Journal of Sustainable Economics

Journal homepage: https://talenta.usu.ac.id/jse

Does the Democracy and Economic Growth Affect Human Development in Indonesia?

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ABSTRACT

Democracy and economic growth can be improvement of human development progress. The interaction between democracy and economic growth and human development achievements has profound implications for the development of societies and countries. This article will contribute to a better understanding of the complicated interplay between democracy, economic growth and human development. The study employs the autoregressive distributed (ARDL) to prove the relationship between democracy, economic growth and human development in Indonesia for the period 1990-2021. There is long-run cointegration relationship between democracy and economic growth on human development in Indonesia during the sample period. Where, economic growth contibutes positively to HDI and is statistically significant and democracy not significant impact to human development in Indonesia. In the short-run, democracy and economic growth have a positive and significant impact on human development in Indonesia. where democracy has greater implications for human development than economic growth. Diagnostic tests for serial correlation, functional form, normality and heteroscedasticity of the models were conducted, and the results are valid for meaningful interpretation.
Keyword: Democracy, Economic Growth, HDI, ARDL

1. Introduction

The improvement of a country's welfare and human development progress can be seen through several important indicators such as the democracy index, economic growth and the human development index. Although the three indicators measure different dimensions, there is a strong and significant relationship between the three variables. The linkages and relationships between these three variables are often the focus of research, as understanding the interaction between democracy and economic growth and human development achievements has profound implications for the development of societies and countries.

Democracy refers to a form of governance in which the people hold the ultimate power and where participation in the formulation of public policy is generally free and unrestricted. Economic growth reflects an increase in a country's economic output and is often considered the main measure of economic progress.The human development index measures a country's success in providing basic human requirements such as education, health, and income. The connection between the three concerns not only how democracy and economic growth impacts aspects of human development, but also how human development promotes and strengthens democracy and also economic growth.

A good and strong democracy tends to encourage public participation in inclusive and open decision-making and tends to protect human rights, so that democracy will function to produce a more equitable distribution of resources. When people have access to electoral participation and decision-making, they feel that their human rights are protected to be able to get the same resources such as income, health services and access to education, which in turn can improve the quality of human development. Tsai (2006) showed that democracies indeed achieved "higher levels" on the human development indicators. However, democracy was not a powerful predictor of "changes" in human development scores during the analysis period. Frey & Al-Roumi (1999) through his research shows there is a strong positive relationship between democracy and quality of life.

Vollmer & Ziegler (2009) confirms that living in a democratic system positively affects human development measured by life expectancy and literacy rates even controlling for GDP. By analyzing interaction effects they find that the performance of democracy is rather independent of the circumstances. However, democracy leads to more redistribution in favor of health provision in more unequal societies. Wickrama & Mulford (1996) finding from the analysis of data from eighty-two developing countries confirm that political democracy showed a consistent positive effect on social well-being measures, and the least democratic countries were more vulnerable to the negative effects of disarticulation. These findings underscore the independent positive role that political democracy may play in improving social well-being in developing countries.

Sustained economic growth is able to increase people's per capita income while for the government, strong economic growth is one of the resources to invest especially in the education and health sectors as well as infrastructure. In addition, high economic growth will also be able to provide more job creation. The increase in people's income, the improvement of education and health levels as well as strong infrastructure and the creation of new jobs will have a positive impact on the improvement of human quality in the country. Mazumdar (2005) showed that economic growth has a impact on the human development in developing countries. Economic growth also through its various contributions towards the human development index. Brady & Beckfield (2007) find that gross domestic product (GDP) has significant positive effects on weel being inlLess-developed countries, where over time, GDP has become much less effective. Mazumdar (2000) find causal priority between human well-being and per capita gross real product (an indicator of economic achievement of a country)

The purpose of this article is to analyze and elaborate on the relationship between the Democracy Index, Economic Growth and the Human Development Index. We will investigate how democracy and economic growth affect human development, and how advances in human development can aid in the establishment of more democraty and economic growth. This article will contribute to a better understanding of the complicated interplay between democracy, economic growth and human development, as well as its ramifications in many global contexts.

