



GOVERNMENT EXPENDITURE AND HUMAN DEVELOPMENT IN INDONESIA

Johan Beni Maharda^{1,2}, Bunga Zharfa Aulia²

¹ Coordinating Ministry for Economic Affairs, Indonesia

² Faculty of Economics and Business, Diponegoro University, Indonesia

Abstract. *This study aims to estimate the association between government expenditure and human development index (HDI) in Indonesia. Due to unequal HDI attainment, this study focuses on 12 provinces which categorized as provinces with low level of HDI in Indonesia. This study employs fixed effect model (FEM) panel data analysis on provincial level datasets from 2010 to 2018. This study found that the increase of government expenditure on education significantly increases HDI, while government expenditure on health has no significant association with HDI. Major finding of the study highlights the role of gross regional domestic product (GRDP) per capita in increasing HDI on 12 provinces in Indonesia.*

Keywords: *Government expenditure on education, government expenditure on health, HDI, FEM.*

INTRODUCTION

Human development has strong association with economic development as it has significant impact in increasing economic growth, standard of living, and social welfare. Increasing human development may result in sustainable growth, since it increases productivity, employment, and output (Ali et al., 2012). United Nation

Development Program (UNDP) further proposes human development index (HDI) in 1990 due to limited proxies in measuring human development¹. HDI portrays standard of living, educational attainment, and health attainment.

Such association may further highlight the important role of government in human development

¹ GDP fails to portray human development level in a country, therefore UNDP proposes HDI as main proxy that portray human

development attainment in Human Development Report (UNDP, 1990)

investment in health, education, and other social services. Theoretical and empirical studies highlighted the significant role of government expenditure due to market failure in human development investment (Agarwal, 2015; Ali et al., 2012; Anand & Ravallion, 1993; Gupta et al., 2002). Furthermore, proper government expenditure in human development may lead to sustainable human development. Thus, investment in government expenditure appears to be significant to further boost human development and economic development.

This study would like to address the issue of human development and government expenditure in Indonesia. Indonesia is acknowledged as the fourth most populous country and considered as the largest economy in ASEAN. Indonesia accounts for 39.4% of ASEAN's total GDP in 2018, which followed by Thailand (16.9%), Singapore (12.2%), and Malaysia

(12.0%)². Additionally, Indonesia is also known as the ASEAN country with stable economic condition during global financial crisis in 2008, while other countries such as Thailand, Singapore, Malaysia, and Brunei Darussalam experienced negative growth during the crisis³. However, Indonesia's level of human development is lower compared to other ASEAN countries. Indonesia is currently categorized as medium level of human development, while Singapore, Brunei Darussalam, Malaysia, and Thailand are categorized in very high and high level of human development respectively. As it is evident in Table 1, the gap between Indonesia and other ASEAN countries widen due to life expectancy rate, mean years of schooling, and GNI per capita. Additionally, Indonesia's human development level decreases continuously compared to Philippines and Vietnam⁴. Furthermore, Indonesia's provincial HDI appears to

² ASEAN Key Figures 2019 (The ASEAN Secretariat, 2019)

³ IMF (2017) accessed on <https://www.imf.org/external/pubs/ft/weo/2017/01/weodata/index.aspx>

⁴ 2017 HDI and its Components accessed on <http://hdr.undp.org/en/composite/HDI>

be unbalanced. As summarized in Figure 1, Lampung, South Sumatera, West Kalimantan, West Nusa Tenggara, East Nusa Tenggara, Gorontalo, Central Sulawesi, West

Sulawesi, Maluku, North Maluku, Papua, and West Papua are categorized as the provinces with low HDI level in Indonesia.

Table 1. Human Development Index (HDI) of ASEAN 8 Countries in 2017

HDI Rank	Country	HDI	Life Expectancy at Birth	Mean Years of Schooling	Gross National Income (GNI) per capita (2011 PPP \$)
9	Singapore	0.932	83.2	11.5	82,503
39	Brunei Darussalam	0.853	77.4	9.1	76,427
57	Malaysia	0.802	75.5	10.2	26,107
83	Thailand	0.755	75.5	7.6	15,516
113	Philippines	0.699	69.2	9.3	9,154
116	Indonesia	0.694	69.4	8.0	10,846
116	Vietnam	0.694	76.5	8.2	5,859
139	Lao PDR	0.601	67.0	5.2	6,070

