

Analysis of Determinants Human Development Index in ASEAN Countries

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Abstract: The Human Development Index (HDI) is an important variable in improving people's quality of life, measured by the level of education, health, and income per capita. This research considers aspects of economic variables, such as foreign direct investment (FDI), unemployment, and economic growth, with the aim of analyzing the determinants of HDI in 11 ASEAN countries from 2018 to 2021. The analysis technique of this study uses panel data regression with the help of eviews software version 12. The results of the study concluded that economic growth, FDI have a significant positive effect on HDI. while the unemployment rate has no significant effect on HDI. The policy recommendation in this study is that the government should increase employment opportunities by opening new jobs through foreign direct investment, which will increase GDP and subsequently improve HDI.

1 INTRODUCTION

Human development index (HDI) is an indicator used to measure the progress of a country in terms of social and economic dimensions (Shah, 2016). The social and economic success of a country's development hinges on human development. Human development is not only about increasing human choices such as human rights, freedom of speech, ability to work, and the opportunity to live longer with good health, and think creatively. UNDP developed the HDI concept to assess human well-being from a broader perspective, beyond the income generated by society (Sofilda et al., 2015).

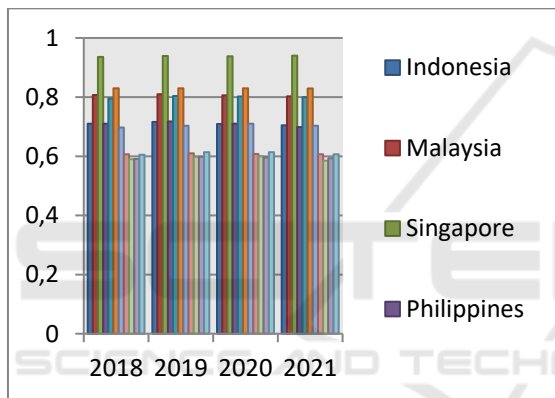
Previous studies have been conducted by previous researchers on the Human Development Index in several journals. With the existence of previous study so that authors make rationale for compiling this study. The results of studies by Handalani (2018), Fadillah & Setiartiti (2021), and Dzulqornain & Iriani (2022) conclude that economic growth has a significant impact on the human development index. According to study Rohmah & Wicaksana (2021), to increase the human development index, it is necessary to identify the problems faced and make policies to increase the human development index by

encouraging higher economic growth. The study of Sumiyarti and Handayani (2022) revealed various outcomes. the research results show that economic growth has not been able to drive growth in 34 provinces in Indonesia. Sumiyarti & Handayani (2022) adds that the success of building welfare (HDI) is determined by how much the government's commitment as a regulator and provider of infrastructure to achieve a modern economy, improve the quality of life and human resources.

The results of the study conducted by Sumiyarti and Handayani (2022) concluded that foreign investment has a positive and significant impact on the human development index. while studies Sumiyarti & Handayani (2022), Arisman (2018), show that the unemployment rate has significant negative effect on the human development index. But, Sofilda et al., (2015) conclude that the unemployment rate has no significant effect on the human development index. according to Sangaji (2016), public policies implemented by the government must be able to reduce the poverty rate by creating jobs through pro jobs so that the unemployment rate decreases.

The findings from Elistia & Syahzuni (2018) show that economic growth as measured by GDP per capita has a very strong positive correlation above 0,8

and significant at the $\alpha = 1\%$ level with the Human Development Index which is an indicator of welfare in 10 ASEAN countries from 2010 to 2016, except Brunei Darussalam which has a strong positive and significant correlation of 0,76. In contrast to Simamora et al., (2022) who conducted research on the relationship between HDI and economic growth in districts/cities of East Kalimantan Province in 2010 – 2021 using the Klassen Typology approach, cointegration, and Granger causality relationships. The research results concluded that only 3 regions consisting of 1 district and 2 cities were in quadrant I of the Klassen Typology, namely the correlation between growth and HDI was positive. The long-term relationship between economic growth and HDI is evident. In addition, the Granger causality results show a one-way relationship, namely that HDI has an impact on growth.



