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**FINAL REPORT**

**Research to Support and Inform  
Ratification, Implementation and/or Enforcement of the  
Framework Convention on Tobacco Control (FCTC)**

**PROJECT TITLE:**

**STUDY OF THE IMPACT OF TOBACCO CONSUMPTION  
AMONG THE POOR IN INDONESIA**

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# CHAPTER 1

## INTRODUCTION

### 1.1. Rationale

World Health Organization estimates that in 2020 smoking related diseases will be the biggest health problem that causes 8.4 million deaths per year (Health Department 2004). Those smoking related diseases are, just to mention a few, respiratory illness, cancers, cardiovascular and bronchitis.

Indonesian cigarette consumption from 1960 to 2003 increased 3.8 folds from 35 billion to 171 billion sticks per annum (USDA 2004<sup>1</sup>). This increasing trend was peaked in 2000 with 217 billion sticks per annum but then decrease to 171 billion in 2003.

From the Socio-Economic Survey Data in 2004, smoking prevalence in 2004 was 28% while the prevalence for men was 52% and for women was 3%. Compared with 2001 data (the prevalence in 2001 was 31%), then the smoking prevalence was decreasing slightly which is 4% point. The same pattern was happened to male smoking prevalence that was decreasing 10% point (the prevalence in 2001 was 62%). However, for adult women, the prevalence was increasing more than two times higher which was 1.3% in 2001 compared to 3% in 2004 (Ahsan 2006).

Socio-Economic Survey 2004 publication also revealed that average monthly household expenditure for tobacco was higher than average monthly expenditure for education and health. The tobacco expenditure was 2.1 times higher than education expenditure and 1.7 times higher than health expenditure. In addition, education and health expenditure could be doubled if there are no smokers in the family. If it is happen then this human resource investment will increase the people's capacity to get more welfare. Meanwhile, the percentage of average tobacco expenditure to food expenditure was 13%. It means that if there are no smokers at home then the household food expenditure could be increased 13%. It will increase the nutrition intake by household members, especially for the babies. This switching household expenditure will be more effective if it is done by the poor (Ahsan 2006<sup>2</sup>). In addition, Kosen 2004 conclude that total tobacco related cost was Rp 127,4 trillion (*cigarette purchased, disability, mortality and morbidity*) and this equal 7,5 times higher than government revenue from tobacco excise Rp 16,5 trillion in 2001<sup>3</sup>.

Therefore, study to analyze the impact of tobacco consumption among the poor is much needed. This study will reveal, *firstly* the socio demographic and economic profile of smokers emphasizing the different in income group. *Secondly*, how tobacco consumption among the poor decreases their welfare and what expenditure switching is possible to make if there is

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<sup>1</sup> [www.fas.usda.gov/scripts/gain\\_display\\_report.exe?](http://www.fas.usda.gov/scripts/gain_display_report.exe?)

<sup>2</sup> Ahsan, Abdillah "The Impact of Socio Economic Factors to Individual Smoking Behavior: Analysis of Socio Economic Survey Data 2004". Master Thesis, Postgraduate Program in Economics University of Indonesia, February 2006 : Depok.

<sup>3</sup> Kosen,S. An Economic Analysis of Tobacco Use in Indonesia. Jakarta. National Institute of Health Research & Development, 2004

no smokers in the family and in national level. *Thirdly*, the impact of tobacco controls regulation to the smoking behaviors of the poor will also be determined. This study is different from previous study that we have done because it will specifically analyze and address the impact of tobacco consumption among the poor household. While the objective of the previous study was to elaborate the impact of tobacco control policy such as increasing tax to the cigarette demand as general using national socio economic survey data 1999.

This study is relevant to support assignment of FCTC by Government of Indonesia because it will reveal the bad impact of tobacco consumption among the poor using the latest data available. The result of this study will be used to convince the economic ministries within the Government of Indonesia that increasing tobacco consumption is not desirable economically because it has high opportunity cost in term of other essential commodities such as health and education.

## **1.2. General Objective**

To analyze the impact of tobacco consumption among the poor in Indonesia in term of other essential commodities.

## **1.3. Specific Objectives**

1. To make Indonesian smokers profile in 2004 addressing the different in income group.
2. To analyze the impact of tobacco consumption among the poor to their wealth in terms of opportunity costs to consume essential goods and services.
3. To analyze the impact of tobacco control regulation to smoking behaviors of the poor.
4. To estimate the impact of household smoking status to their essentials expenditure.
5. To make policy implication from this research to support FCTC

## CHAPTER 2 LITERATURE REVIEW

Tobacco is being a catastrophe killing about 5 million of people worldwide per year. According to expert estimation, if current trend continues, it is projected to kill 10 million people a year by 2010, with 70% of those deaths occurring in developing countries. Tobacco also takes an enormous toll in health care costs, lost productivity and of course the tangible cost of the pain and suffering inflicted upon smokers, passive smokers and their families. Despite the increase in tobacco-related illness and disability worldwide, tobacco control remains one of the least valued activities of public health agencies evidenced by the serious under funding of tobacco control by both government and international aid agencies. While the negative health consequences of tobacco use are well documented, the full impact of the tobacco epidemic on the economic and social development of developing countries is still not well understood. (Vinastas, 2006)

Two-thirds of the poor nations for which data are available have male smoking rates above the 35% prevalence rate in the developed world. In Uganda, for example, about 50% of men smoke, while 80% of the population lives on less than \$1 a day, and half of the children under five are malnourished. In Cambodia, two-thirds of the men use tobacco, while nearly half of the children are malnourished. Although smoking rates have been low in much of Africa, between 1995 and 2000 cigarette consumption jumped by nearly two-thirds. There are many low and middle income countries with large pockets of poverty and high smoking rates. In India, the world's most populous low income country, where poverty still abounds among some sections of the population, tobacco will kill 80 million males currently aged 0–34 years. (Pa Modou Faal, 2007)

In China, 200 million people live on less than \$1 a day and 300 million males, or nearly two-thirds of all males, smoke. Tobacco will kill 100 million Chinese males currently aged between 0 and 29 years, with half of these in the productive middle years. This will deprive families of breadwinners, diminish the productive workforce and slow the conquest of poverty. Smoking rates for females in the developing world are much lower than for males, but this is set to change. Data from the Global Youth Tobacco Survey show that many girls in their early teens are taking up smoking in the developing world. Data from many countries show that the poor are most likely to smoke. An analysis of 74 studies from 41 high, medium and low income countries found that, regardless of country income, poorer individuals were those more likely to use tobacco, accounting for much of the mortality gap between rich and poor. In low and middle income countries, including Brazil, Cambodia, China, India and Viet Nam, smoking rates among the uneducated or less educated outstrip rates among the more educated. (Pa Modou faal, 2007)

For poor people, the opportunity costs of tobacco use can be very high. In countries such as Bulgaria, Egypt, Indonesia, Myanmar and Nepal, household expenditure surveys show that low income households spend 5–15% of their disposable income on tobacco. (Pa Modou Faal, 2007) Many poor households spend more on tobacco than on health care or education. In Bangladesh, households with an income of less than \$24 a month smoke twice as much as those on much higher incomes. The average amount spent on tobacco by the poorest 10

million male smokers could buy an additional 1400 calories of rice per day, or significant amounts of protein for each family. If these men quit, and put 70% of their saved income into food, this would provide enough calories to save 10.5 million Bangladeshi children from malnutrition. (Pa Modou Faal, 2007) Besides cutting access to food, diverting limited household income to tobacco reduces family capacity to seek medical attention for a sick child, or to send children to school. Tobacco consumption ruins the health of poor people by causing respiratory and lung diseases, heart disease, strokes and cancers. It impacts on national economies in terms of health costs and lost productivity. In 2000, three tobacco-related illnesses—heart disease, stroke and cancer—cost the Indian government \$5.8 billion. Productivity lost due to tobacco-related premature deaths is \$82 billion per annum in the United States of America and already \$2.4 billion in China. (Pa Modou Faal, 2007) Cultivating tobacco also damages people's health. Tobacco farmers use pesticides that can cause respiratory, nerve, and skin and kidney damage. Those who harvest or cure tobacco experience "green tobacco sickness".

Tobacco has been seen as an attractive cash crop for farmers in the developing world. However, many small tobacco farmers barely recoup their investment in tobacco when they adopt it as a crop. Globally, 5.3 million hectares of arable land are currently under tobacco cultivation—land that could feed 10–20 million people. (WHO, 2004) Tobacco has a negative impact on the balance of payments of many countries. Two-thirds of 161 countries, where data are available, are net importers of tobacco, losing more hard currency in cigarette imports than they gain by exporting tobacco. Several countries, including Cambodia, Malaysia, Nigeria, the Republic of Korea, Romania and Vietnam, have a negative tobacco trade balance of more than \$100 million. (Harley stanton, 2004)

In Vietnam, there are about 56% of male and 2.7% of female smokers. Tobacco is the cause of many diseases leading to the death of lots of people and is becoming a heavy burden for consumers in respect to both the cost of life and the direct cost for tobacco and for the treatment of tobacco related diseases. Nearly half of all households in Vietnam have a smoker. (vinastas, 2006) The World Bank categorizes Vietnam as a low-income country. The country's average per capita income was US\$560 per annum in 2004. Despite Vietnam's low socio-economic status, households with smokers spent approximately 626,900 VND or US\$39.75 per year on tobacco. As a percentage of the national per capita income, smoking households spent an average of seven percent of their annual income on tobacco.

In 2000, despite material gains in standard of living and human development, 32 percent of the population lived below the international poverty line, only about half of the population had access to safe water supplies, and 34 percent of children under the age of five were underweight. Vietnam poses special obstacles for tobacco control: smoking is common and widespread, and the government produces and sells most of the cigarettes consumed in the country. There were significant differences between smoking and non-smoking household groups' distribution education level, and occupation in Vietnam:

- The households without smokers generally demonstrated a higher education level (high school and above), 18.1% compared to 11.7%.
- Households without smokers contained more household members working as government employees (5.9% compared to 3.6%), and also contained more household members as students (19.1% compared to 16.3%).

- Those who smoked both cigarette and *water-pipe tobacco* had the earliest age of initiation. The mean age for this group was 18.7 years.
- Those who smoked both cigarette and *water-pipe tobacco* consumed the greatest number of cigarettes per day. The mean number of cigarettes consumed for this group was 14 cigarettes per day.
- Those who smoked both cigarette and water-pipe comprised the heaviest of smokers. However among the heavy smokers (11-19 cigarettes/day) 76.2% were cigarette only smokers compared with 12.5% for *water-pipe tobacco* only smokers. (tobacco over education: an examination of opportunity losses for smoking household)

The mean annual household expenditure for tobacco (both cigarette and *water-pipe tobacco*) was 626,900 VND (approximately US\$39.75). Per smoker the mean annual expenditure for tobacco was 537,300 VND (US\$33.90). Disaggregating the annual household data, there was a direct relationship between wealth index and expenditures for cigarettes: Households in the highest wealth index (better off group) spent 4.5 times more on cigarettes than households in the poorest wealth index. The opposite was true for expenditures on water-pipe tobacco, where the poorest wealth index spent 5 times more than those households in the highest wealth index. (Thu Thi le et al, 2006)

The relationship between households without smokers spending more on food per person per week and per person per year than households with smokers is stronger than when alcohol was included. This could indicate that spending on alcoholic drinks (beer, liquor, and wine) was higher in the smoking households than non-smoking households. Households without smokers spent more on education than households with smokers, both per household per year, per person per year, and per child per year.

There were wide differences in proportional spending on tobacco and basic needs by wealth index. The amount spent on smoking by higher income households (1,872,500 VND) was four times that spent by the poorest households (410,400 VND). Similarly, the amount spent on food in the wealthiest households (24,963,000 VND) was three times that spent on food for the poorest households (8,483,000 VND). The ratio of tobacco to food was 7.5% in higher income households while these proportions were 4.0% and 4.8% in the very poor and the poorest households respectively. The proportion of tobacco spending to education spending reaches 228.1% in the poorest households, while this ratio was only 79.6% in households in the highest wealth index. Spending on tobacco in the poorest and very poor households represented a significant sum when compared to spending on essential items, even though the absolute amounts spent are naturally lower than those spent by wealthier households. In general, tobacco spending placed a proportionally heavier burden on poor families. (Thu Thi Li, et al, 2006)

Income per household per year was statistically higher for households without smokers than households with smokers in Vietnam. Similarly, income per person per year was also statistically higher than members in households with smokers. Based on food poverty line and the per capita amount paid by households for food, 14.7% of households were food poor. Of these 14.7% households, 59.6% were households with smokers and 40.3% were households without smokers. About 11.3% of households with smokers could potentially be lifted from food poverty if their household tobacco spending went instead for food.



In Vietnam, households without smokers spent more per child for education than households with smokers. The proportion of tobacco spending to education spending reaches 228.1% in the poorest households. Some poor households were choosing tobacco over education and thereby losing a possible opportunity for their children to obtain the best education available to them.

Based on the survey which has been done in Vietnam, approximately 14.7% of all household members lived in food poverty and were unable to meet their nutritional needs. Over half (59.6%) of food poor were smoking households. Reallocation of tobacco expenditures to food expenditures could potentially raise 11.3% of all smoking households above the food poverty line if tobacco expenditures were used to buy food.

Many smokers would never fathom that they spend 7 percent of their income on tobacco and that they spend more on tobacco than on education for their children. As evidenced by the supportive educational policies of the government, Vietnam has always placed education for children as a very high priority. Households with smokers, if posed the choice—tobacco or education—would undoubtedly choose education for their children. However, the reality is that poor smokers, addicted to tobacco, choose tobacco over education.

For poor families in Vietnam, tobacco spending places proportionally heavier burdens. Comprehensive reviews by WHO and the World Bank have shown that price measures are arguably the most effective at reducing both uptake and increasing cessation. The poorest wealth index groups would be the most sensitive to such price increases. Vietnam's economic growth over the past three decades has made tobacco increasingly affordable. Worsened, real prices for tobacco in Vietnam have been falling consistently over the past three decades. In a recent study by Guidon et al. that looked at annual real percentage changes in cigarette prices between 1990 and 2000 in a sample of more than 100 cities from more than 60 countries, Ho Chi Minh City ranked last. It was estimated that real prices fell on average by close to 8 percent per year during the 1990s in Vietnam.

In Cambodia, households with at least one smoker were about 75.4 percent from 2.16 million households in Cambodia. About 58.7 percent of male (for population over 20 years old) in Cambodia are smoker. This percentage reflected the percentage of male which are smoker in urban area (exclude capital city Phnom Penh). However, percentage of male and female which are smoker in rural area is higher, that is 65.8 percent and 8.2 percent respectively. Percentage of both male and female which is smoker in capital city Phnom Penh is lower than Cambodia generally, which is 29.5 percent and 1.2 percent respectively.

About 45.7 percent of all smoking households in Cambodia spent 5,000 riels up to 15,000 riels per month their income on tobacco, 33.1 percent spent more than 15,000 riels and 21.2 percent lower than 5,000 riels. However, 70.1 percent of higher income spent more than 15,000 riels per month on tobacco.

Tobacco consumption compared to total expenditure in Cambodia is small, only 2.86 percent in smoking households. However, tobacco consumption slightly higher than clothing consumption that is only 2.63 percent of total expenditure of smoking households. About 54.32 percent of total expenditure of smoking households are spent on food (exclude

tobacco); it means that smoking households are lower and middle income. Share of income spent on tobacco in very poor smoking households in Cambodia is higher than rich households, 3.9 percent compared to 2.31 percent. This share also reflects both in rural and urban smoking households. The poor smokers are likely to reduce most of their consumption as result of a future price increase.

Percentage of Cambodian population living with the smoker is 78.4 percent of 12 million. Then, percentage of children (under 13 years old) living with smoker is 80 percent of total 3.13 million. They are exposure to second-hand-smoke and also potential to be a new smoker.

In Cambodia, the opportunity cost of one pack of 555 cigarette (KHR 5,000) is equal with 3,244 calorie by substituted it with 1 kg rice, 0.3 kg fish, 0.2 kg eggs, 1 kg Morning Gloria and 1 kg banana. Smoking households spent about average KHR 14,003 on tobacco every month, and the total monthly spending on tobacco in Cambodia is KHR 22,944,009. The total US\$ 69.5 million spent on tobacco in Cambodia exceeds most of the aids for each ministerial spending on various socio-economic projects during 2001-2002. The total USD 69.5 million can buy 274,304 tons of high quality rice, or 63,131 units of 125cm Dream-Honda-Motorbike, or 27,778 units of 1.0L Tico-Daewoo-Minicar, or 27,778 big wooden houses in rural area. (RITC, tobacco control in cambodia, 2004)

Myanmar is one of the higher tobacco use country. About 80.4 percent of its population is the smoker, 86.1 percent use tobacco without smoke, and 61.3 percent use both of tobacco. About 83 percent of smokeless tobacco use betel with tobacco. The user of betel with tobacco mostly is women.

The types of tobacco consumed in Myanmar are cheroots, cigarettes, cigars, hand-rolled cheroots, pipes and others. There is a significant use of type of tobacco according to their education. The higher educated people will substitute their cheroots with cigarettes and vice versa. About 71 percent of un-literate people use cheroots compared to 0 percent cigarettes, but 50 percent university graduated use cigarettes compared to 22 percent cheroots. (Nyo Nyo Kyaing et al, 2005)

Tobacco workers and trishaw drivers are the higher use of cheroots; they are 73.3 percent and 62.4 percent respectively. However, bus driver and bus assistant higher use of the cigarettes, they are 46.6 percent and 49.3 percent respectively. In Myanmar, the people with the higher daily income will consume most cigarettes than cheroots. About 57.5 percent of people which their daily income less than 500 Kyats consume cheroots, while only 22.5 percent consume cigarettes. However, 50 percent of people which their daily income exceeds 3500 Kyats consume cigarettes and only 32 percent use cheroots. (Nyo Nyo Kyaing, et al, 2005)

The household survey on tobacco economics in Myanmar (2001) reported overall mean monthly expenditure on tobacco as 2.7% of total household expenditure, 3.3% of total expenditures for urban households and 2.5% for rural households. (Nyo Nyo Kyaing et al, 2005) Daily expenditure on smoking products is about 6.33 percent of individual income and 5.99 percent of total family income. Expenditure on smokeless tobacco (betel) is higher than smoking products, 9.08 percent and 10.42 percent of individual income and total family

income respectively. The total expenditure on smoking and smokeless products for both users is 14.43 percent and 13.99 percent of individual and total family income respectively. About 33.4 percent of daily income of the poorest income group in Myanmar is spent on tobacco (both smoke and smokeless). While the richest daily income group only spent 7.22 percent of their daily income. The spending on smokeless tobacco is nearly twice higher than smoking products.

The opportunity cost of tobacco consumption in Myanmar in the last two years is 13.4 times higher than their spending on education and 34.6 times higher than their spending on health care.

