

Does Local Government's Spending Effective in Improving Human Development Index?

Study in Underdeveloped Region

Apakah Pengeluaran Pemerintah Daerah Efektif dalam Meningkatkan Indeks Pembangunan Manusia?

Studi di Daerah Tertinggal

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Abstract

The purpose of this study was to examine each local government expenditure in the health, education, and economic functions against three indicators forming the Human Development Index (HDI) as a measure to assess community welfare, namely health, education, and economic indicators in 122 underdeveloped regions in Indonesia from 2015-2018 period. The HDI health indicator is measured using Life Expectancy (UHH), the education indicator is represented by School Year Expectation (HLS), and the economic indicator is represented by Population Expenditure per Capita (PPK). In addition, other variables that can affect HDI are included, namely poverty and population growth. The research method used multiple linear regression analysis with the selected model, namely the fixed effect model (FEM). This study used 488-panel data consisting of a combination of 122 cross-sectional data originating from 122 underdeveloped regencies/cities in Indonesia and time series data for 4 years from 2015-2018. The results showed that only local government expenditures in economic function had a positive and significant effect on the HDI economic indicators, namely PPK. If government spending on economic functions increases by 1%, it can increase the expenditure per capita of residents in underdeveloped areas in 2015-2018 by 0.03102%. Meanwhile, local government spending in the health function does not have a significant effect on UHH, and local government spending in the education function does not have a significant effect on HLS. Another result shows that the poverty variable has a negative and significant effect on all HDI indicators in underdeveloped areas.

Keywords

Local Government Spending; Human Development Index; Community Welfare; Underdeveloped Region

Abstrak

Tujuan dari penelitian ini adalah untuk mengkaji setiap pengeluaran pemerintah daerah pada fungsi kesehatan, pendidikan, dan ekonomi terhadap tiga indikator pembentuk Indeks Pembangunan Manusia (IPM) sebagai ukuran untuk menilai kesejahteraan masyarakat, yaitu indikator kesehatan, pendidikan, dan ekonomi di 122 daerah tertinggal di Indonesia periode 2015-2018. Indikator kesehatan IPM diukur dengan Angka Harapan Hidup (UHH), indikator pendidikan diwakili oleh Harapan Lama Sekolah (HLS), dan indikator ekonomi diwakili oleh Pengeluaran Penduduk per Kapita (PPK). Selain itu, dimasukkan juga variabel lain yang dapat mempengaruhi IPM yaitu kemiskinan dan pertumbuhan penduduk. Metode penelitian menggunakan analisis regresi linier berganda dengan model yang dipilih yaitu fixed effect model (FEM). Penelitian ini menggunakan 488 panel data yang terdiri dari gabungan 122 data cross sectional yang berasal dari 122 kabupaten/kota tertinggal di Indonesia dan data time series selama 4 tahun dari tahun 2015-2018. Hasil penelitian menunjukkan bahwa hanya pengeluaran pemerintah daerah pada fungsi ekonomi yang berpengaruh positif dan signifikan terhadap indikator ekonomi IPM yaitu PPK. Jika pengeluaran pemerintah untuk fungsi ekonomi meningkat sebesar 1%, maka dapat meningkatkan pengeluaran per kapita penduduk di daerah tertinggal pada tahun 2015-2018 sebesar 0,03102%. Sedangkan belanja pemerintah daerah pada fungsi kesehatan tidak berpengaruh signifikan terhadap UHH, dan belanja pemerintah daerah pada fungsi pendidikan tidak berpengaruh signifikan terhadap HLS. Hasil lain menunjukkan bahwa variabel kemiskinan berpengaruh negatif dan signifikan terhadap semua indikator IPM di daerah tertinggal.

Kata Kunci

Belanja Pemerintah Daerah; Indeks Pembangunan Manusia; Kesejahteraan Masyarakat; Daerah Tertinggal

1. Introduction

The issue of community welfare is an issue that is always interesting to study because almost every state government around the world wants its citizens to live in prosperity. Several methods can measure the level of welfare of the population in a country and one of them is by using the Human Development Index (HDI). HDI is composed of three main indicators that measure the level of community welfare, namely the level of health, education, and economy. The HDI explains how the population can access the results of development carried out by the government to meet their basic needs such as health, education, and the economy (Badan Pusat Statistik, 2021). The higher the HDI in a country indicates that the government has succeeded in meeting the needs of its people through an effective development process.

The good news is that the HDI in Indonesia has shown an increasing pattern in recent years. Based on data from the Indonesian Central Bureau of Statistics/*Badan Pusat Statistik* (BPS), Indonesia's HDI has always shown an increase in the last 12 years. In 2010 Indonesia's HDI was only 66.53 while in 2021 Indonesia's HDI has increased to 72.29. But unfortunately, although it has always increased in recent years, Indonesia's HDI is still in the middle category. In addition, when compared to other Southeast Asian countries, Indonesia's HDI is still lagging behind countries such as Singapore, Brunei Darussalam, Malaysia, and Thailand.

