SEADI DISCUSSION PAPER SERIES

Impact of Increasing Tobacco Tax on Government Revenue and Tobacco Consumption

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Impact of Increasing Tobacco Tax on Government Revenue and Tobacco Consumption

SEADI Discussion Paper No. 8

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1. Introduction

BACKGROUND

Tobacco consumption causes lung and mouth cancer, heart disease, and low birth weight. Globally, tobacco consumption causes five million deaths, and, if this trend continues, it is going to kill one billion people by 2050. In Indonesia, there are 200,000 deaths related to tobacco consumption each year. Smoking prevalence has increased significantly from 27 percent in 1995 to 34.7 percent in 2010, or an increase of nearly 30 percent in 15 years among those age 15 and above. Female smokers nearly tripled, from 1.7 percent in 1995 to 4.2 percent in 2010.

The number of smokers age 10-14 was 71,126 in 1995, and by 2007, this increased more than six times, to 426,214 children. Among young people age 15-19 years old, smokers increased from 7 percent in 1995 to 19 percent twelve years later. In other words, by 2007, one in five younger people were smokers, compared to 1995, when one in ten was a smoker- an increase of 100 percent.

Using a method developed by Blecher and Van Walbeek using Relative Income Prices (RIP), the Demographic Institute, Faculty of Economics University of Indonesia, found that cigarette prices in Indonesia are becoming more affordable. Though in nominal terms, cigarette prices increased from Rp. 2,900 to Rp. 6,000, or US$ 0.25 to US$ 0.60, cigarette prices in Indonesia are still among the world's lowest and most affordable.

According to the 2009 Socio-economic Survey, household expenditure on cigarette consumption out-weighed nutrition, health, and education expenditure. Among the poorest households, monthly expenditures for cigarettes was eleven times higher than for meat, seven times higher than for fruit, five times higher than for health, and six times higher than for education.

Tobacco consumption needs to be regulated. Indonesia already has a tobacco excise law, no.39/2007, which regulates tobacco excise. The law states that the maximum tobacco excise is 57 percent of the retail price, or 275 percent of the factory price. If the government were to increase the tobacco excise tax to the maximum, it will provide an additional US$ 6.5 billion in government revenue.

Currently, the excise tax scheme in Indonesia is multi-tier and very complicated. The system is based on cigarette type, cigarette industry production, and sales price. In total, there are twenty-five excise cigarette tiers. Following the Excise Tax Road map to simplify the tobacco excise system, the tiers have been reduced to 15 tiers. The multiple tiers of the excise tax tariff are very prone to fraud and price switching between the higher tier and lower tier.

OBJECTIVES

1. To evaluate the benefits of the tobacco tax increase for government revenue and decreasing tobacco consumption.
2. To evaluate the impact of increasing the tobacco tax on the number of lives saved from those who quit smoking.

2. Method

QUANTITATIVE APPROACH

Model

To estimate demand elasticity, we refer to Van Kinh, et al (2006),[1] who estimated cigarette demand elasticity in Vietnam. In their study, Van Kinh, et al employed a method that distinguishes between the decision to smoke and the quantity of cigarettes smoked. The first equation explains smoking status (indicated by a dummy variable), using the sample of all households, and corresponds to a smoking participation equation. A probit model is employed in the first equation. The second equation, which is a conditional demand equation, is confined to smokers, and uses the logarithm of the number of cigarettes smoked per smoker as the dependent variable, and corresponds to the cigarette quantity smoked per smoker. Other studies, such as Hu, et al (1995)[2], Mao, et al (2000),[3] and Adioetomo, Djutaharta and Hendratno (2006),[4] employ a similar method called a two-part model that estimates price elasticity of smoking participation, conditional price elasticity of demand and total price elasticity.

The smoking status model is estimated using the model defined as

$$D_{smoker} = \beta_0 + \beta_1 \ln p_{cig} + \beta_2 \ln p_{tob} + \beta_3 \ln y + \sum_{k=4}^{n} \beta k \; Z \quad \ldots\ldots(1)$$

In which:

D_{Smoker} = dummy variable of smoking status (smoker = 1, other while = 0)
p_{Cig} = price of cigarettes
p_{tob} = price of tobacco, as proxy for roll your own cigarette
y = annual per capita income
Z =variables relate to individual, household, geographic and commune characteristics.
β0 = constant parameter
β1 = percentage point change in the possibility of someone being smoker as price of cigarette change 1%
β2 = percentage point change in the possibility of someone being a smoker as price of "roll-your-own cigarette" changes by 1%

---

[1] Hoang Van Kinh, Hana Ross, David Levy, Nguyen Thac Minh and Vu Thi Bich Ngoc, "The effect of imposing a higher, uniform tobacco tax in Vietnam" *Health Research Policy and Systems* 2006, **4**:6

[2] T.W. Hu, R. Qui-Fang, T. E. Keeler, and J Bartlet. 1995. "The Demand for Cigarettes in California and Behavioral Risk Factors". *Health Economics* 4:7-14.

[3] Z. Z. Mao, C. R. Hsieh, T. W. Hu, and J. L. Jiang. 2000. "The Demand for Cigarettes in China". Chengdu, Sichuan, China: West China Medical Sciences University.

[4] S.M. Adioetomo, T. Djutaharta and Hendratno. 2005. "Cigarette Consumption, Taxation, and Household Income: Indonesia Case study", World Bank

$\beta 3$ = percentage point change in the possibility of someone being a smoker as income changes by 1%

βk = parameter indicating the relationship between individual characteristics and taste, household characteristics, geographic, and province characteristics and the possibility of being a smoker.

The model considers potential substitutes for cigarettes. As the price of cigarettes increases, smokers may switch to cheaper cigarette variants, such as the roll-your-own cigarette. In the consumption module, there are questions on the type cigarette used by smokers, namely white cigarettes, filtered kretek cigarettes, non-filtered kretek cigarettes, and tobacco. We use tobacco consumption as proxy for the roll-your-own cigarette.

The second model is the conditional quantity model that applies only to smokers. This is a double-log model, where the logarithm of the number of cigarettes smoked by a smoker is the dependent variable:

$$\ln q_{cig} = \beta_0 + \beta_1 \ln p_{cig} + \beta_2 \ln p_{tob} + \beta_3 \ln y + \sum_{k=4}^{n} \beta k \, Z \quad \ldots\ldots(2)$$

where $\ln q_{cig}$ = logarithm of quantity of cigarettes consumed by smoker. Other variables are the same as in model (1).

Data and Variables

This study employs cross sectional data to examine smoking behavior among smokers, the financial burden that it imposes, and to estimate smoking elasticity of those who consume cigarettes. The 2011 Socio Economic Survey (SUSENAS), a survey conducted by the Central Board of Statistics, is used to estimate elasticity. There are two types of SUSENAS data: module and core. Module data is available for every three years with different focus questions covering health, consumption, and socio-economic status, while core data is available every year. The SUSENAS 2011 core data contains variables on a wide range of socio-economic factors, including education, employment, health, social insurance, and living standards, while the SUSENAS 2011 module data includes household consumption details. In the module questionnaire, households were asked about the quantity consumed and the expenditure of food items over the last week; and non-food items for the last one, two, or three months. Households are also asked the source of the items and whether they were bought or given. To have a more precise calculation on prices, we only examine the quantity and price of cigarettes and tobacco purchased. Because there is no separate section about smoking behavior, we identify the smoking status of households based on the quantity of tobacco consumed.

We do a household level analysis because SUSENAS provides the price and the consumption of tobacco and cigarettes at the household level. To make the analysis more sensible, we then estimate the consumption per capita of tobacco and cigarettes by dividing the household consumption over the number of household members, and take into account the variables of head of the household characteristics. In addition, because SUSENAS data does not collect household income, the income is measured via household expenditures.

In the SUSENAS 2011 data set, we have examined 71,774 households. Below are the variables employed. We use income per capita in each household.

Table 2-1
Variables and Definitions

Variables	Definition
HHS	Smoking status of household, 1=smoking household, 0 = non-smoking household
qskm	Quantity of filtered cigarette consumed per household
qspm	Quantity of white cigarette consumed per household
qskt	Quantity of non-filtered cigarette consumed per household
qcig	Quantity of cigarette consumed per household
qcigc	Quantity of cigarette consumed per capita
pskm	Price of per stick filtered cigarette
pspm	Price of per stick white cigarette
pskt	Price of per stick non-filtered cigarette
pcig	Price of per stick cigarette spent by household (The price is calculated by dividing the cigarette expenditure over the quantity of cigarette consumed per capita)
lny	Monthly expenditure per capita (in log)
CHARACTERISTICS OF HEAD OF HOUSEHOLDS	
Age	Age of the head of the household.
Sex	Dummy variable for the sex, 1= male, 0=otherwise
Marstat	Dummy variable for marital status, 1 =ever married , 0= if never married
Work	Dummy variable for working status, 1= working, 0=otherwise
educ_0	Dummy variable for the highest education level attained by the head of the households, 1= elementary education, 0 =otherwise
educ_1	Dummy variable for the highest education level attained by the head of the households, 1= secondary education, 0 =otherwise
educ_2	Dummy variable for the highest education level attained by the head of the households, 1= higher education, 0 =otherwise
Sec_0	Dummy variable for employment sector of the head of the households, 1= primary sector, 0 =otherwise
sect_1	Dummy variable for employment sector of the head of the households, 1= secondary, 0 =otherwise
sect_2	Dummy variable for employment sector of the head of the households, 1= tertiary, 0 =otherwise
sect_3	Dummy variable for employment sector of the head of the households, 1= not working, 0 =otherwise
Fwork_1	Dummy variable for employment status of the head of the households, 1= formal, 0 =otherwise
Fwork_2	Dummy variable for employment status of the head of the households, 1= not working, 0 =otherwise
Fwork_3	Dummy variable for employment status of the head of the households, 1= informal, 0 =otherwise

Estimated Government Revenue

As price increases, consumption decreases by an amount that depends on the change in the price and the price elasticity of demand. To estimate the reduction in the quantity consumed (Q), we use the price elasticity of demand (E_D)

$$E_D = \frac{\Delta Q/Q0}{\Delta P/P0} = \frac{\Delta Q}{\Delta P} * \frac{P0}{Q0} \quad \ldots\ldots(3)$$

In the model, the estimate of the overall price elasticity is the sum of the estimates of participation and conditional elasticity:

$$E_D = E_{Dpar} + E_{Dcon} \ldots\ldots..(4)$$

where E_D is overall elasticity; E_{Dpar} is participation elasticity; and E_{Dcon} is conditional elasticity

From (4) we can calculate quantity change in consumption $\Delta Q = \frac{Q0.\Delta P.ED}{P0}$…….(5)

The magnitude of change in the total cigarette consumption is calculated using the initial quantities of cigarettes consumed, the percentage change in prices (due to the change in tax rates), and the overall price elasticity estimates as indicated in equation 5

Using equation (5) we obtain the change in consumption

% change in consumption $\Delta Q = \frac{\Delta Q}{Q0}$ …..(6)

Initial government revenue is calculated for each cigarette type as

$R_0 = Q_0P_0*t_0$……(7)

Where t_0 = current excise cigarette tax (average excise tax 44%)
The quantity of cigarettes smoked after the tax increase is calculated using $Q_1=Q_0-\Delta Q$. With Q_1, the estimate of the new government revenue R_1 for each cigarette type is:

$R_1 = Q_1P_1*t_1$……(8)

Where t_1 = increasing current excise cigarette tax to 57% (maximum allowable excise tax by law).

The absolute change in the tax revenue is

$\Delta R = R_1 – R_0$…..(9)

Estimating Impact of Price Increases on Decrease in Number of Smoking-attributable Deaths

Estimation of smoking-attributable deaths was based on past research. Ranson, et.al. (2001)[5] estimated that a 10 percent increase in prices could reduce smoking prevalence by 2 percent; this could save many lives if applied to a large population. A study done in India by John et.al. (2010)[6] found that raising the cigarette tax by Rs 3691 per 1000 sticks will increase taxes to 78% of retail price, plus avert 3.4 million premature deaths. While a study by Barber et.al, (2008)[7] in Indonesia found that increasing tobacco excise taxes could avert mortality up-to 5.9 million and reduce the number of smokers by up to 16.8 million.

Following the same framework as studies done in India and Indonesia, we estimate lives saved from increasing the tobacco excise. Changes in the number of smoking-attributable deaths is the product of: (1) percentage change in the price of cigarettes; (2) price elasticity; (3) prevalence impact of 50%; (4) number of tobacco-attributable deaths prior to the price increase; and (5) a “mortality adjustment factor.”

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[5] M. Kent Ranson, Prabhat Jha, Frank J. Chaloupka, Son N. Nguyen. 2001. “Global and regional estimates of the effectiveness and cost-effectiveness of price increases and other tobacco control policies”. Nicotine & Tobacco Research (2002) 4, 311–319.

[6] R.M John, R.K. Rao, M.G. Rao, J. Moore, RS Deshpande, J. Senggupta, S. Selvaraj, F.K. Chaloupka, and P. Jha. 2010. “The Economics of Tobacco and Tobacco Taxation in India”. WHO.

[7] S. Barber, S.M Adioetomo, A. Ahsan and D. Setyonaluri. 2008. “Tobacco Economics in Indonesia”. WHO

Mortality adjustment accounts for the fact that not all smokers will be able to avoid a premature, tobacco-related death by quitting. A recent study in the UK found that the cumulative risk of death from lung cancer among quitters was as low as 10% of the risk among continuing smokers. The absolute hazards avoided depend on the age of cessation (Peto *et al.*, 2000).[8] Doll, Peto, Wheatley, Gray, and Sutherland (1994)[9] found that doctors in the UK that quit smoking before age 35 returned to life-table estimates of mortality very close to those of people who had never smoked. Smokers who quit at ages 35 or older were also found to have reduced risk of tobacco-related death, but these risks appeared not to have a linear relationship with the age of quitting. Based on these studies, we make the following conservative assumptions: 95% of quitters aged 15–29 years will avoid tobacco-related death, while only 75% of quitters aged 30–39, 70% of quitters aged 40–49, 50% of quitters aged 50–59, and 10% of quitters aged 60 or older will avoid tobacco-related death. We assume that a decrease in the amount of smoking by those who continue smoking has no impact on tobacco use.

QUALITATIVE APPROACH

Qualitative activities were conducted to complement the quantitative approach; with the goal of filling in gaps that quantitative analysis could not answer. Qualitative activities were used to retrieve more information on how the effect of increased excise taxes will influence smoker/non-smoker daily activities, whether smokers switch to other brands or stay faithful to their current brand and why, and government plans at the national and local levels for facing future challenges if no smoking behavior policies are enacted.

Informants

Stakeholder perceptions regarding tobacco excise increases and the affect on their and other's livelihood were gathered. Informants consisted of smokers, non-smokers, the tobacco industry, nongovernment organizations, and related government agencies. Government agencies that were interviewed are the Ministry of Finance (Fiscal Board Policy and Excise and Custom) and Ministry of Health (Center for Health Promotion or Non-Communicable Disease) at the national level. The Regional Planning Board (*Badan Perencanaan Pemerintah Daerah* or BAPPEDA) and SKPD Revenue and Health section were the subnational Government agencies interviewed. Health practitioners were also interviewed at the subnational level.

