Eurasia: Economics & Business, 3(9), March 2018
DOI https://doi.org/10.18551/econeurasia.2018-03

UDC 332

DOES SPENDING AFFECT HUMAN DEVELOPMENT? – REGIONAL DATA INVESTIGATION IN WESTERN AND EASTERN PARTS OF INDONESIA

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ABSTRACT
This study aims to identify the direct relationship between government spending (education, health, and infrastructure) and the HDI (Human Development Index) as well as the indirect relationship between government spending and the HDI through economic growth in western and eastern parts of Indonesia which are divided into four geographical zones: Sumatra, Java-Bali, Kalimantan-Sulawesi, and Eastern Indonesia. Each zone is divided again into areas with high, medium, and low GDRP (Gross Domestic Regional Product) per capita. This study uses path analysis for the period of 2011 to 2013. The results show that government spending in education, health, and infrastructure tends to directly influence the HDI, and their relationship to economic growth is not significant. Government spending on education, health, and infrastructure has a more significant direct effect on the HDI in the zones of Java-Bali and Sumatra compared to the zones of Kalimantan-Sulawesi and Eastern Indonesia.

KEY WORDS
Government, economic growth, path analysis, development.

History has shown that countries applying a developmental paradigm with the dimension of human resource development can develop, even with the absence of abundant natural resources. Natural resources (physical capital) are only defined as a passive factor, while human resources are an active factor (Todaro & Smith, 2006; Saputra, 2014). There are three prominent aspects of human development: healthy and long life, the opportunity for education, and access and ability to have a proper life (UNDP, 1990).

Based on the UNDP data (2016), the HDI of Indonesia was ranked 111th in 2014, 108th in 2013, and 124th in 2012. Observation from the past three years shows that the HDI of Indonesia was far behind most of the countries in the world. The high discrepancy in human development is still found among provinces in Indonesia. In 2014, the HDI of Jakarta was 78.39, but the HDI of Papua was 56.75. The data of World Bank (2015) also showed that the GDP per capita of Indonesia in 2014 was ranked 139th based on the Atlas method. Based on the purchasing power parity (PPP) method, Indonesia was ranked 126th. Based on the data, Indonesia is considered a country with a low per capita income.

The debate of economists on Keynes theory and Neo-classical views regarding the role of the government is still currently ongoing. Tanzi (2005) states that exorbitant role of government caused monopolies, the reduced role of the private sector, and high public dependency on government programs. However, many researchers have found that government interventions give an important effect on the improvement of the HDI. Edeme (2014) proves that social expenditures of the government (education, health, rural infrastructure and water resource development, agriculture, and housing) can influence the success of human development efforts.

Rostow and Musgrave have developed a theory on the presence of the relationship between government spending improvement and stages of economic development (Mangkoesoebroto, 2014). The theory reveals that government spending influences regional economic development. Dao (2012) also finds that the growth of GDP per capita depends on the growth of public spending (health and education). Atmakuri, Reddy, and Rao (2014) discuss the strong relationship between economic growth and improvement of human life. Manuelli (2015) also states that the quality of human resources varies systematically according to the level of developmental growth.

DOI https://doi.org/10.18551/econeurasia.2018-03

Nugroho (2015) claims the real relationship between government spending and human development is indirect through economic growth. Studies in different regions may show different empirical evidences. Prasetyo and Zuhdi (2013) prove in their research in 81 countries that not all government spending regarding human development (education, health, and subsidy/transfer) are efficient in the effort of the HDI improvement in every country. This study takes place in regencies and cities in Indonesia which are grouped into four geographical zones: Sumatra, Java-Bali, Kalimantan and Sulawesi, and Eastern Indonesia. The zonal regions are grouped into areas with high, medium, and low GDRP (Gross Domestic Regional Product) per capita.

This study also attempts to explain two relationships; the direct influence of government spending on human development and indirect influence of government spending on human development through economic growth. The results of the research will show that government spending in the sectors of education, health, and infrastructure tend to directly influence the improvement of the HDI and that the relationship between government spending and the HDI through economic growth is not evident.

The results of the study in all zones with high, medium, and low GDRP per capita will show that direct relationship between health and infrastructure spending to the HDI is found to be most influential in the zone of the Java-Bali in the areas with low GDRP per capita. Education spending is most influential in the Kalimantan-Sulawesi zone in the areas with low GDRP per capita.

LITERATURE REVIEW

There is abundant literature that defines the importance of human development. Keley (1993) in Mulyadi (2014) indicates a positive relationship between population growth and economic growth in developed countries. Meanwhile, a negative relationship between population growth and economic growth exists in developing countries, which is caused by the low quality of the people. Becker (1962) states that expenditures in improving the quality of the population would give better returns. This means that the government needs funding in its effort to improve the living quality of the people. Government spending, especially in education, health, and infrastructure, has been proven to give a real impact on the improvement of HDI (Baldacci *et al.,* 2008; Edeme, 2014; Razmi *et al.*, 2012).