Table 1. HDI of Southeast Asian Countries 2015

Country	HDI 2015	World Rank
Singapore	0.925	5
Brunei Darussalam	0.865	30
Malaysia	0.789	59
Thailand	0.740	87
Indonesia	0.689	113
Philippines	0.683	114
Vietnam	0.682	115
Timor Leste	0.605	133
Laos	0.586	138
Cambodia	0.563	143
Myanmar	0.556	145

Source: United Nations Development Program (2015).

Based on data from the United Nations Development Program (2015), HDI in Indonesia was recorded at 0.689 and was in the middle category. At the Southeast Asian level, Indonesia's HDI occupies the fifth position, while globally it is ranked 113 out of 188 countries. By referring to these data, of course, it takes hard work for the government to increase the HDI so that all the basic needs of the Indonesian people can be fulfilled properly.

The HDI in Indonesia could be much lower in underdeveloped areas with minimal development. The data from BPS of Indonesia from 2015-2019 shows that the average HDI rate in underdeveloped areas is always below the national average. Although the average HDI in underdeveloped regions in the 2015-2019 period always increases every year, the figure is always below the national average. To overcome this problem, President Joko Widodo has established 122 regencies/cities in Indonesia which are classified as underdeveloped areas in the 2015-2019 period through Presidential Regulation (*Perpres*) Number 131 of 2015 (Pemerintah Republik Indonesia, 2015). With the enactment of this rule, local governments can focus more on intensifying development in underdeveloped areas to improve the welfare of the community.

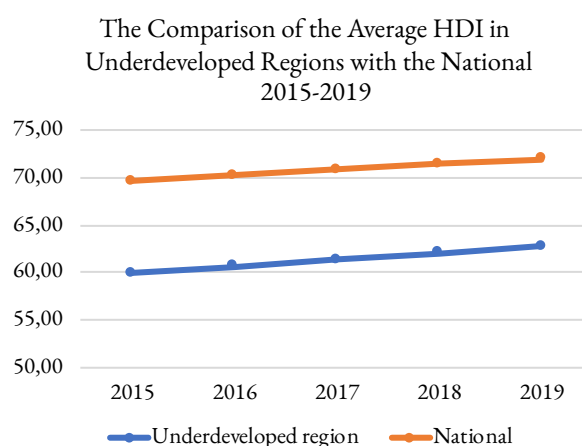


Figure 1. The Comparison of the Average HDI in Underdeveloped Regions with the National (Badan Pusat Statistik, 2021).

The key to improving the welfare of the community is the development and the key to implementing development is the absorption of local government spending which is used to build infrastructure and the basic needs of the population (Haile & Niño-Zarazúa, 2018). Local government spending has a big role in

improving people's welfare. Appropriate and effective Regional Revenue and Expenditure Budget/*Anggaran Pendapatan dan Belanja Daerah* (APBD) policies are expected to increase the HDI index which in turn can improve people's welfare (Sofilda & Hamzah, 2015). Through appropriate APBD policies, local governments can use budget funds to build infrastructure and facilities needed by the community such as schools, hospitals, markets, and others.

According to the Minister of Finance Regulation (PMK) Number 127/PMK.02/2015 concerning Budget Classification, budgets are classified into 3 groups, namely based on the organization that flows through the ministries and institutions, based on functions such as economic, health, and education functions and based on the type of expenditure such as expenditures for employees, goods/services, and others (Kementerian Keuangan Republik Indonesia, 2015). To improve the welfare of the community, local governments must use budget funds based on previously defined functions. Thus, in theory, if the amount of local government expenditure for each of the indicators that make up the HDI (health, economy, and education) is large, then the HDI figures for the three indicators (economy, education, and health) should also increase.

Previous studies have analyzed the role of local government spending in improving the Human Development Index in Indonesia both at the provincial level such as Regina et al. (2020); Widodo et al. (2019); Simatupang & Sinaga (2020); Nainggolan et al. (2022); and Maharda & Aulia (2020) as well as at the district/city level such as Nurvita et al. (2022); Fadilah et al. (2018); Rahmawati & Intan (2020); Fattah & Muji (2012); and Wakarmamu & Indrayono (2019). Most of the previous studies found that large amounts of local government spending proved effective in increasing HDI figures.

