The Effect of Poverty, Cigarette Prices and Cigarette Production on Cigarette Consumption in East Java Province

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Abstract

This study aims to determine the effect of poverty, cigarette prices, and cigarette production on cigarette consumption in East Java Province. The data used in this study were obtained from BPS, Worldbank, and the Directorate General of Plantation with a span of 4 years starting in 2019-2022. This study uses panel data regression analysis and the results obtained are Poverty, Cigarette Prices have a positive effect on Cigarette Consumption. While Cigarette Production has no effect on Cigarette Consumption. And together Poverty, Cigarette Prices and Cigarette Production affect Cigarette Consumption

Kata Kunci *: Poverty, Cigarette Price, Cigarette Production and Cigarette Consumption*

Abstract

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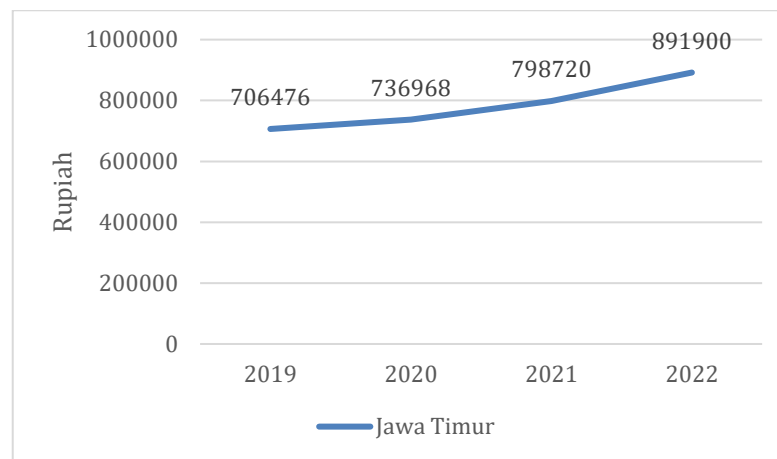***Keyword****s: Poverty, Cigarette Price, Cigarette Production and Cigarette Consumption*

INTRODUCTION

Cigarette consumption is increasing every year. In 2021, the number of active smokers in Indonesia was recorded at 69.1 million smokers. According to data

(WHO, 2021), the number of Indonesian smokers has been increasing since the last ten years. This has led to increased poverty and poor health. From research (Holly Herawati, 2010) argues that smoking causes various diseases such as cancer, tumors and especially those related to breathing. Then according to research (H. Sari et al., 2017) argues that smoking causes an increase in individual or household poverty because it diverts spending on basic needs such as food, education, and health into cigarette consumption.

In East Java province, which is the area with the largest tobacco production, and also one of the provinces with the highest cigarette consumption in Indonesia, there has been a significant statistical increase in cigarette consumption in the past four years. According to BPS data in 2019 the average cigarette consumption in East Java was 706,476 rupiah, increasing by 26 percent within four years to 891,900 rupiah in 2022.
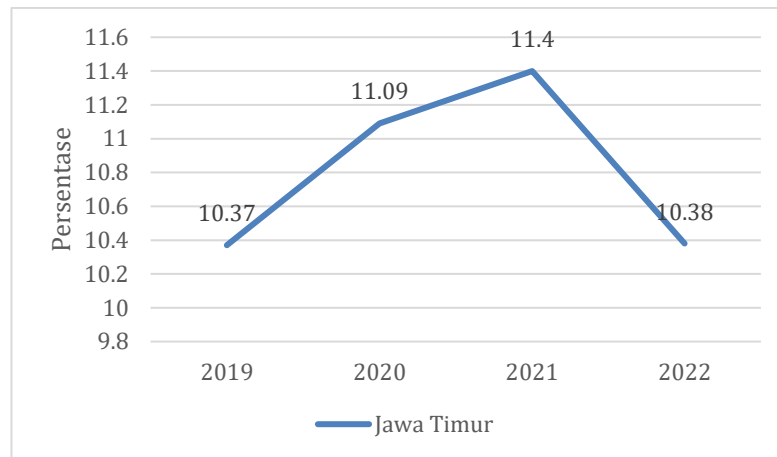

Source : BPS 2022 processed
Picture 1. cigarette consumption in east java

Cigarette consumption in East Java also ranks second in the monthly food commodity expenditure data, released by the National Socio-Economic Survey (SuSenas) above grains and vegetables. That is, 6.38 percent, while grains and vegetables only account for 5.67 percent and 3.92 percent of monthly expenditure. This condition can trigger an increase in the poverty rate. Because the poverty rate is calculated from (basic needs approach), namely consumption or expenditure on basic needs equalized to 2100 calories per capita.

Cigarettes are not included in expenditure that can be counted in basic needs, so the high rate of cigarette consumption can lead to reduced expenditure on other basic needs, causing poverty. Conversely, research (A. M. D. Sari, 2016) explains that poverty itself affects the level of cigarette consumption of the population, where poor people tend to consume more cigarettes than the established population, this is called consumptive behavior. So the higher the poverty rate will increase the level of cigarette consumption. According to (Mowen & Minor, 2002) consumptive behavior is consuming behavior that is not based on consideration and planning but

on pleasure and feelings. In line with this, data from the Indonesian Association of Public Health Experts (IAKMI) explains that 70 percent of smokers come from poor people.