In regard to economic growth, government interference also plays an important role. Baldacci *et al,* (2008) and Mercan and Sezer (2014) conclude in their research that social spending (education and health) gives positive and significant impacts on economic growth. In addition, the achieved economic growth is proven to be directly influential on the improvement of the HDI (Ranis et al., 2000; Suri et al., 2011). Economic growth should extend people's opportunity to fulfill their basic needs, such as food, clothing, education, health, and access to proper lives. Strauss and Thomas (1995) state that economic growth paves the way for an improvement effort in human quality (Suri *et al,* 2011). An empirical study of Case *et al.* (2002) and Haddad *et al.* (2003) also conclude that economic growth enables improvement of the economy of the society, which means that increase or improvement of income through of income will produce better education and health for people.

Besides the aforementioned direct influence of government spending on the improvement of the HDI, several researchers also found strong relations between government spending and the HDI through economic growth. Nugroho (2015) and Ramirez *et al.* (1998) claim that economic growth due to the interference of government plays an important role in human development. Cutler, Deaton, and Lieras-Muney (2005) also suggest that improvement of life expectancy level is supported by technological advancement, which is the effect of economic growth supporting educational improvement (Suri *et al.*, 2011).

DOI https://doi.org/10.18551/econeurasia.2018-03

METHODS OF RESEARCH

This research uses the Path Analysis method. This method is used to analyze causal relationships in multiple regression where the independent variable influences its dependent variable not only directly (causal effect), but also indirectly (non-causal effect) (Pardede & Manurung, 2014).

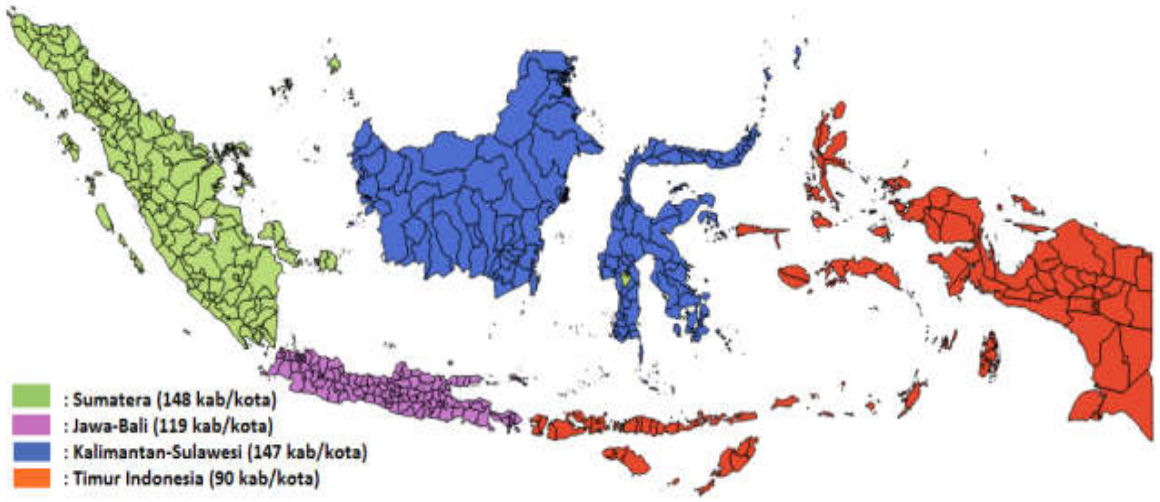

Figure 1 – Division of Research Regional Zones

This research uses data from 2011 to 2013. The research area is grouped into four geographical zones: (i) Zone of Sumatra (148 regencies/cities) consisting of Aceh, North Sumatra, West Sumatera, Riau, Jambi, South Sumatra, Bengkulu, Lampung, Riau Islands, and Bangka Belitung; (ii) Zone of Java-Bali (119 regencies/cities) consisting of West Java, Central Java, East Java, Bali, and Banten; (iii) Zone of Kalimantan-Sulawesi (147 regencies/cities) consisting of West Kalimantan, Central Kalimantan, East Kalimantan, South Kalimantan, North Sulawesi, Central Sulawesi, South Sulawesi, Southeast Sulawesi, Gorontalo, and West Sulawesi; (iv) Zone of Eastern Indonesia (90 regencies and cities) consisting of West Nusa Tenggara, East Nusa Tenggara, Maluku, North Maluku, Papua, and West Papua. Special Capital Region of Jakarta is not included in the sample because the structure of the local government is different from other regions.