Source: Human Development Reports 2017, UNDP

Table 2. Share of Government Expenditure on Education and Health of ASEAN 6 Countries in 2005 and 2017

Country	Share of Education Expenditure to GDP (%)		Share of Health Expenditure to GDP (%)	
	2005	2017	2005	2017
Singapore	3.3	2.9	3.1	4.9
Brunei Darussalam	3.6	4.4	2.4	2.6
Malaysia	6.0	5.0	3.2	4.2
Thailand	3.9	4.1	3.5	4.1
Philippines	2.4	2.4	3.9	4.7
Indonesia	2.6	3.6	3.0	2.8

Source: ASEAN Key Figures 2018, ASEAN Secretariat

Table 2 shows the share of government expenditure on education and health of ASEAN 6 countries in 2005 and 2017. Evidently, Indonesia's expenditure on education and health were relatively lower than other ASEAN countries. Since 2005, the share of government expenditure on education and health were

relatively low, which accounts less than 3% from Indonesia's overall GDP. This implies strong association between government expenditure and human development level for the case of Indonesia. Thus, estimating the association between HDI and government expenditure in Indonesia is essential.

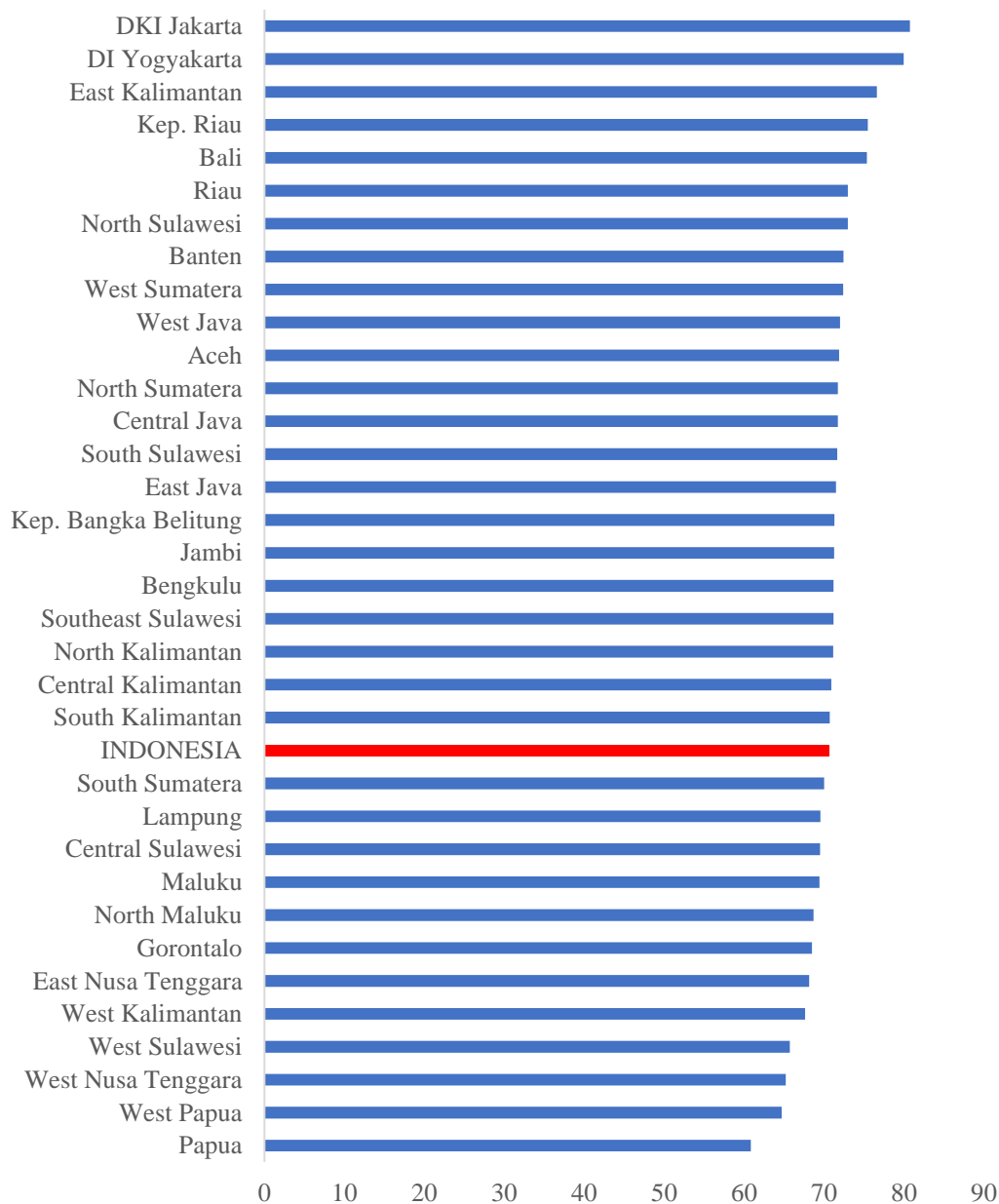


Figure 1. HDI on Provinces in Indonesia 2018

Source: Central Bureau of Statistics accessed on <https://ipm.bps.go.id/data/nasional>

This study will estimate the association between HDI and government expenditure in Indonesia. This study would also incorporate both education and health expenditure as main analysis in the study.

Furthermore, this study focuses on provincial level datasets of HDI and government expenditure and highlight the issues of unbalanced provincial HDI in Indonesia. Hence highlighting the study mainly on 12

provinces in Indonesia which categorized in low level of HDI in Indonesia, such as Lampung, South Sumatera, West Kalimantan, West Nusa Tenggara, East Nusa Tenggara, Gorontalo, Central Sulawesi, West Sulawesi, Maluku, North Maluku, Papua, and West Papua. Therefore, this study will focus on the association between HDI and government expenditure of low level provincial HDI in Indonesia.

The paper is structured as follows. Section two reviews existing literature regarding the issue of government expenditure and HDI. Section three describes source of data, summary of variables, and econometric model of the study. Section four contains result, discussion, and policy implication of the study. Finally, section five draws conclusion and limitation of the study.

LITERATURE REVIEW

Classical approach considers government expenditure as inputs and education and health attainment as necessary outputs in developing economy (Anand & Ravallion, 1993).