Regina et al. (2020) concluded that government spending originating from the General Allocation Fund (DAU) had a positive and significant impact on HDI in 33 provinces (except Jakarta) from 2016-2018. Every DAU increases by 1%, and the HDI will increase by 59.03%. Research by Simatupang & Sinaga (2020) found that local government spending on education and health had a positive and significant impact on HDI in 21 provinces in Indonesia from 2014-2017. Meanwhile,

Nainggolan et al. (2022) explain that every 1% increase in government spending on education will increase HDI by 0.059% in 34 provinces in the 2015-2019 period. The same results were also found in the research of Maharda & Aulia (2020) which concluded that government spending on education had a positive and significant effect on HDI, but government spending in the health sector did not play a significant role in increasing HDI figures in 5 selected provinces in the 2007-2016 period. Meanwhile, another study by Widodo et al. (2019) proves that local government spending on health and education has a positive but not significant effect on HDI.

Previous research has also evaluated the contribution of local government spending in Indonesia to more specific areas such as districts/cities. The study by Nurvita et al. (2022) revealed that local government spending on health and education had a positive and significant impact on HDI in 11 districts/cities in Jambi Province from 2012-2019. If government spending on health and education increases by 1%, respectively, then the HDI increases by 3.66% and 1.39% in that province. The same results were also found in the study by Fattah & Muji (2012). They explained that the allocation of government spending on education and health in Janeponto District, South Sulawesi 1998-2007 proved effective in increasing the HDI rate in the area. Fadilah et al. (2018) analyzed how the role of regional spending in increasing the HDI rate in 38 underdeveloped and developed districts/cities in East Java Province from 2010-2015. The results show that government spending on education and health has a positive effect on each component in the HDI indicator. In the same area, Rahmawati & Intan (2020) found evidence that local government spending in East Java has a positive and significant effect on HDI where if local government spending increases by 1%, the HDI in the province also increases by 0.8%. Another study from Wakarmamu & Indrayono (2019) explains that local government spending in Papua Province from 2000-2016 contributed greatly to increasing the HDI rate in the province.

We can easily find studies on the effect of local government spending on HDI or people's welfare, but most of the previous studies have not specifically

examined each function of local government spending that has the potential to increase the three indicators of HDI composition, namely health, economy, and education. Most of the previous studies still used local government expenditures and composite HDI index figures, so it is not possible to know which part of the regional government expenditure function is not effective in improving the three HDI indicators. In addition, previous research is still limited in analyzing the role of local government spending on HDI in underdeveloped areas. It is important to do this analysis in special areas such as underdeveloped areas to find out whether government spending has been effective in increasing HDI, considering that so far the HDI in underdeveloped areas tends to be lower than in other areas.

Therefore, this study aims to fill the existing research gap by examining each function of local government spending in the health, education, and economic sectors against the three HDI indicators, namely health, education, and the economy in 122 underdeveloped regions in Indonesia in the 2015-2018 period. By using a slightly different approach from previous studies, this study is expected to be able to reveal the role of local government spending in improving the 3 HDI indicators more specifically to obtain more precise research results.

2. Methods

The research method used in this study is multiple linear analysis with the common effect model (CEM), fixed effect model (FEM), or random effect model (REM) approach depending on the results of determining which estimation model is appropriate. This method is useful to determine the effect of the independent variable on the dependent variable. This study uses secondary data originating from 122 underdeveloped regencies/cities in Indonesia which are determined by Presidential Decree number 131 of 2015. Due to data limitations, this research is limited to a period of 4 years from 2015 to 2018. The data sources come from the BPS, and the Ministry of Finance of the Republic of Indonesia.

The dependent variable in this study consisted of three indicators of the HDI, namely health, education, and economy. Meanwhile, the independent variable consists of three functions of local government

expenditure, namely health, education, and economic functions. Health indicators on the HDI are measured using the logarithm of life expectancy at birth (LOGUHH), education indicators on HDI are measured using the logarithm of expected years of schooling (LOGHLS), and economic indicators on HDI are measured using the logarithm of adjusted per capita expenditure (LOGPPK). Meanwhile, local government spending in the health, education, and economic sectors are seen from the logarithm of the total realized expenditure that has been used for health (LOGPPDKES), education (LOGPPDPEND), and economic (LOGPPDEKO) function for one year.

Based on previous research, Several macroeconomic variables have a significant effect on reducing HDI, namely poverty (Regina et al., 2020; Syafri & Firdayeti, 2022; Nainggolan et al., 2022), and population growth (Sofilda & Hamzah, 2015). Therefore, these two variables were also analyzed in this study. The choice of these two variables is based on the understanding that poverty and population growth are classic problems that are still faced in underdeveloped regions in Indonesia. In this study, population growth (POP) is measured by subtracting the current year's total population from last year's which is then divided by last year's total population, meanwhile, the poverty variable (POV) is seen from the percentage comparison of the number of people classified as poor with the total population.