Based on Anggraini & Muta'ali (2011) and Devarajan *et al.* (1996), this study divides the considered zones above into three different groups of areas with GDRP per capita using the concept of quartile limits (i.e. high, medium, and low). A quartile is a set of data that has been compiled from the data with the smallest value to the greatest value and then divided into four (4) equal parts (Novananda and Setiawan, 2015). There are three types of quartiles:

- *First quartile* (K1) is 25% of the distribution of the lower quartile;
- *Second quartile* (K2) is 50% of the distribution of the middle quartile (median);
- *Third quartile* (K3) is 25% of the distribution of the upper quartile.

$$K_i = \text{value number } \frac{i\,(n+1)}{4}$$

Where: i = shows the quartile to be calculated (1, 2, and 3, or K1, K2, and K3); n = number of individuals.

This study uses the difference test of independent sample t-test to prove that each group is statistically different. Outlier testing is used to ensure the non-existence of extreme data. Chow test and Hausman test is used to identify the proper regression. Normality test (Jarque-Bera) is used to guarantee that the data is normal in scale. This research involves classical assumption tests in the form of autocorrelation (Durbin Watson) and

DOI https://doi.org/10.18551/econeurasia.2018-03

heteroscedasticity (Park test). This study uses data standardized with z-score. Regression analysis is done using Eviews 7.

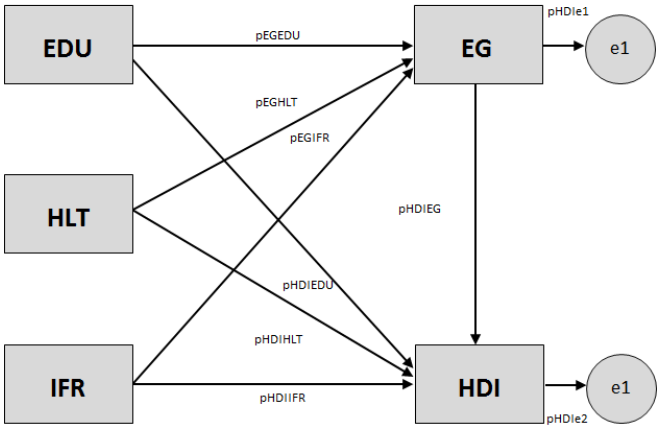

Figure 2 – Path Analysis Diagram Model

Based on the diagram above, EDU is the ratio of government spending in education to the total expenditure (in percent); HLT is the ratio of government spending in health to the total expenditure (in percent); IFR is the ratio of government spending in infrastructure to the total expenditure (in percent); EG is the economic growth (in percent); and HDI is Human Development Index (between 0 to 100), where e is the residual and p is the path coefficient. Below is the structural equation of the research:

- Substructure I: government spending directly influences economic growth.

$$EG = pEGEDU\ EDU + pEGe1\ e1 \quad (1)$$
$$EG = pEGHLT\ HLT + pEGe1\ e \quad (2)$$
$$EG = pEGIFR\ IFR + pEGe1\ e1 \quad (3)$$

- Substructure II: economic growth directly influences human development.

$$HDI = pHDIEG\ EG + pHDIe2\ e2 \quad (4)$$

- Substructure III: government spending directly influences human development.

$$HDI = pHDIEDU\ EDU + pHDIe2\ e2 \quad (5)$$
$$HDI = pHDIHLT\ HLT + pHDIe2\ e2 \quad (6)$$
$$HDI = pHDIIFR\ IFR + pHDIe2\ e2 \quad (7)$$

- Substructure IV: government spending indirectly influences human development through economic growth.

$$HDI = (pEGEDU\ EDU \times pHDIEG\ EG) + pHDIe2\ e2 \quad (8)$$
$$HDI = (pEGHLT\ HLT \times pHDIEG\ EG) + pHDIe2\ e2 \quad (9)$$
$$HDI = (pEGIFR\ IFR \times pHDIEG\ EG) + pHDIe2e2 \quad (10)$$

RESULTS AND DISCUSSION

Data Description. This study uses the human development index (HDI) and economic growth (EG) as endogenous variables and the ratio of government spending on education (EDU), health (HLT) and infrastructure (IFR) as exogenous variables. Table 4.1 presents the average value of the five variables for each group of areas with high, medium, and low GDRP per capita in every zone. The highest average HDI for group of areas with high,

DOI https://doi.org/10.18551/econeurasia.2018-03

medium, and low GDRP per capita are Java-Bali, where the highest average reaches 72.46 for the group with high GDRP per capita. Meanwhile, the lowest is in Eastern Indonesia at only 51.1. The highest average economic growth for the group with high GDRP per capita is Eastern Indonesia at 8.04 per year, while the highest values for the group with medium and low GDRP per capita are in Kalimantan-Sulawesi. The highest average spending ratios on education and health for groups of areas with high, medium, and low GDRP per capita are in Java-Bali. Spending on health and education reaches more than 50 percent of the total regional spending. The Java-Bali zone already has the more complete infrastructure, so the government spending is prioritized for social spending (health and education). The highest average spending ratios on infrastructure for groups with high and medium GDRP per capita are in Kalimantan-Sulawesi, while the highest ratio for the group with low GDRP per capita is in Eastern Indonesia. This shows that Eastern Indonesia and Kalimantan-Sulawesi still prioritize infrastructure development, considering infrastructure, especially transportation, is still low when compared to Java-Bali and Sumatra.

