

Tobacco Economics in Indonesia

Sarah Barber

University of California, Berkeley

Sri Moertiningsih Adioetomo

Demographic Institute
Faculty of Economics, University of Indonesia

Abdillah Ahsan

Demographic Institute
Faculty of Economics, University of Indonesia

Diahhadi Setyonaluri

Demographic Institute
Faculty of Economics, University of Indonesia

"Implementing the maximum legally allowable tobacco tax rates could prevent between 1.7 and 4.0 million tobacco-related deaths among smokers and generate additional revenues of US\$ 3.2 to 6.5 billion. Doubling the tobacco tax could increase employment by more than one-quarter of a million jobs."

ISBN: 978-2-914365-40-6

International Union Against Tuberculosis and Lung Disease (The Union)
68 boulevard Saint Michel, 75006 Paris - FRANCE
Tel : +33-1 44.32.03.60, Fax : +33-1 43.29.90.87
email: union@iuatld.org; web: www.iuatld.org

Suggested citation: Barber S, Adioetomo SM, Ahsan A, Setyonaluri D.
Tobacco Economics in Indonesia. Paris: International Union Against
Tuberculosis and Lung Disease; 2008.

Tobacco Economics in Indonesia

| | |
|---|-----------|
| Executive Summary | 1 |
| I. Background of the Study | 4 |
| Purpose and Scope of the Study | 4 |
| Data Sources | 4 |
| Data Gaps and Limitations | 5 |
| II. Introduction | 6 |
| Smoking Prevalence and Burden of Disease | 6 |
| Relationships Between Health and Economic Productivity | 8 |
| Market Failures: Inadequate Information About Health Risks and Addiction, and Financial and Physical Costs Imposed on Nonsmokers and Society | 10 |
| Generating Government Revenue: Tobacco Price and Tax Measures | 13 |
| III. Tobacco Tax, Tariff, and Price Information | 17 |
| Tobacco Tax Structure | 17 |
| Cigarette Taxes and Prices | 19 |
| Affordability of Tobacco Products | 23 |
| Note About <i>ad valorem</i> and Specific Tax Systems | 24 |
| IV. Demand Studies | 27 |
| Studies Using Aggregate Data | 27 |
| Studies Using Household Data | 29 |
| Impact of an Increase in Tobacco Prices on Low-income Households | 30 |
| Impact of an Increase in Tobacco Taxes on Cigarette Consumption and Government Revenue | 31 |
| V. Industry Market Structure and Employment | 35 |
| Tobacco Farming | 35 |
| Market Structure of the Cigarette Industry | 37 |
| Tobacco Manufacturing | 39 |
| Studies Evaluating the Impact of Taxation on Employment | 42 |
| VI. Tobacco Tax Administration | 46 |
| Revenue from Tobacco Excise | 46 |
| Factors in Determining the Tobacco Tax Rates | 46 |
| Industry Responses to the Tobacco Tax System | 53 |
| Tax Administration, Counterfeiting, and Smuggling | 55 |
| Conclusions and Recommendations | 59 |
| <i>Annexes</i> | 62 |
| <i>Acknowledgments</i> | 85 |
| <i>Bibliography</i> | 86 |

Blank Page

Executive Summary

Low real cigarette prices, population growth, rising household incomes, and mechanization of the *kretek* industry have contributed to sharp increases in tobacco consumption in Indonesia since the 1970s. The majority of tobacco users are smokers, and the vast majority of smokers (88 percent) use *kreteks*, or cigarettes made of tobacco and cloves. Smoking prevalence is 34 percent, and 63 percent of men smoke. Per capita adult tobacco consumption increased by 9.2 percent between 2001 and 2004. Given the delay of up to 25 years between the time of smoking uptake and the onset of many chronic diseases, the negative health effects of increases in cigarette consumption are being seen only now. Up to one-half of today's 57 million smokers in Indonesia will die of tobacco-related illnesses.

The vast majority of smokers (88 percent) use *kreteks*, or cigarettes made of tobacco and cloves.

Market failures exist for tobacco, including imperfect information about health risks and the risks of addiction. Some 78 percent of Indonesian smokers started before the age of 19 years. Nicotine is highly addictive; among children under 15 years who already smoke, 8 out of 10 have tried to quit but were unsuccessful. Unlike those who use other highly addictive but illegal substances, however, smokers are presented with many opportunities to purchase tobacco and are constantly confronted with advertisements that promote tobacco use as socially acceptable. Taxation plays an important role in keeping prices high to prevent uptake among children and adolescents, who did not intend to start a lifetime addiction.

Smoking imposes costs on nonsmokers and society. Health care costs for tobacco-related illnesses in Indonesia could amount to between Rp 2.9 and 11.0

More than 97 million non-smokers in Indonesia are routinely exposed to second-hand smoke.

trillion per year (US\$ 319 million and 1.2 billion). In addition, secondhand smoke is carcinogenic. More than 97 million nonsmokers are regularly exposed to secondhand tobacco smoke. Households with smokers dedicate 11.5 percent of monthly expenditures on tobacco, and such high spending has serious welfare implications. The national nutritional surveillance system reported that paternal smoking predicts an increased probability of short-term and chronic child malnutrition.

The customs law states that excise should be used to reduce consumption of tobacco products and control their distribution because they are unhealthy. In practice, the primary factor taken into consideration when setting the tobacco tax rate is the annual revenue target. The system continues to promote gaps in prices between products, tobacco has become more affordable over time, and smoking prevalence among children has increased sharply. Cigarette prices and tax rates in Indonesia are low relative to other countries, and real cigarettes prices have remained stable since the 1980s. The current tax rate (37 percent of sales price) is low compared with the global benchmark of 70 percent, and the rates are below the maximum allowable by law. The government "roadmap" intended to create healthy communities and guide tobacco excise policy could result in worse health outcomes by

Up to one-half of the 57 million smokers in Indonesia today will die of tobacco-related illnesses. Some 78 percent of Indonesians started smoking before the age of 19 years.

Six large hand-rolled and machine-made kretek firms contribute some 88 percent of total tobacco excise revenues.

encouraging higher consumption. There is no evidence to indicate that reducing nicotine levels has any effect on health outcomes.

Demand for tobacco products responds to changes in price. Reaching the global benchmark of 70 percent through a specific, or primarily specific rather than *ad valorem*, tax would have the greatest health impact and could avert between 2.5 and 5.9 million tobacco-related deaths. At the same time, the demand for tobacco products is inelastic, or the percentage reduction in demand is less than the percentage increase in price. With a relatively small impact on the tax base, this increase would contribute Rp 23.8 to 75.8 trillion (US\$ 2.6 to 8.3 billion) additional revenue, regardless of reduced sales volumes for cigarettes.

The impact of price and tax measures on health and revenue depends on the structure of the market, industry and consumer responses to tax and price increases, and the implementation of the tax. The current tobacco tax structure itself is complex, based on the type of tobacco product, mode of production (machine or hand-rolled), and industry production scale. It has evolved over time to incorporate multiple and sometimes conflicting goals, including not only revenue generation but also employment and the promotion of small industries. The policy has largely acted to protect small firms by reducing demand for products from large firms through increases in their retail prices and tax rates.

71 percent of market share is held by three companies.

From a revenue perspective, tobacco taxation is relatively easy to administer given that six large hand-rolled and machine-made *kretek* firms contribute some 88 percent of total revenues. However, the tobacco manufacturing industry has responded to the tiered tax rates by firm production scales in a number of ways. The tiered rates allow firms to incur lower taxes by reducing their production levels to fall within lower tax brackets, establishing new small firms, or buying up small firms or contracting production to them. In effect, the production tiers in the tobacco tax system offer a number of different ways to legally avoid the highest tax brackets, thereby substantially reducing the impact of a tax increase on revenue generation and social welfare. In addition, the industry has strong lobbying power to influence policy because 71 percent of market share is held by three companies. In the past, firms have been willing to absorb tax increases and reduce their margins to maintain or increase market share. It is notable that the 2008 regulation imposed a large, nearly uniform specific tax for all tobacco products and this represents a major change from the previous tax scales. The impact of this change should be monitored closely.

Cigarette manufacturing has contributed less than 1 percent of total national employment since the 1970s.

Changes in tobacco tax and price would not be expected to have a great impact on tobacco and clove farming nationally for several reasons. Less than 2 percent of Indonesian farmers are involved in tobacco cultivation, and most tobacco and clove farmers are concentrated in specific geographic areas. Both tobacco and clove farmers already have very diverse crop holdings and engage in other farm and non-farm enterprises as a part of income generation activities. In Central and East Java, tobacco cultivation amounts to 1.8 and 0.5 percent of total arable land, respectively.

Tobacco manufacturing is also a regional rather than a national concern. Contrary to popular perception, tobacco manufacturing is not a major employer in Indonesia at a national level, and ranks 48 out of 66 sectors in contributing to total employment. The contribution of cigarette manufacturing to total manufacturing employment has declined steeply over time from 28 percent in 1970 to less than 6 percent today, and its contribution to total employment has remained less than 1 percent since the 1970s. The number of cigarette firms has fluctuated over time; however, their geographic distribution was remarkably concentrated in 14 districts between 1960 and 1990. The vast majority of these firms are located in Central and East Java, where tobacco manufacturing is estimated to account for 2.0 and 2.9 percent of total employment, respectively.

Estimating the economic impact of a reduction in tobacco spending requires a consideration of how spending on tobacco is reallocated to other commodities or investments. Research simulating a doubling of the tobacco tax reports a net positive increase in employment by 0.3 percent (281,135 jobs). This result is primarily because tobacco farming and manufacturing are not ranked high in terms of overall economic output, employment, and wages. Household tobacco expenditures are large; diverted to other more productive sectors of the economy, such spending could stimulate growth and have a positive net economic impact.

The tobacco excise system should be simplified by eliminating the production tiers and applying a uniform specific tax.

Tax levels that achieve the global benchmark of 70 percent of sales price through a specific, or primarily specific rather than *ad valorem*, tax would have the greatest health impact.

The report concludes with five recommendations. First, the tobacco excise system should be simplified by eliminating the production tiers, applying a uniform specific tax, implementing tax increases across all products, and automatically adjusting the specific tax for inflation. Specific excises that impose the same tax per cigarette are more effective in discouraging cigarette consumption. Tax increases that aim to reduce consumption need to be higher than the general rate of inflation and large enough to offset income growth. Second, the maximum legally allowable excise tax rate for all tobacco products should be applied to reverse the trend of increasing cigarette affordability and to start to address the significant burden of tobacco-related illnesses. Tax levels that achieve the global benchmark of 70 percent through a specific, or primarily specific rather than *ad valorem*, tax would have the greatest health impact. Third, the employment generation goal of the tobacco tax system should be re-examined to determine whether other programs or policies would be more effective in promoting employment. Fourth, the tax rates should be set at a level to correct for market failures related to lack of information and addiction, and to reflect the true costs of smoking to individuals and society. Lastly, it is recommended that the 2 percent earmarked excises be used effectively to support local economies that could be negatively affected by reductions in tobacco consumption, and to implement tobacco control programs more broadly.

I. Background of the Study

Purpose and Scope of the Study

This study aims to systematically review existing studies to provide a comprehensive report about the economic aspects of tobacco in Indonesia. The paper first describes why the economics of tobacco is important and why governments intervene in the tobacco market. In addition to achieving revenue goals, governments intervene in the tobacco market to address the burden of tobacco-attributable diseases, to reduce the negative consequences of tobacco consumption on economic productivity and poverty, and to correct market failures related to lack of information and addiction, particularly among children and adolescents. Some basic social and demographic aspects of tobacco consumption are also discussed in the second chapter.

The third chapter describes historic and current tobacco tax structure and prices in Indonesia, and compares data on cigarette prices, taxes, and affordability with that of other countries. The fourth chapter reviews existing studies using aggregate or household data about the demand for cigarettes. This chapter also presents the results of simulations that predict the impact of tax increases on household tobacco spending, cigarette consumption, tobacco-attributable mortality, and government tax revenues. The fifth chapter describes the structure of the tobacco industry, tobacco leaf processing and manufacturing, production, trade, and employment. It also presents the results of studies that simulate the impact of tobacco tax increases on employment and economic output. The sixth chapter describes tax excise revenues, factors related to determining the tobacco tax rates, operational aspects of

tobacco tax implementation, industry responses to the increases, counterfeiting, and smuggling. The report concludes with policy recommendations.

Data Sources

Prevalence and consumption are based on data from large-scale surveys that are representative of the population, including the national socioeconomic surveys (SUSENAS) collected by the Central Bureau of Statistics and the Indonesian Family Life Surveys (IFLS). Data updates commissioned for this study include household level consumption and tobacco expenditures, age at uptake, employment, and industry.¹ The consumer price index for tobacco is from the Indonesian Central Statistical Bureau (BPS). The tax rates are estimated for the three main types of cigarettes based on household data about consumption and prices, industry figures for total production by type of cigarette, and tax directorate statistics about excise revenues by type of cigarette. An opportunistic survey of cigarette prices among street vendors and retailers in Jakarta was commissioned for this paper, and the details of this survey are published separately.² Historic and current excise tax and price structure for tobacco products are sourced from published Ministerial Decrees from the Excise Tax Directorate, Ministry of Finance. Figures about excise tax revenues are sourced from published reports of the Ministry of Finance. Indonesian rupiah values are expressed in 2007 US dollar values unless otherwise indicated.

We summarize previous analytical work about the demand for cigarettes and simulations of tax increases on consumption and revenues. This review was informed by two published papers of research in Indonesia and the Southeast Asian Region.³ The first, “An Overview of the Tobacco Control Economic Literature and Evidence for Indonesia” was conducted by Research Triangle Institute and critiqued most of the studies cited here. The second, “Higher Tobacco Prices and Taxes in South-East Asia: An Effective Tool to Reduce Tobacco Use, Save Lives and Generate

This study aims to systematically review existing studies to provide a comprehensive report about the economic aspects of tobacco in Indonesia.

Revenue” was commissioned by the World Health Organization (WHO) and the World Bank to inform regional price and tax policies. Each of the individual studies is cited in the endnotes.

Industry structure and market share was collected from market research groups and published industry sources. Updates on agricultural and manufacturing production and trade were sourced from the Indonesian Central Statistical Bureau (BPS) and the U.S. Food and Agricultural Organization (FAO). Employment figures were sourced from the Indonesian BPS. Cited are two studies that examine the impact of changes in tax on employment. The first was previously published by United States Agency for International Development (USAID).⁴ The second study commissioned for this report examines the implications of a tax increase on employment. Data used for this study include the SUSENAS national household survey data and published reports of the input-output analysis of the impact of a tobacco tax increase on employment. This study expands on a prior study conducted by the Demographic Institute, Faculty of Economics, University of Indonesia.⁵

A structured interview was commissioned for this report to collect data about tobacco tax administration and implementation. The interview was carried out by a research team at the Demographic Institute, Faculty of Economics, University of Indonesia, and the key informants were government officials at the Excise Tax Directorate and the Fiscal Analysis Bureau, Ministry of

Limited data exist about marketing and advertising; this represents an important area for future work, particularly the subject of marketing to youth.

Finance. The findings are summarized here, and the full structured interviews are published separately.⁶

Data Gaps and Limitations

Data about the tobacco-attributable disease burden are taken from existing studies. More comprehensive analyses of disease burden and health care costs are the focus of a separate research plan funded by the U.S. National Institutes of Health Fogarty International Center (University of Indonesia and University of California, Berkeley) in 2008. Additional research is also being planned to analyze cigarette demand among adults and children, and this report focuses only on previous studies conducted in Indonesia that have produced consistent results. This report does not comprehensively assess the poverty-related aspects of tobacco consumption, which is the focus of future research by the Demographic Institute, University of Indonesia. The report also does not cover marketing of tobacco products. Limited data exist about marketing and advertising; this represents an important area for future work, particularly the subject of marketing to youth.

Endnotes for Chapter 1

- ¹ Ahsan A, Wiyono N, Setyonaluri D, Prihastuti D, Yudhistira MH, Sowwam M. Tobacco control country study. Demographic Institute, Faculty of Economics, University of Indonesia, 2007.
- ² Ahsan A, Wiyono N, Setyonaluri D, Prihastuti D, Yudhistira MH, Sowwam M. An opportunistic survey of retail prices for cigarettes. Processed, 2007.
- ³ Ross H. An overview of the tobacco control economic literature and evidence for Indonesia. Open Society Institute and Research Triangle Park, 2005; Guindon E, Perucic A-M, Boisclair D. Higher tobacco prices and taxes in South-east Asia: An effective tool to reduce tobacco use, save lives and generate revenue. World Bank, Health, Nutrition and Population Discussion Paper. Economics of tobacco control paper No. 11, 2003.
- ⁴ Marks S. Cigarette excise taxation in Indonesia: An economic analysis. Partnership for Economic Growth, BAPPENAS and USAID, July 2003.
- ⁵ Ahsan A, Wiyono N. The impact analysis of higher cigarette price to employment In Indonesia. Demographic Institute, Faculty of Economics, University of Indonesia, 2007.
- ⁶ Ahsan A, Wiyono N, Setyonaluri D, Prihastuti D, Yudhistira MH, Sowwam M. Implementation of tobacco tax. Demographic Institute, Faculty of Economics, University of Indonesia, 2007.

II. Introduction

This chapter describes why the economics of tobacco is important and why governments intervene in the tobacco market. In addition to achieving revenue goals, governments intervene in the tobacco market to address the burden of tobacco-attributable diseases, to reduce poverty, to correct market failures related to lack of information and addiction, and to protect children and adolescents.

Smokers are predominantly male, and 63 percent of men smoke. The vast majority of smokers use *kreteks*, which carry the same health risks as other tobacco products. Tobacco consumption kills at least 200,000 people annually in Indonesia, and tobacco use has serious negative health impacts for nearly every organ in the body. For every eight smokers that die from active smoking, one nonsmoker dies from exposure to secondhand smoke. This ratio represents at least 25,000 deaths from secondhand smoke in Indonesia. Through its negative health effects, tobacco consumption contributes to lower economic productivity through reductions in physical functioning, lung capacity, and higher rates of illnesses. Premature death among up to one-half of smokers is likely to affect the relative size of the labor force, as well as have an important long-term economic impact through reductions in earnings and savings. High household expenditures on tobacco have serious welfare implications.

Tobacco price and tax measures are the most effective way to reduce tobacco-related morbidity and mortality. This is because the demand for tobacco responds to changes in price. At the same time, demand is inelastic, or the percentage reduction in demand is less than the percentage increase in price. In other words, many smokers would continue to smoke, even with higher tobacco prices. With a relatively small impact on the tax base, an increase in tobacco taxes will result in a net increase in total government revenue from the tax — regardless of reduced sales

volume for cigarettes. Keeping tobacco prices high through regular increases in tax, therefore, has proven effective in generating both positive health outcomes and increased government revenue.

Smoking Prevalence and Burden of Disease

Concern about the health and economic impact of tobacco consumption in Indonesia has been relatively recent. This is a reflection of the increases in living standards and quality of life. In the 1960s, life expectancy was 38 years; a child born today could expect to live to 69 years.⁷ Whereas tobacco has been consumed with betel or cloves for some time, few people lived long enough to suffer its most severe negative health consequences.

Although all tobacco products are harmful to health, an increase in smoking could be expected to have a broader range of serious health problems when compared with chewing tobacco. Inhaling tobacco smoke delivers high levels of nicotine to the brain very rapidly.⁸ Smoking *kreteks* replaced chewing betel and tobacco during the early to mid-1900s for many rural men, and smoking became widespread after the mechanization of the *kretek* filter in the 1970s.⁹ Cigarette production increased from about 38 billion sticks in 1971 to more than 220 billion today.¹⁰ Low real cigarette prices, population growth, and rising household incomes contributed to a large increase in smoking prevalence and consumption. There is a delay of up to 25 years between the time of smoking uptake and the onset of many chronic diseases. Therefore, the negative health effects of rapid increases in cigarette consumption since the 1970s to 1980s are being seen only now. More recent data suggest that smoking

Kreteks are composed mostly of tobacco (60–70 percent); therefore, they carry all of the same health risks as other tobacco products.

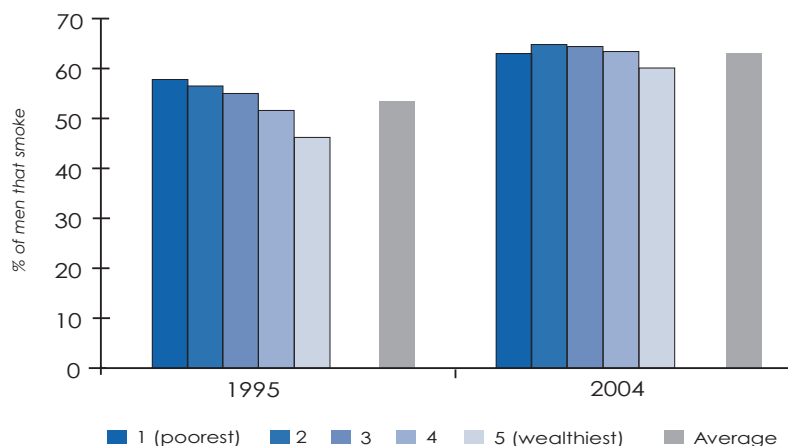
prevalence has continued to increase from 27 percent in 1995 to 34 percent in 2004.

Nearly all (97 percent) tobacco users in Indonesia smoke cigarettes. Smokers are predominantly male, although the prevalence of female smoking is increasing. Some 53 percent of men smoked in 1995, compared with 63 percent in 2004. Smoking among women is associated with social stigma in Java-Bali, although this is changing with cigarette marketing towards women.¹¹ Female prevalence increased from 1.7 percent to 4.5 percent during the same period (1995 to 2004, Annex 2.1). Rates of female smoking are higher in non-Java-Bali; 10 percent of women in Papua smoke; and 9 percent of women in East Kalimantan do so (Annex 2.2). In 1995, the poorest had higher rates of smoking prevalence compared with the wealthiest using household expenditure quintiles (Graph 2.1.). However, this gradient has largely disappeared. In 2004, prevalence was lower among men within the highest household wealth quintile but differs little across the other four expenditure categories (Annex 2.3).

The vast majority of smokers (88 percent) use *kreteks*, or tobacco-and-clove cigarettes, and a very small segment of smokers in rural areas use roll-your-

own or pipe tobacco.¹² A slightly higher percent of youth (15 to 19 years) prefer white (tobacco only) cigarettes (21 percent) (Annex 2.4). *Kreteks* are composed mostly of tobacco (60 to 70 percent); therefore, they carry all of the same health risks of other tobacco products.¹³ In addition to cloves, *kreteks* typically have a number of different additives in the “sauce.” Mixed with tobacco, the additives help to maintain the flavor of a particular brand over time. While commonly used additives such as fruit and herb extracts may be safe when ingested, the health effects of burning and inhaling them are not known.¹⁴ The eugenol in cloves is considered a possible human carcinogen in itself; other substances hazardous to health detected in *kreteks* include coumarin and anethole.¹⁵ Similarly, white (tobacco only) cigarettes also contain chemical additives to numb the throat, mask the smell of secondhand smoke, and enhance the addictive properties of nicotine.¹⁶ Unlike other consumables and drugs, the chemical contents of cigarettes (the “sauce” and additives) are unknown to both consumers as well as the government regulatory body, National Agency for Drug and Food Control (Badan POM). The existing measurements of tar and nicotine levels do not inform about specific additives or

Graph 2.1: Male Smoking Prevalence by Expenditure Quintiles, 1995 and 2004



Source: SUSENAS.

predict health outcomes. Current measures of tar and nicotine are based on discredited testing methodology that should no longer be used.¹⁷

Conclusive evidence over decades confirms that up to one-half of smokers die as a result of their addiction.¹⁸ While tobacco-attributable deaths are projected to decline in high-income countries, they are expected to double from 3.4 million to 6.8 million annually in low- and middle-income countries.¹⁹ Cancers are responsible for one-third of these deaths, and cardiovascular and chronic respiratory diseases are each responsible for 30 percent of deaths. These projections find that smoking will kill 50 percent more people in 2015 than HIV/AIDS, and will account for 10 percent of all deaths globally. Estimates show that tobacco consumption causes up to 200,000 deaths annually in Indonesia.²⁰ The main causes of tobacco-attributable mortality in Indonesia — similar to the causes in global estimates — are heart diseases, stroke, cancers, and respiratory illnesses, particularly chronic obstructive pulmonary disease.²¹ It has been demonstrated that tobacco use has serious negative health effects for nearly every organ in the body.¹⁸

Secondhand smoke is carcinogenic to humans.²² Secondhand smoke kills about one nonsmoker for every eight smokers that die from active smoking.²³ Multiple studies have demonstrated increased risk of serious diseases caused by exposure to secondhand smoke. Nonsmoking women exposed to secondhand smoke in the home have a 25 percent increased risk of lung cancer, with longer exposure corresponding to higher risk.²⁴ Studies among nonsmoking Indonesian women with smoking husbands demonstrated higher risks of lung cancer compared with nonsmoking women with nonsmoking husbands.²⁵ Other studies have demonstrated a 23 to 25 percent increased risk of heart disease from exposure to secondhand smoke.²⁶ Even low levels of exposure increase the risk of heart attacks and heart disease.²⁷ Significantly reduced coronary flow velocity reserve has been reported in nonsmokers after 30 minutes of exposure to

secondhand smoke, indicating loss of endothelial function that leads to vascular diseases.²⁸ This suggests that even short periods of exposure to secondhand smoke could have long-term negative health effects. More than 97 million nonsmokers in Indonesia are routinely exposed to secondhand smoke.²⁹

Exposure to secondhand smoke leads to serious illnesses for children, including a higher risk of sudden infant death syndrome (SIDS), acute respiratory infections, ear disease, and severe asthma.³⁰ Among school children in Jakarta and Java, between 76 and 82 percent report exposure to secondhand smoke in public places.³¹ Some 70 percent of all Indonesian children less than 15 years of age are regularly exposed to secondhand tobacco smoke.³²

Relationships Between Health and Economic Productivity

Based on the established theories of health as a form of human capital,³³ Bloom and Canning describe four ways in which health contributes to economic prosperity.³⁴ First, healthy people are physically and cognitively stronger, leading to longer working hours, fewer sick days, and higher productivity at work or in school. Second, healthy people have longer life expectancies. This creates incentives for investments in health, education, and other forms of human capital. Third, greater longevity induces higher levels of retirement savings during working life. Foreign investors look to economies with a healthy labor force. Fourth, a healthier population reduces demand for children via lower mortality rates. The changes from

Households with smokers spent on average a share of 11.5 percent on tobacco products, compared with 11.0 percent for fish, meat, eggs and milk combined; 2.3 percent for health and 3.2 percent for education.

high to low mortality and fertility lead to increases in the proportion of working age adults — a key determinant of economic growth.

Whereas better health promotes a country's economic performance, the reverse is also true. Poor health can inhibit economic growth. In the case of tobacco, smoking reduces physical strength and lung capacity. In addition to other serious long-term conditions, tobacco consumption diminishes overall immune function, which leads to higher rates of general infections among smokers.³⁵ Male smoking prevalence is higher in rural areas compared with urban areas (67 percent and 59 percent, respectively, Annex 2.2). Reductions in physical functioning in rural regions are likely to have an important impact on local economies that rely on agricultural or manual labor. Individual income lost from sick days is less likely to be recovered from informal or agricultural employment.

Indonesia is now benefiting from a decline in child mortality and fertility rates, which has contributed to longer life expectancies and incentives to save. However, studies across countries with long-term tobacco consumption consistently demonstrate

that the risk of death is high among smokers. Up to one-half of smokers die of their addiction, and approximately half of these deaths occur during productive life before retirement (35 to 69 years), resulting in at least 10 to 15 years of life loss.³⁶ At the household level, this implies a loss of earnings, household savings, and investments. Early death of a parent is likely to have long-term effects on the education and living standards of their children. Analyses of the national socioeconomic survey (SUSENAS) demonstrate that the death of a parent results in large reductions in child school enrollment through higher drop-out rates.³⁷

Sizeable household expenditures on tobacco products have serious welfare implications. In 2005, households with smokers spent on average a share of 11.5 percent on tobacco products, compared with 11.0 percent for fish, meat, eggs and milk combined; 2.3 percent for health; and 3.2 percent for education (Table 2.1, Annex 2.5). Particularly for low-income households, limited resources spent on tobacco could reduce spending on health, food, education, or other necessities.

Table 2.1: Percent of Total Monthly Expenditures on Tobacco, Food, Health, and Education for Households with Smokers, by Expenditures Quintiles, 2005

| Expenditure category | Household expenditure quintiles | | | | | Average |
|----------------------|---------------------------------|------|------|------|-------------|---------|
| | 1 (lowest) | 2 | 3 | 4 | 5 (highest) | |
| Tobacco | 11.9 | 12.3 | 12.4 | 11.7 | 9.2 | 11.5 |
| Fish | 5.6 | 6.1 | 6.2 | 6.0 | 4.9 | 5.7 |
| Eggs and milk | 2.6 | 3.0 | 3.3 | 3.6 | 3.8 | 3.3 |
| Meat | 1.0 | 1.6 | 2.1 | 2.5 | 2.9 | 2.0 |
| Health | 2.1 | 2.1 | 2.2 | 2.4 | 2.7 | 2.3 |
| Education | 1.8 | 2.6 | 3.0 | 3.6 | 4.9 | 3.2 |

Source: SUSENAS. Tobacco category excludes betel nut.

With the exception of households at the top of the distribution that spend the lowest share, tobacco expenditures are proportional throughout the distribution of expenditures. Spending on tobacco products increased slightly for the lowest and highest quintiles between 2002 and 2005, and remained the same for the middle expenditure quintiles (Annex 2.6).

Diverting household resources to tobacco spending has important negative health effects within the home. The national nutritional surveillance system among more than 175,000 urban slum households reported that paternal smoking predicts an increased probability of short-term and chronic child malnutrition.³⁸ These findings are all the more striking considering that smoking is primarily an addiction among males, and one that started during childhood or adolescence when the implications of starting to smoke were probably poorly understood.

Market Failures: Inadequate Information About Health Risks and Addiction, and Financial and Physical Costs Imposed on Nonsmokers and Society

The economic principle of consumer sovereignty suggests that consumers make the best decisions about how to spend their own money. This argument is based on two assumptions. The first is that consumers make informed decisions with full knowledge of the costs and benefits of their choices. The second assumption is that individuals bear all of the risks of their consumption decisions; that is, their actions have no cost or impact on others. Tobacco use violates both of these assumptions.

Javanese boys 13 to 17 years old could repeat the health warnings on cigarette packs, but also claimed that smoking one to two packs per day was not harmful to health.

What is perhaps even more confusing to Indonesian consumers is that the government health regulations have not kept up-to-date with the growing body of knowledge.

Informed choices require accurate information. However, the health hazards associated with tobacco consumption are poorly understood. Javanese boys 13 to 17 years old could repeat the health warnings on cigarette packs but also claimed that smoking one to two packs per day was not harmful to health.³⁹ Contrary to industry-sponsored reports,⁴⁰ independent research has demonstrated that *kreteks* are as harmful as other cigarettes.⁴¹ Even fewer people understand the serious health effects to nonsmokers from exposure to secondhand smoke.⁴²

What is perhaps even more confusing to Indonesian consumers is that the government health regulations have not kept up-to-date with the growing body of knowledge. Articles in the existing government regulation for tobacco control require printing tar and nicotine levels on cigarette packages,⁴³ despite the evidence that such measurements are based on discredited testing methodology and have been used to market cigarettes as “healthier.”⁴⁴ It is likely that this has contributed to an increase in the sales of cigarettes marketed as “mild.” The market share for “mild” *kreteks* – virtually nonexistent in 1994 – represented 34 percent of the machine-made *kretek* market and 19 percent of the total cigarette market in 2006.⁴⁵ The industry projects that retails sales for “low-tar” cigarettes will triple between now and 2010.⁴⁶ In fact, smokers of “low-tar” cigarettes face no fewer health risks compared with smokers of “high-tar” cigarettes.⁴⁷ As such, global health bodies recommend banning such terms as “light,” “mild,” and “low-tar” because they mislead consumers into thinking that they are using less dangerous products.⁴⁸

The average age of smoking initiation has declined to 17.4 years. Children are socialized early on to consider smoking as normal and socially acceptable.

The government regulation is weak in the area of consumer information. Whereas the regulation does call for health warnings on cigarette packages, only one health warning is authorized for use, and there is no minimum size. The authorized health warning reads: “Smoking can cause cancer, heart attacks, impotence and harm pregnancy and fetal development.” The minimum size for health warnings on billboards and advertisements is 15 percent.⁴⁹ Effective messages are needed to communicate health risks that will appear in 20 to 25 years between the time a person starts to smoke and the onset of many diseases. Striking differences in prevalence can be correlated to educational levels, whereby 73 percent of males with no education smoke compared with 48 percent of

males with college education, which suggests a need to clearly communicate health risks (Annex 2.3).

The decision to start smoking is usually made during childhood or adolescence, and children are starting to smoke at earlier ages than in the past. The average age of smoking initiation has declined to 17.4 years in 2004, and 78 percent of Indonesian smokers start before the age of 19 years (Annexes 2.7, 2.8). Between 1995 and 2004, smoking prevalence for male children 15 to 19 years of age increased by 139 percent, and for 20- to 24-year-old males, prevalence increased by nearly 50 percent (Table 2.2, Annex 2.1). Declines in prevalence among older age groups reflect higher rates of cessation and would probably include people who quit because they became sick or recognized the signs of serious tobacco-related illnesses (Annexes 2.1, 2.9).

