Long- and short-term analysis on the Human Development Index in West Nusa Tenggara

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ABSTRACT

Purpose — *With the low human development index in West Nusa Tenggara, this study is intended to analyze important factors in increasing the Human Development Index in an area.*

Method — *This research combined cross-sectional data consisting of 10 regencies and cities in West Nusa Tenggara and time-series data from 2016 to 2020. In addition, a series of model tests were carried out. This research employed the Arellano-bond estimator for the dynamic panel estimation, which used first-difference (FDGMM) with robust standard error.*

Result — *We found that the previous year's Human Development Index, poverty rate, and GDRB significantly increased the human development index in West Nusa Tenggara, especially in the short term. Meanwhile, in the long run, all variables do not affect the human development index in West Nusa Tenggara. In addition, this study revealed that the previous year's HDI, poverty rate, and GRDP only affected the short term. Moreover, long-term policies are needed to increase the HDI in West Nusa Tenggara, such as increasing community capacity, health assistance, price stabilization, and creating new jobs.*

Contribution — *This study clarifies in practice the need for differentiating poverty reduction strategies according to their duration. This is because short-term interventions have little long-term impact on reducing poverty.*

Keywords: human development index, GMM, long-term analysis, MSME, poverty

INTRODUCTION

The goal of economic development is to improve public welfare. Specifically, the main target of economic development is the improvement of the quality of life of the community. This goal can be achieved by reducing the number of people living below the poverty line. For example, increasing job opportunities can stimulate effective economic activities and reduce the poverty rate in a country. It is important as poverty has become one of the economic challenges faced by many countries that need to be reduced or solved entirely. However, many countries usually run into conflicts, such as social and economic inequalities, towards a modern economic system that result in poverty. Poverty causes the inability of the community to improve their standard of living to meet basic human needs, such as clothing, food, shelter, education, and healthcare.

Gweshengwe & Hassan (2020) suggests that poverty is a state where people are unable to meet the minimum standard of living. It is calculated based on certain parameters, such as consumption basis or basic needs which are related to low income, unfit living conditions, poor healthcare quality, and low education levels that promote the low quality of human resources. These poverty parameters also increase the number of unemployed and low-income people. In addition, according to The Economist (2008), poverty is a closed condition where people are isolated from physical and non-physical life needs. The Economist (2008) also mentions that poverty is the inequality of opportunities in formulating social controls in the form of assets, finances, social organizations, politics, social networks, goods or services, knowledge, skills, and information.

Figure 1. Poverty rate in Indonesia
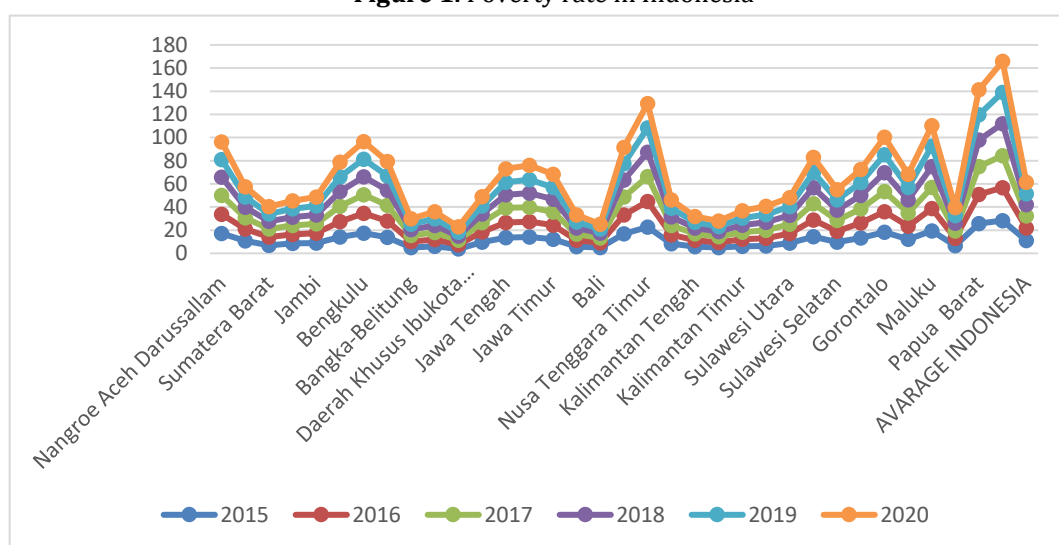
Source: BPS Indonesia (2021)

West Nusa Tenggara is one of Indonesia's provinces with the highest percentage of people living below the poverty line. Based on Figure 1, in 2015 – 2020, this province ranks fifth lowest and its poverty rate is above the Indonesian average. Moreover, human quality development is below the average Human Development Index in Indonesia. Figure 2 also shows that the percentage of people living below the poverty line is above the average among all provinces in Indonesia from 2015 to 2020. In 2015, it was 16.82% while the average poverty rate in Indonesia was 11.175%. In 2020 it was 14.1% while the average poverty rate in Indonesia was 9.985%.