This study aims to examine the effect of each local government expenditure function that has the potential to improve three indicators in the HDI, namely health, education, and economy. Therefore, by modifying the equations from previous studies (Fadilah et al., 2018), this study developed three regression equations which are described as follows:

$$\text{LOGUHH}_{i,t} = c + \beta_1 \text{LOGPPDKES}_{i,t} + \beta_2 \text{POV}_{i,t} + \beta_3 \text{POP}_{i,t} + e_{i,t} \quad (1)$$

$$\text{LOGHLS}_{i,t} = c + \beta_1 \text{LOGPPDPEND}_{i,t} + \beta_2 \text{POV}_{i,t} + \beta_3 \text{POP}_{i,t} + e_{i,t} \quad (2)$$

$$\text{LOGPPK}_{i,t} = c + \beta_1 \text{LOGPPDEKO}_{i,t} + \beta_2 \text{POV}_{i,t} + \beta_3 \text{POP}_{i,t} + e_{i,t} \quad (3)$$

Where $\text{LOGUHH}_{i,t}$ is an indicator of HDI health in the form of a logarithm of life expectancy, $\text{LOGHLS}_{i,t}$ is an education indicator of HDI in the form of an expected logarithm of school years, and $\text{PPK}_{i,t}$ is an

Table 2. Descriptive Statistical Analysis Results

	UHH**	HLS**	PPK****	PPDKES*	PPDPEND*	PPDEKO*	POV***	POP***
Mean	65.43039	11.69449	7361.518	110624.0	169435.4	75852.36	21.37217	1.648015
Maximum	73.28000	14.29000	11496.00	373388.2	1032962.	510961.9	45.74000	5.205396
Minimum	53.60000	2.170000	3625.000	0.000000	0.000000	0.000000	5.250000	0.137831
Std. Dev.	3.291477	1.880613	1591.902	81825.35	173811.3	46599.50	9.676428	0.887012
Sum	31930.03	5706.910	3592421.	53984528	82684472	37015953	10429.62	804.2311
Obs.	488	488	488	488	488	488	488	488

Description: *) in Rp Million, **) in Years, ***) in %, ****) in Rp
 Source: Secondary data processed, 2022

economic indicator of HDI in the form of a logarithm of expenditure per capita of the population in 122 underdeveloped areas in Indonesia. in the 2015-2018 period. LOGPPDKES_{i,t}, LOGPPDPEND_{i,t}, and LOGPPDEKO_{i,t} are the logarithms of local government spending in health, education, and economic functions in 122 underdeveloped regions in Indonesia in 2015-2018. POVi,t is the percentage of the population poverty rate, and POPI,t is the population growth in 122 underdeveloped districts and cities in Indonesia in 2015-2018. C is a constant, β1, β2, and β3 is the regression coefficient of the independent variable, ei,t is the error, and i,t is the residual.

Before regression testing, the regression analysis on the previous panel data must choose the model with the most appropriate method to apply. In this case, there are three estimation models, namely the common effect model (CEM), fixed effect model (FEM), and random effect model (REM). To choose which estimation model is most appropriate to be applied in panel data regression, there are three methods or approaches, namely the Chow test, the Hausman test, and the Lagrange Multiplier test.

3. Results and Discussion

3.1. Descriptive Statistical Analysis Results

The results of the descriptive statistical analysis show that the average life expectancy (UHH) in 122 underdeveloped areas in Indonesia during the 2015-2018 period is 65.43 years. This figure is below the national average of 70.985 years. The minimum UHH value was recorded at 53.6 years which was obtained by Nduga Regency in Papua Province in 2015, while the highest UHH was achieved by Bengkayang Regency in 2018 at 73.28 years. The HDI indicator in the form of school year expectations (HLS) in 122 underdeveloped areas

during 2015-2018 had an average of 11.69 years. This means that the average HLS in underdeveloped areas is still below the national average which has reached 12.75 years. The lowest school year expectation was achieved by Nduga Regency, which was only 2.17 years in 2015, while the highest school year expectation was owned by Aceh Singkil Regency in 2018 at 14.29 years (see Table 2).

Based on the results of descriptive statistical analysis, the average per capita expenditure of residents in disadvantaged areas during 2015-2018 was IDR 7,361.25 and was below the national which had reached IDR 10,573. Nduga Regency became the area with the lowest per capita expenditure rate of only IDR 3,625 in 2015, while West Sumbawa Regency in 2018 became the area with the highest per capita expenditure of Rp. 11,496.