Table 1 – Average of HDI, EG, EDU, HLT, IFR and GDRP per capita in Each Regional Group (2011-2013)

Zone	Group of GDRP per capita	HDI (index)	EG (%)	EDU (%)	HLT (%)	IFR (%)	GDRP per capita (in million)
I (Sumatera)	High	69.12	5.46	28.94	9.06	18.35	73.02
	medium	66.85	5.88	37.05	9.74	14.42	24.46
	low	62.50	5.73	35.37	9.31	14.82	14.3
II (Java-Bali)	high	72.46	6.16	37.29	12.37	12.19	53.44
	medium	67.99	5.95	44.72	11.60	9.40	18.43
	low	63.92	5.43	49.55	11.26	10.01	12.05
III (Kalimantan-Sulawesi)	high	68.72	8.02	23.76	9.72	22.79	88.04
	medium	66.03	7.40	34.45	8.63	14.60	22.18
	low	62.91	6.82	36.72	9.81	12.74	14.23
IV (Eastern Indonesia)	high	63.10	8.04	19.38	8.71	17.85	63.16
	medium	60.16	5.69	25.72	9.17	13.33	14.01
	low	51.41	6.81	26.47	8.50	15.06	6.97

The grouping of areas based on high, medium, and low GDRP per capita is due to the high inequality of the average regional GDRP per capita among these groups. In the group with high GDRP per capita, the highest average is in Kalimantan-Sulawesi of 88.04 million rupiah per year, while the lowest is in Java-Bali of only 53.44 million per year. In the group with medium GDRP per capita, the highest average is in Sumatera of 24.46 million rupiah per year, while the lowest is in Eastern Indonesia of only 14.01 million per year. In the group with low GDRP per capita, the highest average is in Kalimantan-Sulawesi of 14.23 million rupiah per year, while the lowest is in Eastern Indonesia of only 6.97 million per year. This data shows that there are still large per capita income inequalities both based on geographic zones and among areas within the zones.

Research Results. The difference test uses an independent sample t-test with $\alpha = 5\%$. The result shows that the probability in each group of areas is 0.000 or < 0.05. It means that the average is not the same. The result of the outlier test indicates that there are several regions that have extreme data. The test shows there are 84 outliers of 504 regencies/cities so that the test sample is 420. The normality test uses Jarque-Bera with $\alpha = 1\%$. The result in each group shows the probability of more than 0.01. Therefore, the data are believed to be normal. Autocorrelation test uses the Durbin-Watson test (DW) with $\alpha = 1\%$. The result in each group shows $dU < DW < 4 - dU$, which means that autocorrelation does not occur. The heteroscedasticity test uses the Park test with $\alpha = 1\%$. The result in each group shows the probability of > 0.01, so there is no heteroscedasticity.

Direct Relationship of Government Spending to the HDI. Regression results of the direct relationship of government spending on education, health and infrastructure to the HDI based on geographic zones and groups of areas with GDRP per capita can be seen in Table 2 (Substructure I). This discussion is divided into three parts, each for areas with high, medium, and low GDRP per capita.

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Table 2 – Regression results of substructures I to IV