In the case of the poorest, where food shortage is an ongoing problem, and where a significant share of income is going to purchase food, tobacco expenditures may make the difference between an adequate diet and malnutrition. While tobacco is regarded as a basic need, food for oneself and one's children becomes a luxury. In both urban and rural areas of Bangladesh, per capita spending on tobacco is higher than on milk. What the average Bangladeshi male smoker spends on cigarettes each day would be enough to purchase almost 3,000 calories of rice. Researchers estimate that in Bangladesh 10.5 million people are going hungry and 350 children are dying *each day* due to diversion of money from food to tobacco.(PATH Canada, Tobacco and poverty fact Sheet)

In summarizing, tobacco consumption has an unfavorable impact on poverty. In low income country consumption of tobacco take a big proportion in household income needed for other priority such as health, education, food, etc. Tobacco consumption also contributes to malnutrition and other major causes of poverty. In Bangladesh, if money spent on tobacco were spent on food, so over 10.5 million malnourished people can have an adequate diet. (Efroymsen D et al, 2001). In Egypt, other example, more than 10% of household expenditures go to cigarettes or other forms of tobacco. (Hebra Nazar, 2003)

## **CHAPTER 3 METHODOLOGY**

### **3.1 Data**

The study will use Indonesian Socio Economic National Survey (SUSENAS) 2003, 2004 and 2005 raw data. These data contain multi purposes household survey which has been conducted regularly by the Central Board of Statistic (CBS) since the 1960s, and has constituted the primary source for data on socio economic characteristic of the population in Indonesia. This survey was conducted in 30 provinces in Indonesia. There are two kinds of data in this survey, that is core and module data while smoking behavior data was taken from module data. The smoking behaviors section was only for chosen respondent age 15 old years or more. In addition, other source of data such as from related government agency will be used to enhance the analysis.

There is the difference between the source of data use in regression in chapter 4. The smoking behaviors data are taken from SUSENAS 2004, and the household expenditure for tobacco is taken both from SUSENAS 2003, 2004 and 2005. The difference of source of data is caused by the different kind of module in each survey. In 2004, the module contains health, housing and dwelling topics which include risky behaviors such as individual smoking behavior. The individual smoking behaviors information, such as quantity of cigarette smoked per-day, was only found in SUSENAS 2004 data. Unfortunately, these data did not contain the expenditure information on cigarettes. Information about household expenditure was taken from SUSENAS 2005 module. This module consists of the specific allocation of household expenditure, such as expenditure on food and beverages, housing, health and education, including household expenditure on cigarettes.

In this study, we will use the SUSENAS 2004 data for regression analysis to reveal the impact of tobacco control regulation to the smoking behavior of the poor. Then, the SUSENAS 2004 and enriched with 2005 data set on household expenditure will be used to take the portrait of the opportunity cost of cigarette consumption in term of essential goods, primary needs, etc. Thus, the main source of data to be used in this research is the SUSENAS 2004 data set and complemented with 2005 data set for descriptive analysis. The SUSENAS 2004 module used to survey 64,573 households in 30 provinces in Indonesia

### **3.2 Data Analysis**

The data will be process using the statistical program stata 8 version to resume the descriptive and regression analysis.

### **3.3 Research Method**

This study consist of two method of analysis, they are regression analysis and descriptive analysis. The descriptive analysis will use cross tabulation of the raw data to create poor smokers profile and determine possible expenditure switching among the poor smokers. The definition of poor people accommodate the international standard and among

people in Indonesia. First, the classification pursue the World Bank criterion, that is classified people by expenditure per day (US\$ 1, US\$ 2, and >US\$ 2 as an income group). Second, poor people classified by household income quintile. The profile will include socio, economic and demographic characteristic of adult smokers in Indonesia. This study also includes other risk behavior such as alcohol consumption in this analysis.

The profile in descriptive analysis divided in to four categories that are smoking prevalence, average cigarette consumption, average of age of initiation, and tobacco expenditure. Meanwhile the characteristics are sex, marital status, age group, education, occupation, and location. In addition, we will analyze the cross tabulation between smoking status and symptoms of smoking related diseases by income group. The descriptive analysis will be done based on cross tabulation between these four categories and its characteristics for three different income groups (low, medium and high). The simulation of tobacco expenditure switching will be conducted to prove that tobacco consumption is absolutely wasting the national resources. It will calculate what national tobacco expenditure by the poor can purchase other essential commodities such as education and health services.

Three parameters were estimated through regression to indicate the responsiveness of smokers to changes in cigarette price; they are price elasticity of smoking participation, conditional price elasticity of demand, and total price elasticity. Price elasticity of smoking participation indicates the impact of changes in cigarettes price on the probability of member of household to smoke.

Regression analysis will be used to reveal the impact of tobacco control regulation to the smoking behavior of the poor. One of the most effective measures of tobacco control is tax and price regulation. This study will examine the impact of increasing tobacco price to cigarette consumption, after controlling other factors, by income group. This study will compare the impact of tobacco control policies to smoking behavior; consist of decision to smoke regularly and demand for cigarette, by different income group (low, medium and high).

## **Two-Part Model Estimation**

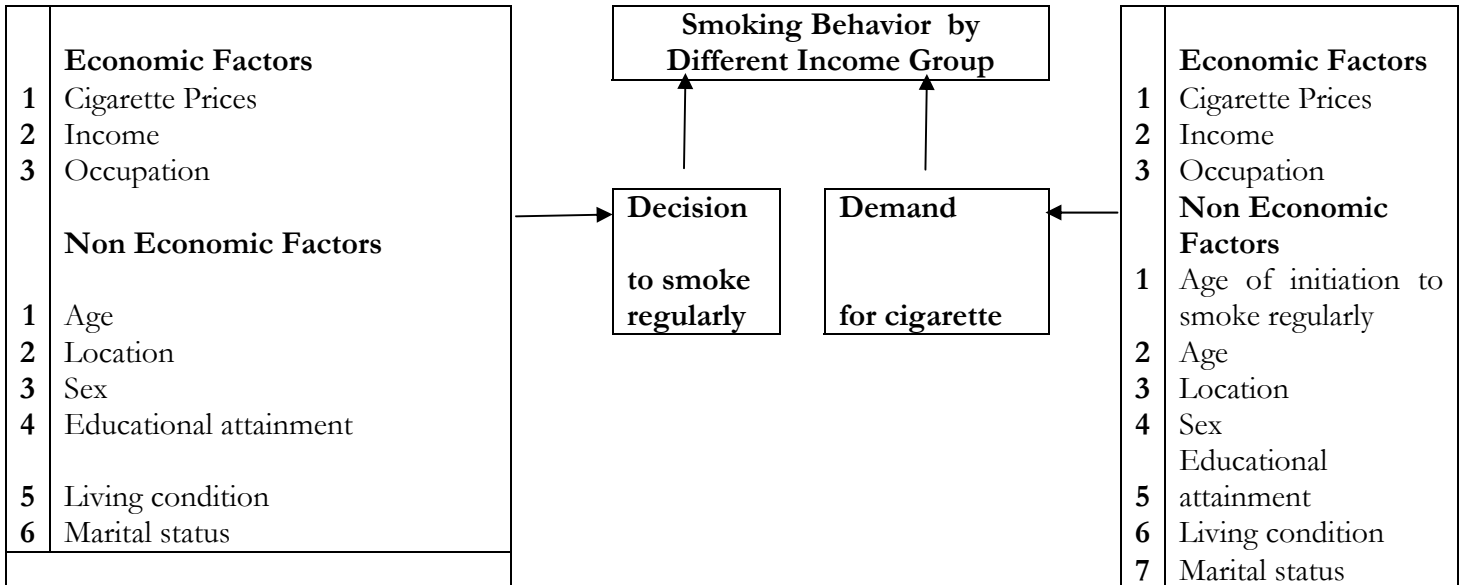
The price elasticity of smoking participation, conditional price elasticity of demand, and total price elasticity were estimated through a two-part model as described by Cragg (1971). Cragg-type model was employed by Manning et al. (1981) in studying the demand for medical care. Hu et al. (1985) and Mao et al. (2000) applied this model in studying the demand for cigarettes in California and China respectively. The two-part model assumes that member of households decided whether they will smoke or not first; then if they decided to smoke, they will choose how much to smoke.

- The literatures suggest several reasons for using the two-part model:
- The decision to smoke may be influenced by different factors than those that determine the numbers of cigarettes smoked (Manning et al. 1981 and Duan et al. 1983). Jones (1986, 1989) found this fact in the United States.

- The quantity of cigarettes smoked does not meet the normal distribution criterion, and the decision to smoke or not is a binary (yes or no) variable. This makes the two-part model econometrically more appropriate (Manning et al. 1981 and Duan et al. 1983); using ordinary least square estimation could result in inconsistent estimates.

Figure below is the conceptual framework of the smoking behavior model.

**Figure 1**  
**Conceptual Framework of the Model**



The data about cigarettes consumption information on National Socio-Economic Survey (SUSENAS) shows that its range value lies between zero and positive infinite. When an individual decide not to smoke, its consumption value is zero. Contrarily, smokers will give a positive value on cigarettes consumption. As a result, the OLS estimation will be bias because of limited independent variable exist (Cragg, 1971). In addition, the quantity of consumption depends on whether he decided to consume or not. Thus, Cragg developed the two-part model using durable goods demand cases which contain the same problem.

Cragg model consist of two estimation model. First, logit or probit models which accommodate the probability of an occasion will be occurred or not. In other words, this model was used to determine the individual decision to consume or not. Thus, the first model can be written as:

$$\Pr (y = 1) = f (x' \beta )$$

Where  $\Pr(y=1)$  shows the individual probability to consume,  $x$  is the matrix of independent variables, and  $\beta$  is the matrix coefficient of each independent variables. In probit form, the estimation model above can be rewrite as follow:

$$\Pr (y = 1) = \Phi (x' \beta) = \int_{-\infty}^{x' \beta} \frac{1}{\sqrt{2 \pi}} \exp \left( - \frac{1}{2} z^2 \right) dz$$

Or in logit form, the model can be written as:

$$\Pr (y = 1) = \Lambda (x' \beta) = \frac{\exp (x' \beta)}{1 + \exp (x' \beta)}$$

The use of logit or probit model depends on the assumption of the observation distribution. If the observation assumes normal distributed, the probit model will be used. Then, logit model will be used if the observation follows the logistic distribution.

This analysis used the logarithmic value of the dependent variable (the number of cigarettes smoked) because the dependent variable has a skewed distribution (Mao, 2000). Transformation to the logarithmic value makes the distribution of cigarettes consumption among smokers is close to a normal distribution, resulting in more precise estimates (Hu et al. 1995). The logarithmic value for cigarettes prices was also calculated in both the logit participation equation and the estimation of conditional demand. Thus, the coefficient can be interpreted as the price elasticity of smoking participation and the conditional price elasticity (Mao, 2000). Logit estimation is applied to determine the coefficients for the independent variables affecting the probability of a household smoking.

In other tobacco research, prices always be a crucial problem. Cigarettes information was only filled by smoker respondent, while non smoker leaved it blank. Since the price was not available in every questionnaire, the price can be estimated trough price equation, as written as follow (Wilkins, Yurekli, and Hu):

$$P = f(x' \theta)$$

where  $x$  is an independent variables matrix which contain the respondent information such as sex, age, income, etc. While  $\theta$  is a matrix of independent variables coefficient. This price equation will measures predicted prices for non-smokers which then will be compiled with the smokers' price information.

Cragg model in medical care has the same insight with cigarettes consumption trend. Thus, this study developed the demand analysis into two estimation model. The first model is logit model estimation can be written as:

$$\Pr (Y = 1) = \frac{1}{1 + e^{-(\delta_0 + \delta_1 \ln P_i + \sum_{i=2}^n \delta_i X_i + U_i)}}$$

Where  $Prob(Y=1)$  is the individual probability to be a smoker,  $P_i$  reflect the cigarette prices,  $X_i$  is matrix of other variables such as income, type of job, area of living, sex, living condition and marital status. The second model is the regression model using the ordinary least square method, which can be written as:

$$\ln(qcig \geq 1) = \beta_0 + \beta_1 \ln P_i + \sum_{i=2}^n \beta_i X_i + V_i$$

Where  $qcig$  reflect the number of cigarettes consumed by smokers, and other variables are same as firts model.

This study measures the price elasticity through three stages. First, the participation price elasticity which estimates the probability to consume cigarettes through a logit estimation equation (Hu et.al; 1995 as cited in Arunatilake dan Opatha; 2004):

$$\varepsilon_p = (1 - p(Y = 1))\delta_1$$

Where  $\varepsilon_p$  is the participation elasticity,  $p(Y = 1)$  is the cigarettes consumption prevalence.

Second, the consumption price elasticity which measured through OLS equation:

$$\varepsilon_c = \frac{\partial qcig}{\partial P} \frac{\bar{P}}{qcig} = \beta_1.$$

Third, the total price elasticity that calculated as total of participation elasticity and consumption price elasticity, or can be written as:

$$\varepsilon_{tot} = (1 - Pr(Y = 1))\delta_1 + \beta_1$$

Through the two-part model, this study attempt to reveal the total price elasticity impact to poor people. Poor definition follows the explanation which has given above. This study can continuous to analyze about which people have the higher sensitivity to the changes in prices.

## Variables Definition

The summary of the variables used in this study can be seen in Table 1. Independent variables were grouped into two parts. Part one contain cigarettes price variable which used to estimate price elasticity. Part two consist of other dependent variables such as demographic information.

The demographic information shows that 54.9 percent respondent live in rural area, 70.3 percent has married, 55.8 percent has a job, and almost equal sex ratio. Data also shows that age average of respondent is 38 years old, and dominated the age group between 25 to 34 years old (30 percent). Most of respondent classified as low-level educated people, where 46.8 percent of respondent only graduate elementary school or less.



**Table 1**  
**Variables Definition**

No.	Variable's name	Average Value	Definition
1.	Cigarettes Consumption ( <i>lqcig</i> )	2,242	Natural logarithmic of number cigarettes consumed by smokers per week.
2.	Price prediction ( <i>lnprice</i> )	5,929	Natural logarithmic of cigarettes price prediction measured from expenditure on cigarettes per month.
3.	Area of living ( <i>urban</i> )	0,451	Dummy variable of respondent's area of living, if <i>urban</i> =1, <i>otherwise</i> =0
4.	Sex ( <i>male</i> )	0,506	Dummy variable of respondent's sex, if <i>male</i> = 1, <i>otherwise</i> = 0.
5.	Dominant activity ( <i>kerja</i> )	0,558	Dummy variable of respondent's status of work. <i>Kerja</i> = 1, <i>otherwise</i> = 0.
6.	Basic Education ( <i>educ_dasar</i> )	0,468	Dummy variable of household members who at most graduated only from basic elementary school. If <i>educ_dasar</i> = 1, <i>otherwise</i> = 0
7.	Intermediate Education ( <i>educ_tengah</i> )	0,393	Dummy variable of household members who has reached intermediate education (junior high school/SMP or general high school/SMU). If <i>educ_tengah</i> = 1, <i>otherwise</i> = 0
8.	High Education ( <i>educ_tinggi</i> )	0,139	Dummy variable of household members who has reached high education (college or university). If <i>educ_tinggi</i> = 1, <i>otherwise</i> = 0.
	Living condition ( <i>bad_livcind</i> )	0,198	The condition of respondent's houses which set by number of room, lightning and air circulation. If <i>bad_livcind</i> =1, <i>otherwise</i> = 0.
9	Respondent age ( <i>age</i> )	38,196	Actual age of respondent when survey conducted.
10.	Age group 15 - 24 years old ( <i>age1524</i> )	0,205	Dummy variable of respondent age group which their age between 15-24 years old, if yes <i>age1524</i> = 1, <i>otherwise</i> = 0
11.	Age group 25 - 34 years old ( <i>age2534</i> )	0,269	Dummy variable of respondent age group which their age between 25-34 years old, if yes <i>age2534</i> = 1, <i>otherwise</i> = 0
12.	Age group 35 - 44 years old ( <i>age3544</i> )	0,224	Dummy variable of respondent age group which their age between 35-44 years old, if yes <i>age3544</i> = 1, <i>otherwise</i> = 0
13.	Age group 45 - 54 years old ( <i>age4554</i> )	0,137	Dummy variable of respondent age group which their age between 45-54 years old, if yes <i>age4554</i> = 1, <i>otherwise</i> = 0
14.	Age group 55 years old and above ( <i>age55lbh</i> )	0,165	Dummy variable of respondent age group which their age 55 years old and above, if yes <i>age55lbh</i> = 1, <i>otherwise</i> = 0
15.	Marital status ( <i>kawin</i> )	0,703	Dummy variable of respondent marital status, if yes <i>kawin</i> = 1, <i>otherwise</i> = 0

## CHAPTER 4 RESULT AND ANALYSIS

### 4.1. Profile of Indonesia Smokers

#### 4.1.1. Smoking Prevalence

Based on processed raw data of SUSENAS 2004, the smoking prevalence for sample in Indonesia was 27.8%, below 2001 data that was 31.5%. This prevalence holds for those who smoke daily and 15 or more years old. In addition, the smoking prevalence for those who occasionally (not everyday) smokers were 6%. In addition there were 4.1% of respondent who was smoker in the past but recently did not smoke anymore. This fact reveal that quit smoking is very hard to do and this could be because of the addictiveness of cigarette.

Smoking prevalence for male was higher than of female, 51.7% compared with 3.34%. For male, this prevalence was lower than 2001 that is from 62.2% to be 51.7%. However, the smoking prevalence for female was much higher, doubled, than 2001, from 1.3% to be 3.3%. This fact reveals that female smoking is threatening for Indonesia. if we compare with developed countries, the smoking prevalence for female in Indonesia was much lower than Canada in 1999, 22.9% (Gilmore 2000) and United States in 1999, 21% (Globalink 2006). Therefore, female smoking prevalence in Indonesia has potential to increase in the future. We should give this special attention because female has reproductive function and more interaction with their children, in Indonesia case. *Appendix table 1*

By age group, the pattern of smoking prevalence was like reversed U, whereas the youngest age group, 15-24 years old, and the oldest one, 55 years old or more, has the lowest smoking prevalence which are 33 and 24% respectively. In addition, the highest prevalence is for those in the age of 35-44 years old, 34%. The same pattern is happened for male prevalence by age group whereas the youngest and oldest age group has the lowest smoking prevalence, 33 and 47% respectively, and the highest smoking prevalence is for those in the age of 35-44 years old, 58%. However, for female prevalence, the highest prevalence is happen for those in the age of 35-44 and 55 year or more, 3.9%. These facts inform us that youth smoking prevalence, although relatively lower than other age group, is high especially for male. This could be due to intense tobacco industry promotion by targeting the youth through youth related activities and icon such as sport and music.

The higher the education levels of respondent, the lower their smoking prevalence. Those with basic education, not graduated and graduated from elementary school, have smoking prevalence of 30%. This prevalence is higher than those with middle education, graduated from junior and senior high school, 28% and those with high education, graduated from diploma and bachelor degree, 21%. The same pattern applies for male whereas those with high education have lowest smoking prevalence compared with others. For female, the lowest prevalence is happened for those with middle education. This number shows that the awareness of health consequences of smoking is higher for those with higher education. However, this does not apply for female, because smoking habit is perceives as a life style so that education is not affluence the decision to smoke for them.

