

A Comparative Relationship of Quality of Life Factor to Achievement in MDGs’– SDGs’ Indicators of Poverty and Hunger Index with variations in PHI Data Input

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Abstract—The sustainability development is a development that relevant to the present time, with a plan in accordance to national mid-term development plan which are MDGs and SDGs. It is a development by approaching the improvement of the quality of life and prosperity. The aim of this research is to observe the effect of people’s quality of life and the sustainable development goals in the poverty and hunger index as indicators by using panel data at 33 provinces in Indonesia during a period of 2010, 2014 to 2015 for MDGs program and 2016, 2017 to 2018 for SDGs program, implementing the approach of Fixed Effect Model cross-section weigh and ordinary Least Square (OLS) in order to compare the coefficient without any influences of time and region. The result of this research shows that there are some significant influences which vary between the variable in MDGs and SDGs periods. It is also shown in target input that the minimum value of PHI is “zero” and the value of PHI’s target input is 2.5%. However, overall significant factors in this result are among the level of income, tertiary education, dissent work, nonagricultural with the variable of sustainable development goals in the indicator of poverty and hunger index. These research results are expected to be a consideration in decision-making process for Indonesian government to set a right full policy for people’s quality of life achievement, which contributed in SDGs program until 2030 hence achieve “Zero Goals” or there will be no people who are poor and no one have no access to the clean water.

Keywords—Sustainability development Goals; MDGs; SDGs; Fixed effect model; Poverty Index; Random effect model

I. INTRODUCTION

A development orientation that inclines to human welfare is the sustainability development, related to welfare and environmental sustainability, both for today’s generation and the future generation. For this purpose, the government schedule a Millennium Development Goals (MDGs) since 1990-2015, continued to the Sustainability Development Goals (SDGs) from 2016-2030. The 2030 sustainable development agenda discuss the comprehensive and integrated perception of the numerous social, economic and environmental challenges by creating an effective and cross-sector partnership. (Hoelman at al., 2015)

Several study groups have discussed the “Growth” versus “Development” orientation of progress. Growth is identical with the traditional establishment, focused on the increase of Gross Domestic Product. On the other side, “development” characteristic is more modern and emphasizes in the increase of per capita income, focused more at the social indicators, indicates that the development has to be observed as a multi-dimensional process. Brinkman (2016) perceived that growth tends to be not connected with development. Growth autonomously often forced to be the achievement of values, not the result of development towards equity. Kutnesz (1965) stated “a growth without development is the experience that often happened in underdeveloped countries. The modern economic development should not poverty.”

There are 8 goals and 65 indicators in MDGs, as well as 17 goals and 169 indicators in SDGs. However, this study only focused on the achievement of people’s social economic status such as decreasing the poverty depth index, reducing the proportion of population who under the level of poverty, prevalence the malnourished toddlers, and ensuring no more people with the consumption under the nutritional adequacy standard or the minimum consumption (less than 1400 kcal/person according to UNDP, 2007). These four indicators combined together as an individual indicator called the poverty and hunger index (PHI). Author unite these several indicators as a single indicator by adopting a formula introduced by Gentilini & Webb (2015), since the separate indicators will give

each partial information that often contradicts to each other. These facts will complicate the comparison of goal achievement of MDGs and SDGs between regions, so the measure used is a composite index called PHI. The overall value of PHI in the achievement of MDGs and SDGs are indicated in early research as presented in Table I

The percentage of Indonesian population who starve decrease from 19,7percent in 2000 to 7,6percent in 2015-2016. Even though energy source food availability has been successfully increased, Indonesia was slowly advancing in declining the number of malnutrition population especially toddlers (HasanudinAco in National Kompas, 2016).

Data inform that the target of PHI is less than the realization. This means that PHI challenges are yet to be accomplished since some of the regions in Indonesia are still have the PHI value above 0,5 percent, average PHI achievement during MDGs is 0,63, while the average continuation of SDGs until 2017 is 0,50 which under the target of 0,38 (INFID, MDGs, 2016).

The non-achievement factors of sustainable development goals in MDGs and SDGs remind us to an opinion by Malthus with his theory “Principle of Political Economic”, that more actual in analyzing the population factors regarding the economic development. According to him, the growth of population is not merely about the number, it could not happen without the enhancement in a comparable welfare (quality of life) (Masiglio, 2011). This Malthus’ theory was supported by Barro & Becker (2013) who believe that the population is a thread for development, if the economical source is permanent and does not vary, there will be no sources for technical progress. Therefore, population growth has to be controlled and the improvement of their quality of life becomes crucial. For that phenomenon, the author decided to conduct this research in order to discover the effect of people’s quality of life such as income level, education level and decent work status with the goals of Poverty and Hunger Index (PHI) decrease during the MDGs and SDGs periods. This research observes the PHI goals by categorizing minimum target of PHI as input that appointed by the government which theoretically is 0, meaning that there are absolutely no people living below the poverty line, who do not experience hunger and do not live in the depths of poverty, or identical with “zero goals” in the SDGs goal, and the real comparison which valued as 2.5% using the same calculation method. In the real term and actual data, the target input of PHI data was never and impossible to be “zero”.

