Do Population and Income Influence on Consumption Pattern in Indonesia?

SRI KURNIAWATI
UniversitasTanjungpura

YULIANINGSIH
UniversitasTanjungpura

ABSTRACT

This research aims to analyze public consumption pattern related to the level of income and population in Indonesia. Basically, public consumption spending is categorized into two types of use, namely spending for food and spending for non-food. Public consumption pattern can be influenced by economic and social factors, or in other words, there are different patterns of public consumption spending as well as low and high income, as well as poor, medium or rich-categorized public households.

According to data, increased income in Indonesia is not followed by increased portion of non food consumption. Meanwhile, the data shows that increased population is certainly followed by increased spending on consumption for food and non food. By using multiple regression analysis of fixed effect model, it is found out that income and population influence positively and significantly on spending of consumption on food and non food in Indonesia.

Keywords: Food consumption, non foodconsumption, income, population

INTRODUCTION

Indonesia public consumption pattern can be considered according to its user allocation. Basically, public allocation of consumption spending is categorized into two groups of use, namely spending for food and spending for non-food. Welfare level is said to get better, if the spending for food consumption tends to increasingly decrease. On the other way, spending for non food consumption increasingly increased. There is different pattern between consumption spending for food and spending for non food it is related to income.

Along with increased income, public starts to be have capability for non food consumption spending and there will be decreased proportion of food consumption. This then can be a new benchmark on public standard of living. It is not only by seeing at total consumption spending or total growth of consumption spending, but also consumption allocation as the basic of measurement. Whether most of income is allocated to food spending as still low income and low standard of living indicators or most of income is allocated for non food spending.

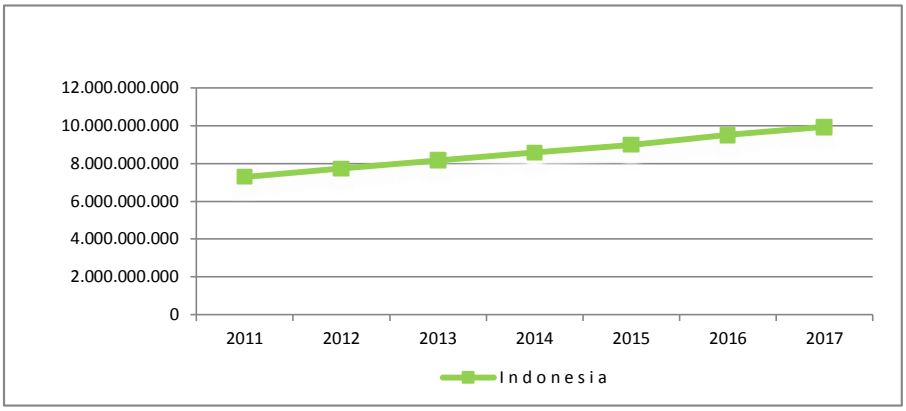


Figure 1. Gross Domestic Product on Basic Constant Price in 2010 Indonesia In 2011-2017 (Billion Rupiah)

According to the data from Biro PusatStatistik (BPS), Indonesian GDP keeps increasing (figure 1) also with the number of population (Figure 2) in the period of 2011 until 2017. The increase tends to also increase public consumption that can be seen from improvement of increased welfare. But, if studying deeper, most provinces in Indonesia are still dominated by food spending. Out of 34 provinces, there are only 12 provinces with public consumption spending that is dominated by non food spending (figure 3).