Area

Areas were chosen based on whether they represented the western or eastern part of Indonesia, and also based on high smoking prevalence. In 2010, according to basic health research (RISKESDAS), the provinces with the highest smoking prevalence are Central Kalimantan, with 36 percent of the population above age 15 years smoking, followed by Kepulauan Riau, with 33.4 percent, West Sumatra, with 33.1 percent, and East Nusa Tenggara, with 33 percent.[10] Because Sumatra has two provinces among the highest prevalence, we chose West Sumatra. The prevalence difference was not significant, but in terms of absolute numbers, West Sumatra has more people smoking than Kepulauan Riau. The fourth province chosen was DKI Jakarta, chosen because the central

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[8] R. Peto , S. Darby , H. Deo, P. Silcocks, E. Whitley, R. Doll. 2000. "Smoking, smoking cessation, and lung cancer in the UK since 1950: combination of national statistics with two case-control studies". *British Medical Journal* 321:323–329.

[9] R. Doll, R. Peto, K. Wheatley, R. Gray, I. Sutherland. 1994. "Mortality in relation to smoking: 40 years' observations on male British doctors". *British Medical Journal* 309:901–911.

[10] Ministry of Health. 2010. Basic Health Research.

government is located there. Fieldwork ran from the last week of March to the second week of April 2013. All fieldwork was conducted simultaneously.

Informants and FGD

In qualitative research, common interview methods used are focus-group discussions (FGD) and in-depth interviews. These two approaches were implemented in obtaining perception information from stakeholders. FGDs were conducted for smokers and non-smokers, and for the other informants (government, NGOs/CBOs) we conducted in-depth interviews. In DKI Jakarta, there were 8 FGDs, 4 smokers and 4 non-smokers. Male and female adults, adolescents, and poor households further differentiated these groups. “Adult” was defined as being over the age of 19, “adolescent” as 10-19 years old.

In each area, the field team held FGDs among smokers and non-smokers. Eight groups were interviewed. Each consisted of 8 to 10 people. In total, the field work conducted 32 FGDs and 23 in-depth interviews. Discussion was lively, and each participant stated his or her opinion on the issues that were presented. Friendly debates among participants were seldom heard, since there were differences of opinions on the issues. Target groups and informants were also interviewed.

Before the interviewing process, interview guidelines were developed to ensure that all informants were asked about the same issues/topics.

Table 2-2
Informants and Method

Province	Focus Group Discussion	In-depth Interview
West Sumatra	• Smoker: male adult, female adult, youth, poor HHH • Non-smokers: male adult, female adult, youth, poor household	• Regional planning board (BAPPEDA) • SKPD revenue division • SKPD Health division • Local parliamentarian • Local NGOs (Indonesia Planned Parenthood Association-West Sumatra) • Local CBOs (*Lembaga Kerapatan Adat Alam Minangkabau* (LKAAM) of West Sumatra)
Central Kalimantan	• Smoker : male adult, female adult, youth, poor HHH • Non-smokers: male adult, female adult, youth, poor HHH	• Regional planning board (BAPPEDA) • SKPD revenue division • SKPD Health division • Local parliamentarian • Local NGOs (Indonesia Cancer Foundation – Central Kalimantan branch) • Local CBOs (*Fatayat* NU (Women organization under Nahdatul Ulama) - Central Kalimantan)
East Nusa Tenggara	• Smoker : male adult, female adult, youth, poor HHH • Non-smokers: male adult, female adult, youth, poor HHH	• Regional planning board (BAPPEDA) • SKPD revenue division • SKPD Health division • Local parliamentarian • Local NGOs (Indonesia Planned Parenthood Association-East Nusa Tenggara) • Local CBOs (Indonesia Women Political Caucus- East Nusa Tenggara)
DKI Jakarta	• Smoker : male adult, female adult, youth, poor HHH • Non-smokers: male adult, female adult, youth, poor HHH	• Fiscal Policy Board, Ministry of Finance • NGO: Member of Indonesia Tobacco Control Network (FAKTA) • SKPD revenue division • SKPD Health division • Local parliamentarian
Total	32 FGDs	23 in-depth

Issues

The questions on tobacco cover a very wide range of issues, including health, economics, social, smoke-free areas, and the TAPS (tobacco advertising and promotion) ban. Issues covered in the qualitative research were informants' perception of tobacco consumption, young smokers, effects of the increase in tobacco excise taxes and prices on young/beginner smokers, switching, advertising, prevalence, illness caused by cigarette consumption, quitting support, and smoke-free areas. These issues were arranged in the interview guidelines that were developed before the fieldwork.

Table 2-3
Issues and Informants

Issues	Informant						
	FGD	NGO	CBO	SKPD Health Division	Local Parliamentarian	Regional Planning Board (BAPPEDA)	SKPD Revenue Division
1. Price of cigarette	V	V	V	V		V	
2. Excise tobacco	V	V	V	V		V	
3. 2% Tobacco Excise Sharing		V	V	V	V	V	V
4. Local Cigarette tax				V		V	V
5. Local Government Revenue						V	V
6. Smoke free area	V	V	V	V	V	V	
7. Smoking habit	V			V	V		
8. Pictorial Health Warning	V						
9. Cigarette sale	V	V	V				
10. Cigarette Advertisement	V	V	V				
11. Cigarette Sponsorship	V	V	V				

Note : The V means topics checked is discussed with the informant

3. Literature Review

CURRENT TOBACCO CONSUMPTION AND SMOKING PREVALENCE

The smoking prevalence in Indonesia continues to increase. In 1995, only 27% of the adult population age 15+ smoked, while in 2011, this increased to 36%. In 1995, 53% of males smoked, while in 2011, this increased to 67%. This means that two of every three adult males smoke. Among women, only 1.7% smoked in 1995, and this increased to 4.5% in 2011. Female smoking prevalence more than doubled over the last 16 years (Figure 3-1).

Figure 3-1

Trend of Smoking Prevalence, 1995-2011, Indonesia

SOURCE: Susenas 1995, 2001, and 2004, Riskesdas 2007 and 2010 , Global Adult Tobacco Survey Indonesia 2011

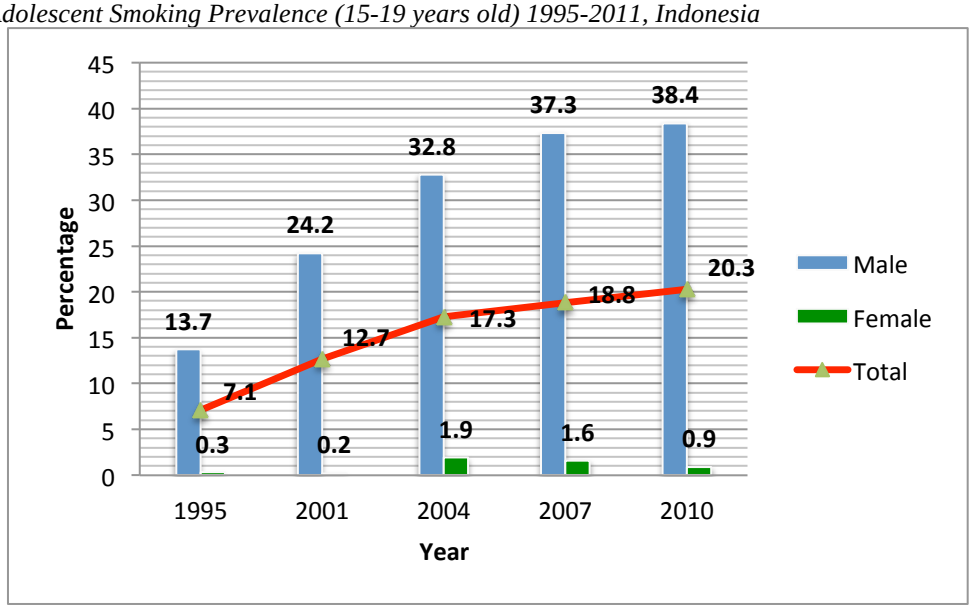
In 2010, there were an estimated 58.6 million smokers in Indonesia, of which 55 million were male smokers and 3.5 million were female. Assuming that population growth is 1.4%, there were an estimated 60.2 million smokers in Indonesia in 2012. Based on this figure, Indonesia ranks fourth for countries with the highest number of smokers, and is behind China and India. This parallels the growing cigarette consumption in Indonesia, from 182 billion sticks in 1998 to 260.8 billion sticks in 2009.

The percentage of adolescents, 15-19 years old, who smoke also keeps increasing over time. In 1995, only 7% of adolescents smoked, while in 2010 this increased to 20%. This means that 1 out of 5 teenagers smoke. The smoking prevalence of adolescents has increased almost three-fold in the last 15 years. For teenage boys, smoking prevalence in 1995 was 14%, and this increased to 38% in 2010. The increase was more than two-fold in the last 15 years. For teenage girls, the smoking prevalence in

1995 was 0.3%, and rose to 0.9% in 2010, or tripled over the last 15 years (Graph 3.2). Based on these data, we can conclude that teens in Indonesia are increasingly exposed to smoking. This is very alarming because there are millions of young people trapped by cigarette addiction.

Figure 3-2

Trend of Adolescent Smoking Prevalence (15-19 years old) 1995-2011, Indonesia

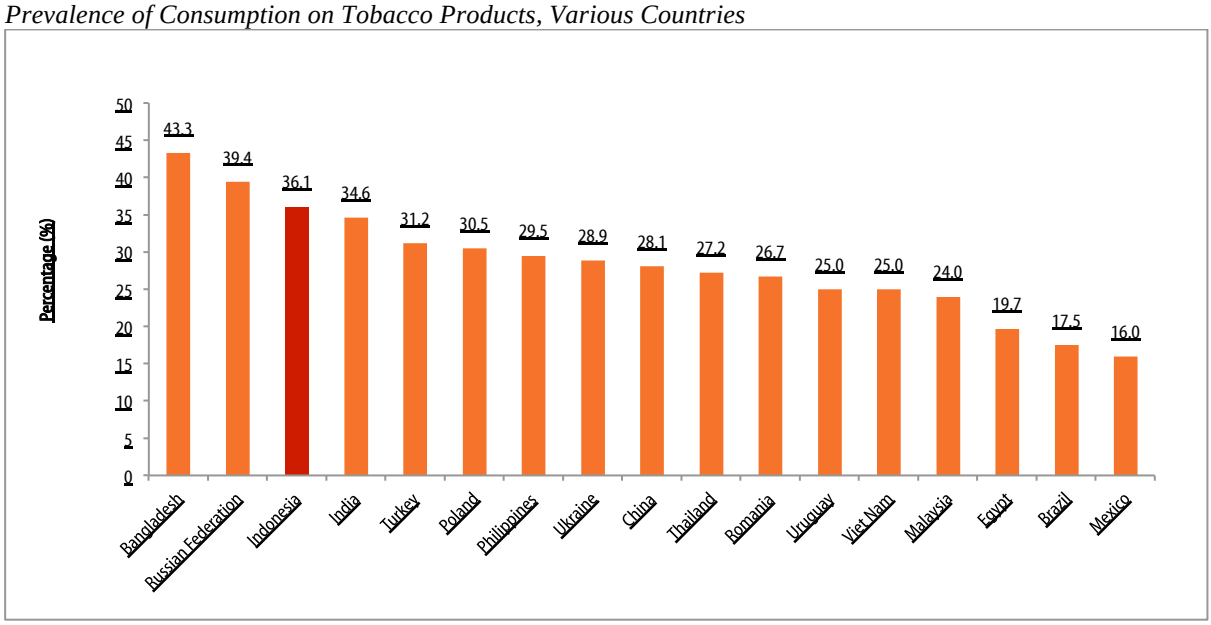


SOURCE: Susenas 1995, 2001, 2004 and Riskesdas 2007, 2010

Figure 3-3 compares the prevalence of tobacco product consumption globally among several countries. Indonesia is listed as a country with high level of tobacco consumption, 36.1%, close to Bangladesh and Russia, whose prevalence is 43.3% and 39.4% (Figure 3-3). This is considered to be high prevalence, and compares to India and China, both of which have a larger population than Indonesia, but have much lower relative prevalence. In ASEAN, the Indonesia prevalence is much higher compared to other ASEAN countries, such as Philippines, Thailand, and Malaysia.

Figure 3-3

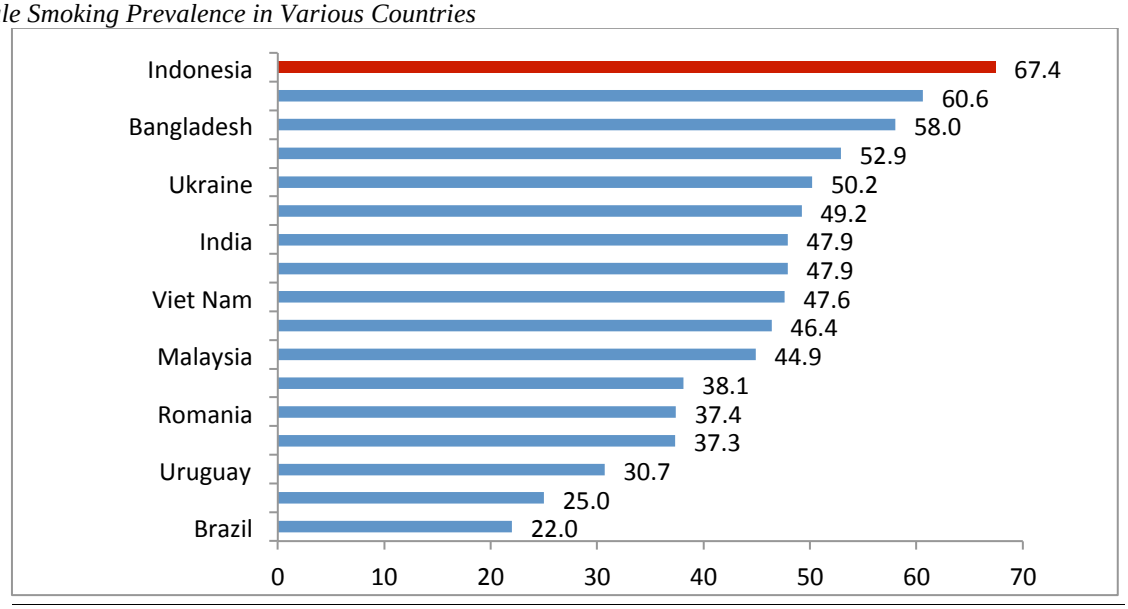
Prevalence of Consumption on Tobacco Products, Various Countries



SOURCE: Global Tobacco Adults Survey Indonesia, 2011

The prevalence comparison by sex shows that the males in Indonesia are the highest among smoking male prevalence compared to other countries. Male prevalence was 67.4%, higher than Russia and Bangladesh with 60.6% and 58%, respectively (Figure 3-4).

