasizes analysis of actual problems with data in the form of numbers.

**Data Types and Sources**

The type of data used in this research is quantitative secondary data, namely data that is available in the form of numbers. Meanwhile, the data used in this research are time series

data and latitudinal series data.

**Data analysis technique**

**Panel Data Analysis**

The panel data regression model is a regression model that stacks *time series data observations with cross section* data . By determining the estimation model using the *Common Effect, Fixed Effect, Random Effect approach* .

**Model Fit Test**

The model suitability test consists of the Chow test and the Hausman test.

**Classic assumption test**

The classical assumption test is carried out so that hypothesis testing based on the analysis model is not biased and the results are close to accurate or the same as reality. The Classic Assumption Test consists of Normality Test, Autocorrelation Test, Multicollinearity Test, Heteroscedasticity Test.

**T test**

The t test aims to show how much influence individual variables have in explaining the dependent variable.

**F test**

To show whether all the independent variables included have a joint influence on the dependent variable.

**Coefficient of Determination and Correlation Test.**

The coefficient of determination essentially measures how far the model's ability is to explain variations in the dependent variable. The coefficient of determination value is between zero and one. A small value means that the ability of the independent variables to explain the dependent variables is very limited. A value close to one means that the independent variables provide almost all the information needed to predict variations in the dependent variable.

**RESULTS AND DISCUSSION**

**Regression Analysis**

$$Gini_t = \beta_0 + \beta_1 IPM_t + \beta_2 Pengangguran_t + \in_t$$

$$Gini_t = 5{,}514742 + 0{,}036989\, IPM_t - 0{,}420663\, Pengangguran_t + \varepsilon_t$$

Based on the calculation results above, the regression coefficient results can be interpreted as follows:

1. The constant of 5.514742 states that if all the independent variables, namely HDI ( $X_1$),

and Unemployment ( $X_2$ ) have an influence on the dependent variable, then Economic Growth will increase by 5.514742%.

2. The coefficient value of the HDI variable ( $X_1$ ) is 0.036989. This means that an increase in the HDI variable of 1% will result in an increase in economic growth (Y) of 0.036989%,

3. The coefficient value of the Unemployment variable ( $X_2$ ) is -0.420663. This means that an increase in the Unemployment variable by 1% will result in a decrease in economic growth (Y) of -0.420663%.

**Model Fit Test**

**Hausman test**

Correlated Random Effects - Hausman Test

Equation: Untitled

Cross-section random effects test

| Test Summary | Chi-Sq. Statistics | Chi-Sq. df | Prob. |
|---|---|---|---|
| Random cross-section | 19.694646 | 2 | 0.0001 |

Based on the Hausman Test results above, it can be seen that the cross section Chi Square probability value is 0.0001 < α (0.05), so the temporary model is *Fixed Effect Models (FEM)* .

**Classic assumption test**

**Normality test**



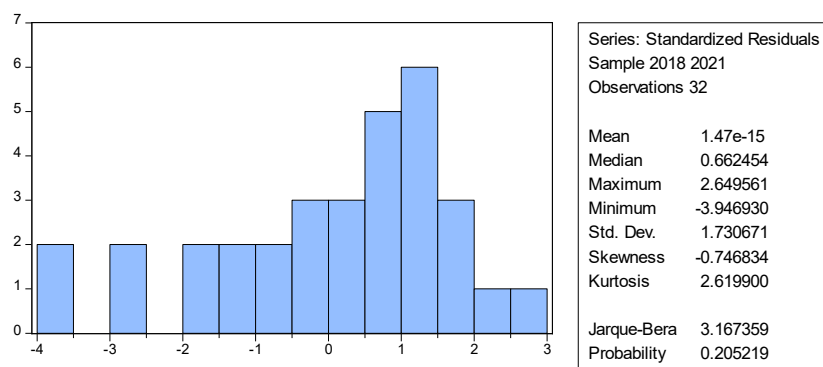| Series: Standardized Residuals | |
|---|---|
| Sample 2018 2021 | |
| Observations 32 | |
| Mean | 1.47e-15 |
| Median | 0.662454 |
| Maximum | 2.649561 |
| Minimum | -3.946930 |
| Std. Dev. | 1.730671 |
| Skewness | -0.746834 |
| Kurtosis | 2.619900 |
| Jarque-Bera | 3.167359 |
| Probability | 0.205219 |

Figure 1 Normality Test Graph

Used to find out whether the dependent and independent variables are normally distributed or not. In this study, the normality test was carried out using the Jarque-Bera Test (JB test). The analysis results show that the JarqueBera Probability value is 0.205219 or more

than 0.05. Thus it can be said that the data is normally distributed.