Generally, the state of the art perceived the poverty indicator, not in the MDGs and SDGs context, but they were conducted in a long time series instead. Previous researches observed each indicator spatially, as mentioned by Nwokolo (2017) who studied the impact of education level on the food insecurity. Alarcon et al. (2016) reckon an adequate nutrition in the low-income households. Annestrand, Lenz, Bird and James (2017) discuss the influence of income on food safety in the rural community. Olabode (2012) and Hadar (2012) saw the effect of per capita income to the decrease of poverty index. It was also discussed in previous research about the impact of work status to the poverty of household (Amao, Ayantoye & Fandusi, 2012) and Abdala (2014) also studied the assessment of calorie intake and protein adequacy.

To the best of author’s knowledge, currently there is no research conducted about the sustainability development goals in decreasing the poverty and hunger as target by combining several derivative indicators in MDGs target to become a single indicator as the Poverty and Hunger Index (PHI), by comparing the minimum target in input of Poverty Hunger Index (PHI) which regulated by the government as “zero” and assume the target minimum of PHI valued as 2.5%. Moreover, this research perceives the poverty and hunger index with a composite index (supporting instrument) as an entity in the sustainable development goal by implementing IPM calculation method, using panel data in short period of time.

II. LITERATURE REVIEW

Starting form 2016, the sustainable development goals (SDGs) 2015 – 2030 officially replace the millennium development goals (MDGs) that ended in 2015. There are 17 goals of SDGs that categorized in the pillar of human development, the economic development, environmental development and governance. The principle of SDGs achievement since it started from 2016 to 2030 is abandoning no one, or called “Zero Goal”. SDGs emphasize in the prosperity between developed countries, poor countries and developing countries. While MDGs that started from 1990-2015 solely targeted that 50 percent of its aims is half of the population, less than half of poverty and hunger, too minimum target makes many countries have already achieved it (Houlman & Pahursip, 2015).

The theory of Human Development Armatiya Sen developed by Mahbul UIHaq (2000) assumed that fixing or improving the quality of life will bring more impact to the welfare and prosperity of people compared to improving only in the economic ability and economic growth. Furthermore, James Grant, the president of The Overseas Development Council, and Paul Streeten (2008) stated that the aim and target of development have to gain the basic needs of all people everywhere to enhance their quality of life.

The quality of life is an expansion opportunity process for people to live their precious life, some essential things in human development are in order to experience a healthy long-life, knowledgeable, and have an access to sources needed in having a decent

and normal life. The quality of human resource assessed by the level of education, health, income, and decent occupation, according to UNDP (2007), while according to OECD (1982) quality of life indicators are income, house, environment, social stability, health, education and decent occupation.

Quality of life identified in the study of Macke, Casagrande, Alberto R, Sarate, A.Silva, (2018), includes social relations, material welfare or income, environmental welfare and community integration. In the case of research at Curitiba, Brazil, it was found that quality of life factors were explained by socio-structural variables 16.45 percent, followed by environmental welfare 13.64 percent, material welfare 15.10 percent.

A. The effect of quality of life's achievement to the poverty and hunger index

The impact of income to the achievement of poverty and hunger index decrease was stated by Wang, Feng, Xia and Alkire (2016) that the decrease of poverty and hunger index is related to the poverty multi-dimensionally around 69 percent. The income will reflect the quality of life and the level of poverty if the assessment of income could illustrate the level of consumption expenditure per capita. Emphasized by a research conducted by Wesenbeeck, Keyzer & Nuba (2009) which stated that in a household with a low socioeconomic level, the society tends to be poor and the food is very insecure which cause in the challenge of food and water supply, severe health and malnutrition especially for pregnant mother and the toddlers.

Another quality of life's indicator that connected to the non-achievement of target indicator of sustainable development goals by poverty and hunger index (PHI) is the level of education. J. Hogan and P. Berning (2012) shows an average value of disposable income per household member who took a primary education tend to have a lower disposable income and in a relative poverty compared to the one who took secondary education. The same outcome also resulted in a research by Mutisya, Ngware, Kabiru & Kandala (2016), the one who has a low level of education tend to insecure in its food consumption patterns such as fruits and vegetables, they only prioritize on the staple food. The coefficient of household education achievement is negative and significant. Nwokolo (2017) prove that the level of education and the source of income correlated positively to household food security, which indicates that the income factor affects the poverty and food insecurity because of the impact from a low level of education, causing them to have an indecent occupation.

The other indicator that affects the target achievement of poverty and hunger index is the decent occupation status, a decent occupation is an occupation that gives adequate income, properly make a dignified living, and protect the physical and psychological safety and security (Shanto, 2017). In this study, the author chooses an occupation status of independent workers, non-agricultural free workers as the benchmark of a decent occupation. Decent work status in this case independent workers and non-agricultural free workers is chosen as an indicator that affects the IKK, according to empirical evidence showing the dynamic effects of entrepreneurs, self-employed are very valuable, Hendri, Saparini, and M. Chatib Basri (2017).