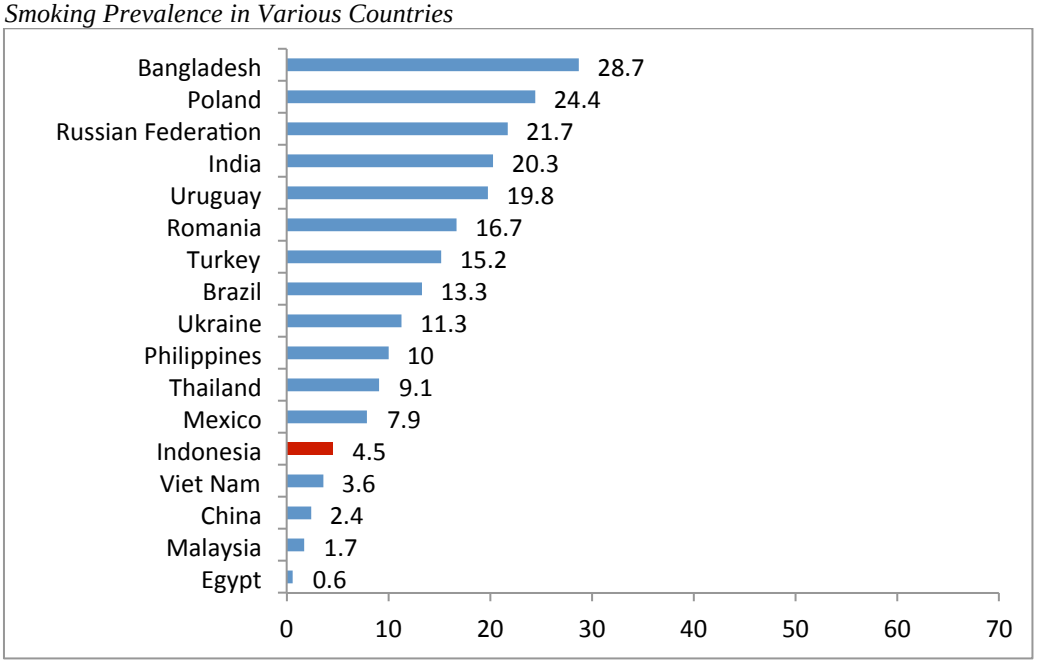
Figure 3-4
Male Smoking Prevalence in Various Countries



SOURCE: Global Tobacco Adults Survey Indonesia, 2011

Among other countries, smoking prevalence among Indonesian women is relatively low. Compared to Bangladesh, where one in four women is a smoker, only 45% of women in Indonesia are smokers (Figure 3-5).

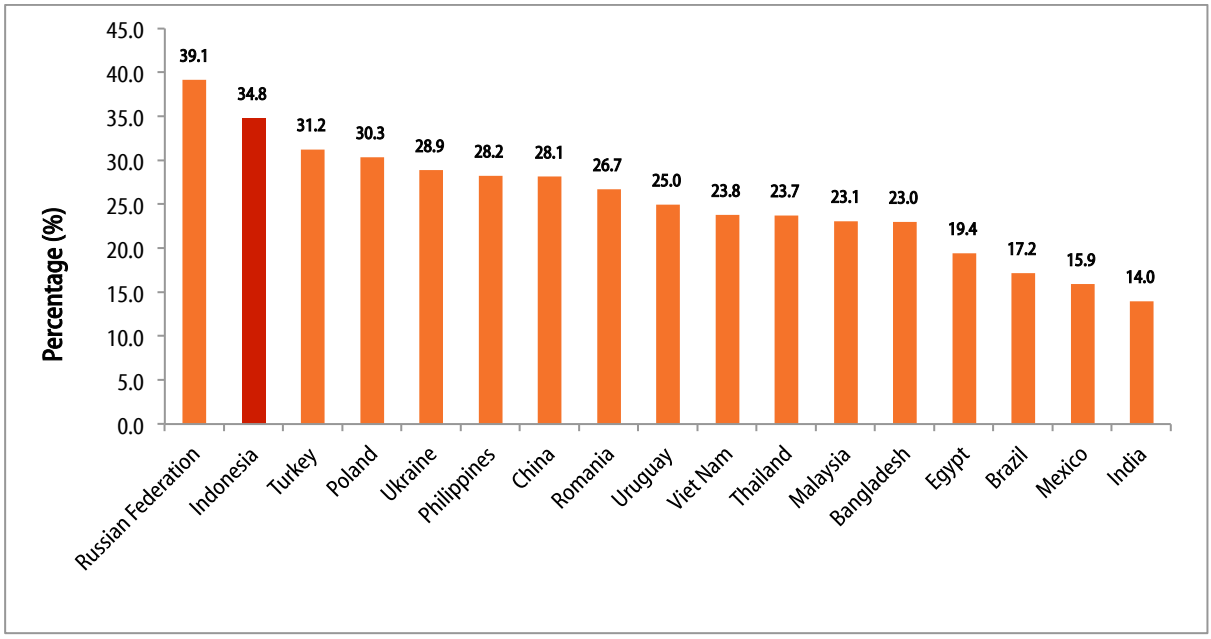
Figure 3-5
Female Smoking Prevalence in Various Countries



SOURCE: Global Tobacco Adults Survey Indonesia, 2011

According to GATS, the smoking prevalence in Indonesia has reached 34.4% (Figure 3-6), higher than other countries in Europe and Asia. This is a relatively high number and close to Russia's prevalence, which is 39.1%. In terms of numbers, there are 80 million people in Indonesia that smoke, whereas in Russia are only 55 million people.

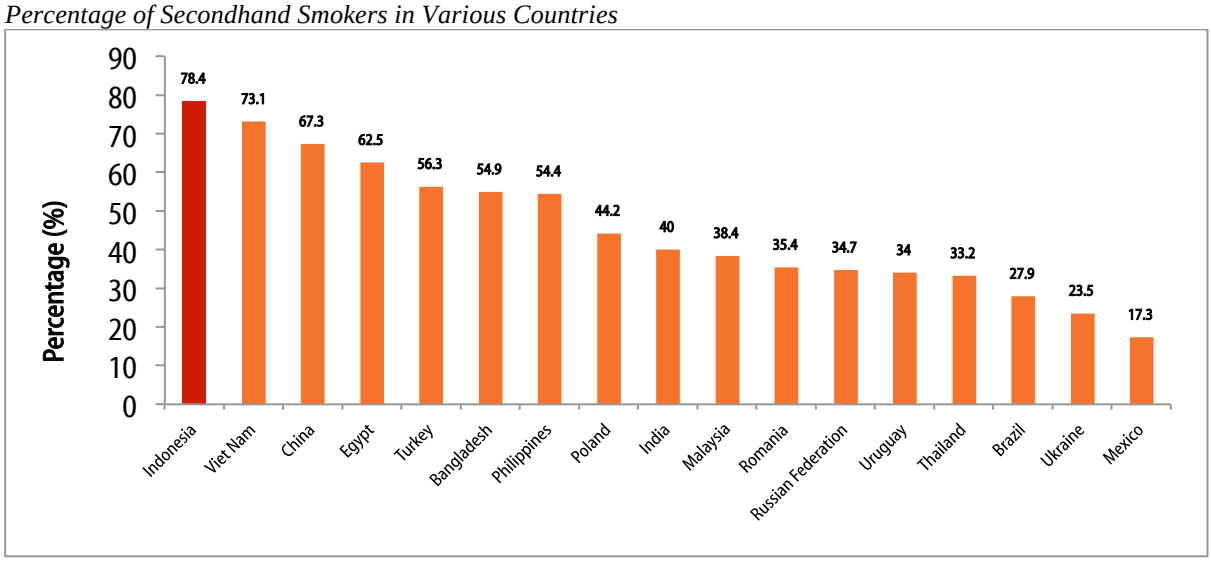
Figure 3-6
Smoking Prevalence in Various Countries



SOURCE: Global Tobacco Adults Survey Indonesia, 2011

At 78.4%, Indonesia has the highest percentage of second hand smoke compared to other countries. (Figure 3-7). As many as 186 million people in Indonesia are exposed to cigarette smoke.

Figure 3-7
Percentage of Secondhand Smokers in Various Countries

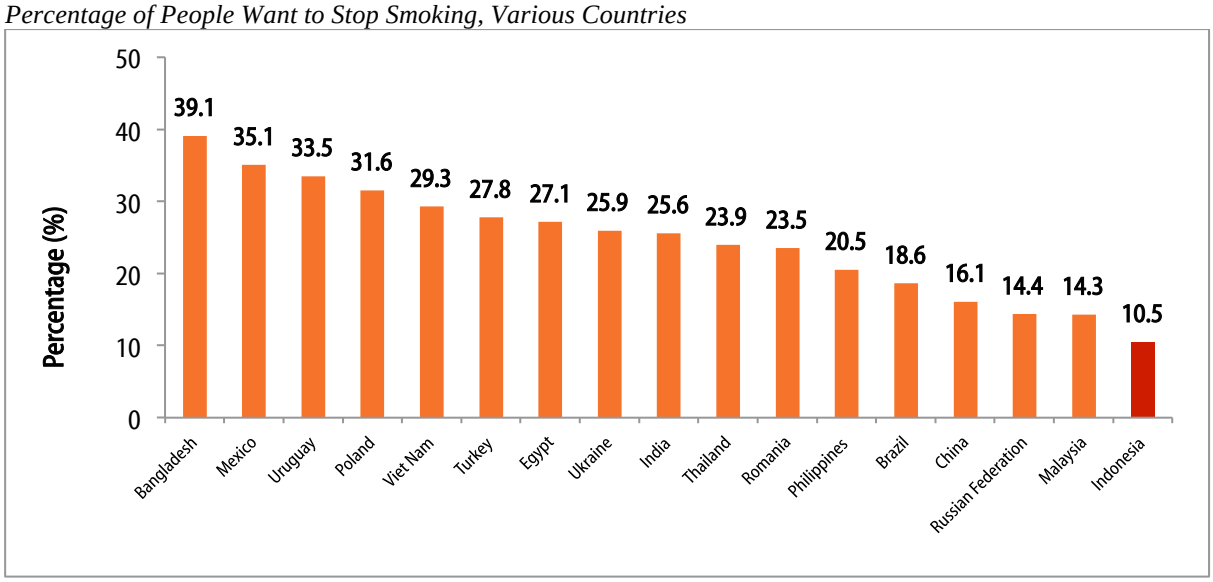


SOURCE: Global Tobacco Adults Survey Indonesia, 2011

Compared to other countries, Indonesia is the fourth lowest country for smoking cessation, at a rate of 10.5% (Figure 3-8). This stands in contrast to places like Bangladesh, which has a higher smoking prevalence but also a high percentage of smoking cessation, 39.1%. The low percentage indicates the lack of awareness of a healthy life style among Indonesians.

Figure 3-8

Percentage of People Want to Stop Smoking, Various Countries



SOURCE: Global Tobacco Adults Survey Indonesia, 2011

TOBACCO EXCISE TAX

In May 2003, the World Health Organization (WHO) World Health Assembly unanimously adopted the WHO Framework Convention on Tobacco Control (FCTC) to galvanize action at the global and country level against the tobacco epidemic. Unfortunately, among Asian Pacific countries, only Indonesia has not signed and ratified the FCTC. Indonesia is now a heaven for the cigarette industry since there is no strict regulation of tobacco use.

To fight the tobacco epidemic, the WHO introduced the MPOWER package of six proven policies: 1) monitor tobacco use and prevention policies, 2) protect people from tobacco smoke, 3) offer help to quit tobacco use, 4) warn about dangers of tobacco use, 5) enforce bans on tobacco advertising, promotion, and sponsorship, 6) raise taxes on tobacco.

Raising excise taxes on tobacco is the most effective instrument to control tobacco consumption. Higher taxes are especially important for deterring tobacco use among the young and the poor, groups that will benefit most from a decrease in consumption. The young and the poor are more sensitive to the prices of cigarettes. A significant higher tax would help them quit or prevent them from picking up smoking (WHO 2008).

As a dangerous product, tobacco and cigarettes have excise taxes and other tax and duties imposed. The types of tax that are imposed on tobacco are: a) excise taxes, b) import duties, and c) general taxes on consumption (Sunley 2009). Excise taxes are imposed on tobacco to discourage consumption, in addition to increasing government revenue. Excises on tobacco are easier to administer than broad-based consumption taxes or direct taxes on income. Imported tobacco is subject to import duties. In Indonesia's case, imported cigarettes constitute an insignificant part of consumption; in 2005, the ratio of imported cigarettes to domestic production was less than 1%

(SEATCA 2010). Meanwhile, general tax consumption, for example value added tax (VAT), aims to raise revenue from domestic consumption, including tobacco.

There are three reasons why the government needs to impose excise tax on tobacco:

1. To raise revenue for general purposes: Tobacco taxes are very efficient in raising revenue. There is a large, captured consumer market paying taxes because they either cannot quit smoking due to addiction, or they are not price sensitive to taxes.
2. To correct external costs: a tobacco tax helps defray the external costs of tobacco consumption, such as diseases contracted by non-smokers and the costs to treat such diseases.
3. To discourage consumption of the product: higher tobacco taxes discourage consumption, particularly among the poor, the young, and new tobacco users, and provides an opportunity for more productive spending and investment elsewhere (Yurekli 2001 and Cnossen 2005).

Since raising taxes is the most effective measure to reduce consumption, the WHO recommends increasing the excise tax to at least 70% of the retail price, which will lead to a significant increase in the price of cigarettes, encourage smokers to quit, prevent smoking among children and adolescents, and reduce deaths from tobacco consumption. Further, imposing higher excise taxes will increase government revenue from the cigarette tax (WHO 2010).

Implementation of excise taxes can be either specific, ad valorem, or a combination of these.

- *Specific excise system*: a cigarette is taxed based on the amount per pack, per 1,000 sticks, or per ton (e.g., $1.50 per pack regardless of price).
- *Ad valorem excise system:* a cigarette is taxed based on a percentage of the value of the product, as measured by the manufacturer/producer price at which the product is sold to the retailer/distributor (e.g., 45 percent of the manufacturer's price or retail price) (Yurekli 2001).

Ninety percent of countries (163 of 182) impose an excise tax on tobacco products, except for some in the Middle East (Bahrain, Kuwait, Oman, Qatar, Saudi Arabia, and UAE), Pacific Island, and Caribbean countries (WHO 2010). Tobacco products are also subject to VAT, import duties, cigarette and other taxes, such as additional taxes or local taxes to finance specific programs. The amount of VAT and additional taxes varies depending on the policy of each country. The current value of VAT in the price of cigarettes is between 2-10% in 30 countries, 10-15% in 65 countries; 30 countries do not impose VAT on tobacco products (WHO 2010).

A review of the implementation of excise tobacco taxes in eight countries shows that countries that impose a simple, uniform excise tax can lower cigarette consumption; this happened in Turkey, Thailand, Brazil, United States, and Australia (see Table 3-1). The system is effective at reducing tobacco use and allows for effective tax administration and higher tax revenues.

Tiered excise tax systems applied by other countries are not effective in lowering consumption. This system encourages smokers to substitute from higher-priced cigarettes to lower priced cigarettes because there is price gap between premium cigarettes and cheap cigarettes.