Those who has job have higher smoking prevalence than those who has no job, 42 and 10% respectively. This pattern applies for male and female. This could be due to the availability of source of income and working class life style.

While, those married has higher smoking prevalence than those in single status (never been married and divorce), 32 and 18% respectively. This pattern applies for male and female. This may be because of marital stress.

By income group, the smoking prevalence pattern was like reversed U whereas those in quartile 1 (the poorest) and quartile 5 (the wealthiest) has lowest smoking prevalence, 21 and 25% respectively. While, those in quartile 3 and 4 has the highest smoking prevalence, that is 30%. This informs us that smoking prevalence is not directly related, unlike other goods, with the income could be due to the addictiveness of cigarettes.

Those who live in rural area have higher smoking prevalence than those who live in urban area, 30 and 25% respectively. This pattern happens for male and female. This could be due to the more spare time to smoke in rural area than in urban area.

By living condition, those who live in good living condition have slightly lower smoking prevalence compared with those lives in bad living condition, 27 and 29% respectively.  
*Appendix Table 2*

#### **4.1.2. Average Cigarette Consumption**

In 2004, the average consumption for those who smoke regularly (everyday smokers), is 11 sticks per day or 330 sticks per month or 3960 per year. While, the average consumption for male smokers is higher than female smokers, 11 compared with 10 sticks per day.

In addition, the average cigarette consumption for female smokers in urban areas is higher than in rural areas, 330 compared with 300 sticks per year. However, there is no different for male smokers who live in rural and urban area, 330 sticks per year for both. The fact that female smokers in urban area have average cigarette consumption higher than in rural area shows that female smokers in urban area has more cigarette related life style, smoking perceived as cool for women in urban area.

Mean while, the higher the income, the higher the average cigarette consumption, the lowest is 270 sticks per month for those in quintile 1 and the highest is 390 sticks per year for quintile 5. This pattern applies for male and female smokers. In addition, male average consumption for quintile 1-4 is higher than female in the same quintile. However, for the wealthiest (quintile 5), the pattern was reverse whereas female smoker has higher average consumption than male does, 360 compared with 390 sticks per month.

The average cigarette consumption pattern between male and female by education is slightly different. For male, their average consumption is 330 sticks per month for all level of education. However, the average consumption for female smokers is different by education level. Female smokers with middle level of education have the highest average consumption, 360 sticks per month. While, female smokers with high level education have the lowest average consumption, 270 stick per month. There is interesting fact whereas female smokers

with middle level of education have higher average consumption than male smokers with the same level of education, 330 compared with 360 stick per month. This may be due to the lifestyles of female with middle education support their smoking habit than male does.

From living condition point of view, the average cigarette consumption of male smokers is indifferent between those live in good living condition with those live in bad living condition, 330 stick per month. While, for female smokers there is a different whereas those live in good living condition has higher average consumption than those live in bad living condition, 330 compared with 300 stick per month. This could be related with the availability of private room to smoke for female smokers lived in good living condition. They have more room to smoke privately than female smokers lived in bad living condition, in Indonesia female smokers is awkward to see by others especially in rural areas.

By marital status, there is the same pattern between male and female smokers whereas those married has higher average consumption than those who is in unmarried status (has never been married and divorced), 330 compared 300 stick per month. This fact reveals that not only married people have higher smoking prevalence but also their average cigarette consumption does than not married peoples.

Those who answered work as their dominant activities have average cigarette consumption higher than those who do not work (330 and 300 packs per months respectively). However, from sex point of view, female smokers whether they work or not has the same average consumption, 300 stick per month. While, working male smokers has higher average cigarette consumption than those do not work, 330 compared with 300 per month. This shows us that for female smokers, working status are not affluences their average consumption while for male smokers it does.

From age group point of view, there is reversed U pattern whereas those in the youngest, 15-24 years, and the oldest age group, 55+ years, have the lowest average consumption, 300 stick per month. While, those in the age group of 25-54 years have higher average consumption, 330 stick per month. There is interesting fact that female smokers in the age group of 15-24 years have higher average consumption than male smokers in the same age group, 330 compared with 300 stick per month. In addition, male smokers in the age group of 55+ years have higher average consumption than female smokers in the same age group, 300 and 240 stick per month respectively. *Appendix Table 3*

#### **4.1.3. Average Age of Smoking Initiation**

Average age of smoking initiation for adult respondent, age 15 years or more, is 17. Those who live in rural area have younger average age of initiation than those in urban area, 17 and 18 year respectively. In addition, adult female smokers have older age of initiation than male, 19 compared with 17 year.

The younger the age of respondent, the younger their average age of smoking initiation, those in the age of 15-24 years have average age of initiation of 16 compared with 17 for those in the age of 25-34. In addition, those in the age of 35+ have older age of initiation, 18. These reveal that nowadays the average age of initiation is earlier than before. This could be due to intensive cigarette advertising by the industry.

Married smokers have older average age of initiation than those who are not in married status, 18 and 17 respectively. However, female married smokers have younger age of initiation than female not married smokers, 18 compared with 21.

From education point of view, the higher the education level, the older their average age of smoking initiation. Those who had basic education have average age of smoking initiation younger than those who had middle and high education, 18 and 21 respectively. *Appendix Table 4*

## 4.2. Household Tobacco Expenditure and Its Opportunity Cost

### 4.2.1. Comparison of Household (HH) Expenditure Pattern by HH Smoking Status

In this study, we divide household by its smoking status. Household with smoker (HHS) is those who have tobacco expenditure, hence minimum there is one smoker in this household. Contrary, household without smoker (HHNS) is those who do not have tobacco expenditure so there is no smoker in the household. This separation will allow us to analyze the different expenditure pattern between HHS and HHNS. This will also provide us information about possible expenditure change if tobacco expenditure does not exist in HHS.

Based on National Socio Economic Survey (NSES) 2005 data, 64% of household in Indonesia have tobacco expenditure. This is equal to 37 million household. It also infers that majority of household in Indonesia have at least one smoker. *Table 1*

**Table 1**  
**Proportion of HH by Type of Smoking Status, Indonesia, 2005**

Description	HHNS	HHS	All HH
# of HH	21,303,966	37,460,582	58,764,548
%	36.25	63.75	100.00

Source: National Socio Economic Survey 2005

If we compare the composition of average monthly household expenditure by type of expenditure between HHS, HHNS, and all HH, based on NSES 2005, then we will reveal some interesting facts. First, the percentage of tobacco and betel expenditure was ranked in 2<sup>nd</sup> position after total food expenditure for HHS (10.44%). Tobacco expenditure only lowers than grains expenditure, but it is higher than some essentials food expenditure such as for fish, meat, eggs and milk, vegetables, and fruits. In addition, compared with each component of non food expenditure, tobacco and betel expenditure is higher. The non-food expenditure includes expenditure on housing rental cost; education cost; health cost; durable goods; and tax and insurance.

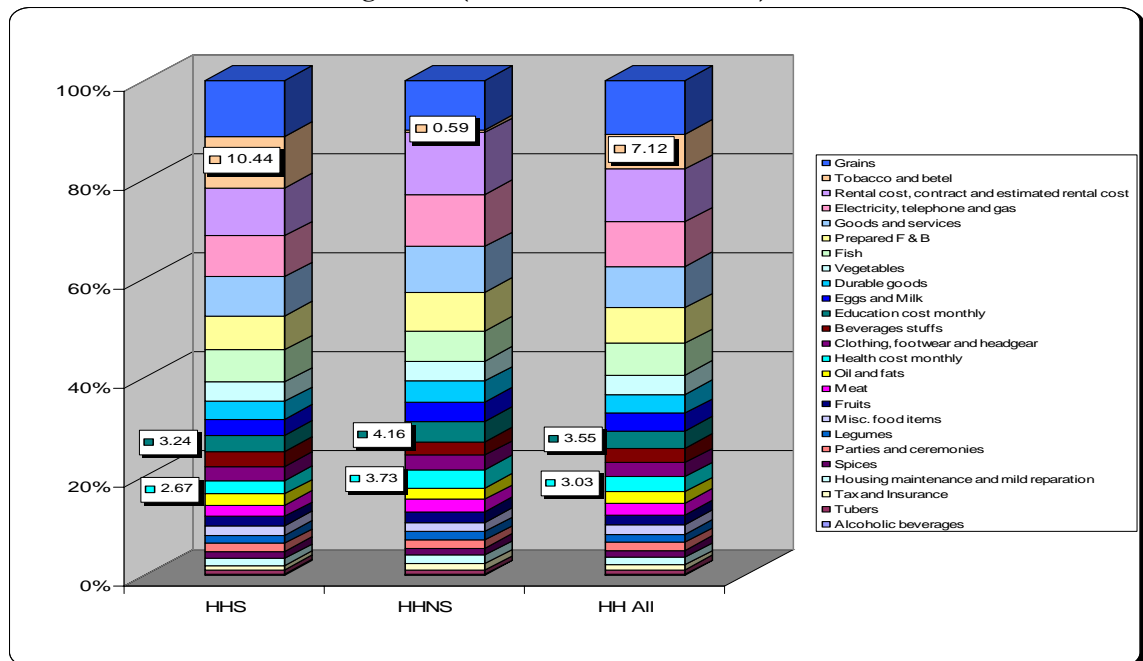
Second, compared with education and health expenditure, the percentage of tobacco expenditure in 2005 was higher than education and health expenditure for both HHS and all HH. Percentage of tobacco expenditure is more than three times higher compared to

education and health cost in HHS. The education and health expenditures are also higher for HHNS compared to HHS. This means that households with no cigarettes expenses are able to allocate more on human capital investment within their households.

Third, if we compare the composition of household expenditure by type of expenditure between HHS and HHNS then we reveal that each type in non-food expenditure is higher for HHNS than for HHS. While, HHNS also have higher high quality food expenditure such as meat, fruits, and eggs and milk, compared to HHS. This shows that money goes to tobacco and betel would otherwise be spent on higher quality food and other non-food expenditure such as education, health, and housing. *Appendix Table 5*

If we sort the percentage of expenditure by its type for HHS, then we will realize that HHS expenditure pattern does not follow their best needs. Tobacco and betel expenditure is ranked in 2<sup>nd</sup> position (10.44%) after expenditure for grains (11.26%). Moreover, household tobacco and betel expenditure is higher than each non food expenditure, which usually require high amount of money to get, such as expenditure for housing rental cost; electricity, telephone and gas bill; goods and services; education cost; health cost; and clothing, footwear and headgear. Beside the fact that tobacco and betel is higher than each type but grain expenditure, this implies that expenditure for tobacco and betel is much higher than egg and milks; fish; meat; and fruits which is source of protein. This fact alone shows that tobacco consumption have high opportunity cost in term of other consumption. *Figure 1*

**Figure 1**  
**Percentage of Monthly Average Household Expenditure by Type of Expenditure and Household Smoking Status (HHS, HHNS and HH all) , Indonesia, 2005**

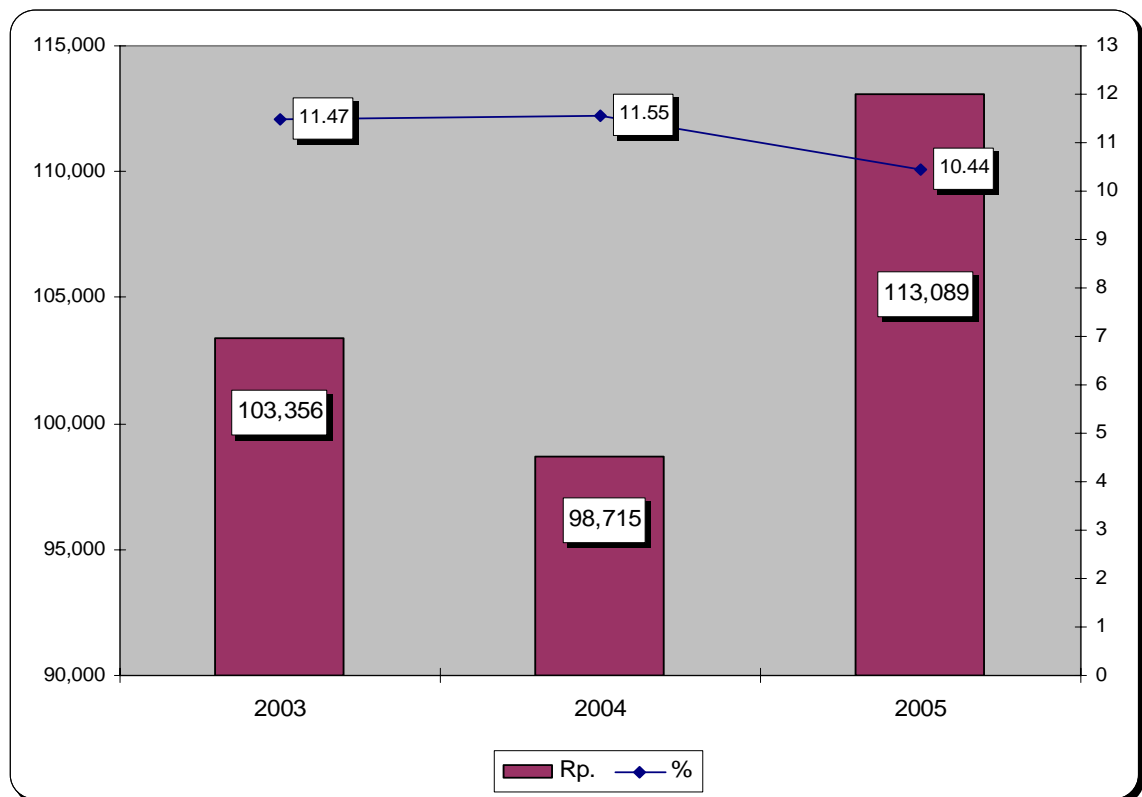


Source: National Socio Economic Survey, 2005

#### 4.2.2. Trend of HH Tobacco Expenditure

From 2003-2005, percentage of tobacco and betel expenditure to total expenditure for HHS is decreasing from 11.47% in 2003 to be 10.44% in 2005. However, the nominal value shows the opposite trend where value of tobacco and betel expenditure for 2003 is Rp. 103,356 and in 2005 this value increase to be Rp. 113,089 per month. It implies that although the percentage of expenditure for tobacco and betel decreased but the amount of money that HHS has spent on this is increasing. Also, it reveals that government policy to increase cigarette price during this period is not very effective to change household tobacco expenditure. *Figure 2 and Appendix Table 6*

**Figure 2**  
Monthly Average Household Expenditure and Its Proportion to Total HH Expenditure for HHS, Indonesia, 2003-2005

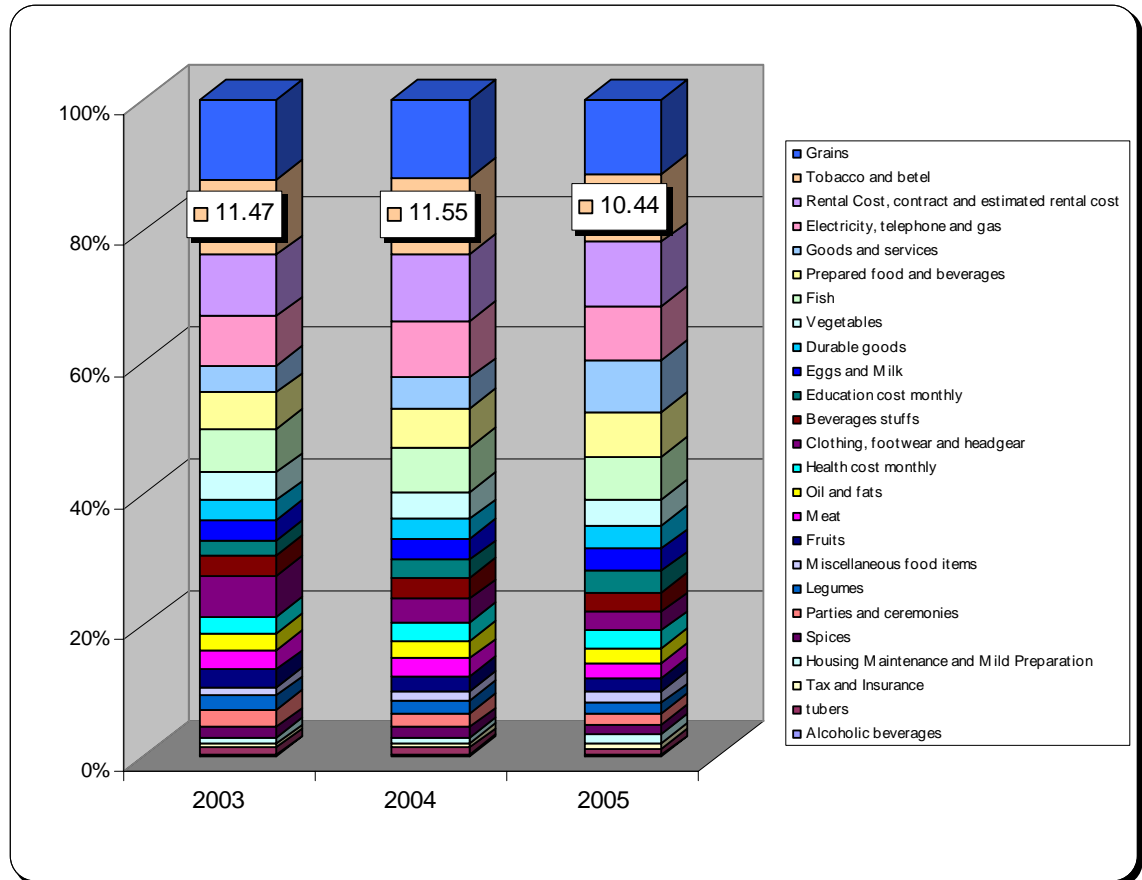


Source: National Socio Economic Survey, 2003-2005

In addition, during this period tobacco and betel expenditure rank in 2<sup>nd</sup> position compared with all type of expenditure for HHS. Moreover, it means that household tobacco and betel expenditure still higher than each type of non food expenditure and expenditure for some essential expenditure for HHS in this period. The non food expenditure include expenditure on housing rental cost, clothing, education, health and housing maintenance which are usually requires large amount of money to consume. While, type of food expenditure that is essentials are meat, fish, egg and milk, and vegetables. This fact shows that Household with smoker keeps spending a lot portion of expenditure to buy this product for the last three

years. In addition, for the last three years opportunity cost of tobacco consumption in HHS in term of other consumption remains high. *Figure 3*

**Figure 3**  
**Rank of HHS Expenditure by Type of Expenditure, Indonesia, 2003-2005**



Source: National Socio Economic Survey, 2003-2005

### 4.2.3. Household Tobacco Expenditure by Income Group

In 2005, 41% poor household (Quintile 1) in Indonesia have tobacco expenditure. While the highest proportion of HHS (household who have tobacco expenditure) by income group is for those in Quintile 4 (71%). In absolute number, there are 4 million poor household who have tobacco expenditure. This implies that millions of poor household in Indonesia spends their expenditure on tobacco product, mostly on cigarette, which is a not essential to them. This is ironic because recently price of many essentials goods such as grain, meat, housing, and transportation is rising highly. We may expect that consumption on cigarette possibly hampers consumption on essentials goods. *Table 2*