Source : BPS 2022 processed
Picture 2. Poverty in east java

Based on the figure above, it can be seen that poverty data in East Java fluctuates but tends to increase. In 2019 it was 10.37, an increase of 1.03 percent in 2021 and a decrease in the year to 10.38 percent in 2022. One of the ways that can be taken to reduce poverty and cigarette consumption is to increase cigarette prices, because price is a factor that can be considered by someone in buying a product. According to research (Arifatun et al., 2020) shows that cigarette prices have a negative effect on cigarette consumption. If the price of cigarettes increases, cigarette consumption decreases, on the contrary, if the price of cigarettes decreases, cigarette consumption increases, this is also in accordance with the law of demand. From the increase in cigarette prices, the population will rethink buying cigarettes and will allocate cigarette expenditure to their original basic needs.

East Java province is known as Indonesia's tobacco center, where almost 50 percent of national tobacco production comes from this province. This also affects cigarette consumption. According to Say's theory, known as Say's Law, the market is the most efficient place to allocate resources and supply will reflect its own demand. In line with that in this discussion from research (Afif & Sasana 2019) shows that cigarette production affects cigarette consumption where every increase in cigarette production increases the rate of cigarette consumption.

The topic of cigarette consumption problems has been widely studied by previous researchers with different variables and results. This study aims to analyze poverty, cigarette prices, and cigarette production on cigarette consumption in East Java province.

RESEARCH METHOD

This type of research is quantitative research with secondary data obtained from the Central Statistics Agency (BPS), Wroldbank, and the Directorate General of Plantations (DG Plantation). With a descriptive statistical approach, namely, an approach that provides an overview of data through variable calculations. The data used in this study are as follows:

1. Cigarette Consumption (Cons)
   Per capita expenditure of the population to buy cigarettes
2. Poverty (Pov)
   Population below the poverty line
3. Cigarette Price (Pri)
   Average price of cigarettes per pack
4. Cigarette Production (Pro)
   Total tobacco production from both smallholder, private, and government.

The data is taken from East Java province starting from 2019-2022. With variable operations as follows:

Variabel	Indicator	Unit of measurement	Source
Cigarette Consumption (Y)	Population per capita spending on cigarettes	Rupiah Unit	BPS
Poverty (X1)	Population below poverty line	Soul Unit	BPS
Cigarette Price (X2)	Average cigarette price per pack	Rupiah Unit	Worldbank
Cigarette Production (X3)	Total Tobacco Production (Smallholder, Private, Government)	Unit Ton	Ditjebun

To determine the effect between the independent variables on the dependent variable in this study, the analysis method used is panel data regression analysis with data from 38 cities / districts in East Java starting from 2019-2022. Using E-views 12 as a data processing analysis tool. And the basic model used in this study is as follows:

$$Cons = \beta o + \beta 1 Pov + \beta 2 Pri + \beta 3 Pro + \mu$$

Description :

Cons   : Cigarette consumption variable
Pov   : Poverty variable
Pri   : Cigarette price variable
Pro   : Cigarette production variable
Bo   : Constant
$\beta 1, \beta 2, \beta 3$: Coefficient

μ   : Error

From data processing with the equation model above has poor results. Then the model is transformed into log form (Gujarati, 2003) so that the resulting results can be better and the new equation model used in this study is as follows:

$$LogCons = \beta o + \beta 1 LogPov + \beta 2 LogPri + \beta 3 LogPro + \mu$$

RESULTS AND DISCUSSION

1. Model Specification Test

In panel data analysis, there are 3 types of regression models, namely the Common Effect Model (CEM), Fixed Effect Model (FEM) and Random Effect Model (REM). Of the three models, the best model selection test is carried out to determine which model is most suitable for use in research. By doing 3 tests, namely the Chow test, the Hausman test, and the Lagrange Multiplier (LM) test.

Based on the three model selection tests above, in this study the best regression model is the Random Effect Model (REM) model.

Tabel *Random Effect Model (REM)*

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-1.892193	1.141437	-1.657729	0.0997
LOGPOV	0.081424	0.034077	2.389429	0.0183
LOGPRI	1.448246	0.106562	13.59065	0.0000
LOGPRO	-0.010311	0.012490	-0.825590	0.4105

Effects Specification				
			S.D.	Rho
Cross-section random			0.194147	0.8697
Idiosyncratic random			0.075164	0.1303

Weighted Statistics			
R-squared	0.600230	Mean dependent var	2.551147
Adjusted R-squared	0.591144	S.D. dependent var	0.118653
S.E. of regression	0.075869	Sum squared resid	0.759805
F-statistic	66.06331	Durbin-Watson stat	1.741067
Prob(F-statistic)	0.000000		

2. Classical Assumption Test

This test is a requirement that must be done before analyzing in order to get good regression model results. Because the regression model chosen in this study is the Random Effect Model (REM), the classic assumption test used is only the normality test and multicollinearity test. Without autocorrelation and heterocadtisity tests,

because the approach with the GLS method can suppress the existence of autocorrelation and heteroscedasticity problems.

