The Factors Affecting HDI Indonesia

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ABSTRACT

This research aims to determine the factors affecting human development index (HDI) in regency/city in Indonesia. Based on data from BPS (Statistics Indonesia), human development index (HDI) of each regency/city in Indonesia has a heterogeneous achievement value from the low, middle to high categories of HDI. This indicates that there are still underdeveloped areas and inequality in human development in Indonesia. Meanwhile, regional government expenditure on education, health, and economic functions tends to increase considerably each year. The methods used were panel data regressions with time series data from 2011-2017 and cross section data of 465 regencies/cities in Indonesia. Econometrics results show variables that have significant positive effect on HDI, which are regional government expenditure on education function, health function, economic function, GRDP (Gross Regional Domestic Product), education infrastructure (number of junior high schools), health infrastructure (number of community health center), and BPK (The Audit Board of Indonesia) opinion. While poverty has negative effect, infrastructure (road length) has no effect. To avoid inequality from affecting human development in Indonesia, the government role to prioritize human development in regency/city with HDI achievement values that are still low or underdeveloped is necessary. These contributions can be made by prioritizing expenditure on health, education, and economic functions in the regional budget.

Keywords : Function expenditure of local government, HDI, klassen typology, panel data regression

I. INTRODUCTION

Human development index at the provincial level in 2017 according to BPS (Statistics Indonesia), it showed that 25 of 34 provinces are below the national HDI of 70.81. Provinces with HDI values are above the national HDI including: West Sumatra, Riau, Riau Islands, Jakarta, Yogyakarta, Banten, Bali, East Kalimantan, and North Sulawesi. Province with low HDI category is Papua Province. The only

province included in the high HDI category is Jakarta. This indicates that there is inquelity in human development in Indonesia and there are still underdeveloped regencies/cities. Figure 1 shows the value of Indonesian HDI and its growth in 2011-2017, the data shows that Indonesian HDI continues to increase, but the growth is very slow at just under 1 percent per year. The importance of increasing HDI is not only from increasing nominal figures, but high growth is also needed to measure the rapidity of human development. The main challenge of development according to the World Bank in [1] is to improve the quality of life by improving education and health.
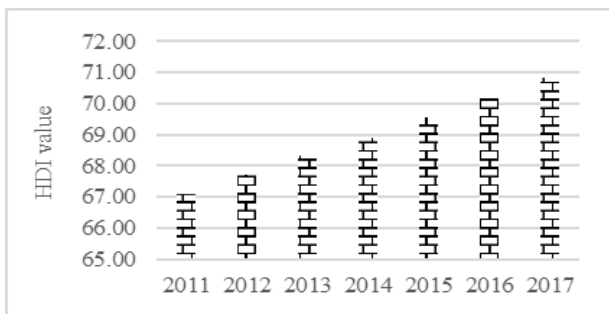

Source: BPS, 2017

Figure 1. National HDI and growth, 2011-2017

Government contribution to improve human development can be performed with fiscal policy through local financial management by allocating the education budget and health budget in the regional budget. Expenditures that prioritize and allocate appropriate budgets for education, health, and infrastructure can make changes in human resource formation and increase the productivity of an area in a long term [2]. This is also reinforced by the findings of [3] that the increase in human development index is caused by an increase in health and education service funding. [4] also find that improving school infrastructure can increase school participation rates. Education, health, and economic infrastructure development programs (road length) will determine the quality of human resources socially. Countries

