

The Impact of Excise Policy and Government Regulations about The Hazards of Smoking For Health on Tobacco Commodity

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Abstract—Tobacco farmers, over the past few years are faced with a variety of changes in government policies like an excise duty policy that increasing every year or policy about the dangers of addictive substances of tobacco for health. The purpose of this study is a) to compare farming revenue and efficiency in the level of the tobacco farmers, b) to evaluate the response of farmers to the implementation of government regulations about the dangers of addictive substances for health and c) to analyze the model of tobacco development of the domestic and international markets. The results showed the revenue and efficiency tobacco farming of NO is higher than VO. NO tobacco is more profitable than VO. The impact of government regulation No.109/2012 showed that tobacco farmers are not affected by the regulations, especially the changes of land areas, earnings and prospects. Farmers still consider that tobacco is prospectus plant, due to tobacco can also be used as raw material for products other than cigarettes. The model of tobacco development is identified through responses land areas and productivity of tobacco, the behavior of the price of tobacco, consumption of tobacco, import of tobacco and export of tobacco.

Key Words— Cigarette industry, government policy, health, and tobacco.

I. INTRODUCTION

Tobacco sector has a greater role than the industrial one. It is contrary to the common view, which assumes that the tobacco industry is the largest employer. Based on the number of output multiplier of tobacco sector higher than the industry one, which indicates an increase in final demand of the tobacco industry to value added is smaller than tobacco (Rahutami, 2009). In fact, tobacco farmers have an inferior bargaining position compared to the industry. It can be seen from the farmer revenue of 1 million dollars per month for four months is not worth by the risk of farming whereas the average wage of farm laborers is 413 thousand dollars equivalent to 47 percent of the national average wage (Indonesian Tobacco Control Network, 2011).

Government intervention about health begins from published Law No. 23 of 1992, the elaboration in the form

of regulations, where the government has issued at least four policies on the impact of tobacco use for health. It is starting from Government Regulation No 81 of 1999 until Government Regulation No. 109 of 2012 about restraint addictive substances of tobacco products for health. On the one side, the government wants to increase state incomes and on the other one, much tobacco manufacture, especially small ones objected to the regulations enforced. Furthermore, the government made a roadmap of cigarette industry development priorities, such as the Tobacco Industry Roadmap. The order of priority of the roadmap is divided into three periods, the first year 2007-2010 is the labor aspect, government incomes and health, second, year 2010-2015 is an aspect of government incomes, health and labor and third, year 2015-2020 prioritize health aspects exceed labor and government incomes (Departemen Perindustrian, 2009).

The tobacco industry is also faced with the issues of the impact of tobacco use on health at the global level. That is sponsored by the WHO in 2003 as stipulated in the Framework Convention on Tobacco Control (FCTC). FCTC is a legally binding convention for members to control tobacco use. FCTC is equipped with a variety of protocols issued, which will be processed to be negotiated, adopted and ratified by each country. One of the protocols of FCTC is the imposition of excise duty of 70%.

In addition, tobacco farmers are also faced excise duty that increases every year, which is more oriented towards the increase in state incomes without considering the impact on tobacco farmers and institutions. Ahsan *et al*, (2008) stated that any increase in tobacco excise by a 10 percent raise the price of tobacco products in the market by 1 to 2 percent. Excise-duty policies set by the government tends to increase each year make the realization of the tobacco excise during the years 2006 to 2011 increased sharply by 97.57%. It is seen from the realization of tobacco excise in 2006 amounted to IDR 37.1 trillion increase in 2011 to IDR 73.3 trillion (Anonymous, 2012).

The intervention resulted in decrease symptoms of tobacco production began in 2003 until the year 2011 amounted to 35.19 percent. The decline in tobacco

production in the last 5 years is also followed by a decrease in the land area of tobacco, where the land area from 2003 to 2011 decreased by 12.96 percent. The decline in tobacco production was followed by an increase in tobacco imports by 122 percent during 2003 - 2010. The impact on cigarette imports increased by 60.41% during the years 2005 to 2009 (Kementerian Pertanian, 2010). Looking at the above government interventions, showed so much and the amount of attention the government in suppressing tobacco and industries, both in terms of aspects of the domestic, international and regional market as well as aspects of labor, and excise duty.

Based on the description above, the aim which will be examined in the study are:

1. To compare farming revenue and efficiency in the level of the tobacco farmers.
2. To evaluate the response of farmers to the implementation of government regulations about the dangers of addictive substances for health.
3. To analyze the model of tobacco development at the domestic and international markets.