Table 3-1
Summary of Cigarette Tax Systems in Selected Countries

Country	Tax		
	System	Rate	Impact of Increase
China (Hu, et al 2008)	Excise and ad valorem	Excise tax: RMB 0,60/carton or RMB 0,06 per pack Ad valorem: ≥ RMB 50 per carton: 45% of wholesale price < RMB 50 per carton: 30% of wholesale price	No impact: China consumed 1,697 billion cigarettes (2002), 2,163 billion cigarette (2009), or an increase of 27%
India (John et al 2010)	Based on tobacco product and tiers	Filtered cigarette (per 1000 sticks) Length ≤ 60 mm: Rs 819 Length 60-70 mm: Rs 1323 Unfiltered cigarette: (per 1000 sticks) Length ≤70 mm: Rs 819 Length 70-75 mm: Rs 1323 Length 75- 85mm: Rs 1759 Length ≥ 85 mm: Rs 2163 Bidis other than paper rolled, manufactured without machine: Rs 12 per 1000 sticks Other Bidis: Rs 30 per 1000 sticks	No impact: Tobacco use in India increased in all age groups 14-54 years old, between 1998 and 2005. For example age 15-24, increased from 19.4% to 40.1%.
Russia (Ross, Shariff, Gilmore A. 2008)	Specific and ad valorem with tiers	Filtered cigarette Specific: RUB 150 per 1000 sticks and minimum RUB 177 Ad valorem: 6% of retail price Unfiltered Cigarette Specific: RUB 72 per 1000 sticks and minimum RUB 93 Ad valorem: 6% of retail price	No impact Between the years 1992-2004, there was a double increase in the prevalence rate among women from 6.9% to 15%
Thailand (WHO, 2011)	Ad valorem, single rate	85% of factory price	Yes, smoking prevalence decrease from 32% (or 12.26 million smokers) in 1991 to 21% (or 11.5 million smokers) in 2011
Turkey (Yurekli, et al, 2010)	Ad valorem with specific floor value	63% of retail price and specific floor value: TL 2,65	Yes, The cigarette price increased threefold between 2005 and 2011; however, cigarette sales declined from 106.7 billion sticks in 2005 to 90.8 billion in 2011 (global.tobaccofreekid.org).
Brazil (Iglesias et al 2007)	Specific tax with tier, adjusted with inflation rate	Length <87 mm: Soft pack: BRL 0.764 Soft pack and same brand box pack: BRL 1.004 Box pack: BRL 1.335 Length >87 mm Soft pack: BRL 0.764	Yes, the smoking prevalence among adults dropped from 35% in 1989 to 16% in 2006

Country	Tax		
	System	Rate	Impact of Increase
		Soft pack and same brand box pack: BRL 1.004 Box pack: BRL 1.335	
Australia	Specific, single tariff based on weight and sticks, adjusted with inflation rate	Cigarette containing tobacco of: ≤ 0,80 gram: $0,25833 per stick or $ 6,46 per pack (25 stick) Other tobacco product: $ 322.93 per kilogram of tobacco.	Yes In 1980, 34% of people age 18 and over were smoking, however, in 2007 only 19% of people in same age bracket smoked.
United States (CTFK, 2009, 2012)	Specific, single tariff	Cigarette: 100,66 ¢ per pack or $50,33 per 1000 Small cigar (=cigarette): 100,66 ¢ per pack or $50,33 per 1000 RYO tobacco: 100,66 ¢ per pack or $24,78 per pound	Yes, Adult smoking prevalence declined by 6.3% from 20.6% in 2008 to 19.3% in 2010

Note: source for Australia: Chapter E: Enhancing social and market outcomes (E6. Tobacco taxation) (http://taxreview.treasury.gov.au/content/FinalReport.aspx?doc=html/publications/Papers/Final_Report_Part_2/chapter_e6-2.htm)

TOBACCO TAX SYSTEM IN INDONESIA

The tobacco tax system in Indonesia is the most complex system in the world because excise rates are determined by various variables: type of cigarette (hand- made or machine made, kretek or white cigarette, filtered or non-filtered), annual cigarette production, and range of retail price. The complex system encourages smokers to switch from higher priced cigarettes to lower priced cigarettes when the government increases taxes.

Prior to February 1, 2009, Indonesia imposed both an ad valorem tax and a specific tax. Effective on February 1, 2009, Indonesia changed the excise tax system from “a multi-tier mixed specific and ad valorem system” to “a multi-tier specific system.” The specific rates per stick for domestic cigarettes vary by type of product, production levels, and the retail price (*harga jual eceran*—HJE).

According to the Excise Law, the maximum allowable cigarette excise tax is 57% of the retail price. This maximum level is lower than the recommended excise tariff by the WHO, which is 2/3 (67%) of the retail price. Average excise taxes in 2012 were 54%, so there is space to increase the tax to 57%. However, the excise ceiling should be revised because it limits the government’s ability to increase further taxes to protect people.

Table 3-2 shows that during the 2009-2012 period, average tobacco excise tariffs for four types of cigarette (Machine Made Kretek, Hand Rolled Kretek, White Cigarette, and Filtered Hand Rolled Kretek) increased from 38% in 2009 to 54% in 2012. As part of a government plan to simplify the excise tax system, the tiers of excise tariffs reduced from 25 tiers in 2009 to 15 tiers in 2012.[11] The government also imposed an 8.4% value added tax (VAT), in addition to excise taxes for cigarettes sold in Indonesia. The VAT is collected from manufacturers. The average total tax burden for cigarettes in Indonesia in 2012 was 62.4%, (54%+8.4%) (see Table 3-2).

[11] In the future the government will reduce the tax rate to only two: machine made products and hand-made products.

Table 3-2

Tobacco Excise System in Indonesia, 2009-2012

Type of Cigarette	Production Scale (Stick)		2009		2010		2011		2012	
			Retail Price Range	Excise Tariff	Retail Price Range	Excise Tariff	Retail Price Range	Excise Tariff	Retail Price Range	Excise Tariff
Machine Made Kretek (SKM)	I	> 2 Billion	> 660	290	> 660	310	> 660	325	> 660	355
			630 - 660	280	630 - 660	300	630 - 660	315	630 - 660	345
			600 - 630	260	600 - 630	280	600 - 630	295	600 - 630	325
	II	≤2 Billion	> 430	210	> 430	230	> 430	245	>430	270
			380 - 430	175	380 - 430	195	380 - 430	210	374 - 430	235
			374 - 380	135	374 - 380	155	374 - 380	170		
White Cigarette (SPM)	I	> 2 Billion	>600	290	>600	310	>600	325	=> 375	365
			450 - 600	230	450 - 600	275	450 - 600	295		
			375 - 450	185	375 - 450	225	375 - 450	245		
	II	≤2 Billion	>300	170	>300	200	>300	215	>300	235
			254 - 300	135	254 - 300	165	254 - 300	175	254 - 300	190
			217 - 254	80	217 - 254	105	217 - 254	110	217 - 254	125
Hand Rolled Kretek (SKT)	I	> 2 Billion	>590	200	>590	215	>590	235	>590	255
			550 - 590	150	550 - 590	165	550 - 590	180	520-590	195
			520 - 550	130	520 - 550	145	520 - 550	155		
	II	>300 Million - ≤2 Billion	>379	90	>379	105	>379	110	>379	125
			349 - 379	80	349 - 379	95	349 - 379	100	349 - 379	115
			336 - 349	75	336 - 349	90	336 - 349	90	336 - 349	105
	III	≤ 300 Million	=>234	40	=>234	65	=>234	65	=>234	75
Avg. % of excise to retail price				38		44		46		51

SOURCE : *Ministry of Finance Regulation about Tobacco Excise 2008-2011*

Table 3-2 shows that in 2012 the cheapest retail price was IDR 234 per stick (USD 0.025/stick) for a hand-rolled cigarette level III. The low price of cigarettes encourages people to start smoking, especially children and adolescents, and maintains smokers' habits. The low price of cigarettes is even cheaper than the price of candy in Indonesia, which is IDR 400/piece. Moreover, there is no regulation banning people from buying cigarette by the stick. Cigarettes are getting cheaper. A study done by Titissari and Ahsan (2010) on cigarette affordability that uses the Relative Income Price (RIP) method found that cigarettes became 50% more affordable from 2003 to 2010. This is one of main reasons that smoking prevalence and cigarette consumption have increased in Indonesia recently.

IMPACT OF A TOBACCO TAX INCREASE ON CONSUMPTION, EMPLOYMENT, GOVERNMENT REVENUE

A levied tax on tobacco and tobacco related products is a policy practiced in many countries to control tobacco use. The aim of taxation applied to tobacco and tobacco products (cigarette) is to promote health and increase state revenue. A number of studies have documented the effects of cigarette price increases as result of tax increases on cigarette demand. According to Lee et al (2005), the price of elasticity of cigarettes[12] falls between 0.14 and -1.23, but usually falls within a narrower range, from -0.3 to -0.5. Using published statistics from 1980 through 1997, Hu and Mao (2002) estimated the price elasticity of demand for cigarettes in China to be -0.54. They found that the increase of cigarette taxes in China by 25 percent, up from the existing 40 percent tax rate, will reduce cigarette consumption by 4.54 billion packs.

Using published statistics in Taiwan from 1971 to 2000, Lee et al (2005) found that the price elasticities for domestic and imported cigarettes were -0.664 and -0.822, respectively. After the increase of NT$5 Health and Welfare Tax in 2002, the consumption of domestic cigarettes was reduced by 15.21 per packs per capita, and consumption of imported cigarette was reduced by 7.51 packs per capita.

Using data from Thailand, Sarntisart et al (2003) found that the price elasticity was -0.39, while income elasticity was 0.70. Urban smokers and poor people were found to be more responsive to prices compared to rural people. Younger people were also more responsive to changes in price compared with older people.

Karki et al (2003) analyzed data from Nepal, and found that the price elasticity of demand for cigarettes and bidis was -0.882. They also showed that the poor and the young were the groups most sensitive to price changes.

Similar to findings from other countries, Djutaharta et al (2002) analyzed two time series data sets: yearly series (from 1970 to 2001) and monthly series (January to June 2001) in Indonesia. Using annual data, they found that a price elasticity of demand was -0.345 and income elasticity of demand was 0.743. Using monthly data, the price elasticity of demand was -0.315 and the income parameter was not significant. This study simulation showed that raising cigarette taxes would not lower government income because of inelastic cigarette demand, and because total revenue rises when tax increases are used to raise prices.

[12] Price elasticity is the percentage change in demand caused by the one percent change in price.

Using a log-linear model for 1985-1995 data in Indonesia, de Bayer and Yurekli (2000) found that the price elasticity of demand for *kreteks* (clove cigarettes) was -0.51, and the income elasticity was 0.35. The simulation shows that if taxes increased by 100 percent, consumption would fall and revenue would increase.

Adioetomo et al (2001) analyzed data from the 1999 Indonesia National Social and Economic Survey, which used household as the unit of analysis. A two-part model was employed. They found that total price elasticity for all households was -0.61. Simulation of the impact of a 10 percent tax increase, ceteris paribus, showed cigarette prices increasing by 4.9 percent and consumption declining by 3 percent. Additionally, total tobacco tax revenue would increase by 6.7 percent. The study found that poorer households were more responsive to changes in price. Income was found to be positively associated with spending on tobacco products.

It is clear that imposing tax increases on cigarettes would have a significant effect on reducing cigarette consumption, and that government revenue from cigarette taxes would not fall. What about the impact of tax increases on employment, particularly in the tobacco industry? Would employment decline if cigarette taxes were increased? Using Chinese statistics, Hu and Mao (2002) estimated employment in the tobacco industry would drop 5.4 percent, assuming a linear production function. However, in most cases the loss of employment would be lower due to retirement and job transfers. Hu and Mao (2002) also estimate that a 25 percent tax increase, resulting in a 10 percent rise in retail cigarette prices, would save 1.4-2.2 million lives in China.

Marks (2003) using data from the Indonesia Central Board of Statistics in 2000, based on a worst possible scenario, estimated the direct impact of increases in the cigarette tax on employment of production workers in the cigarette sector as a loss of 89,756 jobs, with 86,820 jobs lost in the hand rolled *kretek* sector (*sigaret kretek tangan—SKT*). In the short run, workers that lost jobs in the cigarette industry would most likely become unemployed or move to the informal sector. He suggests that the government employ the workers in the coconut oil sector using simple small-scale industry to heat and press coconuts to extract the oil. However, this is a low productivity and low wage sector. Djutaharta (2005a), using official data from Indonesia, also found a similar finding: that an increase in cigarette taxes would reduce cigarette employment.

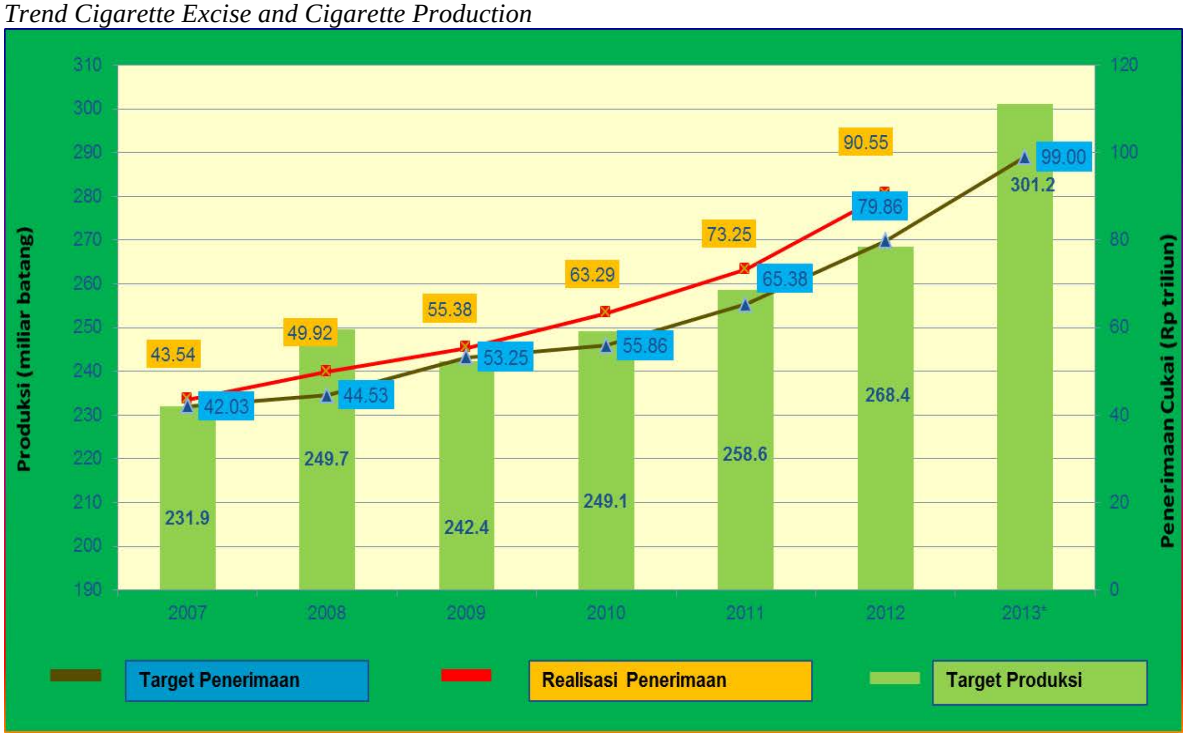
TREND OF TOBACCO EXCISE REVENUE

The main goals of imposing excise taxes are to control cigarette consumption and to monitor cigarette distribution so that cigarette consumption can be reduced. To control cigarette consumption, the government is allowed by law to impose excise taxes on cigarettes. As stated in Law No. 37, 2009, the maximum allowable cigarette excise is 57% of the retail price. Every year the government increases excise taxes moderately. This increase has not affected either consumption or production. Figure 3-9 shows that government revenue from cigarette excise taxes has steadily increased over time, from Rp 43.54 trillion in 2011 to Rp 90.55 trillion in 2012. In the meantime, cigarette production also increased rapidly from 231.9 billion sticks to 268.4 billion sticks. According to Tobacco Atlas, cigarette consumption in Indonesia has increased steeply, from 182 billion sticks in 1998 to 260 billion sticks in 2008.[13]

[13] *Bunga Rampai Fakta Tembakau Permasalahannya di Indonesia tahun 2012*, Tobacco Control Support Center-IAKMI dan Badan Penelitian dan Pengembangan Kesehatan.

