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Exploring the Relationship between Tobacco Consumption and Food Consumption

Novaldi Dwi Purnama[1], Ajeng Septia Mutiara[2], Irgiana Faturohman[3], Muhammad Din Fahmi Rahman[4] , Vita Karima[5]

[1]*Jurusan Administrasi Niaga, Politeknik Negeri Bandung, Bandung 40012*
E-mail: novaldi.dwi.mpem415@polban.ac.id
[2]*Jurusan Administrasi Niaga, Politeknik Negeri Bandung, Bandung 40012*
E-mail:ajeng.septia.mpem415@polban.ac.id
[3]*Jurusan Administrasi Niaga, Politeknik Negeri Bandung, Bandung 40012*
E-mail:irgiana.faturohman.mpem415@polban.ac.id
[4]*Jurusan Administrasi Niaga, Politeknik Negeri Bandung, Bandung 40012*
E-mail:muhammad.din.mpem415@polban.ac.id
[5]*Jurusan Administrasi Niaga, Politeknik Negeri Bandung, Bandung 40012*
E-mail:vita.karima.mpem415@polban.ac.id

ABSTRACT

Many people assume that cigarette consumption absorbs substantial household expenditures that affect the purchase of other food items for consumption. This study aims to evaluate whether there is a relationship between people spending on cigarettes with people expenditure on food. The data used is the average per capita monthly expenditure in 2013-2017. This data is obtained from data publication of Badan Pusat Statistik (BPS). The method used in this research is correlation analysis. The result shows that the expenditure on cigarettes has a significant relationship with some foodstuffs. This finding suggests that some of the foodstuffs are not the primary consumption of food. This result occurs most likely due to indicates that the increasing people's income.

Keywords
 Tobacco consumption, food consumption, consumption,income, expenditure

1. INTRODUCTION

Indonesia experienced a significant economic growth in recent years. This phenomenon makes a continuous economic development and growth. According to Badan Pusat Statistik, Indonesian economic rises positively of 5.19% in 2017. This is a good improvement if compared with the previous year which reached 5.03% [1]. The Increase of Indonesia's economic growth can support the community in conducting economic activities such as consumption activities.

Based on economic dictionary, consumption means human actions either directly or indirectly to dispose of the usefulness of an object used for the final satisfaction of needs. This is supported by Gilarso [2], that consumption is the starting point and final goal of all economic activities of the society. Consumption action carried out every day by anyone, with the aim to obtain the highest satisfaction to meet the needs both of primary needs or secondary needs. On the whole, consumption activities are carried out continuously will lead to consumption patterns for a person or society itself.

Consumption pattern is one of the indicators that can be used to measure the level of prosperity in a country. The higher the expenditure used to buy goods and services, the higher the level of welfare of the society. Motives and patterns of household consumption differ from one to another, this is due to the different income and consumption needed [3]. The relationship between income and consumption patterns is in accordance with those described in Keynesian theory [4]. It is also a psychological process that undermines the actions of consumers since pre-purchase, when the purchase takes place and when consumers choose to stop using their goods or services [5]. Where the consumption of a person or society is determined by his own on their level of income, otherwise, if there are any other factors exist, it doesn't have a strong affect.

The food consumtion pattern in Indonesia is also increasing every year, but still with rice in a single consumption pattern. The high public dependence on rice is not only caused by the reason that rice can be source of energy but also this commodity can be the high source of protein. Besides, Indonesian also consume lots of food such as

tubers, fish, meat, eggs and milk, vegetables, nuts, fruits, oil and fats, drinks, spices, and other consumption.