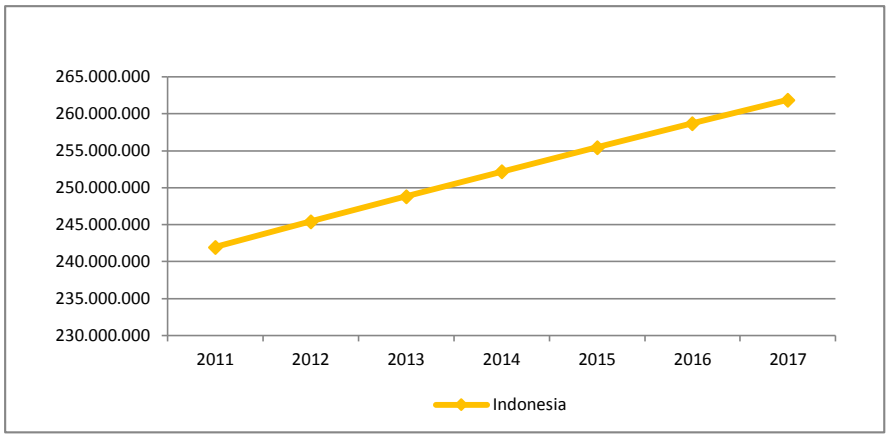


Figure 2. Number of Indonesian Population in 2011-2017 (people)

If seeing again at the statement that public welfare can be measured by changes on consumption pattern from food to non food by increased income and number of population, then this research has a question namely whether any effects income and population on food and non food consumption to Indonesian society? This is based on the facts stating that stable increasing income and spending are not followed by changes of consumption pattern from food consumption to non food.

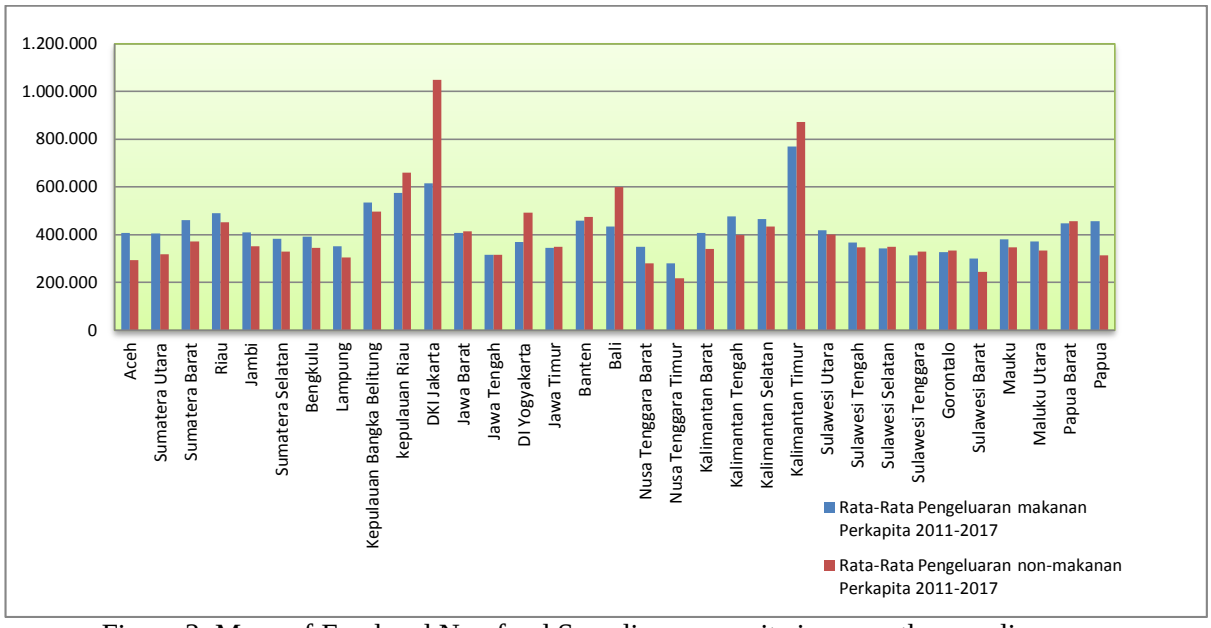


Figure 3. Mean of Food and Non food Spending per capita in a month according to provinces in Indonesia in 2011-2017(Thousand Rp). *Source :*Central Statistics agency (2018)

LITERATURE REVIEW

Correlationof income and consumption level is illustrated by Keynes through consumption function C = f(Y), in which C is consumption and Y is income. In the consumption function,Keynes stated that currently consumption relates directly to level of income. But in proportional increased consumption with the increased income is caused by most of the society also utilizes their increased income for saving (Mankiw, 2003).Discussion on consumption is inseparable from concept of *Marginal Propensity to Consume* (tendency of consuming) and*Marginal Propensity to Saving* (tendency of saving). one's increased income will be used to increase consumption and savings with proportion not more than 1. If the MPC> MPS value, it can be said that a person will increase his consumption more than the savings if his income increases.