**Heteroscedasticity Test**

This research uses heteroscedasticity to make the model non-constant. The test results show that the probability value of the two independent variables is less than 0.05. This means that the regression model has heteroscedasticity.

**Autocorrelation Test**

One measure to determine whether there is autocorrelation is to use the Durbin Watson (DW) test. DW values that originate between dU and 4-dU values indicate a model that is free from autocorrelation problems. The results of the autocorrelation test above show a DW of 3.262373 with dL = 1.2437 and dU = 1.6505 (see table dL dU). It can be explained that the results dU ≤ DW ≤ (4-dU) or 1.6505 < 3.262373 < 2.3495. This means that the autocorrelation test results meet these requirements and it can be stated that the model used is free from autocorrelation.

**t test**

Known: T table$= \text{Tinv}(a; n - k) \rightarrow = \text{Tinv}(0.05; 32 - 3) = 2,04523$

1. Human Development Index (HDI) ($X_1$)on Economic Growth (PE)

   **Conclusion:** t statistic (-2.626903) < t table (2.04523) then it $H_0$ is rejected and the consequence is not rejected $H_1$ and the probability value is (0.0154) < (0.05) then the data is significant. So the result is that there is a significant influence between the HDI variable and Economic Growth.

2. Unemployment ($X_2$)on Economic Growth (PE)

   **Conclusion:** t statistic (-4.117475) < t table (2.04523) then it $H_0$ is rejected and the consequence is not rejected $H_1$ and the probability value is (0.0005) < (0.05) then the data is significant. So the result is that there is a significant influence between the Unemployment variable and Economic Growth.

**F test**

Is known :

**F table**$= \text{Finv}(a; k - 1; n - k) \rightarrow = \text{Finv}(0.05; 3 - 1; 32 - 3) = 3,327654$

Based on the output above, it can be seen that the statistical f value ( 3.564042 ) > f table ( 3.327654 ) with probability (0.0 07196 ) < α (0.05) then $H_0$ is rejected, the consequence is that it is not rejected $H_1$ , meaning that the variables are simultaneously

variable Human Development Index (HDI), and Unemployment **simultaneous effect** on growth Economy in Banten period 2017-2021 .

**Coefficient Test Determination and Correlation**

One measuring tool to determine the R2 determination test is to look at the *Adjusted R-square coefficient value* . The *adjusted R Square* value means the R Square value that has been corrected by the *standard error value* . The *Adjusted R-square* value is used so that the use of the coefficient of determination is not biased towards the number of variables.

1. **Determination Value ( *R-Square* )**

   It can be seen in the output above that the *R-squared value* is 0.593168. This value illustrates that the contribution of the HDI and Unemployment variables to the rise and fall or variation of the PE variable is 59.31% and the remaining 40.69% is the contribution of other variables that are not included. in the model proposed in the study (collected in Nuisance Variables or ∈).

2. **Correlation Value ( *Adjusted R-Square* )**

   Meanwhile, the correlation value of r ( *Adjusted R-squared* ) is 0.426737 or 42.67%, *meaning that the relationship between the Independent Variable and the Dependent Variable in this research can be said to have a* **weak** relationship because it is away from 100%.

**Economic Interpretation**

**HDI on Economic Growth**

Based on the tests that have been carried out, it can be explained that the coefficient of the Human Development Index variable has a positive relationship with Economic Growth. This is in accordance with the hypothesis that HDI has a positive effect on Economic Growth, in accordance with research conducted by . Vice versa, a low HDI value reflects the failure of a region or region in optimizing the resources it owns and is available, so as to reduce income inequality. Based on the tests that have been carried out, it can be explained that the coefficient of the Unemployment variable has a positive relationship with Economic Growth. This is in accordance with the hypothesis that unemployment has a positive effect on economic growth, in accordance with research conducted by .

## CONCLUSIONS AND RECOMMENDATIONS

### Conclusion

Human Development has a significant positive influence on Economic Growth in Banten in 2017-2021. has a positive relationship and influence on Economic Growth in Banten in 2017-2021. With economic growth, it is hoped that it will be able to solve the problems of unemployment and poverty. Human Development and Unemployment together have a significant influence on Economic Growth in Banten in 2017-2021.

### Suggestion

Based on the research that has been carried out, the researchers provide the following suggestions:

1. The government pays more attention and provides good teaching or job training, especially for areas in Banten, so that by improving the quality of human resources, excessive unemployment will be eradicated.
2. The community participates in socialization and assistance from the government if the government holds a job training program with the aim of helping people live more securely so that existing economic growth will increase.

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