The average realization of regional health expenditures (PPDKES) in disadvantaged areas during the 2015-2018 period was IDR 110.624 billion with a total expenditure of IDR 53.98 trillion. During the 2015-2018 period, there were several underdeveloped areas with realized expenditures for the health of IDR 0 namely North Musi Rawas District, Sintang, Konawe Islands, Taliabu Island, Yalimo, and Puncak in 2015, North Nias District, Mentawai Islands, North Musi Rawas, Bangkalan, Central Lombok, Rote Ndao, Southwest Sumba, Mahakam Ulu, Konawe Islands, South Buru, East Halmahera, Yapen Islands, Paniani, Intan Jaya in 2016 and West Southeast Maluku Regency in 2018. Meanwhile, the realization of regional expenditures for health functions the highest was achieved by East Lombok Regency at IDR 373.39 billion in 2018.

Table 3. Chow Test Result

Effect Test	Statistic	df	Prob.	Decision
Model 1				
Cross-section F	1.883459	(121,363)	0,0000	
Cross-section Chi-square	237.773873	121	0,0000	Choose FEM
Model 2				
Cross-section F	2.834287	(121,363)	0,0000	
Cross-section Chi-square	324.588180	121	0,0000	Choose FEM
Model 3				
Cross-section F	3.020981	(121,363)	0,0000	
Cross-section Chi-square	339.959297	121	0,0000	Choose FEM

Source: Secondary data processed, 2022.

The total regional expenditure for the education function (PPDPEND) in 122 underdeveloped regions during the 2015-2018 period was recorded at IDR 82.68 trillion, with an average expenditure of IDR 169.43 billion. Several regions did not record expenditures for the education function during 2015-2018, namely North Musi Rawas District, West Sumba, Sintang, Konawe Islands, Taliabu Island, Yalimo, and Puncak 2015, North Nias District, Mentawai Islands, North Musi Rawas, Bangkalan, Central Lombok, Rote Ndao, Southwest Sumba, Mahakam Ulu, Konawe Islands, South Buru, East Halmahera, Yapen Islands, Paniai and Intan Jaya in 2016, Dogiayi Regency in 2017 and West Southeast Maluku Regency in 2018. Meanwhile, Pandeglang Regency in 2018 became the region with the highest realization of government spending for the function of education, which reached IDR 1.033 trillion.

In other regional government expenditure functions, namely the economic function (PPDEKO), the total realization of expenditure in disadvantaged areas in the 2015-2018 period reached IDR 37.01 trillion with an average realization of expenditure of IDR 75.85 billion. Underdeveloped regions with expenditures of IDR 0 for economic functions include the Regencies of North Musi Rawas, Sintang, Konawe Islands, Taliabu Island, Yalimo, and Puncak in 2015, South Nias District, West Nias, North Musi Rawas, Bangkalan, Central Lombok, Rote Ndao, Southwest Sumba, Mahakam Ulu, Konawe Islands, South Buru, East Halmahera, Yapen Islands, Paniai, and Intan Jaya in 2016, Dogiayi Regency in 2017, and West Southeast Maluku Regency in 2018.

expenditure for the highest economic function during 2015-2018 which reached IDR 510.96 billion.

Based on the results of the data description, the average poverty rate (POV) in underdeveloped areas in 2015-2018 was recorded to be quite high at 21.37% of the total population. The average poverty rate in underdeveloped areas is twice as high as the average national poverty rate of only 10.63% in the 2015-2018 period. The area with the lowest poverty rate was achieved by Nunukan Regency in 2015 with a poverty rate of only 5.25%, while Degiayi Regency became the area with the highest poverty rate in Indonesia, reaching 45.74% in 2015. In addition, the average population growth rate (POP) in 122 underdeveloped regions in 2015-2018 was recorded at 1.65%. Raja Ampat Regency in 2018 became the area with the lowest population growth rate of only 0.14%, while Mappi Regency in 2018 became the district with the highest population growth rate of 5.2%.

The results of other descriptive statistical analyses show that almost all of the variables studied in this study show a standard deviation value that is smaller than the average value (except for the PPDPEND variable). This indicates that the data is homogeneously distributed and there is no significant difference between the variance and the average value. Meanwhile, the standard deviation of the PPDPEND variable shows a value of 173,811.3 or greater than the average value which is only 169,435.4. This proves that the data are heterogeneously distributed and there is a significant deviation between the variance and the mean value.

Table 4. Hausman Test Result

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.	Decision
Model 1				
Cross-section random	19.723205	3	0.0002	Choose FEM
Model 2				
Cross-section random	34.458504	3	0.0000	Choose FEM
Model 3				
Cross-section random	21.240131	3	0.0001	Choose FEM

Source: Secondary data processed, 2022.

3.2. Chow Test Results

Based on the results of the Chow test, it can be seen that the probability values in Model 1, Model 2, and Model 3 all show the number $0 < 5\%$. These results indicate that all regression equation models proposed in this study choose FEM over CEM. In this case, it is necessary to carry out further testing, namely determining the regression model to choose FEM or REM using the Hausman test (see Table 3).