II. METHODOLOGY

The research methods used two methods, namely the analysis of secondary and primary data. The data used for the analysis of secondary data is the series data for 24 years from 1989 through 2012 were obtained from the relevant institutions such as the Ministry of Agriculture of the Republic of Indonesia, the Central Bureau of Statistics of the Republic of Indonesia (BPS), the Directorate-General Customs, FAOSTAT, relevant institutions, and various other literature sources.

Methods for the analysis of primary data used a survey method. The initial stage to determine center areas representing Indonesian tobacco is the province of East Java. Then determined areas representing East Java, is the regency of Jember. The population is farmers who cultivate VO and NO tobacco plants. Target population is village of Gumuksari, district Kalisat, representing VO tobacco and village of Kalibening, Rambipuji district representing NO tobacco. Samples were taken based on random sampling and sample magnitude of 30 people from the both villages in Jember. The methods used to analyze primary data using qualitative and quantitative analysis. The method used to analyze secondary data is quantitative analysis using a model of econometric analysis of simultaneous equation is Two Stage Least Square method or 2SLS.

Based on the simultaneous equations of the model development tobacco is divided into two blocks, which block the tobacco domestic and international market as table 1.

Table 1: Block of Tobacco Domestic and International Markets

No.	Dependent Variables	Explanatory Variables	Type Equation
1.	Block of Tobacco Domestic Markets		

a.	QT	YT x A	Identity
b.	A	RPT, RPJ, RPK, DKC, DKK, LA	Structural
c.	YT	RPT, RPU, i, LYT	Structural
d.	SUT	QT + QMT – QXT	Identity
e.	RPT	QT, RKURS, i, TCHT, LRPT	Structural
f.	DET	KT + STOT	Identity
g.	KT	RPT, TCHT, RPQSK, RPQSP, QS, DKC, DKK, LKT	Structural
2. Block of Tobacco International Markets			
a.	QMT	RPMT, QT, RKURS, RGDP, POP, TCHT, LQMT	Structural
b.	QXT	RPXT, QT, RKURS, KT, LQXT	Structural

Information:

QT = Production of tobacco

A = Area of tobacco plantation

RPT = Real price of tobacco

RPJ = Real price of corn

RPK = Real price of soybean

DKC = Dummy of Specific Excise, 2007

DKC = 0, using the ad valorem excise policy (before 2007)

DKC = 1, using the specific excise policy (begun 2007)

DKK = Dummy of GR 81 of 1999 on Health, 2000

DKK = 0, do not use health policy (before 2000)

DKK = 1, using the policy health policy (begun 2000)

YT = Productivity of tobacco

RPU = Real price of subsidized urea

i = Interest rate

LA = Area of tobacco last year

LYT = Productivity of tobacco last year

SUT = Tobacco Supply

QMT = Import of tobacco

QXT = Export of tobacco

RKURS = Real value of exchange rate

TCHT = Tax tariff on tobacco products

LRPT = Real price of tobacco last year

DET = Demand of tobacco

KT = Consumption of tobacco

STOT = Stock of tobacco.

RPQSK = Real price of clove cigarettes

RPQSP = Real price of white cigarettes

RPMT = Price of imported tobacco

POP = Total population

LQMT = Import of tobacco last year

LQXT = Tobacco exports last year

III. RESULTS AND DISCUSSION

A. Comparison of Farming Income in Tobacco of NO and VO

Analysis of farm income is necessary in order to

compare tobacco income differences based on the type of tobacco; Voor Oogst in the district Rambipuji and Na Oogst in Kalisat Jember. Tobacco of Voor Oogst has many kinds of them are Kasturi, Merakot, Jemamut and Japan. This tobacco is often referred as nemor tobacco, especially in dry season, in April to June and very appropriate for a clove cigarette. The weakness of voor oosgt needs good watering.

Table 2: Income and Efficiency Calculation of NO and VO Tobacco, 2014.

Physical	Tobacco of NO		Tobacco of VO	
	Quan-tity	Value (IDR)	Quan-tity	Value (IDR)
Land Area (Ha)	1	12,000,000	1	10,750,000
Fertilizer				
Urea (kg)			485	897,250
ZA (kg)	475	688,750	960	1,392,000
TSP (kg)	475	950,000		
KNO ₃ (kg)	370	5,550,000		
Pesticide				
Mitindo (kg)	1.9	237,500	3.34	417,500
Champion (kg)	4.1	820,000	6.75	1,350,000
Mimba (liter)	7.8	156,000	8.1	162,000
Seed (stem)	14,800	888,000	15,500	620,000
Dung Fertilizer (kg)	650	325,000	230	115,000
Total of Capital		21,615,250		15,703,750
Labor (Days)				
Cultivate the land	80.45	3,218,000	26.85	1,074,000
Lightly cultivate	80.82	3,232,800	71.25	2,850,000
Fertilization	35.5	1,420,000	29.83	1,193,000
Pest Control Disease	104.2	4,168,800	125.3	5,014,000
Irrigation	15.65	626,000	13.26	530,400
Harvest	18.5	740,000	11.62	465,000
Post-harvest:				
a. Drying	7.5	300,000	6.3	252,000
b. Oven	8.78	351,200	7.8	312,000
c. Sorting	5.45	218,000	3.1	124,000
Cost of Labor		14,274,800		11,814,400
Total Cost		35,890,050		27,518,150
Total Revenue	1450	72,500,000	1250	40,625,000
Income		36,609,950		13,106,850
R/C Ratio		2.02		1.48