Figure 2. Poverty rate in West Nusa Tenggara
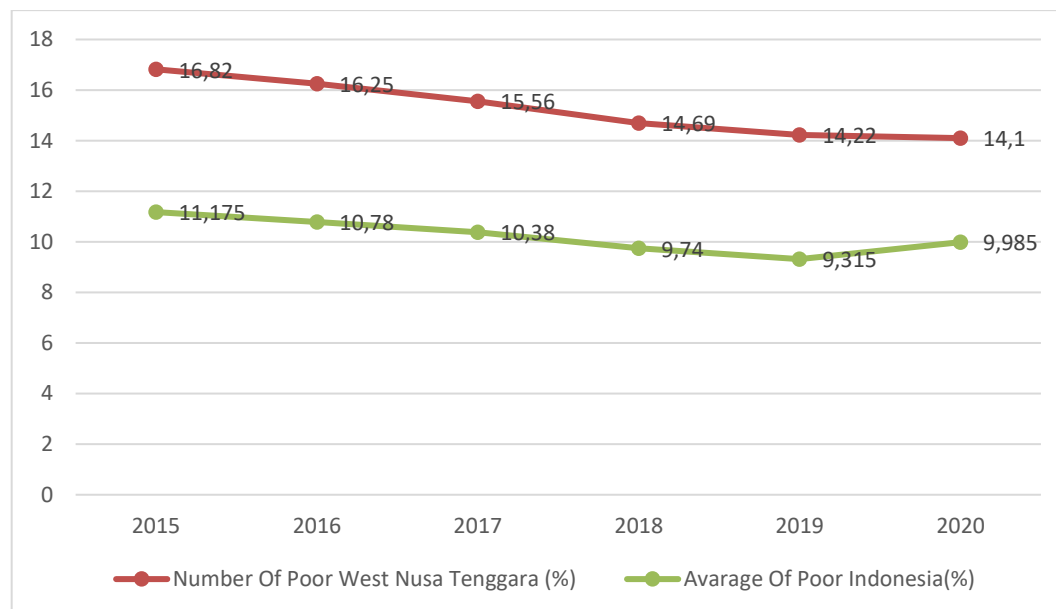
Source: BPS NTB (2021)

Figure 3 illustrates that the Human Development Index in West Nusa Tenggara from 2015 to 2020 was below the average human development index in Indonesia. It shows that, in 2015, the human development index level in Indonesia was 69.55%, while the human development index in West Nusa Tenggara was 65.19%. In 2020, Indonesia's human development index level was 71.94%, while the human development index in West Nusa Tenggara was 68.25%. The low level of welfare in developing countries can affect their ability to accelerate independent and expansive economic activities.