2. Method
2.1. Data and data source
The study is carried out Indonesia country for the period 1990-2021. The selection of Indonesia is because Indonesia has entered the G20 group of countries and became The G20 Presidency steers in 2022. In addition, Indonesia has also conducted seven general elections during the research period. In the study, we measure human development by human development index denoted as *hdi*. We measure economic growth by GDP growth denoted as *growth*. We measure democracy by democracy index denoted as *democracy*. The Human Development Index (HDI) and democracy index were obtained from Our World in Data, GDP growth were obtained from World Bank data base.

2.2. Data Analysis Technique
The study employs the autoregressive distributed (ARDL) to prove the relationship between democracy, economic growth and human development. ARDL models are linear time series models in which both the dependent and independent variables are related not only contemporaneously, but across historical (lagged) values as well. Bounds test proposed by Pesaran, Shin & Smith (2001) to investigate the cointegration relationship between democracy, economic growth and human development. The error correction version of the ARDL model pertaining to the three variables incorporated in our study is stated below.

$$hdi_t = \lambda_0 + \sum_{i=1}^{n} \lambda_{1i}\, hdi_{t-i} + \sum_{i=1}^{n} \lambda_{2i}\, democracy_i + \sum_{i=1}^{n} \lambda_{3i}\, democracy_{t-i} + \sum_{i=1}^{n} \lambda_{4i}\, growth_t$$
$$+ \sum_{i=1}^{n} \lambda_{5i}\, growth_{t-i} + \epsilon_t$$

Although ARDL models have been used in econometrics for decades, they have gained popularity in recent years as a method of examining cointegrating relationships. Two seminal contributions in this regard are Pesaran & Shin (1998) and Pesaran, Shin & Smith (2001). In particular, they argue that ARDL models are especially advantageous in their ability to handle cointegration with inherent robustness to misspecification of integration orders of relevant variables.

3. Result and Discussion

We first formally test the stationarity of the three time series variables in model ARDL and determine their order of integration, using the Augmented Dickey–Fuller/ADF (Dickey & Fuller, 1979) test. The results of the unit root test are reported in Table 1. As can be seen, the growth economic is integrated of order zero, I(0), and all other variables are integrated of order one, I(1).

Table 1. ADF Unit Root Test.

Variables	Level Form		First Difference Form		Order of Integration
	Test Statistic	Prob.	Test Statistic	Prob.	
HDI	-2.3698	0.1581	-4.1866*	0.0028	I(1)
Democracy	-1.9646	0.2999	-2.8130*	0.0684	I(1)
Growth	-4.0801*	0.0035			I(0)

*Note: The null hypothesis are "the series has a unit root". *denotes prob. < 0.1 and the null hypothesis is rejected at the 10% level.*

When we have a linear relationship involving a group of time series variables in which some are stationary, I(0), and other non-stationary but I(1), then it is recommended the use of ARDL bounds test to confirm whether a long-run relationship exists between the model variables. In model , the variable economic growth is I(0) and others are I(1), bounds test approach for cointegration based on an ARDL framework would be suitable for our analysis. The bounds test approach was originally introduced by Pesaran & Shin (1998) and further extended by Pesaran, Shin & Smith (2001). The attraction of this approach is that it involves a single equation estimation which allows for the possibility of different variables with different lag lengths as they entered the model. In addition, once the appropriate lag lengths for each variable are determined, the relationship can be estimated by OLS, and hence it is easy to implement and the results can be easily interpreted.

Table 2. Cointegration for a Long-run Relationship.

Test	Value	Signif.	I(0)	I(1)
F-Bound	6.20	10%	2.63	3.35
		5%	3.10	3.87
		2.5%	3.55	4.38
		1%	4.13	5.00

Note: The null hypothesis are "no levels relationship".

