

DEPENDENCY RATIO, HUMAN DEVELOPMENT INDEX (HDI) ON ECONOMIC GROWTH IN INDONESIA THROUGH SAVINGS

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Abstract

This research aims to see the influence of the exogenous variables (dependency ratio and human development index) on the endogenous variable of economic growth through savings (intervening variable). The research method used is a quantitative method, the data used in this research is secondary data in the form of time series data 2004- 2023 (20 years) in the Indonesian consists of data on dependency ratio, human development index, saving and economic growth. The data collection method was carried out using online searches on the websites of the Central Statistics Agency (BPS), Bapenas and Bank Indonesia. The data analysis technique in this research uses a path analysis model with the help of SPSS version 22 software to determine the effect of the dependency ratio and development index on economic growth both directly and indirectly through savings. Based on the statistical output, it was found that: (1) Dependency ratio has a significant negative effect on savings, (2) human development index has a significant positive effect on savings, (3) Dependency ratio has no significant effect on economic growth, (4) Human Development index has no significant effect on economic growth (5) savings have no significant effect on economic growth, (6) Dependency ratio has a significant positive effect on economic growth through savings, (7) Human development index has significant effect on economic growth through savings.

Keywords : Dependency Ratio (DR); Human Development Index (HDI); Saving, Economic Growth

1. INTRODUCTION

Strong and quality economic growth is the goal of all countries. The results of economic development carried out by the government tend to be measured only by economic growth. If this economic development results in high economic growth, then it is said that economic development in the country or region has been successful. However, in reality, contradictory conditions (anomalies) often occur, even though high economic growth has been achieved in a country or region, the welfare of the people is still low, so many experts often say that the resulting economic growth is of poor quality. According to Arsyad, indicators of the success of development are grouped into three indicators. First, monetary indicators which include per capita income and indicators of net economic welfare. Second, non-monetary indicators include social indicators and quality of life index. The third is a mixed indicator including the core Susenas indicators and the human development index (Arsyad, 2010).

Capital accumulation, one of whose sources comes from savings, is one of the determinants of achieving strong and quality economic growth. Capital accumulation is really needed by a country to build its economic performance. For this reason, the state is trying to create an economic climate that can encourage the growth of capital accumulation needed for economic development (Mudrajad in Fitria 2022). Capital fundamentalism *considers* that capital formation is a key factor for a country's economic growth (Arsyad 2010). High capital

formation in a region/country can only be realized if the income received by each productive age group is partially allocated to savings, and not completely eroded by consumption.

The human development index, which is a combination of social and economic aspects, is part of supporting quality economic growth. The HDI concept is considered to have a role because development begins and has its starting point from humans, is carried out by humans, so it should also be aimed at humans. The HDI variable has a positive and significant relationship to economic growth (Susanto and Rakhmawati, 2013).

Apart from HDI, the amount of savings, the dependency ratio (DR) is also used as an indicator that reflects the economic condition of a country, whether it is classified as a developed country or a developing country. DR is interpreted as the ratio of non-productive age population to productive age population. The high DR percentage reflects the high burden that must be borne by the productive population to finance the living of the population who are not yet and are no longer productive. This phenomenon is one of the factors inhibiting economic development, because part of the income earned which should be allocated to savings, which is then invested in economic development, is forced to be eroded for clothing and food needs for those who are dependent burdens. The dependency ratio does not have a significant effect on the amount of savings (Tarigan 2020). Population growth, low quality of human resources (HR), and limited job opportunities can increase unemployment, the development of the population's age of dependency, therefore demographic factors can act as inhibiting factors or as driving factors that influence economic growth, which is undeniable. So the demographic aspect is closely related to economic growth (Yani, et al. 2017). Partially, the dependency ratio variable has a positive and significant influence on economic growth in Langsa City (Zuraidah Z et al, 2022). The dependency ratio in North Luwu Regency has a positive and significant effect on economic growth in North Luwu (Nurhuda et al, 2023)

Indonesia, in the category of a country with a large population, in 2023 will be in 4th place with the world's largest population. A large population can be a driver or even an obstacle to economic growth. Improving the quality of human resources as reflected in the HDI is important in supporting strong and quality economic growth. The following is data on Dependency Ratio, Human Development Index, saving and Economic Growth in Indonesia.