with good education and health status will enjoy higher growth [5]. Factors of poverty level, motivation geographical difficulties or access to schools, lack of education services and socio-cultural factors affect school participation rates [6].
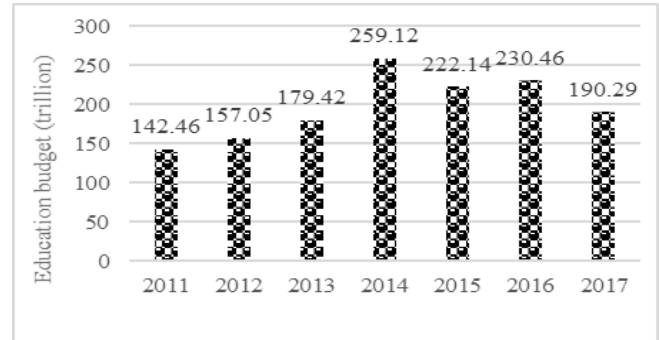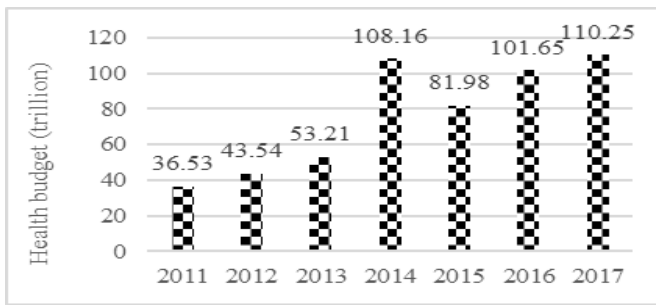

Source: DJPK, 2017

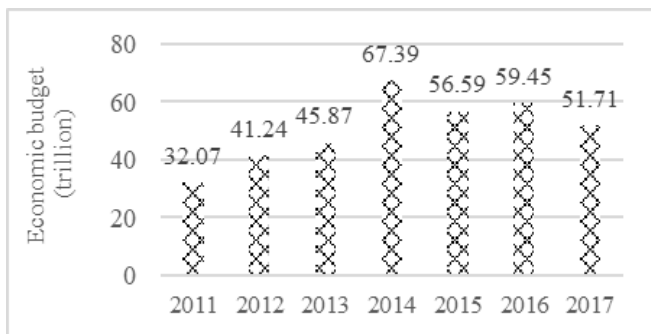Figure 2. Allocation of regency/city education expenditure in Indonesia, 2017

Other important factors are the health sector, in which to improve public health, programs from the government to improve the health status are needed, so that the life expectancy of the population can increase. One component in calculating HDI is the health index formed from life expectancy, so it is important for the government to allocate health budget in the regional budget. Health expenditure positively affects the nutrition of children under five in Nepal [7] and has an effect in reducing infant mortality as well as per capita (GRDP) [8]. Regency/city health budget is as shown in figure 3.

The high allocation of government budget in the health sector is expected to improve the quality of health and ultimately will have an impact on increasing HDI. Based on the data in Figure 3, the health expenditure

Source: DJPK, 2017

Figure 3. Allocation of regency/city health expenditure in Indonesia, 2017 budget from 2011-2017 tended to increase, except in 2015 which decreased. In 2017, the government budget in the health sector was 110.25 trillion rupiah. The average increase in budget growth is 20.13 percent per year. The increase in health expenditure shows the government's attention to improve the health of the Indonesian people. Regional budget priorities can encourage regions to be more accountable in spending the budget according to local needs [9].

Source: DJPK, 2017

Figure 4. Allocation of regency/city economic expenditure in Indonesia, 2017

The economic budget as shown in Figure 4 has fluctuated. From 2011-2017, there was an increase of 19.64 trillion rupiah with a growth of 61.25 percent. The economic expenditure increase was used to create jobs, develop facilities and infrastructure and encourage economic activity increase in the community. This increase is expected to have an impact on improving the community welfare. Government expenditure in this sector according to a

research conducted by [10] resulted in a positive relationship between government expenditure, economic functions, and HDI increase.

Government expenditure data on the functions of education, health expenditure and economic expenditure is presented in figures 2, 3, and 4, it shows that these government expenditures tend to increase quite high annually. With this budget, the regional governments should be able to increase HDI values as high as possible. However, in the reality HDI value increases very slowly at under 1 percent annually and it also shows that there is an inequality in human development among regencies/cities in Indonesia. Based on the data above, this research examined spatially the HDI in regencies/cities in Indonesia and analyzed the factors affecting the human development index. Several previous research were conducted only at the provincial or regency level in one province. This research covers all regencies/cities in Indonesia except those in which the data are not available. With a wider scope of research areas/regions, the human development comparison between among regencies/cities can be determined. This research is expected to provide suggestions to local governments in Indonesia, as well as other relevant parties in improving the quality of human development in regency/city in Indonesia. In addition, this research is expected to be a reference for further research.