3.3. Hausman Test Result

The Hausman test results show that the probability values in Model 1, Model 2, and Model 3 each show the numbers 0.0002, 0.0000, and 0.0001 or smaller than 5%. This proves that the most appropriate regression estimation model to be applied to the three models in this study is FEM rather than REM or CEM, so there is no need for further model determination testing (see Table 4).

3.4. Regression Test Results with Fixed Effect Model

The results of panel data regression using the FEM approach on the three models proposed in this study (see Table 5). The first interpretation of the results of the selected model is to form a regression equation for each model. Based on the results of FEM, the results of the regression equations in Model 1, Model 2, and Model 3 explain the effect of government spending in the health, education, and economic sectors, poverty, and population growth on the HDI which measured by the logarithm of Life Expectancy (LOGUHH), the logarithm of School Year Expectation (LOGHLS), and the logarithm of Per Capita Income (LOGPPK) in 122

underdeveloped regions in Indonesia during the 2015-2018 period are as follows:

$$\text{LOGUHH}_{i,t} = 1.828053 - 0.000294\text{LOGPPDKES}_{i,t} - 0.034617\text{POV}_{i,t} - 0.143295\text{POP}_{i,t} + e_{i,t} \quad (4)$$

$$\text{LOGHLS}_{i,t} = 1.058360 + 0.001393\text{LOGPPDPEN}_{i,t} - 0.107644\text{POV}_{i,t} + 0.564682\text{POP}_{i,t} + e_{i,t} \quad (5)$$

$$\text{LOGPPK}_{i,t} = 3.896398 + 0.003102\text{LOGPPDEKO}_{i,t} - 0.303998\text{POV}_{i,t} - 0.452997\text{POP}_{i,t} + e_{i,t} \quad (6)$$

Based on the results of the FEM test on Model 1, the coefficient value on the constant shows 1.828053 with a probability of $0 < 1\%$, 5% , or 10% . This shows that if the variables LOGPPDKES, POV, and POP are 0 or constant, then LOGUHH is 1.828053. In Model 2, the regression coefficient at the constant is 1.058360 with a probability of $0 < 1\%$, 5% , or 10% which indicates that if the LOGPPDPEND, POV, and POP variables are 0 or have not changed, then the LOGHLS variable value is 1.058360. Meanwhile, in Model 3, the probability value for the constant is recorded at $0 < 1\%$, 5% , or 10% with a regression coefficient of 3.896398 which indicates that if the LOGPPDEKO, POV, and POP variables are 0 or constant, then the LOGPPK variable value is 3.896398.

The results of panel data regression analysis using the FEM approach show that only government spending in the economic sector has a positive and significant impact on the HDI indicator, namely the Spending Per Capita of the population (Model 3). This is indicated by the probability value of LOGPPDEKO of $0.0473 < 5\%$ with a regression coefficient of 0.003102. These results indicate that if government spending on economic functions increases by 1% in 122 underdeveloped regions in Indonesia, it can increase the per capita expenditure of the population by 0.03102%. The results showed that government spending on health functions was not

Table 5. Regression Test Results with Fixed Effect Model

Variable	Model 1 (Prob./Coef.)	Model 2 (Prob./Coef.)	Model 3 (Prob./Coef.)
C	0.0000*** (1.828053)	0.0000*** (1.058360)	0.0000*** (3.896398)
LOGPPDKES	0.5180 (-0.000294)	-	-
LOGPPDPEND	-	0.4149 (0.001393)	-
LOGPPDEKO	-	-	0.0473** (0.003102)
POV	0.0161** (-0.034617)	0.0605* (-0.107644)	0.0000*** (-0.303998)
POP	0.2260 (-0.143295)	0.2325 (0.564682)	0.2961 (-0.452997)
Adjusted-R ²	0.304458	0.432646	0.531353
Prob. (F-Stat)	0.0000*** (2.719140)	0.0000*** (3.994920)	0.0000*** (5.452922)

Dependent: LOGUHH (Model 1), LOGHLS (Model 2), LOGPPK (Model 3)
 (***) p < 0.01 (**) p < 0.05 (*) p < 0.1 C : Constant
 Source: Secondary data processed, 2022

sufficient to improve the HDI health indicator in the form of Life Expectancy (LOGUHH) (Model 1). This is evidenced by the probability value of the LOGPPDKES variable recorded at 0.5180 > 1%, 5%, or 10% with a regression coefficient of -0.000294. The same result is also shown in Model 2 which shows the result that government spending on the education function does not have a significant effect on the HDI education indicator, namely the Expectation of Old Schools (LOGHLS). The probability value for the LOGPPDPEND variable was recorded to be greater than 1%, 5%, or 10%, namely 0.4149 with a regression coefficient of 0.001393.