The Global Youth Tobacco Survey (GYTS) was conducted among schoolchildren 13 to 15 years old in six locations in Indonesia (Table 2.3). The survey reports that approximately 24 to 41 percent of boys in this age group are current smokers. It is remarkable,

Table 2.2: Male Smoking Prevalence by Age Group, 1995 and 2004, and the Percentage Change over Time

| Age group | Smoking prevalence | | Percentage change |
|----------------|--------------------|-------------|-------------------|
| | 1995 | 2004 | |
| 15-19 | 13.7 | 32.8 | 139.4 % |
| 20-24 | 42.6 | 63.6 | 49.3 % |
| 25-29 | 57.3 | 69.9 | 22.0 % |
| 30-34 | 64.4 | 68.9 | 7.0 % |
| 35-39 | 67.3 | 67.7 | 0.6 % |
| 40-44 | 67.3 | 66.9 | -0.6 % |
| 45-49 | 68.0 | 67.9 | -0.2 % |
| 50-54 | 66.8 | 67.9 | 1.7 % |
| 55-59 | 66.1 | 64.1 | -3.0 % |
| 60-64 | 64.7 | 60.0 | -7.3 % |
| 65-69 | 64.3 | 58.7 | -8.7 % |
| 70-74 | 56.9 | 55.3 | -2.8 % |
| 75+ | 53.3 | 47.4 | -11.1 % |
| Average | 53.4 | 63.1 | 18.2 % |

Source: SUSENAS.

however, that 83 to 93 percent of the current smokers have already tried to quit — but were unsuccessful. This percentage suggests that young people lack the capacity to evaluate the risks of smoking and the highly addictive nature of nicotine. It is unlikely that youth who start smoking make an informed choice to start a lifelong addiction.

Because nicotine is a highly addictive substance, it is hard for smokers to quit. Unlike those who use other highly addictive but illegal substances, though, smokers have many opportunities to purchase tobacco and are confronted with advertisements that promote tobacco use as socially acceptable.⁵⁰ Nearly all (89 to 95 percent) of the young people surveyed saw a cigarette billboard advertisement in the past month (Table 2.3). This indicates that children are socialized early on to consider smoking as normal and socially acceptable.

The second assumption behind consumer sovereignty is that the consumer alone bears the risks and costs of consumption decisions. Smokers, however, impose physical and financial costs on others and on society as a whole. A Jakarta-based hospital study

estimated that annual healthcare costs for inpatient treatment of tobacco-attributable illnesses were Rp 2.9 trillion (US\$ 319 million).⁵¹ This figure does not consider the health costs for nonsmokers exposed to secondhand smoke. Given Indonesia's sizeable population, limited public awareness of the negative health effects of active or passive smoking, and the lack of clean air legislation, substantial health costs for nonsmokers exposed to secondhand smoke are to be expected. In other countries, between 6 and 15 percent of total health care costs are attributable to treatment and care of tobacco-related illnesses.⁵² Using as a basis for comparison the amount of money spent from public and private sources on health care in Indonesia in 2005 (Rp 73.5 trillion, or US\$ 8.1 billion)⁵³ and assuming that 6 to 15 percent is spent on tobacco-related illnesses, the total costs of tobacco-related morbidity and mortality would approximate Rp 4.4 to 11.0 trillion (US\$ 484 million to 1.2 billion) per year, or between 0.12 and 0.29 percent of the GDP.⁵⁴ The government's share of total health spending through financing and delivering public health services amounts to 35 percent, and the remaining balance would largely come from individual out-of-pocket payments.

Table 2.3: Summary of Global Youth Tobacco Surveys in Indonesia Among 13 to 15 Year Olds, 2004 to 2006

| Responses | Bekasi | Medan | C. Java | Sumatra | Surakarta | Jakarta |
|--|--------|-------|---------|---------|-----------|---------|
| Currently use tobacco (%) | | | | | | |
| Male | 34.8 | 40.5 | 25.0 | 24.0 | 29.3 | 32.1 |
| Female | 9.4 | 8.1 | 4.3 | 5.0 | 3.4 | 7.4 |
| Among children that currently smoke, % that tried to stop in the past year | 88.7 | 88.4 | 83.3 | 93.3 | 90.7 | 91.8 |
| Among all children, % that: were exposed to second-hand smoke outside home | 76.1 | 79.5 | 81.1 | 81.0 | 79.7 | 81.6 |
| saw a cigarette billboard in the last 30 days | 88.8 | 91.8 | 92.7 | 93.4 | 94.7 | 93.2 |

Source: Centers for Disease Control and Prevention, Global Youth Tobacco Surveys Country Fact Sheets.

This figure probably underestimates health costs because health service utilization in Indonesia is relatively low, and people do not always obtain formal health care when they are sick. Other social costs related to tobacco consumption include diminished work productivity, economic losses resulting from premature death, and reductions in future human capital investments (such as decreased spending on health and education) among children living in households with smokers. In more developed settings, private employers have encouraged their employees to stop smoking to improve productivity and for economic gains such as lower health care costs, fewer sick days, and reduced maintenance costs and risks of fires.⁵⁵ In the U.S., total costs for tobacco-attributable mortality (including medical care expenditures and economic losses such as decreased employee productivity) are equivalent to Rp 701 trillion annually (US\$ 77.1 billion).⁵⁶ Although present-day smoking prevalence rates among males in Indonesia are similar to those of American males in the 1950s and 1960s, this comparison provides some idea about future costs.

Generating Government Revenue: Tobacco Price and Tax Measures

An important reason that governments intervene in the tobacco market is to generate tax revenue. Tobacco taxation forms a stable source of government revenue, contributing 5.7 percent of Indonesia's total government revenue in 2007. Given that tobacco prices and taxes are low, substantial potential exists for greater revenue generation.

Because the demand for tobacco products responds to changes in price, increasing the price and tax of tobacco products is also the most effective way to reduce tobacco-related morbidity and mortality. Numerous economic studies of tobacco price increases have consistently found that price elasticity of demand generally falls between -0.25 and -0.50 in developed countries, or that a 10 percent increase in price results

Globally, evidence has shown that younger people and people with low incomes are more responsive to tobacco price increases.

in a 2.5 to 5.0 percent reduction in consumption.⁵⁷ Studies in low- and middle-income countries have found similar or greater reductions in consumption.⁵⁸ These studies cite price elasticities ranging from -0.50 to -0.70 in South East Asia;⁵⁹ -0.09 in Thailand and -0.23 in Sri Lanka,⁵⁹ and -0.54 in China.⁶⁰ Consistent with these studies, research in Indonesia demonstrates price elasticities of -0.29 to -0.67, or that a 10 percent increase in cigarette price results in a decline in cigarette consumption of 2.9 to 6.7 percent. Moreover, because tobacco is an addictive product, the long-run impact is greater than the short-run impact.

Globally, evidence has shown that younger people and people with low incomes are especially responsive to tobacco price increases. In Indonesia as in most other countries, people start smoking during childhood and adolescence. Recent estimates suggest that price elasticity of demand among youth could be three times greater than elasticity for adults⁶¹ — meaning that youth are much more likely to quit, reduce consumption, or not start using tobacco in response to price changes. Therefore, keeping real tobacco prices high through taxation represents the most effective tool in preventing uptake and encouraging cessation among youth. This is particularly important in light of evidence that youth-access policies alone (such as age restrictions for buying cigarettes) have proven to be ineffective.⁶² Similarly, research in industrialized countries has demonstrated higher price elasticities among low-income smokers when compared with high-income smokers.⁶³ These studies conclude that increases in real cigarette prices through tobacco taxes could narrow socioeconomic inequalities in health.

In many high-income countries, tobacco is an inferior good. However, in Indonesia, income elasticity is positive, and cigarettes are normal goods. Reductions in consumption resulting from higher cigarette prices are offset by increases in consumption because of rising household incomes. Studies examined here predict income elasticities between 0.32 and 0.76, or that a 10 percent increase in income results in an increase in tobacco consumption between 3.1 and 7.6 percent. A tax increase aimed to reduce tobacco consumption, therefore, needs to be large enough to offset the increases in consumption expected with rising household incomes.

Where taxes are effectively passed on to consumers in the form of increased prices, significant public health benefits can occur — such as cessation, reductions in smoking uptake, and declines in tobacco consumption. In the Asia-Pacific region alone, a 33 percent price increase could avert between 10 and 28 million deaths, and a 50 percent increase could avert 15 to 38 million deaths.⁵⁰ In Indonesia, with some 57 million smokers, even a moderate tax increase to 50 percent of the sales price could avert approximately 0.6 to 1.4 million tobacco-related deaths. Therefore, tobacco price increases are the most effective policy measure available to spur declines in smoking

prevalence and uptake and reduce overall tobacco consumption, thereby promoting population health and welfare.

At the same time, demand for tobacco products is inelastic; that is, the percentage reduction in demand is less than the percentage increase in price. In other words, many smokers would continue their addiction even at higher prices. With a relatively small impact on the tax base, an increase in tobacco taxes will result in a net increase in total government revenue from the tax, regardless of reduced sales volume for cigarettes. Simulations of a 5 percent annual increase in real tobacco prices report that tax revenue gains would be substantial, amounting over ten years to a cumulative total of Rp 83.1 trillion (US\$ 9 billion).⁵⁹

Keeping tobacco prices high through regular increases in tax, therefore, has proven effective in generating both positive health outcomes and increased government revenue. However, the impact of price and tax measures on health and revenues depends on a number of factors, including the structure of the market, industry responses to tax increases, household responses to prices, the extent to which consumers substitute cheaper tobacco products, the structure and implementation of the tax, and other related government policies.

Endnotes for Chapter 2

- ⁷ Life expectancy for 1960 from Nitisastro W. Population trends in Indonesia. Ithaca: Cornell University Press 1970; for 2007, BAPPENAS, BPS, UNFPA 2005. Proyeksi Penduduk, Indonesia, 2000-2024.
- ⁸ Britton J, Edwards R. Tobacco smoking, harm reduction, and nicotine product regulation. *Lancet*, 2007.
- ⁹ Reid A. From betel chewing to tobacco smoking in Indonesia. *Journal of Asian Studies* 1985;XLIV:3.
- ¹⁰ Tarmidi L. Changing structure and competition in the *kretek* cigarette industry. *Bulletin of Indonesian Economic Studies* 1996;32(3):85-107.
- ¹¹ Ngi N, Weinehall L, Ohman A. 'If I don't smoke, I'm not a real man' — Indonesian teenage boys' views about smoking. *Health Education Research*, 2007;22(6):794-804.
- ¹² Smoking tobacco in Indonesia. *Euromonitor*, 2007.
- ¹³ Guidotti T. Critique of available studies on the toxicology of *kretek* smoke. *Archive of Toxicology* 1989;63:7-12; Guidotti TL, Laing L, Prakash UB. Clove cigarettes: the basis for concern regarding health effects. *Western Journal of Medicine* 1989;(151): 220-8); Malson JL, Lee EM, Murty R, Moolchan ET, Pickworth WB. Clove cigarette smoking: biochemical, physiological, and subjective effects. *Pharmacology Biochemistry Behavior* 2003;74(3):739-45.

- ¹⁴ Advancing knowledge on regulating tobacco products. Geneva: World Health Organization, 2000.
- ¹⁵ Polzin GM, Stanfill SB, Brown CR, Ashley DL, Watson CH. Determination of eugenol, anethole, and coumarin in the mainstream cigarette smoke of Indonesian clove cigarettes. *Food and Chemical Toxicology* 2007;45(10):1948-1953, 2007; and Givel M. A comparison of US and Norwegian regulation of coumarin in tobacco products. *Tobacco Control* 2003;12:401-405.
- ¹⁶ Summary of literature at ASH UK.
- ¹⁷ World Health Organization. Tobacco control legislation: An introductory guide. 2nd edition. 2004; pp 105-6.
- ¹⁸ U.S. Department of Health and Human Services. The health consequences of smoking: A report of the Surgeon General. U.S. Department of Health and Human Services. Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, Office on Smoking and Health, 2004.
- ¹⁹ Mathers CD, Loncar D. Projections of global mortality and burden of disease from 2002 to 2030. *PLoS Med* 2006;3(11): e442. doi:10.1371/journal.pmed.0030442
- ²⁰ Kosen S. Chapter 2. The health burden of tobacco use, In *The Tobacco Sourcebook*, Ministry of Health, Republic of Indonesia, 2004.
- ²¹ Kosen S. Estimated number of tobacco-related deaths using verbal autopsy. National Institute of Health Research and Development, 2001.
- ²² National Toxicology Program. 11th Report on Carcinogens, 2005. Research Triangle Park, NC: US Department of Health and Human Sciences, National Institute of Environmental Health Sciences, 2000; US National Institutes of Health 2002. National Cancer Institute. Smoking and Tobacco Control Monograph #10: Health Effects of Exposure to Environmental Tobacco Smoke.
- ²³ Schick S, Glantz SA. Sidestream cigarette smoke toxicity increases with aging and exposure duration. *Tobacco Control* 2006;15: 424-429. doi:10.1136/tc.2006.016162.
- ²⁴ Fontham ET, Correa P, Reynolds P, Wu-Williams A, Buffler PA, Greenberg RS, et al. Environmental tobacco smoke and lung cancer in nonsmoking women: A multicenter case-control study. *Journal of the American Medical Association* 1994;271: 1752-1759; Hackshaw AK, Law MR, Wald NJ. The accumulated evidence on lung cancer and environmental tobacco smoke. *BMJ* 1997;315:980-8.
- ²⁵ Suryanto. Risk of lung cancer among smokers. Final Residency Paper, Department of Pulmonology, School of Medicine, University of Indonesia, Jakarta, 2000.
- ²⁶ Law MR, Morris JK, Wald NJ. Environmental tobacco smoke exposure and ischaemic heart disease: an evaluation of the evidence. *BMJ* 1997;315(7114): 973-80.
- ²⁷ Pechacek TF, Babb S. How acute and reversible are the cardiovascular risks of secondhand smoke? *BMJ* 2004;328(7446):980-3.
- ²⁸ Otsuka R, Watanabe H, Hirata K, Tokai K, Muro T, Yoshiyama M, et al. Acute effects of passive smoking on the coronary circulation in healthy young adults. *JAMA* 2001;286(4): 436-41.
- ²⁹ Based on SUSENAS estimates of smoking prevalence and reports of smoking among family members, in the *Tobacco Sourcebook*, Ch 2, 2004.
- ³⁰ Department of Health and Human Services. The health consequences of involuntary exposure to tobacco smoke: a report of the Surgeon General, Executive Summary. U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, Coordinating Center for Health Promotion, National Center for Chronic Disease Prevention and Health Promotion, Office on Smoking and Health, 2006.
- ³¹ Centers for Disease Control and Prevention, US Department of Health and Human Services. *Global Youth Tobacco Surveys (GYTS) Country Fact Sheets*.
- ³² Pradono K. Passive smokers, the forgotten disaster. Institute of Health Research and Development, Ministry of Health, Republic of Indonesia, 2002.
- ³³ Grossman M. On the concept of health capital and the demand for health. *Journal of Political Economy* 1972;82:223-255.
- ³⁴ Bloom DE, Canning D. The health and wealth of nations. *Science* 2000;287:1207-9; and Bloom DE, Canning D, Jamison DE. Health, wealth, and welfare. *Finance and Development*, IMF 2004;41(1):10-15.
- ³⁵ US Department of Health and Human Services. The health consequences of smoking: a report of the Surgeon General. US Department of Health and Human Services, Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, Office on Smoking and Health, 2004.
- ³⁶ Morbidity and Mortality Weekly Reports (MMWRs); Annual smoking-attributable mortality, years of potential life lost, and productivity losses—United States. 1997-2001; July 1, 2005 / Vol. 54 / No. 25; and Liu Bo-Qi, Peto R, Chen ZM, Boreham J, Wu YP, Li JY, et al. Emerging tobacco hazards in China. 1. Retrospective proportional mortality study of one million deaths." *BMJ* 1998; 317 (7170):1411-22.
- ³⁷ Levine D, Gertler P, Ames M. Schooling and parental death. *Review of Economics and Statistics* 2004;86(1): 211-225.
- ³⁸ Semba RD, Kalm LM, de Pee S, O Ricks M, Sari M, Bloem MW. Paternal smoking is associated with increased risk of child malnutrition among poor urban families in Indonesia. *Public Health Nutrition* 2006;10(1): 7-15.
- ³⁹ Ngj N, Weinehall L, Ohman A. 'If I don't smoke, I'm not a real man'—Indonesian teenage boys' views about smoking. *Health education research* 2007;22(6): 794-804; doi:10.1093/her/cyl104.
- ⁴⁰ Clark GC. Comparison of the inhalation toxicity of kretek (clove cigarette) smoke with that of American cigarette smoke. I. One day exposure. *Archives of Toxicology* 1989;63(1):1-6; Clark GC. Comparison of the inhalation toxicity of kretek (clove cigarette) smoke with that of American cigarette smoke. II. Fourteen days, exposure; *Archives of Toxicology* 1990;64(7):515-521; Schwartz A. Battle of the brands. *Far Eastern Economic Review* 1990;April 19:32-33.

- ⁴¹ Guidotti T. Critique of available studies on the toxicology of *kretek* smoke by routes of entry involving the respiratory tract. *Archives of Toxicology* 1989;63:7-12; Council on Scientific Affairs. Evaluation of the health hazard of clove cigarettes. *JAMA* 1988;260:3641-3644; Guidotti TL, Laing L, Prakash UB. Clove cigarettes: the basis for concern regarding health effects. *Western Journal of Medicine* 1989;151:220-228; Malson JL, Lee EM, Murty R, Moolchan ET, Pickworth W. Clove cigarette smoking: biochemical, physiological, and subjective effects. *Pharmacology Biochemistry Behavior* 2003;74(3):739-45.
- ⁴² Julianty P, Kristanti CM. *Perokok Pasif Bencana Yang Terlupakan* (Passive smokers unawareness problem). *Buletin Penelitian Kesehatan*, 2003.
- ⁴³ PP/19/2003, Chapter 10, the Tobacco Sourcebook, 2004.
- ⁴⁴ Advancing knowledge on regulating tobacco products. Geneva:World Health Organization, 2000.
- ⁴⁵ GAPPRI data, quoted in Indonesian Cigarette Market. *Asian Daily, Credit Suisse* 26 January 2007; and Cigarettes in Indonesia, *Euromonitor* 2007, and GAIN report 0026, Indonesia Tobacco and Products Annual, 2000, USDA Foreign Agricultural Service, Global Agricultural Information Network, 6/14/2000.
- ⁴⁶ Cigarettes in Indonesia. *Euromonitor*, 2007.
- ⁴⁷ See, ASH UK for a summary of the literature; and Risks associated with smoking cigarettes with low machine-measured yields of tar and nicotine. *Smoking and Tobacco Control Monograph No. 13*. Bethesda, MD: US Department of Health and Human Services, National Institutes of Health, National Cancer Institute, NIH Pub. No. 02-5074, October, 2001.
- ⁴⁸ Tobacco control legislation: an Introductory guide, Second Edition, WHO 2004; pp 105-106; Advancing knowledge on regulating tobacco products. Geneva: World Health Organization, 2000.
- ⁴⁹ Achadi A, Soerojo W, Barber S. The relevance and prospects of advancing tobacco control in Indonesia. *Health Policy* 2005; 72 (3): 333-349.
- ⁵⁰ Jha P, Chaloupka FJ, Moore J, Gajalakshmi V, Gupta PC, Peck R, et al. Tobacco addiction. 2006. *Disease Control Priorities in Developing Countries* (2nd Edition), 869-886. New York: Oxford University Press. DOI: 10.1596/978-0-821-36179-5/Chpt-46.
- ⁵¹ Kosen S. Data to support a national strategy. In: *The tobacco sourcebook*. Ministry of Health, Republic of Indonesia, 2004.
- ⁵² Stanley K. Control of tobacco production and use. In: Jamison DT, Mosley WH, Measham AR, Bobadilla JL, eds. *Disease control priorities in developing countries*. Oxford University Press 1993:703-23. 1 Max W. The financial impact of smoking on health-related costs: a review of the literature. *American Journal of Health Promotion* 2001;15:321-31, 2001. See, also, US Centers for Disease Control & Prevention (CDC). Annual smoking-attributable mortality, years of potential life lost, and economic costs, United States, 1995-1999. *Morbidity and Mortality Weekly Review (MMWR)* 2002;51(14): 300-03; Miller LS, Zhang X, Max W. State estimates of total medical expenditures attributable to smoking. 1993 *Public Health Reports*, September/October 1998. Warner KE, Hodgson TA, Carroll CE. Medical costs of smoking in the United States: Estimates, their validity, and their implications. *Tobacco Control* 1999; 8(3): 290-300.
- ⁵³ World Health Organization. *National Health Accounts. Indonesia, 2006*.
- ⁵⁴ Based on 2007 budget, in Ministry of Finance, *Budget Statistics 2007-2008*.
- ⁵⁵ Max W, Rice DP, Sung H-Y, Zhang X, Miller L. The economic burden of smoking in California. *Tobacco Control* 2004;13: 264-267. Bunn WB 3rd, Stave GM, Downs KE, Alvir JM, Dirani R. Effect of smoking status on productivity loss. *Journal of Occupational and Environmental Medicine* 2006;48(10):1099-108; Halpern MT, Shikar R, Rentz AM, Khan ZM. Impact of smoking status on workplace absenteeism and productivity. *Tobacco Control* 2001;10(3):233-238.
- ⁵⁶ Annual smoking — Attributable mortality, years of potential life lost, and economic costs — United States, 1995-1999, *MMWR* April 12, 2002 / 51(14):300-3
- ⁵⁷ Chaloupka FJ, Warner KE. The economics of smoking. In: Culyer AJ, Newhouse JP (eds). *Handbook of Health Economics*, edition 1, volume 1, chapter 29, pages 1539-1627. Elsevier, 2000.
- ⁵⁸ Chaloupka FJ, Hu TW, Warner KE, Jacobs R, Yurekli A. The taxation of tobacco products. In: Jha P, Chaloupka FJ (eds). *Tobacco control in developing countries*. New York: Oxford University Press, 2000.
- ⁵⁹ Guindon GE, Perucic A-M, Boisclair D. Higher tobacco prices and taxes in South-east Asia: an effective tool to reduce tobacco use, save lives and generate revenue. *World Bank, Health, Nutrition and Population Discussion Paper. Economics of Tobacco Control Paper No. 11*, October 2003.
- ⁶⁰ Hu TW, Mao, Z. Effects of cigarette tax on cigarette consumption and the Chinese economy. *Tobacco Control* 2002;11:105-108.
- ⁶¹ In: Jha P, Chaloupka FJ, Moore J, Gajalakshmi V, Gupta PC, Peck R, et al. Tobacco addiction. *Disease control priorities in developing countries* (2nd Edition). pp 869-886. New York: Oxford University Press, 2006. DOI: 10.1596/978-0-821-36179-5/Chpt-46.
- ⁶² Ling PM, Landman A, Glantz SA. It is time to abandon youth access tobacco programmes. *Tobacco Control* 2002;11: 3-6.
- ⁶³ In: Jha P, Chaloupka FJ, Moore J, Gajalakshmi V, Gupta PC, Peck R, et al. Tobacco addiction. *Disease control priorities in developing countries* (2nd Edition) ed. 869-886. New York: Oxford University Press 2006, and Townsend JL, Roderick P, Cooper J. 1998. Cigarette smoking by socio-economic group, sex, and age: Effects of price, income, and health publicity. *BMJ* 309;6959:923-926.

III. Tobacco Tax, Tariff, and Price Information

In this chapter, we present data about cigarette prices, tax rates, and affordability of tobacco. The current tobacco tax system is complex and applies both an *ad valorem* and specific per-stick tax, which differs for each tobacco product and by industry production scales. Hand-rolled products and firms with small-scale production levels have consistently enjoyed the most favorable tax rates, which has contributed to variations in point-of-sale prices. Smokers from high-income households purchase cigarettes that are more expensive than those purchased by low-income households. Cigarette prices in Indonesia have remained stable between 1970 and 2005, and tobacco has become more affordable since 1980, relative to the GDP. Cigarette taxes and prices in Indonesia are low in absolute values and compared with other low-income countries and regional averages.

Tobacco Tax Structure

Excise taxes have been levied on tobacco products in Indonesia since the early 1900s. In 1932, the tax rates were the same for all types of tobacco products (20 percent). Since 1936, a tiered tax system for cigarettes began according to the following types of products: hand-made *kreteks* (tobacco-and-clove cigarettes), *klobot* (*kreteks* wrapped in cornhusks), *klembak kemenyan* (*kreteks* with incense), and white cigarettes (tobacco only). Differential tax rates for hand-rolled and machine-produced *kreteks* were introduced with the mechanization of the industry. In the 1970s, the tax system was modified based on production volume and product type, with the highest tax rates corresponding to firms with the highest production.⁶⁴ The tobacco tax structure continues to be based on the type of product, mode of production (hand-rolled or machine-made), and firm production levels.

The HJE is the “retail sales price,” and represents the factory price inclusive of taxes, profit, and transaction costs. Based on the official form, each manufacturer reports the brand-specific costs of all ingredients and related production costs (tobacco, cloves, paper, transportation, wrapping and packaging, etc), to arrive at a base price (Annex 3.1). The *ad valorem*, VAT, and specific taxes are applied to the base price. The VAT is a flat rate of 8.4 percent. The manufacturer then adds profits (for the distributor, agent, and retailer) and the factory transaction costs to arrive at the brand-specific HJE. Based on informal discussions, profits and transaction costs are included before the tax is estimated. The HJE reported in the table is the “minimum” because it is the lower bound of the brand-specific range.

A comparison of the changes in the tobacco tax scales between 2007 and 2008 by type of product and production scale illustrates the complexity of the system (Table 3.1).

In 2007, *ad valorem* rates for machine-made *kreteks* and white cigarettes were between 26 percent and 40 percent, depending on production scales. In addition, a specific per-stick tax was applied for the first time, which also varies by type of product, mode of production (hand-rolled or machine-made), and firm production scales. In 2008, the *ad valorem* rates were revised downward, and a much larger specific tax was applied. The specific tax is Rp 35 for all types of cigarettes with the exception of hand-rolled *kreteks* produced at the smallest scale (Rp 30). Since 2000, *ad valorem* tax rates for machine-made *kreteks* and white cigarettes were the same; however, the 2008 regulation re-introduced differential *ad valorem* rates for these products, but with lower *ad valorem* rates for white cigarettes in comparison with machine-made *kreteks* from the same production scales. The minimum (lower boundary) HJE was revised upward by 9 percent for firms within the largest production

Table 3.1: Tobacco Tax Scales for Domestically Produced and Consumed Products, 2007 and 2008

| Tobacco product | Production Tier | Production (no. of sticks per year) | 2007 | | | 2008 | | |
|--|-----------------|-------------------------------------|-------------------------------|--------------------|-----------------------------|----------------------------|--------------------|-----------------------------|
| | | | HJE minimum (Rp per stick) | ad valorem tax (%) | Specific per stick tax (Rp) | HJE minimum (Rp per stick) | ad valorem tax (%) | Specific per stick tax (Rp) |
| Machine-made kreteks (SKM) | I | >2 billion | 550 | 40 | 7 | 600 | 36 | 35 |
| | II | >500 million to ≤2 billion | 450 | 36 | 5 | 383 | 35 | 35 |
| | III | ≤500 million | 440 | 26 | 3 | 374 | 22 | 35 |
| Machine-made white (tobacco only) cigarettes (SPM) | I | >2 billion | 345 | 40 | 7 | 375 | 34 | 35 |
| | II | >500 million to ≤2 billion | 265 | 36 | 5 | 225 | 30 | 35 |
| | III | ≤500 million | 255 | 26 | 3 | 217 | 15 | 35 |
| Hand-rolled kreteks (SKT) | I | >2 billion | 475 | 22 | 7 | 520 | 18 | 35 |
| | II | >500 million to ≤2 billion | 395 | 16 | 5 | 336 | 10 | 35 |
| | III A | >6 million to ≤500 million | 380 | 8 | 3 | 234 | 0 | 30 |
| | III B | ≤6 million | 275 | 4 | 3 | Combined III A and III B | | |
| Filtered hand-rolled kreteks (SKTF) | I | >2 billion | NA (Only one category of SKT) | | | 600 | 36 | 35 |
| | II | >500 million to ≤2 billion | | | | 383 | 35 | 35 |
| | III | ≤500 million | | | | 374 | 22 | 35 |
| Other cigarettes (KLB, KLM, SPT) | I | 6 million | 215 | 8 | NA | 180 | 8 | NA |
| | II | ≤6 million | 180 | 4 | NA | Combined I and II | | |
| Sliced leave (TIS) | I | >2 billion grams | 50 | 20 | NA | 50 | 20 | NA |
| | II | >500 million to ≤2 billion grams | 50 | 16 | NA | 50 | 16 | NA |
| | III A | >50 million to ≤500 million grams | 50 | 8 | NA | 40 | 8 | NA |
| | III B | ≤50 million grams | 40 | 4 | NA | Combined III A and III B | | |
| Cigars (CRT) | | NA | 20 | NA | 275 | 20 | NA | |
| Other (HPTL) | | NA | 275 | 20 | NA | 275 | 20 | NA |

Note: Ministry of Finance Regulations No. 118/PMK.04/2006, effective from March 2007, specific tax effective since July 2007, and No. 134/PMK.04/2007, effective in 1 January 2008. Production scales set forth in 43/PMK.04/2005, effective from July 2005, and No. 134/PMK.04/2007, effective 1 January 2008. HJE minimum: lower bound of brand specific retail price. NA: not applicable. KLB: Klobot (corn husk wrapped cigarettes); KLM: Klembak (incense clove cigarettes); SPT: hand-rolled white (tobacco only) cigarettes.

scales and downward by 15 percent for those in the smallest production scales.

For hand-rolled *kreteks*, there are a number of differences between the 2007 and 2008 regulations. A new category was established for filtered, hand-rolled *kreteks* (SKTF). The number of production scales was reduced from four to three, and the same tax rates were applied to firms producing ≤ 500 million sticks per year. For (filterless) hand-rolled *kreteks* (SKT), the *ad valorem* rates were revised downward substantially. For the smallest SKT producers, the HJE was revised downward by 38 percent, and the *ad valorem* rates eliminated entirely. However, filtered hand-rolled *kreteks* (SKTF) face the same *ad valorem* rates as machine-made *kreteks*. Perhaps the most important change is the specific tax of Rp 35 for all production categories with a slightly lower tax (Rp 30) for hand-rolled *kretek* (SKT) firms producing ≤ 500 million sticks per year.

As before, other tobacco products produced on a small scale are taxed at low rates. These include cornhusk cigarettes, rhubarb cigarettes, *kreteks* with incense; white (tobacco only) hand-rolled cigarettes, cigars, and sliced tobacco leaves. In addition, there were some changes in the production scales for other cigarettes and tobacco leaf.

To achieve their revenue targets for excise, the Ministry of Finance can adjust the *ad valorem* tax rates, specific per-stick tax, the cut-off points for firm production scales, and the number of firm production scales. The HJE is based on firm production costs but can also be modified by the Ministry of Finance, as indicated in Table 3.1. Any of these factors can be adjusted once or more, or not at all during a single year for a given tobacco product or production scale. However, hand-rolled products and firms with small-scale production levels have consistently enjoyed the most favorable tax rates (Table 3.2, Annex 3.2).

Between 1996 and 2001, there was at least one adjustment annually in the tobacco tax scales, and more than one adjustment was made in 2000 and 2001. Between 2000 and 2007, there were no changes in the *ad valorem* rates for SKM and SPM and, between 2002 and 2007, there were no changes in SKT or other cigarette products. There were, however, adjustments in the HJE. In 2001, one HJE was applied to SKM and SPM products from all production scales, and this system switched back to a tiered HJE by production scale after one year.

To encourage exports, net exporters pay reduced *ad valorem* rates for their domestically sold products. For all types of cigarettes, cigars, or sliced leaf, firms that export more than their domestic sales enjoy reduced *ad valorem* rates of 4 percent percentage points of the tax rate for the same type of tobacco product sold domestically (Annex 3.3). Imported tobacco products are taxed at rates comparable to domestically produced products at the highest firm production scales plus an import duty of 15 percent. In practice, only white machine-made cigarettes are imported. For imported products, the HJE is composed of the port value (CIF) and import duty on which the *ad valorem* and VAT is levied, and the profit and transaction costs are added (Annex 3.4). No taxes are paid for exported tobacco products, or sliced tobacco grown for personal consumption.

Cigarette Taxes and Prices

Using household data about prices paid for cigarettes and excise tax data about revenues, we can calculate the tax rates for the three main types of cigarettes (Table 3.3). The tax rate averages 37 percent of sales price, with the lowest rate (21 percent) for hand-rolled *kreteks* and the highest (46 percent) for machine-made *kreteks* (Table 3.3).

To estimate the tax share as a percent of government retail price (HJE), it is necessary to use

Table 3.2: Change in Tobacco Tax Scales for Domestically Produced and Consumed Products, 1996 to 2007

| Date | Machine-made kreteks (SKM) | | Hand-made kreteks (SKT) | | Machine-made white cigarettes (SPM) | | Other cigarettes | | Change in production scales |
|----------|----------------------------|----------|-------------------------|----------|-------------------------------------|----------|------------------|----------|-----------------------------|
| | Tax (%) | HJE (Rp) | Tax (%) | HJE (Rp) | Tax (%) | HJE (Rp) | Tax (%) | HJE (Rp) | |
| 5/ 1996 | 20-36 | 30-80 | 2-16 | 20-60 | 20-38 | 25-75 | 1-8 | 20-60 | X |
| 4/ 1997 | 20-36 | 40-85 | 2-16 | 25-65 | 20-38 | 30-80 | 1-8 | 25-65 | X |
| 4/ 1998 | 20-36 | 140-225 | 2-16 | 80-150 | 20-38 | 30-125 | 1-8 | 50-125 | |
| 4/ 1999 | 20-36 | 110-225 | 4-16 | 55-150 | 20-36 | 110-225 | 4-16 | 55-150 | X |
| 4/ 2000 | 28-40 | 120-250 | 12-20 | 65-165 | 28-40 | 70-150 | 12-20 | 65-165 | |
| 11/ 2000 | 26-40 | 150-280 | 10-20 | 100-200 | 26-40 | 120-180 | 10-20 | 100-200 | |
| 4/ 2001 | 26-40 | 170-305 | 4-20 | 125-230 | 26-40 | 90-195 | 10-20 | 100-200 | |
| 7/ 2001 | 26-40 | 190-325 | 4-20 | 150-255 | 26-40 | 103-208 | 4-20 | 100-200 | |
| 12/ 2001 | 26-40 | 270 | 4-20 | 175-225 | 26-40 | 150 | 4-8 | 100-125 | X |
| 11/ 2002 | 26-40 | 320-400 | 4-22 | 200-340 | 26-40 | 200-270 | 4-8 | 125-150 | X |
| 1/ 2003 | 26-40 | 320-400 | 4-22 | 200-340 | 26-40 | 180-250 | 4-8 | 125-150 | |
| 7/ 2005 | 26-40 | 370-460 | 4-22 | 230-400 | 26-40 | 210-295 | 4-8 | 150-180 | |
| 4/ 2006 | 26-40 | 410-510 | 4-22 | 255-440 | 26-40 | 235-320 | 4-8 | 165-200 | |
| 3/ 2007 | 26-40 | 440-550 | 4-22 | 275-475 | 26-40 | 255-345 | 4-8 | 180-215 | |

Source: Excise Tax Directorate, Ministry of Finance. HJE is the lower bound of the brand specific "retail sales price" or factory prices plus taxes and profits. Specific per stick taxes were implemented since 2007, and are listed in Table 3.1.

data from the Excise Tax Directorate or collect market data because the HJE is brand- and firm-specific. An opportunistic market survey was conducted among street vendors, supermarkets, and small grocers in Depok and Jakarta, and includes the most popular brands of cigarettes sold.⁶⁵ The survey collected data about banderol prices and sales prices. The banderol price listed on the tax ribbon is the HJE multiplied by the number of sticks. Where sales prices exceed banderol prices, firms are obligated to report to the tax directorate to allow for an adjustment of the HJE. It is intended, therefore, that the price at point of sale is

lower than the banderol price. This survey indicates that sales prices are well below banderol prices for nearly all brands surveyed. Banderol prices were approximately 22 percent higher than sales prices for SKM, 19 percent higher for SKT, and 17 percent higher for SPM. Using this estimate, the tax share as a percentage of the HJE is approximately 31 percent (Table 3.3). The largest difference between the two rates is for SKM. Hand-rolled *kreteks* have the lowest rates of taxation as well as the lowest banderol prices, and the difference between the two rates is relatively small.