II. RESEARCH METHODS

Panel data used was 2011-2017 time series, and cross sections of 465 regencies/cities in Indonesia from DJPK (Directorate General of Fiscal Balance of Ministry of Finance), Central Bureau of Statistic (BPS), and The Audit Board of Indonesia (BPK).

A. Spatial Analysis of Human Development Index among Regencies/cities in Indonesia

This analysis tool could help decision makers to set policy priorities. The classic typology was used to identify problems based on previously available data, regarding to policy planning, mainly. This analysis divided the area based on two main indicators. This research combined human development index (HDI) with its growth.

B. Factors Affecting Human Development Index

Econometrics analysis to analyze factors affecting human development index in regencies/cities in Indonesia was conducted by using panel data. The panel data used were time series from 2011 to 2017 and cross sections from 465 regencies/cities in Indonesia must be set as follows:

$HDI_{it} = \alpha +$
$\beta_1 LNEducation\_expen_{it} +$
$\beta_2 LNHealth\_expen_{it} +$
$\beta_3 LNEconomy\_expen_{it} +$
$\beta_4 LNEducation\_infra_{it} + \beta_5 LNHealth\_infra_{it} +$
$\beta_6 transport\_infra_{it} + \beta_7 LNGDRP_{it} +$
$\beta_8 poverty_{it} + \beta_9 BPK\_opinion_{it} + u_{it}$

Note:

HDI$_{it}$: Human development index

LNEducation_expen$_{it}$: Expenditure on education (Rupiah)

LNHealth_expen$_{it}$: Expenditure on health (Rupiah)

LNEconomy_expen$_{it}$: Expenditure on economy (Rupiah)

LNEducation_infra$_{it}$: Education infrastructure covers number of Junior High Schools (units)

LNHealth_infra$_{it}$: Health infrastructure covers number of community health centers (units)

LNTransport_infra$_{it}$: Transportation infrastructure covers road length (percentage)

LNGRDP$_{it}$: Gross Regional Domestic Product (Rupiah)

poverty$_{it}$: Poverty (percentage)

BPK_opinion$_{it}$: Dummy BPK opinion WTP/WDP (1 = WTP /unqualified opinion; 0 =WDP / qualified opinion)

LN : Natural logarithm

u$_{it}$: error

III. RESULTS AND DISCUSSION

Based on BPS, the data regarding human development index in regencies/cities among Indonesia from 2011- 2017 increased. On 2011 the lowest HDI value was 21.12 and the highest was 82.98. On 2017 the value increase with the lowest value of 27.87 and the highest of 85.49. The lowest HDI values from 2011-2017 were found at Nduga Regency in Papua Province, while the highest HDI from 2011-2017 was at Special Region of Yogyakarta. The highest HDI and the lowest value indicates a quite high difference. The difference among them was 57.62. The lowest HDI growth from 2011- 2017 by 2.45 percent was found at Pangkal Pinang and the highest by 31.98 percent was at Nduga Regency. The

average HDI growth from 2011-2017 was 5.88 percent.

A. Klassen Typology Analysis

HDI spatial analysis among regencies/cities in Indonesia used Klassen typology analysis as shown in Figure 5. To discover HDI with its growth range, 4 quadrants were formed to find the relatively HDI development in regencies/cities compared to the others. Vertical line divider was the average HDI of regencies/cities in Indonesia, meanwhile horizontal line divider was the average HDI growth among regencies/cities in Indonesia. Quadrant 1 indicated Human Development Index (HDI) value and HDI growth above the average of other regencies/cities. The regencies/cities in quadrant 1 included: North Barito, Lamongan and Sukabumi. Quadrant 1 was not a top priority for government in increasing HDI because those regencies/cities were areas with high human development.
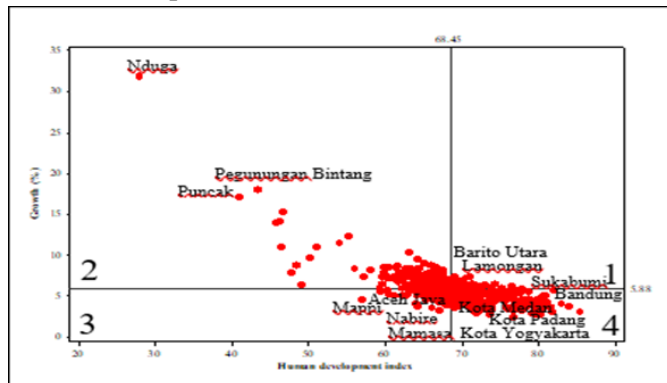