Figure 3. Human Development Index in Indonesia & West Nusa Tenggara
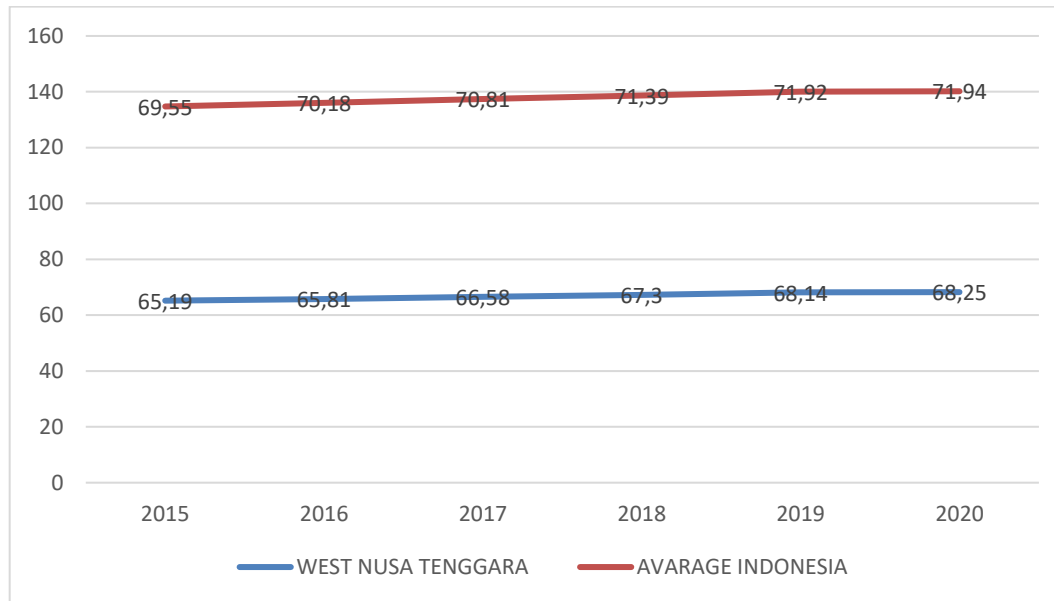
Source: BPS Indonesia (2021)

Meanwhile in Figure 3, it can be seen that West Nusa Tenggara's HDI is still below the average Indonesian HDI where Indonesia's HDI is at 72 percent and West Nusa Tenggara's at 69 percent. In other words, there is a difference of 3 points between the West Nusa Tenggara Human Development Index and Indonesia.

Research on the human development index is no stranger to the world of economics as evidenced by several studies such as Shah (2016), in his research it was stated that GDP, life expectancy, and literacy rates had an effect on increasing HDI in Indonesia. While other independent variables such as the Gini index, fertility rate, CO2 emission level, and inflation show negative constants. Furthermore, research conducted by Franciari & Sugiyanto (2013) analyzed the relationship between HDI, Fiscal Capacity, and Corruption with Poverty in 38 districts in Indonesia. His research shows that the higher the HDI number, the lower the poverty rate. Similar to the others, Eren et al. (2014) tried to observe HDI and human resources using a regression model. As a result, life expectancy, education duration, labor force participation, and GDP per capita affect increasing HDI. Finally, research conducted by Susilowati et al. (2020) examined the causal relationship between the human development index (IPM), foreign debt, economic growth, and poverty using the secondary data quiz Granger causality method from 1990 to 2013. As a result, no causal relationship was found between HDI and foreign debt.

These various studies failed to distinguish the short- and long-term effects of each variable considering that the time variable will give different results to a variable. Thus, this study tries to analyze the effect of the previous year's HDI variables, poverty, Banking capital credit for MSMEs, and GRDP on the latest year's HDI based on the short and long term.

METHOD

To examine the research hypothesis, this study employed dynamic panel data analysis. The research had been conducted from 2016 to 2020 and employed 4 parameters involving independent and dependent variables. Also, dynamic panel data regression is considered superior compared to cross-section or time-series data, especially in two aspects. First, the data panel makes the number of observations (n) larger. Such an advantage can improve the degree of freedom parameter, test for collinearity between explanatory variables, and econometric estimation efficiency. Second, the dynamic panel data can analyze economic statements that cannot be justified by cross-section or time-series data (Burlig et al., 2020; Keum, 2010). The combination of the panel data is expected to formulate dynamic and comprehensive structure (Alam Adha et al., 2018; Azizurrohman & Bhakti Hartarto, 2019).

It also employed dynamic panel data with the Arellano-Bond dynamic panel-data estimation approach. The stages of the dynamic panel data regression test were a) validity test, b) consistency test, c) unbiased estimator test, d) Wald test or simultaneous test, e) short-term and long-term partial tests and f) convergence measuring (Moral-Benito et al., 2019; Zyphur et al., 2020). The estimated specifications for the panel data regression model are as follows:

$$y_{i,t} = dy_{i,t-1} + x¢_{i,t}\beta + u_{i,t}$$

The autoregressive dynamic panel model is a model with a lagged dependent variable as its independent variable. The following is the autoregressive dynamic model equation:

$$Y_t = b_0 + b_1 X_{1t} + b_2 X_{2t} + b_3 X_{3t} + d_1 Y_{t-1} + e_i$$

Notes:

Y_t : The dependent variable for the time t

εi : Error component

X_{it} : The independent variable for the unit i at the time t

Y_{t-1} : Lagged dependent variable which also becomes its independent variable (explanatory endogenous variable)

In the dynamic model, the coefficients $\beta 1$, $\beta 2$, $\beta 3$, $\beta 4$ become the short-term effects of the changes in Xit, and $(\beta i\,(1-\delta))$ is the long-term effect of the changes in Xit.