Table 1. Average per capita monthly expenditure by group of goods (rupiah) in 2013-2017

Foodstuffs	Year				
	2013	2014	2015	2016	2017
Grains	57,956	60,235	66,929	64,566	61,455
Tubers	3,151	3,566	4,470	5,057	5,764
Fish	28,356	31,849	32,041	33,620	40,478
Meat	13,252	14,980	18,048	20,526	24,987
Eggs and Milk	21,540	23,923	26,616	28,025	29,357
Vegetables	31,158	30,068	27,365	34,505	42,397
Nuts	9,444	10,328	10,003	10,349	11,252
Fruits	16,379	19,243	20,174	19,268	22,850
Oil and Fat	11,545	12,691	13,154	12,705	13,588
Beverages	13,385	13,461	14,729	16,019	17,078
Spices	6,783	7,374	8,349	9,166	9,656
Other Consumption	7,302	7,768	9,008	9,443	10,909
Finisihed Food	92,254	103,762	109,968	133,834	172,600
Tobacco	43,930	49,102	51,608	63,555	65,586

The Increase of Indonesian economic is not only affecting to the consumption of people on food but also impacting to tobacco consumption which also increases every year. Indonesia is the 4th largest countryof tobacco consumption in the world. Global Adult Tobacco Survey (GATS) in 2011 stated that the number of tobacco users reached 61 million people or as much as 36% of the total population of Indonesia. In September 2014, Indonesian tobacco consumption reached 6.03%, while in September 2015 tobacco consumption increased to 6.79% of the average monthly expenditure [6].

Economic development in Indonesia is considered to have an impact on the increase of public consumption of staple food and also tobacco. Based on this matter, it is interesting to do an analysis, especially about expenditure and food consumption pattern in Indonesian society. This research generally aims to explore the relationship of cigarettes purchase and food consumption pattern in Indonesia.

2. LITERATURE REVIEW
2.1 Cigarette
Smoking habits for Indonesian society today become commonplace and prevalent thing. Indonesian people assume that cigarette is an essential requirement that must be met every day, even in some cases some people feel incomplete if after doing something not equipped with cigarettes. This makes the consumption of cigarettes as a regular thing for some people in Indonesia. According to data released by WHO, Indonesia is the world's 3rd largest contributor to smokers after China and India with 35 percent of the population

or about 75 million people [7]. This is clarified with data obtained fromtabaccoatlas.org [8] states that every Indonesian smoker consumes 1,675 cigarettes each year and may continue to increase. Indonesia's cigarette consumption pattern now is the focus for the government, because massive growth from year to year can cause severe socio-economic impacts, such as triggering inflation and disease for the people. For certain groups of people cigarette consumption may be the main intake compared to other consumption, it is reported that spending on tobacco is three times that of children's education expenditures, and 4.3% of family health expenses. In addition, the head of a family who smokes will be more interested in buying cigarettes than the consumption of other materials [9]. According to a survey conducted by GYTS [10] said that, in Indonesia the total expenditure of tobacco spending compared to other expenditure is 2 times bigger than fish expenditure, 5 times bigger than milk and egg expenditure, 6 times bigger than cost Education, 7 times bigger than fruits shopping, and 11 times bigger than meat shopping, It becomes problem because cigarette is not a staple that must be fulfilled everyday, even on the other side of cigarette have impact which is not good for health.

2.2 Food
Food Law (UU) No. 18 of 2012 explains that food is anything that comes from biological sources of agriculture, plantation, forestry, fishery, livestock, aquatic and water products, whether processed or unprocessed for food or beverage for human consumption, including food additives, foodstuffs, and other materials used in the process of storage, processing, and or the manufacture of foods and beverages. According to Khaeron [11], foods are a basic need for humans. Foods are also useful for building cells in the body and keeping them healthy and functioning as they should. Supported by Syah [12], food is not just a source of calories, protein, minerals, and vitamins but also important for the sensitivity of thought and intelligence.

Food is a primary need that cannot be delayed to support the survival. Based on Badan Pusat Statistik, foodstuffs include whole grains (rice, maize, wheat), tubers (cassava, sweet potato, potatoes, sago, other bulbs), fish, meat, eggs and milk, vegetables, beans (soybeans, peanuts, green beans, other nuts), fruits, oils and fats (coconut oil, palm oil, other oils), beverages, spices, finished food and beverages, others. When viewed from the data per year, it appears that in general per capita expenditure to consume food increases. This is

allegedly related to the income level of Indonesian society.