Figure 3-9

Trend Cigarette Excise and Cigarette Production



Note: Target Penerimaan= Revenue Target, Realisasi Penerimaan= Revenue Realization, Target produksi= Production Target.

Source: Presentation by Fiscal Policy Board (2013).

4. Impact of Excise Increase on Government Revenue and Life Saved

This chapter examines the analysis based on the 2011 Susenas data. There are three sections: descriptive analysis, estimating price elasticity, and simulation of government revenue from cigarette excise and simulation of lives saved for people who either quit or reduce smoking.

DESCRIPTIVE ANALYSIS

Based on Socio Economic Survey (Susenas) Data from 2011, which has 71,773 household respondents and is nationally representative, 60% of households in Indonesia have cigarette expenditures or have at least one smoker in the household. An analysis based on the sex of the head of household shows that male heads of household have a much higher smoking percentage (65%) compared to female heads of household (27%). This result is in line with the individual smoking status by sex, where male smoking prevalence is 67%. This number shows the magnitude of the smoking problem in male society. The low price of cigarettes, massive cigarette advertising, small text health warning on cigarette packs, and ineffective smoke-free area regulations have contributed to massive cigarette consumption for the male population in Indonesia. In addition, by marital status, 60% in the ever married head of household has expenditure on cigarettes, while in never married category, heads of householdsmoking prevalence is lower (42%).

Comparing urban and rural locations shows that household smoking prevalence is similar- 59% for urban, and 60% for rural households. By head of household education, the lowest household smoking prevalence is found among those with the highest education level, tertiary education, 45%. For those who attained only a primary education, the smoking prevalence is higher, 59%. This indicates that head of household education has an impact on household smoking status, likely because they are more informed about the risks of smoking.

Based on head of household working status, household smoking prevalence is higher for those with a working head of household (62%) than a non-working head of household (40%). This may be due to the higher purchasing power for working heads of household. However, 40% of non-working heads of household have cigarette expenditures. This fact is not economically sound because they spend on cigarettes, which will damage their health in the future, even though their head of household does not work. They should spend their limited income on other important expenditures that will increase their welfare in the future, such as education and nutrition. Household head employment status shows a similar smoking status of around 60%. However, for unpaid heads of household, there is also a high smoking prevalence, 59%. The similar household smoking prevalence applies for formal and informal jobs, around 62%. Analyzing job sectors shows that heads of household that work in the secondary sector have highest houshold smoking prevalence, 67%.

Based on expenditure quintile per capita, households in quintile 1 (the poorest) have the lowest smoking prevalence, 51%. The highest household smoking prevalence is in quitile 3, 65%. Even for the poorest households, half still make cigarette expenditures. They should spend their limited income in other areas, such as education and nutrition. The government should increase the price of cigarettes to decrease their cigarette purchasing power. The government should also ban sales of single sticks to make cigarettes less affordable for the poorest housholds.

Table 4-1

Household Smoking Status by Characteristics of the Head of Households (Percentage distribution of household by smoking status and background characteristics), Indonesia 2011

Characteristics of Head of Household	Nonsmoking Households		Smoking Households		All Households	
	Number	Percentage	Number	Percentage	Number	Percentage
SEX						
Male	21.531	34,85	40.249	65,15	61.780	100
Female	7.247	72,52	2.746	27,48	9.993	100
Total	28.778	40,10	42.995	59,90	71.773	100
MARITAL STATUS						
Never married	1.392	58,32	995	41,68	2.387	100
Ever married	27.386	39,47	42.000	60,53	69.386	100
Total	28.778	40,10	42.995	59,9	71.773	100
RESIDENCE						
Urban	12.002	40,48	17.646	59,52	29.648	100
Rural	16.776	39,82	25.349	60,18	42.125	100
Total	28.778	40,10	42.995	59,90	71.773	100
EDUCATION						
Primary and less	16.063	41,25	22.880	58,75	38.943	100
Secondary	9.396	35,1	17.370	64,90	26.766	100
Tertiary	3.319	54,73	2.745	45,27	6.064	100
Total	28.778	40,10	42.995	59,90	71.773	100
WORKING STATUS						
Working	24.107	37,69	39.861	62,31	63.968	100
Not working	4.671	59,85	3.134	40,16	7.805	100
Total	28.778	40,1	42.995	60	71.773	100
EMPLOYMENT STATUS						
Self employed	5.973	37,93	9.774	62,07	15.747	100
Self employed assisted by family member	7.463	39,58	11.392	60,42	18.855	100
Employer with permanent workers	1.219	35,76	2.190	64,24	3.409	100
Employee	7.289	36,7	12.570	63,30	19.859	100
Casual employee	2.080	35,27	3.817	64,73	5.897	100
Unpaid worker	83	41,29	118	58,71	201	100
Total	24.107	37,69	39.861	62,31	63.968	100

Characteristics of Head of Household	Nonsmoking Households		Smoking Households		All Households	
	Number	Percentage	Number	Percentage	Number	Percentage
FORMAL/INFORMAL WORK						
Informal	15.599	38,33	25.101	61,67	40.700	100
Formal	8.508	36,57	14.760	63,43	23.268	100
Total	24.107	37,69	39.861	62,31	63.968	100
SECTOR						
Primary	11.990	38,05	19.524	61,95	31.514	100
Secondary	2.956	32,78	6.062	67,22	9.018	100
Tertiary	9.161	39,09	14.275	60,91	23.436	100
Total	24.107	37,69	39.861	62,31	63.968	100
INCOME GROUP (PER CAPITA)						
Quintile 1	7.042	49,06	7.312	50,94	14.354	100
Quintile 2	5.582	38,89	8.773	61,11	14.355	100
Quintile 3	5.020	34,97	9.335	65,03	14.355	100
Quintile 4	5.124	35,69	9.231	64,31	14.355	100
Quintile 5	6.010	41,87	8.344	58,13	14.354	100
Total	28.778	40,10	42.995	59,90	71.773	100

Notes: Definitions of Variables

Education

Primary: those whose highest education attainment is SD/SLB/MI/Paket A (elementary school) + those who do not attend school.

Secondary: SMP/SMPLB/MTs/Paket B/SMA/SMALB/MA/SMK/Paket C (Junior High and High School)

Higher/tertiary: D1/D2/D3/D4/S1/S2//S3 (Vocational and University)

Job Sector

Primary: paddy and crops, horticulture, plantation, fishery, livestock, forestry & other agriculture, mining & extraction

Secondary: manufacturing, electricity & gas, construction

Tertiary: commerce, hotel and restaurant, transportation and warehousing, information & communication, finance and insurance, education service, health service, social, governmental, and individual service, others

Formal/Informal Work

Formal: work as employer with permanent workers and employee

Informal: work as self-employed, self-employed assisted by family member or temporary help, casual employee, unpaid worker

Income groups: as categorized by income per capita in the HH.

Q1: income per capita is between Rp.0 - Rp.266324.8

Q2: income per capita is more than Rp.266324.8 up to Rp.380618

Q3: income per capita is more than Rp.380618 up to Rp. 542963.4

Q4: income per capita is more than Rp. 542963.4 up to Rp.838242.2

Q5: income per capita is more than Rp. 838242.2

PRICE ELASTICITY

We estimate the price elasticity using two equations because the Susenas data contain smoking and nonsmoking households. First, we employ a probit model to estimate factors that influence households smoking decisions. The main factors that we use are cigarette price and income per capita. We develop 5 models to make sure that the variables concerned are stable and consistent. In the second equation we employ an OLS regression, where the dependent variable is the logarithm of quantity of cigarettes consumed by the household. Independent variables for both equations are derived from the characteristics of heads of household (sex, age, marital status, education and employment status).

Table 4-2, below, shows that the coefficient on the price variable has, as expected, a negative sign and is significant for all models. The negative sign suggests that higher prices decrease the probability of households having a member that smokes (i.e. being a smoker household). The effect of price on the household decision to smoke is around -0.11. The previous study done by Adioetomo et al (2005) in Indonesia found the lowest participation elasticity was 0.02 for households. Findings from China (Mao et al, 2000), California (Hu et al, 1995), and Vietnam (Kinh et al, 2005) show that participation elasticity was higher. The effect of prices on the individual decision to smoke is estimated at –0.49 in China, −0.33 in California, and -0.53 in Vietnam. The lower participation elasticity in Indonesia indicates that cigarette price has a smaller effect on the decision to smoke.

This study found that, as expected, the income variable is positive and significant for all models; it is around 0.09 (models 3, 4, and 5), indicating that as income increases, the probability of smoking increases. This finding is consistent with the study in Vietnam (Kinh et al, 2005) that found the coefficient on income was 2.45.

Another notable variable is tobacco price. The effect of tobacco price is negative and significant (model 3, 4, 5), at around -0.02, a little bit lower compared with cigarette price. This indicates that higher tobacco prices decrease the probability of a household including a member who smokes roll-your-own cigarette.

Other characteristics of head household variables include sex, age, marital status, education, and employment, which are all significant (model 3,4,5). Variables on location (urban and rural area) are positive and significant for all models except for model 2, where the sign is negative. A positive sign means that living in a rural area increases the probability of smoking compared to those who live in urban areas.

Table 4-2

Probit Models for Smoking Participation

(Dependent variable is household smoking status (yes=1, no=0))

	Model 1	Model 2	Model 3	Model 4	Model 5
Cigarette price in pack (in ln)	-0.11118 (0.0046)***	-0.10897 (0.0045)***	-0.11630 (0 .0046)***	-0.11618 (0 .0047)***	-0.11639 (0 .0046)***
income per capita (in ln)	0.0465 (0.0028)***	0.04980 (0.0030)***	0.09722 (0 .0034)***	0.09675 (0 .00348)***	0.09667 (0 .0034)***
Tobacco price (in ln)		-0.00890 (0.0031)***	-0.01884 (0 .0032)***	-0.01855 (0 .0032)***	-0.01884 (0 .0032)***
area		-0.01342 (0.0039)***	0.01121 (0 .0041)***	0.00584 (0.0044)	0.01042 (0 .0042)**
sex			0.34787 (0 .0054)***	0.34783 (0 .0054)***	0.34765 (0 .0054)***
age			-0.00344 (0 .0001)***	-0.00338 (0 .00016)***	-0.00341 (0 .0001)***
marstat			0.17470 (0 .0112)***	0.17340 (0 .0112)***	0.17416 (0 .0112)***
educ 1			-0.02845 (0 .0045)***	-0.03010 (0 .0045)***	-0.02922 (0 .0045)***
educ 2			-0.25713 (0 .0078)***	-0.25794 (0 .0079)***	-0.25930 (0 .0079)***
work			0.05380 (0 .0070)***	-	-
sect_1				0.03091 (0 .0062)***	-
sect_2				0.00291 (0 .0017)**	-
sect_3				-0.01145 (0 .0018)***	-
fwork_1					0.00577 (0 .00458)
Fwork_2					-0.05198 (0 .0072)***
No of observation	71773	71773	71773	71773	71773
R^2	0.0071	0.0073	0.0796	0.0799	0.0797

*Note: Significance of coefficients *** p < 0.01; ** p < 0.05; * p < 0.10.*

The second part of the equation examines the quantity of cigarettes smoked by households. The model is a conditional demand estimation for cigarette consumption, because only smoking households are included in the model. The model estimates the factors that determine cigarette consumption among households (Table 4-3).

The study shows that the conditional price elasticity, as expected, is negative and significant for all models, at around -0.70. This means that if cigarette prices increase by 10 percent, the quantity of cigarettes consumed decreases by 7 percent. Compared with smoking participation, this finding shows that cigarette consumption is much more sensitive to changes in price. Other studies done in China (Mao et al. 2000), California (Hu et al. 1995), and Vietnam (Kinh et al, 2005) using individual-level data show different results. Those studies found that smoking participation is more sensitive to cigarette prices than the conditional price elasticity, except for Vietnam, where the estimation for smoking participation and conditional price elasticity is almost similar, at around -0.50. Adioetomo et al (2005) found that cigarette consumption (-0.6) is much more sensitive to price changes than smoking participation (-0.02).

Table 4-3

Estimated Coefficients of Conditional Demand Equations

(Dependent variable is quantity of packed cigarette consumed per capita (in ln))

	Model 1	Model 2	Model 3	Model 4	Model 5
Cigarette price in pack (in ln)	-0.69655 (0.0090)***	-0.69123 (0.0091)***	-0.69764 (0 .0046)***	-0.70068 (0.00898)***	-0.70033 (0.00894)***
income per capita (in ln)	0.59633 (0.00671)***	0.60723 (0.0068)***	0.61648 (0 .0034)***	0.61348 (0.00702)***	0.60937 (0 .00704)***
Tobacco price (in ln)		0.02375 (0.00583)***	0.01660 (0 .0032)***	0.01781 (0.00571)***	0.01623 (0.00570)***
area		-0.06635 (0.00723)***	-0.05123 (0 .0041)***	-0.06627 (0.00779)***	-0.0615 (0.00726)***
sex			0.01545 (0 .0054)***	0.01936 (0.01501)	0.01213 (0.01499)
age			-0.00344 (0 .0001)***	-0.01049 (0.00030)***	-0.01023 (0.0003)***
marstat			0.17470 (0 .0112)***	-0.03359 (0.02391)	-0.03592 (0.02386)
educ 1			-0.02845 (0 .0045)***	-0.00207 (0.00768)	-0.0040 (0.0076)
educ 2			-0.25713 (0 .0078)***	-0.20420 (0.01651)***	-0.21725 (0.01650)***
work			0.05380 (0 .0070)***	-	
sect_1				0.02908 (0.01060)***	-
sect_2				0.01532 (0.00293)***	-
sect_3				-0.00392 (0 .00390)	-
fwork_1					0.07374 (0.00768)***
Fwork_2					-0.0160 (0.01516)
No of observation	42995	42995	42995	42995	42995
R^2	0.2416	0.2434	0.2753	0.2758	0.2768

*Note: Significance of coefficients *** p < 0.01; ** p < 0.05; * p < 0.10.*

The effect of income on cigarette consumption is positive and significant for all models, at around 0.6. It means that each 10 percent increase in income tends to increase the average quantity of cigarettes consumed by 6.0 percent. In other word, as income increases, people smoke more cigarettes. The positive sign indicates that cigarettes are a normal good in Indonesia.

Unlike in the first equation, tobacco prices have the opposite sign: they are positive and significant, around 0.02 (model 2-model 5). This means that if tobacco prices increase by 10%, cigarette consumption would increase by 2%. This shows it is a substitution product for cigarettes- if the cigarette price increases, smokers will likely switch to sliced tobacco using roll-own-your cigarettes.

If we look at the head of household characteristics, sex, age, marital status, education, and working status are all statistically significant and affect cigarette consumption (model 3). However, when we exclude working status and replace it with employment sector and formal work (model 4 and model 5), some variables like sex, marital status, and education do not significantly affect cigarette consumption.

Total Elasticity. The price elasticity of smoking participation is -0.11 (Table 4-2), and the price elasticity of cigarette consumption is -0.7 (Table 4-3). From these, we can calculate the total price elasticity to be −0.46,[14] which means that a 10 percent increase in the cigarette price will lead to a decrease in cigarette consumption by 4.6 percent.