Table 1: Data on Dependency Ratio, Human Development Index, saving and Economic Growth in Indonesia

Year	Dependency Ratio (%)	Human Development Index	Savings (Billion)	Economic Growth (%)
2019	44.5	72.81	5804930.69	5.02
2020	44.7	72.81	6465102.8	-2.07
2021	44.8	73.16	7253263,204	3.7
2022	44.9	73.77	7932189,976	5.31
2023	45.1	74.39	8235947,831	5.05

Source: BPS, Bappenas and Bank Indonesia

2. METHODOLOGY

The research method used is a quantitative method, the data used in this research is secondary data in the form of time series data for 2004-2023 (20 years) in the Indonesian region consisting of dependency ratio, human development index, saving and economic growth data. The data collection method was carried out using online searches on the websites of the Central Statistics Agency (BPS), Bapenas and Bank Indonesia. The data analysis technique in this research uses a path analysis model with the help of SPSS version 22 software to determine the effect of the dependency ratio and development index on economic growth both directly and indirectly through savings, as shown in the following figure:

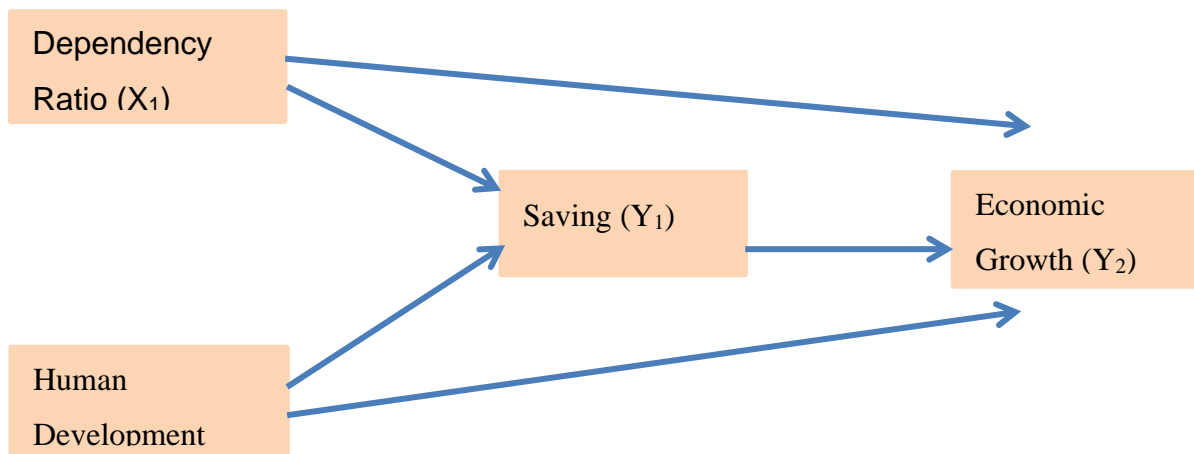


Figure 1: Conceptual Framework

The structural model equation is as follows:

$$\begin{aligned}
 Y_1 &= f(X_1, X_2) \\
 \text{Ln}Y_{1it} &= \alpha_0 + \alpha_1 X_{1it} + \alpha_2 X_{2it} + \varepsilon_{1it} \\
 Y_2 &= f(Y_1, X_1, X_2) \\
 Y_{2it} &= \beta_0 + \beta_1 Y_{1it} + \beta_2 X_{1it} + \beta_3 X_{2it} + \varepsilon_{2it} \\
 &= \beta_0 + \beta_1 (\alpha_0 + \alpha_1 X_{1it} + \alpha_2 X_{2it}) + \beta_2 X_{1it} + \beta_3 X_{2it} + \varepsilon_{2it} \\
 &= \beta_0 + \alpha_0 \beta_1 + \alpha_1 \beta_1 X_{1it} + \alpha_2 \beta_1 X_{2it} + \beta_2 X_{1it} + \beta_3 X_{2it} + \varepsilon_{2it}
 \end{aligned}$$