Where:

Log HDI	= Human Development Index (%)
logHDI(-1)$_{it}$	= Human Development Index $_{t-1}$ (%)
log_Poverty	= Log Poverty (%)
log_Credit_MSME	= MSME Credit (%)
log_GDRB	= GDRB (LOG)
C	= intercept
$\beta_1, \beta_2, \beta_3$	= regression coefficients
ε	= error term

The dynamic panel model of this research is as follows:

$$log\text{HDI}_{it} = C + \beta_1\, log\text{HDI}(-1)_{it} + \beta_2\, \text{log\_Poverty}_{it} + \beta_3\, \text{log\_Credit\_MSME}_{it} + \beta_4\, \text{log\_GDRB}_{it} + \varepsilon_{it}$$

The estimated independent variables are the poverty rate (Log Poverty), credit for MSMEs (Log MSME Credit), GDRB, and the lagged dependent variable (HDI$_{(-1)}$). Also, the research considered the last year's human quality development as a proxy or representative of the evidence of any successful effect of human quality development in the year before.

The lagged dependent variable in the equation model above caused problems with the correlation between the lagged dependent variable and the residue. To overcome this inconsistency problem, Generalized Method of Moments (GMM) estimation was utilized to control endogeneity by using the lagged dependent variable and other related variables as instrumental variables.

The model test was employed to see the validity of the instrument variable, whether it is greater than the suspected number of parameters, and to measure the consistency of the estimates obtained from the GMM-AB estimation. This test also employed the Sargan Test and the Arellano-Bond Test. The Sargan test was used to determine the validity of instrument variables whose number exceeded the suspected number of parameters (overidentifying condition).

Table 1. Operational variable

Variable	Definition	Source
Human Development Index	The development in the forms of education and healthcare services	BPS NTB
Poverty Rate	Poverty is an economic inability of an individual or family measured by their expenditure to afford basic needs like food and non-food commodities	BPS NTB
Micro, Small, Medium Enterprises (MSME) Credit Program	Business capital investment in the current assets	BPS NTB
Gross Regional Domestic Product (GRDP)	Total amount of value-added goods or services produced by all economic units including local residents and residents from other areas living in a region within a certain time	BPS NTB

RESULT AND DISCUSSION

This research combined cross-sectional data of 10 regencies and cities in West Nusa Tenggara from 2016 to 2020. A series of model tests were carried out to select the best model. This research employed the Arellano-bond estimator for the dynamic panel estimation, which used first-difference (FDGMM) with robust standard error. In addition, the validity test was considered the first test to determine the dynamic panel model test or GMM. In this study, the validity test results were obtained using the Sargan test whose Prob-chi value was 0.0027 or less than 5%; hence, there was a validity problem. The robust standard error method was employed to obtain valid results to overcome this problem. In other words, overidentifying restrictions were valid and could not calculate the Sargan test with vce (robust), and there was no heteroscedasticity. Subsequently, a consistency test was conducted to determine the best model. The estimator's

consistency characteristic was obtained using the Arellano-Bond test for m-statistics. The result showed that Prob>z in the 2nd order was 0.2060 which was greater than 5%, and it meant that it was consistent and had no autocorrelation. According to the results of three Unbiased Estimator tests, the coefficient value of the FDGMM was 0.5457. It was considered unbiased because the value was between the estimator of the fix effect model (FEM) (valued at 0.5120) and the pooled least square (PLS) (valued at 0.9701).