Growing literature uses HDI as significant aspect that portrays education and health attainment in a country. However, the association between HDI and government expenditure remains unclear. Studies of Ali et al. (2012), Reddy & Narsi Reddy (2019), Das et al. (2019) concluded that government expenditure has positive and significant impact on HDI, while studies of Gupta et al. (2002) and Danu (2013) found that government expenditure is inefficient and has negative impact on HDI.

Gupta et al. (2002) analyses cross-sectional data of 50 developing and transition countries and found that increased public expenditure on health and education may improve school attainment and reduce mortality rates. Ali et al. (2012) employs time series analysis that studies the association between HDI and government expenditure in Pakistan during 1972-2010. The empirical results of the study concluded that government expenditure has insignificant and negative effect, while income per capita has significant and positive

effect on HDI. This implies that income per capita is considered as the major determinant of HDI.

Agarwal (2015) employed fixed effect model (FEM) and log-log model in analysing the impact of government expenditure on HDI. The results highlighted the significance of government expenditure and per capita income on HDI. Omodero (2019) investigated the association between government spending and human development in Nigeria from 2003 to 2017. This study conducted multiple linear regression model on Ordinary Least Square (OLS) method. This study further concluded that government recurrent expenditure has significant and positive impact on HDI, while capital expenditure, inflation, and corruption has no significant effect on HDI.

Shah (2016) conducted cross-country analysis and included GDP per capita, literacy rate, life expectancy, Gini index, fertility rate, and carbon emission as determinants of HDI. The results show that Gini index, fertility rate, carbon emission, and inflation has negative and significant effect on HDI, while GDP

per capita, literacy rate, and life expectancy has positive and significant effect on HDI. Reddy & Narsi Reddy (2019) concluded that open spending on medical and public health, education, sports, art and culture, water housing, urban development, and nutrition have positive and significant effect on human improvement. Danu (2013) conducted cross-country study using Data Envelopment Analysis (DEA) to analyse the efficiency of government expenditure in increasing HDI. The results revealed that government expenditure appears to be efficient for few countries, namely Singapore and Zamibia. Das et al. (2019) investigates the association between government expenditure on HDI in India from 1995 to 2016 with VECM, which concluded that both government expenditure and HDI has long run associations, but with no errors corrected.