Table 3.3. Cigarette Tax Rates as % of Sales Prices and as % of Retail Price (HJE), by the Three Main Types of Cigarettes, 2005

| Type of cigarette | Cigarette Tax Rate | |
|------------------------------------|--------------------|-------------------------|
| | % of sales price | % of retail price (HJE) |
| Machine made- <i>kreteks</i> (SKM) | 46.0 | 37.7 |
| White cigarettes (SPM) | 39.9 | 34.2 |
| Hand-made <i>kreteks</i> (SKT) | 21.4 | 18.0 |
| Average | 36.8 | 30.7 |

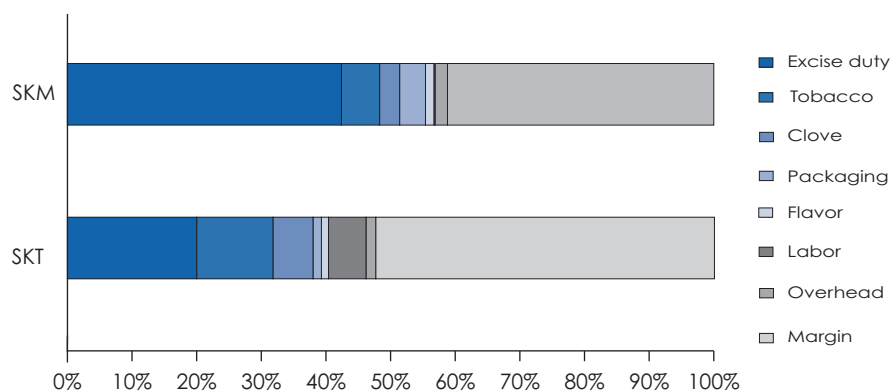
Sources: Price per pack from SUSENAS 2005 national household data, industry figures for total production by type of cigarette, and excise tax directorate figures for revenue by type of cigarette. HJE is the "retail price" which represents the factory price inclusive of tax and profits. HJE across brands estimated from an opportunistic survey that reported averages of the official price premium over the sales price.

In 2007, amendments to the Excise law No. 11 revised upward the caps on the tobacco excise tax from 55 to 57 percent of the retail price (HJE), or from 250 percent to 275 percent of the manufacturers' production cost.⁶⁶ Holding other components constant, applying the maximum excise allowable by law (57 percent of HJE) would approximate a tax rate of 64 percent of sales price.

In addition to the tax, the main components of the price of cigarettes include the profit margin, tobacco,

cloves, labor, packaging, and flavoring. Graph 3.1 illustrates the projected 2005 common size statements for hand-rolled *kreteks* (SKT) and machine-made *kreteks* (SKM) produced by Gudang Garam, the cigarette firm with the largest market share. *Kreteks* are a mix of about two-thirds tobacco and one-third cloves. Up to 30 percent of the tobacco component relies on leaf imports and is, therefore, sensitive to price fluctuations based on the strength of the rupiah. This is similar to the packaging and flavoring, which

Graph 3.1: Common Size Statements, Hand-rolled *Kreteks* (SKT) and Machine-rolled *Kreteks* (SKM), Gudang Garam, Projected 2005



Source: Jardine Fleming Research

Overall, real cigarette prices have remained remarkably stable between 1970 and 2005.

also relies on imported products. Flavorings are produced by multinational companies. Packaging costs are higher for SKM (4 percent) compared with SKT (1.3 percent), perhaps related to the cost of filters. The higher proportion of cloves in the SKT cost breakdown (6.2 percent compared with 3.1 percent for SKM) could reflect small or no inventory for stockpiling cloves. Clove traders also play a role in stockpiling, which could result in higher prices for small producers. Labor forms nearly 6 percent of SKT costs for Gudang Garam, compared with 0.2 percent for SKM. The projected profit margin was 52 percent of for SKT, and 41 percent for SKM. In the past, firms have been willing to absorb excise tax increases and reduce their margins to maintain or increase market share.⁶⁷

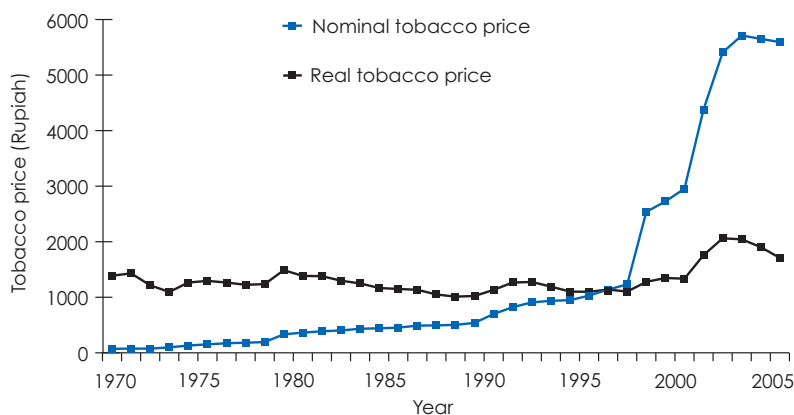
The change in nominal and real prices of cigarettes (*kreteks* and white) between 1970 and 2005 is illustrated in Graph 3.2. While nominal prices increased rapidly after the economic crisis in 1997 to

1998, real cigarette prices remained largely unchanged between 1970 and 2002, after which there was a slight increase that could be related to increases in the excise tax rates. Overall, real cigarette prices have remained remarkably stable between 1970 and 2005.

There was a decline in per capita domestic consumption as measured by domestic sales between 2001 and 2003 (Graph 3.3). However, 2001 production levels were achieved again in 2005, corresponding with the decline in real prices and no tax increases (Chapter VI). Given that demand is inelastic and consumption changes slowly, the decline in per capita consumption as measured by tax paid sales probably captures the industry's ability to change production levels in response to the changes in taxes rather than changes in demand for cigarettes. Household level data report 7.3 million new smokers between 2001 and 2004, and aggregate tobacco consumption increased by 16 percent.⁶⁸

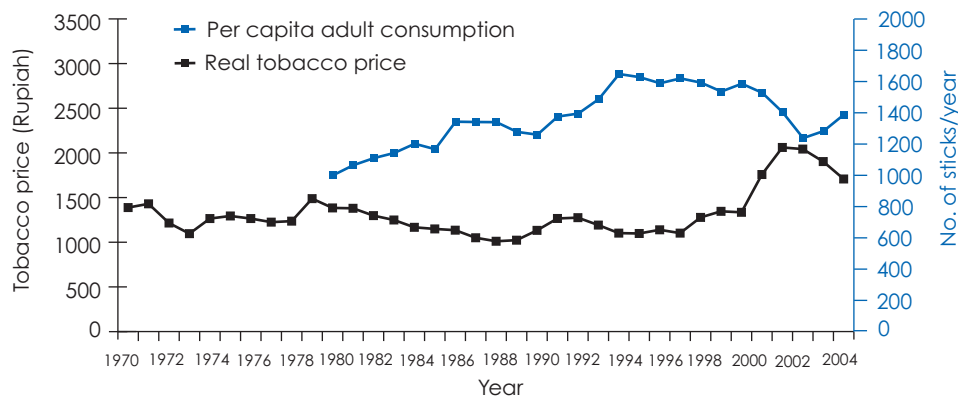
Tobacco in Indonesia became 50 percent more affordable between 1980 and 1998.

Graph 3.2: Comparison of Nominal and Real Tobacco Prices, 1970 to 2005



Source: Price data to 2001 from Djutaharta et al 2005; recent figures processed from SUSENAS.

Graph 3.3: Comparison of Real Tobacco Prices and Per Capita Annual Domestic Sales, 1970 to 2005



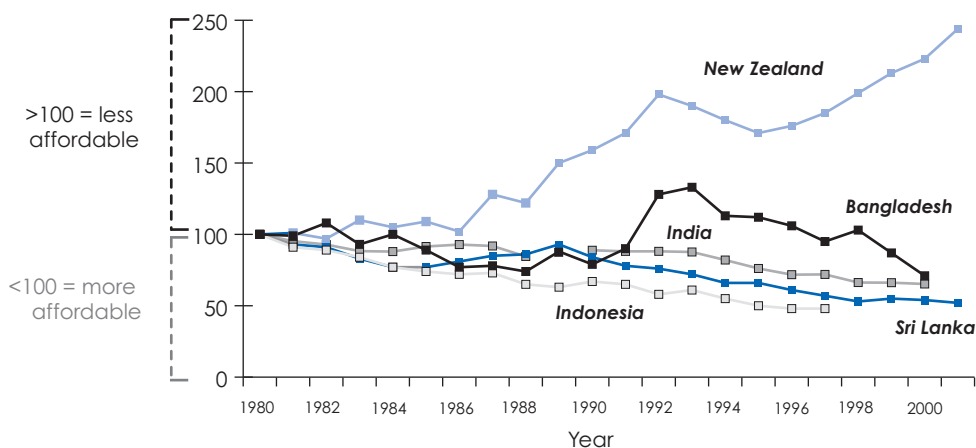
Sources: Tobacco price data to 2001 from Djutaharta et al 2005; Recent figures processed from SUSENAS; domestic sales from FAO and industry reports, subtracts exports, and adds imports; adult population 15+ from BAPPENAS, BPS, UNFPA 2005.

Affordability of Tobacco Products

Guindon et al estimated cigarette affordability for countries in South East Asia.⁶⁹ Affordability is calculated by dividing relative tobacco prices by a country's per capita gross domestic product (GDP). An index of greater than 100 means that tobacco became less affordable over time. This occurred in New

Zealand, where real tobacco prices more than tripled between 1980 and 2000, making tobacco much less affordable (Graph 3.4). In contrast, an index of less than 100 means that tobacco became more affordable. Tobacco in Indonesia became 50 percent more affordable between 1980 and 1998, similar to Sri Lanka and India.

Graph 3.4: Affordability of Tobacco Products, 1980 to 2000



Source: Guindon, et al. 2003.

Cigarette taxes and prices in Indonesia are low relative to other low-income countries and regional averages.

We extended this analysis using data from 2001 to 2005. The affordability index was almost flat during this period with the same index values in 2001 and 2005.⁷⁰ The annual GDP growth rate was estimated at 6 percent between 2003 and 2004.⁷¹ This suggests that changes in the tobacco taxes did not reduce cigarette affordability.

Other factors that affect affordability are the availability of tobacco products at different prices and “quality,” which makes smoking affordable for all income groups. The price of cigarettes consumed varies by income levels. The higher the smoker’s household income, the higher the price per pack of cigarettes purchased. On average in 2005, high-income smokers purchased cigarettes that were about 40 percent more expensive than those purchased by low-income households (Table 3.4). Lower income households tend to consume more hand-rolled *kreteks* relative to machine-made cigarettes, because of their

lower sales prices on average. In addition, high-income smokers consume more sticks of cigarettes.

Cigarette taxes and prices in Indonesia are low relative to other low-income countries and regional averages. Graph 3.5 illustrates the simple average tax rate for a number of different countries. Tax rates average 51 percent for low-income countries and 58 percent for countries in the East Asia and Pacific region. The average price per pack averages US\$ 1.18 in low-income countries, and US\$ 2.28 for countries in the Asia-Pacific. The Asia-Pacific region encompasses high and middle income nations such as Singapore and Malaysia, in addition to very poor countries such as Cambodia. In some middle- and high-income countries (i.e., Turkey) and other countries where tobacco taxes have been used as a part of comprehensive strategies to reduce tobacco use (i.e., Thailand), taxes account for two-thirds or more of the retail price.

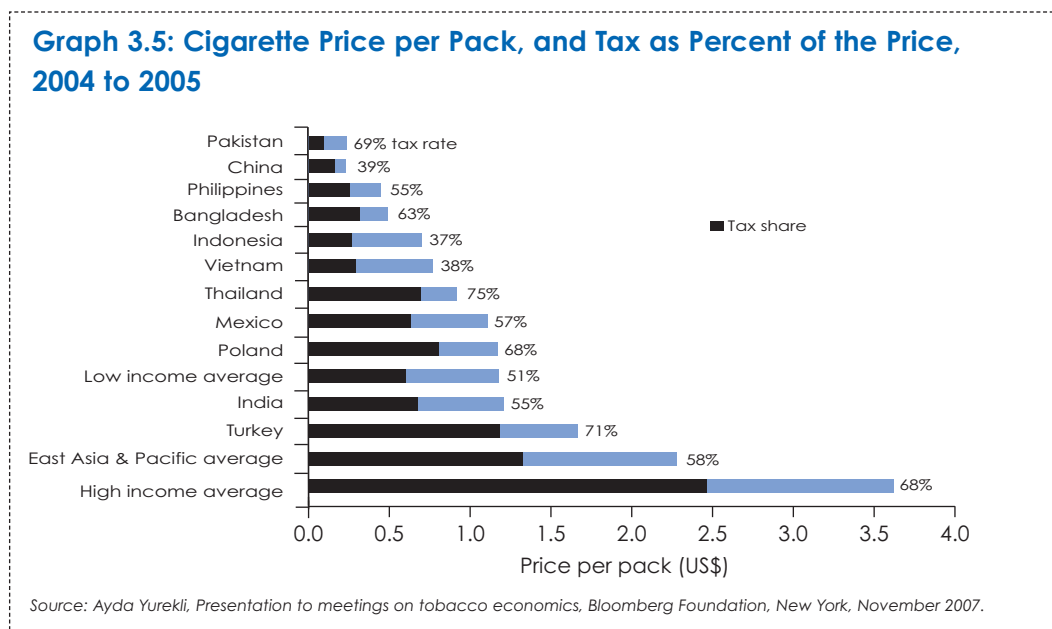
Note About *ad valorem* and Specific Tax Systems⁷²

The tobacco tax system in Indonesia applies both an *ad valorem* (based on value) and a specific tax

Table 3.4: Cigarette Expenditures per Pack for the Three Main Types of Products, by Household Expenditure Quintile, 2005, Rupiah

| Type of cigarette | Household expenditure quintiles | | | | |
|-----------------------------|---------------------------------|-------|-------|-------|----------------|
| | 1 (lowest) | 2 | 3 | 4 | 5 (highest) |
| Machine-made <i>kreteks</i> | 4,865 | 5,622 | 6,168 | 6,738 | 7,279 |
| Hand-rolled <i>kreteks</i> | 4,079 | 4,834 | 5,258 | 5,731 | 7,308 |
| Machine-made whites | 3,702 | 4,334 | 4,270 | 5,271 | 6,524 |
| Average (Rupiah) | 4,404 | 5,186 | 5,704 | 6,353 | 7,232 |
| Average (US\$) | 0.44 | 0.52 | 0.57 | 0.64 | 0.72 |

Source: SUSENAS. Pack of 16 sticks.



(based on quantity). Either system has advantages and disadvantages in terms of generating higher revenues, administration, and promoting higher prices.

The specific tax system has an advantage in terms of generating higher revenues, given that it protects revenues from price wars or reductions. Specific excises can facilitate revenue forecasts where buying patterns are based on “high” or “low” quality products. The specific tax system also provides an incentive to increase cigarette prices, because any increase in price is returned to the manufacturer as revenues. Because of the price effect, specific excises that impose the same tax per cigarette are more effective in discouraging cigarette consumption. In contrast, the *ad valorem* taxation has a multiplier effect; a part of any increase in the price at point of sale is returned to the government as tax revenue. With an *ad valorem* tax, the government effectively subsidizes any price reduction. The *ad valorem* system provides no guarantee of higher revenues because of inflation and price wars, unless a minimum price at point of sale is specified. The multiplier effect of the *ad valorem* tax creates a disincentive to the manufacturer to improve product’s

quality. Specific taxes, on the other hand, may lead to greater consumption of high-quality brands.

Indonesia has favored *ad valorem* excises for hand-rolled and domestically produced *kreteks* relative to white cigarettes or prestige brands that are imported or produced locally by foreign companies. *Ad valorem* excise in this situation will give greater protection to domestic producers of less expensive (“lower quality”) brands. However, when there are large quality differences between domestic and imported products, import duties can be imposed on the imports to offset the effect that a specific excise negatively affects lower-price or quality domestic production. When customs duties are imposed for protection, specific excises can be imposed on both domestic production and imports.

Lastly, specific excises have the advantage in terms of ease of administration. This is because specific taxes are based on quantity and not the value of the product. Under *ad valorem* taxation, determining the value is particularly difficult, and firms can game the system to reduce their tax liabilities. International experience has demonstrated

Tax increases that aim to reduce consumption need to be higher than the general rate of inflation and large enough to offset increases in income.

that *ad valorem* taxes keep pace with inflation better than specific taxes. *Ad valorem* taxes, however, are no guarantee that tax rates will keep pace with inflation, and may require adjustment. Specific taxes can keep

pace with inflation if they are automatically adjusted to the consumer price index (CPI), or other price indicators. However, it is very important that the inflation adjustment be automatic. Such an adjustment should be made by administrative order, and should not require a decision by an executive agency or approval by a legislative body. Tax increases that aim to reduce consumption need to be higher than the general rate of inflation and large enough to offset increases in income.

Endnotes for Chapter 3

- ⁶⁴ Tarmidi L. Changing structure and competition in the *kretek* cigarette industry. *Bulletin of Indonesian Economic Studies* 1996;32(3) :85-107.
- ⁶⁵ Ahsan A, Wiyono N, Setyonaluri D, Prihastuti D, Sowwam YM. Tobacco control country study, Indonesia. Demographic Institute, Faculty of Economics, University of Indonesia, 2007.
- ⁶⁶ Law of the Republic of Indonesia, Number 11, 1995, about Excise; and Law of the Republic of Indonesia, Number 39, 2007, about the amendment to Law number 11, 1995, about Excise.
- ⁶⁷ Jardine Fleming Research, 1999.
- ⁶⁸ Ahsan A, Wiyono IN, Setyonaluri D, Prihastuti D, Halley YM, Sowwam M. Tobacco control country study. Demographic Institute, Faculty of Economics, University of Indonesia, 2007. Data processed from SUSENAS.
- ⁶⁹ Guindon GE, Perucic A-M, Boisclair D. Higher tobacco prices and taxes in South-east Asia: an effective tool to reduce tobacco use, save lives and generate revenue. World Bank. Health, Nutrition and Population Discussion Paper. Economics of Tobacco Control Paper No. 11., October 2003.
- ⁷⁰ Data about real per capita GDP and tobacco CPI from the Bank of Indonesia and the Central Bureau of Statistics.
- ⁷¹ World Bank. Spending for development: making the most of Indonesia's new opportunities. *Public Expenditure Review*, 2007.
- ⁷² Summarized from Chaloupka FJ, Hu TW, Warner KE, Jacobs R, Yurekli A. The taxation of tobacco products. In: Jha P, Chaloupka FJ, eds. *Tobacco control in developing countries*. New York: Oxford University Press, 2000.

IV. Demand Studies

This chapter reviews the studies done in Indonesia about the demand for cigarettes using aggregate and household level data.^{73, 74} A substantial body of literature demonstrates that tobacco products follow the basic downward-sloping demand curve, and demand for tobacco products responds to changes in price. Surveys of the economic literature have found that price elasticity of demand falls between -0.25 and -0.50 in high income countries, or that a 10 percent increase in price results in 2.5 to 5.0 percent reduction in consumption.⁷⁵ Theory predicts that demand would be more responsive to prices in low-income countries, and this is largely confirmed by empirical evidence. Studies in low-income settings have reported similar or greater reductions in consumption in response to price changes.⁷⁶

Despite the different datasets and methods, the range of price elasticities reported in Indonesian studies is consistent, ranging between -0.29 and -0.67, or that a 10 percent increase in cigarette prices results in a decline in cigarette consumption between 2.9 and 6.7 percent. At the same time, studies examined here predict income elasticities between 0.32 and 0.76, or that a 10 percent increase in income results in an increase in tobacco consumption between 3.1 and 7.6 percent. This implies that cigarettes are normal goods. A tax increase aimed to reduce tobacco consumption, therefore, needs to be large enough to offset the increases in consumption expected with rising household incomes. This finding contrasts with the U.S., Europe, and other high-income countries, where an increase in household income is associated with a decrease in the demand for cigarettes, or that cigarettes are an inferior good in those settings. Simulations that take into consideration increases in income that offset the price effect suggest that a 10 percent increase in tobacco taxes will result in a net decline in consumption of 0.9 to 3.0 percent in Indonesia.

This chapter also describes simulations that predict the impact of a tax increase on spending among low-income households, health, and tax revenues. A tobacco tax increase could result in an improvement in the expenditure distribution if price-sensitive low-income households reduce spending. A tax increase that reached the global benchmark of 70 percent of sales price under the current excise system could avert between 2.5 and 5.9 million tobacco-related deaths. At the same time, revenue gains would amount to additional revenues of Rp 23.8 to 75.8 trillion (US\$ 2.6 to 8.3 billion).

Studies Using Aggregate Data

Several studies have examined tobacco demand using aggregate data. Bird used annual aggregate data for 1970 to 1994, to estimate an error correction model that accounts for non-stationary price and income data.⁷⁷ The study also took into account several policy changes that could be expected to have an impact on tobacco consumption. Dummy variables are included for the mechanization of filter *kretek* production by Gudang Garam and Djarum in 1980 to 1981. Another series of dummy variables represent the initial years after lifting a ban on television advertising of tobacco (1989 to 1994). The models generate long-run price and income elasticities of -0.43 and 0.83, respectively. The dummy variable for the relaxation of restrictions on television advertising was significant and negative, contrary to expectations. The author explains that this may be capturing the impact of a change in the tax scale and establishment of retail prices by the Ministry of Finance in 1991.

The positive and significant coefficient for the dummy variable for mechanization confirms that the widespread introduction of mechanization in *kretek* filter manufacturing resulted in a jump in consumption in the early 1980s. The increase in *kretek* production was accompanied by industry investments in machinery, sophisticated packaging, product

distribution, and advertising that probably also contributed to increased consumption (see Chapter V).

De Beyer and Yurekli used a log linear model with aggregate time series data for 1980 to 1995. Their results were reported in a World Bank briefing paper.⁷⁸ Limiting their analyses to *kreteks*, they report a price elasticity of demand of -0.51 and an income elasticity of 0.35.

A follow-up study by Djutaharta et al estimates a series of models using annual (1970 to 2001) and monthly (1996 to 2001) time series data.⁷⁹ The models included dummy variables for the introduction of health warnings on cigarette packages (set to 1 for the years 1991 to 2001), for the economic crisis (set to 1 for the years 1997 to 2001), and a time trend. Annual data from 1970 to 1996 yield a long-run price elasticity of -0.57 and income elasticity of 0.46. Using annual data from 1970 to 2001, their models yield slightly lower price elasticities ranging from -0.33 to -0.47, and income elasticities from 0.14 to 0.51. They report that the financial crisis caused a 22 percent increase in cigarette consumption. The authors attribute this increase to stress. The dummy variable for the years 1991 to 2001 representing the introduction of health warnings was not significant. The linear time trend was significant in the model using the annual data from 1970 to 2001; from this result, the authors conclude that consumption increased by about 1 percent annually independent of changes in price and income.

Using monthly data from 1996 to 2001, they report price elasticities from -0.32 to -0.43. Income elasticity was estimated at approximately 0.47, although the results were insignificant. The authors note that that the price data include both tobacco and alcohol. Since alcohol consumption is forbidden in Indonesia's predominantly Muslim society, its consumption is extremely low. However, price elasticity could be biased with this inclusion.

Guindon, Perucic, and Boisclair analyze an original time series model using data from Indonesia for 1970 to 2000, as a part of a larger analysis for the South East Asian region.⁷⁴ Using a conventional model not accounting for addiction, they report a short-run price elasticity of -0.29. Using a myopic addiction model with a lagged consumption variable, they report price elasticity of -0.32. Income elasticities are 0.72 and 0.32 for the conventional and myopic addiction model, respectively.

Marks estimates a series of models for price elasticity for cigarettes using aggregate data for 1999 to 2002, and taking into consideration population and income growth as well as substitution between cigarette products.⁸⁰ He reports price elasticities ranging from -0.59 to -1.57 based on models using different time periods. Those estimates based on longer times series (1999 to 2002) yielded price elasticities between -0.59 and -0.67, and these figures are consistent with previous studies. Estimates of own price elasticities for the type of cigarettes range from -0.82 for hand-made *kreteks*, -1.37 for machine-made *kreteks*, and -2.11 for white cigarettes; these elasticity estimates are higher because it is relatively easy for a smoker to switch to different types of tobacco products.⁷³

Based on actual quantities of cigarettes consumed, the expenditure elasticities confirm that all three types of cigarettes are normal goods, with estimates of 0.10, 0.65, and 0.74, for hand-made *kreteks*, machine-made *kreteks*, and white cigarettes, respectively, and an average across product types of 0.46. Marks also calculates "quality adjusted" expenditure elasticities as the product of price and quantity reflected in the mean expenditure share, reasoning that price is an indicator of quality. Quality-adjusted expenditure elasticities average 0.63 across the three types; 0.27 for hand-made *kreteks*, 0.77 for machine-made *kreteks*, and 1.16 for white cigarettes. This suggests that white cigarettes are superior goods (>1).

Studies Using Household Data

Aggregate data measure tax paid sales rather than consumption, although this is unlikely to be a serious problem given minimal illicit trade in cigarettes. There are, however, disparities between tax-paid sales and household consumption. Analyses of household and individual reports of tobacco consumption allow for a more in depth exploration by population subgroups, age, gender, income, and education. Erwidodo, Molyneaux, and Pribadi use cross-sectional data from the 1999 SUSENAS (national household socioeconomic survey) to estimate a Almost Ideal Demand System (AIDS).⁸¹ They report a price elasticity of -1.0.

Adioetomo et al uses the same cross-sectional dataset from 1999 to analyze tobacco consumption in more detail.⁸² In addition to cigarette prices, the ordinary least squares models included as independent variables household expenditures, excise tax dummies, area, large islands, residence, sex, age, and education. They report that prices do not significantly impact a household's decision to consume tobacco, but prices affect the number of cigarettes consumed (conditional price elasticity of -0.60). Poorer households are more responsive to changes in price, consistent with theory (-0.70). They also report an income elasticity of 0.76.

Witeolar, Rukumnuaykit, and Strauss use a household panel of the Indonesian Family Life Survey in 1997 and 2000 to predict smoking uptake among men.⁸³ They describe an "alarming trend" in smoking prevalence for males 15 to 19 years old, rising from 32 percent to 43 percent between 1993 and 2000. They report that parental education has a significant and negative effect on smoking participation and intensity among males 15 to 19 years old, and an individual's own education is significant for adult males 20 to 59 years old. Using household budget shares of tobacco, they report own price elasticity of -0.8. Households below and above the per capita expenditure median have an expenditure elasticity of 1.2 and 0.7,

respectively. Per capita household expenditures are not associated with smoking uptake among males 15 to 19 years old. Male adolescent smokers have a conditional price elasticity of -0.3 in models including province and urban fixed effects.

Systematic reporting bias in individual data could be a factor explaining the non-significant findings about uptake, given that this finding is inconsistent with international and regional research.^{74, 76, 84} Both studies also report substantial price variation in the data. Particularly for the cross-sectional data, such variation may reflect preferences for different types of cigarettes, quality, and tastes, rather than differences in actual prices because regional price variations are negligible.

In making its own revenue forecasts in 2002, the Excise Tax Directorate has estimated price elasticities by type of cigarette, specifically -1.12 for hand-rolled *kreteks*, -0.52 for machine-made *kreteks*, and -0.14 for white cigarettes.⁸⁵ These estimates have been updated, and the Tax Directorate now applies price elasticities of -1.34 for hand-rolled *kreteks*, -1.12 for machine-made *kreteks*, and -0.55 for white cigarettes.⁸⁶ The studies used to generate these estimates have not been publicly released. In prior studies commissioned by the Ministry of Finance, researchers used data from the 2002 SUSENAS (national household socioeconomic survey) to estimate three double log ordinary least squares models to inform about price elasticity for each of the three major types of cigarettes.⁸⁷ Estimating the models separately, rather than simultaneously, overestimates the price effect because substitution across the three types of cigarettes is not considered; nor do they account for increases in income that offset price increases. Despite hand-rolled and machine-made products advertised to and consumed by distinct market segments, customers regularly choose from these products sold side-by-side in the market. Increases in the prices of one type of tobacco product that lead to declines in its consumption could be offset by increased consumption of a different kind or

cheaper product. The price elasticities quoted by the tax directorate are high in comparison with the other studies, suggesting that, because of these issues with the estimations, the government could be overestimating the reductions in demand resulting from cigarette tax increases.

Impact of an Increase in Tobacco Prices on Low-income Households

To examine the impact of an increase in tobacco taxes on the poor, Marks simulated the changes in expenditure on tobacco primarily as a result of a 99 percent increase in the price for hand-rolled *kreteks* (SKT), which tend to be consumed by poorer households.⁸⁰ The simulation model increases the tax on SKT to 60 percent (from 22 percent), on SKM to 57 percent (from 46 percent), and on SPM to 46 percent (from 45 percent). Total changes in quantities and prices for the three types of cigarettes are used to calculate new expenditure shares.

Table 4.1 first presents the shares in total cigarette expenditures for each of the three main types of

cigarettes. For the poorest 10 percent (decile 1), cigarettes amounted to 5.9 percent of total household spending (3.1 percent on SKT, 2.5 percent on SKM, and 0.3 percent on SPM). For the wealthiest 10 percent (decile 10), cigarettes amounted to 9.1 percent of total household spending (1.9 percent on SKT, 6.4 percent on SKM, and 0.8 percent of SPM). This confirms that wealthier households purchase different types of cigarettes that are higher priced, and is consistent with higher mean expenditures for wealthier households reported by Adioetomo et al.⁸²

The simulation suggests that a large increase in the price of SKT would result in small changes in cigarette expenditures overall (-1 percentage point). For households in the lowest expenditure decile, slightly increased spending on SKT is offset by changes in spending on other types of cigarettes. However, the simulation makes the assumption that price elasticities of demand are constant across the income distribution. Assuming that price elasticities are higher among the poor, a tax increase could result in an improvement in the expenditure distribution if price-sensitive low-income households reduce spending.

Table 4.1: The Impact of a Tax Increase on Hand-rolled Kreteks (SKT) on Tobacco Spending, by Household Expenditure Deciles

| Decile | Mean Expenditure Share | | | | | | | |
|--------------|------------------------|-----|-----|------------|------------------------------------|-----|-----|------------|
| | Actual in 2002 | | | | After a 99% price increase for SKT | | | |
| | SKT | SKM | SPM | Total | SKT | SKM | SPM | Total |
| 1 | 3.1 | 2.5 | 0.3 | 5.9 | 3.4 | 2.3 | 0.3 | 5.9 |
| 2 | 3.9 | 3.8 | 0.3 | 8.0 | 4.2 | 3.5 | 0.3 | 8.0 |
| 3 | 4.6 | 4.5 | 0.4 | 9.4 | 5.0 | 4.1 | 0.3 | 9.4 |
| 4 | 4.4 | 5.1 | 0.5 | 9.9 | 4.7 | 4.7 | 0.5 | 9.9 |
| 5 | 4.5 | 5.5 | 0.4 | 10.4 | 4.9 | 5.1 | 0.4 | 10.3 |
| 6 | 4.4 | 6.4 | 0.5 | 11.3 | 4.8 | 5.9 | 0.5 | 11.1 |
| 7 | 4.2 | 6.6 | 0.5 | 11.3 | 4.6 | 6.1 | 0.5 | 11.2 |
| 8 | 3.4 | 7.3 | 0.6 | 11.3 | 3.7 | 6.7 | 0.6 | 11.0 |
| 9 | 2.8 | 7.4 | 0.5 | 10.7 | 3.1 | 6.8 | 0.5 | 10.4 |
| 10 | 1.9 | 6.4 | 0.8 | 9.1 | 2.1 | 5.9 | 0.7 | 8.8 |
| Total | 3.7 | 5.5 | 0.5 | 9.7 | 4.0 | 5.1 | 0.4 | 9.6 |

Source: Marks, 2003. Hand-rolled kreteks (SKT), machine-made kreteks (SKM), white cigarettes (SPM); Based on SUSENAS data for 2002. A 99% price increase raised the tax to 60% of actual sales price for SKT; the model also applied a 57% and 46% tax of sales price for SKM and SPM.

Impact of an Increase in Tobacco Taxes on Cigarette Consumption and Government Revenue

These studies demonstrate that cigarette demand is inelastic, or that the percentage reduction in demand is less than the percentage increase in price. Therefore, an increase in tobacco taxes will result in a net increase in total government revenue from the tax because many smokers will continue smoking at higher prices. Sunley, Yurekli, and Chaloupka examine the impact of an increase in cigarette tax on cigarette consumption and tax revenue in 70 countries.⁸⁸ They conclude that an increase in taxes that resulted in a 10 percent increase in price would result in a 3.5 percent reduction in consumption in low-income countries and a 2.2 percent reduction in high-income countries. A 10 percent increase in cigarette prices would increase tax revenues in all countries, averaging 4.8 percent in low-income countries and 7.2 percent in high-income countries. The percentage of revenue generated from a cigarette price increase is larger in high-income countries because of the relatively smaller decline in consumption.