The controversy of the independent worker could be summarized from a research by J. Gooetz, Fleming and Rupangsingha (2012) which stated that even though the independent workers only give a little economic benefit for individual and local, and merely provide less welfare, but this kind of occupation is still a solution for severe poverty. Furthermore mentioned by Rajapaksha (2015) that non-farm opportunities become a sustainable strategy to stabilize income and decline poverty. A non-agricultural free worker is a solution for the income of a worker in an inconsistent agricultural sector. Herman (2014) identified that the progress in agricultural and non-agricultural sector has a vital essence to decrease the poverty and hunger level as targeted in MDGs in 2015, empirical evidence proves that the rise of per capita income in an agricultural sector could decline the poverty level as many as 52 percent, and the increase of per capita income from a non-agricultural sector lessen the poverty level around 15 percent. According to Verhage and Shapland, (2017), the difference between formal and informal workers has emerged economically and sociologically in the past half century. Formal workers are considered to be well-established, working in the formal sector is considered seeking mental well-being from a decent work culture.

III. METHOD

This research involves overall 99 observations including 33 research area and time period of 3 years which are 2010, 2014 and 2015 for MDGs program, as well as 99 observations for SDGs program of 3 years which are 2016, 2017 and 2018, Data collection is done by observation and interview methods, at the Central Bureau of Statistic data such as the Millennium Development Goals reports, Statistic yearbook report data about welfare indicators, Indonesian labor statistic (worker and social trends - 2010) and per capita consumption expenditure. Data for PHI were obtained by implementing Poverty and Hunger Index (PHI) drafting methodology based on indicators determined by UNDP (2007), which including the data of : poverty depth index, proportion of population who consume

calories below the minimum calorie intake (<1400 kcal/mg) and proportion of population who still considered under the poverty level. All mentioned data formulated as one composite index and refer to the Human Development index (HDI) calculation method implemented in Indonesia (BPS, 2008), using the formula introduced by Gentilini and Webb (2008) as follows:

$$PHI = \frac{1}{4} \sum_{i=1}^3 (xi - min)/(max i - min i)$$

where *xi* is the actual value from *i* indicator and *max* and *min* are the maximum and minimum values from each indicator of PHI input. The minimum value set varies as “zero” and 2.5%, while the maximum value is set as 100.

TABLE I. DISKRIPSI OF DATA SOURCES

<i>REM Code/Variable</i>	<i>Description</i>	<i>Scale</i>	<i>Data Source</i>
Indicator (PHI)	Poverty and Hunger Index	Percentage	Input PHI data in UNDP version (2007), processed.
Quality of Life - Factors			
PPC	Per capita income level	Billion	BPS-2016- 2018/ MDGs
TPT	Secondary education level	Percentage	BPS-2016- 2018/MDGs
TPS	Tertiary education level	Percentage	BPS-2016-2018/MDG
PPM	Total self-employment	Percentage	Susenas- 2016-2018
BNP	Non-agricultural free workers	Percentage	Susenas- 2016-2018

A. Regression Model of Panel Data

Panel data is a combination of cross-data and time series data. In panel data, the same cross-section unit is measured over several periods and times. Data regression model in this study used independent variables, that is, Poverty and Hunger Index (PHI).The dependent variables are sustainable developments, that is, Per capita income level (PPC), Secondary education level (TPS), and tertiary education level (TPT), the decent occupation status such as a total number of independent workers (PPM) and a total number of non-agricultural free workers. A panel data model approach based on the work, Asterioous and G.Hall (2007), is employed in this study. Initially, the relationship is to be estimated as:

$$Y_{it} = \alpha_{it} + \beta_1 X_{it} + \beta_2 X_{it} + \beta_2 X_{it} + \varepsilon_{it}$$

Where Y_{it} is the unit-I cross section into for t, β is the constant 1 x k, X_{it} is the vector observation on an independent variable, and ε_{it} is the error Component (0, σ^2)

The regression equation in panel data modeling in this study is as mentioned as follows to observe the influencing factors in target achievement of MDGs-SDGs by PHI indicator, considering previous research, which is the most efficient modeling technique, is to follow the conceptual ideas of Fan & Gay (2016) and Wesent Berk (2009). Not only is the small number of variable, the possibility of data availability also enabling study result to be compared in the previous research. Therefore, it is assumed that factors affecting PHI could be represented as follows:

$$PHI_{it} = f (Ppc, Edt, Edt, Jpm,Pnp) + \mu_{it}$$

Econometrically, the OLS model and Panel model equation for each indicator could be written as:

$$PHI = \beta_1 + \alpha_1 PPC + \alpha_2 TPS + \alpha_2 TPT + \alpha_4 PPM + \alpha_5 BNP + \mu_i \dots\dots\dots(1)$$

$$PHI = \beta_1 PPC_{it} + \beta_2 TPS_{it} + \beta_3 TPT_{it} + \beta_4 PPM_{it} + \beta_5 BNP_i + \mu_{it} \dots\dots\dots(2)$$

Gujarati & Porter (2009) described in their theory of engineering model election between the Common Effect, Fixed Effect and Random Effect using two model estimation techniques, first one is the Chow test to pick between Common Effect and Fixed effect model, and second is the Hausman test to select between the Fixed Effect and Random Effect model. The hypotheses formed in the Hausmant test are Ho: Random Effect mode land H1: Fixed Effect model. Azwar (2013) also described the same thing on his research, that if the Chow test is significant then the model used is the Fixed Effect model, and if the LM test is significant then the model used is Common Effect.