Studies regarding the association between government expenditure and HDI in Indonesia is relatively limited. Sofilda et al. (2015) highlights the issue of HDI and government expenditure in Indonesia

by disaggregating provinces into the high HDI index provinces and low HDI index. The study concluded that government expenditure on health and education has significant and positive effect on HDI, economic growth has positive and significant effect, while population growth and unemployment has negative and significant effect on HDI. Pahlevi (2017) conduct panel data analysis from 33 provinces in Indonesia in 2008 and 2012. This study further employs DEA approach to measure the efficiency of government expenditure in Indonesia. The results show that education expenditure and

level of governance has significant and positive impact on HDI in Indonesia, while health expenditure affect human development negatively.

METHODOLOGY

As discussed in the previous section, Lampung, South Sumatera, West Kalimantan, West Nusa Tenggara, East Nusa Tenggara, Gorontalo, Central Sulawesi, West Sulawesi, Maluku, North Maluku, Papua, and West Papua are categorized as the provinces with lower HDI scores in Indonesia.

Table 3. Summary of Variables

Variabel	Notasi	Sumber
Human Development Index (HDI)	HDI	Central Bureau Statistics and INDO-DAPOER World Bank
Government Expenditure on Education	EDU	Directorate General of Fiscal Balance, Ministry of Finance
Government Expenditure on Health	HEALTH	Directorate General of Fiscal Balance, Ministry of Finance
Gross Regional Domestic Product (GRDP) per Capita	GRDPERCAP	Central Bureau Statistics and INDO-DAPOER World Bank
Total Household Expenditure on Health and Education	HOUSEHOLDEXP	Socio-economic National Survey (SUSENAS) of Central Bureau Statistics
Labour Force	LABFORCE	INDO-DAPOER World Bank

Source: Central Bureau of Statistics, Directorate of Fiscal Balance, Ministry of Finance, INDO-DAPOER, World Bank, 2010-2018.

Hence, this study attempts to address the association between HDI and government expenditure on the selected provinces and further discuss policy implications needed in increasing the HDI scores of the selected provinces. This study further employs panel data analysis on provincial level datasets during 2010-2018. The datasets were obtained from Central Bureau of Statistics, Directorate General of Fiscal Balance, Ministry of Finance, and Indonesia Database for Policy and Economic Research (INDO-DAPOER) World Bank. Summary of variables are summarized in Table 3.

This study uses ordinary least squares (OLS) panel data analysis in estimating the association between HDI and government expenditure. To conform normal distribution and satisfy OLS assumption, we transform all independent variables into logarithmic form. Therefore, the econometric model used in this study is as follows:

$$\begin{aligned}
 HDI_{i,t} = & \beta_0 + \beta_1 LNEDU_{i,t} + \\
 & \beta_2 LNHEALTH_{i,t} + \beta_3 LNGRDPERCAP_{i,t} + \\
 & \beta_4 LNHOUSEHOLDEXP_{i,t} + \\
 & \beta_5 LNLABFORCE_{i,t} + \varepsilon_{i,t} \dots\dots (1)
 \end{aligned}$$

where $HDI_{i,t}$ is the human development index of province i during period t ; $LNEDU_{i,t}$ is government's expenditure on education of province i during period t ; $LNHEALTH_{i,t}$ is government's expenditure on health of province i during period t ; $LNGRDPERCAP_{i,t}$ is gross domestic regional product per capita of province i during period t ; $LNLABFORCE_{i,t}$ is labour force of province i during period t ; and $\varepsilon_{i,t}$ is the error term.

RESULTS AND DISCUSSION

This study attempts to address the association between government expenditure and HDI on 12 provinces with low HDI level in Indonesia. As discussed in the previous section, this study focuses on Lampung, South Sumatera, West Kalimantan, West Nusa Tenggara, East Nusa Tenggara, Gorontalo, Central Sulawesi, West Sulawesi, Maluku, North Maluku, Papua, and West Papua as main case study to further understand the association between government expenditure and HDI in Indonesia. This study employs panel data

analysis on provincial level datasets during 2010-2018.

Prior to the econometric analysis, we determine panel data model that is suitable for this study. Firstly, we conduct Chow Test and Hausman Test to choose the suitable

model for this study. The results in Table 4 shows that null hypothesis is rejected in Chow Test and the Hausman Test, which implies that FEM is the suitable panel data model in this study.