The F-Bound test value 6.1997 is evidently greater than the I(1) critical value, that indicates reject the null hypothesis and the model has a cointegrating relationship. The ARDL model uses the concept of time lagged so that we need to know the best number of lags in the ARDL model used through the smallest AIC value approach. as for the lag value that shows the best model of the ARDL equation used according to figure 1 is lag = 4.
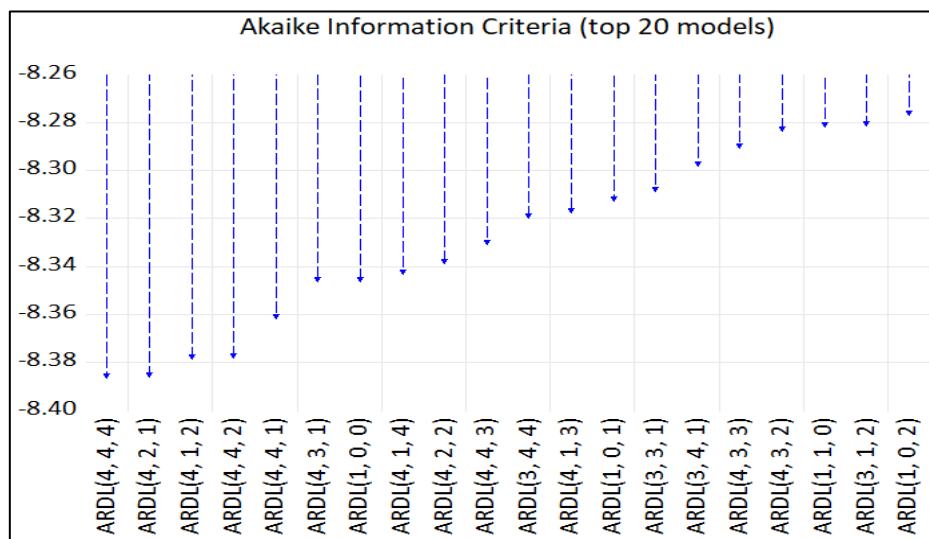

Figure 1. Model Selection.

An ARDL (4, 4, 4) model is selected based on the AIC. Tabel 3 presents the results. The calculated value of F-statistic to test the above null hypothesis (no cointegration or no long-run relationship) is 475.0146 where significanly at 1% level. Therefore, we conclude that cointegration exist and there is a long-run relationship between HDI and other variables.

Table 3. ARDL (4, 4, 4) Estimation Results.

Regressor	Estimate	Std. Error	t-Statistic	Prob
HDI(-1)	0.1015	0.2984	0.3401	0.7392
HDI(-2)	0.0833	0.2934	0.2841	0.7808
HDI(-3)	0.4127	0.3080	1.3397	0.2033
HDI(-4)	0.3861	0.2786	1.3859	0.1891
Democracy	0.0929	0.0398	2.3377	0.0360
Democracy(-1)	-0.0847	0.0877	-0.9653	0.3520
Democracy(-2)	-0.0025	0.0998	-0.0251	0.9803
Democracy(-3)	0.0791	0.0842	0.9398	0.3645
Democracy(-4)	-0.0856	0.0485	-1.7657	0.1009
Growth	0.0008	0.0002	3.9208	0.0018
Growth(-1)	0.0016	0.0005	3.0172	0.0099
Growth(-2)	0.0009	0.0007	1.3272	0.2073
Growth(-3)	0.0003	0.0006	0.5279	0.6064
Growth(-4)	0.0008	0.0006	1.3260	0.2077
C	0.0066	0.0231	0.2845	0.7805

R^2 = 0.9980   S.E. Reg. = 0.0031
AIC = -8.3855   F-statistic = 475.0146
SIC = -7.6718   Prob(F-statistic) = 0.0000

Since cointegration between the model variables is established, the next step is to estimate the conditional ARDL long-run model were given in Table 4. As can be seen, in the long-run, economic growth contibutes positively to HDI and is statistically significant at the 1 percent level, confirming the argument of the economic growth will be affect to Human Development in Indonesia. An increase in economic growth increases the human development. This result is in line with the results reported in previous studies, such as, Mazumdar (2005), Brady & Beckfield (2007), Mazumdar (2000).