IV. FINDINGS AND DISCUSSION

A. Realization and Target Indicator PHI

Socio-economical data of Poverty and Hunger Index (PHI) at several regions describe the condition of Poverty and Hunger Index (PHI) of some provinces in Indonesia. Target and achievement of sustainable development goal in MDGs and SDGs at the average of the province in Indonesia by the decrease of Poverty and Hunger Index (PHI) indicators illustrated in Table-II

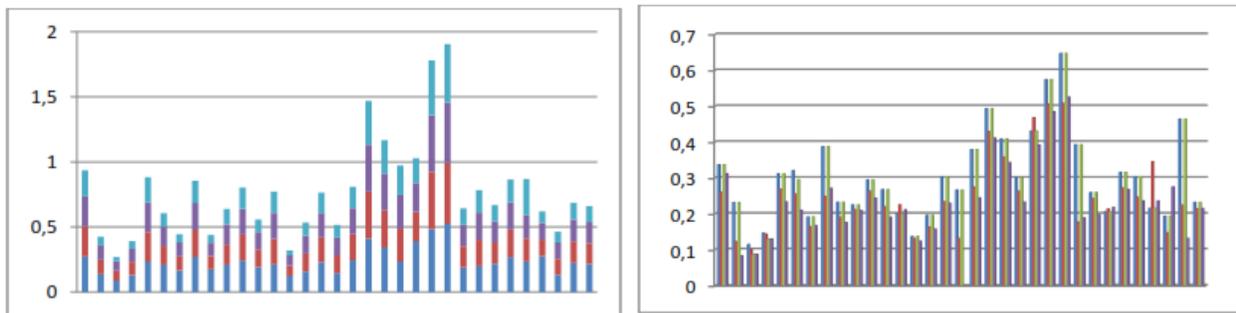
TABLE II. REALIZATION AND TARGET INDICATOR PROPERTY AND HUNGER INDEX

Indicators of PHI	Target & Realization of MDGs				Target & Realization of SDGs			
	Target 2010	Realization 2014	Target 2015	Realization 2015	Target 2016	Realization 2016	Target 2017	Realization 2018
Percentage of population who live below the poverty line	8.10	9.07	7.70	8.19	5.19	7.12	7.00	12.02
Depth index of poverty	1.87	2.21	1.50	2.02	0.73	1.74	0.27	1.79
Prevalence of the malnourished toddlers	5.2	7,2	3.6	4.07	3.1	3.8	32.7	3.12
The proportional the population with calorie intake under 1400/kcal/capita	9.30	12.7	8.5	7.4	5.4	6.12	4.01	4.60

Source: Millennium Development Goals Reports (2015) & Kompas’s Paper (2017)

In Figure I, data indicate that the achievement of PHI incline targeted in MDGs and SDGs program for most provinces has not been reached yet since the index value is still less than 0,5. The sustainability achievement of SDGs until 2017 indicates an average value of 0.62 which below the target value that supposed to be 0.38.

B. Variation Target Input Data PHI



Source: Author: PHI input data

FIGURE I. TARGET PHI “ZERO” VS TARGET PHI 2.5% IN SDGs **FIGURE II. TARGET PHI “ZERO” VS TARGET PHI 2.5% IN MDGs**

To discover the PHI achievement between overall area in Indonesia during MDGs and SDGs, it is important to correlate it with the condition of per capita income level of Indonesian population which approached by the data of per capita income as illustrated in the following Table II.

C. The Level of Income Per capita

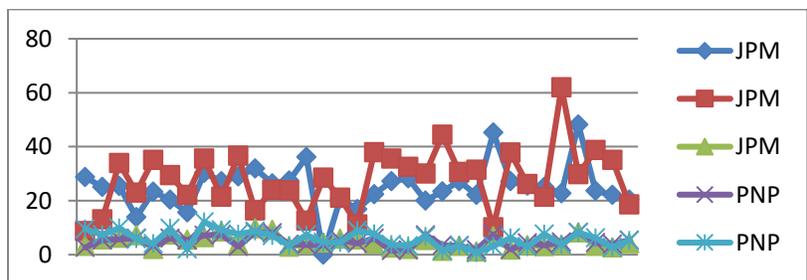
TABLE III. THE LEVEL OF INCOME PER CAPITA OF THE INDONESIAN POPULATION IN EACH PROVINCE