Information :

- Y_1 = Saving
- Y_2 = Economic Growth
- X_1 = Dependency Ratio
- X_2 = Human Development Index
- Ln = Natural Logarithm
- α_0, β_0 = Constant
- $\alpha_1 \alpha_2 \beta_1 \beta_2 \beta_3$ = Coefficients Regression
- i = Indonesia
- t = Years (2004-2023)

The regression models that will be analyzed are:

- 1) Regression Model I → Model I regression analysis is used to determine the magnitude of the direct influence of the mandireng variable which consists of the dependency ratio variable and the human development index variable on the savings variable (dependent variable)
- 2) Regression Model II → Model II regression analysis is used to determine the magnitude of the direct influence of the dependency ratio and human development index variables on economic growth
- 3) Regression Model III → Model III regression analysis is used to determine the direct influence of the savings variable on economic growth.

1. Simultaneous Test (F)

The F test is carried out to determine the simultaneous influence of the independent variable (X) on the dependent variable (Y). Provided that, if $F\text{-count} > F\text{-table}$, then H_1 can be accepted. Conversely, if $F\text{-count} < F\text{-table}$, then H_1 is rejected. Or you can also look at the probability section with $\alpha = 0.05$. If $\text{sig.} > \alpha (0.05)$, then H_1 is rejected. Meanwhile, if $\text{sig.} < \alpha (0.05)$, then H_1 can be accepted.

2. Partial Test (T-Test)

This test was carried out to determine the partial influence of the independent variable (X) on the dependent variable (Y). With the condition that $T\text{-count} > T\text{-table}$ then H_1 can be accepted. And if $T\text{count} < T\text{-table}$, then H_1 is rejected, likewise if $\text{sig.} > \alpha (0.05)$ then H_1 is rejected and if $\text{sig.} < \alpha (0.05)$, then H_1 can be accepted.

3. Coefficient of Determination (KD)

KD is used to measure how much the independent variable (X) contributes to the dependent variable (Y). So it can be determined using the equation, $KD = R^2 \times 100\%$

Where, KD = determinant coefficient, and R^2 = correlation coefficient.

4. Path Analysis

Path Analysis Path analysis is an extension of regression analysis to estimate causal relationships. Figure 1 shows an image of a path diagram, with two independent variables, namely dependency ratio (X_1), human development index (X_2) while economic growth is the dependent variable.

3. RESULTS AND DISCUSSION

The research results include the direct and indirect impact of DR, the human development index on economic growth through savings. The following is the SPSS output.

Multiple Linear Regression Analysis

1. Model I Regression

Model I regression analysis is used to determine the magnitude of the direct influence of the Dependency ratio variable, human development index on savings.

Table 2: Regression Model I
 Coefficients ^a

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
1 (Constant)	21,047	2,176		9,674	,000
DEPENDENCY RATIO	-,297	,026	-,816	11,455	,000
HUMAN DEVELOPMENT INDEX	,108	,022	,347	4,880	,000

a. Dependent Variable: SAVING

Based on the spss output above, the regression results can be arranged in the following equation:

$$Y=21.047 + (0.297)X_1 + 0.108X_2$$

Table 3: Results of the coefficient of determination for Model I
 Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	,958 ^a	,918	,909	,20921

a. Predictors: (Constant), HUMAN DEVELOPMENT INDEX, DEPENDENCY RATIO

Based on table 3, the coefficient of determination (R²) is 0.918. This can be interpreted that the dependency ratio variable, human development index has an influence contribution of 91.8% on savings while 8.2% is influenced by other variables not examined by researchers.