	GDRP per capita	Substructures	Sumatera	Java-Bali	Kalimantan-Sulawesi	Eastern Indonesia
Sub structure I	High	EDU -> HDI	-0.1373*	-0.1579*	-0.0132	-0.1022
		HLT -> HDI	0.0529	0.1743*	0.0879*	0.1259*
		IFR -> HDI	0.0783**	0.0660***	0.0727***	0.0486
	Medium	EDU -> HDI	-0.2214*	-0.3047*	-0.0425	-0.0842
		HLT -> HDI	0.0980*	0.1457**	0.0064	0.0856**
		IFR -> HDI	0.1101*	0.1813*	0.0680**	0.0710***
	Low	EDU -> HDI	-0.1540**	-0.1946*	-0.3270**	-0.1836***
		HLT -> HDI	0.1813*	0.4003*	0.3300**	-0.0765
		IFR -> HDI	0.2185*	0.2528*	0.1123	0.0798***
Sub structure II	High	EDU -> EG	0.2678**	-0.1716	-0.0572	-0.1022
		HLT -> EG	0.1391	-0.2311***	-0.2781**	0.1259*
		IFR -> EG	-0.0736	0.1049	0.1746	0.0486
	Medium	EDU -> EG	0.1789***	-0.3090*	0.0238	-0.2028***
		HLT -> EG	-0.0038	0.0256	0.1488***	-0.0432
		IFR -> EG	0.0136	0.0989	-0.065	0.1536
	Low	EDU -> EG	0.0608	0.0436	0.187	0.703
		HLT -> EG	0.2103**	0.095	0.0049	0.4836***
		IFR -> EG	0.1600**	0.1133	-0.0668	-0.4605**
Sub structure III	High	EG -> HDI	-0.021	-0.077	-0.040	0.032
	Medium	EG -> HDI	-0.037	0.034	-0.024	-0.022
	Low	EG -> HDI	0.038	0.016	0.114	0.039
Sub structure IV	High	EDU-> EG->HDI	-0.0059	0.0133	0.0023	-0.0034
		HLT -> EG->HDI	-0.003	0.0179	0.0112	0.0041
		IFR -> EG->HDI	0.0016	-0.0081	-0.007	0.0016
	Medium	EDU-> EG->HDI	-0.0067	-0.0107	-0.0006	0.0045
		HLT -> EG->HDI	0.0001	0.0009	-0.0036	0.001
		IFR -> EG->HDI	-0.0005	0.0034	0.0016	-0.0034
	Low	EDU-> EG->HDI	0.0023	0.0007	0.0214	0.0278
		HLT -> EG->HDI	0.008	0.0016	0.0006	0.0191
		IFR -> EG->HDI	0.0061	0.0019	-0.0076	-0.0182

*Notes: * sig α=1%; ** sig α=5%; *** sig α=10%.*
Substructures I = Direct relationship; Substructures II, III, and IV = Indirect relationship.

Areas with High GDRP per Capita. In Sumatra zone for the group of areas with high GDRP per capita, education and infrastructure spending directly and significantly affects the HDI, but health spending does not significantly affect the HDI. In Java-Bali zone for the group of areas with high GDRP per capita, spending on education, health, and infrastructure directly and significantly affects the HDI. In Kalimantan-Sulawesi zone for the group of areas with high GDRP per capita, health and infrastructure spending directly and significantly affects the HDI, but education spending does not significantly affect the HDI. In Eastern zone for the group of areas with high GDRP per capita, only health spending directly and significantly affects the HDI, while spending on education and infrastructure does not significantly affect the HDI.

Education spending has a significant direct effect on the HDI in Sumatra and Java-Bali. Although it is significant, the direction of the relationship is negative. This is because areas with high income also have the problem of high population growth. In areas with an advanced economy, there have been other factors affecting education, such as technological advancement and high participation of the private sector. Consequently, the role of local government becomes low. Education spending in the areas of Kalimantan-Sulawesi and Eastern Indonesia with high GDRP per capita has not been able to directly influence the HDI. This is because the ratio of education spending in the areas of Kalimantan-Sulawesi and Eastern Indonesia with high GDRP per capita is lower, which are 23.78 and 19.39, than Sumatra and Java-Bali, which are 28.94 and 37.29, from the total of their local spending.

DOI https://doi.org/10.18551/econeurasia.2018-03

Spending on health in the regions of Java-Bali, Kalimantan-Sulawesi, and Eastern Indonesia has direct, significant, and positive influences on the group of areas with high GDRP per capita. This shows that health spending has an important role in improving the HDI in areas with high GDRP per capita. The health service system is an important element in increasing the degree of public health. With an appropriate system, the objective of health development can be achieved. The success of the public health system depends on several components including funds, supporting facilities, and quality human resources. Atmawikarta (2010) states that there are three main factors that can influence the optimal utilization of health service which, in the end, influence health status; they are geographical, financial and socio-anthropological inhibitors.

Infrastructure spending is influential toward the improvement of the local HDI in the areas with high GDRP per capita in Sumatra, Java-Bali, and Kalimantan-Sulawesi. Infrastructure plays an important role in providing access for the society to fulfill their basic needs, especially in the provision of roads, access to clean water, electricity, and sufficient housing. In Eastern Indonesia, infrastructure spending has not been able to give significant influence on the improvement of the HDI. The zone is still far behind in infrastructure development due to the geographical conditions that inhibit the smooth progression of development. In this region, the infrastructure development is still in the process of physical capital development, so the influence is currently insignificant.

In the group of areas with high GDRP per capita, education and health spending mostly influences the HDI in Java-Bali zone. The success of Java-Bali governments in managing budgets in order to contribute significantly to the HDI cannot be separated from educational and health facilities, which are more complete than the other zones. Meanwhile infrastructure spending most influences the HDI in Sumatra zone. This is due to the great efforts of local governments heavily spending on infrastructure development. It can be seen from the high average ratio of infrastructure spending, reaching 18.35 percent from the total expenditure.