The results of other studies show that the poverty level of the population in disadvantaged areas has a negative and significant effect on health, education, and economic indicators of HDI as measured by LOGUHH (Model 1), LOGHLS (Model 2), and LOGPPK (Model 3). (POP) has no significant effect on the three HDI indicators. This is indicated by the probability value of the population growth rate which shows numbers greater than 1%, 5%, or 10% in the three models, namely 0.2260 (Model 1), 0.2325 (Model 2), and 0.2961 (Model 3). Meanwhile, the probability value of the poverty level variable in Model 1 shows 0.0161 < 5% with a regression coefficient of -0.034617 which means that if the poverty rate of the population in 122 disadvantaged areas increases by 1%, it will reduce the Life Expectancy (LOGUHH) of the population by 0.34617%. In Model 2, the population poverty level variable has a probability value of 0.0605 < 10% with a regression coefficient of

-0.107644. These results indicate that if the poverty rate of the population in the area where they live increases by 1%, it will reduce the School Year Expectation (LOGHLS) by 1.07644%. Meanwhile, the probability value of the poverty level in Model 3 was recorded at 0 < 1%, 5%, and 10% with a regression coefficient of -0.303998. This indicates that if the poverty rate in underdeveloped areas increases by 1%, it can reduce the population expenditure per capita (LOGPPK) by 3.03998%.

The value of Adjusted R² in Table 2 explains how much the model's ability to explain the dependent variable is. In Model 1, the value of Adjusted R² was recorded at 0.304458, which means that the regression equation model with the independent variables LOGPPDKES, POV, and POP was able to explain the LOGUHH variable by 30,4458%, while the rest was explained by other variables not examined in this study. Meanwhile, the value of Adjusted R² in Model 2 was recorded at 0.432646 or in other words the LOGPPDPEND, POV, and POP variables were able to explain the LOGHLS variable by 43.2646%, while the rest was explained by other variables. In Model 3, the Adjusted R² value of 0.531353 explains that the variables LOGPPDEKO, POV, and POP can explain the dependent variable LOGPPK by 53.1353%, while the rest are explained by other variables. Last, but not least. Prob value. (F-statistics) which explains the simultaneous effect of all independent variables on the dependent variable in the three models, all show numbers 0 < 1%, 5%, or 10%. This indicates that either in

Model 1, Model 2, or Model 3, if all independent variables are tested simultaneously, it has a significant effect on HDI indicators in the form of UHH, HLS, and PPK.

3.5. Discussion

The results showed that government spending on health functions had no significant effect on improving health indicators on the Human Development Index (HDI) in the form of Life Expectancy (UHH) in 122 underdeveloped regions in Indonesia in the 2015-2018 period. This result is not previous estimates which predict that government spending in the health sector can increase the UHH.

Law Number 36 of 2009 mandates that the provincial and district/city government health budgets be allocated a minimum of 10 percent of the APBD excluding salaries (Kementerian Kesehatan, 2009). This number is quite large compared to other functions. The results of the data description show that the total expenditure of the local government for health functions in 122 underdeveloped regions in Indonesia for four years from 2015-2018 almost reached IDR 54 trillion. In other words, on average each underdeveloped district/city received funds for the health of more than IDR 110 billion from 2015-2018 or more than IDR 27 billion per year. Although quite large, this figure has not been effective in increasing life expectancy which is an indicator of HDI health in underdeveloped areas. In some cases, there are still several regions that do not receive the allocation of funds for health.

Sanggelerang et al. (2015) stated that most of the funds were used for the construction and procurement of health facilities and infrastructures such as hospitals and health centers. Mongan (2019) stated three priority programs of local governments in Indonesia related to health improvement that is carried out, namely: increasing the number and quality of health service facilities and infrastructure, waiving health care costs, and improving maternal and child health. The health budget in the Physical Special Allocation Fund/*Dana Alokasi Khusus* (DAK) for the Health Sector with outputs include procurement of pharmaceutical vehicles, ambulance vehicles, construction of office buildings, procurement of health facilities and

infrastructure, construction of mobile health centers, wastewater treatment, procurement medical equipment, procurement of medicines, motorcycles, construction of Family Planning Extension Center and others (Mongan, 2019). All of these types of expenditure indicate that most government spending on health functions is still focused on spending that is curative rather than preventive (Muliza et al., 2017). It is feared that this type of expenditure will make the budget burden heavier in the long term.

Based on the results of the study, government spending on education has no significant effect on the education indicator on the Human Development Index, namely the Expectation of Old Schools (HLS) in 122 underdeveloped areas in Indonesia in 2015-2018. These results indicate that the allocation of funds for education in disadvantaged areas is still not effective in improving the quality of education.