2. Regression Model II

Model II regression analysis is used to determine the magnitude of the direct influence of the Dependency ratio variable, human development index on the economic growth variable.

Table 4: Regression Model II
 Coefficients ^a

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
1 (Constant)	20,184	17,421		1,159	,263

DEPENDENCY RATIO	,142	,208	,153	,685	,503
HUMAN DEVELOPMENT INDEX	-,309	,177	-,388	1,741	,100

a. Dependent Variable: ECONOMIC GROWTH

Based on the spss output above, the regression results can be arranged in the following equation:

$$Y=20,184 + 0,142X_1 + (0,309)$$

Table 5: Results of the coefficient of determination for Model II

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	,449 ^a	,201	,108	1.67515

a. Predictors: (Constant), HUMAN DEVELOPMENT INDEX, DEPENDENCY RATIO

Based on table 5, the coefficient of determination (R^2) is 0.201. This means that the dependency ratio variable, human development index has an influence contribution of 20.1% on economic growth while 79.9% is influenced by other variables not researched by researcher.

3. Regression Model III

Model III regression analysis is used to determine the magnitude of the direct influence of the saving variable on the economic growth variable.

Table 6: Regression Model III

Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	19,585	8,366		2,341	,031
	SAVING	-,975	,557	-,381	-1,749	,097

a. Dependent Variable: ECONOMIC GROWTH

Based on Table 6, it shows that the sig value is > 0.05 , this shows that saving does not have a significant effect on economic growth.

Path Analysis

Path analysis is an extension of regression analysis to estimate the causal relationship between variables (causal model) that has been previously established based on theory. Path

analysis is a development of regression analysis, so that regression analysis can be said to be a special form of path analysis.

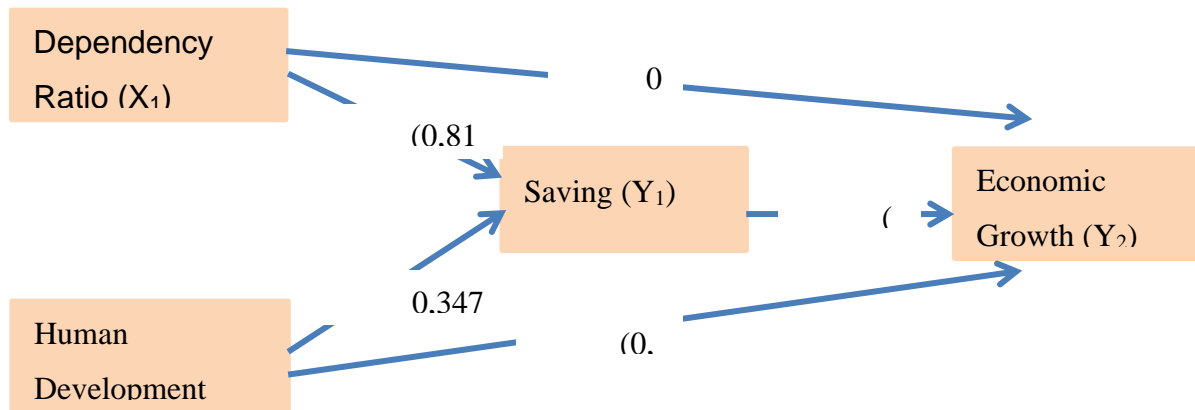


Table 7: Direct Variable Estimation Results

	Variables	Coefficients	Sig.	Label
DK →	Savings	(0.816)	0,000	Significant
HD →	Savings	0.347	0,000	Significant
			0.	Not
DK →	Economic Growth	(0.153)	503	Significant
			0.	Not
HD →	Economic Growth	(0.388)	100	Significant
Saving →	Economic		0.	Not
Growth		(0.381)	097	Significant