Table 4. Estimated Long-run Coefficients of the ARDL Model.

Regressor	Estimate	Std. Error	t-Statistic	Prob
HDI(-1)	-0.0163	0.0303	-0.5291	0.5990
Democracy(-1)	-0.0007	0.0065	-0.1044	0.9185
Growth(-1)	0.0044	0.0012	3.5317	0.0037
ΔHDI(-1)	-0.8822	0.2935	-3.0052	0.0101
ΔHDI(-2)	-0.7988	0.3165	-2.5240	0.0254
ΔHDI(-3)	-0.3861	0.2786	-1.3859	0.1891
ΔDemocracy	0.0929	0.0398	2.3377	0.0360
ΔDemocracy(-1)	0.0089	0.0613	0.1459	0.8863
ΔDemocracy(-2)	0.0064	0.0536	0.1199	0.9064
ΔDemocracy(-3)	0.0856	0.0485	1.7657	0.1009
ΔGrowth	0.0008	0.0002	3.9208	0.0018
ΔGrowth(-1)	-0.0020	0.0011	-1.8535	0.0866
ΔGrowth(-2)	-0.0011	0.0008	-1.3376	0.2040
ΔGrowth(-3)	-0.0008	0.0006	-1.3260	0.2077
C	0.0066	0.0231	0.2845	0.7805

The coefficient of Democracy is negative and not significant. Indonesia's democracy index does not have a long-run impact on improving human development. This article argues that there is no strong or robust relationship between a democracy and its subsequent human development. This result is in line with the result reported in previous studies, such as, Gerring, Thacker & Alfaro (2012), Gauri & Khaleghian (2002), McGuire (2004), Ross (2006) and Shandra et al. (2004).

Beginning with the long-run results, the coefficient of the error correction term is highly significant with the expected negative sign, which confirms the result of the bounds test for cointegration. Once shocked, the larger the error correction coefficient, the faster will be the return to equilibrium (Pesaran & Pesaran, 2009). The coefficient of the error correction term is –0.02, which suggests a slow adjustment process. Approximately, 2 percent of the disequilibrium of the previous year's shock adjusts back to the long-run equilibrium in the current year.

Table 5. Estimates of the Error Correction Representation.

Regressor	Estimate	Std. Error	t-Statistic	Prob
ΔHDI(-1)	-0.8822	0.2935	-3.0052	0.0101
ΔHDI(-2)	-0.7988	0.3165	-2.5240	0.0254
ΔHDI(-3)	-0.3861	0.2786	-1.3859	0.1891
ΔDemocracy	0.0929	0.0398	2.3377	0.0360
ΔDemocracy(-1)	0.0089	0.0613	0.1459	0.8863
ΔDemocracy(-2)	0.0064	0.0536	0.1199	0.9064
ΔDemocracy(-3)	0.0856	0.0485	1.7657	0.1009
ΔGrowth	0.0008	0.0002	3.9208	0.0018
ΔGrowth(-1)	-0.0020	0.0011	-1.8535	0.0866
ΔGrowth(-2)	-0.0011	0.0008	-1.3376	0.2040
ΔGrowth(-3)	-0.0008	0.0006	-1.3260	0.2077
ECM(-1)	-0.0163	0.0029	-5.5246	0.0001

In the short-run, democracy and economic growth have a positive and significant at 10 percent impact on human development in Indonesia. where democracy has greater implications for human development than economic growth. Diagnostic tests for serial correlation, functional form, normality and heteroscedasticity of the models were conducted, and the results are presented in Table 6. As can be seen, the model has the desired econometric properties, in that it has a correct functional form and residuals are serially uncorrelated, normally distributed and homoscedastic. Therefore, the results are valid for meaningful interpretation.

Table 6. Diagnostics checks: Model Assumptions.