Figure 5. Human Development Index among Regencies/cities in Indonesia

Regencies/cities with low HDI values should have high HDI growth, so, it will cause convergence among regencies/cities in Indonesia. Convergence among regencies/cities in achieving HDI values was necessary in equitable development, in order to avoid imbalance in human development among regions. These conditions were indicated in quadrant 2. Some of the regencies/cities contained in quadrant 2 were: Nduga, Puncak and Pegunungan Bintang.

HDI increase among underdeveloped regencies/cities must become the first priority to achieve HDI convergence among regencies/cities. Human development that is not prioritized in the improvement of underdeveloped regencies/cities will result in HDI divergence, then inequality in development between regions will be higher and the goal of equitable development will be difficult to achieve. Some of the most prominent regencies/cities shown in quadrant 3 were: Mappi, Nabire, Aceh Jaya and Mamasa.

Success of human development in regencies/cities is not only seen from HDI high value, but also from high growth of HDI. Growth indicated whether the development occurs in a regency/city rapid or slow. Quadrant 4 indicated the regency/city HDI value with slow growth, because the growth is under the average of other regencies/cities. Some of them in quadrant 4 were: Medan, Bandung, Padang and Yogyakarta.

B. Factors Affecting Human Development Index

Calculated F value of 562.3273 (probability = 0.00000) was significant at 1 percent level indicating there was one independent variable with a significant effect on HDI. R-squared value from 0.9897 meaning that 98.97 percent of diversity on dependent variable could be explained by the model and the remaining 1.03 percent was affected by other factors outside the model.

The test result on table 1 indicated that variables with a significant positive effect on human development index were education expenditure, health expenditure, economic expenditure, education infrastructure, health infrastructure, GRDP and BPK opinion. While, variable with a significant negative effect was poverty. Partially

each of the variable effect can be explained as follows:

TABLE I

PANEL DATA REGRESSION ON FACTORS AFFECTING HUMAN DEVELOPMENT INDEX

Variable	coefficient	Prob
Education expenditure	0.2031***	0.0000
Health expenditure	1.1887***	0.0000
Economy expenditure	0.2460***	0.0000
Education infrastructure	1.0984***	0.0000
Health infrastructure	1.1483***	0.0002
Transportation infrastructure	0.0367	0.3746
GRDP	0.6876***	0.0000
Poverty	-0.2085***	0.0000
BPK Dummy opinion	0.7370***	0.0000
constanta	32.4594	0.0000
R-squared	0.9897	
Adjusted R-squared	0.9879	
F-statistic	562.3273	
Prob(F-statistic)	0.0000	

Regression model coefficient indicates significant and positive effect of government expenditure in education on HDI. P-value by 0.0000 meaning that the variable affected the model at 1 percent significant level. The coefficient was 0.0020 and with a positive sign, meaning that if government expenditure increased by 1 percent, then HDI was expected to increase by 0.0020 assuming other variables were fixed (ceteris paribus). These results are relevant with [10], [11] and [3]. Proportional and targeted government expenditure on education programs has an accelerating impact on economic growth [16], because education levels can be linked to indicators of income levels, poverty levels, productivity levels, and business field entered. Education can teach employees about skills to increase productivity and higher income. Labor is an input factor that will affect output. The greater number of people with relatively high education, then it will facilitate employee absorption to increase productivity and then will increase output.

Government expenditure in health sector had a significant positive effect on HDI, with a p-value of 0.0000. The variable coefficient was 0.0119, meaning that if health expenditure increased by 1 percent then the HDI would increase by 0.0119 when the other variables were fixed. The result is relevant with [12]. Government expenditure in the health sector will increase life expectancy to a long – lived community and results in health index increase. Higher health expenditure will create healthy human resources. So, they can work optimally to increase their income both personally and at regional level. The accuracy of health expenditure is crucial to support welfare achievement in the health sector which will ultimately support community welfare achievement.