2.3 Consumption

Consumption can be interpreted as a form of fulfilment, both for food needs and non-food needs. According to Mankiw and Al [13] consumption has a meaning as spending of goods and services by households. The meaning of goods here includes household expenditures on durable goods, such as vehicles and household equipment, and for non-durable items such as food and clothing. Whereas for the meaning of services here includes intangible goods. For examples such as haircuts, health care and education. so It can be concluded that consumption is not limited to food and beverages, but also includes on non-food goods and services. Dominick [14] adds that the purpose of consumption is to maximize total satisfaction derived from the use of his income.

By looking at the data, Indonesia is a developing country with the largest level of food consumption. This shows, that the level of Indonesia's economy is still weak. However, referring to the economic improvement from year to year, this can affect the consumption patterns of Indonesian society. With the increase of the economy, whether the amount of expenditure on goods or services will change or not and can it affect the selection of a good or service will be consumed by a person.

2.4 Consumption Theories

There are several theories about consumption. First, its Jhon Maynard Keynes that argues the amount of household consumption depends on the income generated. The comparison between the magnitude of consumption and income is called Keynes as Marginal Propensity to Consume (MPC). MPC is used to measure that the greater the income, the level of household consumption is also high, and vice versa, but it's contradict with the theory of Franco Modigliani that assumes the amount of consumption, should not depend on the basis of income. Because in essence, the income itself varies greatly, that is, when a person can still manage his income from savings when income is low, high, or no income e.g due to a pension that has been paid upfront, and so forth. Modigliani consumption theory is called the Life Cycle Hypothesis. This theory explains that the amount of consumption depends not only on the amount of income, but also on the amount of wealth owned, where this wealth can be generated through savings, investment, income allowance, inheritance, and so forth.

James Dusenberry has also that theory, he said consumption theory suggests that the amount of consumption of a person and society depends on the highest income that the person or society has ever owned or achieved. The Dusenberry theory is based on two assumptions that are interdependent and irreversible. Interdependent is the large consumption of a person influenced by the amount of consumption of others while irreversible is the level of consumption expenditure that adjusts to the amount of income owned. But Maynard Keynes [15] on Irving Fisher view, consumption theory is the consideration that a person to make consumption based on current conditions and conditions in the future. Where the two conditions will determine how much income will be saved, and how much income will be spent or spent for consumption purposes. But in this study is limited only based on the theory of John Maynard Keynes because in accordance with the variables that will be tested for the effect of income on consumer goods expenditure.

2.5 Keynes Theory

John Meyer Keynes is a macroeconomist who contributes a lot in discovering economic theories and methods. The theory of consumption is one of Keynesian approach which often used as researchers' reference. According to Puhardjo [16], current consumption depends on current ready to spend revenue (disposable income). It means, both of income received and human's consumption patterns are related to each other. A person who has higher income will have higher consumption and vice versa.

Keynesian theory said "if our income increases, our consumption also will be increase. So, there is a limit of consumption that must be fulfilled even with the income level of the person in zero position which is called autonomous consumption." [4].
The equation function of Keynesian consumption theory:
$$C = C_0 + bYd$$
Where:
C = Consumption
C_0 = Autonomous consumption
b = Marginal Propensity to Consume (MPC)
Yd = Disposable Revenue
$0 \leq b \geq 1$

Noteworthy in the Keynesian consumption functions are; First, it is real variable, Rahardja&Manurung [4] said that consumption function shows the relationship between incomes and consumption expenditures are both expressed by using the constant price level, not the

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relationship between the nominal income with nominal consumption expenditure. The next point is represents the revenues, not the income previously obtained and not the expected revenue in the future. And the last, It is an absolute income, not a relative income or a permanent income, as noted by other economists.

2.6 The Proposed Model
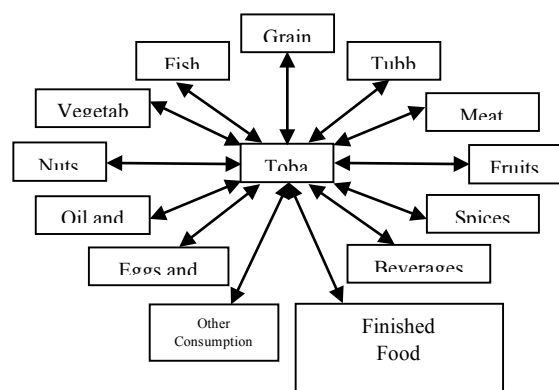
Figure 1. Research model

Figure 1 illustrates the research model under study based on the data obtained. In the model research, tobacco or cigarettes as independent variables are described as having a relationship with some foodstuffs as a dependent variable. Researchers want to know more deeply whether right spending on buying cigarettes has a connection with spending to purchase food.