**Table 2**  
**Number of Household by Its Tobacco Expenditure Status and Income Group, Indonesia, 2005**

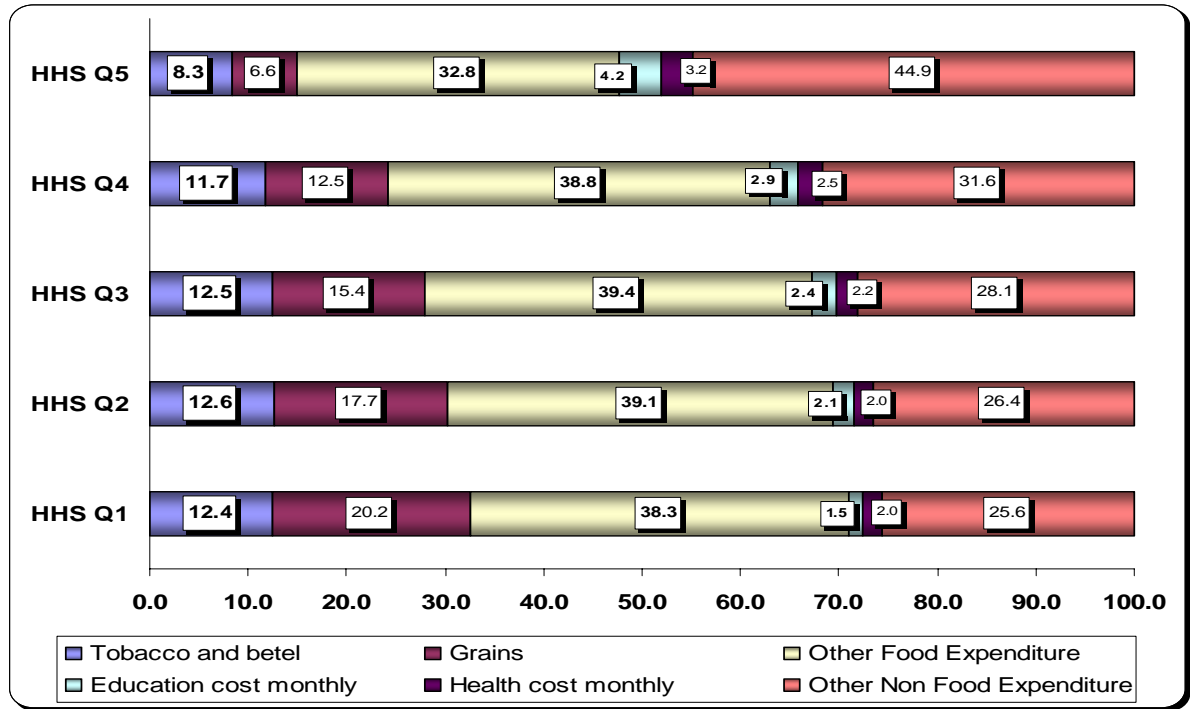
HH Tobacco Expenditure		Q1 (Poorest)	Q2	Q3	Q4	Q5 (Richest)	all HH
<b>Do not Have Tobacco Expenditure</b>	# of HHNS	5,882,722	4,317,847	3,447,521	3,420,752	4,235,124	21,303,966
	%	59.26	35.26	29.13	28.86	32.82	36.25
<b>Have Tobacco Expenditure</b>	# of HHS	4,044,562	7,928,198	8,388,942	8,430,902	8,667,978	37,460,582
	%	40.74	64.74	70.87	71.14	67.18	63.75
<b>all HH</b>	# of All HH	9,927,284	12,246,045	11,836,463	11,851,654	12,903,102	58,764,548
	%	100	100	100	100	100	100

Source: National Socio Economic Survey, 2005

The poorer the household income group, the higher its food expenditure portion. Figure 4 shows that in 2005 proportion of food expenditure for poorest group of HHS (71%) are higher than the richest one (48%). Meanwhile, percentage of average monthly tobacco and betel expenditure to total expenditure for the poorest HHS is higher compared with the richest one. The poorest HHS allocates 12% of its expenditure to tobacco and betel, while the richest HHS only allocates 8%. In addition, percentage of tobacco and betel expenditure to total expenditure is rank in 2<sup>nd</sup> position for the poorest HHS. Contrary, for the richest HHS percentage of tobacco and betel expenditure rank in 4<sup>th</sup> position compared with other type of household expenditure. This facts shows that burden of tobacco expenditure is higher for the poorest HHS than to the richest HHS.

The burden of tobacco expenditure for poorest HHS is resulted from opportunity lost of expenditure. This is because tobacco expenditure is higher than all type but grain expenditure. These include basic needs expenditure such as expenditure for housing, clothing, food, and transportation. In addition, household tobacco expenditure also much higher than household investment expenditure for example expenditure for education and health cost. If the poorest HHS decreases its tobacco consumption then we may expect that their basic needs and investment expenditure can be increased. Hence, it will increase the human resource quality of the poorest household. *Figure 4 and Appendix Table 7*

**Figure 4**  
**HHS Expenditure by Type of Expenditure and Income Group, Indonesia, 2005**



Source: National Socio Economic Survey, 2005

#### 4.2.4. Poor Household Tobacco Expenditure

Proportion of the poorest (quintile 1) household who has tobacco expenditure compared to total household is decreasing for 2003-2005 by 18% point. In 2003, 59% of the poorest household has tobacco expenditure but it decreased to 41% in 2005, although it increased in 2004 to be 61%. However, number of the poorest household who has tobacco expenditure is still huge in 2005 which is 4 million household. This shows us that burden of tobacco expenditure reaches 4 million of the poorest household in Indonesia. *Table 3*

**Table 3**  
**Proportion of Household by Tobacco Expenditure Status for the Poorest Household (Quintile 1), Indonesia, 2003-2005**

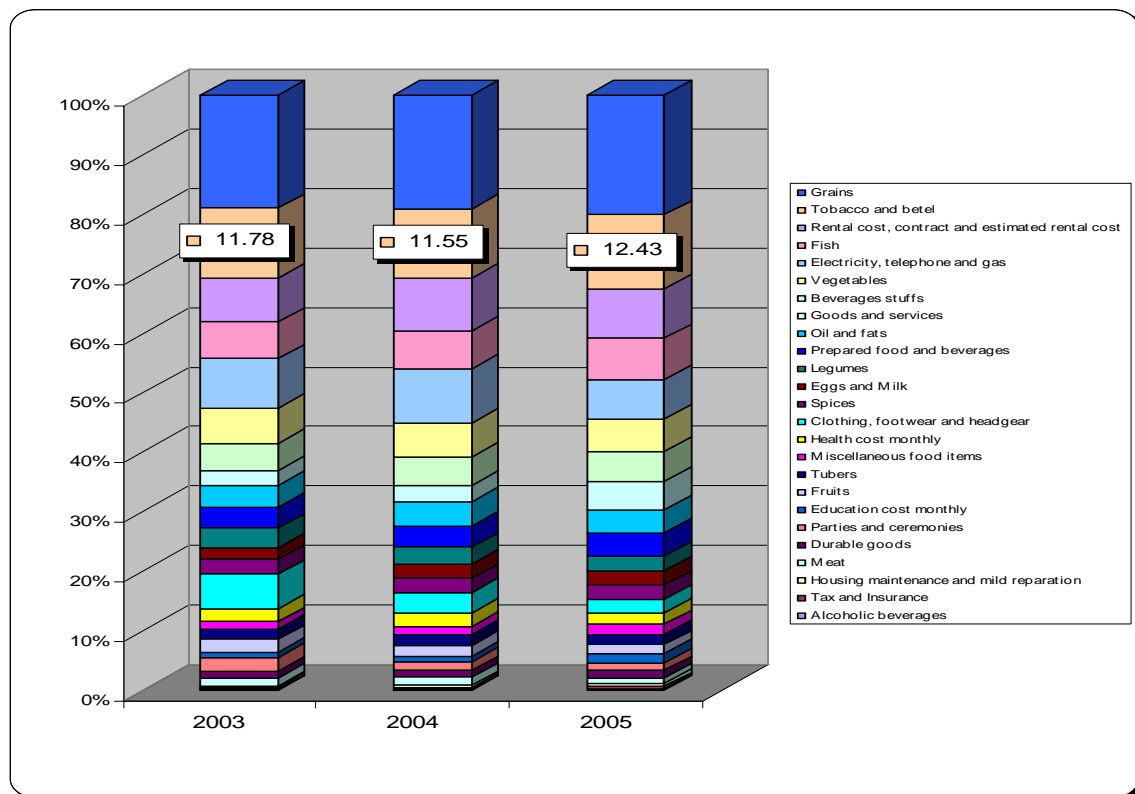
HH Tobacco Expenditure Status	2003	2004	2005
Do not Have Tobacco Expenditure	4,689,631	4,509,125	5,882,722
%	41	39	59
Have Tobacco Expenditure	6,623,607	7,048,986	4,044,562
%	59	61	41
all HH	11,313,238	11,558,111	9,927,284
%	100	100	100

Source: National Socio Economic Survey, 2003-2005

For 2003-2005, proportion of monthly average tobacco and betel expenditure to total monthly average expenditure for poor (q1) HHS is increasing, from 11.78% in 2003 to be 12.43% in 2005. It implies that increasing expenditure for tobacco and betel during 2003-2005 will decrease other type of expenditure. In monetary value, poor HHS monthly average expenditure for tobacco and betel increased by 5% in the same period which is from Rp. 42,363 in 2003 to be Rp. 44,442 per month in 2005. This data shows that not only the proportion of tobacco and betel expenditure for poor HHS increased but also its monetary value increased.

In addition, for poor HHS, those in Q1, the rank of monthly average of tobacco and betel expenditure compared with other type of expenditure is in the 2<sup>nd</sup> position consistently for 2003-2005. This expenditure is higher than each type of other expenditure such as expenditure for meat, egg and milk, housing rental cost, clothing, education and health. This reveals that for the last three years tobacco, mostly cigarette, and betel expenditure is very important for the poorest HHS. For example, in 2005 the poorest HHS spend 12.43% of their expenditure for tobacco, mostly on cigarette, and betel, and only spend 0.85% on meat, 2.34% on eggs and milks, 0.81% on education and 2.2% on health cost. It implies that the poorest HHS wastes their money on tobacco and betel while in the same time they press expenditure on very essential goods and services. *Figure 5*

**Figure 5**  
**Rank of the Poorest (Q1) HHS Expenditure by Type of Expenditure, Indonesia, 2003-2005**



Source: National Socio Economic Survey, 2003-2005

Despite using quintile of expenditure as income group, in this study we also use World Bank definition of poverty. For the purpose of global aggregation and comparison, the World Bank uses reference lines set at \$1 and \$2 per day (World Bank 2007). Therefore, we also segregate the household data based on their average consumption per day with reference line set at US\$ 1 per day (US\$ 30 per month) and US\$ 2 per day (US\$ 60 per month).

In 2005, based on NSES 2005 data, 3.1 million household (5% from total) in Indonesia has monthly average expenditure as not more than US\$. 30 (US\$ 1 per day). If we use US\$ 60 per month as reference line then there are 19.6 million household include in this group. Meanwhile, 23% of very poor household, who spend not more than US\$ 1 per day, has tobacco expenditure. This proportion is almost doubled (51%) when we use US\$ 2 as reference line. Again, this data reveals that one half of poor household (US\$ 2 per day consumption), using World Bank definition, has tobacco expenditure. *Table 4*

**Table 4**  
**Number of Household**  
**by Tobacco Expenditure Status and Income Group (World Bank Definition),**  
**Indonesia, 2005**

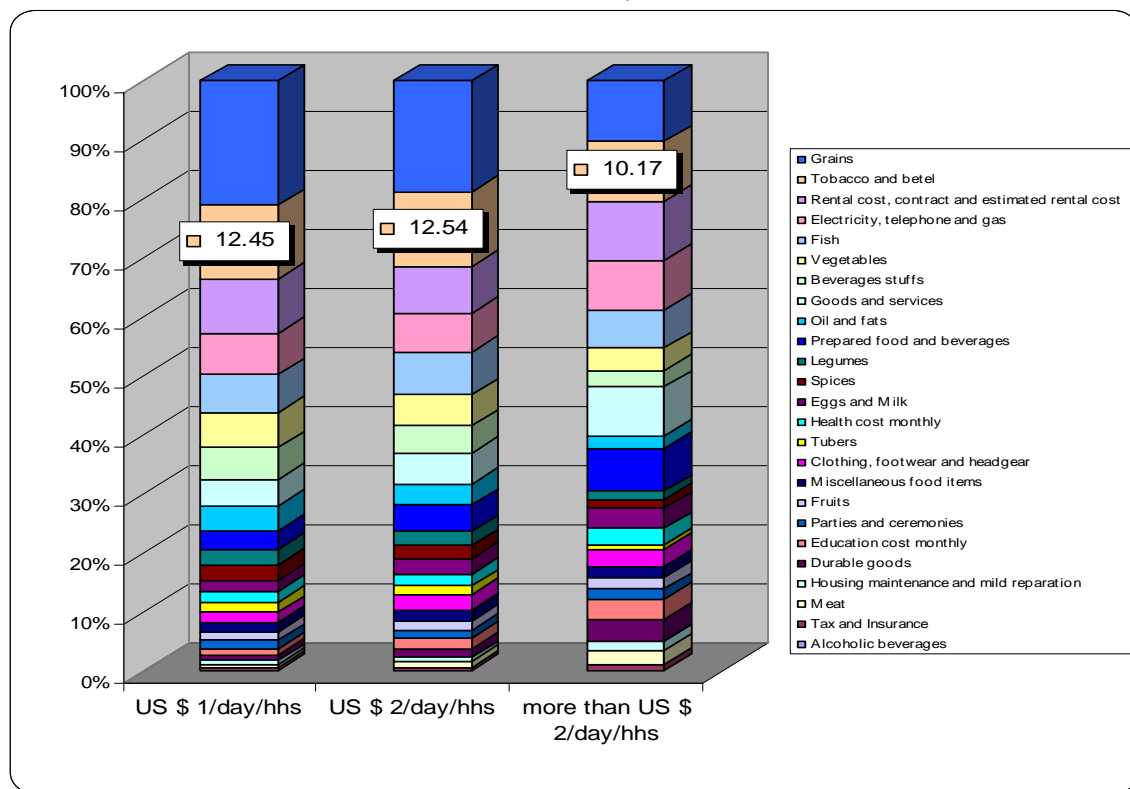
HH Tobacco Expenditure Status		US\$ 1/per day	US \$ 2/per day	More Than US \$ 2/per day	All HH
Do not Have Tobacco Expenditure	# of HHNS	2,388,051	9,524,154	11,779,812	21,303,966
	%	77.4	48.7	30.1	36.3
Have Tobacco Expenditure	# of HHS	696,138	10,054,317	27,406,265	37,460,582
	%	22.6	51.4	69.9	63.7
all HH	# of all HH	3,084,189	19,578,471	39,186,077	58,764,548
	%	100	100	100	100

Source : National Socio Economic Survey, 2005

Note : US \$ 1 : Rp. 9,750 ([www.bi.go.id](http://www.bi.go.id))

Percentage of average monthly tobacco and betel expenditure to total expenditure for the poorest HHS based on World Bank definition is higher compared with other income group. The poorest HHS (US\$ 1 per day consumption) allocates 12% of its expenditure to tobacco and betel, while HHS in the group of more than US\$ 2 per day consumption only allocates 10%. In addition, percentage of tobacco and betel expenditure to total expenditure is rank in 2<sup>nd</sup> position for all group of HHS. This fact shows that burden of tobacco expenditure based on World Bank poverty definition is high for all group of HHS. *Figure 6 and Appendix Table 9*

**Figure 6**  
**Rank of HHS Expenditure by Type of Expenditure and Income Group (World Bank Definition),**  
**Indonesia, 2005**



Source: National Socio Economic Survey, 2005

#### 4.2.5. Opportunity Cost of Tobacco Consumption

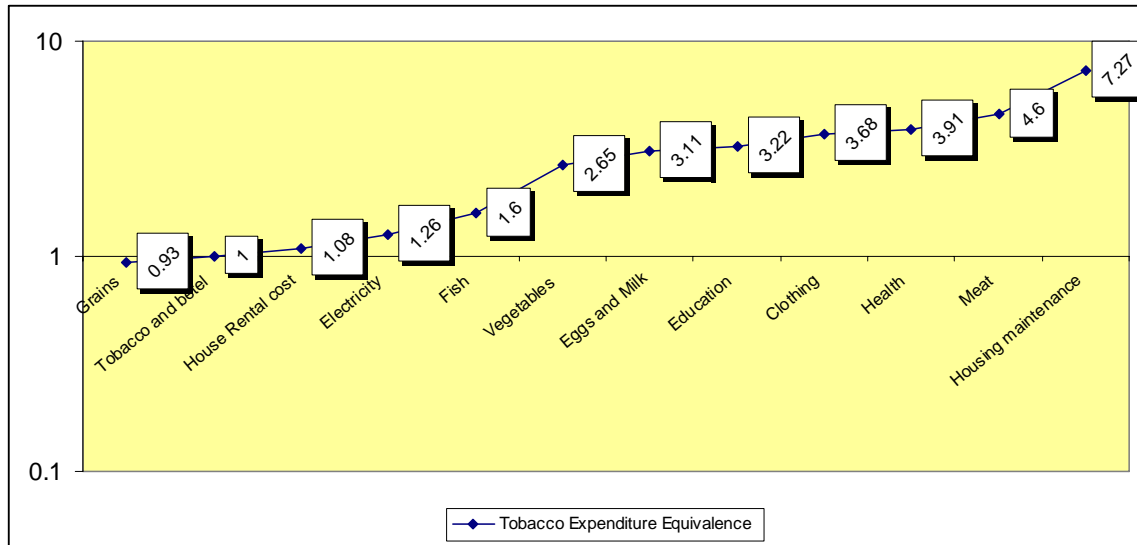
##### Equivalence of Tobacco Expenditure

For household which have tobacco expenditure (HHS), their tobacco consumption causes high opportunity cost in term of several basic and essentials expenditure. The basic expenditure is expenditure for basic needs required to sustain human living. We have identified three basic needs that are basic food (grain), housing and clothing. Expenditure for these will determine human living. While, essential expenditure is expenditure for essential goods that will increase human resources quality in the future. Essential expenditure consists of food and non food expenditure. Essential food expenditure for example is meat, egg and milk, vegetable, and fish. While essential non food expenditure is expenditure for health and education.

Figure 7, shows the equivalence of expenditure for tobacco and betel for overall HHS in terms of basic and essentials expenditure. This figure reveals that HHS tobacco consumption in a month equal to 7 (seven) fold of housing maintenance; 5 (five) fold of meat; 4 (four) fold of health cost; 3 (three) fold of education cost; and 3 (three) fold of eggs and milk expenditure. These facts infer that if HHS does not consume tobacco then they

will have opportunity to increase either of housing condition, essential food consumption, and education and health quality of their household member.