Table 8: Results of direct and indirect variable estimation

Variable	Coef. Direct Variables	Coef. Indirect variables	Total Value	Label
Dependency Ratio on Economic Growth through Savings	0.153	0.310	0.463	Significant
Human Development Index on Economic Growth through Savings	(0.388)	(0.132)	(0,644)	Significant

3.1. DISCUSSION

1. Effect of Dependency Ratio on Savings

Based on the table of direct variable estimation results, the coefficient value of the Dependency variable is (0.816) with a significance value of 0.000 which is smaller than the alpha level of 5% ($0.000 < 0.05$), so it is concluded that the dependency ratio has a significant

negative effect on savings. This finding is in line with research by Khan et al (2013), the dependency ratio has a significant negative effect on savings.

2. The Influence of the Human Development Index on Savings

Based on the table of direct variable estimation results, the coefficient value of the human development index variable is 0.347 with a significance value of 0.000, which is smaller than the alpha level of 5% ($0.000 < 0.05$), so it is concluded that the human development index has a significant positive effect on savings. This finding is in line with research conducted by Harahap et al (2021), namely that there is a significant influence of the HDI variable on community savings in Langkat Regency.

3 . The Effect of Dependency Ratio on Economic Growth

Based on the table of direct variable estimation results, the coefficient value of the dependency ratio variable is (0.513) with a significance value of 0.503 which is greater than the alpha level of 5% ($0.503 > 0.05$), so it is concluded that the dependency ratio has no significant effect on economic growth. This finding is in line with research conducted by Fayissa (2010) whose findings showed that the dependency ratio did not have a significant effect on economic growth.

4. The Influence of the Human Development Index on Economic Growth

Based on the table of direct variable estimation results, the coefficient value of the human development index variable is (0.309) with a significance value of 0.100 which is greater than the alpha level of 5% ($0.100 > 0.05$), so it is concluded that the human development index has no significant effect on economic growth. Research conducted by Grubaugh (2015), the human development index has no significant effect on economic growth.

5. The Effect of Savings on Economic Growth

Based on the table of direct variable estimation results, the coefficient value of the savings variable is (0.381) with a significance value of 0.097 which is greater than the alpha level of 5% ($0.097 > 0.05$), so it is concluded that savings have no significant effect on economic growth.

6. Effect of Dependency Ratio on Economic Growth through Savings

Based on the results of the path analysis regression, the effect of the dependency ratio on economic growth through savings obtained a coefficient value of 0.463. The coefficient value of the direct variable is smaller than the indirect effect ($0.463 < 0.153$) so it can be concluded that the dependency ratio has a significant positive effect on economic growth through savings. Similar findings in research conducted by Nurhuda et al (2023) Dependency ratio has a positive and significant effect on economic growth in North Luwu. This finding contradicts research conducted by Putra and Handoko (2010), namely that the level of dependency of children and parents has a significant negative effect on the ratio of community savings to GRDP.

7. The Influence of the Human Development Index on Economic Growth through Savings

Based on the results of the path analysis regression, the effect of the human development index on economic growth through savings obtained a coefficient value of (0.388). The coefficient value of the direct variable is smaller than the indirect effect ($(0.388) > 0.644$) so it is concluded that the dependency ratio has significant effect on economic growth through savings .

4. CONCLUSION

Based on the results of data analysis carried out by researchers, several conclusions can be drawn, namely: (1) Dependency ratio has a significant negative effect on savings, (2) human

development index has a significant positive effect on savings, (3) Dependency ratio has no significant effect on economic growth, (4) Human Development index has no significant effect on economic growth (5) savings has no significant effect on economic growth, (6) Dependency ratio has a significant effect on economic growth through savings, (7) Human development index has a significant effect on economic growth through savings. The suggestion in this research is to improve human quality as reflected in HDI so that it becomes more serious attention from the government.

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