Areas with Medium GDRP per Capita. In Sumatra and Java-Bali zones for the group of areas with medium GDRP per capita, spending on education, health, and infrastructure directly and significantly affects the HDI. In Kalimantan-Sulawesi zones for the group of areas with medium GDRP per capita, only infrastructure spending directly and significantly affects the HDI, while education and health spending does not significantly affect the HDI. In the Eastern zone for the group of areas with medium GDRP per capita, health and infrastructure spending directly and significantly affects the HDI, while educational spending does not significantly affect the HDI.

Education spending directly and significantly affects the HDI in Sumatra and Java-Bali. However, the same spending in Kalimantan-Sulawesi and Eastern Indonesia has not been found to be directly and significantly influential. The relationship of education spending in Sumatra and Java-Bali is indeed significant, but it is negative in direction. High spending in education does not necessarily determine the success target, but it should be accompanied by effective expense management.

Health spending has a direct influence, both significantly and positively, in Sumatra, Java-Bali, and Eastern Indonesia. In Kalimantan-Sulawesi zone, health spending is not influential toward HDI improvement. This can be seen from the fact that the average health spending of areas with medium GDRP per capita is the lowest among other areas, which is 8.63 percent, while other areas in the same GDRP per capita group is above 9 percent on average.

Infrastructure spending has a direct, positive, and significant influence on all areas with medium GDRP per capita. Local infrastructure expense has led to the improvement of the HDI directly. The planning of local government in developing areas should be focused on the provision of infrastructure and public capital, especially those of basic nature, so people's access to proper and sufficient daily needs can occur. Fiscal policy becomes an important path for efficient budget utilization that leads to local HDI increase.

In the group with medium GDRP per capita, spending on education, health, and infrastructure mostly affect the HDI in Java-Bali zone. Further advancement of educational

DOI https://doi.org/10.18551/econeurasia.2018-03

and health facilities as well as more complete infrastructure are needed to support current human development efforts in the zone.

Areas with Low GDRP per capita. In Sumatra and Java-Bali zones for the group of areas with low GDRP per capita, spending on education, health, and infrastructure directly and significantly affects the HDI. In Kalimantan-Sulawesi zone for the group of areas with low GDRP per capita, spending on education and health directly and significantly affects HDI, while infrastructure spending does not significantly affect the HDI. In Eastern zone for the group of areas with low GDRP per capita, spending on education and infrastructure directly and significantly affects HDI, while health spending does not significantly affect the HDI.

Education spending directly and significantly influences the HDI of all zones in the group with low GDRP per capita. Even though the relationship is significant, as in the groups with high and medium GDRP per capita, the relationships between the two are negative. There are many factors affecting the educational level of a person, not only the efforts of the government. According to Triwiyanto (2014), there are two factors affecting the success of education; internal and external factors of the individual. The internal factors are grouped into two: psychological and physical. Meanwhile, external factors are grouped into nature, socio-economy, teachers, teaching methods, curricula, programs, and facilities.

Health spending directly influences the increase of the HDI in Sumatra, Java-Bali, and Kalimantan-Sulawesi. Spending, especially on physical capital, is very much needed in underdeveloped areas since the development process is still at an early stage in this group of regions. However, health spending cannot give significant influence in areas with low GDRP per capita in Eastern Indonesia. The lowest average for health spending for the medium group is in Eastern Indonesia, at 8.50. Meanwhile, in Sumatra, Java-Bali, and Kalimantan-Sulawesi, the average ratio of health spending is above 9.5.

Infrastructure spending also has a direct and significant influence in Sumatra, Java-Bali, and Eastern Indonesia. Infrastructure, particularly road and electricity, is very much needed in regions with the low economy. Roads will ease the mobility of people in accessing their daily needs and extending the access for households in the search for income. In underdeveloped regions, development of physical capital has a great effect on the improvement of human life. However, infrastructure expense has not been significant in the areas of Kalimantan-Sulawesi with low GDRP per capita, which are at the level of $\alpha = 10\%$, but the probability value is significant at $\alpha = 15\%$. This shows the importance of physical infrastructure development in regions with low GDRP per capita.

In the group of areas with low GDRP per capita in the four zones, health and infrastructure spending mostly influences the HDI in Java-Bali zone. Education spending meanwhile most affects the HDI in Kalimantan-Sulawesi zone. This is due to the ratio of capital expenditure per capita of Kalimantan-Sulawesi being the highest compared to other zones. The fundamental weakness in the design of regional planning is the exclusion of the spatial dimension in development. Differences in factors that cause problems and the potential of each area are assumed to be static and uniform. Second, the sectoral approach is still prominent than a regional approach. This paradigm exists because centralization is still strong. In the era of regional autonomy that has progressed for ten years, local areas must have independence, initiative, and pioneering in planning, arranging, and executing local development. The reason is that local areas know more about the problems and potentials they have. The political process must also be used to identify the preferences of the people (informing the government about the social needs to be provided) and to fulfill the needs of the people through the financial resources required for the provision of those social needs (Musgrave & Musgrave, 1993).