Figure 3. Unbiased estimator test
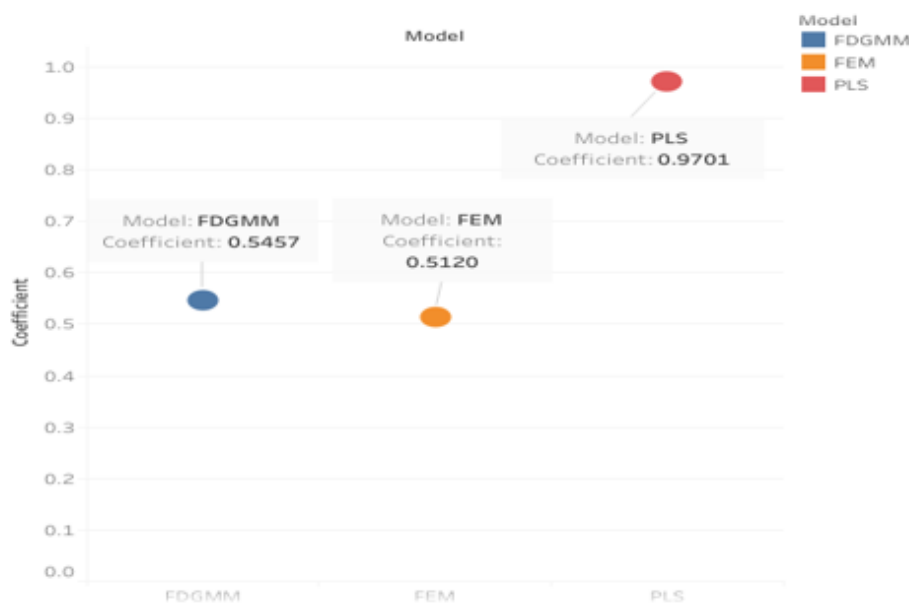
Source: Processing data with tableau (2022)

After being collected, the related data were processed using the dynamic panel regression test tool. The results of data processing using STATA showed the following output of the regression equation model with the Generalized Method of Moments (GMM) model with a robust standard error:

$$log\text{HDI}_{it} = C + \text{-}8.227362 + 0.6993062_{it} + 0.4476869_{it} + 0.5457359_{(\text{-}1)\,it} + \varepsilon_{it}$$

From the equation model above, it can be interpreted and tabulated as follows:

Table 2. Data test results

Independent Variables	Direction	Coefficient	Prob	Robust Std. Error
Log HDI$_{(-1)}$	+	0.545	0.000	0.155
Log Poverty	-	-8.227	0.025	3.679
Log MSME Credit	+	0.699	0.682	1.705
Log GDRB	+	0.447	0.000	0.084
Constanta	+	63.446	0.001	19.242
Prob-Wald Chi2	0.000			

Source: data processed (2022)

The equation model in Table 2 shows that the constant or intercept is 63,446. It means that the HDI value is 63.446% when the following variables like previous HDI, poverty, MSME Credit, and GDRB are equal to zero or constant. Moreover, the coefficient regression ($\beta1$) of HDI (-1) is 0.545. It illustrates that there is a positive effect of previous HDI on HDI amounting to 0.5457. The positive effect means that HDI increases by 0.545% if previous HDI increases by 1 percent. Meanwhile, the coefficient regression ($\beta1$) of poverty is -8.227. It indicates that there is a negative effect of poverty on HDI, valued at -8.227. If the poverty increases by 1 percent, the HDI decreases by -8.227 percent. Lastly, the coefficient regression ($\beta1$) of MSME credit is 0.699. It illustrates that there is a positive effect of MSME credit on HDI amounting to 0.699. Thus, if MSME credit increases by 1 percent, HDI increases by 0.6993 percent.

Simultaneous statistical tests are shown with the prob value – Wald Chi2 = 0.000 or less than α = 5%. It means that the variables including X1 (Log Poverty), X2 (Log MSME Credits), and X3 (Log GRDP) collectively affect the HDI in West Nusa Tenggara. Then, the partial statistical test (T-Test) was conducted to investigate whether individual independent variables affected the dependent variable. The result is summarized in the following table:

Table 3. Short-term significance of independent variables

Independent Variables	Regression Result	prob	Description
Log HDI$_{(-1)}$	+	0.000	5% Significant
Log Poverty	-	0.025	5% Significant
Log MSME Credit	+	0.682	Not Significant
Log GDRB	+	0.000	5% Significant

Source: data processed (2022)

As shown in Table 3, the lag in the human development index ($log\text{HDI}_{(-1)}$) has a significant positive effect at 0.000 in the current year's human development index (HDI). It shows that the success of human quality development in the previous year would have an impact on the following year. In other words, if the HDI in the previous year was high, the human resources in that area would have an impact on increasing the HDI of other human resources. This can be caused by several things such as an increase in the number of teaching staff, an increase in the number of new business units, etc., so it will impact others. This is consistent with the trickle-down effect theory (Sowell, 2012).