Table 4. Chow Test and Hausman Test Results

Variable	Rho	Prob. Chi-Square	Hypothesis Testing	Selected Model
Chow Test	0.962	-	Null Hypothesis Rejected	<i>Fixed Effect</i>
Hausman Test	-	0.008	Null Hypothesis Rejected	<i>Fixed Effect</i>

Source: Own Calculation with STATA 14.0

FEM panel data regression results are summarized in Table 5. Model (1) estimates the effect of government expenditure on HDI, without incorporating GRDP per capita and other control variables in the model. The result shows that government expenditure on education has significant effect on HDI, while government expenditure on health has insignificant effect on HDI. Furthermore, the result shows that 100% increase of education expenditure is expected to increase HDI by 0.217 points. Model (2) only considers the association between GRDP per capita and HDI without considering the effect of government

expenditure in the model. The result shows that the increase in GRDP per capita will significantly increase HDI.

Furthermore, model (3) incorporates government expenditure and GRDP per capita in investigating HDI of 12 provinces in Indonesia. The R-squared of model (3) is 0.889, which is higher than the R-squared of model (1) and model (2). This implies that incorporating both government expenditure and GRDP per capita in the model explains HDI better than if the variables are regressed individually. The results also show that the increase of government expenditure on education and GRDP per capita will significantly increase

HDI level. However, government expenditure on health has insignificant association with HDI.

Model (4) includes controlled variable in the model. The result shows that R-squared in the model is relatively higher than model 3, which means that model (4) explained HDI by 89.2 percent. Model (4) shows that the increase in government expenditure on education, GRDP per

capita, household expenditure on education and health, labour force may significantly increase HDI level. Major finding in the model shows that GRDP per capita and household's expenditure on education and health has more significant role in increasing HDI on 12 provinces in Indonesia. Consistently, health expenditure on health appears to have insignificant effect on HDI.

Table 5. FEM Panel Data Regression on 12 Provinces in Indonesia 2010-2018 (Dependent Variable: HDI)

	(1)	(2)	(3)	(4)
LNEDU	0.217*** (0.838)	-	0.115*** (0.051)	0.139*** (0.049)
LNHEALTH	0.006 (0.975)	-	0.101 (0.062)	0.076 (0.060)
LNGRDPERCAP	-	1.892*** (0.568)	1.561*** (0.001)	2.369*** (0.657)
LNHOUSEHOLDEXP	-	-	-	2.521*** (0.275)
LNLABFORCE	-	-	-	1.501** (0.079)
R ²	0.443	0.464	0.889	0.892
Observation	108	108	108	108

Note: The results show provincial level datasets from 2010-2018. The dependent variable is provincial HDI on all column. All regressions include a constant. Standard errors in parenthesis. *, **, ***: significant at 1%, 5%, and 10%.

Source: Own Calculation with STATA 14.0

Essentially, government expenditure on education has significant and positive association with HDI. This finding support existing findings of Ali et al. (2012), Reddy & Narsi Reddy (2019), Das et al. (2019), Sofilda et al. (2015),

Agarwal (2015), Pahlevi (2017), and Omodero (2019). This finding implies that increasing government expenditure on education may increases HDI level of the provinces with low level of HDI in Indonesia, which would significantly decrease

the HDI gap between provinces in Indonesia.

However, health expenditure is found to have insignificant association with HDI in positive direction. Through this finding, we argue that inefficient public health provision plays an important role in generating such results. We further found that 12 provinces with low level of HDI in Indonesia tends to spend higher public health expenditure compared to provinces with higher HDI level. It is also evident that the 12 provinces has high infant mortality rate and categorized as provinces with low health status despite its public health expenditure. This finding is in line with the study of Pahlevi (2017) which argue that health expenditure appears to be inefficient and ineffective that further results in insignificant effect on HDI. This implies that government needs to formulate better health expenditure allocation which specifically target those in needs that will further reduce the inefficiency of public health provision in Indonesia.

Finally, results this study also highlight the significant role of GRDP

per capita on HDI in Indonesia. This finding support studies of Agarwal (2015), Pahlevi (2017), and Omodero (2019). It is evident that the increase on GRDP per capita may allow local government in formulating expenditure allocation on health, education, and other social and physical investment which would further increase real income, human development level, and overall HDI.

CONCLUSION

This study aims to estimate the role of government expenditure on human development on 12 provinces in Indonesia from 2010 to 2018. This study found that government expenditure on education has significant and positive association with HDI, while on the contrary, government expenditure on health has insignificant association with HDI. We further argue that public health provision on 12 provinces in Indonesia appears to be inefficient. In accordance with the results of this study, it implicates that policy design needs to encourage increase of education expenditure on 12 provinces in Indonesia. Furthermore,

government needs to formulate better expenditure allocation on health expenditure to reduce inefficiency of public health provision in Indonesia.