Sources: Data processed, 2014

Tobacco of Na Oogst also has many kinds of them are Besuki and Virginia. This tobacco is often called a *halapan* tobacco planted at the end of the dry season from August to October and widely known with gold leaf and suitable for white cigarettes. Tobacco of NO is done by national plantation professionally processed which require tillage up to four times. This plant can be harvested 39 days after planting.

Table 2 showed the comparison of farming costs and revenues between na oosgt and voor oasgt tobacco, which the use of fertilizers for various types of NO tobacco more than VO tobacco. However, the use of pesticides in both types of tobacco performed 7-10 days up to 5 times spraying. Spraying is done up to the age of under 50 days after planting, especially for VO tobacco.

Based on the use of farm capital, the amount capital of NO tobacco of 60.23 percent is greater than VO tobacco of 42.93 percent of the total farm capital. The use of farming capital of NO tobacco is dominated by the use of fertilizers than the use of pesticides. While the use of the use of fertilizers and pesticides for VO tobacco is almost equal. However, the use of pesticides of VO tobacco is larger than NO, due to pest spraying is more VO tobacco than NO.

Reviewed from the use of farm labor, total labor of NO tobacco of 39.77 percent is smaller than VO tobacco of 57.07 percent of the total labor. The use of NO tobacco labor is dominated by the use of labor spraying pest. However, when viewed from the level of tobacco farming efficiency shows NO tobacco (2.02) is higher than VO (1.48). It indicates NO tobacco is more favorable and efficient than VO tobacco.

B. Farmer's Responses againts Government Policy about The Hazards of Tobacco Addictive Substances for Health

Government intervention as Government Regulation No. 109 of 2012 published in order to limit the consumption of cigarettes. To see how big the response of farmers to government regulations can be seen from the responses of farmers as in Table 3.

Table 3 showed that the knowledge of tobacco farmers against government regulation is very good, which is 83.33 percent of the farmers aware of the officials, socialization, friends as well as electronic media and only 16.67 percent did not know it. Information about these regulations largely obtained through officials and friends/relatives. Lack of socialization by the government on the regulation indicates no involvement of government functions in disseminating these rules, although there are about 30 percent received information from the officials. In addition, farmers' understanding of the goals and objectives of government regulation is only about 26.66 percent, the rest do not understand about the rules. This is due to the farmers so do not care about the rules. Most tobacco farmers or 76.67 percent do not want to change the tobacco crop. It means that farmers still rely on tobacco plants as the main crop, although 23.33 percent said tobacco plants no longer potential, so it wants to shift to corn or soybeans. Most of farmers do not want to change tobacco crops due to lack of

irrigation infrastructure, low rainfall and tobacco prices tend to rise following the world price.

Table 3: Farmer Responses about Government Regulation No. 109 of, 2014.

No.	Description of Regulation	Farmer's Responses	
		Quantity (people)	Percent age (%)
1.	Knowledge Information of Regulation No. 109/2012		
	a. Do not Know	5	16,67
	b. Officials	9	30,00
	c. Socialization of agencies / officials / institutions	5	16,67
	d. Friends / Relatives	12	40,00
	e. The media / internet	4	13,33
2.	Knowledge of Regulation No. 109/2012		
	a. Understand	8	26,66
	b. Rather Understand	10	33,33
	c. Not Understand	12	40,00
3.	Impact of Regulation 109/2012		
	a. Production Down	5	16,67
	b. Land Area Down	6	20,00
	c. Switch to Other Crops	4	13,33
	d. Not Impact	19	63,33
4.	The desire to plant other crops		
	a. Do not want	23	76,67
	b. Yes, corn crops	2	6,67
	c. Yes, soybean	5	16,67
5.	Barriers switch to other plants		
	a. Low rainfall	14	46,67
	b. No irrigation / need irrigation	16	53,33
	c. Tobacco price rises	11	36,67
	d. Do not have the expertise of other cultivate	7	23,33
	e. Capital	3	10,00
6.	Positive utilization of tobacco		
	a. Insecticide	17	56,67
	b. Veterinary drug	9	30,00
	c. Health medicine	6	20,00
	d. Herbal Cigarettes	4	13,33
	e. Cosmetics	1	3,33
	f. Biofuel	2	6,67
	g. Others	3	10,00