Furthermore, the poor population/poverty parameter (Log Poverty) has a significant positive effect at 0.025 with a 5% confidence level. These results are in accordance with the research conducted by Franciari & Sugiyanto (2013) which mentioned that the poor population/poverty variable has a negative direction. According to Agustina (2020; Leonita & Sari (2019); Ristika et al. (2021); Sudarlan (2015); Susi & Mispiyanti (2020), one of the strategies/efforts to alleviate poverty is to build human resources (HR). Development of human resources can be done by increasing access to consumption of social services (education, health, and nutrition). In other words, if poverty increases, it means that efforts to improve education, health, and community economic services have failed, so that the increasing poverty rate will have a negative impact.

Then, the GRDP parameter (Log GDRB) has a significant positive effect with a 5% confidence level. These results are in accordance with research conducted by Eren et al. (2014) which mentioned that GRDP has a positive and significant effect on HDI. Additionally, the increase in GDRP can help to improve the quality of education, community welfare, and job opportunities which is a reflection of the Human Development Index (HDI) (Diba et al., 2018; Islamiatus Izzah & Martha Hendarti, 2021; Shaleh et al., 2021; Wulandari et al., 2019).

Unlike the others, the parameter of banking credit for MSMEs (Log MSME Credit) has no significant effect on the Human Development Index in West Nusa Tenggara. This is because West Nusa Tenggara's MSMEs still only absorb a small portion of capital assistance money, therefore it does not have a significant impact on the local economy. Additionally, MSMEs in West Nusa Tenggara do not need a lot of employees, thus they struggle to find new employees. This has an impact on the insignificance of MSME loans to West Nusa Tenggara's HDI.

Table 4. Long-term significance of independent variables

| Independent Variable	Regression Result	prob	Description
Log Poverty	-	0.613	5% Not Significant
Log MSME Credit	+	0.871	5% Not Significant
Log GDRB	+	0.326	5% Not Significant

Source: data processed (2022)

Based on Table 4, all of the variables do not have any significant effect on Human Development Index of West Nusa Tenggara, especially in long term case. Therefore, it may be claimed that West Nusa Tenggara's human development index calls for more short-term policies, such as school scholarships, monetary assistance, low-cost consumables, and other short-term measures.

DISCUSSION

According to this study, West Nusa Tenggara residents require more suitable long-term policies, such as investing in the health sector, stabilising prices, generating new jobs, and training residents to increase their capacity.

Moreover, we discovered that if the West Nusa Tenggara administration decides on appropriate long-term measures to raise its Human Development Index, then after 2 years the level of inequality between districts in West Nusa Tenggara will be 0 or evenly distributed. In other words, the appropriate approach will abolish inequality in West Nusa Tenggara in less than two years by reducing it by 60% annually.

Figure 4. Spatial maps of Human Development Index
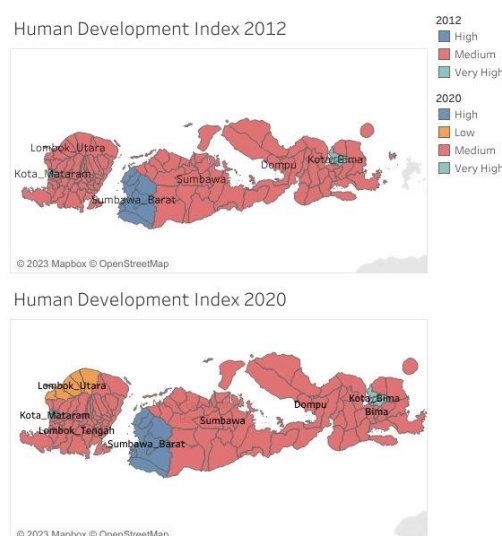
Source: data processed (2022)

Another finding in this study is that while all districts in West Nusa Tenggara have experienced an increase in the Human Development Index, North Lombok Regency is the only district that has experienced a decrease in HDI. Therefore, further research is required to determine the reasons for the HDI reduction in North Lombok

CONCLUSION

The Human Growth Index shows that the quality of human resources has become one of the measures of regional development (HDI). The HDI level of West Nusa Tenggara is now the fifth lowest among Indonesian provinces, and the proportion of the population living in poverty is higher than the national average. A short-term, long-term, and convergence analysis is required due to the unsatisfactory situation to establish appropriate policies in West Nusa Tenggara moving forward to improve human quality development.