A number of studies have simulated the impact of a tax increase on consumption and revenues using Indonesian data. Studies using aggregate time series data and household surveys predict consistent results; a modest 10 percent increase in cigarette taxes would reduce consumption by 0.9 to 3.0 percent and increase cigarette tax revenue by 7.4 to 9.0 percent (Table 4.2). The relatively larger gains in tax revenues in Indonesia

compared with other developing countries are related to weaker consumer response to price increases, and ease of product substitution.

De Beyer and Yurekli estimated the impact on government revenue based on 1998 SUSENAS data, assuming no changes in smuggling or substitution.⁷⁸ They estimate that a 10 percent increase in tax would result in an increase in price of 3 percent and a decline in cigarette consumption of 2.0 percent. The resulting increase in tobacco tax revenue would amount to 8.0 percent, or 0.26 percent of GDP. Using similar assumptions and yearly time series data, Djutaharta et al predict that a 10 percent increase in tax will result in a 2.6 percent increase in the price of cigarettes, similar to de Beyer and Yurekli's estimate of 2.0 percent.⁷⁹ They estimate that this would result in a 0.9 percent decline in consumption and a 9.0 percent increase in tax revenues.

Using a cross-section of national household level data, Adioetomo et al estimate a higher impact of a tax increase on cigarettes prices (4.9 percent), and a decline in consumption of 3.0 percent.⁸² They predict that a 10 percent increase in tax would result in a 6.7 percent increase in government revenue. Lastly, Sunley, Yurekli, and Chaloupka estimate that a 10 percent increase in tobacco tax would result in a 2.4 percent decline in cigarette consumption and a 7.4 percent increase in cigarette tax revenues. Given that cigarettes have different tax rates, substitution to products with lower prices and tax rates would likely result in lower revenues.

Table 4.2: Simulations of the Impact of a 10% Increase in Cigarette Tax on Cigarette Consumption and Government Tobacco Excise Revenues

| Study | % reduction in consumption | % increase in revenue |
|--|----------------------------|-----------------------|
| De Beyer and Yurekli ⁷⁸ | 2.0 | 8.0 |
| Djutaharta et al ⁷⁹ | 0.9 | 9.0 |
| Adioetomo et al ⁸² | 3.0 | 6.7 |
| Sunley, Yurekli, Chaloupka ⁸⁸ | 2.4 | 7.4 |

Using data from Indonesia, Guindon et al simulate the effect of a 5 percent increase in real tobacco prices to 2010 from a 2000 baseline.⁷⁴ A systematic annual tax increase is relevant for Indonesia where real prices have remained largely unchanged since 1980. The simulations assume price and income elasticities of -0.75 and 0.50, respectively. They also assume that the increases in prices are driven solely by tax increases, and that real GDP growth rates are 4 percent annually. Tax revenue gains would be substantial, amounting to a cumulative total over ten years of Rp 83.1 trillion (US\$ 9 billion).

We examine the impact of a tax increase on future mortality and revenues using a static model of the 2008 cohort of smokers (Table 4.3). There are currently about 57 million smokers in Indonesia. A recent review reported that between one-half and two-thirds of smokers would eventually die of tobacco-related illness.⁸⁹ Taking into consideration deaths from other causes but also very low cessation rates in Indonesia, we assume that the expected mortality among this group is 50 percent (28.45 million). In addition, the health gains from quitting decline with increasing age. Whereas 95 percent of mortality could be averted by quitting at age

29 years or younger, quitting after 60 years of age would avert only 10 percent of deaths attributable to tobacco consumption. On average, mortality averted by quitting is approximately 70 percent of the expected number of deaths.

To predict the changes in consumption and revenues, we examine the results using a price elasticity range based on published studies in this review. The low, medium, and high price elasticities are -0.29, -0.40, and -0.67, based on a consistent range of estimates.^{74, 79, 82} We assume that price elasticity is the same for males and females, and across age groups. The impact on consumption is composed of the reduction in prevalence (40 percent of the price elasticity) and the reduction in smoking intensity among the remaining smokers (60 percent of the price elasticity). It is assumed that the remaining smokers that do not quit face the same mortality risks as before.

The results are reported in Table 4.4. A relatively small tax increase that raised the tax to 50 percent of sales price could avert between 0.6 and 1.4 million deaths. This is approximately 2 to 5 percent of the expected mortality in this cohort. Given that tobacco is

Table 4.3. The 2008 Cohort of Smokers by Age Group and Percent of Expected Mortality Averted by Quitting

| Age group | Number of smokers | % of expected mortality (50% of smokers) that could be averted by quitting |
|---------------|-------------------|--|
| <= 19 | 3,794,397 | 95% |
| 20 - 29 | 13,562,101 | 95% |
| 30 - 39 | 14,240,754 | 75% |
| 40 - 49 | 11,929,314 | 70% |
| 50 - 59 | 7,272,600 | 50% |
| 60 - 69 | 3,320,352 | 10% |
| 70 + | 2,783,116 | 10% |
| Totals | 56,902,633 | 70% |

Sources: Number of smokers based on smoking prevalence: 2004 SUSENAS data and population projections for 2008: BAPPENAS, BPS, UNFPA 2005; estimates of the percent of mortality avoided by quitting in Ranson et al 2002. We assume no increase in prevalence since 2004.

Table 4.4: The Impact of Increasing Tobacco Taxes on Tobacco-attributable Mortality and Government Revenue

| | Current levels | Increase to | | |
|---|----------------|-------------|------|------|
| % Sales price | 37% | 50% | 64% | 70% |
| % Government retail price ^a | 31% | 43% | 57% | 64% |
| Reduction in number of smokers (million) | 56.9 | | | |
| Price Elasticities ^b | | | | |
| -0.29 | | 1.8 | 5.0 | 7.3 |
| -0.40 | | 2.5 | 6.9 | 10.0 |
| -0.67 | | 4.1 | 11.5 | 16.8 |
| Mortality averted (millions) | 28.45 | | | |
| -0.29 | | 0.6 | 1.7 | 2.5 |
| -0.40 | | 0.9 | 2.4 | 3.5 |
| -0.67 | | 1.4 | 4.0 | 5.9 |
| Mortality averted (% of expected) | -- | | | |
| -0.29 | | 2% | 6% | 9% |
| -0.40 | | 3% | 8% | 12% |
| -0.67 | | 5% | 14% | 21% |
| Remaining smokers (million) | -- | | | |
| -0.29 | | 55.1 | 51.9 | 49.6 |
| -0.40 | | 54.4 | 50.0 | 46.9 |
| -0.67 | | 52.8 | 45.4 | 40.1 |
| Additional excise revenue (Rp trillion)^c | 41.8 | | | |
| -0.29 | | 25.1 | 59.3 | 75.8 |
| -0.40 | | 23.0 | 50.1 | 59.3 |
| -0.67 | | 18.1 | 29.1 | 23.8 |
| Additional excise revenue (US\$ billion)^c | 4.6 | | | |
| -0.29 | | 2.8 | 6.5 | 8.3 |
| -0.40 | | 2.5 | 5.5 | 6.5 |
| -0.67 | | 2.0 | 3.2 | 2.6 |

^a The government retail price (HJE) is estimated as a proportion of the sales price; see Chapter 3.

^b The low, medium, and high price elasticities are based on a consistent range of estimates from high quality studies, see Guindon et al⁴, Djutaharta et al⁵, and Adioetomo et al⁶.

^c Revenues figures estimated using the 2008 targeted revenues, assuming that 95 percent of excises will come from tobacco.

addictive, the long-run impact would be greater than the short-run impact; therefore, the results for health are conservative. At the same time, most smokers (52.8 to 55.1 million) would continue smoking. Higher taxes among remaining smokers (even at lower consumption levels) would generate between Rp 18.1 and 25.1 trillion (US\$ 2.0 to 2.8 billion) in additional excise revenues.

Assuming that the HJE is approximately 17-22 percent higher than the sales price, applying the maximum tax allowable by law (57 percent of HJE) would be approximately equivalent to increasing the tax to 64 percent of sales price. This simulation implies that applying the maximum tax rate could avert 3.5 to 8.1 million tobacco-related deaths, while also

It is estimated that increasing the tax to 70 percent of sales price could avert between 2.5 and 5.9 million deaths, or 9 to 21 percent of the expected mortality in the current cohort of smokers.

generating increased excise revenues of Rp 29.1 and 59.3 trillion (US\$ 3.2 to 6.5 billion). It should be noted that the actual impact of applying the maximum tax rate would be greater because it would require increases in taxes for all products, which would reduce substitution. Similarly, the application of a uniform specific tax that minimized the differences in tax rates

between cigarette products could also result in additional lives saved.

The last column predicts the impact of increasing the tax to 70 percent of sales price, which is the global benchmark. It is estimated that increasing the tax to 70 percent of sales price could avert between 2.5 and 5.9 million deaths, or 9 to 21 percent of the expected mortality in the current cohort of smokers. At the same time, the remaining number of smokers would number 40.1 to 49.6 million people. Therefore, this tax increase would generate Rp 23.8 to 75.8 trillion (US\$ 2.6 to 8.3 billion) in additional excise revenue. Using the 2008 excise targets, this simulation predicts total tobacco excise revenues of Rp 65.6 to 117.6 trillion (US\$ 7.2 to 12.9 billion).

Endnotes for Chapter 4

- ⁷³ Ross H. An overview of the tobacco control economic literature and evidence for Indonesia, Open Society Institute and Research Triangle Park, June 2005.
- ⁷⁴ Guindon GE, Perucic A-M, Boisclair D. Higher tobacco prices and taxes in South-east Asia: an effective tool to reduce tobacco use, save lives and generate revenue. World Bank. Health, Nutrition and Population Discussion Paper. Economics of Tobacco Control Paper No. 11, October 2003.
- ⁷⁵ Chaloupka FJ, Warner K. The economics and smoking. National Bureau of Economic Research, 1999.
- ⁷⁶ Chaloupka FJ, Hu TW, Warner K. The taxation of tobacco products. In: Jha P, Chaloupka FJ, eds. Tobacco control in developing countries. New York: Oxford University Press, 2000.
- ⁷⁷ Bird K. 1999. Industrial concentration and competition in Indonesian manufacturing. Doctoral Thesis. Australian National University, 1999.
- ⁷⁸ Curbing the tobacco epidemic in Indonesia: World Bank. Watching Brief, 2000.
- ⁷⁹ Djutaharta T, Surya HV, Pasay NHA, Hendratno, Adioetomo SM . Aggregate analysis of the impact of cigarette tax rate increases on tobacco consumption and government revenue: The case of Indonesia. World Bank. HNP Discussion Paper. Economics of Tobacco Control No. 25, 2005.
- ⁸⁰ Marks S. Cigarette excise taxation in Indonesia, an economic analysis. Partnership for economic growth, BAPPENAS and USAID, 2003.
- ⁸¹ Erwidodo, Molyneaux J, Pribadi N. Household food demand: an almost ideal. Demand Systems (AIDS), Working Paper, 2002.
- ⁸² Adioetomo M, Djutaharta T, Hendratno. Cigarette consumption, taxation, and household income: Indonesia case study. World Bank, HNP Discussion Paper No. 26, 2005.
- ⁸³ Witoelar F, Rukumnuaykit P, Strauss J. Smoking behavior among youth in a developing country: case of Indonesia. Working paper, Yale University. December 2005.
- ⁸⁴ Chaloupka FJ, Wechsler P. Price, tobacco control policies and smoking among young adults. Journal of Health Economics 1997; 16(3): 359-373.
- ⁸⁵ Communication from Director of Excise, 10/2003.
- ⁸⁶ Communication from Director of Excise, 1/ 2008.
- ⁸⁷ Tjahyaprijadi C, Indarto WD. Analysis of consumption patterns for machine-made *kretek* cigarettes. Hand-made *kretek* cigarettes, and machine-made non-clove cigarettes. Economic and Fiscal Policy 2003;7(4). One study was omitted because it lacks a description of data and analyses. It concludes that the profitability of the industry could be increased by reducing taxes for the firms in the medium production scales. See: Brahmantio Isdijoso. Alternative study of revenues and excise Tax Rates for 2004.
- ⁸⁸ Sunley EM, Yurekli A, Chaloupka F. The design, administration, and potential revenue of tobacco excises. In: Jha P, Chaloupka FJ, eds. Tobacco control in developing countries. New York: Oxford University Press, 2000.
- ⁸⁹ Jha P, Chaloupka FJ, Moore J, Gajalakshmi V, Gupta PC, Peck R, et al. Tobacco addiction. Disease Control Priorities in Developing Countries (2nd Edition), ed. , 869-886. New York: Oxford University Press. DOI: 10.1596/978-0-821-36179-5/Chpt-46, 2006.

V. Industry Market Structure and Employment

This chapter describes the structure of the tobacco industry, tobacco leaf farming and manufacturing, production and trade, and employment. Most tobacco leaf and cloves grown in Indonesia are used for domestic production of cigarettes. *Kretek* production increased rapidly after the mechanization of the industry in the 1970s, and 90 percent of domestic sales are *kreteks*. Exports of tobacco leaf, cloves, and cigarettes do not contribute significantly to foreign exchange. The market is concentrated with three firms holding 71 percent of cigarette market share.

From a national perspective, tobacco farming and manufacturing contribute little to total employment levels. From a regional perspective, most of tobacco and clove farmers are concentrated in specific geographic areas. Some 55 percent of tobacco cultivation area and more than 2/3rd of people employed in tobacco manufacturing sector are in East Java. However, even in East Java, tobacco is farmed on 0.5 percent of total arable land, and tobacco manufacturing provides 2.9 percent of total employment.

This chapter also presents the results of studies that simulate the impact of tobacco tax increases on employment. Research simulating a doubling of the tobacco tax reports a negative impact in six sectors directly related to tobacco production. Across 60 other sectors of the economy, however, there is a positive impact on economic output, income, and employment. Based on the net impact, doubling the tobacco tax could increase employment by more than one-quarter of a million jobs. This is primarily because tobacco farming and manufacturing do not rank high (34th and 62nd, respectively, out of 66 sectors) in terms of overall economic output, employment, and wages. Household tobacco expenditures are large; diverted to other productive sectors of the economy, such spending could stimulate growth.

Some 90 percent of domestic cigarette sales are *kreteks*.

Tobacco Farming

Indonesia contributes 2.1 percent of the global supply of tobacco leaf (Annex 5.1).⁹⁰ Most leaf is used for domestic production of cigarettes and other products; however, between 16 and 47 percent was exported during 1995 to 2005. At the same time, Indonesia imports a substantial amount of tobacco leaf, amounting to 31 percent of domestic production in 2005 (Table 5.1). The US\$ value of exports was higher than imports until 1990 (Annex 5.2). Since 1990, however, the value of imports is higher than the value of exports, resulting in a negative net export value (with the exception of 1999). Tobacco leaf exports do not contribute significantly to foreign exchange, and amount to 0.38 percent of total export value.

Less than 1 percent of total arable land is devoted to leaf production, and this percent has declined slightly since 2000 (Annex 5.3).⁹¹ Fluctuations in leaf production could be attributable to changes in input costs for labor, agricultural inputs and leaf processing; input costs affect how intensively farmers manage their yields.⁹² Smallholders manage nearly all (98 percent) of the tobacco area.⁹³ A study in Central Java reports that farm sizes for tobacco are only about 0.25 to 0.50 hectares.⁹⁴ Ninety percent of tobacco arable land and more than 90 percent of leaf supply originates from three provinces (East Java, Central Java, and West Nusa Tenggara) (Annex 5.4). In 2005, 1.7 percent of farmers cultivated tobacco as one of their

Tobacco farming accounts for 1.2 percent of full-time employment in the agricultural sector and 0.53 percent of total full-time employment.

Table 5.1: Tobacco Production, Import and Export Ratios of Domestic Production, and Net Export Value, 1995 to 2005

| Year | Domestic production (tons) | Import ratio | Export ratio | Net export value (US\$ 000) | Tobacco leaf exports as % of total export value |
|------|----------------------------|--------------|--------------|-----------------------------|---|
| 1995 | 140,169 | 34.21% | 15.69% | -54,018 | 0.41% |
| 1996 | 151,025 | 29.84% | 22.08% | -49,781 | 0.44% |
| 1997 | 209,626 | 22.47% | 20.17% | -53,024 | 0.46% |
| 1998 | 105,580 | 21.99% | 47.32% | 71,581 | 0.52% |
| 1999 | 135,384 | 30.22% | 27.40% | -36,185 | 0.44% |
| 2000 | 204,329 | 16.76% | 17.60% | -43,546 | 0.36% |
| 2001 | 199,103 | 22.27% | 21.61% | -48,206 | 0.49% |
| 2002 | 192,082 | 17.33% | 22.22% | -27,286 | 0.43% |
| 2003 | 200,875 | 14.73% | 20.23% | -32,317 | 0.34% |
| 2004 | 165,108 | 21.30% | 28.14% | -30,236 | 0.36% |
| 2005 | 153,470 | 31.37% | 35.01% | -34,923 | 0.38% |

Source: Ministry of Agriculture and FAO. Net export value is the US\$ value of exports minus US\$ value of imports.

crops.⁹⁵ Tobacco farming, however, is not full-time work; tobacco is typically rotated on a given plot of land in one year out of three to avoid depleting the soil of nutrients.⁹⁶ Typically, farmers must diversify their crop holdings to reduce their vulnerability to financial loss.⁹⁷ To estimate the contribution of tobacco farming to employment, full-time equivalent (FTE) can be calculated using the number of person workdays needed to plant one hectare of tobacco. This suggests that tobacco farming accounts for 1.2 percent of full-time employment in the agricultural sector and 0.53 percent of total full-time employment (Annex 5.5).

Clove is the second most important raw material in the production of *kreteks* after tobacco. Indonesia produces 76 percent of the world's supply of cloves.⁹⁸ More than 90 percent of production is used domestically (with the exception of 1998, when 22 percent of production was exported) (Annex 5.6). Most (72 percent) of annual clove demand is from the *kretek* industry.⁹⁹ An estimated 1.2 million smallholders own 90 percent of clove trees;¹⁰⁰ similar to tobacco,

however, clove farming is not full-time. Clove farming is more dispersed, but more than two-thirds of supply originates from Sulawesi Island or the provinces of Central and West Java. Between 1995 and 2002, total clove production declined as a result of the clove monopoly established in 1990, which set forth fixed purchase prices from farmers. After the monopoly was dissolved in 1998, real clove prices increased 13-fold (1998 to 2002) and production increased.¹⁰¹ In 2002, restrictions were placed on clove imports on behalf of clove farmers in order to force an increase in price.¹⁰²

Changes in tobacco tax and prices would not be expected to have a large impact on tobacco and clove farming nationally for several reasons. From a macroeconomic standpoint, less than 2 percent of farmers are involved in tobacco farming, and most of tobacco and clove farmers are concentrated in specific geographic areas. For clove farmers, restrictions on imports appear to be the key factor affecting their profits and incomes, compared with relatively slow changes in demand for cigarettes. Other

factors that strongly affect crop yields and production levels include weather, seed quality, and availability of technical and financial support to farmers as well as pesticides and fertilizers.⁹⁴ Both tobacco and clove farmers already have very diverse crop holdings and engage in other farm and non-farm enterprises as a part of income generation activities. Given that tobacco tends to be rotated on a given plot of land one year in three, farmers typically cultivate tobacco as a secondary crop in addition to a range of other crops including paddy, garlic, chili, potatoes, and fruit.⁹⁴ Similarly, clove trees take 3 to 4 years to mature, and are grown alongside a wide range of other trees or crops, including coconuts, corn, vanilla, and coffee.¹⁰³

A study examined the profitability of tobacco farming in Central Java, in comparison with seven other crops.⁹⁴ The authors report that chili, potatoes, and nilam offer similar or better net profits and rates of return compared with tobacco (Annex 5.7). They note, however, that smallholders would need external investment and technical assistance to transition to more profitable agricultural products. Such investments could include specialized agricultural support or private trading networks that would allow entry into new markets.

Tobacco farmers sell leaf to middlemen and/or directly to cigarette companies, especially in Central and West Java where both large cigarette manufacturers and farmers are concentrated.⁹⁴ A factor affecting the prices received by tobacco farmers is the “partnership schemes” between tobacco farmers (particularly those that grow Virginia tobacco) and large cigarette manufacturers. Manufacturers provide farmers with resources, technical assistance and small loans, which are repaid in kind with the sale of leaves at a price set by the manufacturers. This arrangement generally places the farmers in a weak bargaining position. Reports exist about dissatisfaction among farmers because leaf prices are based on industry-determined standards of quality.¹⁰⁴

Market Structure of the Cigarette Industry

The tobacco market in Indonesia is an oligopoly. Three firms (Gudang Garam, Djarum, and Sampoerna/Philip Morris International) hold 71 percent of market share, and seven firms hold 88 percent of the market. The competitive market could be illustrated by changes in market share for cigarettes over time (Table 5.2, Annexes 5.8. to 5.9).

Some 90 percent of domestic cigarette sales are *kreteks*.¹⁰⁵ The distribution of market share was affected by entry restrictions limiting new capital investments in *kretek* manufacturing by multinationals during most of the 1980s and 1990s.¹⁰⁶ These restrictions did not apply to investments in white (tobacco) only cigarettes, which are produced by *kretek* manufacturers through sub-contracts or their subsidiaries. This policy was less strict for small foreign firms that were given permission to produce white cigarettes in the 1980s. Considering these long-standing entry restrictions into *kretek* manufacturing, Philip Morris International’s purchase in 2005 of the domestic manufacturer Hanjaya Mandala Sampoerna was a major breakthrough by a large multinational firm into the *kretek* market.

Also affecting the market share is the tiered tax system and introduction of tax by production scales, which effectively protected small *kretek* firms from competition from larger cigarette producers. In 1959, the gap in tax rates was reported to be as large as 30 percentage points between large *kretek* and white manufacturers in 1959.¹⁰⁷ However, this difference has narrowed over time and has recently reversed. In 2008, lower *ad valorem* rates were applied to white cigarettes in comparison with machine-made *kreteks* from the same production scales.

The industry’s lobbying power is strengthened by the concentration of market share in the hands of a few firms as well as alliances among cigarette manufacturers. The assumption in an oligopoly is that

Table 5.2. Market Share, Major Cigarette Firms, 1979 to 2005

| Cigarette manufacturer (year established) | 1979 | 1989 | 1998 | 2005 |
|--|-----------|-----------|-----------|-----------|
| Gudang Garam (1958) | 12 | 28 | 47 | 41 |
| Djarum (1951) | 13 | 28 | 13 | 15 |
| British American Tobacco (BAT, 1905) | 15 | 3 | NA | 4 |
| Bentoel (1930) | 8 | 11 | 3 | 3 |
| Sampoerna (1913) | 1 | 3 | 12 | - |
| Sampoerna/Philip Morris International (2005) | - | - | - | 15 |
| Philip Morris Indonesia (1998) | NA | NA | NA | 6 |
| Sumatra Tobacco Trading Company (STTC) | 10 | 4 | NA | NA |
| Noyorono | 4 | 3 | 2 | 4 |
| Total | 63 | 80 | 77 | 88 |
| Other | 37 | 20 | 23 | 12 |

Sources: Euromonitor 2007, Jardín Fleming Research 1999, Bird 2002. NA = Information not available

tax increases will be passed onto consumers in the form of prices that match or exceed the increase in tax, particularly where there is more coordinated behavior between firms.¹⁰⁸ Theory suggests that pricing strategies for tobacco can be set below short-run profit, because consumption is addictive and behavior among firms allows for future prices to exceed marginal costs.¹⁰⁹ It is notable that industry sources in Indonesia predict a decline in consumption related to increased consumer awareness of the health hazards of smoking while, at the same time, they predict an

11 percent annual growth in industry value related to price increases.¹⁰⁵

Most firms rely on one or a few brands for much of their revenues. Turning to brand market share, a handful of brands were responsible for 59 percent of sales in 2003 (Table 5.3). Although there are more than 3,000 very small firms, many of these small producers copy the more popular brands and would probably not survive under a stricter regulatory environment.

Table 5.3: Cigarette Brand Market Share (%), 2003

| Brand | 2003 |
|------------------------------------|------|
| Gudang Garam ^a | 32 |
| A Mild (Sampoerna/Philip Morris) | 11 |
| Djarum | 10 |
| Marlboro (Philip Morris Indonesia) | 7 |
| Total percent of sales | 59 |
| Other | 41 |

Source: Euromonitor 2007. ^a Report does not specify Surya, International, Merah

Tobacco Manufacturing

Domestic cigarette production exceeded 220 billion sticks in 2005 (Table 5.4, Annex 5.10). Because of the popularity of domestically produced *kreteks* (tobacco-and-clove cigarettes), most of production is consumed domestically, and imports are negligible. Exports accounted for 2 to 3 percent of domestic production between 1995 and 2005. The government encourages exports by applying a substantially lower excise tax for net exporters (see Chapter III). Multinational companies with regional and international subsidiaries have an advantage in the export market, and white cigarettes accounted for approximately 70 percent of the value of exports in 2004. Nearly half (49 percent) of white cigarette exports were directed to Cambodia.¹¹⁰ Most of *kretek* exports go to Malaysia; exported *kreteks* have faced problems in overseas markets outside of Asia. In 1999 several brands of *kreteks* were withdrawn from the Australian market on the grounds that they failed to meet the requirements of the Consumer Product

Information Standard for Tobacco.¹¹¹ Exports do not contribute significantly to foreign exchange, and amount to 0.22 percent of total export value.

The industry has consistently differentiated between *kreteks* (tobacco-and-clove cigarettes) and white (tobacco only) cigarettes. Commercial production of hand-rolled and packaged *kreteks* started in Central Java in the early 1900s, with annual production levels estimated at 7 billion sticks in 1929.¹¹² Domestic manufacture (with filter machines) of white cigarettes began in the early 1920s, and nearly replaced imported white cigarettes by the early 1930s.¹¹³ By the 1960s, several hundred medium- and small-scale *kretek* firms competed with a few large multinational foreign-owned companies.¹¹² A number of government policies were implemented to protect the market share of the *kretek* industry.

Among the first was the tiered excise tax system imposed in 1936, which established preferential tax rates for *kreteks* (20 percent) compared with white

Table 5.4: Cigarette Production, Import and Export Ratios, and Value of Cigarette Exports as % of Total Export Value

| Year | Domestic Production (million sticks) | Import Ratio | Export Ratio | Cigarette Exports as % of Total Export Value |
|------|--------------------------------------|--------------|--------------|--|
| 1995 | 225,385 | 5.99% | 1.78% | 0.26% |
| 1996 | 216,200 | 2.38% | 2.19% | 0.26% |
| 1997 | 225,417 | 2.07% | 1.87% | 0.26% |
| 1998 | 232,724 | 4.69% | 1.81% | 0.21% |
| 1999 | 221,293 | 1.62% | 2.14% | 0.23% |
| 2000 | 231,185 | 1.32% | 2.69% | 0.22% |
| 2001 | 226,611 | 0.91% | 2.45% | 0.31% |
| 2002 | 209,668 | 0.26% | 2.89% | 0.28% |
| 2003 | 192,340 | 2.54% | 3.12% | 0.22% |
| 2004 | 203,880 | 2.53% | 2.56% | 0.20% |
| 2005 | 220,310 | 0.48% | 2.39% | 0.22% |

Source: Ministry of Agriculture and FAO.

cigarettes (30 percent), along with retail prices for white cigarettes.¹¹⁴ Production levels were negatively affected in the 1960s by high clove prices for the *kretek* industry; foreign-owned white cigarette firms faced production setbacks when they were nationalized between 1958 and 1964, and regained market share after 1968-69.¹¹⁵

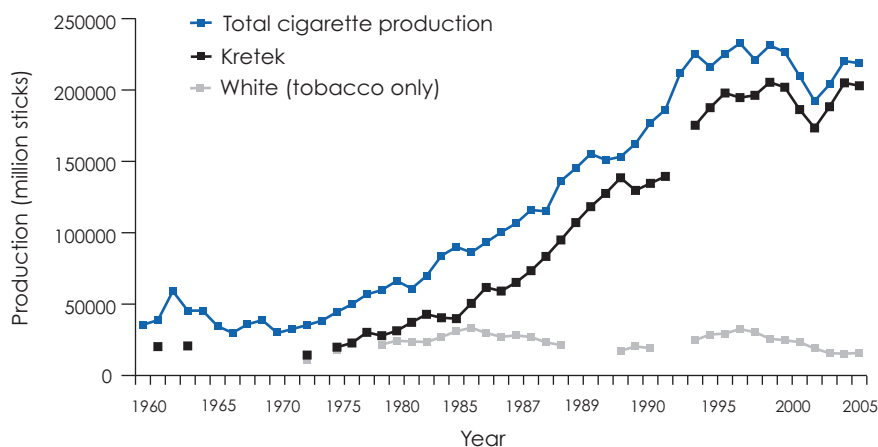
Cigarette manufacturing was transformed by mechanization in the 1970s. Three major *kretek* manufacturers (Bentoel, Gudang Garam, and Djarum) received government approval to mechanize part of their production between 1970 and 1980, while other firms were denied licenses to introduce new machinery.¹¹⁵ In 1974, *kretek* and white cigarette production was nearly equal. Ten years later, *kretek* production was more than three times greater than white cigarette production, and production of machine-made *kreteks* continued to increase steeply to more than 200 billion sticks by 2000 (Graph 5.1). The increase in *kretek* production was accompanied by industry investments in machinery, sophisticated packaging, product distribution,¹⁰⁷ and advertising¹¹⁵ that contributed to increased consumption. Other

factors were increased affordability of cigarettes between 1980 and 1998¹¹⁶ and transmigration programs that moved large numbers of Javanese (and their habits) to the outer Islands.¹¹²

A brief decline in *kretek* production in 1991 could be related to the change in the tax system, which incorporated different retail prices by industry production volume. Higher retail prices were imposed on firms with the highest production scales. The rationale was to protect small firms, by increasing the retail prices for products from large firms — thereby reducing their demand.¹⁰⁶ Sales for hand-rolled *kreteks* and white cigarettes increased in 1991 relative to machine-made *kreteks*. Between 2001 and 2003, production dropped in the machine-made *kretek* sector but 2001 production levels were regained by 2005. Given that household data demonstrated an increase in consumption during the same period, these changes could be explained by the industry's response to a series of increases in the excise tax (see Chapter VI).

Most firms in the tobacco product manufacturing sector are companies that dry and process leaves

Graph 5.1: Cigarette Production, 1960 to 2005



Sources: Ministry of Agriculture, Ministry of Finance, excise tax bureau, FAO, and industry estimates. Cigarette production account for approximately 97% of tobacco sales (Ministry of Industry, 2005). Other tobacco products consumed at low levels and among specific population subgroups include cigars, *klobot* (corn husk wrapped cigarettes); *klembak* (incense clove cigarettes), and sliced leaves or chewing tobacco.

In the 1970s, the industry's contribution to manufacturing employment was about 28 percent compared with less than 6 percent today.

(Annex 5.11). In examining employment, we focus on cigarette firms, which would represent the largest employers in tobacco manufacturing. The contribution of cigarette manufacturing to total manufacturing employment has declined steeply over time. In the 1970s, the industry's contribution to manufacturing employment was about 28 percent compared with less than 6 percent today. Although the absolute numbers have risen slightly, this increase has not matched rapid growth in the manufacturing sector as a whole. The contribution of cigarette manufacturing to total employment has remained 0.3 percent or less since the 1970s (Annex 5.12). These figures are based on large and medium size industries. In 2004, it was estimated that some 10,000 additional people were working in very small-scale cigarette firms;¹¹⁷ however, this changes little the industry's contribution to total employment. In comparison with other employment categories, cigarette manufacturing ranks number 48 out of 66 sectors in contributing to total employment nationally (Annex 5.13).

Different sources provide different estimates about the number of large and medium firms in cigarette manufacturing. It has been estimated that the number of cigarette firms fluctuated from 300 in the mid 1970s, 130 in the early 1990s, and 245 in 2004 (Annex 5.14). However, their geographic distribution has remained remarkably concentrated, and most are near regions where tobacco is grown. Between 1961 and 1993, *kretek* firms (of all sizes) were located in only 14 districts, with the majority in Kudus (Central Java), and Kidiri and Malang (East Java) (Annex 5.15).¹⁰⁷ Estimates suggest that more than 2/3rds of people

Tobacco manufacturing wages rank low, at 20th out of 24 manufacturing sectors, and average Rp 662,149 (US\$ 73) per month.

employed in tobacco manufacturing sector are in East Java alone, and more than 90 percent are in East and Central Java (Annex 5.16). The largest number of jobs is in East Java, where tobacco manufacturing provides 2.9 percent of total employment. In certain areas, the contribution of employment is high; in Kudus, for example, it was estimated that 6.4 percent of the population worked in cigarette manufacturing.¹¹⁷

Industry mechanization is a key factor affecting employment in cigarette production. In the labor-intensive hand-rolled industry, a pair of women produces between 3000 and 4000 cigarettes in a single day, or some 450,000 cigarettes per person per year.⁹⁶ In contrast, modern machinery can produce as many as 16,000 cigarettes per minute. In an attempt to minimize the impact of mechanization on employment in the hand-rolled sector in the 1970s, the government initially restricted the number of licenses issued for cigarette mechanization, and the proportion of production each firm could mechanize was limited to 10 percent. Realizing that compliance was low, this proportion was later amended to 50 percent, then 66 percent.¹¹⁵ In absolute terms, the employment numbers have remained relative stable with slight increases in the late 1990s.