The total elasticity found in this study is little bit lower than other studies conducted by Mao et al (2000) in China (-0.52) and Adioetomo et al (2005) in Indonesia (-0.61), however it is similar to a study done by Hu et al (1995) in California (-0.46).

SIMULATION

In this section, based on the elasticity we got from the estimation, we will examine the simulation of government revenue when cigarette prices increase due to a cigarette excise tax increase. Other simulations will see how many people's lives can be saved when excise taxes increase because smokers quit or reduce cigarette consumption.

Government Revenue

Increases in cigarette excise taxes will bring about a cigarette price increase that in turn will lead to a decrease in cigarette consumption. Table 4.4 shows that by increasing excise taxes to 57%, the maximum allowable cigarette excise tax, the cigarette price will increase by 38%. If the government follows the WHO standard for excise taxes on cigarettes, which is 70% of retail price, the price will increase by 97%. Cigarette prices (16 sticks per pack) on average will increase from Rp 9,077.3 to Rp 12,491.7, and to Rp 17,904.7, if excise taxes increase to 57% and 70%, respectively.

Total cigarette consumption will decrease from 10,442.91 million packs per year to 8,604.62 and 5,690.20 million packs per year if excise taxes increase to 57% and 70%, respectively. If excise taxes are increased by 57% and 70% respectively, government revenue will increase by 58% (Rp 42.71 trillion) and 84% (Rp61.73 trillion). It is estimated that government revenue will increase from Rp 73.25 trillion in 2011 to Rp 115.96 trillion and Rp 134.98 trillion if the government increases excise taxes by 57% and 70%, respectively.

Table 4-4

Impact of Excise Tax on Excise Government Revenue

Tax increase (%)	Base value (2011)	Simulation (Effect of Tax Increase)		
		50	57	70
Price increase (%) included tax		18	38	97
Total cigarette consumption per year (million pack)	10,442.91	9,546.20	8,604.62	5,690.20
Decrease in cigarette consumption (%)		-8.59	-17.60	-45.51
Cigarette price per pack (16 sticks), Rp	9,077.3	10,742.8	12,491.7	17,904.7
Cigarette excise per pack (Rp)	3,705.92	5,371.4	7,120.3	12,533.
Changes in govt. revenue from excise (%)		32.50	58.31	84.28
Changes in govt. revenue from excise (Rp, trillion)		23.80	42.71	61.73
Est. govt. revenue from excise (in Rp, trillion)	73.25	97.05	115.96	134.98

[14] Total elasticity=(0.6*price elasticity of cigarette consumption)+(0.4*price elasticity of smoking participation)

Lives Saved

To examine the impact of a tax increases on future mortality and revenues, we use a static cohort model of smokers in 2011 (Table 4-5). There are currently about 62 million smokers in Indonesia. We make the assumption that the expected mortality among these smokers is 50 percent (31 million). In addition, the health gains from quitting decline with increasing age. Whereas, 95 percent of deaths could be averted by quitting at age 29 years or younger, quitting after 60 years of age would avert only 10 percent of the deaths attributable to tobacco consumption. On average, mortality averted by quitting is approximately 70 percent of the expected number of deaths.

Table 4-5

Cohort of Smokers by Age Group and Percent of Expected Mortality Averted by Quitting in 2011

Age group	Number of Smokers	Expected Mortality (% mortality that could be averted by quitting)	Expected Mortality (Number)
</=19	4,105,291	95%	3,900,026
20-29	13,882,225	95%	13,188,114
30-39	15,012,473	75%	11,259,355
40-49	12,943,201	70%	9,060,241
50-59	8,826,199	50%	4,413,100
60-69	4,625,256	10%	462,526
70+	2,666,311	10%	266,631
Total	62,060,956	69%	42,549,992

To predict the changes in consumption, we used price elasticity from the 2011 Susenas data, which is -0.11 (the price elasticity of smoking participation), -0.7 (the price elasticity of cigarette consumption), and total elasticity price (-0.47). Price elasticity is assumed to be the same for males and females, and across age groups. The impact on consumption is composed of the reduction in prevalence (40 percent of the price elasticity) and the reduction in smoking intensity among the remaining smokers (60 percent of the price elasticity). The remaining smokers that do not quit are assumed to face the same mortality risks as before.

Table 4-6 shows that if taxes are increased to 57 percent of sales price, there will be 1.96 million tobacco-related deaths averted. If the taxes are raised 70% then even more deaths can be averted, around 5.07 million. This is approximately 3.1% and 16.3% of the expected mortality in this cohort since cigarettes are addictive, but there are many smokers that would continue smoking: 59 million and 55 million if taxes are increased to 57% and 70%, respectively. This simulation shows that higher excise taxes would reduce cigarette consumption and avert more deaths.

It is important to note that increasing the maximum excise tax (57%) would increase cigarette prices all levels rather than reduce substitution among cigarette types. In addition, the simplification of the tax system would result in additional lives saved because all types of cigarettes would have the same excise burden, and there would no price gap between high cigarette prices and lower cigarette prices.

Table 4-6

Impact of Increasing Tobacco Excise on Tobacco- attributable Mortality, 2011

	Current Levels	Increase to		
% Excise tax to retail price	40.8%	50%	57%	70%
Tax per pack (16 pieces)	3,705.9	5,371	7,120	12,533
Base price	5,371.4	5,371	5,371	5,371
Price per pack: point of sale (Rp)	9,077.3	10,743	12,492	17,905
Increase in price		18.3	37.6	97.2
Number of smoker (million)	62.06			
Reduction in number of smokers (million)		1.37	2.80	7.24
Mortality averted (millions)	31.03	0.96	1.96	5.07
Mortality averted (% of expected mortality)		3.1%	6.3%	16.3%
Remaining smokers (million)		60.7	59.3	54.8

5. Perception of Price and Other Tobacco Control Measures

Informants were asked about 11 issues in the FGD. From a tobacco control perspective, tobacco consumption cannot be decreased by applying one strategy. Increasing excise taxes on tobacco, and thus prices, is only one of several strategies that should be conducted simultaneously. These issues will be elaborated in this section.

INCREASING PRICE OF CIGARETTES

In this section, we present the results of several focus group discussions (FGD) and in-depth interviews about the price of cigarettes. We reveal informants' opinions on whether they support or refuse this policy. In addition, we explore the informants' opinions on single stick sales and the optimal price of cigarettes for getting smokers to quit. This information is important in tobacco control because increasing prices is the most effective measure to decrease cigarette consumption. We conducted FGD with several types of informants based on their smoking and socio-economic status. The FGD were conducted for adult male smokers and non-smokers; adult female smokers and non-smokers; poor smokers and non-smokers; and teenager smokers and non-smokers. Female, poor, and teenage smokers are included in FGD because they are vulnerable and a potential group in the cigarette market. Meanwhile, in-depth interviews were conducted with several policy makers and civil society groups to discuss and explore their opinions on using cigarette prices as an instrument to control cigarette consumption.

Support for Increasing Cigarette price and Ban of Single Stick Sales

The purpose of increasing cigarette prices is to decrease the number of smokers. The government increases cigarette prices by increasing tobacco excise taxes.

> "Yes, the government should increase cigarette prices to decrease the number of smokers." (In-depth Interview with Planning Board West Sumatra)

The problem is not only the price per pack but also sales of single stick cigarettes, which make cigarettes cheaper and more affordable for teenagers. Several informants stated that sales of single stick cigarettes make it cheaper for teenagers with limited fund. Therefore, they recommend that the government ban sales of single stick cigarettes.

> "The problem is not only cigarette sales in packs, but mainly single stick sales because they make cigarette prices cheaper, and children in secondary and high school can afford it." (FGD Non Smoker Female, Padang West Sumatera)

> "Usually daily allowance for children is around IDR 10,000. For example they use their money for renew their cell phone balance and meals, but there is still enough money to buy single stick cigarettes. The Government must ban sales of single stick cigarettes." (In-depth Interview with head of Fatayat NU women organization)

> "Even if the price of cigarettes increases, smokers can still buy single stick cigarettes. If they cannot buy them in a pack, they will buy them by the stick." (FGD Female Smoker Jakarta)

Prices of cigarettes per pack should be higher than daily income of poor people and teenagers. Poor people who earn IDR 75,000 per day can afford to buy a pack of cigarette, the price of which is between IDR 10,000 – 20,000. Even teenager that have a daily allowance of IDR 10,000 can still afford a pack of cigarettes every day. The price of a pack of cigarettes must be higher than IDR 40,000 to force poor people and teenagers to stop smoking.

> "About cigarette prices, please make them higher than IDR 10,000 or IDR 12,000…at least IDR 40,000 per pack, so that children and carpenters cannot afford them. Daily wages of carpenters are around IDR 75,000, so if the government set the price higher than IDR 40,000 they will find it hard to smoke. If the price is IDR 10,000, they can afford it and also children can afford it." (In-depth Interview with Local Health Office Central Kalimantan)

> "But if price of cigarette is IDR 50,000 then children cannot afford it. Because their daily allowance is only IDR 10,000" (FGD Non Smoker Female Palangkaraya)

Refusal of Increasing of Cigarette Price

A non-smoker male stated that increasing prices is useless because smoking is addictive. It is impossible for smokers to quit because of increasing prices. They will try many ways to keep smoking. Cigarettes are also considered primary goods for smokers. This is related to taste and preference; smokers who smoke a particular brand will smoke the same brand because of their preferences. That's why increasing cigarette prices will not be effective.

> "It is useless, because they are addicted, nothing can be done to make them stop smoking. I think increasing prices will have no impact at all." (FGD Non Smoker Male Palangkaraya)

> "If smokers are already addicted then whatever the price is, they will buy their cigarettes. Samsu (famous brand of hand rolled Kretek) was only IDR 500, now it is IDR 1,000 but we still smoke it." (FGD Smoker Male Jakarta)

> "No, I do not agree with that, because cigarettes are a basic need for smokers. Smokers still buy cigarettes even if the price is skyrocketing. Also, smoker's loyalty to a particular brand will last forever. Increasing prices will only decrease consumption slightly." (In-depth Interview Member of Provincial Parliament in Central Kalimantan)

Other informants stated that increasing cigarette prices should not be considered as a solution to decrease cigarette consumption. As long as single stick sales are allowed then increasing the price of cigarettes is useless to decrease cigarette consumption because smokers can buy cigarettes by the single stick, which is much cheaper.

> "I don't think so, that is not a solution (increasing the price of cigarettes) because sellers can sell cigarettes by the single stick" (FGD Female Smokers Palangkaraya)

Increasing the price of cigarettes will burden parents of young smokers. This was the sentiment of young smokers. They thought that increasing cigarette prices would raise costs for their parents because they buy cigarettes using their parents' money. Even young smokers stated that cigarette prices should not increase, so that they can still afford it.

> No, it is as if people are smoking, parents will work harder for a living – (if the price of cigarettes increases), they will not be able to buy cigarettes. I will not be able to buy cigarette, but I need to smoke…. (FGD, Male Smoker Palangkaraya)

> "Cigarette prices must not be expensive. If it is expensive, I cannot afford it!"(FGD Young Smokers Palangkaraya)

Smoking is also considered a social activity, and smokers often share their cigarettes with other smokers. This makes more people become addicted to cigarettes. It also decreases the impact of increasing cigarette prices to decrease cigarette consumption.

> "Smoking is related to social pressure. If someone buys cigarettes, he will share it with friends and they all become addicted. They will make every effort to have cigarettes." (In-depth interview with Bappeda, NTT)

Increasing cigarette prices are also considered a factor that raises the inflation. This is another reason why the government should implement a cigarette price increase in timely manner so that it will not accelerate the inflation rate.

> "Cigarette prices don't have to be increased. If they are increased, prices of other commodities will also increase." (In-depth interview with Bappeda, NTT)

Price Level That Decreases Consumption and Pushes Smokers to Quit

Several informants stated that price of cigarettes should be higher than daily income to force smokers to quit. The lowest price of cigarette that will make smokers quit is IDR 40,000 per pack. However, a majority of informants stated that the price must be at least IDR 50,000. If the cigarettes are bought in single stick then their price must be at least IDR 5,000 per stick. There was an informant who stated that only if cigarette prices were around IDR 150,000 would there be a decrease cigarette consumption. Recently, the price of cigarettes range from IDR 4,000 – IDR 14,000 per pack, and the single stick price ranges from IDR 500 – 1,500 per stick. To decrease cigarette consumption, based on this information, the government should increase tobacco excise taxes and, hence, increase prices of cigarettes by more than double to reach informants' stated price level.

> "If the cigarette price is higher than income, smokers will quit. For example, if someone's income is Rp.50,000 per day and the cigarette price is Rp.40,000, smokers will likely to quit". (FGD Male Smoker Jakarta)

> "If the cigarette price is Rp.50,000, I will probably reduce my consumption, but not quit." (FGD Female Smoker Jakarta)

> "[The cigarette price must be] Rp.5000/stick or Rp.50.000/pack [the average daily allowance for students is Rp. Rp15.000/day and the cigarette expense is around Rp.7000/day]" (FGD Young Smokers Padang)

> "If the price is already 150 thousand, [I will] be confused and stop smoking" (FGD Female Smoker Jakarta)

CIGARETTE EXCISE

In this research we also discuss informants' knowledge and opinion of cigarette excise taxes. This is because the objective of cigarette excise taxes is to control cigarette consumption. This is different from the objective of tax policy, which is to increase government revenue and is not concerned with consumption.

Aim of Tobacco Excise

An officer from the Planning Board in Central Kalimantan questioned the central government's objective for cigarette excise taxes. He feels that there is a dichotomy in this policy, is it more for health or for government revenue? The central government should determine their priority; if it is more for health then they should increase it much further. However, a member of the local parliament in Central Kalimantan stated that the government should take the middle way on cigarettes because it harms our health condition, but also it increases government revenue. The dichotomy between health and government revenue should not matter as long as the government increases its revenue from cigarette excise through increasing the cigarette excise tariff, and hence increasing prices and decreasing consumer affordability, but not increasing cigarette consumption.

> "Well, we need to know, what is the central government obsession with increasing cigarette excise? Is it toward taxes – right, since there is a dichotomy right? Dualism, is it for economics or health?" (In-depth Interview, BAPPEDA, Central Kalimantan)

> "This is just a thought. On one side, it increases local revenue, but on the other it disturbs health. I think I will take the middle way" (In-depth Interview, Member of Parliament, Central Kalimantan)

Who pays the Excise?

Recently, the cigarette industry claimed that they contribute to government revenue by paying trillions in cigarette excise taxes. However, like all other forms of taxation, the consumer ultimately pays through increasing cigarette prices. A local health officer in Central Kalimantan stated that smokers pay cigarette excise when they buy cigarettes. So, the cigarette industry does not contribute to government revenue. In addition, an FGD participant in Jakarta stated that smokers lose twice by paying disease related costs and paying taxes to the government. Smokers' lose, but the industry always makes sure that they will never lose in this business. In fact, a cigarette industry owner is one of the richest men in Indonesia.

> "Actually when we buy cigarettes, we pay the tax. Smokers also contribute, not just the industry. We pay the tax, we are fooled. There are people that said that it is the industry that pays the tax, in reality it is us – smokers- that pay the tax". (In-depth Interview, Local Health Office, Central Kalimantan)

> "It is the smoker that pays…. They lose, but the industry doesn't want to lose". (FGD, Non Smoker Female Jakarta)

Support for Increasing Cigarette Excise Tariff

Increasing cigarette excise tariffs can increase cigarette prices and hence decrease cigarette consumption. An informant from the local health office stated that increasing cigarette excise will reduce the number of beginner smokers, but should be accompanied by a ban of single stick sales. Another rationale for increasing cigarette excise tariffs is that recent cigarette excise revenue and tariffs are not enough to finance the costs of smoking related disease treatment.