Meanwhile, the correlation between population and food is delivered by Malthus in his book "*Essay On The Principle Of Population*" which states that population growth follows a series of measurements while growth of food availability follows a series of arithmetic (Samuelson and William, 1992). Population growth can include the number of family members (number of dependents), number of poor and rich people, age structure, and others. Increasing number of population will lead to more desire to consume both food and non-food.

Earnest Engel (1857) (in Mankiw, 2000 and Holcomb, et al, 2014) states that more income leads to smaller part of income to be used for consumption, and the other way around. Poorer households devote a higher share of income to food than richer households. According to consumption theory, consumption patterns vary according to household income levels, high-income households tend to allocate smaller percentages for daily needs such as food and clothing and higher expenses for luxury goods (Ismail and Abu Bakar, 2012)

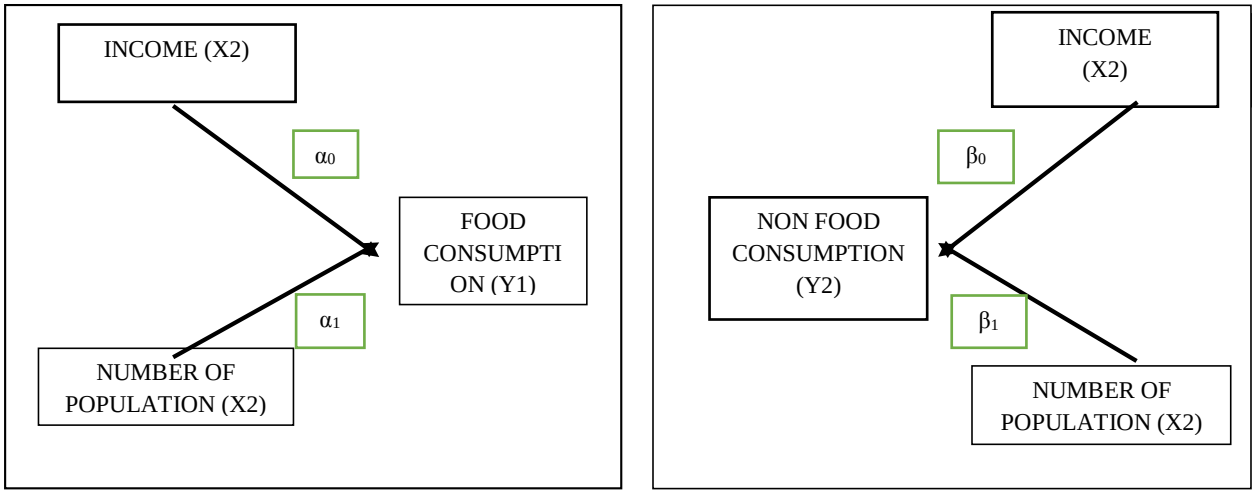
Explaining the influence of income on consumption for both food and non-food can be started from several previous studies such as Guo, et al (2000) who found structural changes in the influence of income on food consumption in China 1989-1993, by calculating the income elasticity shown to increase income shifting consumption food for the inferior food category and normal food. Inferior goods are goods whose demand will decrease along with increased public income.

Using simple regression analysis on meanreal income and food spending by household variables, Syrovatka (2003) found that the Engel Law is valid in the Czech Republic with the result that there will be decreased proportion of food spending if there is increased real household income. But according to Khan (2014), household consumption is not only influenced by current level of household income but by the highest level of income achieved previously and other household consumption patterns.

Onanuga, et al (2015) found that Keynes's theory applies in Nigeria with positive intercept values and income coefficients on the consumption even though in the short term MPC (0.78) is smaller than APC (0.88). To increase the MPC, there must conduct some efforts namely to create jobs, increase agricultural output through sustainable agricultural policies, and increase wage rates in the public and private sectors.