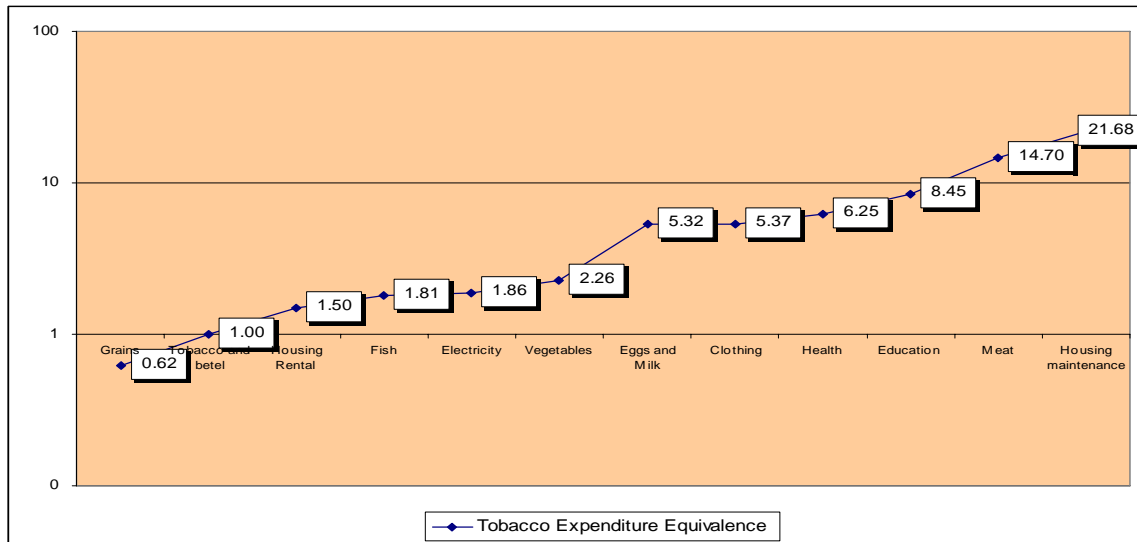
**Figure 7**  
**Equivalence of Tobacco Expenditure in Term of Basic and Essentials Expenditure for Overall HHS, Indonesia, 2005**



Source: National Socio Economic Survey, 2005

For poor (Q1) HHS, the situation is worse. Poor HHS tobacco and betel expenditure is equal to 22 fold of housing maintenance; 15 fold of meat; 8 fold of education cost; 6 fold of health cost and 5 fold of eggs and milk expenditure. Therefore, the potential opportunity of diminishing and disappearing tobacco consumption for poor HHS is much higher than for overall HHS.

**Figure 8**  
**Equivalence of Tobacco Expenditure for Poor HHS, Indonesia, 2005**



Source: National Socio Economic Survey, 2005

### Simulation of Change in Tobacco Expenditure

In this study we simulate the impact of change in tobacco expenditure to basic and essentials expenditure. The basic assumption of this simulation is all tobacco and betel expenditure will change to basic and essential expenditure. Therefore, we will disperse equally the tobacco expenditure to basic and essential expenditure. For example, in impact simulation of change in tobacco expenditure to essentials, we disperse all tobacco expenditure (Rp 113, 089) to 9 basic and essentials expenditure which are fish, meat, eggs and milk vegetables, education, health, housing, clothing and grain expenditure. Therefore each essential will be increased by Rp 12,565. Afterward, we simulate of the impact of this changes to basic and essential expenditure. The question to be answered is how much the increase of basic and essential expenditure as a result of disappearing tobacco consumption in HHS.

Table 5 shows that disappearing tobacco consumption in the HHS will increase mostly on meat expenditure by 77 percent, health cost by 43 percent, and clothing by 41 percent and education cost by 36 percent. While, the two least impacted expenditure by disappearing tobacco consumption are housing and grain expenditure.

**Table 5**  
**Simulation of Change in Tobacco Expenditure to Basic and Essentials Expenditure for HHS,**  
**Indonesia, 2005**

	Type of Expenditure	Before Change in Expenditure			After Change in Expenditure			% Increase for Basic Exp
		Expenditure (Rp./Month)	% to Total Exp	% of Basic and Essential Exp	Expenditure (Rp./Month)	% to Total Exp	% of Basic and Essential Exp	
1	Tobacco and betel	113,089	10.44		-	-		
<b><i>Basic and Essentials Expenditure</i></b>								
1	Grains	121,948	11.26	<b>11.26</b>	134,513	12.42	<b>12.42</b>	<b>10.30</b>
2	Fish	70,638	6.52	<b>6.52</b>	83,204	7.68	<b>7.68</b>	<b>17.79</b>
3	Meat	24,598	2.27	<b>2.27</b>	37,163	3.43	<b>3.43</b>	<b>51.08</b>
4	Eggs and Milk	36,335	3.35	<b>3.35</b>	48,901	4.51	<b>4.51</b>	<b>34.58</b>
5	Vegetables	42,624	3.93	<b>3.93</b>	55,189	5.09	<b>5.09</b>	<b>29.48</b>
6	Housing and household facility		-	<b>11.11</b>		12.27	<b>12.27</b>	<b>10.44</b>
6a	Rental cost, contract and Estimated rental cost	104,849	9.68		111,132	10.26		
6b	Housing maintenance and mild reparation	15,557	1.44		21,840	2.02		
7	Education cost monthly	35,089	3.24	<b>3.24</b>	47,654	4.40	<b>4.40</b>	<b>35.81</b>
8	Health cost monthly	28,950	2.67	<b>2.67</b>	41,515	3.83	<b>3.83</b>	<b>43.40</b>
9	Clothing, footwear and headgear	30,692	2.83	<b>2.83</b>	43,257	3.99	<b>3.99</b>	<b>40.94</b>

Source: National Socio Economic Survey, 2005

## Tobacco Consumption Opportunity Lost in Term of Consumer Goods

Table 6, shows the opportunity lost of tobacco consumption in term of several consumer goods in national level. We compare the national tobacco expenditure with other consumer goods (rice, milk, meat, chicken, egg, fish and sugar). The research question to be explored is how many unit of consumer good the HHS can purchase if their tobacco consumption disappeared. Our calculation reveals that if HHS does not consume tobacco then each of them will have additional consumption per month either as many as 23 kg of rice, 20 kg of milk, 22 kg of meat, 52 kg of chicken, and 171 kg of sugar.

**Table 6**  
**Opportunity Lost of Tobacco Consumption in Term of Several Consumer Goods for Overall HHS, Indonesia, 2005**

National Yearly Tobacco and betel Exp	Item	Consumer goods						
		Rice (Kg)	Milk (400 gram)	Meat (Kg)	Chicken (Kg)	Egg (Kg)	Fish (Kg)	Sugar (Kg)
Rp 50,8 Trillion	Price	5,000	21,000	47,000	20,000	10,500	11,000	6,100
	Unit/ year	10,167,315,259	2,420,789,347	1,081,629,283	2,541,828,815	4,841,578,695	4,621,506,936	8,333,864,966
	# of HHS	37,460,582						
	Unit/HHS/Year	271.41	598.53	267.43	628.46	1197.06	1142.65	2060.51
	Unit/HHS/month	22.62	49.88	22.29	52.37	99.75	95.22	171.71

Meanwhile, if poor HHS does not consume tobacco then each of them will have additional consumption per month either as many as 9 kg of rice, 1 kg of milk, 1 kg of meat, 4 kg of chicken, and 7 kg of sugar. These are much quantity consumption for the poor HHS.

Table 7

**Table 7**  
**Opportunity Lost of Tobacco Consumption in Term of Several Consumer Goods for Poor HHS, Indonesia, 2005**

Poor Yearly Tobacco and betel Exp	Item	Consumer goods						
		Rice (Kg)	Milk (400 gram)	Meat (Kg)	Chicken (Kg)	Egg (Kg)	Fish (Kg)	Sugar (Kg)
Rp 2.15 Trillion	Price	5,000	21,000	47,000	20,000	10,500	11,000	6,100
	Unit/ year	431,396,219	102,713,385	45,893,215	107,849,055	205,426,771	196,089,190	353,603,458
	# of Poor HHS	4,044,562						
	Unit/poor household/Year	106.66	25.40	11.35	26.67	50.79	48.48	87.43
	Unit/Poor People/month	8.89	2.12	0.95	2.22	4.23	4.04	7.29



### 4.3. Demand Analysis By Income Group

#### Result of estimation

In this section we will describe the result of the two-part model estimation. There are two part results: a) the estimation of the probability of smoking function using logistic regression and b) the estimation of the conditional demand of cigarette using linier regression. The result of estimation is presented in table 8, 9, and 10.

#### Estimation of Smoking Probability

Table 8 shows the probability of smoking by income group (overall and quintile) and the World Bank's (WB) poverty line. As expected, the result shows that the price is negative and statistically significant in determining the smoking probability. This result shows that the higher cigarette price, the lower probability of people to smoke. The negative coefficients apply to income group and World Bank's poverty line that varies from -0.409 to 2.488. If we look at the income quintile, Table 8 shows that the coefficient of the first quintile (the poorest) is the higher compare to other quintile group. It means that the poorest people are sensitive to the price increase. The cigarette price increase would prevent poor people to consume cigarette. Using World Bank's poverty line, the coefficient for people with income less than US\$ 1 is higher than to those who under US\$ 2. In other words, those who poor people with income less than US\$ 1 or US\$ 2 would consume cigarette lower than those with higher income of more than US\$ 1 or US\$ 2 if cigarette increase.

If we look at income variable, as expected the coefficient is positive and significant suggesting that the higher income of people, the higher likelihood of smoking. As the income increase, the probability of the poorest people to smoking tend to high (1.045 compare to wealthiest (0.120)). Using WB's poverty line, the probability of people with less than US\$ 1 is lower than those with income less that US\$ 2.

Positive and significant for work variable (except for first quintile) show that those who work are more likely to smoke compared to those who do not work. The probabilities of smoking for those who live in urban areas are more likely to smoke than those who live in rural areas. As expected, male are more likely to smoke compared to female. In Indonesia it is common that male smoke as indicated by smoking prevalence rate for male that are much higher than for female. For age variable, the coefficient is positive and significant except for aged 55 year old and above. It shows that the probability of smoking tend to lower for older age group compare to reference age (15-24). Those who live in bad living (house) condition are less likely to smoke than those who live in good living condition (for first quintile). However, the highest quintile has the opposite direction that those who live in bad living (house) condition are more likely to smoke than those who live in good living condition. The probability of smoking is lower for tertiary education compared to those with primary education for overall. The same direction (negative and significant) applies for quintile as well as for WB's poverty line.

**Table 8**  
**The Result of Logistic Regression for Probability of Smoking, Indonesia, 2004**

Variables	Overall	Income Quintiles					Based on WB	
		I	II	III	IV	V	<1US\$	<2US\$
Ln(price)	-0,856*	-1,696*	-1,069*	-0,713*	-0,384*	-0,409*	-2,488*	-1,422*
Ln(income)	0,415*	1,045*	0,4317*	0,492*	0,071	0,120*	0,886*	0,947*
Work	0,251*	0,061	0,187*	0,225*	0,262*	0,432*	-0,218**	0,123*
Not work (reference)								
Urban	-0,029***	0,176	-0,023	0,001	-0,074*	-0,144*	0,251**	0,061**
Rural (reference)								
Male	1,666*	1,575*	1,71*	1,727*	1,720*	1,593*	1,409*	1,647*
Female (reference)								
Age 25-34	0,199*	-0,184*	0,140*	0,251*	0,396*	0,324*	-0,077	-0,019
Age 35-44	0,173*	-0,205*	0,039	0,191*	0,403*	0,322*	-0,192	-0,089**
Age 45-54	0,124*	-0,229*	0,008	0,166*	0,298*	0,259*	-0,416***	-0,128***
Age >55	0,036	-0,317*	-0,053	0,088	0,112**	0,139**	-0,379***	-0,179*
Age 15-24 (reference)								
Bad living condition	0,005	-0,127*	-0,023	0,025	0,025	0,079**	-0,264*	-0,081*
Good living condition (reference)								
Secondary education	-0,103	-0,136*	-0,081**	-0,121*	-0,142*	-0,141*	0,068	-0,085*
Tertiary education	-0,304*	-0,018	-0,171*	-0,331*	-0,373*	-0,525*	-0,119	-0,045
Primary education (reference)								
Constant	-2,442*	-5,358*	-1,332	-4,370***	-0,650	-1,139*	1,313	-5,86*

Note: significant of coefficient : \*p < 1%, \*\* p< 5% and \*\*\*p<10%

Source: Estimation results

### Conditional Demand Elasticity

This section discusses the second part of the two-part model namely conditional demand model since it includes only people who smoke. This model will estimate the independent variables that determine cigarette consumption. As similar to the logistic regression, the estimation are applied to overall sample, income quintile and WB's poverty line.

As shown in Table 9, the result of estimation shows that all coefficients of parameters are negative and statistically significant indicated that as the higher cigarette price increase, the lower cigarette increase also. In overall, price elasticity is -0.055 meaning that the increase of 10% of cigarette price would decrease by 0.55% of cigarette consumption. In we look at the income quintile, price elasticity of demand is -0.411 (fourth quintile) followed by -0.304 (first quintile), -0.292 (fifth quintile) and -0.065 (second quintile). It means that the increase in cigarette price would reduce the consumption to people in all quintile groups in which people from forth and first quintile would be much affected. It is understood that the first quintile (the poorest group) would be much affected since the lack of their income. However, the fourth quintile (relatively wealthy) would also be most affected by price increase. The finding is not consistent with the common senses. Using WB's poverty line, people with income less than US\$ 1 is more price sensitive than those with income US\$ 2

(price elasticity is -0.412 and -0.208 respectively). It shows that poorer people would cut their expenses on cigarette if the price of cigarette increases.

As expected, the coefficient of income is positive and statistically significant, except for second income quintile. The positive sign shows that cigarette is normal good in which as income increases the consumption of cigarette also increases. In the overall sample, coefficient of income is 0.307 suggested that if the income increase by 10%, then the cigarette consumption would increase by 3.07%. If we look at the income quintile, the increase of income by 10% would increase the consumption would increase by 5.67% (second quintile), 5.24% (fourth quintile), and 5.13% (first quintile). The coefficient of income for WB's poverty line is almost the same, 0.454 and 0.451 respectively.

The coefficient of male is negative and significant suggest that male is more likely to smoke than female. The sign of age is also negative and significant indicated that as the age increase the consumption decrease. In other words, young people tend to smoke more than to older people.

**Table 9**  
**Estimated Coefficient of Conditional Cigarette Demand, Indonesia, 2004**  
**(Dependent Variable: Cigarette Consumption)**

Variables	Overall	Income Quintiles					Based on WB	
		I	II	III	IV	V	<1\$US	<2\$US
Ln(price)	-0,055**	-0,304*	-0,065***	0,058	-0,411*	-0,292*	-0,412*	-0,208*
Ln(income)	0,307*	0,513*	0,567*	0,301	0,524*	0,224*	0,454*	0,451*
Work	-0,052*	0,084*	0,020	-0,121**	0,023	-	0,096***	0,164*
Do not work (ref)								
Urban	-0,049*	-0,100*	-0,036	-0,035	-0,053*	-0,027	-0,067	-0,070*
Rural (ref)								
Male	-1,033*	-0,179*	-0,853*	-1,611*	-0,559*	-0,793*	0,047	-0,396*
Female (ref)								
Age	-0,001*	-0,001*	-0,001***	-0,002	-0,002*	-0,0002	-0,003**	-0,002*
Bad living condition	-0,023	0,037***	-0,021**	-0,002	-0,039***	-0,068**	0,022	0,006
Good living condition (ref)								
Secondary education	0,051*	0,068*	0,035*	0,103*	0,020	-0,003	0,017	0,039**
Tertiary education	0,082*	0,014	0,076*	0,279*	0,036	0,046	0,070	0,023
Primary education (ref)								
Married	-0,053*	-0,094*	-0,068*	-0,044	-0,051*	-0,060**	-0,081*	-0,080
Not married (ref)								
Constant	0,155	-2,559*	-3,541*	0,528	-1,478	2,402*	-1,632	-1,937*
Samples	64573	12907	12892	12938	12924	12912	3569	22518

Note: significant of coefficient : \*p < 1%, \*\* p < 5% and \*\*\*p < 10%

Source: Estimation results

## Total Price Elasticity

Total price elasticity was calculated by adding price elasticity in the logistic regression and price elasticity in the conditional demand. The estimation is important to know the people's sensitivity in the cigarette price as a whole. Table 10 shows summary of total price elasticity based on the previous table.

Total price elasticity is negative and statistically significant for overall sample and sub sample. The total price elasticity varies between -0.451 and -2.388. For overall sample, the total elasticity is 0.856 meaning that if the cigarette price increases by 10%, the cigarette consumption decrease by 8.56%. The poorest people (first quintile) are most affected by price increase as is shown by the price elasticity 1.696 compared to richest people (fifth quintile) that is 0.409. The cigarette price increase will encourage poor people to reduce cigarette consumption and to allocate their budget to other essentials household expenditure. This pattern also holds if we use World Bank income group criterion.

**Table 10**  
**Total Cigarette Price Elasticity, Indonesia, 2004**

	Overall	Quintiles					Based on WB	
		I	II	III	IV	V	<1\$US	<2\$US
Price Elasticity of Smoking Participation	-0,856*	-1,696*	-1,069*	0,713*	-0,384*	-0,409*	-2,488*	-1,422*
Price Elasticity of Conditional Demand	-0,055**	-0,304*	-0,065***	0,058	-0,411*	-0,292*	-0,412*	-0,208*
Smoking Prevalence	0,273	0,237	0,294	0,287	0,297	0,251	0,206	0,261
Total Price Elasticity	-0,676	-1,598	-0,821	-0,451	-0,681	-0,598	-2,388	-1,258

Note: significant of coefficient: \*p < 1%, \*\* p< 5% and \*\*\*p<10%

Source: Estimation results

### 4.4. The Impact of Household Smoking Status to Their Essentials Expenditure

Table 11 presents the linear regression model for the logarithm of monthly expenditure for source of protein (meat, fish, egg, milk and legumes), controlling for possible confounders of household's head characteristics such as age, sex, and education, and also household characteristics such as household size, dummy variable for households who have expenditure less than \$2 per capita, location (urban or rural), and island. The coefficient of household smoking status and source of protein expenditures per month is 0.056. The positive coefficient indicates a trend in smoking households spending more to buy meats and other sources of protein than non-smoking households. However, the negative coefficient of household poverty status and source of protein expenditures shows that households whom each of their member live under US\$ 2 in average, spent much less on source of protein. Negative coefficient also found for dummy variable for location, showing that rural households tend to spent less on source of protein compared to those who live in urban areas.

The positive coefficient of the household size variables shows that increasing number of household members tend to increase spending on sources of protein.