Wages in cigarette manufacturing are approximately 2/3rds of average manufacturing wages. Women represent 81 percent of workers in the tobacco manufacturing sector. Wages for women rolling cigarettes are piece-rate. Tobacco manufacturing overall ranks 20th out of 24 manufacturing sectors in terms of wages amounting to Rp 662,149 (US\$ 73) per month.¹¹⁹ In the early 1990s, work conditions in hand-

rolled cigarette manufacturing were considered poor, and included exposure to chemicals and particulate matter that could have negative effects on reproductive and respiratory health.¹²⁰ Some research has identified the problem of child labor in tobacco farming and cigarette manufacturing in Indonesia.¹²¹

Studies Evaluating the Impact of Taxation on Employment

Similar to other countries with a domestic tobacco industry, there is a concern that an increase in tobacco taxes would negatively impact employment in tobacco agriculture and manufacturing. Estimating the impact of reduction in tobacco spending requires a consideration of how spending from tobacco is reallocated to other commodities or investments. Ahsan and Wiyono estimated an input-output analysis to simulate the impact of an increase in tax taking into consideration the interdependence between economic sectors.¹²² Based on price and income elasticities from Djutaharta et al (see Chapter IV),¹²³ they simulated a 100 percent increase in tobacco tax resulting in an 8.9 percent decline in tobacco consumption. Because spending on tobacco would be diverted to other commodities, they estimate that six sectors would be negatively impacted (trade, fertilizers and pesticides, paper manufacturing, clove farming, tobacco farming, and cigarette manufacturing). However, 60 other sectors would benefit from a decline in tobacco consumption, because resources would be directed from tobacco spending to these sectors. Therefore, there is a positive net impact in economic output by Rp 335.4 billion (US\$ 36.9 million) (0.008 percent), an increase in household income by RP 491.6 billion (US\$ 54.1 million) (0.08 percent), and an increase in employment by 281,135 jobs (0.3 percent).

An increase in economic output would result primarily because tobacco farming and manufacturing are not ranked high relative to other sectors in their overall contribution to the economy. Tobacco manufacturing and farming are ranked 34th and 62nd

out of 66 sectors in terms of their overall output, employment, and wages.¹²⁴ Wages, in particular, are relatively low in cigarette manufacturing and very low in agriculture (tobacco and other crops). A positive increase in household income would result given that household expenditures on tobacco are relatively large. Reductions in spending on tobacco are estimated to result in higher spending on food and other products. Diverting household expenditures from tobacco to spending on other products would channel money to other productive sectors of the economy, which could stimulate growth. Simulating low and high reductions in tobacco consumption, Ahsan and Wiyono report that reductions in tobacco consumption would result in increased output in the economy as a whole. They conclude that substantial tobacco price increases would create net positive benefits on output, income and employment. Additional tax revenue for the government could be directed to support any labor transitions from tobacco to other sectors of the economy.¹²⁵

Other studies examine employment more narrowly, and do not consider that a reduction in spending for tobacco would free up money that that could be spent on other goods and services, which would, in turn, create jobs in other sectors of the economy. Marks predicted the impact of an increase in tax on employment in the hand-rolled *kretek* sector.⁹⁶ He applies a price elasticity estimate of -0.78 and a tax increase that would result in an 80 percent increase in real price, resulting in a 49 percent reduction in demand for SKT. Based on average productivity per worker, he predicts a loss of more than 86,000 jobs in the hand rolled *kretek* sector — this amounts to about half of the workforce in *kretek* manufacturing. Several of these assumptions, however, are questionable.¹²⁶ The reductions in demand are likely overestimated because of the high price elasticity applied (-0.78). The model assumes that marginal and average productivity are equal. A more realistic assumption is that marginal productivity is lower than the average productivity,

and this would result in a lower impact on employment regardless of the assumptions applied.

Separate but important considerations for the tobacco industry are the political gains in maintaining the hand-rolled *kretek* sector, and the financial gains made by maintaining a tiered tax system in which the highest tax rates can be legally avoided. A separate Ministry of Industry report puts forward a “roadmap” to enable the tobacco industry to secure their business over the short, medium and long term.¹²⁷ The report estimates the total amount of employment attributable to the tobacco industry as 10.35 million jobs (Table 5-5). In comparing the figures in this report with statistics released by the Central Statistical Bureau (BPS) or other government agencies, the government data are less than half of industry figures for direct employment in tobacco manufacturing and tobacco and clove agriculture.

Moreover, the Ministry of Industry estimates use total numbers of tobacco and clove farmers rather than full-time equivalents, which are more accurate for part-time work. The fourth column reports the BPS-adjusted figures for full-time equivalent for tobacco farming, considering that clove trees typically take 3 to 4 years to mature, and that a farmer would dedicate 20 to 33 percent time to their cultivation over these years. This suggests that direct employment from tobacco and cigarette manufacturing is between 1.0 and 1.2 million

people. More importantly, from a policy perspective is the percent of total employment provided. Direct employment in tobacco manufacturing and production amounts to 1.1 to 1.2 percent of total employment.

The report attributes more than half of their employment figures (5.45 million) to indirect employment (retailers, printers, and transportation, etc), which cannot be verified by other sources. They estimate, for example, that cigarettes contribute 4.9 million retail jobs, or about 18 percent of the total workforce in the entire service industry. It is unlikely that nearly 1 in 5 people working in the service sector depends on tobacco sales for their livelihood. Retailers and street vendors generate income not only from tobacco sales but also other products, including perishable goods (cooked food, fruit, vegetables, and flowers), gum, telephone cards, magazines and books, small consumer electronics, and others. Any reduction in spending on tobacco would be offset by increased spending on other products.

Not considered in these analyses is industry spending in the marketing and advertising sectors.¹²⁸ Estimates in 2004 suggest that major Indonesian cigarette companies spent US\$ 134.4 million (Rp 1.2 trillion) on direct electronic and print advertising, consistent with previous reports that the industry contributes about 5 to 7 percent to direct advertising revenues annually.¹²⁹ It is perceived that local

Table 5.5: The Contribution of Tobacco Manufacturing to Direct Employment: Comparing Estimates from Different Sources

| Employment category | Ministry of Industry estimates | BPS and other government estimates | Full-time equivalent | % of total employment |
|-----------------------|--------------------------------|------------------------------------|----------------------------|-----------------------|
| Tobacco manufacturing | 600,000 | 258,678 | 258,678 | 0.28 |
| Tobacco farmers | 2,400,000 | 683,603 | 503,458 | 0.53 |
| Clove farmers | 1,500,000 | 1,200,000 | 240,000-396,000 | 0.26-0.42 |
| Total | 4,500,000 | 2,142,281 | 1,002,136-1,158,136 | 1.07-1.23 |

Source: Ministry of Industry 2007, Central Statistical Bureau (BPS), most recent years.

governments generate a large amount of tax revenue from cigarette billboards; in reality, taxes from billboard advertising generate less than 2 percent of total district income on average.¹³⁰ However, the industry spends an undetermined amount of funds on promotions and indirect advertising, including

sponsorship of concerts and cultural and social events, as well as coupons and price discounts. Some of this is channeled via foundations that are funded in large part by cigarette sales and serve as advertising by promoting a positive image of tobacco companies.

Endnotes for Chapter 5

⁹⁰ FAOSTAT, Food and Agricultural Organization Statistics Division.

⁹¹ Ministry of Agriculture, various years.

⁹² Global Agricultural Information Network (GAIN) Report #4027. Indonesia Tobacco and Products Annual 2004. Washington, DC: United States Department of Agriculture; 2004.

⁹³ Ministry of Agriculture, Republic of Indonesia. Agricultural Statistics 2006.

⁹⁴ Keyser JC, Juita NR. Smallholder tobacco growing in Indonesia: costs and profitability compared with other agricultural enterprises. World Bank, HNP discussion paper, February 2007.

⁹⁵ Ministry of Agriculture.

⁹⁶ Marks S. Cigarette excise taxation in Indonesia, an economic analysis. Partnership for economic growth, BAPPENAS and USAID. July 2003.

⁹⁷ Kawague T. Chapter 11. Income and employment income and employment generation from agricultural processing and marketing at the village level: A study in Upland Java. In: von Braun, J, Kennedy E, eds. Agricultural Commercialization, Economic Development, and Nutrition. International Food Policy Research Institute, 1994.

⁹⁸ FAOSTATS, Food and Agricultural Organization Statistics Division.

⁹⁹ Jardine Fleming Research, estimate for 1998.

¹⁰⁰ Directorate of Processing and Marketing of Farming Products, Directorate General for Development of Processing and Marketing of Farming Products, Ministry of Agriculture. In Chapter 3. The Tobacco Source Book: Data to support a National Tobacco Control Strategy, Ministry of Health Republic of Indonesia, 2004.

¹⁰¹ Information - Farming Commodity Price at in the Domestic Market 2002, Directorate of Processing and Marketing of Farming Products, Directorate General for Development of Processing and Marketing of Farming Products, Ministry of Agriculture. In Chapter 3, The Tobacco Source Book: Data to support a National Tobacco Control Strategy, 2004, Ministry of Health Republic of Indonesia.

¹⁰² Decree No.538/2002, 5 July 2002, In: The Tobacco Sourcebook.

¹⁰³ Bennett CPA, Marks SV, Muslimin L. The clove monopoly: lessons for the future. Trade Implementation And Policy Project. US Agency for International Development and Ministry of Industry and Trade, Republic of Indonesia, Jakarta. November 1998.

¹⁰⁴ Global Agricultural Information Network (GAIN) Report #3021. Indonesia Tobacco and Products Annual 2003. Washington DC: United States Department of Agriculture; September 16, 2003.

¹⁰⁵ Euromonitor International 2007.

¹⁰⁶ Bird K. Industrial concentration and competition in Indonesian manufacturing. Doctoral Thesis. Australian National University, 1999.

¹⁰⁷ Tarmidi L. Changing structure and competition in the *kretek* cigarette industry. Bulletin of Indonesian Economic Studies 1996;32(3):85-107.

¹⁰⁸ Chaloupka FJ, Hu T-W, Warner KE, Jacobs R, Yurekli A. Chapter 10. The taxation of tobacco products. Tobacco Control in Developing Countries.

¹⁰⁹ Becker GS, Grossman M, Murphy KM. An empirical analysis of cigarette addiction. American Economic Review 1994;84(3):396-418.

¹¹⁰ CBS, Indonesia Foreign trade statistics, 2004.

¹¹¹ Employment Trends in the Tobacco Sector, ILO Geneva 2003.

¹¹² Castles L. Religion, politics, and economic behavior in Java: The Kudus cigarette industry. Cultural Report Series No. 15, Southeast Asian Studies, Yale University. 1967.

¹¹³ Reid A. From betel chewing to tobacco smoking in Indonesia. Journal of Asian Studies 1985;XLIV:3.

¹¹⁴ Istyastuti AW. Policy on in-direct tax policy: Case study on tobacco excise in Indonesia 1969-1992. Post Graduate Program, Social and Economic Science, and Specialized Politic Science University of Indonesia, 1992.

- ¹¹⁵ Bird K. Industrial concentration and competition in Indonesian manufacturing. Doctoral Thesis. Australian National University, 1999.
- ¹¹⁶ Guindon GE, Perucic A-M, Boisclair D. Higher tobacco prices and taxes in South-east Asia: an effective tool to reduce tobacco use, save lives and generate revenue. World Bank. Health, Nutrition and Population Discussion Paper. Economics of Tobacco Control Paper No. 11, October 2003.
- ¹¹⁷ Central Bureau of Statistics.
- ¹¹⁸ International Labor Organization, Employment trends in the tobacco sector: Challenges and prospects. Report for discussion at the Tripartite Meeting on the Future of Employment in the Tobacco Sector, Geneva, 2003.
- ¹¹⁹ Central Bureau of Statistics, 2003.
- ¹²⁰ Kemp M. Inside Indonesia 1993.
- ¹²¹ Indrasari T, Anarita P. Child labor on tobacco plantations, Bandung, 2002; and Manning C. The economic crisis and child labour in Indonesia, Australian National University. International Labour Office, International Programme on the Elimination of Child Labour Geneva, 1999.
- ¹²² Ahsan A, Wiyono Ir. N. The impact analysis of higher cigarette prices to employment in Indonesia. Demographic Institute, Faculty of Economics, University of Indonesia, September 2007.
- ¹²³ Djutaharta T, Surya HV, Pasay NHA, Hendratno, Adioetomo SM. Aggregate analysis of the impact of cigarette tax rate increases on tobacco consumption and government revenue: The case of Indonesia. World Bank. HN Discussion Paper. Economics of Tobacco Control No. 25, 2005.
- ¹²⁴ Central Bureau of Statistics 2003, in Ahsan A, Wiyono IN, Setyonaluri D, Prihastuti D, Halley YM, Sowwam M. Tobacco Control Country Study, Indonesia, Demographic Institute, Faculty of Economics, University of Indonesia, 2007.
- ¹²⁵ Jha P, Chaloupka FJ. The economics of global tobacco control. *BMJ* 2000;321:358-361.
- ¹²⁶ See a review of this paper in: Ross, H. An overview of the tobacco control economic literature and evidence for Indonesia, Open Society Institute and Research Triangle Park, June 2005
- ¹²⁷ Ministry of Industry. The 2007-2020 roadmap of industry of tobacco related product and excise policy, March 2007.
- ¹²⁸ Bird K. Advertise or die: advertising and market share dynamics revisited. *Applied Economics Letters* 2002;9(12):763-767.
- ¹²⁹ Indonesia Advertising Industry. Persatuan Perusahaan Periklanan Indonesia (PPPI), US Department of Commerce, 2006
- ¹³⁰ East Asia decentralizes: making local government work. The World Bank. May 2005.

VI. Tobacco Tax Administration

This chapter describes excise revenues and factors related to setting tobacco tax levels. Tobacco excise contributed 5.7 percent of total government revenues in 2007. The excise target (tobacco and alcohol) for 2008 is Rp 44 trillion (US\$ 4.8 billion). The factors taken into consideration in setting tobacco taxes include the excise law, revenue targets, employment, and industry development. The law and other policy documents from the Ministry of Finance state that the philosophy behind excise taxation is to reduce consumption and control the distribution of unhealthy or immoral products. However, in practice, health considerations are not a factor in setting the tobacco tax rates. Other normative factors related to the government's role in tobacco taxation include poverty reduction, market failure, child protection, and recovering the losses to society because of tobacco consumption.

Despite tax scales favoring small firms and hand-rolled products, the contribution of production and excise from hand-rolled *kreteks* and small firms has declined between 2000 and 2005, and large firms in both the machine-made and hand-rolled sectors contributed the vast majority of production. The tiered tax rates by production levels allow firms to incur lower taxes by reducing their production levels to fall within lower tax brackets, establishing new small firms, or buying up or contracting production to small firms. The Ministry of Industry developed a “roadmap” with the goal of increasing cigarette production to 260 billion sticks by 2020.¹³¹ Its stated goal is to achieve healthy communities, but is more likely to have the opposite effect. The plan's intention to increase cigarette production and reduce nicotine levels will probably lead to worse health outcomes. If the government were committed to healthy communities, however, higher taxation could efficiently increase government revenues, improve health, and increase net employment across all sectors.

Revenue from Tobacco Excise

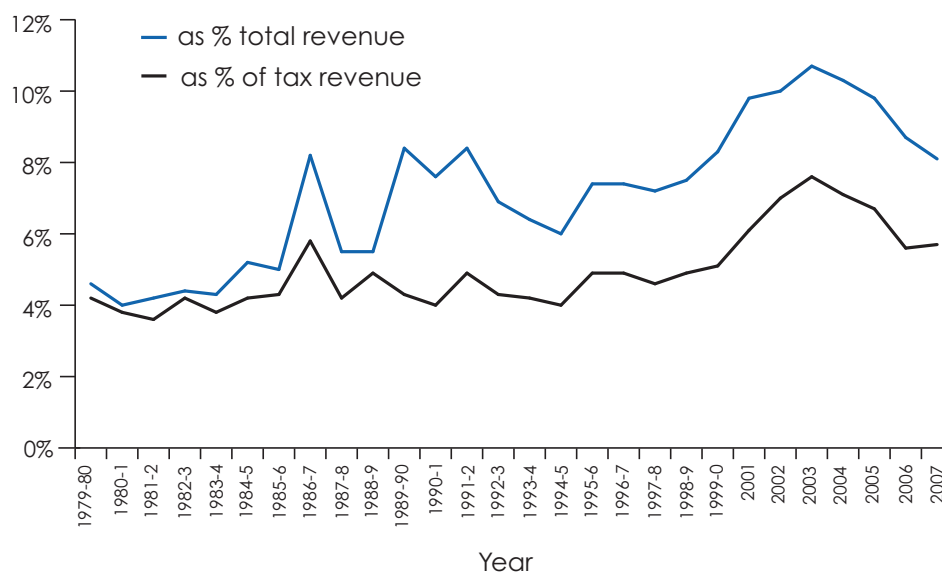
Tobacco excise forms an important source of government revenues, amounting to 8.4 percent of tax revenues and 5.7 percent of total government revenues in 2007. Tobacco excise has accounted for 4 to 6 percent of total nominal revenues between 1979 and 2000 (Graph 6.1, Annex 6.1). Tobacco excise revenues peaked in 2002 to 2003 corresponding with a series of tax increases. The decline after 2003 corresponds with weak or no increases in tobacco excise rates between 2004 and 2007. Excise consists of taxes on tobacco, ethyl alcohol, and alcoholic beverages but the vast majority is from tobacco.

In the 1970s, most tobacco tax revenue was generated from hand-made products. In 1979, 59.0 percent of excise tax revenues were derived from handmade *kreteks* (SKT), compared with 26.1 percent from white cigarettes (SPM) and 15.0 percent from machine-made *kreteks* (SKM) (Annex 6.2). Machine-made *kreteks* were just starting to be produced on a large scale through mechanization in 1979. Just 10 years later, in 1989, 78.7 percent of tobacco excise tax revenue was derived from machine-made *kreteks*, 16.1 percent from hand-made *kreteks*, and 5.3 percent from white cigarettes. With fluctuations in the relative contributions of hand- and machine-made *kreteks*, the contributions of the three products to revenue has remained similar through the 1990s and to date. In 2005, machine-made *kreteks* contributed 73.4 percent of total tobacco excise tax revenue, followed by hand-made *kreteks* (19.6 percent) and white cigarettes (6.9 percent).

Factors in Determining the Tobacco Tax Rates

Law No. 11/ 1995 on Excise Taxation.¹³² Law No. 11 passed in 1995 sets the maximum excise tax for tobacco at 250 percent of the manufacturers' production cost or 55 percent of the retail sale price (HJE). This law was amended in 2007, and the cap increased to 275 percent of the manufacturers'

Graph 6.1: The Contribution of Tobacco Excise as a Percent of Total Revenue and as a Percent of Total Tax Revenue, Nominal Terms, 1979 to 2007



Sources: Ministry of Finance, excise tax reports and budget statistics, various years.

production cost or 57 percent of the retail sales price.¹³³ The government aimed to increase the maximum tax rate from 55 percent to 65 percent to enable long-term revenue planning but failed to gain support for this increase. The justification for the relatively small increase was to maintain jobs in the tobacco industry. Large (machine-made) cigarette manufacturers are closest to reaching the excise tax caps because they face the highest tax rates (36 and 34 percent) compared with hand-rolled manufacturers in the lowest production scale (0 and 22 percent). The law identifies the role of the government in using excises to control the consumption of commodities (tobacco, alcohol or other products) to reduce health or environmental risks, or to promote justice and equity.

The 2007 revision of the excise law also puts forward a revenue-sharing scheme. Two percent of tobacco excise revenue will be distributed to tobacco-

producing regions based on their excise contribution. Using the target excise revenues for 2008 and assuming that 95 percent of excises are from tobacco, the 2 percent earmark will amount to approximately Rp 836 billion (US\$ 92 million) for tobacco-producing regions. The distribution of the revenue is as follows: 30 percent is given to the provincial administration, 40 percent to the administrations of the producing districts or municipalities, and the remaining 30 percent to other second-level administration in tobacco-producing provinces. The revenues are to be allocated to tobacco industry improvements, including the quality of raw materials for production, tobacco industry development, social environment development, socialization about excise tax programs, and eradication of counterfeit products and fake excise ribbons.

Achieving revenue targets. The primary reason for intervening in the tobacco market is to generate tax

revenues. Similar to other budget line items, the government puts forward an annual revenue target for excise, and the targets are adjusted within a given year to meet gaps or come closer to actual revenues. To achieve these targets, the Ministry of Finance adjusts the *ad valorem* rates, specific per stick tax, the number of firm production scales, or their cut-off points. The targeted (tobacco and alcohol) excise revenues for 2008 are Rp 44 trillion (US\$ 4.8 billion), amounting to 1.0 percent of GDP.¹³⁴ These budget planning figures project that the contribution of excise will remain about the same as 2006 and 2007, at 5.8 percent of total revenues and grants and 7.6 percent of tax revenues in 2008 (Annex 6.3).

Protecting the domestic *kretek* industry. During the 1920s, foreign-owned multinationals were successful in establishing white (tobacco only) cigarette production and imports that rivaled the production of *kreteks*.¹³⁵ By 1936, the government implemented a differential excise tax system, with a higher tax on white cigarettes compared with *kreteks*, to protect the market share of the domestic *kretek* manufacturers. Whereas the difference in tax rates between large *kretek* and white manufacturers was large as 30 percentage points in 1959,¹³⁶ this difference has narrowed over time. Between 2000 and 2007, the *ad valorem* tax rates were the same for machine-made *kreteks* and white cigarette producers, and retail prices for white cigarettes were lower — presumably because they do not use cloves in their production. In 2008, however, differential *ad valorem* rates were imposed again, but with lower *ad valorem* rates for white cigarettes in comparison with machine-made *kreteks* from the same production scales. Protection of the *kretek* industry, therefore, no longer appears to be a consideration in setting tobacco tax rates.

Promoting employment. Creating employment opportunities has been the focus of central government policy, and unemployment levels have stabilized in

recent years at approximately 10.3 percent.¹³⁷ In 1992, entry restrictions in the *kretek* market were also relaxed under certain conditions that promoted employment. Firms were required to start with the production of hand-rolled *kretek*, and could progress to the production of machine-made *kreteks* at a ratio of 2:3 with hand-rolled cigarettes.¹³⁸

There are two main ways in which the tobacco tax scales are designed to promote employment in small firms. First, there is a large difference in tax rates between hand-rolled and machine rolled products. The *ad valorem* tax rates range from 22 to 36 percent for machine-made *kreteks* and 15 to 34 percent for machine-made white tobacco only cigarettes. The rates for hand-rolled (unfiltered) *kreteks*, however, are much lower, at 0 to 18 percent. Other hand-rolled products produced on a very small scale (<1 percent of production) are taxed at only 8 percent (including klobot (cornhusk cigarettes), klembak (incense clove cigarettes), and hand-rolled white (tobacco only) cigarettes).

Second, the excise system is based on production volume, whereby firms with the highest production pay the highest taxes. The rationale is to protect small firms, by reducing demand for products from large firms through increases in their sales prices.¹³⁸ The percent of tobacco excise revenue from hand-rolled *kreteks* (SKTs) increased from 13 to 14 percent in 1996 to 1998 to approximately 23.0 percent in 2001 to 2003. This increase could be attributed in part to preferences in the excise tax rates and minimal retail prices that favored hand-rolled *kretek* producers (Table 6.1., Annex 3.2).

Firms with the highest production pay the highest taxes. The rationale is to protect small firms by reducing the demand for products from large firms.

In 1999, there was a decline in retail price (HJE) for SKT produced by the smallest firms (from Rp 80 in 1998 to Rp 55 in 1999). An increase occurred from 4 to 12 percent in the *ad valorem* tax applicable to the firms with smallest production levels in 2000, although this rate was lowered to 10 percent later the same year and returned to 4 percent one year later. In addition, the number of production scales for SKT increased from 3 in 1999 to 4 in 2001, with the lowest tax rate applicable to the lowest production scale. In 2002, a tax increase was applied to SKT but only for the largest firms. There were no changes in the tax rates for SKT between 2003 and 2007 and only slight increases in HJE between 2005 and 2007. Small hand-rolled *kretek* firms enjoyed the lowest tax rate (4 percent) from 2001 to 2007 (Annex 3.2).

In July 2007, the tax directorate applied an additional specific per-stick tax to the three main types

of cigarettes, including SKT. Initially, the specific per-stick tax also corresponded with the production scales, where the highest per stick rate (Rp 7) was applied to the largest firms compared with Rp 3 for the smallest. In 2008, the system imposed a specific tax of Rp 35 for all cigarette products with the one exception of SKTs at the lowest production scale (Rp 30). The tax rates for other types of tobacco products also changed during the same period and likely had an effect on the share of revenue by type of product.

Despite large adjustments in the tax scales to promote production from small firms in 2000 to 2002, their contribution to production and excise declined between 2000 and 2005 (Table 6.2). SKT production from small firms contributed 9.9 percent of total production in 2000 compared with 5.8 percent in 2005; a large decline can be seen for small SKM firms from 13.4 to 5.4 percent. In addition, large SKM and

Table 6.1: Percent Tobacco Excise Revenue by Type of Cigarette, and Change in Tax Rates for Hand-rolled Kreteks (SKT), 1996 to 2007

| Year | % of excise revenues | | | Change in tax rates for SKT ^a | | |
|------|----------------------|------|------------|--|------------------|------------------|
| | SKM | SKT | SPM, other | HJE ^b | Ad valorem | Production scale |
| 1996 | 0.77 | 0.13 | 0.10 | +/- ^c | +/- ^c | xx ^d |
| 1997 | 0.78 | 0.12 | 0.10 | + | | x |
| 1998 | 0.77 | 0.14 | 0.09 | + | | |
| 1999 | 0.72 | 0.17 | 0.11 | - | + | x |
| 2000 | 0.71 | 0.20 | 0.10 | ++ ^d | - | |
| 2001 | 0.67 | 0.23 | 0.10 | +++ ^e | - ^f | x |
| 2002 | 0.66 | 0.23 | 0.11 | + | + ^g | x |
| 2003 | 0.69 | 0.23 | 0.09 | No change for SKT | | |
| 2004 | 0.72 | 0.21 | 0.08 | No change for any product | | |
| 2005 | 0.73 | 0.20 | 0.07 | + | | |

Notes: ^a Changes in tax rates for other products are not described here; see Annex 3.2. Noted here is the year in which the change took place, which may be different from the year in which the ministerial decree was issued. + indicates an increase and - indicates a decline. ^b Retail price. ^c Increase for lowest production scale and decrease in highest. ^d Two changes occurred in one year. ^e Three changes occurred in one year. For third change, uniform HJE applied to all but lowest production scales. ^f Decrease in lowest production scale only from 12 to 4%. ^g Increase for the highest production scale only.

Table 6.2: Total Production and Tobacco Excise Revenue for Machine-made Kreteks (SKM) and Hand-rolled Kreteks (SKT), by Firm Production Levels, 2000 and 2005

| Type | Firm production levels | 2000 | | 2005 | |
|---------|----------------------------|------------|--------|------------|--------|
| | | Production | Excise | Production | Excise |
| SKM | | | | | |
| I | >2 billion | 39.7 | 63.0 | 47.2 | 68.8 |
| II | >500 million to ≤2 billion | 5.3 | 5.4 | 6.1 | 4.4 |
| III | ≤500 million | 13.4 | 9.6 | 5.4 | 5.4 |
| SKT | | | | | |
| I | >2 billion | 28.3 | 19.1 | 24.3 | 17.8 |
| II | >500 million to ≤2 billion | 3.4 | 0.9 | 11.2 | 1.7 |
| III A&B | ≤500 million | 9.9 | 2.0 | 5.8 | 1.9 |

Source: Roadmap for the Tobacco Product Industry, Ministry of Industry 2007.

Despite preferential tax policies, the percentage of production from small kretek firms declined from 23 percent in 2000 to 11 percent in 2005.

SKT firms (>2 billion per year) contributed 72 percent of production and 87 percent of tobacco excise revenues in 2005. In 2006, six large firms contributed 88 percent of excise tax revenues and 75 percent of total production.¹³⁹ Despite this unsuccessful effort to promote small industry through preferential excise, the tobacco tax schedules continue to favor small firms (see Chapter III, Table 3.1.).

Promoting the tobacco industry. Early in 2007, the Government of Indonesia led by the Ministry of Industry released “The Roadmap of Tobacco Products Industry and Excise Policy.” The roadmap has three aims: to increase government revenue, promote employment, and improve health. It is proposed to achieve these goals via increasing cigarette production to 260 billion sticks by 2020. The plan is supported by the Ministry of Finance, the Ministry of Manpower and Transmigration, the Ministry of Agriculture, and the cigarette manufacturers associations (GAPPRI and GAPRINDO).

The government states that this “roadmap” is in line with the philosophy of implementing excise taxes to reduce consumption and promote healthy communities.¹⁴⁰ This plan is flawed in several ways. A decline in cigarette sales volume does not necessarily imply a reduction in government revenue. Demand for tobacco products is inelastic; that is, the percentage reduction in demand is less than the percentage increase in price. In other words, some smokers would reduce consumption and many others would continue smoking, even at higher prices. The studies described in Chapter IV suggest that a 10 percent increase in tax will result in a decline in consumption of 0.9 to 3.0 percent. With a relatively small impact on the tax base, the tax increase would result in an increase in government tax revenues regardless of reductions in sales volume for cigarettes. Therefore, the most

The most efficient way to increase government revenues is to increase tobacco taxes, rather than promoting higher tobacco consumption among females and youth given that 63 percent of adult males already smoke in Indonesia.

efficient way to increase government revenues is to increase tobacco taxes rather than promoting higher tobacco consumption among females and youth given that 63 percent of adult males already smoke in Indonesia. The industry states that they plan to export much of the increase in production. However, such plans could be hampered by lower production costs in other countries as well as increasingly strict regulations about cigarettes additives and health warnings with the implementation of the FCTC globally. For example, in the US, a proposed bill (backed by Philip Morris) bans the import of cigarettes with additives other than menthol.¹⁴¹

To improve health, the roadmap proposes to reduce the nicotine levels in cigarettes by 2020. To be clear, the business model of the cigarette market is to create, sustain demand for, and deliver nicotine, a highly addictive drug.¹⁴² Reducing nicotine levels would result in compensating behaviors among smokers, such as smoking more cigarettes or inhaling more deeply, to achieve the same levels of nicotine intake. Compensating behaviors such as smoking more or more intensely can result in worse health outcomes because of higher exposure to carbon monoxide and other chemicals in the cigarette smoke. Studies conclusively demonstrate no health benefits in reducing nicotine levels.¹⁴³

Moreover, regardless of the nicotine levels in tobacco leaf, chemical additives can enhance nicotine's addictive properties. The tobacco industry has used ammonium compounds, for example, to raise the alkalinity of smoke, which increases the addictive "kick" of the nicotine.¹⁴⁴ Cigarettes can also be produced using more porous cigarette wrapping paper, which results in lower "tar and nicotine" yields without changing the composition. The existing measurements of tar and nicotine levels are based on discredited testing methodology that fails to capture the behavioral and physiological responses to chemical additives and cigarette content.¹⁴⁵ In short, promoting higher

consumption and sales of an addictive product is unlikely to create healthy communities.

Promoting health. Tobacco taxation is the most cost-effective public health tool for reducing tobacco-attributable morbidity, disabilities, and mortality. This disease burden will increase substantially over the upcoming decades at present consumption levels. However, the existing government regulation on tobacco control (PP 19/2003) does not include articles about price and tax measures. A Tobacco Control Act (Controlling the Impact of Tobacco Products on Health) is being put forward as parliamentary initiative. The draft bill proposes tobacco tax rates at 65 percent of the HJE and a 10 percent earmark of tobacco taxes for tobacco control and health activities (Annex 6.4). To date, the bill is waiting to be included in the national legislative agenda. The government acknowledges the role of excise in reducing consumption and controlling the distribution of products considered immoral or unhealthy.¹⁴⁶ In addition, the Ministry of Finance stated that the modest increase in the maximum allowable tobacco tax rates in the customs law (from 55 to 57 percent) was done for health considerations.¹⁴⁷ In practice, however, tobacco tax rates and prices remain low, consumption has steadily increased over time, and smoking prevalence among children is increasing.

Framework Convention on Tobacco Control. The Framework Convention on Tobacco Control (FCTC) is an international public health treaty developed by all of World Health Organization (WHO) member states. Its objective is "to protect present and future generations from the devastating health, social, environmental and economic consequences of tobacco consumption and exposure to tobacco smoke by providing a framework for tobacco control measures to be implemented by the Parties at the national, regional and international levels in order to reduce continually and substantially the prevalence of tobacco use and exposure to tobacco smoke."¹⁴⁸

As a member state of the WHO, the Government of Indonesia (represented by the Ministry of Health, Ministry of Foreign Affairs, Ministry of Trade and Industry, Ministry of Finance, and National Agency for Drug and Food Control) participated in all treaty negotiating bodies as well as the treaty's drafting committee between 1999 and 2003. The FCTC text was adopted unanimously by all members of the WHO at the 56th World Health Assembly in May 2003. The treaty sets forth minimum standards for tobacco control policies, including a consideration of health in implementing tobacco price and taxes and restricting duty-free sales. As of October 2007, 152 countries have become parties to the treaty through ratification or accession (including major producers such as China, India, and Brazil), and 168 countries have signed the treaty.¹⁴⁹ Indonesia is the only country out of 38 in the Southeast Asia and Western Pacific Regions that is not a party to the treaty. Not being a party to the treaty places Indonesia in a weak position, specifically related to regional cross-border policies such as trade and smuggling that affect domestic policies and revenues and favorable trading status within ASEAN.

Reducing poverty. Through its negative health effects, tobacco consumption would be expected to reduce labor productivity, decrease the relative size of the labor force, and have an important long-term economic impact at the household level through reductions in earnings and savings. The Indonesian Millennium Development Goal (MDG) Reports produced in 2004 and 2005 and signed by the respective Presidents of the Republic of Indonesia discuss the poverty effects of tobacco use.¹⁵⁰ They emphasize the high levels of spending for tobacco products among poor households — resources that could have been spent on health, education, food, or other necessities. Both reports recommend tobacco taxes to increase prices as a means of reducing the negative health and welfare effects of tobacco consumption. However, the poverty effects of tobacco consumption do not appear to be a consideration in determining the tobacco tax rates.

Protecting children. Higher tobacco prices would be expected to have the strongest impact on uptake and consumption among children and adolescents, who may be up to three times more sensitive to price increases. The National Commission on Child Protection (NCCP) has identified the promotion of tobacco products as a violation of the Child Protection Law, which obligates the government to protect children from addictive substances. For example, 78 percent of Indonesian smokers started smoking before the age of 19 years, nicotine is highly addictive, and 83 to 93 percent of children who smoke try to quit before reaching adolescence. Youth access policies such as age restrictions for buying cigarettes have been demonstrated as ineffective in preventing youth smoking.¹⁵¹ This suggests that taxation plays an important role in keeping prices high to prevent uptake among children and adolescents, who did not intend to start a lifetime addiction. Protection of children, however, does not appear to be a consideration in determining the tobacco tax rates.