Province	Income Per capita					
	2010	2014	2015	2016	2017	2018
Aceh	415.528	902995	752 118	921 416	902 995	1202995
Sumatera Utara	399,267	909818	775 189	890 632	909 818	934617
Sumatera Barat	459,349	1053803	894 703	1 032 424	1 053 803	1277393
Riau	475,376	568206	1 005 509	1 120 873	1 120 938	999823
Jambi	433,131	551287	840 696	923 752	969 225	999997
Sumatera Selatan	388,436	620211	731 429	839 123	924 847	926675
Bengkulu	409,656	367377	811 077	894 794	990 909	976989
Lampung	347,281	1103337	741 206	789 061	849 293	989212
Kepulauan Babel	568,206	369907	1 118 101	1 211 879	1 306 994	1307994
Kepulauan Riau	551,287	320042	1 344 722	1 465 121	1 564 877	1552008
DKI Jakarta	620.211	394957	1 733 431	1 876 648	1 997 446	1878460
Jawa Barat	367,377	477266	896 895	983 477	1 103 337	1144507
Jawa Tengah	327,967	452789	695 856	756 720	827 223	750143
DI Yogyakarta	369,907	585368	830 472	1 070 962	369 907	11501100
Jawa Timur	320,442	387001	830 602	870 412	938 801	1679854
Banten	394,957	463828	1 032 346	1 135 256	1 251 972	1351772
Bali	477,266	480652	1 104 145	1 099 561	1 332 085	1432085
Nusa Tenggara Barat	352,789	510293	668 499	760 641	821 052	912050
Nusa Tenggara Timur	285,364	436636	533 891	576 627	681 484	881990
Kalimantan Barat	387,001	392646	783 050	860 227	929 135	919165
Kalimantan Tengah	463,828	353434	920 786	1 044 770	463 828	9734989
Kalimantan Selatan	480,652	327225	956 156	1 047 247	1 157 806	1257400
Kalimantan Timur	510,293	361621	1 193 642	1 296 926	1 443 928	1546678
Sulawesi Utara	436,636	348219	820 426	957 458	1 106 713	1139013
Sulawesi Tengah	392,646	348471	760 612	842 912	918 349	1310641
Sulawesi Selatan	353,434	407582	746 767	859 529	927 908	827906
Sulawesi Tenggara	327,225	4674	673 488	806 568	853 720	883828
Gorontalo	361,621	2099	667 401	774 525	898 383	988983
Sulawesi Barat	348,219	1958	615 491	685 941	722 626	812766
Maluku	348,471	3406	794 355	846 106	348 471	1038599
Maluku Utara	407,582	2772	789 896	809 371	407 582	946795
Papua Barat	397,155	3177	1 030 232	1 009 401	1 121 892	1567300
Papua`	40118	1819	829753	936387	1079861	1279400

Source: MDGs Report 2010-2015, BPS- Statistic of People Welfare 2016-2018

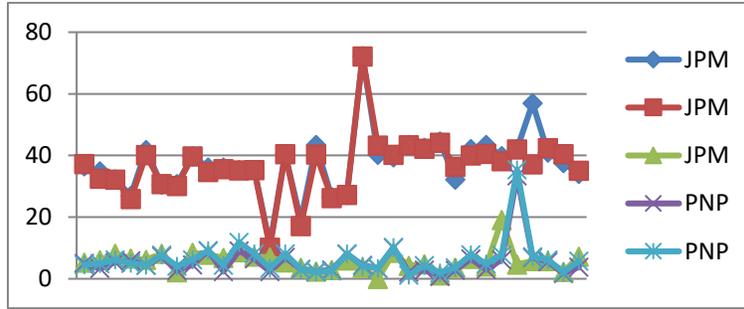
Decent work, which in this case is for the independent workers and non-agricultural free workers, are chosen as the indicators that affect PHI. According to the empirical evidence that indicates the dynamical effect of the entrepreneur, the independent workers are vital (Hendri, Saparini & M. Chatib Basri, 2017). Most of the researchers assumed that self-employment is worse than a hired worker, but this kind of job is better than nothing (Tsuboe, A. Zereyesus & Osei, 2016).

D. Self Employment



Source: MDGS Report 2015

FIGURE III. THE PROPORTION OF POPULATION AS AN SELF EMPLOYMENT IN MDGS



Source: BPS-People welfare indicators, 2018

FIGURE IV. THE PROPORTION OF THE POPULATION AS AN SELF EMPLOYMENT IN MDGS

Figure III and Figure IV show the number of self employment and the number of non-agricultural free workers during the MDGs and SDGs period. Respectively in the figures, differences in the independent workers and non-agricultural free workers ‘condition is illustrated based on each province in Indonesia. It can be concluded that the total numbers of people who work as an independent worker are more desirable compared to non-agricultural free workers, which means the number of independent workers is greater in overall provinces, for example in Kalteng province with 41.43 percent, Bengkulu with 37 percent, Kaltim with 40 percent, while the number of independent workers in these provinces is very small with the average of 4.72 percent. This prove that the independent workers is the workers that provide a solution for the economy as similarly stated by Akiri & Ijuo (2016) that the impact of independent workers to the decrease of poverty and the increase of the quality of life is very significant, and the independent workers in the urban community are more capable of raising their income.