**Table 11**  
**Linear Regression for the Logarithm of Monthly Expenditure for Source of Protein,**  
**Indonesia, 2005**

<i>Variable</i>	<i>Coefficient</i>	<i>Std Error</i>	<i>t-stat</i>
HH Smoker (0=HH non smoker)	0.056	0.003	18.3
Poor (under \$2) (0=non poor)	-0.638	0.006	-102.9
Location (0=rural)	-0.306	0.003	-102.1
HH size	0.144	0.001	165.6
Sex of HH head (0=female)	-0.116	0.005	-23.7
Log Age of HH head	0.100	0.005	19.2
<i>Education of HH head (0=no schooling)</i>			
Primary	0.211	0.005	39.2
Junior Secondary	0.378	0.006	60.4
Senior Secondary	0.569	0.006	90.8
Diploma	0.724	0.010	71.5
University	0.787	0.009	86.5
<i>Island (0=Sumatra)</i>			
Jawa	-0.302	0.004	-85.2
Bali & NTT	-0.378	0.007	-58.2
Kalimantan	0.252	0.004	56.3
Sulawesi	0.015	0.004	3.6
Maluku	-0.049	0.008	-6.4
Papua*	-0.014	0.015	-0.9
Constant	12.479	0.023	537.1

In the non food expenditure basket, education and health expenditure are the most important items that households should spend substantial proportion of their income. However, most households do not spend their income on these important expenditure, especially for household smokers. Table 12 presents linier regression for the logarithm of monthly expenditure for education. The coefficient of household smoker is negative and statistically significant (-0.072), indicated that household smoker is less likely to spend their income for education compared to non household smoker. Using WB's poverty line, the coefficient of poor household whom the member spend less that \$US 2 is negative and significant (-1.018). Again, it shows that poor household spends on education less than non poor household. However, if poor households could reduce or wipe out cigarette expenditure, the households may increase the proportion of their income to pay education for their children.

The coefficient of location is also negative and significant (-0.610) suggest that household live in rural areas spend less on education compared to household live in urban areas.

Regarding the household size, as the size of household increase, the expenditure for education also increases.

**Table 12**  
**Linear Regression for the Logarithm of Monthly Expenditure for Education,**  
**Indonesia 2005**

<i>Variables</i>	<i>Coefficient</i>	<i>Std Error</i>	<i>t-stat</i>	<i>Sig</i>
HH Smoker (0=HH non smoker)	-0.072	0.007	-9.8	-0.000754
Poor (under \$2) (0=non poor)	-1.018	0.016	-62.3	-0.000262
Location (0=rural)	-0.610	0.007	-82.4	-0.000090
HH size	0.108	0.002	48.2	0.000047
Sex of HH head (0=female)	0.134	0.013	10.4	0.001235
Log Age of HH head	0.758	0.015	50.1	0.000302
<i>Education of HH head (0=no schooling)</i>				
Primary	0.308	0.015	21.0	0.000697
Junior Secondary	0.529	0.016	32.6	0.000497
Senior Secondary	0.759	0.016	46.7	0.000348
Diploma	1.146	0.026	43.9	0.000594
University	1.256	0.022	56.3	0.000396
<i>Island (0=Sumatra)</i>				
Jawa	0.040	0.009	4.6	0.001852
Bali & NTT	-0.233	0.014	-16.3	-0.000877
Kalimantan	-0.247	0.011	-21.7	-0.000523
Sulawesi	-0.242	0.011	-22.3	-0.000489
Maluku	-0.343	0.017	-19.9	-0.000866
Papua*	-0.059	0.029	-2.0	-0.014199
Constant	7.686	0.063	122.1	0.000515

Table 13 presents linier regression of monthly expenditure for health. This finding is similar with education expenditure in which the coefficient of household smoker is negative and significant (-0.064). Household smoker is less likely to spend his/her income on health compared with non household smoker. If a member(s) of household smoker stop(s) to smoke, the proportion of income for health could be increased and household member will healthier. Poor household (with expenditure less than US\$ 2 per day) is also less likely to spend his/her income for health (coefficient=-1.777) compared to non poor household. Household live in rural areas tend to spend less on health compared to those who live in urban areas. Regarding the household size, as the number of household increase, the expenditure for health also increases.

**Table 13**  
**Linear Regression for the Logarithm of Monthly Expenditure for Health,**  
**Indonesia, 2005**

<i>Variables</i>	<i>Coefficient</i>	<i>Std Error</i>	<i>t-stat</i>	<i>Sig</i>
HH Smoker (0=HH non smoker)	-0.064	0.007	-8.7	-0.000835
Poor (under \$2) (0=non poor)	-1.177	0.017	-68.9	-0.000248
Location (0=rural)	-0.209	0.007	-28.3	-0.000261
HH size	0.109	0.002	54.2	0.000037
Sex of HH head (0=female)	-0.168	0.012	-14.6	-0.000792
Log Age of HH head	0.311	0.012	26.5	0.000444
<i>Education of HH head (0=no schooling)</i>				
Primary	0.154	0.012	13.0	0.000908
Junior Secondary	0.267	0.014	18.9	0.000743
Senior Secondary	0.394	0.014	27.6	0.000518
Diploma	0.412	0.026	15.6	0.001685
University	0.453	0.022	20.3	0.001101
<i>Island (0=Sumatra)</i>				
Jawa	-0.102	0.009	-11.9	-0.000723
Bali & NTT *	0.001	0.013	0.1	0.142856
Kalimantan	-0.065	0.011	-6.1	-0.001739
Sulawesi	-0.111	0.011	-10.4	-0.001033
Maluku *	-0.010	0.018	-0.6	-0.031486
Papua	0.127	0.029	4.3	0.006812
Constant	9.202	0.052	176.3	0.000296

## CHAPTER 5 CONCLUSION AND POLICY RECOMMENDATIONS

### 5.1. Conclusion

#### 5.1.1. Indonesian Smokers Profile in 2004

##### *Smoking Prevalence*

- Based on processed raw data of National Socio Economic Survey (NSES) 2004, the smoking prevalence for sample in Indonesia was 27.8%, below 2001 data that was 31.5%. This prevalence holds for those who smoke daily and 15 or more years old. In addition, the smoking prevalence for those who occasionally (not everyday) smokers were 6%. In addition there were 4.1% of respondent who was smoker in the past but recently did not smoke anymore. This fact reveal that quit smoking is very hard to do and this could be because of the addictiveness of cigarette.
- By age group, the pattern of smoking prevalence was like reversed U, whereas the youngest age group, 15-24 years old, and the oldest one, 55 years old or more, has the lowest smoking prevalence which are 33 and 24% respectively.
- The higher the education levels of respondent, the lower their smoking prevalence. Those with basic education, not graduated and graduated from elementary school, have smoking prevalence of 30%. This prevalence is higher than those with middle education, graduated from junior and senior high school, 28% and those with high education, graduated from diploma and bachelor degree, 21%.
- By income group, the smoking prevalence pattern was like reversed U whereas those in quartile 1 (the poorest) and quartile 5 (the wealthiest) has lowest smoking prevalence, 21 and 25% respectively. While, those in quartile 3 and 4 has the highest smoking prevalence, that is 30%.
- Those who live in rural area have higher smoking prevalence than those who live in urban area, 30 and 25% respectively.

##### *Average Cigarette Consumption*

- In 2004, the average consumption for those who smoke regularly (everyday smokers), is 11 sticks per day or 330 sticks per month or 3960 per year. While, the average consumption for male smokers is higher than female smokers, 11 compared with 10 sticks per day.
- Mean while, the higher the income, the higher the average cigarette consumption, the lowest is 270 sticks per month for those in quintile 1 and the highest is 390 sticks per year for quintile 5. This pattern applies for male and female smokers.
- The average cigarette consumption pattern between male and female by education is slightly different. For male, their average consumption is 330 sticks



per month for all level of education. However, the average consumption for female smokers is different by education level. Female smokers with middle level of education have the highest average consumption, 360 sticks per month. While, female smokers with high level education have the lowest average consumption, 270 stick per month.

#### ***Average Age of Smoking Initiation***

- Average age of smoking initiation for adult respondent, age 15 years or more, is 17. Those who live in rural area have younger average age of initiation than those in urban area, 17 and 18 year respectively. In addition, adult female smokers have older age of initiation than male, 19 compared with 17 year.
- The younger the age of respondent, the younger their average age of smoking initiation, those in the age of 15-24 years have average age of initiation of 16 compared with 17 for those in the age of 25-34. In addition, those in the age of 35+ have older age of initiation, 18.
- From education point of view, the higher the education level, the older their average age of smoking initiation. Those who had basic education have average age of smoking initiation younger than those who had middle and high education, 18 and 21 respectively.

#### **5.1.2. The Impact of Tobacco Consumption Among The Poor**

- Based on National Socio Economic Survey (NSEES) 2005 data, 64% of household in Indonesia have tobacco expenditure. This is equal to 37 million household. Its also infers that majority of household in Indonesia have at least one smoker.
- The percentage of tobacco and betel expenditure was ranked in 2<sup>nd</sup> position after total food expenditure for HHS (10.44%).
- From 2003-2005, percentage of tobacco and betel expenditure to total expenditure for HHS (household who have tobacco expenditure) is decreasing from 11.47% in 2003 to be 10.44% in 2005. However, the nominal value shows the opposite trend where value of tobacco and betel expenditure for 2003 is Rp. 103,356 and in 2005 this value increase to be Rp. 113,089 per month.
- During this period tobacco and betel expenditure rank in 2<sup>nd</sup> position compared with all type of expenditure for HHS.
- In 2005, 41% poor household (Quintile 1) in Indonesia have tobacco expenditure.
- Percentage of average monthly tobacco and betel expenditure to total expenditure for the poorest HHS is higher compared with the richest one. The poorest HHS allocates 12% of its expenditure to tobacco and betel, while the richest HHS only allocates 8%.

- In addition, percentage of tobacco and betel expenditure to total expenditure is rank in 2<sup>nd</sup> position for the poorest HHS. Contrary, for the richest HHS percentage of tobacco and betel expenditure rank in 4<sup>th</sup> position compared with other type of household expenditure. This facts shows that burden of tobacco expenditure is higher for the poorest HHS than to the richest HHS.
- For 2003-2005, proportion of monthly average tobacco and betel expenditure to total monthly average expenditure for poor (q1) HHS is increasing, from 11.78% in 2003 to be 12.43% in 2005.
- In addition, for poor HHS, those in Q1, the rank of monthly average of tobacco and betel expenditure compared with other type of expenditure is in the 2<sup>nd</sup> position consistently for 2003-2005.
- In 2005, HHS tobacco consumption in a month equal to 7 (seven) fold of housing maintenance; 5 (five) fold of meat; 4 (four) fold of health cost; 3 (three) fold of education cost; and 3 (three) fold of eggs and milk expenditure.
- Poor HHS tobacco and betel expenditure is equal to 22 fold of housing maintenance; 15 fold of meat; 8 fold of education cost; 6 fold of health cost and 5 fold of eggs and milk expenditure. Therefore, the potential opportunity of diminishing and disappearing tobacco consumption for poor HHS is much higher than for overall HHS.
- Disappearing tobacco consumption in the HHS will increase mostly on meat expenditure by 77 percent, health cost by 43 percent, and clothing by 41 percent and education cost by 36 percent.
- This study calculated that if HHS does not consume tobacco then each of them will have additional consumption per month either as many as 23 kg of rice, 20 kg of milk, 22 kg of meat, 52 kg of chicken, and 171 kg of sugar.

### **5.1.3. The Impact of Tobacco Control Regulation to Smoking Behaviors of The Poor.**

This study estimates that the poor HHS (first quintile) are most affected by price increase as is shown by the price elasticity -1.696 compared to richest people (fifth quintile) that is - 0.409. The cigarette price increase will encourage poor people to reduce cigarette consumption and to allocate their budget to other essentials household expenditure.

### **5.1.4. The Impact of Household Smoking Status to Their Essentials Expenditure**

This study conclude that household smoking status have significant impact on expenditure for source of protein, health and education. Household who have tobacco expenditure (HHS) is estimated to have more expenditure for source of protein. However, HHS is estimated to have lower health and education expenditure compared with household who do not have tobacco expenditure.

## 5.2. Policy Recommendations

- a. This study reveal that high smoking prevalence, high cigarette consumption and early smoking age of initiation in Indonesia indicates serious health problem. In addition, household tobacco expenditure creates high opportunity cost in term of basic and essentials expenditure. Therefore, we recommend the government to increase tobacco control policy. There are four tobacco control measure that government should implement which are *first* increasing tobacco tax and price, *second* total ban for tobacco advertising, *third* pictorial health warning and *fourth* smoke free are.
- b. This study concludes that poor smoker (first quintile) are most affected by price increase whereas their price elasticity (-1.696) is higher than elasticity for richest smoker (fifth quintile) which is -0.409. So, poor smoker will decrease their cigarette consumption, as a result of increasing price, more than the richest smoker does. Hence, we may predict that change in tobacco expenditure to other expenditure for poor smoker is more likely than for the richest smoker. That is why increasing cigarette price is an effective measure to decrease poor smoker cigarette consumption and change it to other essential expenditure.
- c. In order to increase and sustain tobacco control policy in Indonesia, we recommend the government to ratify Framework Convention on Tobacco Control (FCTC). The ratification of FCTC will indicates government political will to protect the health of Indonesian citizen.

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## APPENDIX

**Appendix Table 1**  
**Smoking Prevalence by Sex, Indonesia 2004**

Sex	Smoke Everyday	Smoke Occasionally (not everyday)	Ever Smoker but Recently do not Smoke	Never Smoke	Total
Female	1072	367	279	30371	32089
%	3.34	1.14	0.87	94.65	100
Male	16996	3497	2381	10035	32909
%	51.65	10.63	7.24	30.49	100
Male and Female	18068	3864	2660	40406	64998
%	27.8	5.94	4.09	62.16	100

Source: National Socio Economic Survey 2004

**Appendix Table 2**  
**Smoking Prevalence by Individual Characteristic and Sex, Indonesia, 2004**

No	Characteristic	Sex		Male and Female
		Male	Female	
1	<b>Marital Status</b>			
	Not Married	36.71	2.92	17.74
	Married	56.81	3.56	32.04
2	<b>Age Group</b>			
	15-24	33.80	2.34	17.05
	25-34	57.91	3.25	29.86
	35-44	58.30	3.86	34.01
	45-54	57.46	3.78	33.25
	55 or more	47.03	3.86	24.85
3	<b>Income Group</b>			
	Quintile 1 (the poorest)	48.53	2.71	21.28
	Quintile 2	54.26	3.22	29.25
	Quintile 3	53.11	3.95	29.87
	Quintile 4	49.61	3.71	27.40
	Quintile 5 (the wealthiest)	44.38	2.84	24.99
4	<b>Educational Level</b>			
	Basic Education	56.58	3.79	29.93
	Middle Education	48.02	2.63	27.92
	High Education	45.39	3.54	20.29
5	<b>Dominant Activities</b>			
	Not Working	31.29	3.24	9.74
	Working	56.81	3.57	42.11
6	<b>Living Condition</b>			
	Good	51.31	3.21	27.58

	<b>Bad</b>	53.03	3.87	28.66
<b>7</b>	<b>Location</b>			
	<b>Rural</b>	55.14	3.65	29.81
	<b>Urban</b>	47.36	2.97	25.34
<b>8</b>	<b>Total</b>	<b>51.65</b>	<b>3.34</b>	<b>27.80</b>

Source : National Socio-Economic Survey, 2004

1. Education Level

Basic : unfinished and finished only elementary school

Middle : finished junior high, senior high and vocational high school

High : finished diploma level and above

2. Income Group (approach with average household expenditure in a month)

Quintile 1 : <= Rp. 348.104

Quintile 2 : > Rp. 348.104 and <= Rp. 696.209

Quintile 3 : > Rp. 696.209 and <= Rp. 1.044.314

Quintile 4 : > Rp. 1.044.314 and <= Rp. 1.392.419

Quintile 5 : >= Rp.1.392.419 (maximum Rp.1.740.523)

3. Living condition

Bad : dwelling which has less than three rooms and one of its bed rooms, living rooms, dining rooms, kitchen, mixed rooms has not enough ventilation and has not enough fresh air.

Good : other condition than above.

**Appendix Table 3**  
**Average Individual Cigarette Consumption by Characteristic and Sex,**  
**Indonesia, 2004**

No.	Characteristic	Sex						Total		
		Male			Female			daily	monthly	yearly
		daily	monthly	yearly	daily	monthly	yearly			
<b>1</b>	<b>Location</b>									
	<b>Rural</b>	11	330	3960	10	300	3600	11	330	3960
	<b>Urban</b>	11	330	3960	11	330	3960	11	330	3960
<b>2</b>	<b>Income Group</b>									
	<b>Quartile 1</b>	9	270	3240	8	240	2880	9	270	3240
	<b>Quartile 2</b>	10	300	3600	9	270	3240	10	300	3600
	<b>Quartile 3</b>	11	330	3960	11	330	3960	11	330	3960
	<b>Quartile 4</b>	12	360	4320	12	360	4320	12	360	4320
	<b>Quartile 5</b>	12	360	4320	13	390	4680	13	390	4680
<b>3</b>	<b>Education</b>									
	<b>Low</b>	11	330	3960	10	300	3600	11	330	3960
	<b>Middle</b>	11	330	3960	12	360	4320	11	330	3960
	<b>High</b>	11	330	3960	9	270	3240	11	330	3960
<b>4</b>	<b>Living Condition</b>									
	<b>Good</b>	11	330	3960	11	330	3960	11	330	3960
	<b>Bad</b>	11	330	3960	10	300	3600	11	330	3960
<b>5</b>	<b>Marital Status</b>									
	<b>Unmarried</b>	10	300	3600	10	300	3600	10	300	3600
	<b>Married</b>	11	330	3960	11	330	3960	11	330	3960
<b>6</b>	<b>Dominant Activity</b>									
	<b>Not Working</b>	10	300	3600	10	300	3600	10	300	3600
	<b>Working</b>	11	330	3960	10	300	3600	11	330	3960
<b>7</b>	<b>Age Group</b>									

	15-24	10	300	3600	11	330	3960	10	300	3600
	25-34	11	330	3960	11	330	3960	11	330	3960
	35-44	11	330	3960	10	300	3600	11	330	3960
	45-54	11	330	3960	11	330	3960	11	330	3960
	55+	10	300	3600	8	240	2880	10	300	3600
8	<i>Alcohol Drinking</i>									
	Not Drinking	11	330	3960	10	300	3600	11	330	3960
	Drinking	12	360	4320	14	420	5040	13	390	4680
9	Total	11	330	3960	10	300	3600	11	330	3960

Source: National Socio Economic Survey 2004

**Appendix Table 4**  
Average Age of Smoking Initiation By Individual Characteristic and Sex, Indonesia, 2004

No.	Characteristic	Sex		Male and Female
		Female	Male	
1	<b>Location</b>			
	Rural	19	17	17
	Urban	19	17	18
2	<b>Age Group</b>			
	15-24	16	16	16
	25-34	17	17	17
	35-44	19	18	18
	45-54	20	18	18
	55+	23	18	18
3	<b>Marital Status</b>			
	Not Married	21	17	17
	Married	18	17	18
4	<b>Education Level</b>			
	Basic Education	19	17	17
	Middle Education	18	18	18
	High Education	21	18	18
5	Total	19	17	17