Source: UNDP (2023), Processed Data.

Figure 1: Human Development Index in ASEAN 2018 – 2021.

Based on Figure 1, the Human Development Index in ASEAN countries varies and increases yearly, except for 2021. Almost all ASEAN countries experienced a decline in Human Development Index (HDI), except for Singapore. Singapore is an ASEAN country that has the highest average HDI score, followed by Brunei Darussalam, Thailand, Malaysia, and Indonesia. While the lowest HDI is owned by Timor Leste.

Feriyanto (2016) examined how labor, growth, and investment (both domestic and foreign) affect HDI in 33 provinces from 2006 to 2013 using a fixed-effect model. The research results concluded that labor, domestic investment, FDI have a positive effect on HDI. Meanwhile, economic growth hasn't effect on HDI. Furthermore, Anindhita and Hasbi (2022) examined the causality relationship and multiple

regression between economic growth and HDI in Gorontalo Province between 2011 and 2022 using 40 samples. The findings conclude that economic growth and HDI are stationary at the 1st difference level and have a cointegration relationship at the $\alpha = 5\%$ level. The results of the causality test show that economic growth and HDI have a two-way relationship or influence each other.

The aim of this study is to examine the factors that affecting the Human Development Index in 11 ASEAN countries in 2018 – 2021. For this aim, panel data regression can be used, along with a combination of time series and cross-sectional data. Independent variable in this study, include economic growth, foreign direct investment, and unemployment rate.

2 RESEARCH METODOLOGY

The data secondary used taken from World Development Indicators (WDI) and United Nations Development Programme (UNDP). Research objects taken from 11 countries namely: Indonesia, Malaysia, Singapore, Philippines, Thailand, Brunei Darussalam, Vietnam, Laos, Myanmar, Cambodia, Timor Leste. The data required include: Human Development Index (HDI) from UNDP (2023), GDP per capita growth (annual %), Foreign Direct Investment (FDI) net inflows (% of GDP), unemployment rate (% of total labor force) (World Bank, 2023).

Panel data regression was used to analyze relationships between dependent and independent variables using pooled data. HDI was the dependent variables. While the independent variables in this study were economic growth, FDI, and unemployment. This study sample from 2018 until 2021. Panel data regression has three model stages: common effect model (CEM), fixed effect model (FEM), and random effect model (REM). CEM has explanatory variables that are not influenced by error term. Meanwhile, FEM assumes different intercepts and REM has error term that are not correlated with each other and more consistent than CEM.

However, in panel data regression, there are two tests, namely Chow test (to select CEM nad FEM) and Hausman test (to select FEM and REM). The best model is chosen to interpret the analysis results based on the existing test results. The mathematical equation that used in this study as follow:

$$HDI_{it} = \alpha_0 + \beta_1 GDP_{it} + \beta_2 FDI_{it} + \beta_3 UNEMP_{it} + \varepsilon_{it} \quad (1)$$

Where:

HDI = Human development index

GDP = Economic Growth
 FDI = Foreign direct investment
 UNEMP = Unemployment rate

3 RESULTS AND DISCUSSION

According to Figure 2, economic growth in ASEAN countries tends to fluctuate, and even decline, especially during the COVID-19 outbreak. Almost all countries experienced minus (-) growth during covid in 2020, except Brunei Darussalam and Vietnam. Timor Leste has the highest average economic growth of 29,93 percent. The reason for this is that the country is considered a new country and is currently in the process of development.