METHODOLOGY

Type of research used is explanatory with quantitative approach namely describing relation between variables with mutual effects. In this research, there are two independent variables related to describe a symptom of two dependent variables. The data used is the panel data namely combination of time series data and cross section data, concerning PDRB, number of population, food consumption spending and non food consumption spending in 33 provinces in Indonesia in the period of 2011 until 2017. Analysis on income and number of population effects on food and non food spending can be illustrated in the following conceptual framework.



By using such conceptual framework as shown in Figure 4, then the analysis method used is multiple linear regression model as follow:

$$LogY_{1,it} = \alpha_0 + \alpha_1 LogX_{1,it} + \alpha_2 LogX_{2,it} + \mu_{it} \quad \ldots\ldots (1)$$
$$LogY_{2,it} = \beta_0 + \beta_1 LogX_{1,it} + \beta_2 LogX_{2,it} + \varepsilon_{it} \quad \ldots\ldots (2)$$

In which:

Y_1 = Spending of food consumption
Y_2 = Spending of non food consumption
α_0, β_0 = Constanta
α_1, α_2, β_0, β_1= Coefficient of independent variables
X_1 = PDRB (thousand rupiah)
X_2 = number of population (people)
i = number of unit cross section (province)
t = showing certain period of time (year)

The panel data will be analyzed using multiple linear regression model with two dependent variables and two independent variables. Chow test was then conducted to compare the fixed effect model with the common effect and the Hausman test was to compare fixed effects with random effects. The hypothesis in this study states that income and population have significant effects on food and non-food consumption in Indonesia.

To determine the sensitivity level of food and non-food consumption spending on any factors affecting on it, namely income and population, it will used the concept of elasticity. The magnitude of the elasticity value in this model can be seen directly from the magnitude of regression coefficient values of its supporting variables (Gujarati, 2006).

RESULT AND DISCUSSION

From the results of the model testing, it is found that the fixed effect model is the best, thus the regression results for equation (1) can be presented as follows:

TABLE 1.Regression Results for the equation(1)

Variables	Coefficient	Std. Error	t-Statistic	Prob.	Information
(Konsumsi Makanan) C	-40.62865	2.392071	-16.98472	0.0000	-
LOGPDRB (X1)	0.823579	0.070710	11.64729	0.0000	Significant
LOGJumlahPenduduk (X2)	2.497754	0.233629	10.69111	0.0000	Significant
R-squared	0.970313				
F-statistic	188.4177				
Prob(F-statistic)	0.000000				

Source: Data diolah

The following equation is the result of hypothesis testing for the equation (1):

$$Y_1 = -40{,}63 + 0{,}82X_1 + 2{,}50X_2 \ldots\ldots\ldots (3)$$

Research results shows that income and population have positive and significant effects on the spending of food consumption in Indonesia. Sensitivity of food consumption to changes in the affecting variables can be seen from each variablecoefficientin which each 1 percent increase in PDRBleads to increased food consumption by 0.82 percent, while every 1 percent population growth will lead to increased food consumption by 2.5

percent. This shows that changes in food consumption are more sensitive to changes in population than PDRB.

Increased income can cause increase consumption, in other words, Keynes's Theory can be applyin Indonesia. There are 15 components including in the consumption of food namely grains, tubers, fish, meat, eggs and milk, vegetables, nuts, fruits, oils and fats, beverage ingredients, spices, other consumption, processed foods, alcoholic beverages, tobacco and betel. There will be increased consumption of these components by increased income of Indonesian people.

Increased population will certainly increase the demand for 15 components of food, the need for food will continue to increase in order to meet the basic needs of people's lives and serve as indicators to see the level of public welfare. Varied public needs both in quantity and quality require them to be more careful in making choices, especially for low-income people.

The results of this study are in line with research by Syrovatka (2003), Sangaji (2009), Ismail and Abu Bakar (2012), Sitanggang (2014), and Onanuga, et al (2015).