The following Figures V – VIII illustrate the proportion of people’s completed education level including secondary education and tertiary education.

Data of secondary education level in the sustainable development goal of MDGs-SDGs indicates the achievement that is not much contrasting; it means that the achievement of secondary education level in these two periods of time evenly is still below 40 percent. However, there is a bit of difference between the tertiary education in MDGs and SDGs. During the MDGs period, the achievement of tertiary education on the average is below 8 percent, while increasing in the SDGs period on the average of above 8 percent. As a matter of fact, there are some areas that reached 10 percent.

E. The Level of Education

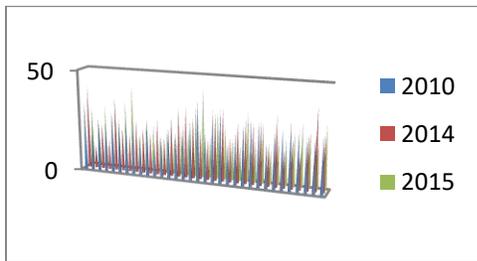


FIGURE V. SECONDARY EDUCATION LEVEL IN THE MDGS

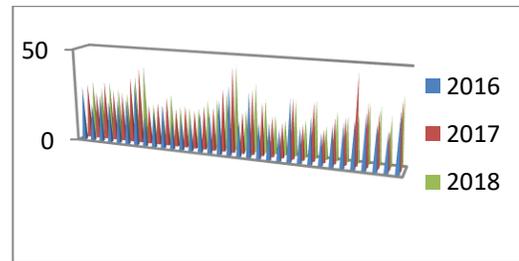
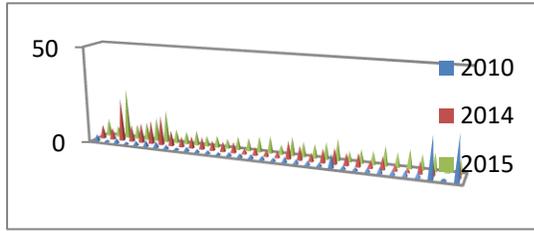


FIGURE VI. SECONDARY RY EDUCATION LEVEL IN THE SDGS



Source; MDGs Report (2015), BPS (2018)

FIGURE VII. TERTIARY EDUCATION LEVEL IN THE MDGs

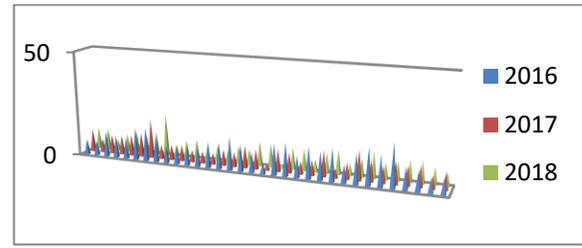


FIGURE VIII. TERTIARY EDUCATION LEVEL IN THE SDGs

B. The Result of the Model Accuracy Test

We analyze several model specifications to associate the estimation result obtained. To assign the difference between Phi’s achievement during SDGs period and MDGs period, separate panel data will be estimated for each of data cluster, becoming data group of MDGs and SDGs. The definition on MDGs and SDGs program for the aim of this research is defined in the appendix.

For the data classification based on sustainable development target and goals, we compare the minimum target in PHI input which categorized as “zero” is a theoretical provision and government’s expectation, while the category included based on the minimum target of 2.5% is the logical data and close to the actual data. In fact, the actual data is indicated above the target of 2.5%. However, this target comes from author’s improvisation to analyze the possibilities occurred to variable significance’s goal affecting PHI. The use of two separate panels does not only increase the estimation efficiency in separated time regression but also help in fixing misspecification caused by cross-sectional heterogeneity. We also use the OLS model to contrast intercept variable (constant) and significance for each period of sustainability development goal, this model implemented in managing static test difference between SDGs period and MDGs period, when the calculation indicator of Poverty and Hunger Index (PHI).

We first use a simple model to estimate the basic relationship between in each category of sustainable development goals in the MDGs and SDGs period. Estimated in equation (1), using OLS model to indicate the variable significance test without time and area’s effect, so the interpretation could be differentiated by the significance test that considers the time and area’s effect (FEM). By the minimum target of PHI input for poverty determination by the government categorized as “zero” and improvisation as 2.5%, the estimation results using the OLS model are listed in table-3 below.