Sources: Data processed, 2014

Most of farmers or 63.33 percent stated that government regulation is not having an impact on tobacco farmers. It means that farmers remain to cultivate tobacco without overshadowed will decline in tobacco production. However, there are about 36.67 percent of the farmers feel that the

government regulations affect them, where 13.33 percent switched to other crops than tobacco. Farmers still strongly believe that tobacco is the mainstay crop. Although the government is trying to control the use of raw material tobacco, farmers are still optimistic that tobacco can still be cultivated forever as a raw material for products other than clove or white cigarettes. This is due to 56.67 percent of farmers stated that the tobacco can be used as an insecticide, especially rice pest eradication. Some farmers or 30 percent stated that tobacco is used as Veterinary drugs, because the tobacco extract (nicotine) has the potential to eradicate the worm disease in cattle. In addition, 20 percent of farmers believe that tobacco is able to treat human diseases, such as diabetes, antibodies, to cure wounds. More farmers declare tobacco can be used as cosmetics and biofuels.

C. Modeling Commodity of Tobacco in Domestic and International Markets

Parameter estimation of models built is dynamic simultaneous models using two stages least square estimation methods (2SLS). The results of estimating the model policy meet the criteria of economics and statistics, so that the models are built quite feasible used for simulation and forecasting models. It is shown from the coefficient of determination (R²) of each structural equation which provides a high enough value 0.65344 to 0.99094. This situation can be said that the exogenous variables that build models able to explain well endogenous variables.

Based on the value of F statistics provide good results, where F is the magnitude of the value range 3.77 to 209.78 with probability significance level $\alpha = .0,0166$ up to <0.0001 . Testing each variable parameter of structural equation used the t test with a level of significance that meets the economic criteria. Significance intervals were used in this study using a significance level to the tolerance level of 0.30, which is 5 percent (A), 10 per cent (B), 20 percent (C) and 30 percent (D).

Commodity Model of Domestic Market

Tobacco production is the identity equation which is multiplying the productivity of tobacco with harvest area. The identity equation states that tobacco production is closely linked to productivity of tobacco and harvest area. If one of these variables changes, it will affect the amount of tobacco production.

Policies that encourage and hinder the performance of tobacco can be seen from the behavior of tobacco production which were identified through the response of tobacco harvested area and productivity. Policies that encourage tobacco performance were to raise the price of tobacco and corn, because corn is a complement crop of tobacco plants. While policies that hinder the performance of tobacco were raising the price of soybeans, which soybean crop is substitution or competitor from tobacco one. Besides that, policies that encourage tobacco performance were the government's excise policy and vice versa tobacco policy about the dangers of smoking to health

tends to hinder the performance of the tobacco economy. Tobacco productivity can be increased by raising the price of tobacco policy, and productivity last year, as well as by lowering interest rates to push farm credit assistance.

Thus policies that can encourage tobacco performance were by increasing tobacco supply. Tobacco supply was the identity equation is the sum of the production of tobacco and tobacco imports after deducting tobacco exports. The identity equation states the supply of tobacco desperately needs the supply of tobacco products and the amount of net export and import of tobacco. If one of these suppliers changes, it will affect the amount of tobacco supply.

Policies that encourage and hinder the performance of tobacco can also through an increase in the price of tobacco and tobacco consumption. Increasing the price of tobacco can be done by increasing the value of the real exchange rate. While policies that hinder the performance of tobacco is the policy of raising interest rates, which resulted in low credit loans for tobacco farmers. Increased consumption of tobacco as raw material for cigarette companies can be done by increasing the excise tariff and implementation of specific tax policy on companies and decrease the price of clove cigarettes.