Indirect Relationship of Government Spending to HDI through Economic Growth. Regression results of the indirect relationship of government spending on education, health and infrastructure to the HDI based on geographic zones and groups of areas with GDRP per capita can be seen in table 4.2 (Sub structures II, III and IV). This discussion is divided into three parts, each for areas with high, medium, and low GDRP per capita.

Areas with High GDRP per capita. In Sumatra zone for the group of areas with high GDRP per capita, only education spending significantly influences economic growth. In Java-

DOI https://doi.org/10.18551/econeurasia.2018-03

Bali, Kalimantan-Sulawesi, and Eastern Indonesia, only health spending has a significant effect on economic growth. Education spending is not significant on growth in Java-Bali, Kalimantan-Sulawesi and Eastern Indonesia zones. Baldacci *et al,* (2008) argue that it takes a long time to make the government efforts in education spending fully influential on the improvement of economic growth. Investment in education is a way to improve the economic development of an area. Failure in the development of education may lead to crucial problems, such as poverty and unemployment, which burden the government.

Health spending has a significant effect on economic growth in Java-Bali, Kalimantan-Sulawesi, and Eastern Indonesia zones. Wang (2011) finds that in countries with high economic growth, health spending stimulates economic growth. In the zone of Eastern Indonesia, health spending positively influences economic growth. However, a negative relationship between the two is evident in the regions of Java-Bali and Kalimantan-Sulawesi. Baldacci *et al,* (2008) also find that marginal profit of social expenditure (including health) tends to decrease in countries with high income. This happens since areas with high income face problems of high population growth. In the areas of Sumatra with high GDRP per capita, health spending is not able to influence growth significantly. This is because the spending of the government which should be allocated to the health sector is not properly directed to improve allocation for health. At least several explanations are found; one of which is the low capacity of program planners and implementers, so the expected outcome cannot be achieved.

Infrastructure, which supports economic activity, should have an influence on the improvement of the local economy. However, in the four zones of areas with high GDRP per capita, there are none that significantly influences economic growth. Cahyono and Kaluge (2012) in their research also conclude that the availability of public infrastructure (road, electricity, and telephone lines) is influential for the economic condition in Indonesia in the long term but less influential for the short term. Economic growth is believed to have the impact of expanding people's choices of access to improve the HDI. The relationship of economic growth and the HDI is not proven to have a significant effect in the fourth zone for the group of areas with high GDRP per capita. Economic growth will be in line with the growing economy, but economic growth has not focused on improving the HDI directly. The results show that indirect relationships of government spending on education, health, and infrastructure toward the HDI through economic growth did not prove to have significant effects in the four zones with high GDRP per capita.

Areas with Medium GDRP per capita. In Sumatra, Java-Bali, and Eastern Indonesia, only education spending has a significant effect on economic growth. On the areas with medium GDRP per capita in Kalimantan-Sulawesi, only health spending has a significant effect on economic growth. Education spending is an important element in the effort of improving the local economy. Nevertheless, the influence of educational spending in Java-Bali and Eastern Indonesia is negative on economic growth. This finding is interpreted as evidence that regions in the development stage spend too much on capital but too little in spending for current needs. It is assumed that some capital expenditures do not positively influence the productivity of the private sector. In the zone of Kalimantan-Sulawesi, a significant relationship between education expense and economic growth has not yet been found. This is probably due to the low effectiveness of government’s plan in education in the effort of giving tangible influence on local economic growth. This is shown by the fact that the values of average school participation (ASP) of people in the age range between 13-15 and 16-18 in the period of 2011-2013 are the lowest. The value is even lower than the value in the zone of Eastern Indonesia.

Health spending has a significant effect on economic growth in Kalimantan-Sulawesi. History has proven that the success of quick economic take-off is supported by breakthroughs in disease eradication, public health, and nutrition improvement (Atmawikarta, 2010). The success of government spending in health in supporting economic growth is the result of on-target programs. However, in Sumatra, Java-Bali, and Kalimantan-Sulawesi, this spending has not yet been able to influence the improvement of economic growth. Areas with

DOI https://doi.org/10.18551/econeurasia.2018-03

low income allocate their resources more on health services and medical treatment, not on prevention activities.

Spending on infrastructure also has not yet been significantly influential in all areas with medium GDRP per capita. The condition of infrastructure at the local level is a key determinant for the local economy. This is made possible since capital expenditure on infrastructure is not allocated more on the construction of new transportation facilities but on the maintenance of existing transportation facilities, such as through road maintenance.