TABLE IV. ESTIMATION RESULT OF THE QUALITY OF LIFE AND PHI BY OLS MODEL

Variable	Coefficient	MDGs	SDGs
C	α_0	1.0824 (2.967)*	0.4475 (0.357)
PPC	α_1	-0.0621 (-2.213)**	-0.021 (0.576)**
EDS	α_2	0.0040 (1.789)***	0.0019 (0.977)
EDT	α_3	-0.0022 (-0.825)	-0.0063 (0.039)**
JPM	α_4	-0.0019 (1.479)**	-0.0029 (2.339)**
PNP	α_5	-0.0104 (-2.128)**	-0.005(-2.408)**
R ²		0.414977	0.371816
Adj R ²		0.354457	0.307933
F-Statistics		6.856903	5.820258
Jarque Berra		0.000087	0.000076
AR(2)		0.110	1.89
Wald test		24.67 **	27.78**

Note: t- statistic is in parenthesis. *1% sig level, **5 % sig level, and ***10 % sig level

Difference of both panel data is explicit, in the MDGs period by the data from 2010, 2014-2015 and SDGs period by the data from 2016-2018, the difference of estimation result is shown from the clustering of each panel data, which in the MDGs period all variable of the quality of life affect the PHI achievement significantly, except in the variable of secondary education level which only significant at 10 percent. This result could be correlated to the previous research conducted by Cova and Stacova (2016) at the Czech Republic, which mentioned that the quality of life with per capita income approach is connected with the population who considered under the poverty line and growth. On the other side, Ren, Gei, Wang, Mao and Zang (2017) found out that the income of a village

significantly has a negative impact to the poverty, but has an effect that varies in the areas considered as poor. Another research concerning income level and food insecurity pointed out about correlation between the level of poverty and food insecurity, when household income declined, prevalence of food discomfort increased, to less income obtained the more possible for an individual to consume the food in a smaller portion less than what he necessary eat, 83 percent of individuals who eat in a smaller portion has an income of under \$20.000 (Ammestrand, Lenz, Bird, James, 2017).

In SDGs period, an indicator of the quality of life that has no effect is the secondary and tertiary education level, indicated by the estimation of each coefficient values 0.0019 and 0.0063 that positively correlated but not as significant, which means that every increase in educated population will affect the increase of poverty and hunger level. This fact is contradicted to the literature, but we could argue that the population who completed secondary education has a limited option of the alternative job, usually difference in education level here would distinguish one's self-development especially regarding life decision. However, this model predicts other variables more accurate and according to the hypothesis.

The indicator of decent occupation status for both categories of MDGs and SDGs period show the same significance that self employment is significantly affected PHI at the coefficient -0.0019 with t statistic value of 1.479 and significant at 10 percent confidence. On the other hand, the non-agricultural free worker is significant at the confidence of 10 percent with a coefficient of -0.0104. This test result answer the initial hypothesis, even in accordance with the research by Rajapaksha (2015) and Vanwey & Yathii (2012), non-farm opportunities become the sustainable strategy to stabilize the income and decrease poverty. A free worker in the agricultural sector turns out to be the solution for the unstable income of agricultural workers.

TABLE. V. ESTIMATION RESULT OF THE QUALITY OF LIFE AND PHI BY FIXED EFFECT MODEL WITH CROSSECTION WEIGHT

Variable	Coefficient	MDGs		SDGs	
		0% minimum target	2.5% minimum target	0% minimum target	2.5% minimum target
C	α_0	0.2437 (0.770)	0.6509 (2.338)*	0.1952 (2.388)*	0.2453 (0.770)*
PPC	α_1	-0.053 (-0.867)**	0.0655 (0.765)*	-0.005 (-3.700)	-0.008 (-650)**
EDS	α_2	-0.003 (13.378)*	0.3200 (12.03)	0.002 (1.112)	-0.908 (23.870)
EDT	α_3	0.006 (14.049)*	-0.876 (11.098)*	-0.005 (-0.267)	0.006 (2.918)
JPM	α_4	-0.001 (-4.351)	-0.233(9.090)*	-0.001 (2.441)**	-0.001 (21.699)*
PNP	α_5	-0.002 (21.699)*	0.0044 (13.440)**	-0.003 (2.213)**	-0.002 (21.699)*
R ²		0.999511	0.79665	0.99951	0.99951
Adj R ²		0.978668	0.79880	0.99881	0.99881
F-Statistics		18.20826	143.156	143.8780	143.8780
Jarque Berra		0.0000671	0.000067	0.000060	0.000160
Durbin Watson		3.870099	2.178900	2.767800	3.112800
Redundant Test		155.023 (0.000)*	125.323 (0.000)*	15.323 (0.000)*	85.323 (0.000)*
Hausmant		17.432 (0.014)*	18.432 (0.004)*	18.432 (0.044)*	18.432 (0.000)*
LM test		-	-	-	-

Note: t- statistic is in parenthesis. *1% sig level, **5 % sig level, and ***10 % sig level

The result of the panel data analysis in this study as shown in Table-4uses the panel model, which is the Fixed Effect Model, to compare it with the OLS model. After going through the process of best model selection, by implementing the Chow test and Hausmant test, as well as Multiplier Langrange (LM).The result of panel data is obtained by categorizing MDGs and SDGs data and categorizing the minimum target of PHI input by the government respectively as “zero”percent and 2.5 percent. The result is almost the same, which means that every variable could answer the hypothesis and in accordance to the previous research where the per capita income affect negatively to PHI, both in the MDGs period with zero minimum target and 2.5 minimum target. It could be interpreted that every 0.1 percentincreases in per capita income could decrease the poverty and hunger index as much as 0.5 percent for PHI with zero minimum target and 0.65 percent for PHI with 2.5 percent minimum target. It also can be stated that the dissimilarity in a minimum target that expected to have a poverty decline in each region in Indonesia could differentiate the percentage of poverty and hunger decrease, at the smaller target assigned (2.5 percent), and could also decrease more of PHI because of the rise of income, and has a significant result. Hopefully, this result is also in accordance with the prior researches.