> "Oh yes, the government has to increase cigarette excise and prices, to reduce beginner smokers, and there should be no sales by the stick". (In-depth Interview Local Health Office West Sumatra)

> "Then they said, 'how about cigarette excise?' l told them it (income) is in-sufficient. Income from cigarette excise is not enough to finance the cost of illness caused by smoking". (In-depth Interview, Indonesia Cancer Association, Central Kalimantan)

TWO PERCENT TOBACCO EXCISE SHARING REVENUE

According to Excise Law No 39 year 2007, the central government has to share 2% of its tobacco excise revenue with tobacco producer provinces, whether cigarette and or tobacco. This 2% sharing revenue is allocated for five uses, including improving tobacco leaf quality, monitoring the cigarette industry, social development, dissemination of tobacco excise regulation, and law enforcement against illicit cigarettes. This has been implemented since 2008. In our research, we gauge informant knowledge, opinion, and preferences of this policy.

2% tobacco excise sharing revenue will have a positive impact because it will increase local government revenue. The local panning board officer in Central Kalimantan supports increasing tobacco excise through increasing its tariff.

> "...the problem with excise is that there will be revenue from taxes that are distributed to the provincial government, etc. From a revenue perspective it has a positive impact, if (tobacco excise) increases then it [revenue] will increase too . . ." (In-depth Interview, Local Planning Board Central Kalimantan)

From the health perspective, based on ministry of finance regulation, the 2% tobacco excise sharing revenue can only be used for making and implementing smoke free area policy; and providing health equipment to treat smoking related diseases. An informant from the local health office in East Nusa Tenggara stated that this fund is useful in supporting the smoke free area (SFA) policy. This will add resources for making SFA possible because the fund for the local state budget is very small.

> "Yes, maybe continue upholding the implementation of the regional smoke free area (SFA). Funds from APBD are very small- if there is 2% tobacco tax sharing, we will focus on cost sharing with other APBN funds to goal regulation and implementation on SFA." (In-depth Interview, Local Health Office East Nusa Tenggara)

However, there are several problems regarding implementation of 2% tobacco excise revenue sharing. Firstly, this fund is small compared to other tax sharing from the central government. This fund is not large enough to support health development. Secondly, administration costs of this fund are not rationally accepted because the fund is so small in some cities. Thirdly, the disbursement of this fund is gradual. This creates difficulties for local authorities to use it effectively. Fourthly, there are conflicts of interest in allocating this fund between health and tobacco industry interests.

> "Well, that is the obsession. That is the obsession to develop health, but if we compare to other tax sharing programs it is small. If we only depended on support from it, it is not enough. In developing the health sector in Central Kalimantan, but relying on it [2% tobacco excise sharing] it is not enough." (In-depth Interview, Local Planning Board Central Kalimantan)

> "Well, it depends on the region. For districts, the money is insignificant; there are those that receive only fifteen million. That is the problem, the reporting efforts are not comparable to the amount received." (In-depth Interview, Local Revenue Office, Central Kalimantan)

> "The transfer is often gradual, every three-months, it is difficult to assign activities, since funds are not disbursed simultaneously." (In-depth Interview, Local Planning Board Central Kalimantan)

> "If in a district/city there is a fund for public health, there is a clause that states that the fund can not be used to afflict tobacco farmers. But we had socialized that it is not for smoking, what we have socialized is for smoke free area". (In-depth Interview, Local Health Office, West Sumatera)

LOCAL CIGARETTE TAX

According to Law No. 28 year 2009 on "Local tax and retribution," one form of local tax is the cigarette tax. This will be implemented in 2014. This tax is collected by the Directorate General Custom and Excise, Ministry of Finance, and distributed to all provinces based on the province's population. However, informants from the local revenue office in Central Kalimantan stated that this is not fair because the Central Kalimantan population is relatively small and, hence, receives a small part of the local cigarette tax.

> "So this cigarette tax has a deadline in 2014, I have coordinated with the central authority, and this cigarette policy is a sissy. I call it sissy because it is a local tax but collected by customs, right? So customs collect, and the distribution is regulated by PMK (Ministry of Finance Regulation) based on the population size. I said yesterday, Central Kalimantan's population size is small but has a large number of smokers, is that fair? – I said that, he he." (In-depth Interview SKPD Revenue Division Central Kalimantan)

In law No. 28 year 2009, it is stated that 50% of the local cigarette tax should be used for health objectives and law enforcement against illicit cigarettes. In our research, we discuss this with local policy makers. Informants from the Local Planning Office of East Nusa Tenggara stated that, in term of health objectives, this fund should be used for health promotion to disseminate information on the dangers of smoking. This fund can also be used to support implementation of recent government regulations on Pictorial Health Warning (PHW) at the local level. In addition to health promotion, informants from the West local revenue office, West Sumatra, stated that funds should be used to build a lung hospital to treat smokers that get lung cancer. Another suggestion about how to use local cigarette funds was that they should support health promotion in high schools, so that the students are afraid to smoke.

> "Maybe from a health perspective, it is more about socialization. In health, there are 3 aspects. First there is promotion, second, preventive, and third, curative. Promotion is more about socialization and the advocacy process to show that smoking causes illness. Preventive is prevention, the cigarette packaging that we have are attractive compared to other country, where they feature horrifying picture of mouth cancer." (In-depth Interview Local Planning Board East Nusa Tenggara)

> "Funds from cigarette taxes should be used for improving lung hospital facilities, providing smoking areas so that smokers do not smoke everywhere, and starting a campaign on the dangers of smoking" (In-depth Interview, SKPD Revenue Division, West Sumatera)

> "Funds from taxes should be used to fund health activities for SMP and SMA school-children that can be conducted once or twice per year, so that children are also afraid of smoking, and afraid of health inspections that can detect if they are smokers." (In-depth interview, BAPPEDA, West Sumatra)

LOCAL GOVERNMENT REVENUE

Contributions from the cigarette industry to local economies depend on whether areas produce tobacco leaves and/or cigarettes. If a region produces then we assume that their economy is more dependant on cigarettes than other places that do not produce cigarettes and/or tobacco. For areas that do not produce cigarettes, the contribution of cigarettes to the local economy comes in the form of taxes and retribution, advertising, and trade. An informant from the local planning office in East Nusa Tenggara stated that in terms of labor absorption, tobacco farming is very small because it is grown for self subsistence or personal cigarette consumption through roll-your-own cigaretttes. He also said that local revenue from cigarette advertisements is small because there are not many cigarette

advertisements in the area. Meanwhile, in West Sumatra, contributions from the cigarette sector are small because there is no cigarette industry or tobacco farming in this area.

> "The case of labor absorption is troublesome because here in the city of Kupang, a majority of people work as civil servants, there is less work outside from civil servants compared to tobacco farming. Tobacco farming is very small, only for self-subsistence and not enough for sale." (In-depth Interview, BAPPEDA East Nusa Tenggara)

> "Local revenue from cigarette advertisements is small, since there are not many advertisements here." (In-depth Interview, BAPPEDA East Nusa Tenggara)

> "Contributions from the cigarette sector in West Sumatra are small, there is no cigarette industry here, but the number of smokers are many." (In-depth Interview, SKPD revenue division, West Sumatera)

SMOKING BEHAVIOR

Cigarettes are addictive. Many smokers try to quit, but fail due to tar and nicotine, which are addictive. During FGD, participants admitted that they couldn't quit smoking.

> "I want to quit, but I can't. My friend suggested that I eat candy to replace cigarettes anytime my body needs a cigarette, so I replace cigarettes with candy. I tried once, but tomorrow, I continue my habit, smoking again. My friend's method didn't work for me." (FGD, Poor People, Palangkaraya, Central Kalimantan)

> "When we were young, a broken heart was not a problem, but trying to stop smoking is like dying" (FGD, Male, Non Smoker, Tebet, Jakarta)

> "I agree that smoking is dangerous, however, as a smoker, it's hard to stop smoking. I only tried to quit smoking once. I stopped for 2 months, after that I started smoking again. I get a headache if I don't smoke. Nevertheless, we all know the bad impact of smoking." (FGD, Female, Smoker, Pasar Minggu, Jakarta)

The age of smoking initiation in Indonesia is very young. The Global Adult Tobacco Survey in 2011 reported that 12.5% of smokers started smoking when they were younger than 15 years old. Results from FGD show that many started smoking when they attended junior high school or elementary school.

> "Here, when students were out of school, they smoked cigarettes. Even, during school breaks, they go underground to smoke. If they smoke outside school, they were not detected [by their teacher]. Mostly students who smoke were in junior and senior high school. I don't see elementary students smoking cigarettes." (In-depth Interview, Chief, Fatayat NU, Palangka Raya, Central Kalimantan)

> "I don't know about other places, but, here, students from elementary school have smoked cigarettes. Once, I visited a Café, I met a child, I asked him, "what grade are you in?" He replied, "sixth grade, Ma'am." I wondered how did they get money to buy cigarettes? Then, I realized that they collect money with three other children to buy cigarettes." (In-depth Interview, Health Provincial Agency, Palangkaraya, Central Kalimantan)

> "I tried to start smoking when I was in senior high school in 2005, if I am not mistaken. I was interested in smoking when I observed my female friends smoke cigarettes. In the beginning, I just wanted to try smoking after school was dismissed. I had many friends that had already smoked when they were in junior high school and even when they were in elementary school." (FGD Female, Smoker, Palangkaraya, Central Kalimantan)

Research on tobacco has concluded that consuming cigarettes can affect human health through cancer, heart attacks, impotence, and fetal disorders. Although the government has mandated a print health warning on every cigarette pack, many smokers do not pay attention to this warning. In one FGD, a woman participant still smokes even though she is pregnant. However, most of participants believe that cigarettes do harm human health. They mentioned many diseases attributed to cigarette smoke

> "When I was pregnant, I was still smoking because I asked to my friends who had been pregnant and had smoked, and they said, it was safe to smoke, nothing happened." (FGD, Female, Smoker, West Sumatera)

> "We believe [that smoking cigarette causes many diseases]." (FGD, Male, Non Smokers, Palangkaraya, Central Kalimantan)

> "I believe [smoking harms human health], based on my husband's experience when his neck got sick. According the doctor, my husband's disease was caused by cigarettes; he was a heavy smoker at that time. A doctor gave us medicine to make my husband stop smoking. Getting massages also helps smokers quit. In a cigarette stick, there are many chemical substances that harm those who smoke and those around the smokers. The effect of cigarette smoke does not immediately harm smokers, but this effect takes place after smokers smoke many cigarettes. This certainly will cause lung cancer and other diseases." (FGD Female, Non Smoker, Kupang, East Nusa Tenggara)

> "Yes…I believe that cigarette smoke affects the health of not only smokers, but people around smokers too." (FGD, Male, Smoker, West Sumatera)

> "I have already smoked cigarettes for 40 years. I tried to quit for 2 months, but I failed, and then smoke again. We know that cigarette affect our health. For me, the intention to quit is the only driver that can make me successfully quit or fall off course, God help. Before I perform the haj, I intended to quit, but unfortunately I got sick, I was hospitalized. After that, I quit smoking" (FGD, Male, Non Smoker, Tebet, Jakarta)

SMOKE-FREE AREAS

In 2011, the Indonesian Ministry of Health, along with the Ministry of Internal Affairs, issued a regulation on in-door smoking. Regulation No 188/Menkes/PB/I/2011 regulates the implementation of smoke-free areas (SFA) inside buildings. This regulation prohibits smoking in (1) public areas, (2) work places, (3) health facilities, (4) educational places, (5) child play areas, (6) places of worship, (7) public transportation, and (8) other areas. Currently, there are about 35 local districts that have had smoke-free laws on the ground, these include DKI Jakarta, Cirebon, Palembang, Padang Panjang, Bali, and Bogor city, which also has a smoke free law. During FGD, most of participants agreed with the implementation of smoke-free areas, although some of smoker participants suggested a designated smoking room to accommodate smokers that want to smoke in SFA. For government officers, implementation of SFA is not easy. Law enforcement is a problem for those districts that have SFA regulation.

> "SFA is a must because not all people smoke cigarettes. Sometimes, I see people smoking in health facilities, such as Puskesmas (Health Center). SFA should also be implemented in recreation areas, since these areas are frequently visited by family; and also in restaurants, usually smokers will have a smoke after lunch" (FGD, Female, Smoker, Palangkaraya, Central Kalimantan)

> "No, we don't have any objection to the government implementing SFA. The implementation of SFA should be firmed, since I saw some smokers in hospital areas that were not punished. The government should also provide smoking rooms for those who want to smoke." (FGD, Male, Smoker, West Sumatera)

> "I think the government should provide SFA in hospitals and school, and since it's a government regulation, people won't get angry with SFA regulation. Other places that need SFA are public transport and public places." (FGD, Female, Non Smoker, Kupang, East Nusa Tenggara)

> "As a smoker, we agree with SFA because we realize that cigarette smoke affects other people, annoys other people, and we agree with that. The government doesn't want us to stop smoking, but to regulate it." (FGD, Male, Smoker, Pasar Minggu, Jakarta)

> "Recreation parks and other places should not allow people to smoke cigarettes. It's up to the government. In schools, there are teachers who teach while smoking. Smoking teachers are not a good example for pupils." (FGD, adolescent, Smoker, Palangkaraya, Central Kalimantan)

> "Padang city doesn't have SFA regulations. With local autonomy, the regent and mayor have the power to manage their territory. The provincial government of West Sumatera already has SFA regulations that could be an umbrella for the district and city to issue SFA regulations. It is urgent for each district and city to have SFA regulations, so that we could implement SFA." (In-depth interview with Health Provincial Agency, Padang, West Sumatera)

> "Our problem is that we have good ideas, but they can not be implemented well. We have SFA regulations, but the government cannot enforce them well. With SFA, we see people smoking, it's related to discipline. So, if we want to make SFA work, we must ensure that the regulations are enforced. Otherwise, it would be useless." (In-depth Interview with Secretary of Cancer Foundation, Central Kalimantan)

> "This year, we will have management training on how to manage SFA. We realize that implementing SFA is not an easy task…it's a long process. Discussion with parliament members that oppose SFA takes time. We also have to face mayors and regents who are smokers, so it's a hard job. Now, we just socialize the SFA idea and advocate to other agencies." (In-depth interview with Health Provincial Agency, Kupang, East Nusa Tenggara)

PICTORIAL HEALTH WARNING

Government Regulation no. 109/2012 states that to protect people from the effects of cigarettes, the government mandates a printed pictorial health warning on every cigarette pack. Pictorial health warnings are more effective in urging people to stop smoking or reduce smoking. Until now, health warnings on cigarette pack have not been effective because they were only a sentence warning that smoking can cause cancer, heart attacks, impotence, and fetus disorder. The 2011 GATS results show that 72% of respondents notice the health warning. However, only 29.8% of smokers think about quitting. Most of the participants in FGD support the implementation of PHW since it's visible and easy to understand, even for illiterate people.