Source: National Socio Economic Survey 2004

**Appendix Table 5**  
**Percentage of Household Expenditure**  
**By Type of Expenditure and Type of Household in terms of Tobacco Expenditure**  
**(HH Smoker, HH Non Smoker and All HH), Indonesia, 2005**

	Type of Expenditure	HHS			HHNS			HH ALL		
		monthly	yearly	% to total	monthly	yearly	% to total	monthly	yearly	% to total
A	<b>Food</b>									
1	Grains	121,948	1,463,374	11.26	98,856	1,186,272	9.96	113,699	1,364,386	10.82
2	Tubers	9,491	113,890	0.88	8,721	104,657	0.88	9,216	110,591	0.88
3	Fish	70,638	847,659	6.52	60,680	728,160	6.12	67,081	804,971	6.38
4	Meat	24,598	295,170	2.27	24,989	299,869	2.52	24,737	296,849	2.35
5	Eggs and Milk	36,335	436,026	3.35	38,194	458,323	3.85	36,999	443,991	3.52
6	Vegetables	42,624	511,487	3.93	39,072	468,868	3.94	41,355	496,263	3.94
7	Legumes	17,816	213,794	1.64	16,839	202,067	1.70	17,467	209,604	1.66
8	Fruits	20,635	247,623	1.90	21,346	256,148	2.15	20,889	250,669	1.99
9	Oil and fats	25,224	302,685	2.33	22,445	269,340	2.26	24,231	290,773	2.31
10	Beverages stuffs	32,713	392,550	3.02	26,852	322,223	2.71	30,619	367,427	2.91
11	Spices	15,843	190,121	1.46	14,437	173,242	1.46	15,341	184,091	1.46
12	Miscellaneous food items	20,125	241,504	1.86	18,714	224,564	1.89	19,621	235,453	1.87
13	Prepared food and beverages	74,248	890,976	6.85	77,687	932,246	7.83	75,477	905,719	7.18
14	Alcoholic beverages	1,834	22,007	0.17	1,245	14,946	0.13	1,624	19,484	0.15
15	<b>Tobacco and betel</b>	<b>113,089</b>	<b>1,357,069</b>	<b>10.44</b>	<b>5,887</b>	<b>70,649</b>	<b>0.59*</b>	<b>74,794</b>	<b>897,525</b>	<b>7.12</b>
	Total food expenditure	627,161	7,525,935	57.89	475,964	5,711,574	47.97	573,150	6,877,796	54.55
B	<b>Non Food</b>									
16	Housing and household facility									
a	Rental cost, contract and estimated rental cost	104,849	1,258,190	9.68	123,427	1,481,128	12.44	111,486	1,337,830	10.61
c	Electricity, telephone and gas	89,513	1,074,157	8.26	104,826	1,257,917	10.57	94,983	1,139,801	9.04
b	Housing maintenance and mild reparation	15,557	186,689	1.44	17,740	212,876	1.79	16,337	196,044	1.55
17	Goods and services	85,969	1,031,628	7.94	92,022	1,104,268	9.28	88,131	1,057,577	8.39
18	Education cost monthly	35,089	421,068	3.24	41,257	495,082	4.16	37,292	447,507	3.55
19	Health cost monthly	28,950	347,398	2.67	37,016	444,189	3.73	31,831	381,974	3.03
20	Clothing, footwear and headgear	30,692	368,300	2.83	28,672	344,059	2.89	29,970	359,641	2.85
21	Durable goods	38,423	461,079	3.55	42,990	515,885	4.33	40,055	480,657	3.81
22	Tax and Insurance	9,609	115,310	0.89	12,223	146,676	1.23	10,543	126,515	1.00
23	Parties and ceremonies	17,484	209,805	1.61	16,015	192,183	1.61	16,959	203,510	1.61
	Total non food expenditure	456,135	5,473,625	42.11	516,188	6,194,262	52.03	477,588	5,731,055	45.45
	<b>Total Expenditure</b>	<b>1,083,297</b>	<b>12,999,560</b>	<b>100.00</b>	<b>992,153</b>	<b>11,905,835</b>	<b>100.00</b>	<b>1,050,738</b>	<b>12,608,852</b>	<b>100.00</b>

Source : National Socio Economic Survey, 2005

\* : Only betel expenditure



**Appendix Table 6**  
**Household with Smoker (HHS) Expenditure by Type of Expenditure, Indonesia, 2003-2005**

2003					2004					2005				
RANK	Type of Expenditure	Monthly	Yearly	% to total	RANK	Type of Expenditure	Monthly	Yearly	% to total	RANK	Type of Expenditure	Monthly	Yearly	% to total
1	Grains	109,959	1,319,509	12.20	1	Grains	102,477	1,229,722	11.99	1	Grains	121,948	1,463,374	11.26
2	<i>Tobacco and betel</i>	<b>103,356</b>	<b>1,240,266</b>	<b>11.47</b>	2	<i>Tobacco and betel</i>	<b>98,715</b>	<b>1,184,584</b>	<b>11.55</b>	2	<i>Tobacco and betel</i>	<b>113,089</b>	<b>1,357,069</b>	<b>10.44</b>
3	Rental cost, contract and estimated rental cost	84,015	1,008,177	9.32	3	Rental cost, contract and estimated rental cost	87,107	1,045,285	10.19	3	Rental cost, contract and estimated rental cost	104,849	1,258,190	9.68
4	Electricity, telephone and gas	67,638	811,661	7.51	4	Electricity, telephone and gas	73,372	880,462	8.58	4	Electricity, telephone and gas	89,513	1,074,157	8.26
5	Fish	59,994	719,930	6.66	5	Fish	57,702	692,420	6.75	5	Goods and services	85,969	1,031,628	7.94
6	Clothing, footwear and headgear	55,624	667,494	6.17	6	Prepared food and beverages	51,088	613,061	5.98	6	Prepared food and beverages	74,248	890,976	6.85
7	Prepared food and beverages	49,293	591,517	5.47	7	Goods and services	40,264	483,162	4.71	7	Fish	70,638	847,659	6.52
8	Vegetables	38,278	459,334	4.25	8	Vegetables	35,342	424,106	4.13	8	Vegetables	42,624	511,487	3.93
9	Goods and services	37,234	446,810	4.13	9	Clothing, footwear and headgear	30,783	369,391	3.60	9	Durable goods	38,423	461,079	3.55
10	Durable goods	27,814	333,771	3.09	10	Beverages stuffs	27,546	330,557	3.22	10	Eggs and Milk	36,335	436,026	3.35
11	Beverages stuffs	27,082	324,987	3.01	11	Eggs and Milk	27,410	328,925	3.21	11	Education cost monthly	35,089	421,068	3.24
12	Eggs and Milk	26,480	317,762	2.94	12	Durable goods	25,718	308,614	3.01	12	Beverages stuffs	32,713	392,550	3.02
13	Meat	26,383	316,597	2.93	13	Health cost monthly	24,079	288,944	2.82	13	Clothing, footwear and headgear	30,692	368,300	2.83
14	Health cost monthly	24,183	290,197	2.68	14	Oil and fats	23,328	279,935	2.73	14	Health cost monthly	28,950	347,398	2.67
15	Fruits	24,071	288,857	2.67	15	Education cost monthly	23,063	276,761	2.70	15	Oil and fats	25,224	302,685	2.33
16	Parties and ceremonies	23,841	286,098	2.65	16	Meat	23,063	276,750	2.70	16	Meat	24,598	295,170	2.27
17	Oil and fats	22,820	273,836	2.53	17	Fruits	19,008	228,095	2.22	17	Fruits	20,635	247,623	1.90
18	Education cost monthly	22,022	264,261	2.44	18	Parties and ceremonies	18,131	217,572	2.12	18	Miscellaneous food items	20,125	241,504	1.86
19	Legumes	19,339	232,063	2.15	19	Legumes	16,674	200,087	1.95	19	Legumes	17,816	213,794	1.64
20	Spices	14,619	175,430	1.62	20	Spices	13,931	167,168	1.63	20	Parties and ceremonies	17,484	209,805	1.61
21	Miscellaneous food items	11,659	139,905	1.29	21	Miscellaneous food items	12,252	147,029	1.43	21	Spices	15,843	190,121	1.46
22	Tubers	9,659	115,904	1.07	22	Tubers	9,463	113,551	1.11	22	Housing maintenance and mild repair	15,557	186,689	1.44
23	Housing maintenance and mild repair	8,670	104,039	0.96	23	Housing maintenance and Mild repair	6,884	82,614	0.81	23	Tax and Insurance	9,609	115,310	0.89
24	Tax and Insurance	5,290	63,482	0.59	24	Tax and Insurance	5,745	68,940	0.67	24	Tubers	9,491	113,890	0.88
25	Alcoholic beverages	1,665	19,983	0.18	25	Alcoholic beverages	1,692	20,304	0.20	25	Alcoholic beverages	1,834	22,007	0.17
			-					-					-	
	<b>Total Expenditure</b>	900,989	10,811,869	100.00		<b>Total Expenditure</b>	854,836	10,258,038	100.00		<b>Total Expenditure</b>	1,083,297	12,999,560	100.00

**Appendix Table 7**  
**Household Expenditure by Type of Expenditure and Income Group for HHS, Indonesia, 2005**

	Type of Expenditure	HHS Q1			HHS Q2			HHS Q3			HHS Q4			HHS Q5		
		Weekly	Monthly	% to total	Weekly	Monthly	% to Total	Weekly	Monthly	% to total	Weekly	Monthly	% to total	Weekly	Monthly	% to total
A	<b>Food</b>															
1	Grains	72,083	864,991	20.16	103,698	1,244,373	17.70	121,714	1,460,572	15.43	137,287	1,647,448	12.48	152,981	1,835,777	6.63
2	Tubers	5,803	69,631	1.62	8,286	99,433	1.41	9,352	112,226	1.19	10,185	122,219	0.93	12,251	147,016	0.53
3	Fish	24,622	295,459	6.89	44,148	529,773	7.54	61,419	737,031	7.79	81,948	983,377	7.45	122,234	1,466,814	5.30
4	Meat	3,023	36,272	0.85	8,133	97,599	1.39	14,846	178,150	1.88	26,147	313,763	2.38	62,752	753,025	2.72
5	Eggs and Milk	8,354	100,248	2.34	16,625	199,505	2.84	25,162	301,949	3.19	38,410	460,924	3.49	82,409	988,909	3.57
6	Vegetables	19,632	235,585	5.49	29,788	357,450	5.09	37,632	451,589	4.77	48,209	578,510	4.38	68,418	821,012	2.96
7	Legumes	9,118	109,414	2.55	13,167	158,002	2.25	15,904	190,852	2.02	19,362	232,348	1.76	27,966	335,592	1.21
8	Fruits	5,626	67,509	1.57	9,867	118,405	1.68	14,245	170,943	1.81	21,207	254,486	1.93	46,509	558,113	2.02
9	Oil and fats	13,951	167,409	3.90	19,712	236,547	3.37	23,313	279,754	2.96	27,781	333,376	2.53	36,606	439,276	1.59
10	Beverages stuffs	17,881	214,574	5.00	25,415	304,982	4.34	30,561	366,728	3.88	36,234	434,810	3.29	47,187	566,242	2.04
11	Spices	8,314	99,768	2.32	11,902	142,824	2.03	14,390	172,677	1.82	17,363	208,361	1.58	24,087	289,047	1.04
12	Miscellaneous food items	6,277	75,327	1.76	11,666	139,996	1.99	16,019	192,227	2.03	22,240	266,879	2.02	38,920	467,037	1.69
13	Prepared food and beverages	13,842	166,105	3.87	29,575	354,902	5.05	46,487	557,843	5.89	75,358	904,297	6.85	183,563	2,202,757	7.95
14	Alcoholic beverages	645	7,735	0.18	990	11,874	0.17	1,295	15,537	0.16	2,119	25,430	0.19	3,663	43,960	0.16
<b>15</b>	<b>Tobacco and betel</b>	<b>44,442</b>	<b>533,305</b>	<b>12.43</b>	<b>73,742</b>	<b>884,906</b>	<b>12.59</b>	<b>98,302</b>	<b>1,179,626</b>	<b>12.46</b>	<b>128,888</b>	<b>1,546,650</b>	<b>11.72</b>	<b>192,239</b>	<b>2,306,868</b>	<b>8.33</b>
	Total food expenditure	253,611	3,043,333	70.92	406,714	4,880,571	69.44	530,642	6,367,703	67.28	692,740	8,312,878	62.98	1,101,787	13,221,445	47.74

	Type of Expenditure	HHS Q1			HHS Q2			HHS Q3			HHS Q4			HHS Q5		
		Weekly	Monthly	% to total	Weekly	Monthly	% to total	Weekly	Monthly	% to total	Weekly	Monthly	% to total	Weekly	Monthly	% to total
			-			-			-			-			-	
B	<b>Non Food</b>		-			-			-			-			-	
16	Housing and household facility		-			-			-			-			-	
A	Rental cost, contract and estimated rental cost	29,712	356,538	8.31	46,229	554,744	7.89	63,729	764,752	8.08	96,603	1,159,242	8.78	260,921	3,131,057	11.31
B	Electricity, telephone and gas	23,901	286,810	6.68	37,431	449,170	6.39	51,810	621,724	6.57	81,379	976,548	7.40	229,428	2,753,139	9.94
C	Housing maintenance and mild reparation	2,050	24,598	0.57	3,822	45,869	0.65	5,725	68,700	0.73	10,505	126,065	0.96	51,112	613,340	2.21
17	Goods and services	16,886	202,628	4.72	32,334	388,003	5.52	48,496	581,952	6.15	78,500	942,001	7.14	228,682	2,744,188	9.91
18	Education cost monthly	5,260	63,124	1.47	12,364	148,364	2.11	19,209	230,505	2.44	31,840	382,086	2.89	96,032	1,152,386	4.16
19	Health cost monthly	7,116	85,394	1.99	11,761	141,134	2.01	17,262	207,144	2.19	27,429	329,145	2.49	73,168	878,017	3.17
20	Clothing, footwear and headgear	8,274	99,289	2.31	15,977	191,720	2.73	22,182	266,182	2.81	30,912	370,945	2.81	67,481	809,776	2.92
21	Durable goods	4,605	55,260	1.29	9,038	108,452	1.54	15,182	182,178	1.92	27,312	327,744	2.48	124,511	1,494,127	5.40
22	Tax and Insurance	1,571	18,854	0.44	2,672	32,063	0.46	4,234	50,803	0.54	7,101	85,217	0.65	29,738	356,852	1.29
23	Parties and ceremonies	4,625	55,495	1.29	7,381	88,572	1.26	10,188	122,253	1.29	15,658	187,893	1.42	45,016	540,198	1.95
	Total non food expenditure	103,999	1,247,990	29.08	179,007	2,148,090	30.56	258,016	3,096,192	32.72	407,240	4,886,886	37.02	1,206,090	14,473,080	52.26
			-			-			-			-			-	
	<b>Total Expenditure</b>	357,610	4,291,323	100.00	585,722	7,028,661	100.00	788,658	9,463,895	100.00	1,099,980	13,199,763	100.00	2,307,877	27,694,525	100.00

**Appendix Table 8**  
**Household Expenditure by Type of Expenditure for Poor HHS (Quintile 1), Indonesia, 2003-2005**

	Type of Expenditure	2003			2004			2005		
		Monthly	Yearly	% to total	Monthly	Yearly	% to total	Monthly	Yearly	% to total
A	Food									
1	Grains	68,358	820,296	19.01	63,988.41	767,861	19.19	72,083	864,991	20.16
2	Tubers	6,175	74,100	1.72	5,740.79	68,889	1.72	5,803	69,631	1.62
3	Fish	22,112	265,346	6.15	21,460.06	257,521	6.43	24,622	295,459	6.89
4	Meat	5,062	60,741	1.41	4,654.69	55,856	1.40	3,023	36,272	0.85
5	Eggs and Milk	7,249	86,991	2.02	8,045.18	96,542	2.41	8,354	100,248	2.34
6	Vegetables	21,550	258,597	5.99	18,849.14	226,190	5.65	19,632	235,585	5.49
7	Legumes	11,661	139,938	3.24	9,421.98	113,064	2.83	9,118	109,414	2.55
8	Fruits	7,967	95,599	2.22	6,092.20	73,106	1.83	5,626	67,509	1.57
9	Oil and fats	13,461	161,528	3.74	13,795.11	165,541	4.14	13,951	167,409	3.90
10	Beverages stuffs	15,934	191,209	4.43	16,439.54	197,274	4.93	17,881	214,574	5.00
11	Spices	8,924	107,090	2.48	8,177.37	98,128	2.45	8,314	99,768	2.32
12	Miscellaneous food items	4,342	52,102	1.21	4,469.95	53,639	1.34	6,277	75,327	1.76
13	Prepared food and beverages	12,429	149,143	3.46	11,836.99	142,044	3.55	13,842	166,105	3.87
14	Alcoholic beverages	495	5,937	0.14	548.54	6,582	0.16	645	7,735	0.18
<b>15</b>	<b><i>Tobacco and betel</i></b>	<b><i>42,363</i></b>	<b><i>508,355</i></b>	<b><i>11.78</i></b>	<b><i>38,513.42</i></b>	<b><i>462,161</i></b>	<b><i>11.55</i></b>	<b><i>44,442</i></b>	<b><i>533,305</i></b>	<b><i>12.43</i></b>
	Total food expenditure	248,081	2,976,973	69.00	232,033.37	2,784,400	69.57	253,611	3,043,333	70.92

	Type of Expenditure	2003			2004			2005		
		Monthly	Yearly	% to total	Monthly	Yearly	% to total	Monthly	Yearly	% to total
B	Non Food									
16	Housing and household facility									
A	Rental cost, contract and estimated rental cost	26,493	317,917	7.37	29476.32	353,716	8.84	29,712	356,538	8.31
B	Electricity, telephone and gas	29,809	357,707	8.29	30,283.87	363,406	9.08	23,901	286,810	6.68
C	Housing maintenance and mild repairation	1,139	13,671	0.32	949.50	11,394	0.28	2,050	24,598	0.57
17	Goods and services	9,106	109,277	2.53	8,705.09	104,461	2.61	16,886	202,628	4.72
18	Education cost monthly	2,895	34,743	0.81	3,089.88	37,079	0.93	5,260	63,124	1.47
19	Health cost monthly	8,099	97,191	2.25	7,654.65	91,856	2.30	7,116	85,394	1.99
20	Clothing, footwear and Headgear	20,641	247,690	5.74	11,258.42	135,101	3.38	8,274	99,289	2.31
21	Durable goods	4,153	49,832	1.16	3,703.12	44,437	1.11	4,605	55,260	1.29
22	Tax and Insurance	976	11,714	0.27	1,189.87	14,278	0.36	1,571	18,854	0.44
23	Parties and ceremonies	8,122	97,461	2.26	5,171.30	62,056	1.55	4,625	55,495	1.29
	Total non food expenditure	111,434	1,337,203	31.00	101,482.00	1,217,784	30.43	103,999	1,247,990	29.08
									-	-
	Total Expenditure	359,515	4,314,176	100.00	333,515.37	4,002,184	100.00	357,610	4,291,323	100.00