Estimation for SDGs period by the statistic test also prove that per capita income level affect the PHI decline with less significant value if the set minimum target for PHI input is zero. The coefficient value of per capita income level is 0.5 percent, which means that every 0.1 percent increase of population income then the poverty and hunger index will decrease about 0.5 percent. However, this

effect is not as significant at selected alpha values. This result is similar to the one found in a research conducted by Tanziha et al. (2015), which discuss that there are several factors affecting the hunger other than the income. For example, unstable governance, use of environment over its capacity, discrimination and helplessness of kids and women, as well as a limited food subsidy, an increase of food price, that cause reduction of real income. On the contrary, if the indicator of PHI input is set as 2.5 percent, the income will affect PHI decline significantly at confidence equal to 5 percent. This could be interpreted as if there is an increase in people's per capita income as much as 0.1 percent, the poverty and hunger index will decline by approximately 0.8 percent. Based on research by W. Ham and Bellow (2003), food safety identified as a condition when every household has the physical and economic access to an adequate food for every member of the household.

The estimation table shows how education level has an impact on PHI particularly the tertiary education. During the MDGs period, the connection between both indicators is very significant, where the influence of tertiary education to PHI is 0.6. This means that every 0.1 percent upsurge of the population who completed a tertiary education will cause a decline of PHI as much as 0.6 percent. Meanwhile, in the SDGs period, the secondary and tertiary education level has no impact on the decrease of PHI. Associating to a theory by Mao (2012), the factor of education that could not affect the decrease of poverty is because the education is still lacking in developing skill and talent, for skill-based education and proficiency of technology for the students is more suitable as the solution for poverty. Sofian, Amir and Afra (2016) mentioned that practice-based education is the other dimension that could not be abandoned since it could cause the income gap.

Moreover, self employment has no effect on the decrease of PHI. When the PHI input is set as "zero", it means that the self-employment will not affect PHI at all. The author could argue in this case that it seems the way of the government putting a minimum PHI input as zero become the cause of insignificance of these two variables since the influence of this variable is significant when it set as minimum 2.5 percent. For the estimation of the non-agricultural free worker, it matches the expectation and in accordance with the hypothesis both in MDGs and SDGs period, with the two categories of PHI input valued as zero and 2.5 percent. This result also obtained in the previous research that stated: "nationally, a household involved in the non-agricultural free work tend to be considered as not poor compared to someone who merely farming" (Tsiboe at all, 2016; Hazzel & Readon, 2010). Decision makers possess high expectation at the economy of rural people who work in the non-agricultural sector.

V. CONCLUSION

The achievement of Poverty and Hunger Index (PHI) could be influenced by several factors, even though they observed separately between poverty and hunger as done in the previous researches. In this case, PHI achievement and affecting factors were perceived from the quality of life variables such as per capita income level, completed education level, and decent work. The result shows a significant difference if the PHI input data is compared with the minimum target of "zero" and 2.5 percent, as well as categorizing the sustainability development period in MDGs and SDGs.

Generally, it can be concluded that according to the ordinary least square test every variable of quality of life affect the achievement of PHI negatively and they are significant at both MDGs and SDGs period except for the secondary education level. It is visible that the secondary education level affects positively and significant at MDGs period. This result is far from the expected outcome. Moreover, the secondary education level also has a positive impact on PHI but it is not significant. As for the resulting test of Ordinary Least Square model, it could be concluded without looking at the influence of time and regional differences that this result is more significant.

The estimation result using Fixed Effect Model inform that the test result of PHI input with a minimum target of "zero" is more significant and answer the hypothesis, which means that the quality of life affect PHI. However, the SDGs period with a target categorized as "zero" has no outcome that answers the hypothesis as expected in the variable of per capita income level. On the other hand, PHI input targeted as 2.5 percent give a contrasting result. It can be concluded that target "zero" looks like a forced target, so it could not be achieved in any improvement of income. Meanwhile, the 2.5 percent target is the minimum target of PHI input which more flexible and compromises since it could indicate the significance between variables.

The outcome of this research is expected to be a consideration in government decision to decide the right policy regarding sustainable development, especially for SDGs period in 2016-2030. PHI could be transcript according to the target if the government concerns more in the instrument of quality of life. It is expected Through this research could provide a more applicable solution which beneficial for all parties involved in the sustainability development, so the goals of SDGs program "zero goal" in 2030 could happen. It would be better if this research was conducted qualitatively with a large sample to ensure the target of "zero Goals" of sustainable development goals.

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