> "PHW is visible, easy to read, and smokers would understand [the danger of cigarettes]. The sentence health warning doesn't have an effect on smokers, it's better to have a PHW." (FGD, Poor People, Non Smoker, Palangkaraya, Central Kalimantan)

> "PHW on cigarette packs is a good idea; it would scare children [and prevent smoking]." (FGD, Female, Smoker, Pasar Minggu, Jakarta)

> "[PHW] is a very good idea, as long as it is printed on cigarette packs. With the recent health warning [the sentence], smokers get used to it, they ignore the warning. It's better to use PHW on cigarette packs. Therefore, the government could use other pictures that

> show the impact of cigarette smoking, such as lung cancer, heart disease, or dotted lung." (FGD, Female, Non Smoker, Kupang, East Nusa Tenggara)
>
> "The PHW may affect [smokers] since it's visible and scary" (FGD, adolescent, Padang, West Sumatera)
>
> "[If the cigarette pack] was printed with PHW…the smokers would not buy it (other participants agreed)." (FGD, Female, Non Smoker, Tebet, Jakarta)
>
> "For heavy smokers, PHW doesn't affect them…it's just a picture." (FGD, Female, Smoker, Pasar Minggu, Jakarta)

CIGARETTE SALES

Sale of several items needs to be regulated. These goods include liquor, cigarettes, and adult magazines. In Indonesia, the government regulates only sales of liquor and adult magazines. Sales of cigarettes are semi-regulated- they are regulated only through taxes.

In the focus groups, smokers and non-smokers were asked whether it was hard or not to access/buy cigarettes in Jakarta, Palangka Raya, Padang and Kupang. All said that cigarettes were easy to buy, and they do not have to go to a specialty tobacco shop to buy the product. Cigarettes are on sale at large supermarkets, in malls, and from street vendors.

When asked about their opinion of cigarette regulation by the government, such as implementing a minimum age to purchase tobacco products and requiring a permit to sell tobacco and cigarettes, nearly all groups were ambivalent. Some agree that only those above age 17 should be able to buy, but nearly all said that they do not agree with requiring a "permit sale of tobacco products."

Regardless of their smoking status, all groups agreed that children under 17 years old should not be allowed to buy cigarettes, especially children that are still in primary school. Sales of cigarettes should be kept far from school. Children tend to mimic their parents' attitudes, if they see their parents smoking, children tend to imitate.

> "Yes, I think sales of tobacco products should be regulated. Children easily copy their parents' attitudes. They learn what their parents do. For example, if we ask children to buy cigarettes, they think that it is all right to smoke cigarettes. Children will think that it is good to smoke because his/her father asks them to buy cigarettes. If a parent wants to ask their children to buy something, it should be something good. "Son, please buy for me some cake." He would think, "wow, maybe this cake is good," later when he has money of his own he will surely buy some cake for himself. That is the way to teach one's children, the same applies for cigarettes. My father enjoys his smoke, it must be nice if I imitate him, I will also try. Children are like that, they tend to imitate. Therefore, do not ask them to do bad things, yes that's the way it is." (In-depth interview with Indonesia Cancer Foundation, Central Kalimantan)
>
> "Yes, children and youth need to be regulated, they are the future of the nation, we do not need to be regulated, since we are waiting to die, if I were given another 5 years to live, I am already grateful… nah, now I feel my mouth is bitter, I will move to the back" (FGD, Smoker, adult female, Jakarta)
>
> "Yes [agree with regulating sales] – example: there should be no sales near schools, do not let them sell cigarette near schools. But as you can see, just a little way from this school you can see a warung. In that warung students would gather [to buy and smoke cigarette]. It is easy for them to access [cigarettes]. The problem is in regulating [cigarette

> sales] since selling cigarettes is the warung's business." (In-depth interview with Fatayat NU, Central Kalimantan)

Nearly all informants and participants in the FGD agreed that sales of cigarettes should be regulated. Some even proposed that cigarette sales should be regulated like spirit and liquor sales. Sellers should hold a "seller permit" for tobacco products. The government should regulate tobacco product sales, such as prohibiting sales by the stick. If this were implemented then it will be hard for beginner smokers, especially children, to access tobacco. If children could not buy cigarettes, they could not start smoking and easily become addicted at a young age.

> "… if possible cigarette sellers should be regulated like spirit and liquor sellers. If sellers do not have a permit they can be fined for selling cigarettes. This could reduce tobacco sales and sellers could be monitored. Cigarette sellers should also provide information to their customers about the effect of government regulations on cigarette consumption. When someone wants to sell cigarettes they need to seek a permit for selling cigarettes, this could reduce cigarette sales. However, the government needs to consider various aspects, since cigarette taxes provide large income for the government." (FGD, Non-smoker, Female, East Nusa Tenggara)

> "The government should regulate the sales of cigarettes so that it will be difficult for school age children to access or buy cigarettes." (In-depth interview LKAAM--Community Based Organization), Padang, West Sumatra)

> "In the next neighborhood (RT 02), it could be said that there are only a few sellers, all in all only four sellers, but not all… sometimes when we go there are some… People tend to buy by the stick, the turnover is slow, different than soap …" (FGD, Non-smoker, Adult Female, Jakarta)

Although they agree not to sell cigarettes to children, they do not agree that sales of cigarettes should be regulated, because sales of cigarettes comprise more than half of the merchandise sold in stalls (warungs). There were opinions from the group, that the best option is to close cigarette companies.

> "It is easy to find and buy cigarettes… I do not agree on regulating sales of cigarettes, the implementation is hard, it will reduce stalls' profit- cigarette sales could reach 60% of all warung sales." (FGD, Non-smoker, Adult male, Padang West Sumatra)

> "If we ban warungs from selling cigarettes, I own a warung to provide for my livelihood, and one of them is selling cigarettes, cigarettes are the most profitable item in my warung." (FGD, Non-smoker, poor household, Palangkaraya, Central Kalimantan)

> "...look at warung Oji, if they don't open, children will not gather there, neighborhood children tend to mingle there, as many as 10 kids would gather, though they do not buy anything, just wait for two hours, one or two kids buy one stick and another stick… it is difficult to change their behavior." (FGD, Non-smoker, Adult Female, Jakarta)

Further respondents said that the government should regulate and enforce regulation of cigarette sales. They are also skeptical about the government succeeding in regulating sales.

> "It is hard to regulate cigarette sales, Pak! But just try it, Pak. If possible, why not just close the cigarette companies." (FGD, Smoker, Poor household, Palangkaraya, Central Kalimantan)

> "Well, actually the government could regulate cigarette sales, but the warungs in small hamlets (kampong) will be impossible to regulate, they want to earn money, maybe in large stores it is easy to regulate sales." (FGD, Non-smoker, Adult male, Jakarta)

> "… Personally I do not object to limiting cigarette sales, please, please regulate. But from the government perspective, are they ready and capable? For example, in Pasar Minggu and Kebagusan, could they monitor cigarette sales in these areas? It is only human…. discreetly they will sell cigarettes…" (FGD, Smoker, Adult male, Jakarta)

> "It will not succeed, could be …hhhhmmm…, if kids are smart they will ask an older person to buy cigarettes and give the person some money… nowadays kids are smarter [more resourceful]." (FGD, Non-smoker, Adult Female, Jakarta)

CIGARETTE ADVERTISEMENTS

To attract consumers and new customers, businesses use advertising through various media. Government Regulation no 109 year 2012 (PP 109/2012) on tobacco, says that tobacco is hazardous to health, and regulates tobacco advertisements. The decree regulates all form of indoor and outdoor advertisements.

Some respondent said that they are not concerned about cigarette advertisement; others said that they support regulation on cigarette advertisements, and there are those that think that cigarette advertisements do not need to be regulated. A group in Central Kalimantan said that health warnings that are currently imprinted to cigarette advertisements do not motivate people to stop smoking. Those health warnings tend to tell people that the advertisement is for cigarettes. According to them, the design does not reflect cigarette advertisements. But the health warning allows them to realize that the advertisement is for cigarettes.

Billboards and banners can be seen everywhere along major streets. Schools and hospitals are not safe from cigarette advertisements. For local governments, advertising on billboards and banners are a source of income.

> "Advertisement need to be regulated, the current health warning tends to tell people that those advertisements are for cigarettes since write 'smoking is causes sickness.'" (FGD, Non-smoker, Adult Male, Palangkaraya, Central Kalimantan)

> "Yes there is tax – there are people doing business- it is difficult. To my knowledge those roadside advertisements have permits, pak. The permit is from the mayor, it is PAD (Penerimaan Asli Daerah) for the city, Pak." (FGD, Non-smoker, Adult Male, Palangkaraya, Central Kalimantan)

An informant said that what is more important to regulate is the content of the advertisements. Since these advertisement tends to sell image. These images insinuate to young boys that smoking is "macho."

> "Indeed advertisements need to be regulated, because this encourages people to buy cigarette products. Current advertisements sell image, such as the image that smoking is manly or "macho," and that if one does not smoke then they are "sissy." I think that influences adolescent, especially those age 10 to 13 years old, and also 13 to 15 years old. They are quick in catching imbedded messages. Therefore, it is important to regulate the advertisements' content." (In-depth interview with Fatayat NU, Central Kalimantan)

> "For the sake of the country and nation I think it is necessary to limit cigarette advertisements. Looking at the facts, cigarette advertisements are everywhere. For example, cigarette commercials broadcast by TV, the message is fearless taste, when children sees this they will try to smoke, since they think that by smoking they are fearless, brave, and gentlemanly. Therefore, it is important that the government regulates cigarette advertisement." (FGD, Non-smoker, Female, East Nusa Tenggara)

There are others that said that they do not agree on the government restricting cigarette advertisements, since this is a "democratic" country. Others that do not agree said that the cigarette commercials on TV are already aired late in the night. They even said that it is the government's fault for not making health-warning commercials about the dangers of smoking tobacco as attractive as the tobacco industry commercials.

> "Advertisements do not need to be regulated, we are a democratic country. It will be more 'festive,' as long as health warnings on the dangers of smoking are still listed." (FGD, Smoker, poor, Padang, West Sumatra)

> "Just allow it as long as it is limited, such as broadcast on TV in the late evening, do not show pictures of cigarettes, only the brand. But I do not agree that the government should prohibit all cigarette advertisements on mass media because it violates freedom and creativity. They should make a good and more creative advertisement about the danger of smoking." (FGD, Non- Smoker, Adult male, Padang, West Sumatra)

> "It is the right of the company, let them [advertise] on TV or radio. It depends on us, are we influenced or not, that is it, regarding promotion, it is their right." (FGD, Smoker, Adult Male, Jakarta)

CIGARETTE SPONSORSHIPS

Cigarette companies are targeting young people, their advertisements are building the image that smoking is for fun, adventurous, bright young people. They are persistent in circulating around young people by providing sponsorship to events that are mostly attended by young people. They have scholarship programs for young people.

> "Local governments need to regulate. Cigarette companies are sponsoring football games, they are not actually sponsoring the game, but encouraging people to smoke. For example, badminton, Surya Enam Belas, they do not smoke, but the audience is smoking." (FGD, Non-smoker, Male, Palangkaraya Central Kalimantan)

> "Yes, even in senior high school, there are activities that invite sponsors, since the committee felt they need external funds. The government should regulate ….do not let it free like before, like in university campus areas, where there are one thousand Djarum flags." (FGD, Smoker, Adult-Male, Jakarta)

> "There are concerts providing free cigarettes. It actually depends on the government. There are various forms of sponsorship; one of them is to market their products. So when one buys a ticket to an event, they should just get the ticket, do not give free cigarette packs. That is giving them a bad example." (FGD, Smoker, Adult Female, Palangkaraya Central Kalimantan)

On the opposite side, there are those that are reluctant if this sponsorship is for a band. They said that cigarette companies are quick to provide sponsorships. Other said that if there is no sponsorship from cigarette companies then there is no entertainment.

> "There is no need to regulate cigarette sponsorship, if there is no cigarette sponsor then there is no entertainment in Palangka Raya." (FGD, Male, non-smoker, Palangkaraya Central Kalimantan)

> "Yes … cigarette companies give many sponsorships, such as for Hari Sumpah Pemuda, Independence day celebration on 17 August and music festivals…. But I do not agree that all cigarette sponsorships should stop, just regulate it." (FGD, Non-smoker, Adult-Male, Padang, West Sumatra)

"Those sponsorships could not influence people to start smoking, it is because of promiscuity." (FGD, Smoker, Adult-Male, Jakarta)

6. Conclusions and Recommendations

From the analysis above, we can make some conclusions on tobacco consumption and the impact of increasing tobacco taxes on government revenue and lives saved. Those conclusions are:

- Smoking prevalence in Indonesia is increasing from 27% in 1995 to 36% in 2011. Smoking prevalence for males is increasing from 53% in 1995 to 67% in 2011, while female smoking prevalence is increasing from 1.7% in 1995 to 4.5% in 2011. Male smoking prevalence in Indonesia is the highest among the 16 countries in GATS. Second hand smoke in Indonesia is also the highest among the GATS countries.
- The main objective of the tobacco tax or tobacco excise is to control consumption. Hence, the success indicator of tobacco excise policy should be decreasing cigarette consumption. The tobacco excise system in Indonesia has failed to decrease cigarette consumption.
- 60% of households in Indonesia have cigarette expenditures. Every 1 in 2 poorest households have cigarette expenditures. This shows us the magnitude of smoking behavior in Indonesia.
- In our household smoking participation analysis, higher priced cigarettes will decrease the probability of household members becoming smokers (a price coefficient of -0.11). This low participation elasticity indicates that cigarette prices have a small effect on the decision to smoke. The income variable is positive and significant, at 0.09, indicating that as income increases, the probability of smoking household participation increases.
- For smoking intensity analysis, the study found that the conditional price elasticity is negative and significant, -0.70. If cigarette prices increase by 10 percent, the quantity of cigarettes consumed will decrease by 7 percent. These findings show that cigarette consumption is much more sensitive to changes in price. The effect of income on cigarette consumption is positive and significant, at 0.6. This means that a 10 percent increase in income will tend to increase the quantity of cigarettes consumed by 6.0 percent.
- The impact of increasing tobacco excise taxes to the maximum allowable rate of 57% will increase cigarette prices by 38%, decrease cigarette consumption by 18%, and increase government revenue from tobacco excise by 58%. The higher the increase in tobacco excise, the higher the benefit of increasing tobacco excise for government revenue.
- In addition, the impact of increasing tobacco excise to the maximum allowable rate of 57% will avert 1.96 million smoking related deaths and will reduce the number of smokers by 2.8 million. The higher the increase in tobacco excise, the higher the benefits to lives saved.
- From the qualitative study, we found the common decreasing cigarette consumption price level was Rp. 50,000 per pack, or Rp. 5,000 per stick.

- There are many supports for increasing cigarette prices by increasing tobacco excise from informants, a group that includes smokers, non-smokers, policy makers, civil society, and members of local parliament. They also support other measures of tobacco control like a total cigarette advertising ban, large graphic health warnings, and strict smoke free area regulation.
- Based on the research results, we recommend that the government
  - Increase cigarette prices by increasing tobacco excise substantially because this will have a positive impact on lives saved and government revenue.
  - The current price level of cigarettes, which is Rp. 10,000 per pack, is much lower than the stated decreasing consumption price level of cigarettes by our informants, which is Rp. 50,000 per pack.
  - To implement stricter tobacco control in conjunction with excise taxes, the government should enact a total ban on cigarette advertising, large graphic health warnings, and stricter smoke free area. This is needed because majority of informants support these policies.

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