Law number 20 of 2003 states that the state is obliged to allocate a budget for education of 20% of state spending (Kementerian Pendidikan, 2003). When compared to other functions, the budget for education has a fairly large portion. Based on the results of data analysis, the total realization of government spending on education in 122 underdeveloped regions in Indonesia during 2015-2018 is quite large, reaching more than IDR 82 trillion. However, there are still many regions that did not record expenditures for the education function during 2015-2018. This indicates that there are still gaps in budget realization in certain regions so it cannot have a positive effect on increasing school-year expectations.

Muliza et al. (2017) stated that most of the education budget in the regions is focused on the construction of physical education infrastructure, while the budget for improving the quality of education and training for teachers and students is still limited. This causes government spending on education to not have a significant impact on improving the quality of education and students' long-term expectations of schooling. In addition, the education budget used for the development of physical infrastructure is also feared will not be able to provide benefits in the short term so it will not directly have a significant effect on improving the quality of education in underdeveloped areas.

The results of other studies prove that the realization of the budget for the economy has a positive and significant effect on increasing the HDI economic indicators, namely the per capita expenditure of the population in 122 underdeveloped regions in Indonesia during 2015-2018. If the value of government spending on education in underdeveloped areas increases by 1%, then the per capita expenditure of the population can increase by 0.03102%. The results of this study indicate that of the three government expenditure functions studied in this study, only government expenditure for economic functions is effective in increasing HDI, especially in the economic aspect.

Based on the results of descriptive statistical analysis, the total government expenditure for economic functions in 122 underdeveloped regions in Indonesia in 2015-2018 reached IDR 37 trillion. When compared to the other two functions studied in this study, government spending on economic functions is the smallest. However, government spending on economic functions is considered effective and on target compared to other budget functions.

Government spending is one of the important components to stimulate the regional economy. With a budget for economic functions, the government can build infrastructure that can support community consumption and production activities such as markets and shopping centers, dams, toll roads, and others (Eliza, 2015). In addition, underdeveloped regions tend to have lower income levels when compared to other regions. Thus, in this case, the budget for economic functions has also been allocated to expenditures that are not only physical in nature but also non-physical such as community economic empowerment and subsidies. Thus, the higher the government spending for economic functions, the higher the level of consumption and people's purchasing power, which is indicated by spending (Muliza et al., 2017).

The results showed that the poverty rate in 122 underdeveloped regions in 2015-2018 had a significant effect on reducing HDI figures for all indicators including health, education, and the economy, while population growth had no significant impact on all HDI indicators in underdeveloped areas. The results of this study are by the initial prediction which predicts that the

poverty rate in underdeveloped areas tends to reduce the HDI rate. Regina et al. (2020) explained that there are several causes of poverty in Indonesia, especially in disadvantaged areas that can have a negative impact on HDI, namely 1) the existence of development, income, and economic inequality that is still high between disadvantaged areas and other regions, 2) the unemployment rate is still high and efforts to overcome them that are not yet optimal in underdeveloped areas and 3) inflationary conditions that are still quite high in rural or underdeveloped areas. This condition makes the poverty rate uncontrollable in underdeveloped areas which ultimately has a domino effect on the decline in HDI, especially in the fields of health, education, and economy (Tarumingkeng et al., 2021).

4. Conclusion

Overall, this study concluded that the budgets that have been issued by the government in 122 underdeveloped regions in Indonesia from 2015-2018 have not been fully effective and on target in improving the welfare of the population and the human development index. This is evidenced by the results of research which explains that only government spending on economic functions has a significant effect on increasing the human development index on economic indicators. Meanwhile, government spending on health and education functions does not have a significant impact on increasing HDI in disadvantaged areas, even though these two expenditure functions have a fairly large portion compared to other expenditure functions. In addition, another variable that affected HDI in underdeveloped areas during 2015-2018 is poverty. This is because the level of poverty and inequality in disadvantaged areas tends to be high compared to other regions.

Based on the results of this study, it is recommended that underdeveloped local governments allocate government expenditures that focus not only on physical infrastructure, but also on non-physical such as expenditures for community empowerment, improving the quality of educators and students, and expenditures that are preventive in nature. In addition, the central government also needs to carry out strict monitoring and evaluation of each regional government expenditure budget flow to ensure that regional expenditures can be

right on target and in accordance with the Indonesian state's goal of prospering the entire community.

This study has several limitations that can be corrected in future studies, namely 1) The results show that the value of Adjusted R2 tends to be low, namely 30% (Model 1), 43% (Model 2), and 53% (Model 3). This indicates that many other variables could potentially explain the Human Development Index variable. Therefore, further studies can add other variables that can affect HDI. 2) Further research can find and replace the measurement of each indicator forming HDI (health, education, and economy) which is more appropriate and more appropriate to be applied.

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