The National Commission on Child Protection has identified the promotion of tobacco products as a violation of the Child Protection Law, which obligates the government to protect children from addictive substances.

Using taxation to offset the externalities of tobacco consumption and address time-inconsistent behavior. Tax on tobacco should be set at a level to exceed the externalities imposed by tobacco consumption. This implies that the price of tobacco could include the costs not only for individual smokers but also the costs imposed on others and society. At societal level, the costs of smoking include reductions in labor productivity, and use of publicly financed health care for smoking-attributable diseases and disability for smokers as well as nonsmokers routinely exposed to

secondhand smoke.¹⁵² There is a loss to the economy from premature death and from a reduction in human capital investments, such as education among surviving children. A Ministry of Finance policy paper identifies the role of tobacco taxation in reducing negative externalities, and the excise law identifies the role of the government in using excises to reduce health or environmental risks, or to promote justice and equity.¹⁵³

In estimating the true cost of smoking, an important consideration is that individuals are time-inconsistent. People place a higher value on the present compared with the future, but weigh the two periods relatively equally. This implies that people will consistently make decisions that offer immediate or short-term benefits (such as smoking) over long-term benefits that are much greater (such as additional years of life). At the same time, people seek means of self-control to address this internal conflict between short-term and long-term goals; take, for example, the high percentage of smokers that have attempted to quit but were unsuccessful. Some smokers welcome higher cigarette prices and clean air legislation because it helps them quit or reduce consumption and, thereby, achieve their long-term goals. Taking into consideration time-inconsistent behavior and the monetary value of the health damage for the average

smoker in the U.S., it is estimated that cost of one pack of cigarettes in terms of life years lost is US\$ 35 (Rp 319,824).¹⁵⁴

Industry Responses to the Tobacco Tax System

There are several responses by the industry to the differential scales for tax rates. First, differential tax rates by production scales provide an incentive for firms to reduce their production levels to fall within lower tax brackets. We do not have access to recent production figures by industry to illustrate this point. However, Bird (1999) uses Djarum production data for 1988 to 1992 to show the industry's response to the

Differential tax rates by production scales provide an incentive for firms to reduce their production levels to fall within lower tax brackets.

government's change in tax by production levels (Table 6.3). The change in the highest production threshold to 30 billion sticks prompted Djarum to reduce production to below 30 billion sticks, thereby incurring a lower excise tax rate on its products and increasing its profit margin.¹³⁸ In effect, this suggests that that

Table 6.3: Changes in Djarum's Cigarette Production Volume in Response to the Changes in Tax Rates by Production Level, 1988 to 1992

| Year | Production (billion sticks) | Excise tax rate (%) | |
|------|-----------------------------|---------------------|------|
| | | SKT | SKM |
| 1988 | 35.1 | 25.0 | 35.0 |
| 1989 | 39.6 | 17.5 | 37.5 |
| 1990 | 37.1 | 17.5 | 37.5 |
| 1991 | 29.3 | 15.0 | 35.0 |
| 1992 | 28.9 | 15.0 | 35.0 |

Source: Bird K. 1999. SKT = hand-rolled kreteks. SKM = machine-made kreteks.

Six large firms contribute 88 percent of tobacco excise revenues and 75 percent of total production.

tiered tax system can be “gamed” to increase profits while, at the same time, reducing production volume.

More recently, there was a shift between the number of firms in the small (IIIA) and very small (IIIB) production scales between 2005 and 2006, when the most favorable tax rates were in place for the firms in the lowest production scales (Table 6.4). During this time, there was a decline from 252 to 96 firms in the IIIA tier, and an increase from 2941 to 3841 firms in the IIIB tier, even though there were no changes in the definitions applied to the production scales. The tax policy, therefore, is providing firms an incentive to become smaller, rather than grow larger and improve efficiency. Recognizing this problem, the Excise Tax Directorate combined the IIIA and IIIB production scales for SKT and applied the same tax rate (0 percent) and specific tax (Rp 30) for all firms producing ≤ 500 million sticks for the 2008 regulation.

Second, the very low tax rates for firms with the lowest levels of production (≤ 6 million sticks per

annum) may have provided an incentive to establish new small firms. Different sources provide different figures about the number of firms involved in cigarette manufacturing. Euromonitor reports a doubling of the total number of cigarette firms from 1,500 to more than 3,000 between 2001 and 2004. They claim that many of these firms produce at a very small scale and avoid paying excise duties to keep prices low.¹⁵⁵ In 2006, the Excise Tax Directorate counted 3834 very small cigarette firms (Table 6.4). A separate factor contributing to an increase in the number of small firms is the decentralization policies in 2001, which permitted districts governments to issue licenses to new firms for cigarette production.¹⁵⁵

Marks (2003) as well as industry reports question how many of these small companies are genuinely independent or exist in title only. According to these two sources, small and medium size companies can purchase excise tax ribbons and resell them to large companies. This allows large companies to avoid paying the highest tax rates.¹⁵⁶ This practice is not legal.

Large cigarette firms buy up or contract production to small firms, which incur lower tax rates.

Table 6.4. The Number of Cigarette Firms by Production Tier, and Their Contribution to Excise Revenues, 2005-2006

| Annual Production (sticks) | | 2005 | | 2006 | |
|----------------------------|---------------------------------|-------------|---------------------------|-------------|---------------------------|
| | | No. firms | % of total tobacco excise | No. firms | % of total tobacco excise |
| I | >2 billion | 6 | 86.1 | 6 | 88.3 |
| II | >500 million - ≤ 2 billion | 18 | 8.0 | 25 | 6.7 |
| IIIA | >6 million- ≤ 500 million | 252 | 5.7 | 96 | 4.8 |
| IIIB | ≤ 6 million | 2941 | 0.2 | 3834 | 0.2 |
| Total | | 3217 | 100.0 | 3961 | 100.0 |

Source: Excise tax directorate, Ministry of Finance, in Roadmap of the Tobacco Products Industry, 2007.

A third way that large cigarette firms respond to the tiered rates is to buy up or contract production to small firms, which incur lower tax rates. Before 1999, the government banned establishing or subcontracting production to another firm. Subcontracting production to small firms is now officially recognized and permitted by the Ministry of Finance, presumably because it is pro-employment.¹⁵⁷ The smaller firms are treated as separate legal entities, enabling them to incur lower tax rates.

Data do not exist to estimate the extent to which large firms subcontract production to small firms. We can compare the figures from the Central Statistical Bureau (BPS) about the number of firms in cigarette manufacturing and the Excise Tax Directorate figures about the size of firms (Annex 6.5). However, this comparison is complicated by different definitions of firm size by the industrial sector and the Excise Tax Directorate. The Statistical Bureau estimates firm size by number of employees, with the largest firms employing 100 or more people. The Excise Tax Directorate, however, defines firm size in terms of cigarette production. Therefore, firms with the largest numbers of employees would probably correspond with the small or medium size production scales used by the Excise Tax Directorate. One could assume the greatest overlap would occur for small and very small industries, with both few numbers of workers and small-scale cigarette production. Overall, however, the statistical bureau reports nearly 17,000 “home industries” in tobacco manufacturing, although they are not counted in the Excise Tax Directorate statistics. This difference could be a result of firms that are registered with the labor ministry and not yet

registered with the finance ministry, or firms that are registered but not active in cigarette production.

Table 6.4 also illustrates that a handful of large firms account for vast majority of revenues. Six large firms contributed 88.3 percent of excise tax revenues and 75.1 percent of total production in 2006. This suggests that, despite the complicated tax structure, the most important tax administration issues from a revenue perspective revolve around a handful of large firms.

Tax Administration, Counterfeiting, and Smuggling

There is a concern that an increase in tobacco tax and prices would result in higher contraband cigarette sales. From a revenue perspective, illicit trade in cigarettes can result in the loss of government tax revenues. From a social welfare perspective, smuggling increases the availability of low-priced cigarettes, and low prices encourage consumption.

There are several main types of illicit trade in tobacco products: bootlegging, illegal manufacturing of products, and organized transit smuggling. Bootlegging occurs when a person buys cigarettes in a low tax jurisdiction and resells them in a high tax jurisdiction. The difference in tax rates is the profit. Bootlegging tends to be relatively small-scale and does not account for a large part of global illicit trade. Tax harmonization between countries can reduce bootlegging. Tax rates in Indonesia are much lower than most of its neighboring countries, so it is unlikely that even large tax increases would provide an incentive for bootlegging into Indonesia.

Illegal manufacturing refers to the production of cigarettes contrary to taxation laws, or laws related to licensing or restrictions on the manufacture of tobacco products. The Excise Tax Directorate has recognized the existence of illegal manufacturing of cigarettes and has taken steps to remediate this problem. They are

Despite the complicated tax structure, the most important tax administration issues from a revenue perspective revolve around a handful of large firms.

focusing on tobacco products sold without excise ribbons, counterfeit tax ribbons, recycled tax ribbons, and tax ribbons that do not correspond with the cigarette type and production scale classification.

The excise ribbon is provided by the Ministry of Finance, and the printing is conducted by state-owned companies and/or institutions licensed by the Ministry of Finance. The ribbons are designed using printing security technology to protect from counterfeiting. Producers should pay excise tax within 45 days of product distribution. However, for firms that pay by purchase of excise ribbons, the payment can be made within 90 days of ordering the ribbons. Cigarette importers who pay using excise ribbons have 60 days from ordering the ribbons to pay excise duties. Delays beyond the given deadlines are fined an administrative penalty of around 10 percent of the total tax liability.¹⁵⁸

Transit smuggling (also called freight smuggling or container smuggling) is the main problem in the global illicit cigarette trade.¹⁵⁹ Transit smuggling avoids all taxes by diverting products from the legal distribution chain to the black market. Multinational “western” brands are popular with organized smugglers because they can be sold in many countries. Smugglers place bulk orders from manufacturers; once the shipment leaves the manufacturers, it passes through several paper transactions, which may be difficult to trace and lead to nonexistent companies. The cigarette shipment then disappears into the black market. As a result of US litigation and the release of internal industry documents, there exists considerable evidence of tobacco industry involvement in transit smuggling to advance their business interests in Asia, Africa, and Latin America.¹⁶⁰ Smuggling enables tobacco companies to overcome entry restrictions, enter into new markets, and launch new brands. It also keeps prices low, which encourages widespread access.¹⁶¹

Smuggling cigarettes into Indonesia appears to be less of a problem compared with other countries in the

Price differentials across countries provide an incentive to smuggle, but other important factors are unlicensed distributors and lax anti-smuggling laws and enforcement.

region. Industry sources cite an increase in contraband sales from 9.3 to 12.3 billion sticks between 2000 and 2005,¹⁵⁵ amounting to 5 to 6 percent of sales. In comparison, it is estimated that smuggling as a percent of sales amounts to 10 percent in Vietnam, 11 percent in Thailand, 21 percent in Malaysia, and 14 percent in India.¹⁶² One explanation could be that most Indonesians still prefer domestically produced *kreteks*, whereas white (tobacco only) cigarettes dominate the international illicit trade. Smuggling into Indonesia might not be profitable because *kretek* prices are cheaper than average cigarette prices in neighboring countries. For example, the price of a pack of cigarettes in Indonesia is around US\$ 0.72 compared with US\$ 0.77 in Vietnam, US\$ 0.92 in Thailand, US\$ 1.21 in Malaysia and India, and more than US\$ 3.00 in Singapore. The average price per pack in the East Asia and Pacific region is US\$ 2.28, and the average across low-income countries is US\$ 1.18.¹⁶³

Smuggling white (tobacco only) cigarettes into Indonesia has been identified as potentially profitable. A BAT-commissioned study found a preference among Indonesian consumers for contraband versions of international brand cigarettes.¹⁶⁴ The study reported that contraband international brands are considered more authentic than domestically produced white cigarettes.

Price differentials across countries provide an incentive to smuggle, but other factors are also important. These include unlicensed distributors and lax anti-smuggling laws and enforcement. Singapore, for example, reports smuggling amounting to 2 percent

Cigarette smuggling thrives where it is not considered a serious crime, and law enforcement is weak.

of cigarette sales while also enforcing some of the highest tobacco tax rates in the region.¹⁶² Under Article 15 of the Framework Convention for Tobacco Control (FCTC), other governments in the Southeast Asia and Pacific Region will be required to address smuggling in several specific ways. These include collecting data about cross border trade in tobacco products including illicit trade, enacting or strengthening legislation against illicit trade in tobacco, destroying counterfeit and contraband tobacco, adopting and implementing measures to monitor and control the distribution of tobacco products, and adopting measures to enable the confiscation of proceeds derived from smuggling.

Unlicensed manufacturers and distributors facilitate smuggling. Indonesia requires that all manufacturers, warehouse owners, importers, distributors, or retailers who deal with goods subject to excise have a permit in the form of Identification Number (NPPBKC) from the Ministry of Finance. Before the permit is given, the Excise Tax Directorate will conduct a “fit and proper” test by establishing the profile of a manufacturer in implementing excise-related regulations. The Director General of Excise maintains a database with company identification numbers and activity data. Owners of

NPPBKC (including producers, warehouse owners, distributors, importers, or retailers) are obligated to maintain bookkeeping or at least a record on products subject to excise after the production process. This bookkeeping should be reported regularly to the tax directorate through their representative offices (KPPBC), which monitor the companies. Monthly reports are required from firms that sell tobacco.

Cigarette smuggling thrives where it is not considered a serious crime and law enforcement is weak. In general, low penalties for smuggling cigarettes compared with other products such as pharmaceuticals or other drugs, makes tobacco smuggling attractive. Large profits can be gained at a low risk of getting caught and convicted, and even so with lax penalties. Regulations are required that make cigarette smuggling less profitable by making it a serious crime with high penalties and strict law enforcement. In Indonesia, sanctions for producers of fake excise ribbons include imprisonment for one to eight years, and a fine of ten to twenty times the value of the excise value that should be paid. Penalties for retailers who sell tobacco products having no excise ribbon include imprisonment for one to five years and/or a fine amounting twice to ten times the excise value that should have been paid. The technology exists for creating excise ribbon or other pack markings that would allow cigarettes to be tracked through the distribution process and, when combined with licensing, make it easier to identify and penalize those responsible for the smuggling.

Endnotes for Chapter 6

¹³¹ Ministry of Industry, Republic of Indonesia. Roadmap for the Tobacco Products Industry and Excise Policy, 2007-2020; March 2007.

¹³² Law of the Republic of Indonesia Number 11, 1995, about Excise

¹³³ Law of the Republic of Indonesia, Number 39, 2007, about the amendment to Law Number 11, 1995, about Excise.

¹³⁴ Budget statistics, APBN 2007-2008, Ministry of Finance 2007.

¹³⁵ Castles L. Religion, politics, and economic behavior in Java: The Kudus cigarette industry. Cultural Report Series No. 15, Southeast Asia Studies, Yale University, 1967.

¹³⁶ Tarmidi L. Changing structure and competition in the kretek cigarette industry. Bulletin of Indonesian Economic Studies 1996;32(3):85-107.

¹³⁷ World Bank. April 2007

- ¹³⁸ Bird K. Industrial concentration and competition in Indonesian manufacturing. Doctoral Thesis. Australian National University, 1999. Bird explains that this policy, while strictly applied to large multinationals, was less strict for smaller foreign firms that were given permission to produce white cigarettes in the 1980s.
- ¹³⁹ Data from Roadmap of the Tobacco Products Industry (IHT); Directorate General for Agro-chemical Industries, Ministry of Labor, Opportunities for Tobacco Products, Meeting on March 8 2007.
- ¹⁴⁰ Communication from the Directorate of Excise Tax, 21 January 2008.
- ¹⁴¹ Guerin B. Smoking US-Indonesia trade debate. *Asia Times* Sept 12, 2007.
- ¹⁴² Zeller M. Exposure and harm reduction. Paper presented at the International Conference: Advancing Knowledge on Regulating Tobacco Products, Oslo, Norway, 9-11 Feb. 2000. In WHO 2000. Advancing knowledge on regulating tobacco products.
- ¹⁴³ Facts about light and mild cigarettes. The Johns Hopkins Bloomberg School of Public Health.
- ¹⁴⁴ Summary of literature at ASH UK.
- ¹⁴⁵ Advancing knowledge on regulating tobacco products. Geneva, World Health Organization, 2000.
- ¹⁴⁶ Policies to expand on and intensify tobacco product excise, Ministry of Finance.
- ¹⁴⁷ Government raises cigarette taxes, Ministry of Trade Press Release, July 2007.
- ¹⁴⁸ The Framework Convention on Tobacco Control Text, Part II: Objective, guiding principles and general obligations. Article 3 Objective
- ¹⁴⁹ Updated status of the WHO Framework Convention on Tobacco Control, World Health Organization website.
- ¹⁵⁰ Indonesia Progress Report on the Millennium Development Goals, 2004 and 2005. Ministry of Planning, Republic of Indonesia and the United Nations Development Program (UNDP).
- ¹⁵¹ Ling PM, Landman A, Glantz SA. It is time to abandon youth access tobacco programmes. *Tobacco Control* 2002;11: 3-6.
- ¹⁵² Warner KE, Chaloupka FJ, Cook PJ, Manning WG, Newhouse JP, Novotny TE, et al. Criteria for determining an optimal cigarette tax: the economist's perspective. *Tobacco Control* 1995;4:380-386. doi:10.1136/tc.4.4.380
- ¹⁵³ Ministry of Finance. Policies to expand on and intensify tobacco product excise, Ministry of Finance; and Law of the Republic of Indonesia, Number 39, 2007, about Amendments to Law Number 11, 1995, about Excise.
- ¹⁵⁴ Gruber J, Koszegi B. A modern economic view of tobacco taxation. The International Union Against Tuberculosis and Lung Disease, Paris, February 2008.
- ¹⁵⁵ Cigarettes in Indonesia. *Euromonitor*, 2007.
- ¹⁵⁶ Marks, 2003 and *Euromonitor*, 2007.
- ¹⁵⁷ MoF SK 125/1999.
- ¹⁵⁸ Details on excise administration are stipulated in Law no 39/2007 article 7, and Ministry of Finance decrees: No. 240/KMK.05/1996, KMK No.105/KMK.05/1997, and PMK No.60/PMK.04/2007.
- ¹⁵⁹ Tackling the illicit trade in tobacco, ASEAN inter-sessional meeting, 4-7 March 2002.
- ¹⁶⁰ Lee K, Collin J. Key to the future. British American Tobacco and cigarette smuggling in China. *PLoS Med* 2006; 3(7); Towards health with justice, WHO 2002; Collin J, LeGresley E, MacKenzie R, Lawrence S, Lee K. Complicity in contraband: British American Tobacco and cigarette smuggling in Asia. *Tobacco Control* 2004;13:ii104-ii111; BAT and smuggling; ASH UK; and Tobacco industry involvement in cigarette smuggling ASH Canada.
- ¹⁶¹ How big was the global illicit tobacco trade problem in 2006? Framework Convention Alliance (FCA), Prepared for the 2nd session of the Conference of the Parties to the WHO FCTC, June 30-July 6, 2007, Bangkok, Thailand.
- ¹⁶² Merriman D, Yurekli A, Chaloupka FJ. 2002, How big is the worldwide cigarette smuggling problem? In: *Tobacco control in developing countries*, Oxford University Press; and How big was the global illicit tobacco trade problem in 2006? June 30-July 6, 2007, Bangkok, Thailand.
- ¹⁶³ Figures provided by Ayda Yurekli, Economic Advisor to WHO.
- ¹⁶⁴ Collin J, LeGresley E, MacKenzie R, Lawrence S, Lee K. Complicity in contraband: British American Tobacco and cigarette smuggling in Asia. *Tobacco Control* 2004;13:ii104-ii111.

Conclusions and Recommendations

The social and economic consequences of tobacco consumption in Indonesia have received little attention to date, primarily because there is a delay of up to 25 years between the time of smoking uptake and the onset of many chronic diseases. Therefore, the negative health effects of rapid increases in cigarette consumption since the 1970s and 1980s are only now being seen. Up to one-half of today's 57 million smokers in Indonesia will die of tobacco-related illnesses. This study has highlighted the potential for tobacco price and tax measures to reduce the burden of disease and poverty, address market failure related to addiction, protect children, and recover the costs of tobacco consumption to society. We conclude with five recommendations.

1. Simplify the excise tax system by eliminating the tiered production scales, using a uniform specific tax, implementing tax increases across all tobacco products, and automatically adjusting the tax for inflation.

The tobacco excise tax system could be simplified by eliminating the production scales, using a uniform tax, and applying comparable increases for all products. At present, the production scales offer firms a number of different ways to avoid the highest tax brackets, legally or otherwise, which reduce the impact of tobacco tax increases on revenue generation and social welfare. A larger uniform specific tax would greatly simplify administration, protect revenues from industry pricing competition, and facilitate revenue forecasts. In addition, imposing the same specific tax would be effective in discouraging cigarette consumption assuming that it is large enough to offset income growth and automatically adjusted for inflation

annually. Comparable increases in taxes on all tobacco products are needed to minimize substitution between tobacco products.

2. Implement the maximum legally allowable excise tax rates for all tobacco products.

The current tax rates are well below the maximum allowable by law. Under the current excise tax system, it is estimated that applying the maximum tax rate could avert between 1.7 and 4.0 million tobacco-related deaths among the current cohort of smokers. The actual impact of applying the maximum tax rate could have a greater health impact because it would require increases in taxes for all products, thereby reducing substitution. The application of a uniform specific tax that minimized the differences in tax rates between cigarette products could result in additional lives saved. Specific excises that impose the same tax per cigarette are more effective in discouraging cigarette consumption. Increasing the tax rates to this level would also generate substantial additional government revenues, amounting to Rp 29.1 to 59.3 trillion (US\$ 3.2 to 6.5 billion). Reaching the global benchmark of 70 percent of sales price through a specific, or primarily specific, rather than *ad valorem* tax, would have the greatest health impact.

Research simulating a doubling of the tobacco tax reports that six economic sectors would be negatively impacted. Growth in 60 other sectors would be stimulated. This would result from diverting large household expenditures from tobacco to spending on other commodities and investments with higher economic output. The result would be a net positive impact on economic output amounting to Rp 335.4 billion (US\$ 36.9 million) (0.008 percent), an increase in household income by RP 491.6 billion (US\$ 54.1 million) (0.08 percent), and an increase in employment by 281,135 jobs (0.3 percent).

3. Re-examine the employment generation goal of the tobacco excise tax system, and evaluate whether other policy instruments and programs would be more effective in promoting employment compared with tobacco excise policies.

Part of the complexity of the current tobacco tax system could be explained by its intention to promote employment. The current system applies lower taxes for firms producing hand-rolled products and those operating at low production levels. The policy has primarily been to protect small firms by increasing tax on products from larger firms. However, despite a series of major tax changes favoring small firms that produce hand-rolled *kreteks*, the percentage of production from small firms declined between 2000 and 2005. The relatively low growth in tobacco manufacturing has not matched rapid growth in the manufacturing sector as a whole. The employment generation goal of the current tobacco tax system should be reexamined. A tobacco excise tax system that protects small firms from competition is unlikely to be the most effective means to promote employment — compared with, for example, small-scale credit or investments in education and human development.

4. When setting increases in the tobacco tax rates, take into consideration the social welfare losses of tobacco consumption, including market failures related to lack of information and addiction, time inconsistent behavior that reflects short-term rather than long-term goals, the externalities of tobacco consumption, and the contribution of tobacco consumption to poverty.

The excise tax law states that the purpose of excise is to reduce the consumption and control the distribution of tobacco products, and identifies the role of the government in using excises to reduce health or environmental risks, or to promote justice and equity. In practice, tobacco taxation has not yet been used as a

tool to reduce consumption and improve health and welfare. Tobacco taxes are low by almost any standard, and real prices have remained largely unchanged since the 1980s. The system promotes large gaps in prices between products, and tobacco has become more affordable over time. Tobacco consumption has steadily increased over time, and prevalence among children is increasing.

Tax on tobacco should be set at a level to exceed the externalities imposed by tobacco consumption. This includes public spending on health care for tobacco-attributable illnesses, the loss to the economy from reductions in labor productivity at work, premature death due to tobacco-related illnesses, and reductions in future human capital investments such as health and education among children. Most Indonesians start smoking before the age of 19 years, nicotine is highly addictive, and the long-term risks of smoking are not fully understood. At the same time, individuals tend to make decisions that offer short-term benefits over higher long-term benefits, and most smokers have tried unsuccessfully to quit. Through taxation, the government can help consumers in making informed consumption choices by providing them a more accurate estimate of the true costs. More difficult to value is the cost to the society and families of premature tobacco-related deaths.

5. Consider using earmarked excises to support local economies that could be negatively affected by reductions in tobacco consumption, and to implement tobacco control programs.

While the contribution of tobacco manufacturing is relatively small from a national or provincial perspective, a handful of districts are highly dependent on tobacco manufacturing. The excise law recognizes this concentration, and earmarks 2 percent of excise revenues for tobacco producing regions. Recall that 6 large firms contributed 88.3 percent of excise tax

revenues and 75.1 percent of total production; although there are more than 3000 small producers paying excise, many of these small producers copy the more popular brands. It could be expected, therefore, that these small firms would not survive under a stricter regulatory environment. It is estimated that the 2 percent earmark will amount to approximately Rp 836 billion (US\$ 92 million) for tobacco-producing regions in 2008; with the tax increase in Recommendation B, the earmark could increase to Rp 1.4 to 2.0 trillion

(US\$ 155.9 to 222.5 million). These resources could be directed to support any labor transitions from tobacco to other sectors of the economy, including crop options, specialized agricultural support or private trading networks that would allow entry into new markets, skills training, or other economic or human development programs. The social development programs specified in the law could include health and tobacco control programs more broadly.

Annexes

Annex 2.1: Smoking Prevalence by Age Group and Sex. 1995, 2001, 2004

| Age Group | 1995 | | | 2001 | | | 2004 | | |
|----------------|-------------|------------|-------------|-------------|------------|-------------|-------------|------------|-------------|
| | Males | Females | Average | Males | Females | Average | Males | Females | Average |
| 10-14 | 0.5 | 0.1 | 0.3 | 0.7 | 0.0 | 0.4 | NA | NA | NA |
| 15-19 | 13.7 | 0.3 | 7.1 | 24.2 | 0.2 | 12.7 | 32.8 | 1.9 | 17.3 |
| 20-24 | 42.6 | 1.0 | 20.3 | 60.1 | 0.6 | 28.8 | 63.6 | 4.1 | 30.6 |
| 25-29 | 57.3 | 1.1 | 27.4 | 69.9 | 0.6 | 33.7 | 69.9 | 4.5 | 34.7 |
| 30-34 | 64.4 | 1.2 | 31.5 | 70.5 | 0.9 | 35.3 | 68.9 | 3.8 | 37.3 |
| 35-39 | 67.3 | 1.7 | 35.6 | 73.5 | 1.3 | 36.6 | 67.7 | 5.0 | 39.7 |
| 40-44 | 67.3 | 2.3 | 34.2 | 74.3 | 1.9 | 39.6 | 66.9 | 4.9 | 40.1 |
| 45-49 | 68.0 | 3.1 | 35.7 | 74.4 | 2.2 | 41.3 | 67.9 | 5.8 | 41.0 |
| 50-54 | 66.8 | 3.4 | 34.5 | 70.4 | 2.6 | 34.8 | 67.9 | 4.9 | 38.8 |
| 55-59 | 66.1 | 3.3 | 33.9 | 69.9 | 3.0 | 36.3 | 64.1 | 6.2 | 36.8 |
| 60-64 | 64.7 | 2.8 | 32.2 | 65.6 | 2.8 | 32.6 | 60.0 | 6.2 | 31.3 |
| 65-69 | 64.3 | 3.8 | 34.0 | 64.7 | 2.7 | 32.2 | 58.7 | 4.4 | 30.9 |
| 70-74 | 56.9 | 3.1 | 30.6 | 59.2 | 2.1 | 30.0 | 55.3 | 3.8 | 27.0 |
| 75+ | 53.3 | 1.9 | 24.8 | 48.5 | 2.1 | 23.5 | 47.4 | 4.1 | 24.9 |
| Average | 53.4 | 1.7 | 27.0 | 62.2 | 1.3 | 31.5 | 63.1 | 4.5 | 34.4 |

Sources: National Socio-Economic Survey 1995, 2001, 2004. Aceh and Maluku not included in 2001. Respondents in 2004 were 15 years and older.

Annex 2.2: Male and Female Smoking Prevalence, by Province and Region, 1995, 2001, 2004

| Province | 1995 | | | 2001 | | | 2004 | | |
|------------------------|-------|---------|---------|-------|---------|---------|-------|---------|---------|
| | Males | Females | Average | Males | Females | Average | Males | Females | Average |
| Nangro Aceh Darussalam | 52.8 | 2.2 | 26.9 | - | - | - | 69.1 | 5.6 | 35.1 |
| North Sumatra | 59.8 | 2.5 | 28.7 | 59.7 | 1.7 | 30.3 | 60.4 | 5.2 | 34.2 |
| West Sumatra | 54.2 | 1.5 | 27.6 | 67.1 | 2.5 | 33.3 | 67.6 | 4.6 | 34.2 |
| Riau | 58.6 | 3.7 | 31.0 | 63.3 | 2.1 | 33.4 | 69.5 | 8.0 | 37.8 |
| Jambi | 57.2 | 1.7 | 29.2 | 57.4 | 1.5 | 30.1 | 65.2 | 6.9 | 37.8 |
| South Sumatra | 61.3 | 1.7 | 31.6 | 64.8 | 1.7 | 33.7 | 68.5 | 5.3 | 39.8 |
| Bengkulu | 61.1 | 2.4 | 32.3 | 66.7 | 0.6 | 34.8 | 75.0 | 2.6 | 38.7 |
| Lampung | 42.6 | 1.8 | 22.1 | 67.4 | 1.6 | 35.9 | 71.0 | 5.1 | 39.6 |
| Bangka Belitung | - | - | - | 58.5 | 1.3 | 30.3 | 60.8 | 1.3 | 31.8 |
| DKI-JAKARTA | 58.3 | 1.8 | 29.8 | 54.5 | 1.5 | 27.7 | 55.7 | 5.1 | 31.2 |
| West Java | 52.4 | 1.3 | 26.1 | 68.0 | 1.7 | 35.0 | 70.0 | 5.7 | 39.1 |
| Central Java | 47.2 | 0.5 | 23.5 | 61.5 | 1.0 | 30.8 | 58.7 | 2.9 | 32.6 |
| DI Yogya | 55.7 | 1.3 | 27.2 | 53.7 | 0.2 | 26.3 | 55.7 | 0.9 | 28.8 |
| East Java | 33.1 | 0.9 | 16.9 | 62.4 | 0.8 | 30.7 | 64.1 | 3.1 | 32.5 |
| Banten | - | - | - | 66.3 | 0.8 | 33.6 | 68.1 | 5.9 | 38.2 |
| Bali | 61.8 | 0.5 | 29.2 | 45.7 | 1.3 | 23.3 | 46.2 | 2.2 | 24.3 |
| West Nusa Tenggara | 38.2 | 1.0 | 18.8 | 62.6 | 0.4 | 29.9 | 69.9 | 2.0 | 32.6 |
| East Nusa Tenggara | 39.8 | 0.9 | 20.1 | 56.6 | 0.5 | 27.6 | 52.4 | 3.8 | 27.3 |
| East Timor | 53.9 | 6.0 | 30.2 | -- | -- | -- | -- | -- | -- |
| West Kalimantan | 54.7 | 2.4 | 28.7 | 58.6 | 2.9 | 31.4 | 61.3 | 6.7 | 36.1 |
| Central Kalimantan | 46.3 | 2.3 | 23.6 | 60.2 | 1.0 | 31.8 | 65.8 | 5.1 | 36.6 |
| South Kalimantan | 42.1 | 1.9 | 22.5 | 51.8 | 1.2 | 26.6 | 53.0 | 3.8 | 27.3 |
| East Kalimantan | 50.6 | 0.9 | 25.6 | 55.3 | 2.6 | 29.2 | 45.4 | 8.9 | 29.5 |
| North Sulawesi | 49.3 | 3.3 | 26.2 | 61.2 | 1.9 | 31.7 | 66.3 | 7.0 | 37.1 |
| Central Sulawesi | 48.7 | 2.2 | 23.7 | 64.6 | 3.0 | 34.3 | 62.8 | 4.3 | 33.8 |
| South Sulawesi | 51.1 | 2.4 | 26.1 | 58.5 | 1.2 | 27.9 | 52.8 | 5.0 | 29.0 |
| South East Sulawesi | 40.9 | 1.0 | 21.1 | 58.7 | 1.7 | 29.9 | 60.0 | 5.4 | 31.5 |
| Gorontalo | -- | -- | -- | 69.0 | 0.9 | 35.2 | 73.7 | 5.8 | 38.4 |
| Maluku | 41.7 | 4.3 | 23.1 | NA | NA | NA | 61.9 | 4.0 | 32.3 |
| North Maluku | -- | -- | -- | NA | NA | NA | 76.6 | 4.3 | 42.0 |
| Papua/Irian Jaya | 55.0 | 0.6 | 27.3 | 54.6 | 3.7 | 29.7 | 57.1 | 9.9 | 36.4 |
| Rural | 58.3 | 2.0 | 29.5 | 67.0 | 1.5 | 34.0 | 66.8 | 4.7 | 36.5 |
| Urban | 45.1 | 1.2 | 22.6 | 56.1 | 1.1 | 28.2 | 58.6 | 4.2 | 31.7 |

Sources: National Socio-Economic Survey 1995, 2001, 2004. Aceh and Maluku not included in 2001. Respondents in 2004 were 15 years and older.