Short-term research revealed that GRDP, poverty, and the HDI from the previous year influenced West Nusa Tenggara's HDI. The HDI is not significantly impacted by MSME financing, though. The HDI in West Nusa Tenggara is not affected by any of the variables over the long term; hence, the study's variables cannot be utilized as a long-term policy reference. More suitable policies are therefore required, such as those that boost community capacity, increase jobs, and stabilize prices while also investing in the health sector. Furthermore, it was discovered that North Lombok Regency was the only district in West Nusa Tenggara to see a fall in HDI. Additionally, if the government of West Nusa Tenggara adopts the proper policies to raise HDI, inequality in West Nusa Tenggara will vanish in less than two years. For further research, it is necessary to examine more deeply the causes of the decline in HDI in the districts.

REFERENCES

1. Agustina, D. (2020). Analisis Pengaruh Tingkat Pengangguran Terbuka dan Indeks Pembangunan Manusia Terhadap Kemiskinan di Provinsi Jawa Tengah. *Jurnal Saintika Unpam : Jurnal Sains Dan Matematika Unpam*, *3*(1). https://doi.org/10.32493/jsmu.v3i1.5640

2. Alam Adha, M., Husnayeni Nahar, F., & Azizurrohman, M. (2018). The Impacts of Trade Liberalization on Poverty Reduction in Indonesia. *Jurnal Ekonomi & Studi Pembangunan*, *19*(2). https://doi.org/10.18196/jesp.19.2.5009

3. Azizurrohman, M., & Bhakti Hartarto, R. (2019). Trade and Environment in Indonesia: Case Study Of Asean-China Free Trade Agreement. *Jurnal Ekonomi & Studi Pembangunan*, *20*(1). https://doi.org/10.18196/jesp.20.1.5010

4. Badan Pusat Statistik Indonesia. (2021). Angka Kemiskinan Indonesia. https://www.bps.go.id/pressrelease/2022/07/15/1930/persentase-penduduk-miskin-maret-2022-turun-menjadi-9-54-persen.html

5. Badan Pusat Statistik Indonesia. (2021). Indeks Pembangunan Manusia Indonesia. https://www.bps.go.id/subject/26/indeks-pembangunan-manusia.html

6. Badan Pusat Statistik Nusa Tenggara Barat. (2021). Angka Kemiskinan Nusa Tenggara Barat. https://ntb.bps.go.id/indicator/23/225/1/jumlah-penduduk-miskin-menurut-kab

7. Badan Pusat Statistik Nusa Tenggara Barat. (2021). Indeks Pembangunan Manusia Nusa Tenggara Barat. https://ntb.bps.go.id/pressrelease/2022/12/01/869/ntb--2022--indeks-pembangunan-manusia-sebesar-69-46.html

8. Burlig, F., Preonas, L., & Woerman, M. (2020). Panel data and experimental design. *Journal of Development Economics*, *144*. https://doi.org/10.1016/j.jdeveco.2020.102458

9. Diba, A. O. F., Fathorrazi, M., & Somaji, R. P. (2018). Pengaruh Kemiskinan , PDRB , dan PAD terhadap Indeks Pembangunan Manusia di Jawa Timur. *Journal Ekuilibrium*, *I*(1). Retrieved from https://jurnal.unej.ac.id/index.php/JEK/article/view/19242

10. Eren, M., Çelik, A. K., & Kubat, A. (2014). Determinants of the levels of development based on the human development index: A comparison of

regression models for limited dependent variables. *Review of European Studies*, *6*(1). https://doi.org/10.5539/res.v6n1p10

11. Franciari, P. S., & Sugiyanto, F. X. (2013). Analisis Hubungan IPM, Kapasitas Fiskal, dan Korupsi Terhadap Kemiskinan di Indonesia (Studi Kasus 38 Kabupaten/Kota Di Indonesia Tahun 2008 dan 2010). *Diponegoro Journal Of Economics*, *2*(2). Retrieved from https://www.neliti.com/publications/19641/analisis-hubungan-ipm-kapasitas-fiskal-dan-korupsi-terhadap-kemiskinan-di-indone

12. Gweshengwe, B., & Hassan, N. H. (2020). Defining the characteristics of poverty and their implications for poverty analysis. In *Cogent Social Sciences* (Vol. 6, Issue 1). https://doi.org/10.1080/23311886.2020.1768669