3. RESEARCH METHOD
3.1 Research Design
This research is a quantitative research. There is one independent variable and thirteen dependent variables. The purpose of this study is to describe the relationship between the allocation of public income expenditure on the purchase of cigarettes with the pattern of food consumption.

3.2 Data Source
The data used in this study is secondary data, which collected by other parties for specific purposes [17]. he data is time series, where the data has a period of five years from 2013-2017. This information is the result of the processed National Socio-Economic Survey (Susenas) published by Badan Pusat Statistik. Susenas data used in this study is Average monthly per capita expenditure by a group of goods.

3.3 Data Analysis
Data is processed by using correlation analysis. Correlation analysis is used to find out the strength or weakness of the relationship between dependent variables [18]. Relationship between variables can be seen based on the results of calculating the correlation coefficient. The relationship between variables is unidirectional if the correlation coefficient is positive, and the relationship variable is opposite if the correlation coefficient is negative. The testing method is using bivariate correlation analysis.The correlation coefficient can be seen from the value of pearson correlation contained in the table of correlation analysis.

4. RESULT AND DISCUSSION
Table 2. Pearson correlation value table on correlation test

Variable	Tobacco
Grains	0,410
Tubers	0,960**
Fish	0,872
Meat	0,951*
Eggs and Milk	0,945*
Vegetables	0,776
Nuts	0,844
Fruits	0,774
Oil and Fat	0,727
Beverages	0,963**
Spices	0,971**
Other Consumption	0,926*
Finisihed Food	0,930*

**Correlation is significant at the 0,01 level (2-tailed)

*Correlation is significant at the 0,05 level (2-tailed)

Based on the correlation analysis of the existing food commodity variables, it can be seen that some food commodities have a strong correlation with the expenditure allocated to buy cigarettes, which are tubers, meat, eggs and milk, drinks, spices, other consumption and finished food. It can be seen from the value of pearson correlation obtained by each variable is higher than 0.5 (see table). This finding means that the average public income expenditure allocated to buy cigarettes can affect the purchase of food commodities that have a strong correlation rate. The results of the correlation analysis showed a positive correlation value, this shows that the higher expenditure incurred to buy cigarettes, the higher the expenditure incurred to buy the food.

From the results of existing correlation analysis, researchers assume that the higher consumption of cigarettes is caused by the higher income people. We can see that the food that has significant correlation, i.e. tuber, meat, egg and milk,

beverages, spices, other consumption and finished food, the group can be categorized as food which is not the main consumption of society, where the community will buy the food when they have more money or food that becomes the main consumption has been met. So when the expenditure allocated for cigarette purchases increases, it can be indicated that the income of the community also increases.This is what makes people can buy food that is not their main consumption such as tubers, meat, eggs and milk, drinks, spices, other consumption and finished food. The result in line with Sukirno [19], that stated someone's consumption is directly proportional to his income. A person with greater income, will has greater consumption too. When the level increases, the ability of household to buy variety of consumption needs will be greater and their life pattern also changes.

The results of the correlation analysis also show that the expenditure allocated for cigarettes does not have a significant correlation with some foods, such as grains, fish, vegetables, nuts, fruits and oils and fats. Researchers assume that these foods are a basic consumption that must be met in every day life. So, when the expenditure allocated for cigarette purchases is increasing which indicates that the income of the community also increases, the expenditure on this basic consumption will not increase because the expenditure for purchasing the food group has been budgeted even though the income does not increase. Therefore, people prefer to allocate such income to purchase food in the form of cigarettes, tubers, meat, eggs and milk, beverages, spices, other consumption and finished food, so the expenditure allocated to buy such types of food is also increased. This is also in line with Engel's law that stated, the percentage of consumption expenditure for home expenditure is relatively fixed and does not depend on income level. Therefore, grains, fish, vegetables, nuts, fruits, and oil and fat have insignificant result because they are the main food consumption expenditues [20].