Test	Value	Prob.
Jarque-Berra Normality	1.1319	0.5678
Breusch-Godfrey Serial Correlation LM	0.9954	0.4005
Breusch-Pagan-Godfrey Heteroskedasticity	0.8649	0.6058
Ramsey Reset Model Spesification	1.7483	0.2107

Since the null hypothesis for Jarque-Berra Normality test is that the residuals are normally distributed, the probability of 0.5678 indicates that fail to reject this null hypothesis, therefore conclude that the residuals are normally distributed. Since the null hypothesis for Breusch-Godfrey Serial Correlation LM is that the residuals are serially uncorrelated, the probability of 0.4005 indicates that fail to reject this null hypothesis, therefore conclude that the residuals are serially uncorrelated. Since the null hypothesis for Breusch-Pagan-Godfrey Heteroskedasticity is that the residuals are homoskedastic, the probability of 0.6058 indicates that fail to reject this null hypothesis, therefore conclude that the residuals are homoskedastic. With value of F-statistic from Ramsey RESET test with probability at 0.2107 conducting that it has a correct functional form.

The cumulative sum (CUSUM) of recursive residuals and the CUSUM of square (CUSUMSQ) tests are applied to assess the parameter stability (Pesaran & Pesaran, 1997). The cumulative sum test identifies systematic changes in the regression coefficients, while the cumulative sum of squares test detects sudden changes from the constancy of the regression coefficients. Figure 2 plots the results for CUSUM and CUSUMSQ tests. The results indicate the absence of any instability of the coefficients because the plots of the CUSUM and CUSUMSQ statistics fall inside the critical bands of the 5 percent confidence intervals of parameter stability. Therefore, there exists stability in the coefficients over the sample period for Indonesia.
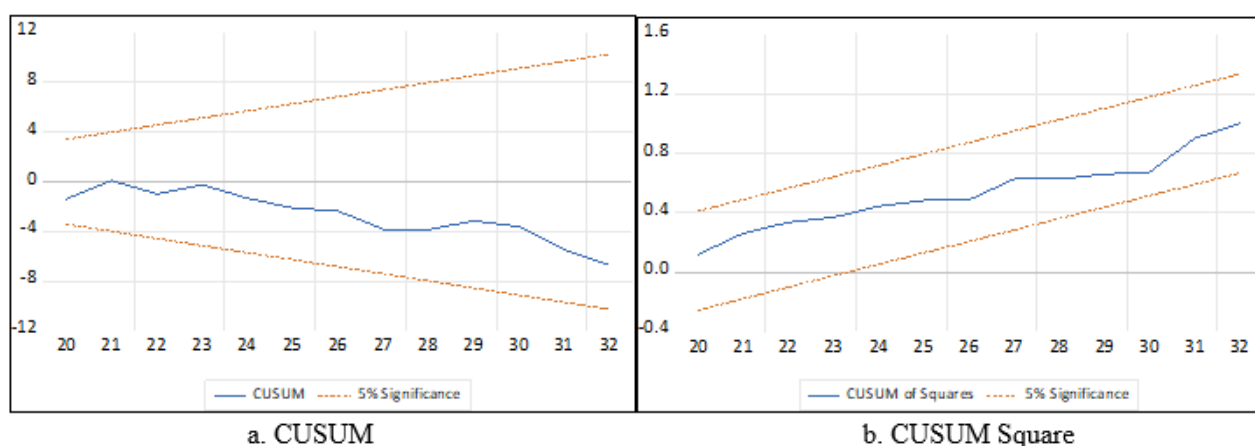
Figure 2. Stability Test.

4. Conclusion

In this paper, the ARDL approach is employed to study the impact of democracy and economic growth on human development in Indonesia. We obtain several conclusions as follows.

1. There is long-run cointegration relationship between democracy and economic growth on human development in Indonesia during the sample period. Where, economic growth contibutes positively to HDI and is statistically significant and democracy not significant impact to human development in Indonesia.
2. In the short-run, democracy and economic growth have a positive and significant impact on human development in Indonesia. where democracy has greater implications for human development than economic growth.
3. Diagnostic tests for serial correlation, functional form, normality and heteroscedasticity of the models were conducted, and the results are valid for meaningful interpretation.

5. Acknowledgements

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