Table 4: Parameter Estimation and Elasticity of Modeling Commodities of Tobacco in Domestic and International Market

No	Dependent variables	Explanatory Variables	Parameter Estimate	t test	Elasticity	
					ESR	ELR
1.	Land Area of Tobacco	Intercept	102349,5	2,72		
		The Real Price Of Tobacco	0,001440	1,07	0,0837	0,1615
		The Real Price Of Corn	0,047584	1,63	0,4272	0,8247
		The Real Price Of Soybean	-0,02410	-1,78	-0,5462	-1,0543
		The Real Price Of Cloves	0,001052	3,35	0,1070	0,2065
		Dummy of Excise Policy	41128,03	1,62	0,0435	0,0839
		Dummy of Health Policy	-33711,1	-1,71	-0,0855	-0,1651
		Lag Land Area Of Tobacco	0,481959	2,53		
2.	Productivity of Tobacco	Price Real Tobacco	0.000014	2.26	0,2199	0,4159
		Real Price Of Urea Subsidy	-0.00810	-0.18	-0,0149	-0,0282
		Interest Rate	-0.05563	-2.84	-0,3408	-0,6445
		Lag Productivity Tobacco	0,471183	2.48		
3.	The Price Real of Tobacco	Intercept	17629410	1.84		
		Tobacco Production	-19.5810	-0,41	-0,2553	-0,3510
		Real Value Of Exchange Rate	377.3980	1.42	0,3496	0,4806
		Interest Rate	-761755	-2,69	-0,9691	-1,3323
		Cigarette Excise Tariff	55622.11	0,28	0,1335	0,1835
		Lag Price Tobacco	0,272644	1,32		
4.	Tobacco Consumption	Price Real Tobacco	-0,00052	-0,56	-0,0499	-0,0976
		Cigarette Excise Tariff	2.627,58	3,09	0,6048	1,1833
		Real Price Clove Cigarettes	-84,8836	-2,32	-0,2248	-0,4397
		Real Price White Cigarettes	14,9676	0,51	0,0540	0,1057
		Total Production Of Cigarettes	87,6078	0,98	0,1513	0,2960
		Dummy of Excise Policy	41869,12	1,88	0,0731	0,1430
		Dummy of Health Policy	-17258,1	-0,92	-0,0723	-0,1414
		Lag Tobacco Consumption	0,488858	3,01		
5.	Import of Tobacco	Intercept	-141995	-1,60		
		The Real Price of Import	-0.43087	-3,44	-0,3899	-0,3845
		Tobacco production	-0.00948	-0,11	-3.3E-05	-3.3E-05
		Real Value of Exchange Rate	-2.04153	-2,32	-0,3766	-0,3714
		Value of Real GDP	0.006979	3,14	0,5237	0,5165
		Population	1.065648	2,15	5,1898	5,1180
		Cigarette Excise Tariff	-916.584	-2,60	-0,6082	-0,5997
		Lag Imported Tobacco	-0.01403	-0,08		
6.	Export of Tobacco	The Real Price of Export	0.091741	0,69	0,0624	-
		Tobacco production	0.134471	2,87	0,5284	-
		Real Value of Exchange Rate	0.917182	2,80	0,1887	-
		Tobacco consumption	-0.07027	-1,34	-0,2258	-

Description: ESR = Elasticity Short Run
 ELR = Elasticity Long Run
 NS indicates not significantly
 A indicates significance level of 5 percent
 B indicates significance level of 10 percent
 C indicates significance level of 20 percent
 D indicates significance level of 30 percent

Commodity Model of International Market

Policies that hinder the performance of commodities and encourage tobacco can be done on the export and import of tobacco. Policies that hinder the performance of commodities of tobacco are increasing tobacco imports. Tobacco imports can be increased with increasing national income and population. In addition to lowering the price of the imported tobacco policy, the exchange rate and the excise tariff will increase the import of tobacco. Policies that encourage tobacco commodity performance are to improve exports of tobacco. An increase in the export of tobacco can be done by increasing the production of tobacco, and the real exchange rate. While the policies that hinder the export of tobacco are the increased use of tobacco promotion in domestic tobacco consumption will increase especially from tobacco companies.

IV. CONCLUSION

1. The level of revenue and farming efficiency of NO tobacco is higher than VO. It indicates na oosgt tobacco is more favourable and efficient than voor oosgt.

2. Government regulation 109/2012 less influence on tobacco farmers. This is shown very little tobacco farmers are switching to other crops, because farmers still believe tobacco is the main crop. In addition, tobacco can be used as raw material for organic insecticide products, veterinary drugs, diabetes drugs, antibodies, cosmetics and biofuels.

3. Modelling of commodity tobacco is identified through the response tobacco harvested area and productivity, the real price of tobacco, tobacco consumption, imported tobacco and tobacco export. All of them responds inelastic both short and long term, except land area responds elastic by soybean price in the long run. In addition, tobacco imports responds elastic population, both in the short and long term. Excise tariff responds positively on tobacco prices, and affect negatively on consumption and import of tobacco. Dummy health policy influence negatively on harvested area of tobacco consumption, and vice versa on the dummy excise policy.

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