13. Islamiatus Izzah, C., & Martha Hendarti, I. (2021). Analisis Pengaruh Tenaga Kerja, Tingkat Upah, dan PDRB terhadap Indeks Pembangunan Manusia (Ipm) di Provinsi Jawa Tengah. *OIKOS Jurnal Kajian Pendidikan Ekonomi Dan Ilmu Ekonomi*. https://doi.org/10.23969/oikos.v5i2.3392

14. Keum, K. (2010). Tourism flows and trade theory: A panel data analysis with the gravity model. *Annals of Regional Science*, *44*(3). https://doi.org/10.1007/s00168-008-0275-2

15. Leonita, L., & Sari, R. K. (2019). Pengaruh PDRB, Pengangguran dan Pembangunan Manusia terhadap Kemiskinan Di Indonesia. *ISOQUANT : Jurnal Ekonomi, Manajemen Dan Akuntansi*, *3*(2). https://doi.org/10.24269/iso.v3i2.252

16. Moral-Benito, E., Allison, P., & Williams, R. (2019). Dynamic panel data modelling using maximum likelihood: an alternative to Arellano-Bond. *Applied Economics*, *51*(20). https://doi.org/10.1080/00036846.2018.1540854

17. Ristika, E. D., Primandhana, W. P., & Wahed, M. (2021). Analisis Pengaruh Jumlah Penduduk, Tingkat Pengangguran Terbuka Dan Indeks Pembangunan Manusia Terhadap Tingkat Kemiskinan Di Provinsi Jawa Timur. *Eksis: Jurnal Ilmiah Ekonomi Dan Bisnis*, *12*(2). https://doi.org/10.33087/eksis.v12i2.254

18. Shah, S. (2016). Determinants of Human Development Index: A Cross-Country Empirical Analysis. *International Journal of Economics and Management Studies*, *3*(5). https://doi.org/10.14445/23939125/ijems-v3i5p106

19. Shaleh, M., Mallongi, S., & Rahman, Z. (2021). Pengaruh Pengangguran, Indeks Pembangunan Manusia dan PDRB Terhadap Tingkat Kemiskinan di

Kabupaten Luwu Timur. *Tata Kelola*, *8*(2). https://doi.org/10.52103/tatakelola.v8i2.556

20. Sowell, T. (2012). " Trickle Down " Theory and " Tax Cuts for the Rich." " *Trickle Down " Theory and " Tax Cuts for the Rich ," 1*. Retrieved from https://www.hoover.org/sites/default/files/uploads/documents/Sowell_TrickleDown_FINAL.pdf

21. Sudarlan. (2015). Contribution Of Human Development Index On Per Capita Income Growth And Poverty Alleviation In Indonesia. *International Journal of Scientific & Technology Research*, *4*(8). Retrieved from https://www.semanticscholar.org/paper/Contribution-Of-Human-Development-Index-On-Per-And-Sudarlan/e168e7df4dbb7a4d2fe2b5391b7134a55ffd0bdb

22. Susi, A., & Mispiyanti, M. (2020). Effects of Regional Government Financial Performance on Economic Growth, Unemployment, Poverty, and Human Development Index. *Jurnal RAK (Riset Akuntansi Keuangan)*, *5*(1). https://doi.org/10.31002/rak.v5i1.2714

23. Susilowati, D., Joko, S., & Pramuja, R. A. (2020). Quality Study of Human Development and Poverty in Madura Island. *Jurnal Ekonomi Pembangunan*, *17*(2). https://doi.org/10.22219/jep.v17i2.10360

24. The Economist. (2008). Poverty: The bottom 1.4 billion. In *Economist* (Vol. 388, Issue 8595). Retrieved from https://www.economist.com/finance-and-economics/2008/08/28/the-bottom-14-billion

25. Wulandari, D., Narmaditya, B. S., Prayitno, P. H., Ishak, S., & Asnan, L. (2019). Human Development Index, Poverty and Gross Regional Domestic Product: Evidence from Malang, Indonesia. *Jurnal Pendidikan Ekonomi Dan Bisnis (JPEB)*, *7*(2), 146–152. https://doi.org/10.21009/JPEB.007.2.6

26. Zyphur, M. J., Voelkle, M. C., Tay, L., Allison, P. D., Preacher, K. J., Zhang, Z., Hamaker, E. L., Shamsollahi, A., Pierides, D. C., Koval, P., & Diener, E. (2020). From Data to Causes II: Comparing Approaches to Panel Data Analysis. *Organizational Research Methods*, *23*(4). https://doi.org/10.1177/1094428119847280