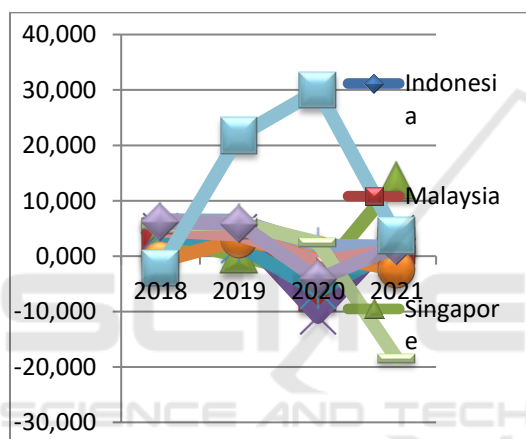


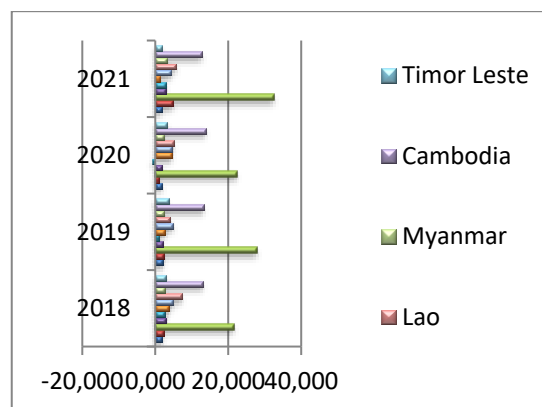
Figure 2: FDI in ASEAN 2018 – 2021.

Based on Figure 2, Foreign Direct Investment (FDI) in ASEAN tends to increase. The country with the highest average FDI is Singapore, with 26.17 percent. Then, followed by Cambodia, Lao, and Vietnam. The remaining 8 countries have an average FDI below 4 percent. The country that has the lowest average FDI is Thailand. FDI is an important component in encouraging an increase in HDI.

According to Todaro and Smith (2020), the Human Development Index (HDI) is a proxy for social welfare and has a positive relationship with income per capita. This means that the higher GDP per capita, the higher the social welfare. The increase in job opportunities and income will be accompanied by more capital inflows into the country. Because of the production goods and services increases, social welfare increases.

Todaro and Smith (2020) added that economic growth only results in improvements in income distribution if two conditions are met, namely

expanding employment opportunities and increasing productivity. The more job opportunities expand, the greater the opportunity for people to get a job. In order for people to earn more income, in this case workers must continue to increase productivity by increasing working hours rather than leisure time.



Source: World Bank (2023), Processed Data.

Figure 3: Foreign Direct Investment in ASEAN 2018 – 2021.

This study uses panel data regression to analyze the relationship between independent variables and the dependent variable in panel data. Panel data is combination of time series dan cross-section. The first step in this study we estimate using common effect model. We can see empirical results common effect model in Table 1. The result shows that economic growth, foreign direct investment had impact on human development index (HDI) at $\alpha=1\%$. But, GDP hadn't impact on HDI.

Table 1: Empirical Results Common Effect.

Variable	Coefficient	Prob
C	0.616647	0.0000*
GDP	-0.002573	0.1907
FDI	0.006758	0.0012*
UNEMP	0.021718	0.0032*
R-squared	0.342141	
Adjusted R-squared	0.292801	
Prob (F-statistic)	0.000723*	
Durbin-Watson stat	0.143300	

Source: Eviews 12, Processed.

Table 2 show the results of Chow Test. The Chow test is utilized to determine which common effect or fixed effect model is the most suitable for estimating panel data. The results of chow test indicated that the probability of cross-section chi-square is 0,000 less than $\alpha=1\%$ so that Ho is rejected and H1 is accepted. Moreover, chow test produces the chosen model,

namely fixed effect model than common effect model.

Table 2: The Results of Chow Test.

Effect Test	Statistic	Prob
Cross-section F	1812,9156	0,0000*
Cross-section Chi-square	281,8522	0,0000*

Source: Eviews 12, Processed.

Hausman test is a test used to determine whether a fixed effect model or a random effect model is. Based on Table 3, the results of Hausman test show that probability of cross-section random is equal to 0,0784 less than $\alpha=10\%$ so that H0 is rejected and H1 is accepted. So, the best model used is fixed effect model in this study.