TABLE 2.Regression Results forequation(2)

Variable	Coefficient	Std. Error	t-Statistic	Prob.	Information
(Konsumsi Non Makanan) C	-47.78450	2.757581	-17.32841	0.0000	-
LOGPDRB (X1)	0.886044	0.086426	10.25204	0.0000	Significant
LOGJumlahPenduduk (X2)	2.886131	0.274087	10.52998	0.0000	Significant
R-squared	0.981549				
F-statistic	306.6691				
Prob(F-statistic)	0.000000				

Source: Data diolah

The followingequationis the result of hypothesis testing for the equation(2):

$$Y_2 = -47{,}78 + 0{,}89X_1 + 2{,}89X_2 \ldots\ldots\ldots (4)$$

There is a similar issue found out to the non-food consumption that income and population also have positive and significant effects. This is according to Engel's Law stating that non-food consumption will increase when public income was increased, although it is seen that non-food consumption is more sensitive to changes in population than changes in GRDP. Non-food consumption will increase by 2.89 percent if the population increases by 1 percent. Whereas non-food consumption will only increase by 0.89 percent with an increase in GDP at 1 percent.

People who have fulfilled needs for food will easily increase their non-food consumption, especially for high-income people. There are 9 components including in non-food consumption namely housing and household facilities, goods and services, education, health, clothing, footwear and head cover, durable goods, taxes and insurance, party and ceremony needs.

The results of this study are similar to the research conducted by Guo, et al (2000), Adiana and Karmini (2012), Donkoh and Amikuzuno (2011) and Wuryandari (2015) which

the study results also concluded that income has significant effects on non foodconsumption spending.

In Indonesia, there is still higher portion of food consumption than non-food consumption, this is caused by still a high level of poor population even though it has continued to decline over the past eight years. According to BPS data, in March 2018, the number of poor people (population with per capita spending per month below the Poverty Line) in Indonesia reached 25.95 million people (9.82 percent), reduced by 633.2 thousand people compared to the conditions in September 2017 which there were 26.58 million people (10.12 percent). In detail, the percentage of poor people in urban areas in September 2017 was 7.26 percent, decreasing to 7.02 percent in March 2018. Meanwhile, the percentage of poor people in rural areas in September 2017 was 13.47 percent, decreasing to 13, 20 percent in March 2018.

It is hard for poor people to switch to non-food consumption because there is still lower income increase level than increased food prices, so that to meet their food consumption, they are still facing difficulties, moreover to switch to non-food consumption. There is greater role of food commodities on the poverty line than the role of non-food commodities (housing, clothing, education and health). The contribution of the Food Poverty Line to the Poverty Line in March 2018 was recorded at 73.48 percent. This figure increased compared to the conditions in September 2017, which amounted to 73.35 percent.

Types of food commodities with major effects on the value of Poverty Line in urban and rural areas are rice, filtered clove cigarettes, broiler eggs, broiler meat, instant noodles, and granulated sugar. Whereas non-food commodities with major effects on the value of the Poverty Line in urban and rural areas are housing, gasoline, electricity, education, and toiletries.

The following is the data on the poor population and the comparison of the mean spending per month for food and non-food consumption throughout 2011 to 2017 in Indonesia.

TABLE 3. Percentages of poor population, mean of spending of food and non food consumption per month in Indonesia in 2011-2017

Years	Poor population (%)	Mean of food consumption (Rp)	Mean of non food consumption (Rp)
2011	9,23	293.556	300.108
2012	8,60	323.478	309.791
2013	8,52	356.435	347.126
2014	8,16	388.350	387.682
2015	8,22	412.462	456.361
2016	7,73	460.639	485.619
2017	7,26	527.956	508.541

Source: BPS, 2018

During 2011 to 2017, there was decreased percentage of poor people in Indonesia by 2 percent, meanwhile, spending on food and non-food consumption continued to increase. In 2011, the mean consumption spending was Rp. 293,556 lower than the non-

food consumption spending, which was Rp. 300,108. But in 2012 to 2015,spending of food consumption was higher than spending for non-food consumption. Even though in 2015, non-food consumption spendingcould be higher above food consumption spending, but in 2017, food consumption spending was above non-food consumption spending.

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