Normality Test

The Jarque-bera prob value is greater than 0.05, so the data is normally distributed. Based on this test, the Jarque-bera prob value is 0.0000, meaning that the data is not normally distributed. According to (Nugraeni & Aji, 2021) Central Limit Theorem can be used where in data that has more than 30 samples, the normality test is considered fulfilled.

Multicollinearity Test

The correlation value is smaller than 0.8, so no multicollinearity is detected. Based on this test, the correlation value is smaller than 0.8, meaning that there are no symptoms of multicollinearity or it is free from multicollinearity.

3. Hypothesis Test
Partial Test
The prob value is smaller than 0.05, so the independent variable affects the dependent variable. Based on the results of this test, the following results are obtained:
1. The poverty variable has a positive effect on the cigarette consumption variable.
2. The cigarette price variable has a positive effect on the cigarette consumption variable.
3. The cigarette production variable has no effect on the cigarette consumption variable.

Simultaneous Test
The value of the prob (F-statistic) is smaller than 0.05, so the independent variable has an effect on the dependent variable. Based on this test, the prob (F-statistic) value is 0.0000, meaning that the independent variables affect the dependent variable together (simultaneously).

Coefficient of Determination
Based on this test, the Adjusted R-square value is 0.591144 or 59 percent, meaning that the independent variables used in this study can explain 59 percent of the dependent variable, and the remaining 41 percent is explained by other variables not used in this study.
Effect of Poverty on Cigarette Consumption

From the regression results the selected poverty variable has a positive influence on cigarette consumption in East Java province. This means that if poverty increases then cigarette consumption will also increase. The same results as this study according to (A. M. D. Sari, 2016) show that poverty has a positive influence on

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cigarette consumption. Strengthened by research (Afif & Sasana, 2019) shows that poverty has a positive and significant effect on cigarette consumption.

In line with data from the Indonesian Association of Public Health Experts (IAKMI) around 70 percent of smokers come from poor or underprivileged populations. Because consuming cigarettes is believed to reduce stress, boredom, calm, trigger feelings of pleasure, and self-relaxation. So this activity is used by the poor as an alternative to reduce stress, anxiety and boredom due to social factors. Instead of shopping, vacationing or eating luxurious foods like the rich. So that the increase in poverty increases the level of cigarette consumption in society.

Effect of Cigarette Price on Cigarette Consumption

From the results of the selected regression variable cigarette price has a positive influence on cigarette consumption in East Java province. This means that if the price of cigarettes increases, cigarette consumption will also increase. In line with the results of research (Kartika et al., 2019)) where the increase in the price of cigarette products does not reduce the consumption rate in the community and instead causes the switch of smokers to more affordable cigarette brands as a response to the price increase. Strengthened by the opinion (Ministry of Industry, 2015) that cigarette products are addictive products so there is no guarantee that increasing the price can reduce consumption.

Because every cigarette contains nicotine, which nicotine itself is an addictive compound that can make a person experience addiction. People who have consumed cigarettes will find it difficult to stop due to the presence of these compounds. So that an increase in the price of cigarette products does not reduce the level of consumption in society. Also the price of cigarettes in Indonesia is still fairly cheap, so an increase in price does not reduce consumption. Unless prices increase rapidly like in foreign countries maybe consumption can be suppressed.

Effect Cigarette Production on Cigarette Consumption

From the regression results the selected variable cigarette production has no influence on cigarette consumption in East Java province. This means that if cigarette production increases or decreases, it has no effect on cigarette consumption. In line with these results according to (Marlitasari, 2015) the increase in cigarette production is caused by several factors including the existence of work targets, the size of the market share, quality raw materials, increased demand, and optimal use of labor. So it is not only demand that causes production but there are other factors that affect production.

The amount of cigarette production in East Java does not affect the level of cigarette consumption of its people. So it is assumed that the amount of cigarette production in this province is due to quality raw materials, optimal use of labor and the production of cigarettes is distributed to other regions.

CONCLUSIONS

Based on the results of this study, the following conclusions can be drawn:
1. Poverty has a positive effect on cigarette consumption in East Java.
2. Cigarette prices have a positive effect on cigarette consumption in East Java.
3. Cigarette production has no effect on cigarette consumption in East Java.
4. Poverty, Cigarette Prices, and Cigarette Production simultaneously affect Cigarette Consumption in East Java.

Suggestions that can be given in accordance with the results of this study are as follows:
1. government policy is needed to increase the price of cigarettes significantly to the extent that cigarette consumption can be reduced in the community.
2. provide more massive warnings and appeals to the public as a result of cigarette consumption, namely low health and poverty.
3. it is hoped that future researchers can add variables that are not yet in this study. The wider the variables can bring up new theories and facts that are accurate in the field. So that this discussion can be further refined.

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