Annex 2.3: Smoking Prevalence by Education and Expenditure levels, by Sex, 1995, 2001 and 2004

| Educational levels | 1995 | | | 2001 | | | 2004 | | |
|---|-------------|------------|-------------|-------------|------------|-------------|-------------|------------|-------------|
| | Males | Females | Average | Males | Females | Average | Males | Females | Average |
| No education/incomplete primary education | 67.3 | 4.8 | 31.2 | 67.3 | 2.8 | 29.3 | 73.0 | 2.4 | 31.1 |
| Primary school graduate | 52.8 | 1.0 | 27.3 | 65.1 | 0.9 | 33.3 | 67.0 | 5.0 | 36.6 |
| Junior high graduate | 38.6 | 0.8 | 21.3 | 51.8 | 0.6 | 27.8 | 58.9 | 3.7 | 33.8 |
| Senior high graduate | 44.7 | 0.8 | 26.1 | 57.7 | 0.8 | 33.5 | 60.7 | 3.8 | 36.4 |
| University graduate | 37.1 | 0.6 | 23.0 | 44.2 | 0.3 | 25.2 | 47.8 | 3.5 | 29.7 |
| Expenditure Quintiles | | | | | | | | | |
| 1 (poorest) | 57.8 | 2.2 | 27.5 | 62.9 | 1.7 | 30.0 | 63.0 | 4.4 | 33.9 |
| 2 | 56.5 | 1.8 | 28.7 | 65.4 | 1.2 | 33.0 | 64.8 | 4.0 | 35.5 |
| 3 | 55.0 | 1.7 | 28.3 | 64.0 | 1.3 | 32.9 | 64.4 | 4.5 | 35.2 |
| 4 | 51.6 | 1.4 | 26.5 | 61.2 | 1.3 | 31.8 | 63.4 | 4.8 | 34.5 |
| 5 (wealthiest) | 46.2 | 1.4 | 23.7 | 57.4 | 1.1 | 29.6 | 60.1 | 4.5 | 32.8 |
| Average | 53.4 | 1.7 | 27.0 | 62.2 | 1.3 | 31.5 | 63.1 | 4.5 | 34.4 |

Sources: National Socio-Economic Survey 1995, 2001, 2004. Aceh and Maluku not included in 2001. Respondents in 2004 were 15 years and older.

Annex 2.4: Percent of Smokers that Prefer Kreteks by Age Group

| Age group | Prefer kretek | Prefer white (tobacco only) cigarettes |
|----------------|---------------|--|
| 15-19 | 79.5 | 20.5 |
| 20-29 | 83.9 | 16.1 |
| 30-39 | 90.5 | 9.5 |
| 40-49 | 93.3 | 6.7 |
| 50-59 | 93.1 | 6.9 |
| 60+ | 91.0 | 9.0 |
| Average | 88.1 | 11.9 |

Source: IFLS 2000.

Annex 2.5: Percent of Monthly Household Expenditure by Type of Expenditure and Type of Household (Smoker and Non Smoker), 2005

| Type of expenditure | Smokers | Non-smokers | Total |
|------------------------------------|-------------|-------------|-------------|
| FOOD | | | |
| Cereals | 13.4 | 13.5 | 13.4 |
| Tubers | 0.8 | 1.0 | 0.9 |
| Fish | 5.7 | 5.7 | 5.7 |
| Meat | 2.0 | 2.2 | 2.1 |
| Egg and milk | 3.3 | 3.7 | 3.4 |
| Vegetables | 4.5 | 5.1 | 4.7 |
| Legumes | 2.4 | 2.8 | 2.5 |
| Fruits | 1.9 | 2.2 | 2.0 |
| Oil and fat | 2.7 | 3.0 | 2.8 |
| Beverages | 3.3 | 3.4 | 3.4 |
| Spices | 1.8 | 2.0 | 1.9 |
| Miscellaneous food | 2.1 | 2.2 | 2.1 |
| Prepared food | 8.1 | 9.4 | 8.6 |
| Alcohol beverages | 0.1 | 0.1 | 0.1 |
| Tobacco | 11.5 | 0.0 | 7.3 |
| Betel nut | 0.3 | 1.1 | 0.4 |
| Total Food Expenditure | 63.9 | 57.3 | 61.5 |
| NON-FOOD | | | |
| Rental cost | 10.4 | 13.2 | 11.4 |
| Housing maintenance and reparation | 0.6 | 0.6 | 0.6 |
| Electricity bills | 9.2 | 11.3 | 10.0 |
| Goods and services | 4.7 | 4.8 | 4.7 |
| Health | 2.3 | 2.9 | 2.5 |
| Education | 3.2 | 4.0 | 3.5 |
| Clothing | 2.5 | 2.4 | 2.5 |
| Durable goods | 1.6 | 1.6 | 1.6 |
| Tax and Insurance | 0.8 | 1.0 | 0.8 |
| Parties and ceremonies | 1.0 | 1.0 | 1.0 |
| Total Non Food Expenditures | 36.1 | 42.7 | 38.5 |

Sources: National Socio-Economic Survey, Demographic Institute, University of Indonesia

Annex 2.6: Tobacco expenditures as a percent of total household expenditures, 1995-2005

| | Year | Household expenditure quintiles | | | | | Average |
|--------------------------------|------|---------------------------------|------|------|------|-----|---------|
| | | 1 | 2 | 3 | 4 | 5 | |
| All households | 1995 | 4.8 | 6.0 | 6.0 | 5.7 | 4.3 | 5.3 |
| | 2002 | 6.7 | 9.0 | 9.3 | 8.6 | 6.0 | 7.9 |
| | 2005 | 5.2 | 8.0 | 8.9 | 8.4 | 6.3 | 7.3 |
| Households with smokers | 1995 | 8.3 | 8.5 | 8.2 | 7.8 | 6.3 | 7.8 |
| | 2002 | 11.2 | 12.3 | 12.4 | 11.7 | 8.9 | 11.3 |
| | 2005 | 11.9 | 12.3 | 12.4 | 11.7 | 9.2 | 11.5 |

Source: Susenas.

Annex 2.7: Average age of Smoking Initiation Among Current Smokers (in years)

| Age group | 1995 | 2001 | 2004 |
|--|-------------|-------------|-------------|
| 15-19 | 15.2 | 15.4 | 15.0 |
| 20-24 | 17.2 | 17.1 | 16.5 |
| 25-29 | 18.0 | 17.8 | 16.9 |
| 30-34 | 18.5 | 18.2 | 17.2 |
| 35-39 | 18.8 | 18.5 | 17.6 |
| 40-44 | 19.3 | 18.7 | 17.6 |
| 45-49 | 19.6 | 19.0 | 17.6 |
| 50+ | 23.7 | 22.5 | 18.0 |
| Average age of initiation (years) | 18.8 | 18.3 | 17.4 |

Source: SUSENAS.

Annex 2.8: Age of Smoking Initiation Among Current Smokers, Percent by Age Group

| Age group | 1995 | 2001 | 2004 |
|--------------|--------------|--------------|--------------|
| 5-9 | 0.6 | 0.4 | 1.7 |
| 10-14 | 9.0 | 9.5 | 12.6 |
| 15-19 | 54.6 | 58.9 | 63.7 |
| 20-24 | 25.8 | 23.9 | 17.2 |
| 25-29 | 6.3 | 4.8 | 3.1 |
| 30+ | 3.8 | 2.6 | 1.8 |
| Total | 100.0 | 100.0 | 100.0 |

Sources: National Socio-Economic Survey 1995, 2001, 2004. Aceh and Maluku not included in 2001. Respondents in 2004 were 15 years and older.

Annex 2.9: Smoking Prevalence in Men 1995, 1997, 2000

| Age group | Year | % ever smoked | % currently smoke | % currently smoke kreteks | Difference between ever smoked and currently smoke |
|-----------|------|---------------|-------------------|---------------------------|--|
| 15+ | 1995 | 77.2 | 68.5 | 56.6 | 8.7 |
| | 1997 | 68.9 | 63.5 | 51.4 | 5.4 |
| | 2000 | 70.4 | 64.8 | 55.4 | 5.6 |
| 15-19 | 1995 | 32.2 | 30.8 | 24.3 | 1.4 |
| | 1997 | 36.7 | 35.3 | 27.4 | 1.4 |
| | 2000 | 43.1 | 41.8 | 31.6 | 1.3 |
| 20-29 | 1995 | 72.4 | 67.4 | 56.3 | 5.0 |
| | 1997 | 68.4 | 66.5 | 53.0 | 1.9 |
| | 2000 | 72.4 | 69.8 | 57.2 | 2.6 |
| 30-39 | 1995 | 77.0 | 70.2 | 59.3 | 6.8 |
| | 1997 | 76.7 | 73.1 | 62.4 | 3.6 |
| | 2000 | 74.9 | 70.6 | 61.9 | 4.3 |
| 40-49 | 1995 | 76.4 | 69.4 | 57.9 | 7.0 |
| | 1997 | 74.7 | 69.3 | 57.6 | 5.4 |
| | 2000 | 76.4 | 70.4 | 63.8 | 6.0 |
| 50-59 | 1995 | 83.3 | 72.7 | 58.7 | 10.6 |
| | 1997 | 80.8 | 72.0 | 57.7 | 8.8 |
| | 2000 | 78.3 | 68.3 | 61.3 | 10.0 |
| 60+ | 1995 | 84.8 | 68.5 | 55.1 | 16.3 |
| | 1997 | 82.3 | 65.8 | 49.6 | 16.5 |
| | 2000 | 80.8 | 63.6 | 55.7 | 17.2 |

Source: Indonesian Family Life Survey, in Witeolar et al 2006.

Annex 3.1:

| Form for Calculation of HJE^a for Domestic Tobacco Products (CK-21A) | |
|--|-----------------|
| This calculation based on _____ cigarette sticks, which uses raw material of _____ kg mixed tobacco, _____ kg clove, and/or _____ kg clove sticks. | |
| Name of Factory: _____ | |
| Address of Factory: _____ | |
| Name of Owner: _____ | |
| NPPBKC: _____ (Factory Identity Number) | |
| NPWP (Tax Identity Number): _____ | |
| Nomor PKP (PKP Number): _____ | |
| Tobacco Product Brand: _____ | |
| Volume per pack: _____ sticks / gram | |
| Weight per stick: ± _____ gram | |
| Retail Price Per Pack: | Rp _____ |
| Excise tariff : | Rp _____ |
| Price of Ingredients and related costs: | Value |
| 1. Mixed tobacco: | Rp _____ |
| 2. Sliced clove: | Rp _____ |
| 3. Sauce: | Rp _____ |
| 4. Filter: | Rp _____ |
| 5. Wrapping paper, tobacco leaves, cornhusk, printing cost: | Rp _____ |
| 6. Cellophane: | Rp _____ |
| 7. Packaging paper including printing cost: | Rp _____ |
| 8. Alumunium foil: | Rp _____ |
| 9. External seal: | Rp _____ |
| 10. Box and external packaging: | Rp _____ |
| 11. Glue: | Rp _____ |
| 12. Cost of rolling, cutting and tying: | Rp _____ |
| 13. Cost for packaging, pressing and cartoning: | Rp _____ |
| 14. Cost for transportation and selling: | Rp _____ |
| 15. Overhead cost: | Rp _____ |
| 16. Other cost: | Rp _____ + |
| 17. Base price: | Rp _____ |
| 18. Excise _____% x _____ HJE: | Rp _____ |
| 19. Value Added Tax of Tobacco Product _____% x _____ HJE: | Rp _____ |
| 20. Producer Profit: | Rp _____ + |
| 21. Factory Transaction Price: | Rp _____ |
| 22. Profit for Distributors, agents and retailers: | Rp _____ + |
| 23. Retail Price (HJE): | Rp _____ |

^a HJE is the "retail sales price," and represents the factory price inclusive of taxes, profit, and transaction costs.

Source: Director General of Customs and Excise, Regulation; No. 07/BC/2005, Ministry of Finance, Indonesia.

Annex 3.2: Change in Tobacco Excise Rates by Major Type of Product, 1996-2007

| Ministerial decree | Implementation date | Machine made kreteks (SKM) | | | Hand made kreteks (SKT) | | | White cigarette (SPM) | | | Other cigarettes | | | Change in production scales |
|--------------------|---------------------|----------------------------|----------|-----------|-------------------------|----------|-----------|-----------------------|----------|-----------|------------------|----------|-----------|-----------------------------|
| | | Tax (%) | HJE (Rp) | Per stick | Tax (%) | HJE (Rp) | Per stick | Tax (%) | HJE (Rp) | Per stick | Tax (%) | HJE (Rp) | Per stick | |
| 228/KMK.05/1996 | April 1996 | 20-38 | 30-75 | NA | 1-18 | 10-65 | NA | 22-38 | 25-85 | NA | 1-8 | 10-65 | NA | X |
| 09/BC/1996 | | | | | | | | | | | | | | |
| 229/KMK.05/1996 | May 1996 | 20-36 | 30-80 | NA | 2-16 | 20-60 | NA | 20-38 | 25-75 | NA | 1-8 | 20-60 | NA | X |
| 19/BC/1996 | | | | | | | | | | | | | | |
| 91/KMK.05/1997 | April 1997 | 20-36 | 40-85 | NA | 2-16 | 25-65 | NA | 20-38 | 30-80 | NA | 1-8 | 25-65 | NA | X |
| 19/BC/ 1997 | | | | | | | | | | | | | | |
| 118/KMK.05/1998 | April 1998 | 20-36 | 140-225 | NA | 2-16 | 80-150 | NA | 20-38 | 30-125 | NA | 1-8 | 50-125 | NA | |
| 16/BC/1998 | | | | | | | | | | | | | | |
| 124/KMK.05/1999 | April 1999 | 20-36 | 110-225 | NA | 4-16 | 55-150 | NA | 20-36 | 110-225 | NA | 4-16 | 55-150 | NA | X |
| 89/KMK.05/2000 | April 2000 | 28-40 | 120-250 | NA | 12-20 | 65-165 | NA | 28-40 | 70-150 | NA | 12-20 | 65-165 | NA | |
| 453/KMK.05/2000 | Nov 2000 | 26-40 | 150-280 | NA | 10-20 | 100-200 | NA | 26-40 | 120-180 | NA | 10-20 | 100-200 | NA | |
| 454/KMK.05/2000 | | | | | | | | | | | | | | |
| 144/KMK.05/2001 | April 2001 | 26-40 | 170-305 | NA | 4-20 | 125-230 | NA | 26-40 | 90-195 | NA | 10-20 | 100-200 | NA | |
| 383/KMK.04/2001 | July 2001 | 26-40 | 190-325 | NA | 4-20 | 150-255 | NA | 26-40 | 103-208 | NA | 4-20 | 100-200 | NA | |
| 384/KMK.04/2001 | | | | | | | | | | | | | | |
| 597/KMK.04/2001 | Dec 2001 | 26-40 | 270 | NA | 4-20 | 175-225 | NA | 26-40 | 150 | NA | 4-8 | 100-125 | NA | X |
| 449/KMK.04/2002 | Nov 2002 | 26-40 | 320-400 | NA | 4-22 | 200-340 | NA | 26-40 | 200-270 | NA | 4-8 | 125-150 | NA | X |
| 537/KMK.04/2002 | Jan 2003 | 26-40 | 320-400 | NA | 4-22 | 200-340 | NA | 26-40 | 180-250 | NA | 4-8 | 125-150 | NA | |
| 100/BC/2002 | | | | | | | | | | | | | | |
| 43/PMK.04/2005 | July 2005 | 26-40 | 370-460 | NA | 4-22 | 230-400 | NA | 26-40 | 210-295 | NA | 4-8 | 150-180 | NA | |
| 17 /PMK.04/2006 | April 2006 | 26-40 | 410-510 | NA | 4-22 | 255-440 | NA | 26-40 | 235-320 | NA | 4-8 | 165-200 | NA | |
| 16/PMK.04/2006 | | | | | | | | | | | | | | |
| 118/PMK.04/2006 | March 2007 | 26-40 | 440-550 | 3-7 | 4-22 | 275-475 | 3-7 | 26-40 | 255-345 | 3-7 | 4-8 | 180-215 | NA | |

Source: Ministry of Finance regulations listed on website for Excise Tax Directorate: http://www.beacukai.go.id/en/library_en/

Annex 3.3: Tobacco tax Scales for net Exporters (firms that export higher quantities compared with domestic sales) (A), and Tax Scales for Imported Tobacco Products (B)

| A. Reduced tax rates for net exporters | | | 2007 | | | 2008 | | |
|--|-----------------|-------------------------------------|--------------------|--------------------|-----------------------------|--------------------|------------------------|-----------------------------|
| Tobacco product | Production tier | Production (no. of sticks per year) | HJE (Rp per stick) | ad valorem tax (%) | Specific per stick tax (Rp) | HJE (Rp per stick) | ad valorem tax (%) | Specific per stick tax (Rp) |
| Machine-made kreteks (SKM) | I | > 2 billion | 550 | 36 | 7 | 600 | 32 | 35 |
| | II | >500 million - ≤2 billion | 450 | 32 | 5 | 383 | 31 | 35 |
| | III | ≤ 500 million | 440 | 24 | 3 | 374 | 18 | 35 |
| Machine-made white (tobacco only) cigarettes (SPM) | I | > 2 billion | 345 | 36 | 7 | 375 | 30 | 35 |
| | II | >500 million - ≤2 billion | 265 | 32 | 5 | 225 | 26 | 35 |
| | III | ≤ 500 million | 255 | 24 | 3 | 217 | 11 | 35 |
| Hand-made kreteks (SKT) | I | > 2 billion | 475 | 18 | 7 | 520 | 14 | 35 |
| | II | >500 million - ≤2 billion | 395 | 13 | 5 | 336 | 6 | 35 |
| | IIIA | >6 million - ≤ 500 million | 380 | 7 | 3 | 234 | 0 | 27 |
| | IIIB | ≤ 6 million | 275 | 3 | 3 | | Combined IIIA and IIIB | |
| Filtered hand-made kreteks (SKTF) | I | > 2 billion | NA | | | 600 | 32 | 35 |
| | II | >500 million - ≤2 billion | NA | | | 383 | 31 | 35 |
| | III | ≤ 500 million | NA | | | 374 | 18 | 35 |
| Other cigarettes (KLB, KLM, SPT) | I | >6 million | 215 | 7 | NA | 180 | 4 | NA |
| | II | ≤ 6 million | 180 | 3 | NA | | Combined II and III | |
| TIS (Sliced Leaves) | I | > 2 billion grams | 50 | 16 | NA | 50 | 16 | NA |
| | II | > 500 million - ≤ 2 billion grams | 50 | 13 | NA | 50 | 12 | NA |
| | IIIA | > 50 million - ≤ 500 million grams | 50 | 7 | NA | 40 | 4 | NA |
| | IIIB | ≤ 50 million grams | 40 | 3 | NA | | Combined IIIA and IIIB | |
| Cigars (CRT) | NA | | 275 | 13 | NA | 275 | 16 | NA |
| Other (HPTL) | NA | | 275 | 13 | NA | 275 | 16 | NA |
| B. Tobacco tax scales for imported products | | | | | | | | |
| Tobacco product | | | HJE (Rp per stick) | ad valorem tax (%) | Specific per stick tax (Rp) | HJE (Rp per stick) | ad valorem tax (%) | Specific per stick tax (Rp) |
| Machine-made kreteks (SKM) | | | 550 | 40 | 7 | 600 | 36 | 35 |
| Machine-made white (tobacco only) cigarettes (SPM) | | | 345 | 40 | 7 | 375 | 36 | 35 |
| Hand-made kreteks (SKT) | | | 475 | 22 | 7 | 520 | 36 | 35 |
| Filtered hand-made kreteks (SKTF) | | | | NA | | 600 | 36 | 35 |
| Other cigarettes (KLB, KLM, SPT) | | | 215 | 8 | NA | 180 | 8 | NA |
| Sliced Leaves, in grams | | | 50 | 20 | NA | 50 | 20 | NA |
| Cigars (CRT) | | | 275 | 20 | NA | 275 | 20 | NA |
| Other tobacco products (HPTL) | | | 275 | 20 | NA | 275 | 20 | NA |

Sources: Ministry of Finance Regulations No. 118/PMK.04/2006, effective from March 2007, specific tax effective since July 2007, and No. 134/PMK.04/2007, effective in 1 January 2008. Production scales set forth in 43/PMK.04/2005, effective from July 2005, and No. 134/PMK.04/2007, effective 1 January 2008. HJE: Retail price; KLB: Klobot, corn husk wrapped cigarettes; KLM: Kelembak, incense clove cigarettes; SPT: hand-rolled white (tobacco only) cigarettes. NA: not applicable

Annex 3.4:

| Form for Calculation of HJE ^a for Imported Tobacco Products (CK-21B) | |
|---|---------------------|
| <i>This calculation is per pack</i> | |
| Name of Importer: | _____ |
| Address of Factory: | _____ |
| Name of Owner: | _____ |
| Address of Owner: | _____ |
| NPPBKC : | _____ |
| <i>(Factory Identity Number)</i> | |
| NPWP (Tax Identity Number): | _____ |
| Nomor PKP (PKP Number): | _____ |
| Type of Tobacco Product : | _____ |
| Volume per pack: | _____ sticks / gram |
| Weight per stick: | _____ gram |
| Retail Price Per Pack: | Rp _____ |
| Excise tariff: | _____ |
| Exchange Rate US\$ 1.00: | Rp _____ |
| Price of Ingredients and related costs: | Value |
| 1. Port Value [CIF]: | Rp _____ |
| 2. Import Duty: | Rp _____ |
| 3. Added / Other Duty: | Rp _____ |
| 4. Excise: _____% x _____Rp (number 15): | Rp _____ + |
| 5. Import Value: | Rp _____ |
| 6. Income Tax for Import _____% x _____Rp (number 5): | Rp _____ |
| 7. Value Added Tax for Tobacco Product 8.4% x _____Rp (number 15): | Rp _____ |
| 8. Other Government Tax: | Rp _____ |
| 9. Factory Cost: | Rp _____ |
| 10. Other Cost: | Rp _____ + |
| 11. Base price: | Rp _____ |
| 12. Profit for Importer: | Rp _____ + |
| 13. Factory Transaction Price: | Rp _____ |
| 14. Profit for Distributors, Agents and Retailers: | Rp _____ + |
| 15. Retail Price: | Rp _____ |

^a HJE is the "retail sales price," and represents the factory price inclusive of taxes, profit, and transaction costs.

Source: Director General of Customs and Excise, Regulation No. 07/BC/2005, Ministry of Finance, Indonesia.

Annex 5.1: Top Tobacco Leaf-Producing Countries, 2005

| Rank | Country | Production (US\$ 1000) | Production (ton) | % of world production |
|-------------------------------|-----------|------------------------|------------------|-----------------------|
| 1 | China | 4,886,230 | 2,685,500 | 40.8 |
| 2 | Brazil | 1,601,974 | 878,651 | 13.4 |
| 3 | India | 1,090,286 | 598,000 | 9.1 |
| 4 | USA | 528,916 | 290,100 | 4.4 |
| 5 | Indonesia | 257,074 | 141,000 | 2.1 |
| 6 | Turkey | 256,556 | 140,716 | 2.1 |
| 7 | Greece | 224,256 | 123,000 | 1.9 |
| 8 | Argentina | 215,140 | 118,000 | 1.8 |
| 9 | Italy | 200,554 | 110,000 | 1.7 |
| 10 | Pakistan | 153,880 | 84,400 | 1.3 |
| Total Top 10 producers | | 9,414,866 | 5,169,367 | 78.6 |

Sources: FAO/STAT, Food and Agricultural Organization Statistics Division, Economic and Social Department.

Annex 5.2: Annual Tobacco Leaf Production, Quantity of Imported and Exported Leaf, and Import and Export Ratios

| Year | Domestic production (tons) | Imported leaf (tons) | Import ratio | Exported leaf (tons) | Export ratio | Net export value (US\$ 000) |
|------|----------------------------|----------------------|--------------|----------------------|--------------|-----------------------------|
| 1971 | 57,352 | 4,767 | 8.31% | 17,748 | 30.95% | 28,223 |
| 1972 | 126,558 | 8,176 | 6.46% | 25,638 | 20.26% | 27,009 |
| 1973 | 76,507 | 5,616 | 7.34% | 32,558 | 42.56% | 36,717 |
| 1974 | 78,071 | 16,769 | 21.48% | 25,513 | 32.68% | 24,965 |
| 1975 | 95,665 | 9,661 | 10.10% | 19,762 | 20.66% | 17,819 |
| 1976 | 89,798 | 9,455 | 10.53% | 20,630 | 22.97% | 34,140 |
| 1977 | 84,502 | 9,476 | 11.21% | 25,927 | 30.68% | 49,770 |
| 1978 | 82,466 | 11,909 | 14.44% | 25,586 | 31.03% | 45,755 |
| 1979 | 120,299 | 13,148 | 10.93% | 23,362 | 19.42% | 47,647 |
| 1980 | 85,487 | 20,047 | 23.45% | 28,339 | 33.15% | 32,687 |
| 1981 | 109,646 | 21,622 | 19.72% | 24,800 | 22.62% | 22,465 |
| 1982 | 106,802 | 16,563 | 15.51% | 19,100 | 17.88% | 4,381 |
| 1983 | 109,484 | 13,523 | 12.35% | 22,400 | 20.46% | 21,734 |
| 1984 | 107,825 | 13,229 | 12.27% | 19,317 | 17.92% | 9,685 |
| 1985 | 160,765 | 7,942 | 4.94% | 20,227 | 12.58% | 26,299 |
| 1986 | 101,235 | 9,824 | 9.70% | 23,092 | 22.81% | 41,118 |
| 1987 | 112,691 | 11,542 | 10.24% | 18,745 | 16.63% | 29,511 |
| 1988 | 116,917 | 10,510 | 8.99% | 18,239 | 15.60% | 15,204 |
| 1989 | 80,979 | 13,601 | 16.80% | 17,721 | 21.88% | 22,355 |
| 1990 | 156,432 | 26,546 | 16.97% | 17,401 | 11.12% | 16,649 |
| 1991 | 140,258 | 28,542 | 20.35% | 22,403 | 15.97% | -570 |
| 1992 | 111,655 | 25,108 | 22.49% | 32,365 | 28.99% | 16,404 |
| 1993 | 121,370 | 30,226 | 24.90% | 37,259 | 30.70% | -10,759 |
| 1994 | 130,134 | 40,321 | 30.98% | 30,926 | 23.76% | -46,954 |
| 1995 | 140,169 | 47,953 | 34.21% | 21,989 | 15.69% | -54,018 |
| 1996 | 151,025 | 45,060 | 29.84% | 33,340 | 22.08% | -49,781 |
| 1997 | 209,626 | 47,108 | 22.47% | 42,281 | 20.17% | -53,024 |
| 1998 | 105,580 | 23,219 | 21.99% | 49,960 | 47.32% | 71,581 |
| 1999 | 135,384 | 40,914 | 30.22% | 37,096 | 27.40% | -36,185 |
| 2000 | 204,329 | 34,248 | 16.76% | 35,957 | 17.60% | -43,546 |
| 2001 | 199,103 | 44,346 | 22.27% | 43,030 | 21.61% | -48,206 |
| 2002 | 192,082 | 33,289 | 17.33% | 42,686 | 22.22% | -27,286 |
| 2003 | 200,875 | 29,579 | 14.73% | 40,638 | 20.23% | -32,317 |
| 2004 | 165,108 | 35,171 | 21.30% | 46,463 | 28.14% | -30,236 |
| 2005 | 153,470 | 48,142 | 31.37% | 53,729 | 35.01% | -34,923 |

Sources: Ministry of Agriculture. Agricultural statistics, Central Bureau of Statistics, 2002. Export Import Statistics 2001. Net export value is the US\$ value of exports minus the US\$ value of imports.

Annex 5.3: Percentage of Tobacco Area to Total Arable Land, Indonesia, 2000-2005

| | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 |
|---------------------------------|------------|------------|------------|------------|------------|------------|
| Arable land (ha) | 20,500,000 | 22,000,000 | 22,000,000 | 23,000,000 | 23,000,000 | 23,000,000 |
| Tobacco area (ha) | 239,737 | 260,738 | 256,081 | 256,926 | 200,973 | 198,212 |
| Tobacco area to arable land (%) | 1.17 | 1.19 | 1.16 | 1.12 | 0.87 | 0.86 |

Source: FAO STAT and Ministry of Agriculture (various years). HA =hectare; FAO statistics differ from Ministry of Agriculture figures.

Annex 5.4: Tobacco Cultivation Area as a Percent of Total Arable Land by Province, 2005

| Provinces | Tobacco cultivation area | Tobacco area as % of total arable land |
|----------------------------|--------------------------|--|
| East Java | 109,918 | 0.48 |
| Central Java | 43,844 | 1.78 |
| West Nusa Tenggara | 23,992 | 4.50 |
| West Java | 7,482 | 0.28 |
| Daerah Istimewa Yogyakarta | 3,303 | 0.21 |
| North Sumatera | 2,685 | 0.06 |
| South Sulawesi | 2,598 | 0.07 |
| West Sumatera | 1,293 | 0.05 |
| Bali | 1,062 | 0.18 |
| East Nusa Tenggara | 499 | 0.07 |
| Other | 1,536 | 0.01 |
| Total | 198,212 | 0.29 |

Source : Ministry of agriculture, tree crop estate statistics of Indonesia 2004-2006. CBS, area and its use in Indonesia, 2005. Notes: Arable land is area of wet land (lahan sawah) plus area of dry land (lahan bukan sawah) minus swamps, dyke, and pond.

Annex 5.5: Tobacco Farmers as a Percent of the Total Labor Force, 1996-2005

| Year | Number of tobacco farmers | Tobacco farmers as a % of the total agricultural labor force | Tobacco farming Full-time Equivalent (FTE)* | Tobacco farming FTE as % of total agricultural labor force | Tobacco farming FTE as % of total labor force |
|------|---------------------------|--|---|--|---|
| 1996 | 668,844 | 1.8 | 572,707 | 1.5 | 0.66 |
| 1997 | 893,620 | 2.5 | 632,148 | 1.6 | 0.64 |
| 1998 | 400,215 | 1.0 | 420,337 | 1.4 | 0.64 |
| 1999 | 636,152 | 1.7 | 424,868 | 1.1 | 0.48 |
| 2000 | 665,292 | 1.5 | 608,932 | 1.1 | 0.48 |
| 2001 | 913,208 | 2.3 | 662,275 | 1.1 | 0.46 |
| 2002 | 808,897 | 2.0 | 650,446 | 1.6 | 0.71 |
| 2003 | 714,699 | 1.7 | 652,275 | 1.6 | 0.72 |
| 2004 | 693,551 | 1.7 | 510,471 | 1.3 | 0.54 |
| 2005 | 683,603 | 1.7 | 503,458 | 1.2 | 0.53 |

Sources: Ministry of Agriculture, December 2006, BPS (Sakernas) and Ministry of Agriculture, various years. Demographic Institute, University of Indonesia.

Annex 5.6: Clove Production, Import and Export Ratios, and Net Export Values, 1990-2005

| Year | Domestic production ('000 tons) | Import ratio | Export ratio | Clove exports as % of total export value | Clove exports as % of non oil and gas export value |
|------|---------------------------------|--------------|--------------|--|--|
| 1990 | 66.91 | 1.32% | 0.36% | 0.00% | - |
| 1991 | 80.25 | 0.86% | 0.40% | 0.00% | 0.00% |
| 1992 | 73.12 | 0.03% | 0.49% | 0.00% | 0.00% |
| 1993 | 67.37 | 1.10% | 1.04% | 0.00% | 0.00% |
| 1994 | 78.38 | 0.48% | 0.80% | 0.00% | 0.00% |
| 1995 | 90.01 | 0.01% | 0.71% | 0.00% | 0.00% |
| 1996 | 59.48 | 0.82% | 1.16% | 0.00% | 0.00% |
| 1997 | 59.19 | 2.35% | 1.01% | 0.00% | 0.00% |
| 1998 | 67.18 | 1.71% | 21.57% | 0.02% | 0.03% |
| 1999 | 52.90 | 14.03% | 2.99% | 0.00% | 0.00% |
| 2000 | 74.05 | 8.01% | 4.36% | 0.01% | 0.01% |
| 2001 | 80.68 | 7.47% | 4.72% | 0.01% | 0.02% |
| 2002 | 87.91 | 0.11% | 7.39% | 0.03% | 0.03% |
| 2003 | 116.42 | 0.03% | 10.83% | 0.03% | 0.04% |
| 2004 | 110.51 | 0.06% | 5.98% | 0.02% | 0.05% |
| 2005 | 110.50 | 0.54% | 8.56% | 0.02% | 0.07% |

Source: FAO statistical database

Annex 5.7: Summary of Costs, Revenue, and Profit (in Rp) for Tobacco in Comparison with Other Crops at Low and High Input Levels, Central Java, Indonesia

| | Low input level | | | High input level | | | |
|--|-----------------|---------|--------|------------------|------------|--------|--------|
| | Tobacco | Tobacco | Chili | Garlic | Ground nut | Nilam | Potato |
| Total cash costs | 8,404 | 14,162 | 16,500 | 8,798 | 1,881 | 7,538 | 6,253 |
| Before sale | 7,605 | 12,907 | 14,630 | 7,885 | 1,674 | 7,103 | 5,458 |
| After sale | 799 | 1,255 | 1,870 | 913 | 207 | 435 | 795 |
| Total production costs | 9,029 | 14,911 | 16,651 | 10,568 | 2,991 | 7,989 | 13,933 |
| Total cost per ton | 15,048 | 12,426 | 1,850 | 4,144 | 2,918 | 258 | 1,072 |
| Gross revenue | 13,170 | 24,984 | 31,500 | 12,750 | 6,150 | 15,500 | 36,400 |
| Net Profit (gross revenue - total cost) | 4,141 | 10,073 | 14,849 | 2,182 | 3,159 | 7,511 | 22,467 |

Source: John C. Keyser and Nila Ratna Juita, *Smallholder Tobacco Growing in Indonesia: Costs and Profitability Compared with Other Agricultural Enterprises* World Bank HNP discussion paper, Feb 2007; summarized in *Curbing the Tobacco Epidemic in Indonesia: Evidence and Options*, Draft January 2004. The World Bank.

Annex 5.8: Market Share of 8 Cigarette Industries: 1979, 1989, 1994 (%)

| Brand | 1979 | 1989 | 1994 |
|--------------|------------|------------|------------|
| Gudang Garam | 12 | 28 | 43 |
| Djarum | 13 | 28 | 18 |
| Bentoel | 8 | 11 | 7 |
| Sampoerna | 1 | 3 | 7 |
| BAT | 15 | 3 | 5 |
| Marlboro | 0 | 2 | 5 |
| Nojorono | 4 | 3 | 2 |
| STTC | 10 | 4 | 1 |
| Faroka | 4 | 1 | 1 |
| Others | 33 | 17 | 11 |
| Total | 100 | 100 | 100 |

Source: Bird, 1999.