Table 3: The Results of Hausman Test.

Test Summary	Chi-square Stat	Prob
Cross-section random	6,805564	0,0784**

Source: Eviews 12, Processed.

Based on the test results and selection of the best estimator then the model which is more precise in estimating the analysis of determinant variables for the human development index in ASEAN countries by using fixed effect model. This model will then be selected, interpreted, and analyzed in research. It can be seen in Table 4. The fixed effect model equation in this study can be explained as follow:

$$HDI_{it} = 0,7193 + 0,0279 GDP_{it} + 0,0336 FDI_{it} + 0,0142 UNEMP_{it} + \varepsilon_{it} \quad (2)$$

Table 4: Empirical Results Fixed Effect.

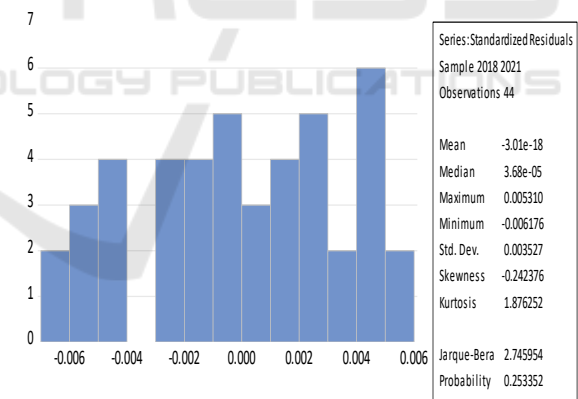
Variable	Coefficient	Prob
C	0,7193	0,0000*
GDP	0,027997	0,0002*
FDI	0,033615	0,0122**
UNEMP	0,014232	0,9592
R-squared	0,999786	
Adjusted R-squared	0,999693	
Prob (F-statistic)	0,0000*	
Durbin-Watson stat	2,392593	

Source: Eviews 12, Processed.

Table 4 show that fixed effect estimated model is exists with probability or empirical statistical significance F of 0,0000 less than $\alpha=1\%$, simultaneously independent variables significant on dependent variable. Coefficient of determination (R-squared) which indicates that the variation of independent variable can be explained by 99,9786% of the dependent variable and the rest is influenced by other variables outside the model by 0,0214%.

Economic growth (GDP) variable has a regression coefficient value of 0,0279 with p-value of 0,0002 at significant effect on Human Development Index (HDI) at $\alpha=1\%$. It means that if GDP increased by 1%, the HDI will increase by 0,0279 or 2,79%. The high level of economic growth will increase the Human Development Index in ASEAN. The results of this study is in line with previous study Handalani (2018), Fadillah & Setiartiti (2021), Dzulqornain & Iriani (2022) and rejected by Feriyanto (2016).

Based on from panel data regression results with Eviews 12, coefficient of 0,0336 with p-value of 0,0122 at a significance $\alpha=5\%$ then H1 is accepted and Ho is rejected, which means that Foreign Direct Investment (FDI) partially has a positive and significant effect on Human Development Index (HDI) in ASEAN period 2018 – 2021. It means that if FDI increased by 1%, the HDI will increase by 0,0336 or 3,36%. It is consistent with the studies of Feriyanto (2016), Handalani (2018), and Sumiyarvi & Handayani (2022). On the other hand, with p-value of 0,9592 less than $\alpha=10\%$ then Ho accepted and H1 is rejected, which means unemployment rate (UNEMP) has no significant on Human Development Index (HDI). It is also in line with study conducted by study Sofilda et al., (2015) and rejected by Feriyanto (2016).



Source: Eviews 12, Processed.

Figure 4: The Results of Normality Test.

Normality tes result can be seen in figure 2, which shows that data has been estimated is normally distributed. The probability for Jarque Berra is 0.253352, which exceeds 10%, so H0 is accepted and H1 is rejected, as shown in Figure 2. So, it can be concluded that error term in this model is normally distributed.