Government expenditure in economy had a significant positive effect on HDI, with a p-value of 0.0000. The variable coefficient was 0.0025, meaning that if economic expenditure increased by 1 percent then HDI would increase by 0.0025 when the other variables were fixed. The result is relevant with [10], expenditure in economic sector aims to trigger an increase in economic growth, where economic growth is closely related to increase in produced goods and services in community. So, more produced goods and services means community welfare is increasing.

Education infrastructure (number of junior high schools) had a significant positive effect on HDI, with a p-value of 0.0000. The variable coefficient was 0.0110, meaning that if the education infrastructure increased by 1 percent then HDI would increase by 0.0110 when the other variables were fixed. The result is relevant with [13]. Educational facilities development number will affect education service quality and education index. Increasing the number of primary schools will increase school participation rates, so it affects education index increase. Funding the construction of needed public facilities for community such as educational infrastructure, then a better quality public service will give impact on welfare level and human development quality. Sufficient number on evenly distributed schools can make the community obtain

proper education easier. The increase in number of schools will increase number of school participation that affect education index increase.

GRDP has significant positive effect on HDI with p-value 0.0000. The variable coefficient was 0.0069, meaning that if the GRDP increased by 1 percent then the HDI would increase by 0.0069 when the other variables were fixed. The result is relevant with [12]. The level of actual GRDP growth can reflect development success that has been implemented by local governments, because actual GRDP provides a measure of economic prosperity [15], an increase in GRDP means an increase in output. It will increase labor demand and affect income increase. Moreover, people can access education and health services easily that eventually increase expected years of schooling, mean years of schooling, and life expectancy. The increasing opportunities to obtain education and health services will affect HDI increase.

Poverty had a significant negative effect on HDI with p-value 0.0000. The variable coefficient was -0.2085, meaning that when poverty increased by 1 percent, the HDI would decrease by 0.2085, when the other variables were fixed. This result is relevant with [10] in Papua Province. According to [10] poverty and human development have reciprocal relationship in different directions. One of them is economic development with aim to improve community welfare. The level of community welfare can be seen from the number of poor people. If the economic development is conducted successfully and increase community welfare, the number of poor people will decrease. The number of poor regencies/cities in Indonesia in the period of 2011-2017 tends to decrease.

BPK opinion was positively significant on HDI with p-value 0.0000. The variable coefficient was 0.7370, meaning that regencies/cities with unqualified opinion (WTP) from BPK gave greater effect on HDI increase by 0.7370 compared to regencies/cities without unqualified opinion WTP from BPK. The result is relevant with [14]. The increasing predicate opinion will affect HDI increase. The increasing opinion predicate due to good financial management will

encourage an increase in public welfare assessment as reflected in HDI.

IV. CONCLUSION

Based on the grouping of regions in Klassen typology analysis, there are regencies/cities with HDI values and HDI growth below the average of other regencies/cities. It means that these regencies/cities are lagging behind in human development. The government needs to prioritize the underdeveloped regencies/cities on the programs to improve human development. Therefore, a convergence among regencies/cities in human development is expected to occur, which emphasizes that equal human development occurs in all regencies/cities across Indonesia. The panel data regression shows that most of the variables positively affect human development index, except poverty with significant negative effect. Transport infrastructure with road length do not affect HDI. This result occurs because some regencies in Indonesia are located in mountainous areas such as those among Papua Province, thus they have difficulties to access the road infrastructure. Furthermore, this condition makes them difficult to obtain education, health, and increase their income. Difficult access to the road results in low HDI value in those regencies on the grouping of regions in Klassen typology analysis, there are regencies/cities with HDI values and HDI growth below the average of other regencies/cities. It means that these regencies/cities are lagging behind in human development. The government needs to prioritize the underdeveloped regencies/cities on the programs to improve human development. Therefore, a convergence among regencies/cities in human development is expected to occur, which emphasizes that equal human development occurs in all regencies/cities across Indonesia. The panel data regression shows that most of the variables positively affect human development index, except poverty with significant negative effect. Transport infrastructure with road length do not affect HDI. This result occurs because

some regencies in Indonesia are located in mountainous areas such as those among Papua Province, thus they have difficulties to access the road infrastructure. Furthermore, this condition makes them difficult to obtain education, health, and increase their income. Difficult access to the road results in low HDI value in those regencies.

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