The research proves economic growth is not significant on the HDI in Sumatra, Java-Bali, Kalimantan-Sulawesi, and Eastern Indonesia. Economic growth can affect human development effectively if it is achieved with proper policy planning. Ranis (2014) states that economic growth provides resources that result in sustainable improvement in human development because economic growth increases income, adding options for the society in the effort of improving their quality as human beings. However, Indonesia's economic growth has not been proven to contribute significantly to the HDI. The results show that indirect relationships between spending on education, health, and infrastructure and the HDI through economic growth are not significant in all four zones of areas with medium GDRP per capita**.**

Areas with Low GDRP per capita. In areas of the Sumatra and Eastern Indonesia zones with low GDRP per capita, health and infrastructure spending has a significant effect on economic growth. Meanwhile, in Java-Bali and Kalimantan-Sulawesi, the three variables of government spending are not significant toward economic growth. Areas with low GDRP per capita are usually still at a lack of facilities for education, health, and infrastructure for societal life. So, government spending in these three fields is crucial to assist in the development of regional economy. At the macro level, a population with good education and health is an important input for the improvement of economic growth and long-term economic development.

However, the direction of the relationship between infrastructure spending and economic growth in Indonesia is negative, which means that spending on infrastructure in these areas has not led to an increase in economic growth. In areas with the low economy, the development of infrastructure still focuses on basic facilities for societal needs, not directed to high economic improvement. This is complicated by the condition of the infrastructure in Eastern Indonesia which is the worst compared to that of other areas, especially underdeveloped areas. Therefore, a quite large amount of time is needed to make the effect significant. In the group of areas with low GDRP per capita, economic growth also has no significant effect on the HDI in all zones. Indonesia, as a developing country, has not been able to balance economic growth and HDI improvement. The trickle-down effect, which is the concept applied in developed countries, has not been applicable in Indonesia. Inflation and tax policies that initiate people to be active in the economy are needed to elevate economic growth.

The results of the study in all zones with high, medium, and low GDRP per capita areas show that direct relationship between health and infrastructure spending to the HDI is found to be most influential in the zone of Java-Bali for the group with low GDRP per capita, while education spending is most influential in the Kalimantan-Sulawesi zone for the group with low GDRP per capita. The role of the government is needed in an area that is still in the early stages of development. Rostow and Musgrave state that for areas that are still at an early stage of development, the role of the government in development is still large compared to other parties. This is due to the fulfillment of basic facilities and infrastructure needs of society that must be completed in order to support continuous development. However, overall government spending on education, health, and infrastructure has a more directly significant effect on HDI in the zones of Java-Bali and Sumatra compared to the zones of Kalimantan-Sulawesi and Eastern Indonesia.

CONCLUSION

A direct relationship of government spending to the HDI in the Sumatra zone shows that almost all spending on education, health, and infrastructure in areas with high, medium,

and low GDRP per capita have a significant effect on the HDI, except health spending for the group of areas with high GDRP per capita. In the zone of Java-Bali, spending on education, health, and infrastructure directly have a significant effect on the HDI for all groups of areas with high, medium, and low GDRP per capita. In the zone of Kalimantan-Sulawesi for the group of areas with high GDRP per capita, government spending that has a significant effect on HDI is for health and infrastructure; in the group of areas with medium GDRP per capita only infrastructure spending has a significant effect on the HDI; and for the group of areas with low GDRP per capita, government spending that has a significant effect on the HDI is for education and health. In the zone of Eastern Indonesia for the group of areas with high GDRP per capita, government spending that has a significant effect on the HDI is health spending only; for the group of areas with medium GDRP per capita, government spending that has significant effect on the HDI is for health and infrastructure; and for the group of areas with low GDRP per capita, government spending that has a significant effect on the HDI is for education and infrastructure. Government spending on education, health, and infrastructure has a directly more significant effect on the HDI in the zones of Java-Bali and Sumatra compared to the zones of Kalimantan-Sulawesi and Eastern Indonesia.

The indirect relationship of government spending to HDI through economic growth has no significantly exhibited effect in all geographic zones as well as for groups of areas with high, medium, and low GDRP per capita. It shows that government spending on education, health, and infrastructure leads more directly to the improvement of the HDI, while economic growth did not prove to be significant.

Implication of Policies. The development of infrastructure, education, and health facilities should be prioritized in underdeveloped areas, especially in Kalimantan-Sulawesi and Eastern Indonesia. Educational spending should be directed to quality improvement programs such as educational personnel quality and competence improvement activities. Health spending should be directed to preventive activities, such as education about healthy life, improvement of nutrition, and health insurance to give more access to health for poor people. Infrastructure spending should be concentrated on road construction because the road is the key for people mobility, especially in underdeveloped areas. Development of new economic centers becomes an important idea so that areas with the low economy can reduce their economic gap with developed areas.

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