4 CONCLUSION

The dependent variable used in the study results of 11 countries in ASEAN is Human Development Index (HDI). Economic growth, Foreign Direct Investment (FDI), unemployment are independent variables. Panel data regression used in this study with fixed effect model. The results of the study can be summarized as follows: economic growth and foreign direct investment have a positive and significant impact on the Human Development Index (HDI) in ASEAN. But, unemployment rate has no significant effect on HDI. Policy recommendation in this study is that the government needs to increase employment opportunities by opening new jobs through FDI to improve HDI. Apart from that, an increase in GDP which is influenced by the size of output can result in additional labor and better productivity. GDP that continues to grow will increase people's per capita income and encourage the state to provide education and health facilities through large tax collections from the society so that HDI increases.

REFERENCES

- Anindhita, F., & Hasbi, M. (2022). The Analysis of Economic Growth and Human Development in Gorontalo Province. *Jurnal Ekonomi Pembangunan*, 20(01), 1–9.
- Arisman. (2018). Determinant of Human Development Index in ASEAN Countries. *Signifikan: Jurnal Ilmu Ekonomi*, 7(1), 113–122.
- Bank, W. (2023). *World Development Indicators*. databank.worldbank.org
- Dzulqornain, R., & Iriani, R. (2022). The Effect of Economic Growth, Regional Expenditures, and Poverty Levels in East Kalimantan Province. *Jurnal Ekonomi Akuntansi*, 7, 27–37.
- Elistia, E., & Syahzuni, B. A. (2018). The correlation of the human development index (HDI) towards economic growth (GDP per capita) in 10 ASEAN member countries. *Jhss (Journal of Humanities and Social Studies)*, 2(2), 40–46.
- Fadillah, N., & Setiartiti, L. (2021). Analysis of Factors Affecting Human Development Index in Special Regional of Yogyakarta. *Journal of Economics Research and Social Sciences*, 5(1). <https://doi.org/10.18196/jers>
- Feriyanto, N. (2016). The effect of employment, economic growth, and investment on HDI: In provinces in Indonesia. *Journal of Economics, Business & Accountancy Ventura*, 19(1), 1.
- Handalani, R. T. (2018). Determinan Indeks Pembangunan Manusia di Asia Tenggara. *Jurnal Kebijakan Pembangunan Daerah*, 2(2).
- Rohmah, C., & Wicaksana, E. J. (2021). Factors Affecting Inter-Regional Human Development Index in Jambi Province. *Jurnal Ekonomi Pembangunan*, 19(December), 193–206. <https://doi.org/10.29259/jep>
- Sangaji, J. (2016). The Determinants of Human Development Index in Several Buddhist Countries. *Journal of Buddhist Education and Research*, 2(1), 48–60.
- Shah, S. (2016). Determinants of Human Development Index : A Cross-Country Empirical Analysis. *SSRG International Journal of Economics and Management Studies (SSRG - IJEMS)*, 3(7), 40–43.
- Simamora, J. P., Fahrulaji, F., & Martha, S. (2022). Analysis of Relation Human Development Index and Economic Growth Regency/City in the Province of West Kalimantan: Analysis of Relation Human Development Index and Economic Growth Regency/City in the Province of West Kalimantan. *Jurnal Forum Analisis Statistik (FORMASI)*, 2(2), 72–82.
- Sofilda, E., Hermiyanti, P., & Hamzah, M. Z. (2015). Determinant Variable Analysis of Human Development Index in Indonesia (Case For High And Low Index At Period 2004 – 2013). *OIDA International Journal of Sustainable Development*, i.
- Sumiyarti, S., & Handayani, K. (2022). Determinants of Human Development Index : Case Study of Provinces in Indonesia. *LePALISSHE*. <https://doi.org/10.4108/eai.3-8-2021.2315091>
- Todaro, M. P., & Smith, S. C. (2020). *Economic development*. Pearson UK.
- UNDP. (2023). *Human Development Index Report*. data.undp.org