5. CONCLUSION

From the results of research obtained, it can be concluded that:

1. Spending on cigarettes has a direct relationship with the consumption of some foodstuffs, such as tubers, meat, eggs and milk, beverages, spices, other consumables and finished foods, meaning that when cigarette expenses increase, the food also increases. Judging from the type of food, the food group is not the main consumption group of the community.

2. Spending on cigarettes has no significant relationship with the consumption of some foods, such as whole grains, fish, vegetables, beans, fruits, oils and fats. meaning that when expenditure on cigarettes increases then the expenditure for the purchase of food will not increase. Viewed from the type of food, the food group is the main consumption group of society.

3. A one-way relationship between cigarette expenditure and consumption of some foodstuffs indicates that this is due to the increase in the income of the community.

6. IMPLICATION AND SUGGESTION

The results show that if cigarette expenditures increase, then expenditures for tubers, meat, eggs and milk, beverages, spices, other consumption and finished foods also increase. The results of this study can have implications on different perspectives, among others: (1) Implications for food companies, (2) Implications for tobacco companies, and (3) Implications for government regulation.

1. The Implication for food companies. Finished food is one of the foods that have a significant relationship to tobacco. According to data on average per capita spending per month according to Badan Pusat Statistik (BPS) 2018, finished food becomes food with the most expenditure consumed by the people of Indonesia. This can be an opportunity for companies to create and develop more finished food and beverage products that have great potential for consumption by the public. For product specifications, the company can produce foods and beverages containing milk, oranges, lemons, pomegranates, celery, legumes, and teams according to F Joseph McClernon, PhD, a psychologist from Duke University can reduce the unpleasant taste of cigarettes. By building brand positioning into a product that can help to stop smoking, then the product will make smokers little by little can reduce smoking habits.

2. The Implication for tobacco companies. Based on data obtained from Badan Pusat Statistik (BPS) which shows that most tobacco companies in Indonesia still use tobacco from outside, coupled with foreign cigarette companies increasingly erode local companies, both of which can be bad for the state economy. The government should take immediate action to address the problem, restrictions on tobacco imports for companies need to be done to protect local tobacco so that the income earned by local farmers will

increase. Although some companies argue that local tobacco has not been able to meet the needs of tobacco consumption, but it is not impossible to do considering the extent of land that can be done in various areas of Indonesia, this restriction can also reduce the consumption of Indonesian cigarettes, where the less tobacco stock then there is no longer any excuse for the government not to raise the price of cigarettes.

3. The Implication for government regulation. Cigarettes are an economic commodity that gives huge benefits to industry and society because it creates more job opportunities. Cigarettes or tobacco also contribute substantially to state revenues, but many problems arise from cigarette consumption for the majority of the population so the government needs to make regulations that protect all parties concerned. The most effective effort to reduce cigarette consumption in the community is through the increase in tobacco prices through taxes. According to Wibisana, Widyastuti; et, al, on [21], the increase in taxes does not reduce the income of the state but will increase state revenues that can later be used to build a particular health program. With the 10% increase in taxes, it has been shown to reduce tobacco consumption by 4% in developed countries. And a 7% tax increase lowers tobacco consumption to 8% in low-income countries.

For suggestion, the results of research that researchers obtain in this study can be used as a reference as a literature review to explore the problem of public expenditure relationship with the pattern of food consumption. In addition, the study can also be used as a reference to know also the relationship to non-food consumption patterns. The results of this study can be published to the public with the aim of educating. So that people will get useful information.

7. LIMITATION

The author realizes that there are still many limitations contained in the writing of this report. Limitations in this study are on the number of samples used. The data are taken from BPS only describes the condition for five years, which means that the sample used is only five. It is possible that the results of the treated data are biased. Also, this study only examines the extent of food commodities alone are not accompanied by non-food commodities. Therefore, research on non-food commodities can be done next time.

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