**Appendix Table 9**  
**Household Expenditure by Type of Expenditure and Income Group for HHS (World Bank Definition),**  
**Indonesia, 2005**

	Type of Expenditure	US \$ 1/day/hhs			US \$ 2/day/hhs			more than US \$ 2/day/hhs		
		Monthly	Yearly	% to total	Monthly	Yearly	% to total	Monthly	Yearly	% to total
A	<b>Food</b>									
1	Grains	52,687	632,245	21.06	87,851	1,054,216	18.88	134,239	1,610,865	10.28
2	Tubers	4,275	51,303	1.71	7,040	84,478	1.51	10,374	124,492	0.79
3	Fish	16,244	194,926	6.49	33,828	405,939	7.27	83,907	1,006,887	6.42
4	Meat	1,410	16,921	0.56	5,306	63,672	1.14	31,552	378,619	2.42
5	Eggs and Milk	4,728	56,738	1.89	12,164	145,962	2.61	45,049	540,586	3.45
6	Vegetables	14,735	176,824	5.89	24,465	293,581	5.26	49,170	590,036	3.76
7	Legumes	6,483	77,790	2.59	11,112	133,342	2.39	20,233	242,794	1.55
8	Fruits	3,657	43,890	1.46	7,595	91,143	1.63	25,336	304,030	1.94
9	Oil and fats	10,573	126,879	4.23	16,839	202,066	3.62	28,246	338,956	2.16
10	Beverages stuffs	13,546	162,554	5.42	21,607	259,279	4.64	36,716	440,591	2.81
11	Spices	6,465	77,576	2.58	10,126	121,506	2.18	17,905	214,855	1.37
12	Miscellaneous food items	3,905	46,855	1.56	8,815	105,784	1.89	24,202	290,428	1.85
13	Prepared food and beverages	8,192	98,309	3.28	20,796	249,554	4.47	93,516	1,122,191	7.16
14	Alcoholic beverages	320	3,839	0.13	812	9,743	0.17	2,202	26,428	0.17
<b>15</b>	<b><i>Tobacco and betel</i></b>	<b><i>31,136</i></b>	<b><i>373,630</i></b>	<b><i>12.45</i></b>	<b><i>58,369</i></b>	<b><i>700,433</i></b>	<b><i>12.54</i></b>	<b><i>132,814</i></b>	<b><i>1,593,768</i></b>	<b><i>10.17</i></b>
	Total food expenditure	178,357	2,140,280	71.31	326,725	3,920,698	70.21	735,461	8,825,529	56.31

	Type of Expenditure	US \$ 1/day/hhs			US \$ 2/day/hhs			more than US \$ 2/day/hhs		
B	<b>Non Food</b>									
16	Housing and household facility									
A	Rental cost, contract and estimated rental cost	23,066	276,792	9.22	37,215	446,581	8.00	129,230	1,550,754	9.89
B	Electricity, telephone and gas	17,449	209,388	6.98	30,276	363,315	6.51	110,866	1,330,397	8.49
C	Housing maintenance and mild reparation	1,642	19,701	0.66	2,978	35,739	0.64	20,092	241,103	1.54
17	Goods and services	10,955	131,458	4.38	23,917	287,003	5.14	108,337	1,300,045	8.30
18	Education cost monthly	2,680	32,164	1.07	8,479	101,751	1.82	44,681	536,173	3.42
19	Health cost monthly	4,590	55,077	1.84	9,329	111,949	2.00	36,023	432,271	2.76
20	Clothing, footwear and Headgear	4,272	51,269	1.71	11,880	142,555	2.55	37,473	449,675	2.87
21	Durable goods	2,361	28,331	0.94	6,560	78,718	1.41	49,909	598,910	3.82
22	Tax and Insurance	1,269	15,223	0.51	2,043	24,520	0.44	12,336	148,037	0.94
23	Parties and ceremonies	3,480	41,760	1.39	5,976	71,711	1.28	21,632	259,585	1.66
	Total non food expenditure	71,764	861,164	28.69	138,653	1,663,841	29.79	570,579	6,846,949	43.69
	<b>Total Expenditure</b>	250,120	3,001,444	100.00	465,378	5,584,540	100.00	1,306,040	15,672,475	100.00

**Appendix Table 10**  
**Equivalence of Tobacco Expenditure in Term of Other Expenditure for HHS,**  
**Indonesia, 2005**

	Type of Expenditure	Monthly Expenditure	% to Total	Equivalence of Tobacco Expenditure (type of exp / tobacco exp)
<b>A</b>	<b>Food</b>			
1	Grains	121,948	11.26	0.93
2	Tubers	9,491	0.88	11.92
3	Fish	70,638	6.52	1.60
4	Meat	24,598	2.27	4.60
5	Eggs and Milk	36,335	3.35	3.11
6	Vegetables	42,624	3.93	2.65
7	Legumes	17,816	1.64	6.35
8	Fruits	20,635	1.90	5.48
9	Oil and fats	25,224	2.33	4.48
10	Beverages stuffs	32,713	3.02	3.46
11	Spices	15,843	1.46	7.14
12	Miscellaneous food items	20,125	1.86	5.62
13	Prepared food and beverages	74,248	6.85	1.52
14	Alcoholic beverages	1,834	0.17	61.67
15	Tobacco and betel	113,089	10.44	1.00
	Total food expenditure	627,161	57.89	
<b>B</b>	<b>Non Food</b>			
16	Housing and household facility			
a	Rental cost, contract and estimated rental cost	104,849	9.68	1.08
c	Electricity, telephone and gas	89,513	8.26	1.26
b	Housing maintenance and mild reparation	15,557	1.44	7.27
17	Goods and services	85,969	7.94	1.32
18	Education cost monthly	35,089	3.24	3.22
19	Health cost monthly	28,950	2.67	3.91
20	Clothing, footwear and headgear	30,692	2.83	3.68
21	Durable goods	38,423	3.55	2.94
22	Tax and Insurance	9,609	0.89	11.77
23	Parties and ceremonies	17,484	1.61	6.47
	Total non food expenditure	456,135	42.11	
	Total Expenditure	1,083,297	100.00	



**Appendix Table 11**  
**Equivalence of Tobacco Expenditure in Term of Other Expenditure for Poor (q1) HHS,**  
**Indonesia, 2005**

	Type of Expenditure	Monthly	% to total	Equivalence of Tobacco Expenditure
A	Food			
1	Grains	72,083	20.16	0.62
2	Tubers	5,803	1.62	7.66
3	Fish	24,622	6.89	1.81
4	Meat	3,023	0.85	14.70
5	Eggs and Milk	8,354	2.34	5.32
6	Vegetables	19,632	5.49	2.26
7	Legumes	9,118	2.55	4.87
8	Fruits	5,626	1.57	7.90
9	Oil and fats	13,951	3.90	3.19
10	Beverages stuffs	17,881	5.00	2.49
11	Spices	8,314	2.32	5.35
12	Miscellaneous food items	6,277	1.76	7.08
13	Prepared food and beverages	13,842	3.87	3.21
14	Alcoholic beverages	645	0.18	68.95
15	Tobacco and betel	44,442	12.43	1.00
	Total food expenditure	253,611	70.92	
B	Non Food			
16	Housing and household facility			
A	Rental cost, contract and estimated rental cost	29,712	8.31	1.50
B	Electricity, telephone and gas	23,901	6.68	1.86
C	Housing maintenance and mild reparation	2,050	0.57	21.68
17	Goods and services	16,886	4.72	2.63
18	Education cost monthly	5,260	1.47	8.45
19	Health cost monthly	7,116	1.99	6.25
20	Clothing, footwear and headgear	8,274	2.31	5.37
21	Durable goods	4,605	1.29	9.65
22	Tax and Insurance	1,571	0.44	28.29
23	Parties and ceremonies	4,625	1.29	9.61
	Total non food expenditure	103,999	29.08	
	Total Expenditure	357,610	100.00	

**Appendix Table 12**  
**Impact Simulation of Change in Tobacco Expenditure to Essential Expenditure for HHS,**  
**Indonesia, 2005**

	Type of Expenditure	Before Change in Expenditure		After Change in Expenditure		% Increase for Essentials Expenditure
		Expenditure (Rp./Month)	% to Total Expenditure	Expenditure (Rp./Month)	% to Total Expenditure	
A	<b>Food</b>					
1	Grains	121,948	11.26	121,948	11.26	
2	Tubers	9,491	0.88	9,491	0.88	
<b>3</b>	<b>Fish</b>	<b>70,638</b>	<b>6.52</b>	<b>89,486</b>	<b>8.26</b>	<b>26.68</b>
<b>4</b>	<b>Meat</b>	<b>24,598</b>	<b>2.27</b>	<b>43,446</b>	<b>4.01</b>	<b>76.63</b>
<b>5</b>	<b>Eggs and Milk</b>	<b>36,335</b>	<b>3.35</b>	<b>55,184</b>	<b>5.09</b>	<b>51.87</b>
<b>6</b>	<b>Vegetables</b>	<b>42,624</b>	<b>3.93</b>	<b>61,472</b>	<b>5.67</b>	<b>44.22</b>
7	Legumes	17,816	1.64	17,816	1.64	
8	Fruits	20,635	1.9	20,635	1.9	
9	Oil and fats	25,224	2.33	25,224	2.33	
10	Beverages stuffs	32,713	3.02	32,713	3.02	
11	Spices	15,843	1.46	15,843	1.46	
12	Miscellaneous food items	20,125	1.86	20,125	1.86	
13	Prepared food and beverages	74,248	6.85	74,248	6.85	
14	Alcoholic beverages	1,834	0.17	1,834	0.17	
15	Tobacco and betel	113,089	10.44	-	-	
	Total food expenditure	627,161	57.89	589,465	54.41	
						-
B	<b>Non Food</b>					
16	Housing and household facility					-
A	Rental cost, contract and estimated rental cost	104,849	9.68	104,849	9.68	
B	Electricity, telephone and gas	89,513	8.26	89,513	8.26	
C	Housing maintenance and mild reparation	15,557	1.44	15,557	1.44	
17	Goods and services	85,969	7.94	85,969	7.94	
<b>18</b>	<b>Education cost monthly</b>	<b>35,089</b>	<b>3.24</b>	<b>53,937</b>	<b>4.98</b>	<b>53.72</b>
<b>19</b>	<b>Health cost monthly</b>	<b>28,950</b>	<b>2.67</b>	<b>47,798</b>	<b>4.41</b>	<b>65.11</b>
20	Clothing, footwear and headgear	30,692	2.83	30,692	2.83	
21	Durable goods	38,423	3.55	38,423	3.55	
22	Tax and Insurance	9,609	0.89	9,609	0.89	
23	Parties and ceremonies	17,484	1.61	17,484	1.61	
	Total non food expenditure	456,135	42.11	493,832	45.59	
	Total Expenditure	1,083,297		1,083,297	100	

**Appendix Table 13**  
**Impact Simulation of Change in Tobacco Expenditure to Basic Expenditure for HHS,**  
**Indonesia, 2005**

	Type of Expenditure	Before Change in Expenditure			After Change in Expenditure			% Increase for Basic Expenditure
		Expenditure (Rp./Month)	% to Total Expenditure	% of Basic Expenditure	Expenditure (Rp./Month)	% to Total Expenditure	% of Basic Expenditure	
<b>A</b>	<b>Food</b>							
<b>1</b>	<b>Grains</b>	<b>121,948</b>	<b>11.26</b>	<b>11.26</b>	<b>159,644</b>	<b>14.74</b>	<b>14.74</b>	<b>30.91</b>
2	Tubers	9,491	0.88		9,491	0.88		
3	Fish	70,638	6.52		70,638	6.52		
4	Meat	24,598	2.27		24,598	2.27		
5	Eggs and Milk	36,335	3.35		36,335	3.35		
6	Vegetables	42,624	3.93		42,624	3.93		
7	Legumes	17,816	1.64		17,816	1.64		
8	Fruits	20,635	1.90		20,635	1.90		
9	Oil and fats	25,224	2.33		25,224	2.33		
10	Beverages stuffs	32,713	3.02		32,713	3.02		
11	Spices	15,843	1.46		15,843	1.46		
12	Miscellaneous food items	20,125	1.86		20,125	1.86		
13	Prepared food and beverages	74,248	6.85		74,248	6.85		
14	Alcoholic beverages	1,834	0.17		1,834	0.17		
15	Tobacco and betel	113,089	10.44			-		
	<b>Total food expenditure</b>	<b>627,161</b>	<b>57.89</b>		<b>551,768</b>	<b>50.93</b>		
						-		
<b>B</b>	<b>Non Food</b>					-		
16	Housing and household facility					-		
<b>a</b>	<b>Rental cost, contract and estimated rental cost</b>	<b>104,849</b>	<b>9.68</b>	<b>11.11</b>	<b>123,697</b>	<b>11.42</b>	<b>14.59</b>	<b>31.31</b>
<b>c</b>	<b>Housing maintenance and mild preparation</b>	<b>15,557</b>	<b>1.44</b>		<b>34,405</b>	<b>3.18</b>		
b	Electricity, telephone and gas	89,513	8.26		89,513	8.26		
17	Goods and services	85,969	7.94		85,969	7.94		
18	Education cost monthly	35,089	3.24		35,089	3.24		
19	Health cost monthly	28,950	2.67		28,950	2.67		
<b>20</b>	<b>Clothing, footwear and headgear</b>	<b>30,692</b>	<b>2.83</b>	<b>2.83</b>	<b>68,388</b>	<b>6.31</b>	<b>6.31</b>	<b>122.82</b>
21	Durable goods	38,423	3.55		38,423	3.55		
22	Tax and Insurance	9,609	0.89		9,609	0.89		
23	Parties and ceremonies	17,484	1.61		17,484	1.61		
	<b>Total non food expenditure</b>	<b>456,135</b>	<b>42.11</b>		<b>531,528</b>	<b>49.07</b>		
	<b>Total Expenditure</b>	<b>1,083,297</b>	<b>100.00</b>		<b>1,083,297</b>	<b>100.00</b>		

**Appendix Table 14**  
**Impact Simulation of Change in Tobacco Expenditure to Basic and Essential Expenditure for HHS,**  
**Indonesia, 2005**

	Type of Expenditure	Before Change in Expenditure			After Change in Expenditure			% Increase for Basic Exp
		Expenditure (Rp./Month)	% to Total Exp	% of Basic and Essential Exp	Expenditure (Rp./Month)	% to Total Exp	% of Basic and Essential Exp	
<b>A</b>	<b>Food</b>							
1	<b>Grains</b>	<b>121,948</b>	<b>11.26</b>	<b>11.26</b>	<b>134,513</b>	<b>12.42</b>	<b>12.42</b>	<b>10.30</b>
2	Tubers	9,491	0.88		9,491	0.88		
3	<b>Fish</b>	<b>70,638</b>	<b>6.52</b>	<b>6.52</b>	<b>83,204</b>	<b>7.68</b>	<b>7.68</b>	<b>17.79</b>
4	<b>Meat</b>	<b>24,598</b>	<b>2.27</b>	<b>2.27</b>	<b>37,163</b>	<b>3.43</b>	<b>3.43</b>	<b>51.08</b>
5	<b>Eggs and Milk</b>	<b>36,335</b>	<b>3.35</b>	<b>3.35</b>	<b>48,901</b>	<b>4.51</b>	<b>4.51</b>	<b>34.58</b>
6	<b>Vegetables</b>	<b>42,624</b>	<b>3.93</b>	<b>3.93</b>	<b>55,189</b>	<b>5.09</b>	<b>5.09</b>	<b>29.48</b>
7	Legumes	17,816	1.64		17,816	1.64		
8	Fruits	20,635	1.90		20,635	1.90		
9	Oil and fats	25,224	2.33		25,224	2.33		
10	Beverages stuffs	32,713	3.02		32,713	3.02		
11	Spices	15,843	1.46		15,843	1.46		
12	Miscellaneous food items	20,125	1.86		20,125	1.86		
13	Prepared food and beverages	74,248	6.85		74,248	6.85		
14	Alcoholic beverages	1,834	0.17		1,834	0.17		
15	Tobacco and betel	113,089	10.44		-	-		
	Total food expenditure	627,161	57.89		576,899	53.25		
<b>B</b>	<b>Non Food</b>							
16	<b>Housing and household facility</b>		-	<b>11.11</b>		<b>12.27</b>	<b>12.27</b>	<b>10.44</b>
a	Rental cost, contract and estimated rental cost	104,849	9.68		111,132	10.26		
b	Housing maintenance and mild reparation	15,557	1.44		21,840	2.02		
c	Electricity, telephone and gas	89,513	8.26		89,513	8.26		
17	Goods and services	85,969	7.94		85,969	7.94		
18	<b>Education cost monthly</b>	<b>35,089</b>	<b>3.24</b>	<b>3.24</b>	<b>47,654</b>	<b>4.40</b>	<b>4.40</b>	<b>35.81</b>
19	<b>Health cost monthly</b>	<b>28,950</b>	<b>2.67</b>	<b>2.67</b>	<b>41,515</b>	<b>3.83</b>	<b>3.83</b>	<b>43.40</b>
20	<b>Clothing, footwear and headgear</b>	<b>30,692</b>	<b>2.83</b>	<b>2.83</b>	<b>43,257</b>	<b>3.99</b>	<b>3.99</b>	<b>40.94</b>
21	Durable goods	38,423	3.55		38,423	3.55		
22	Tax and Insurance	9,609	0.89		9,609	0.89		
23	Parties and ceremonies	17,484	1.61		17,484	1.61		
	Total non food expenditure	456,135	42.11		506,397	46.75		
	<b>Total Expenditure</b>	<b>1,083,297</b>	<b>100</b>		<b>1,083,297</b>	<b>100.00</b>		

**Appendix Table 15**  
**Overall and Poor National Tobacco and Betel Expenditure, Indonesia, 2005**

Year	Number of HHS	Average Tobacco and Betel Expenditure for All HHS	National Tobacco and Betel Expenditure	
			Monthly (Rp.)	Yearly (Rp.)
<b>Overall</b>				
2005	37,460,582	113,089	4,236,381,357,900	50,836,576,294,800
<b>Poor (Q1)</b>				
2003	6,623,607	42,363	280,595,863,341	3,367,150,360,092
2004	7,048,986	38,513	271,480,558,392	3,257,766,700,705
2005	4,044,562	44,442	179,748,424,404	2,156,981,092,848

**Appendix Table 16**  
**Opportunity Loss of Tobacco Consumption in Term of Several Government Expenditure, Indonesia, 2005**

No.	Item	Expenditure (Rp. Trillion)
1	National Tobacco and Betel Expenditure	50.84
2	School Operational Aid	10.83
3	Increasing Nutrition Program	0.6
4	Trans Jawa Toll Investment	42.46
5	Increasing Access to Education Program	45.3
6	Increasing Effective Poverty Reduction Program	12.64