Major finding of this study includes the role of GRDP per capita on HDI on 12 provinces in Indonesia. This finding concludes that increase on GRDP per capita may encourage local government in formulating better expenditure allocation on health, education, and other social and physical investment. Thus, increasing GRDP per capita would further increase real income, human development level, and overall HDI.

This study has shortcomings that needs to be addressed with future research. First, since this study only focuses on 12 provinces with low level HDI in Indonesia, this study did not incorporate unequal level of development and initial condition between provinces in Indonesia. Future studies need to address the issue of inequality on government expenditure and the development characteristics of provinces in Indonesia to provide better understanding regarding the topic. Second, this study uses total

government expenditure on education and health as focal point in the study, while arguably, other expenditure may have association with HDI. It is also possible that other measurement types of government expenditure may have different impact on HDI. Lastly, this study did not consider geographical or spatial differences between each provinces in Indonesia due to limited datasets. Further studies need to incorporate the differences between provinces, specifically the western and eastern Indonesia, since it would probably provide deeper understanding regarding government expenditure and HDI in Indonesia.

REFERENCES

- Agarwal, P. (2015). Social Sector Expenditure and Human Development: Empirical Analysis of Indian States. *Indian Journal of Human Development*, 9(2), 173–189. <https://doi.org/10.1177/0973703020150202>
- Ali, S. A., Raza, H., & Yousuf, M. U. (2012). The Role of Fiscal Policy in Human Development : The Pakistan ' s Perspective. *The Pakistan Development Review*, 51(4).
- Anand, S., & Ravallion, M. (1993).

- Human Development in Poor Countries: On the Role of Private Incomes and Public Services. *Journal of Economic Perspectives*, 7(1), 133–150. <https://doi.org/10.1257/jep.7.1.133>
- Danu, A. (2013). *Meeasuring Government Expenditure Efficiencies Towards Peace and Human n Development*. 6(2), 82–91.
- Das, R. C., Mandal, C., & Patra, A. K. (2019). Linkage between social sector's spending and HDI: study on individual as well as panel data of Indian states. *Review of Social Economy*, 0(0), 1–23. <https://doi.org/10.1080/00346764.2019.1671605>
- Gupta, S., Verhoeven, M., & Tiongson, E. R. (2002). The effectiveness of government spending on education and health care in developing and transition economies. *European Journal of Political Economy*, 18(4), 717–737. [https://doi.org/10.1016/S0176-2680\(02\)00116-7](https://doi.org/10.1016/S0176-2680(02)00116-7)
- Omodero, C. O. (2019). Government General Spending and Human Development: A Case Study of Nigeria. *Academic Journal of Interdisciplinary Studies*, 8(1), 51–59. <https://doi.org/10.2478/ajis-2019-0005>
- Pahlevi, M. (2017). Impact of Governance and Government Expenditure on Human Development in Indonesia. In *Research Paper of Master of Arts in Development Studies International Institute of Social Studies*. Institute of Social Studies.
- Prasetyo, A. D., & Zuhdi, U. (2013). The Government Expenditure Efficiency towards the Human Development. *Procedia Economics and Finance*, 5(2012), 615–622. [https://doi.org/10.1016/s2212-5671\(13\)00072-5](https://doi.org/10.1016/s2212-5671(13)00072-5)
- Reddy, S. M., & Narsi Reddy, V. V. (2019). Social sector expenditures and their impact on human development in India: Empirical evidence during 2001-02 to 2015-16. *International Journal of Recent Technology and Engineering*, 7(6), 1938–1943.
- Shah, S. (2016). Determinants of Human Development Index: A Cross-Country Empirical Analysis. *International Journal of Economics and Management Studies*, 3(5), 43–46. <https://doi.org/10.14445/23939125/ijems-v3i5p106>
- Sofilda, E., Hermiyanti, P., & Hamzah, M. (2015). Determinant Variable Analysis of Human Development Index in Indonesia (Case for High and Low Index at Period 2004-2013). *OIDA International Journal of Sustainable Development*, 08(09), 11–28.
- The ASEAN Secretariat. (2019). *ASEAN Key Figures 2019*.

<https://www.aseanstats.org/publication/asean-key-figures-2018/>

UNDP. (1990). Human Development Report 1990. Concept and

measurement of human development. In *Oxford University Press*.
<https://doi.org/10.1017/9780195064811>