Annex 5.9: Market Share by Kretek and White Cigarette Industries, 1995-1998

| Company | 1995 | | 1996 | | 1997 | | 1998 | |
|--------------------------------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|
| | % | total | % | total | % | total | % | total |
| Gudang Garam | 47.0 | 41.3 | 47.0 | 41.1 | 48.0 | 42.1 | 47.0 | 40.2 |
| Djarum | 16.0 | 14.0 | 14.0 | 12.5 | 14.0 | 12.2 | 13.0 | 11.0 |
| Bentoel | 5.0 | 4.8 | 3.0 | 2.4 | 1.0 | 1.4 | 3.0 | 2.3 |
| Sampoerna | 11.0 | 9.6 | 12.0 | 10.7 | 12.0 | 10.5 | 12.0 | 10.4 |
| Noyorono | 3.0 | 2.3 | 3.0 | 2.1 | 2.0 | 1.7 | 2.0 | 2.1 |
| Others | 18.0 | 15.5 | 21.0 | 19.1 | 23.0 | 20.2 | 23.0 | 19.8 |
| Total Kretek | 100.0 | 87.5 | 100.0 | 87.9 | 100.0 | 88.1 | 100.0 | 85.8 |
| White cigarette manufacturers | -- | 12.5 | -- | 12.1 | -- | 11.9 | -- | 14.2 |
| Total | -- | 100.0 | -- | 100.0 | -- | 100.0 | -- | 100.0 |

Source: Jardin Fleming Research (1999).

Annex 5.10: Annual Cigarette Production, Quantity of Imports and Exports, and Import and Export Ratios

| Year | Domestic production (million sticks) | Imports leaf (million sticks) | Import ratio | Exports (million sticks) | Export ratio | Exports as % total of export value |
|------|--------------------------------------|-------------------------------|--------------|--------------------------|--------------|------------------------------------|
| 1971 | 44,501 | 1,865 | 4.19% | -- | -- | -- |
| 1972 | 49,907 | 1,717 | 3.44% | 1,333 | 2.67% | -- |
| 1973 | 56,800 | 2,702 | 4.76% | 1,353 | 2.38% | -- |
| 1974 | 59,830 | 2,386 | 3.99% | 2,600 | 4.35% | -- |
| 1975 | 66,290 | 4,845 | 7.31% | 5,991 | 9.04% | -- |
| 1976 | 60,890 | 5,453 | 8.96% | 6,738 | 11.07% | -- |
| 1977 | 69,756 | 6,359 | 9.12% | 7,932 | 11.37% | -- |
| 1978 | 83,900 | 6,138 | 7.32% | 8,948 | 10.67% | -- |
| 1979 | 90,100 | 6,900 | 7.66% | 9,943 | 11.03% | -- |
| 1980 | 86,200 | 7,998 | 9.28% | 10,976 | 12.73% | -- |
| 1981 | 93,275 | 7,797 | 8.36% | 11,911 | 12.77% | -- |
| 1982 | 100,334 | 8,425 | 8.40% | 12,318 | 12.28% | -- |
| 1983 | 106,611 | 10,391 | 9.75% | 14,010 | 13.14% | -- |
| 1984 | 115,943 | 10,563 | 9.11% | 13,713 | 11.83% | -- |
| 1985 | 115,000 | 8,964 | 7.80% | 12,713 | 11.05% | -- |
| 1986 | 136,271 | 6,181 | 4.54% | 10,352 | 7.60% | -- |
| 1987 | 145,170 | 7,000 | 4.82% | 5,903 | 4.07% | -- |
| 1988 | 155,300 | 13,476 | 8.68% | 6,156 | 3.96% | -- |
| 1989 | 151,000 | 10,030 | 6.64% | 4,052 | 2.68% | -- |
| 1990 | 153,200 | 9,294 | 6.07% | 3,055 | 1.99% | 0.26% |
| 1991 | 162,400 | 1,438 | 0.89% | 3,872 | 2.38% | 0.30% |
| 1992 | 177,050 | 9,364 | 5.29% | 3,811 | 2.15% | 0.36% |
| 1993 | 186,200 | 1,854 | 1.00% | 3,293 | 1.77% | 0.28% |
| 1994 | 211,823 | 1,667 | 0.79% | 3,179 | 1.50% | 0.18% |
| 1995 | 225,385 | 13,491 | 5.99% | 4,016 | 1.78% | 0.26% |
| 1996 | 216,200 | 5,138 | 2.38% | 4,724 | 2.19% | 0.26% |
| 1997 | 225,417 | 4,667 | 2.07% | 4,211 | 1.87% | 0.26% |
| 1998 | 232,724 | 10,909 | 4.69% | 4,202 | 1.81% | 0.21% |
| 1999 | 221,293 | 3,591 | 1.62% | 4,746 | 2.14% | 0.23% |
| 2000 | 231,185 | 3,046 | 1.32% | 6,209 | 2.69% | 0.22% |
| 2001 | 226,611 | 2,060 | 0.91% | 5,542 | 2.45% | 0.31% |
| 2002 | 209,668 | 542 | 0.26% | 6,056 | 2.89% | 0.28% |
| 2003 | 192,340 | 4,887 | 2.54% | 6,009 | 3.12% | 0.22% |
| 2004 | 203,880 | 5,158 | 2.53% | 5,218 | 2.56% | 0.20% |
| 2005 | 220,310 | 1,060 | 0.48% | 5,273 | 2.39% | 0.22% |

Sources: Ministry of Agriculture. Agricultural statistics, Central Bureau of Statistics, 2002. Export Import Statistics 2001.

Annex 5.11: Firms in Tobacco Manufacturing, by Industry Scale, Indonesia, 2004

| Type of firm | Large | | Medium | | Total | |
|--|------------|---------------|------------|---------------|------------|---------------|
| | Number | % | Number | % | Number | % |
| Dried and processed tobacco | 46 | 20.44 | 447 | 76.41 | 493 | 60.86 |
| Clove cigarette | 148 | 65.78 | 87 | 14.87 | 235 | 29.01 |
| White cigarette | 5 | 2.22 | 5 | 0.85 | 10 | 1.23 |
| Other types of cigarette | 23 | 10.22 | 30 | 5.13 | 53 | 6.54 |
| Related products (cigarette sauce/flavors) | 3 | 1.33 | 16 | 2.74 | 19 | 2.35 |
| Total | 225 | 100.00 | 585 | 100.00 | 810 | 100.00 |

Source: Indicator of Large and Medium Enterprise, Central Board of Statistics, 2004.

Annex 5.12. Employment in Cigarette Manufacturing, as a % of Manufacturing and Total Employment

| Year | No. employed in cigarette manufacturing | Total manufacturing employment | Total employment | % of manufacturing employment | % of total employment |
|------|---|--------------------------------|------------------|-------------------------------|-----------------------|
| 1970 | 132,000 | 482,385 | -- | 27.36% | -- |
| 1971 | 124,000 | 505,362 | -- | 24.54% | -- |
| 1972 | 138,000 | 610,960 | -- | 22.59% | -- |
| 1973 | 116,000 | 618,990 | -- | 18.74% | -- |
| 1974 | 127,550 | 616,210 | -- | 20.70% | -- |
| 1975 | 132,300 | 706,171 | -- | 18.73% | -- |
| 1976 | 165,000 | 794,800 | 53,443,700 | 20.76% | 0.31% |
| 1977 | 161,700 | 784,900 | 48,314,700 | 20.60% | 0.33% |
| 1978 | 142,600 | 814,200 | 51,780,400 | 17.51% | 0.28% |
| 1979 | 151,700 | 856,900 | 51,004,400 | 17.70% | 0.30% |
| 1980 | 158,700 | 963,000 | 51,554,000 | 16.48% | 0.31% |
| 1981 | 157,000 | 1,004,900 | -- | 15.62% | -- |
| 1982 | 160,400 | 1,059,830 | 57,802,801 | 15.13% | 0.28% |
| 1983 | 167,200 | 1,112,360 | -- | 15.03% | -- |
| 1984 | 167,000 | 1,190,420 | -- | 14.03% | -- |
| 1985 | 203,800 | 1,671,990 | 62,457,138 | 12.19% | 0.33% |
| 1986 | 197,800 | 1,679,260 | 68,338,200 | 11.78% | 0.29% |
| 1987 | 201,700 | 1,776,710 | 70,402,443 | 11.35% | 0.29% |
| 1988 | 202,800 | 2,058,250 | 72,518,100 | 9.85% | 0.28% |
| 1989 | 213,200 | 2,247,110 | 73,424,894 | 9.49% | 0.29% |
| 1990 | 204,921 | 2,649,440 | 75,850,600 | 7.73% | 0.27% |
| 1991 | 183,253 | 2,981,130 | 76,423,200 | 6.15% | 0.24% |
| 1992 | 182,817 | 3,298,120 | 78,104,100 | 5.54% | 0.23% |
| 1993 | 184,304 | 3,559,380 | 79,201,000 | 5.18% | 0.23% |
| 1994 | 215,008 | 3,798,610 | 82,037,000 | 5.66% | 0.26% |
| 1995 | 230,676 | 4,224,770 | 80,110,000 | 5.46% | 0.29% |
| 1996 | 223,307 | 4,214,967 | 85,701,813 | 5.30% | 0.26% |
| 1997 | 225,640 | 4,154,837 | 87,050,000 | 5.43% | 0.26% |
| 1998 | 238,848 | 4,123,612 | 87,673,600 | 5.79% | 0.27% |
| 1999 | 244,522 | 4,234,983 | 88,816,859 | 5.77% | 0.28% |
| 2000 | 245,626 | 4,366,816 | 89,837,730 | 5.62% | 0.27% |
| 2001 | 260,189 | 4,382,788 | 90,807,417 | 5.94% | 0.29% |
| 2002 | 265,378 | 4,364,869 | 91,647,166 | 6.08% | 0.29% |
| 2003 | 265,666 | 4,273,880 | 90,784,917 | 6.22% | 0.29% |
| 2004 | 258,678 | 4,324,979 | 93,722,036 | 5.98% | 0.28% |

Sources: World Bank, Ministry of Industry, Demographic Institute, University of Indonesia

Annex 5.13: Ranking of all Sectors Contributing to Total Employment (Input-Output Tables, Central Statistical Bureau (BPS))

| I-O Code | 66 Sectors | Sectors | Employment | % | RANK |
|-----------|------------|---|----------------|-------------|-----------|
| 53 | | Trade | 15,518,065 | 15.97 | 1 |
| 5 | | Vegetables and Fruits | 10,935,873 | 11.26 | 2 |
| 1 | | Paddy | 10,547,125 | 10.86 | 3 |
| 65 | | Others Services | 4,296,005 | 4.42 | 4 |
| 52 | | Construction | 4,211,953 | 4.34 | 5 |
| 63 | | General Government and Defense | 4,040,401 | 4.16 | 6 |
| 4 | | Root Crops | 3,562,098 | 3.67 | 7 |
| 56 | | Road Transport | 3,437,581 | 3.54 | 8 |
| 64 | | Social and Community Service | 3,177,138 | 3.27 | 9 |
| 2 | | Beans | 2,493,338 | 2.57 | 10 |
| 3 | | Maize | 2,479,703 | 2.55 | 11 |
| 36 | | Manufacture of Textile, Apparel and Leather | 2,423,941 | 2.49 | 12 |
| 37 | | Manufacture of Bamboo, Wood and Rattan Products | 2,343,481 | 2.41 | 13 |
| 54 | | Restaurant and Hotel | 2,280,222 | 2.35 | 14 |
| 23 | | Fishery | 1,632,734 | 1.68 | 15 |
| 18 | | Livestock | 1,630,090 | 1.68 | 16 |
| 20 | | Poultry and Its Product | 1,518,424 | 1.56 | 17 |
| 10 | | Oil Palm | 1,252,014 | 1.29 | 18 |
| 9 | | Coconut | 994,009 | 1.02 | 19 |
| 62 | | Real Estate and Business Services | 933,846 | 0.96 | 20 |
| 29 | | Rice Milling | 824,874 | 0.85 | 21 |
| 19 | | Slaughtering | 795,302 | 0.82 | 22 |
| 8 | | Sugarcane | 793,104 | 0.82 | 23 |
| 17 | | Other Agriculture | 749,805 | 0.77 | 24 |
| 35 | | Yarn Spinning | 713,390 | 0.73 | 25 |
| 59 | | Services Allied to Transport | 682,979 | 0.70 | 26 |
| 16 | | Other Estate Crops | 661,483 | 0.68 | 27 |
| 32 | | Manufacture of Other Food Product | 640,594 | 0.66 | 28 |
| 12 | | Coffee | 626,751 | 0.65 | 29 |
| 11 | | Tobacco | 624,039 | 0.64 | 30 |
| 7 | | Rubber | 598,096 | 0.62 | 31 |
| 61 | | Financial Intermediaries | 573,363 | 0.59 | 32 |
| 21 | | Wood | 516,269 | 0.53 | 33 |
| 30 | | Manufacture of Flour All Kind | 503,317 | 0.52 | 34 |
| 28 | | Manufacture of Oil and Fat | 502,071 | 0.52 | 35 |
| 49 | | Manufacture of Transport Equipment and Its repair | 481,906 | 0.50 | 36 |
| 60 | | Communication | 472,760 | 0.49 | 37 |
| 26 | | Other Mining and Quarrying | 450,076 | 0.46 | 38 |
| 27 | | Manufacture of Food Processing and Preserving | 428,072 | 0.44 | 39 |
| 43 | | Manufacture of Non Metallic Mineral Product | 415,657 | 0.43 | 40 |
| 48 | | Manufacture of Machine, Electrical Machinery, and Apparatus | 405,367 | 0.42 | 41 |
| 50 | | Manufacture of Other Products Not Elsewhere Classified | 401,392 | 0.41 | 42 |
| 38 | | Manufacture of Paper, Paper Products and Cardboard | 399,103 | 0.41 | 43 |
| 47 | | Manufacture of Fabricated Metal Products | 392,157 | 0.40 | 44 |
| 14 | | Clove | 382,991 | 0.39 | 45 |
| 40 | | Manufacture of Chemicals | 378,310 | 0.39 | 46 |
| 42 | | Manufacture of Rubber and Plastic Wear | 355,665 | 0.37 | 47 |
| 34 | | Manufacture of Cigarettes | 333,443 | 0.34 | 48 |
| 57 | | Water Transport | 325,984 | 0.34 | 49 |
| 24 | | Coal and Metal Ore Mining | 229,731 | 0.24 | 50 |
| 13 | | Tea | 214,854 | 0.22 | 51 |
| 44 | | Manufacture of Cement | 209,246 | 0.22 | 52 |
| 55 | | Railway Transport | 177,084 | 0.18 | 53 |
| 51 | | Electricity, Gas, and Water Supply | 157,718 | 0.16 | 54 |
| 22 | | Other Forest Product | 148,397 | 0.15 | 55 |
| 6 | | Other Food Crops | 145,243 | 0.15 | 56 |
| 46 | | Manufacture of Non Ferrous Basic Steel | 114,272 | 0.12 | 57 |
| 45 | | Manufacture of Basic Iron and Steel | 104,919 | 0.11 | 58 |
| 25 | | Crude Oil, Natural Gas and Geothermal Mining | 101,372 | 0.10 | 59 |
| 41 | | Petroleum Refinery | 100,974 | 0.10 | 60 |
| 39 | | Manufacture of Fertilizer and Pesticides | 75,953 | 0.08 | 61 |
| 33 | | Manufacture of Beverages | 74,126 | 0.08 | 62 |
| 31 | | Sugar Factory | 69,381 | 0.07 | 63 |
| 15 | | Fibber Crops | 59,207 | 0.06 | 64 |
| 58 | | Air Transport | 34,799 | 0.04 | 65 |
| 66 | | Unspecified Sector | 5,649 | 0.01 | 66 |

Source: Ahsan A, Wiyono IN. *The impact analysis of higher cigarette prices to employment in Indonesia*. Demographic Institute, Faculty of Economics, University of Indonesia, 2007.

Annex 5.14: Number of Kretek and White Cigarette Firms, 1961-2004

| Year | Total kretek | Total white | Total |
|------|--------------|-------------|-------|
| 1961 | 941 | NA | NA |
| 1972 | 287 | NA | NA |
| 1973 | 315 | NA | NA |
| 1974 | 282 | NA | NA |
| 1975 | 283 | 21 | 304 |
| 1976 | 307 | NA | NA |
| 1977 | 321 | NA | NA |
| 1978 | 243 | NA | NA |
| 1979 | 246 | NA | NA |
| 1980 | 263 | NA | NA |
| 1981 | 263 | 16 | 279 |
| 1982 | 263 | 16 | 279 |
| 1983 | 256 | 16 | 272 |
| 1984 | 212 | 17 | 229 |
| 1985 | 143 | 17 | 160 |
| 1986 | 128 | 16 | 144 |
| 1987 | 128 | 16 | 144 |
| 1988 | 119 | 16 | 135 |
| 1989 | 113 | 16 | 129 |
| 1990 | 118 | 16 | 134 |
| 1991 | 122 | 15 | 137 |
| 1992 | 122 | 15 | 137 |
| 1993 | 141 | 10 | 151 |
| 1994 | 175 | 10 | 185 |
| 1995 | 201 | 11 | 212 |
| 1996 | 203 | 12 | 215 |
| 1997 | 190 | 10 | 200 |
| 1998 | 200 | 10 | 210 |
| 1999 | 209 | 10 | 219 |
| 2000 | 210 | 10 | 220 |
| 2001 | 200 | 9 | 209 |
| 2002 | 207 | 5 | 212 |
| 2003 | 201 | 9 | 210 |
| 2004 | 235 | 10 | 245 |

Source: Large and Medium Scale Industrial Statistics, BPS, several years.
NA: not available.

Annex 5.15: Location of Kretek Manufacturers, 1961-1993

| Location of firm | 1961 | 1978 | 1982 | 1984 | 1985 | 1989 | 1993 |
|----------------------|------------|------------|------------|------------|------------|------------|------------|
| Central Java | | | | | | | |
| Gombong | 60 | 13 | 13 | 13 | 11 | 8 | 8 |
| Solo | 67 | 11 | 8 | 7 | 6 | 7 | 6 |
| Kudus | 209 | 81 | 82 | 53 | 32 | 22 | 28 |
| Magelang | - | 11 | 13 | 12 | 9 | 4 | 4 |
| Semarang | 53 | 7 | 6 | 5 | 5 | 6 | 6 |
| East Java | | | | | | | |
| Bojonegoro | 31 | 9 | 9 | 9 | 7 | 15 | 22 |
| Madiun | 83 | 16 | 19 | 19 | 12 | 8 | 7 |
| Kidiri | 131 | 33 | 35 | 25 | 23 | 12 | 22 |
| Surabaya | 112 | 29 | 33 | 35 | 11 | 9 | 10 |
| Malang | 134 | 25 | 33 | 25 | 19 | 15 | 22 |
| Blitar | - | 5 | 5 | 5 | 4 | 3 | 3 |
| West Java | 29 | - | - | - | - | - | - |
| North Sumatra | | | | | | | |
| Pematang Siantar | 16 | - | 4 | 4 | 4 | 4 | 3 |
| Bali | | | | | | | |
| Denpasar | 16 | 3 | 3 | - | - | - | - |
| Total | 941 | 243 | 263 | 212 | 143 | 113 | 141 |

Source: Tarmidi L. 1996.

Annex 5.16: Employment in Tobacco Manufacturing by Selected Provinces

| Provinces | Employment in tobacco manufacturing | Total (male and female) employment | Tobacco manufacturing jobs as % total employment |
|---------------------------|-------------------------------------|------------------------------------|--|
| East Java (2002) | 174,304 | 6,026,458 | 2.9 |
| Central Java (2003) | 84,785 | 4,155,262 | 2.0 |
| West Nusa Tenggara (2004) | 1,564 | 275,184 | 0.6 |
| Yogyakarta (2004) | 3,596 | 786,984 | 0.5 |
| South Sulawesi (2003) | 9,500 | 725,642 | 1.3 |

Source: Large And Medium Manufacturing Statistics, Various Years
www.datastatistik-indonesia.com

Annex 6.1: Excise Tax Revenues as a Percent of Total Government Revenues and as a Percent of Total Tax Revenues, 1979-2006

| | Total revenues (billion rupiah, nominal) | Total tax revenues (billion rupiah, nominal) | Excise revenues (billion rupiah, nominal) | Tobacco excise (billion rupiah, nominal) | Excise % total revenue | Tobacco excise | |
|---------|---|--|---|--|----------------------------------|--|---|
| | | | | | | Tobacco excise as % total revenue | Tobacco excise as % of tax revenue |
| 1979-80 | 7,050 | 6,496 | 327 | 297 | 4.6% | 4.2% | 4.6% |
| 1980-81 | 10,406 | 9,898 | 438 | 397 | 4.2% | 3.8% | 4.0% |
| 1981-82 | 13,763 | 11,857 | 545 | 497 | 4.0% | 3.6% | 4.2% |
| 1982-83 | 12,815 | 11,960 | 620 | 532 | 4.8% | 4.2% | 4.4% |
| 1983-84 | 15,511 | 13,872 | 773 | 595 | 5.0% | 3.8% | 4.3% |
| 1984-85 | 18,724 | 15,221 | 873 | 789 | 4.7% | 4.2% | 5.2% |
| 1985-86 | 20,347 | 17,761 | 944 | 883 | 4.6% | 4.3% | 5.0% |
| 1986-87 | 21,324 | 14,993 | 1,056 | 1,232 | 5.0% | 5.8% | 8.2% |
| 1987-88 | 24,781 | 18,827 | 1,105 | 1,040 | 4.5% | 4.2% | 5.5% |
| 1988-89 | 24,088 | 21,435 | 1,390 | 1,173 | 5.8% | 4.9% | 5.5% |
| 1989-90 | 31,504 | 16,084 | 1,482 | 1,351 | 4.7% | 4.3% | 8.4% |
| 1990-91 | 42,193 | 22,011 | 1,800 | 1,679 | 4.3% | 4.0% | 7.6% |
| 1991-92 | 42,582 | 24,919 | 1,915 | 2,100 | 4.5% | 4.9% | 8.4% |
| 1992-93 | 48,863 | 30,092 | 2,242 | 2,087 | 4.6% | 4.3% | 6.9% |
| 1993-94 | 56,113 | 36,665 | 2,626 | 2,329 | 4.7% | 4.2% | 6.4% |
| 1994-95 | 66,418 | 44,442 | 3,153 | 2,650 | 4.7% | 4.0% | 6.0% |
| 1995-96 | 73,014 | 48,686 | 3,593 | 3,593 | 4.9% | 4.9% | 7.4% |
| 1996-97 | 87,630 | 57,340 | 4,263 | 4,265 | 4.9% | 4.9% | 7.4% |
| 1997-98 | 112,276 | 70,934 | 5,101 | 5,110 | 4.5% | 4.6% | 7.2% |
| 1998-99 | 158,043 | 102,394 | 7,733 | 7,678 | 4.9% | 4.9% | 7.5% |
| 1999-00 | 205,335 | 125,951 | 10,381 | 10,412 | 5.1% | 5.1% | 8.3% |
| 2001 | 300,600 | 185,541 | 17,394 | 18,266 | 5.8% | 6.1% | 9.8% |
| 2002 | 298,528 | 210,086 | 23,189 | 22,882 | 7.8% | 7.7% | 10.9% |
| 2003 | 340,928 | 242,008 | 26,277 | 25,928 | 7.7% | 7.6% | 10.7% |
| 2004 | 403,032 | 279,208 | 28,442 | 28,636 | 7.1% | 7.1% | 10.3% |
| 2005 | 484,513 | 347,000 | 33,300 | 32,651 | 6.9% | 6.7% | 9.4% |
| 2006 | 659,115 | 409,200 | 37,800 | 36,964 | 5.7% | 5.6% | 9.0% |
| 2007 | 720,400 | 489,900 | 42,000 | 41,160 | 5.8% | 5.7% | 8.4% |

Source: Ministry of Finance.

Annex 6.2: Excise Tax Revenues by Type of Cigarette, 1979-2005

| Year | Machine-made kreteks (SKM) | Hand-made kreteks (SKT) | White cigarettes kreteks (SPM) |
|------|----------------------------|-------------------------|--------------------------------|
| 1979 | 0.15 | 0.59 | 0.26 |
| 1980 | 0.26 | 0.51 | 0.23 |
| 1981 | 0.41 | 0.43 | 0.17 |
| 1982 | 0.39 | 0.45 | 0.15 |
| 1983 | | NA | |
| 1984 | 0.49 | 0.38 | 0.13 |
| 1985 | 0.59 | 0.30 | 0.10 |
| 1986 | 0.74 | 0.20 | 0.06 |
| 1987 | 0.75 | 0.19 | 0.06 |
| 1988 | 0.77 | 0.17 | 0.06 |
| 1989 | 0.79 | 0.16 | 0.05 |
| 1990 | 0.83 | 0.12 | 0.06 |
| 1991 | 0.80 | 0.14 | 0.06 |
| 1992 | 0.80 | 0.14 | 0.06 |
| 1993 | 0.80 | 0.13 | 0.07 |
| 1994 | 0.80 | 0.13 | 0.07 |
| 1995 | 0.78 | 0.14 | 0.08 |
| 1996 | 0.77 | 0.13 | 0.10 |
| 1997 | 0.78 | 0.12 | 0.10 |
| 1998 | 0.77 | 0.14 | 0.09 |
| 1999 | 0.72 | 0.17 | 0.11 |
| 2000 | 0.71 | 0.20 | 0.10 |
| 2001 | 0.67 | 0.23 | 0.10 |
| 2002 | 0.66 | 0.23 | 0.11 |
| 2003 | 0.69 | 0.23 | 0.09 |
| 2004 | 0.72 | 0.21 | 0.08 |
| 2005 | 0.73 | 0.20 | 0.07 |

Source: Ministry of Industry estimates

Annex 6.3: State Budget Targets 2008 (trillion rupiah)

| Line item | Proposed budget | As % of total revenues and grants | As % of total tax revenues |
|-------------------------------------|-----------------|-----------------------------------|----------------------------|
| A. Total revenues and grants | 761.4 | 100 | |
| I. Domestic revenue | 759.3 | 99.7 | |
| 1. Tax revenues | 583.7 | 76.7 | 100 |
| <i>a. Domestic taxes</i> | 568.3 | 74.6 | 97.4 |
| i. Income tax | 305.3 | 40.1 | 52.3 |
| ii. Value added tax | 186.6 | 24.5 | 32.0 |
| iii. Land and building tax | 24.2 | 3.2 | 4.1 |
| iv. Duties on land and building tax | 4.9 | 0.6 | 0.8 |
| v. Excises | 44.4 | 5.8 | 7.6 |
| vi. Other | 2.9 | 0.4 | 0.5 |
| <i>b. International trade tax</i> | 15.4 | 2.0 | |
| 2. Non tax revenues | 175.6 | 23.1 | |
| II. Grants | 2.1 | 0.3 | |

Source: Budget statistics. APBN 2008, Ministry of Finance

Annex 6.4: Changes in the Tobacco Control Regulations and Draft Bill, Indonesia, 1999-2007

| Section | Article | Reeregulation (PP) Number 81, 1999 | Regulation (PP) Number 38, 2000 | Regulation (PP) Number 19, 2003 | Draft Law (UU) 2007 |
|--|---------------------------|--|--|--|--|
| Advertisement, Sponsorship and Promotion | Bans | Advertisements are restricted to printed and outdoor media | Advertisements are permitted in electronic media in addition to printed and outdoor media | Same as previous PP | Direct and indirect advertising and promotion of cigarettes is prohibited. Includes printed, electronic and other media. Printed media, electronic media and other media are prohibited from showing people smoking. |
| | | | (Explanatory documents clarify that advertisements are permitted between 21.30 PM and 05.00 AM local time) | Allowable hours for advertisements are explicitly mentioned (21.30 PM to 05.00 AM local time). | Not applicable |
| | Content/design | Advertisements must not encourage people to smoke, describe or persuade people that smoking has health benefits, present pictures and/or writings of cigarettes or people smoking, target children or pregnant women, mention that the product is a cigarette brand. | Same as previous PP | Additional restriction was added; advertisements not violate any norms in society | Not applicable |
| | Health warnings | Health warnings must be included in advertisements. | Same as previous PP | In addition to health warnings (15% of advert), every advertisement must disclose nicotine and tar levels. | Not applicable |
| | Penalties and enforcement | Manufacturers, advertisers, and retailers can be fined up to Rp 100,000,000 (US\$ 10,000) or five years in jail for violation of advertising restrictions. | Same as previous PP | Sanctions for violation were eliminated | Violation of direct or indirect advertising and promotion of cigarettes: a maximum of 5 years in jail and a maximum fine of 1 billion Rp (US\$ 100,000). Violations of prohibition on showing people smoking in print, electronic other media: a maximum of 3 yrs in jail and fines up to 500 million Rp (US\$ 50,000). |
| Packaging and Labeling | Health warnings | Health warnings must be easy to read. | Same as previous PP | Health warnings must be placed on the broad size of the pack | Written and/or pictorial health warnings must be placed on the both sides of the broad side of each pack, comprise 50% or more of the package, in large letters, clear, visible, and convincing, and rotated. |
| | | The authorized health warning reads: "Smoking can cause cancer, heart attacks, impotence and harm pregnancy and fetal development." | The MoH and Coordinating Ministry for Social Welfare authorized 5 alternative warning messages. | The authorized health warning reads "Smoking can cause cancer, heart attacks, impotence and harm pregnancy and fetal development." | Same as previous PP (to be regulated by ministries) |
| | | | | | Packaging and labeling on cigarettes must be in Indonesian. It is prohibited from using words or phrases that are misleading. Information about emissions must be explained in a clear and easy to read manner. |

Annex 6.4 continued

| Section | Article | Reeregulation (PP) Number 81, 1999 | Regulation (PP) Number 38, 2000 | Regulation (PP) Number 19, 2003 | Draft Law (UU) 2007 |
|--|--|---|--|--|---|
| Packaging and Labeling (continued) | Disclosure of emissions | Public disclosure of tar and nicotine content is required. | Same as previous PP | Public disclosure of tar and nicotine level for every cigarette produced required. | Same as previous PP |
| | Minimum number of sticks | | | | Every package of cigarettes will include at least 12 sticks. |
| Product Regulation and Disclosure (referred to as production in draft law) | Penalties and Enforcement | Manufacturers, advertisers, and retailers can be fined up to Rp 100,000,000 (US\$ 10,000) or five years in jail for violation of advertising restrictions, and fines up to Rp 10,000,000 (US\$ 1,000) for failure to include health warnings. | Same as previous PP | Sanctions for violation were eliminated. | Violation from producers and importers that use misleading words or phrases will serve max 3 years in jail and be fined a max Rp 500 million RP (US\$ 50,000). Producers and importers that do not include information about levels of nicotine, tar and carbon monoxide on the label in a clear and easy to read format will serve max 3 years in jail and be fined a maximum of 500 million RP (US\$ 50,000). Producers and importers that do not include health warnings on the labels will serve a maximum of 5 years in jail and fined a maximum of 1 billion RP (US\$ 100,000). |
| | Emissions | Maximum nicotine and tar level for each cigarette must not exceed 1.5 mg and 20 mg Every cigarette produced must undergo testing for tar and nicotine levels | Same as previous PP | Restriction on maximum tar and nicotine level eliminated | Not mentioned |
| | Additives | Not mentioned | Not mentioned | Not mentioned | Every cigarette produced must undergo testing for level of emissions by accredited laboratory. |
| Compliance | Industries producing machine-made cigarettes must comply within 2 years. | Industries producing machine-made cigarettes must comply within 2 years. | Industries producing white machine-made cigarettes must comply within 2 years. | Not Applicable | Not Applicable |
| | Large scale hand made cigarette industries must comply within 5 years and small scale hand-made industries must comply within 5 years. | Large scale hand made cigarette industries must comply within 5 years and small scale hand-made industries must comply within 5 years. | Machine made kretek industries must comply within 7 years and hand-made kretek industries, 10 years. | Not Applicable | Not Applicable |
| Penalties and Enforcement | None | None | None | None | Producers and importers that do not implement testing of contents and emissions for every product will serve maximum 5 yrs in jail and fined a maximum of 1 billion RP (US\$100,000). Producers and importers that use additives that do not fulfill health regulations in the production process will serve max 5 yrs in jail and be fined maximum 1 billion RP (US\$ 100,000). |

Annex 6.4 continued

| Section | Article | Reeregulation (PP) Number 81, 1999 | Regulation (PP) Number 38, 2000 | Regulation (PP) Number 19, 2003 | Draft Law (UU) 2007 |
|---|----------------------------|--|------------------------------------|------------------------------------|--|
| Product Regulations and Disclosure (continued) | Penalties and Enforcement | None | None | None | Producers and importers that do not implement testing of contents and emissions for every product will serve maximum 5 yrs in jail and fined a maximum of 1 billion RP (US\$100,000). Producers and importers that use additives that do not fulfill health regulations in the production process will serve max 5 yrs in jail and be fined maximum 1 billion RP (US\$ 100,000). |
| Clean air restrictions | Restricted places | Smoking bans on public places; including health facilities, religious facilities, workplaces for teaching and children activities and public transportation. | Same as previous PP | Same as previous PP | Same as previous PP (Noted that a proportion of the earmarked tax for regional governments to implement clean air legislation) |
| | Penalties and Enforcements | None | None | None | Those responsible that do not implement clean air regulations will serve a maximum of 5 years in jail and fined a max of 1 billion RP. /US\$ 100,000. Individuals fines for smoking in restricted areas: penalties of up to 1 year in jail and 50 million RP (US\$ 5000). Producers and importers penalties for promotion in smoke-free areas: up to 3 years in jail and 500 million RP (US\$ 50,000). |
| Sales and Distribution | Vending machine sales | Vending machines are to be located in places not accessible to children. | Same as previous PP | Same as previous PP | Cigarette vending machine sales are prohibited. |
| | Free tobacco products | Distribution of free cigarettes is prohibited | Same as previous PP | Same as previous PP | (Included under advertising and promotions) |
| | Sales to minors | None | None | None | Prohibition from selling cigarettes to children <18 years of age; prohibition of children <18 buying cigarettes. |
| | Single stick sales | None | None | None | No one can sell cigarettes by the stick. |
| | Penalties and Enforcements | None | None | None | Producers and importers that sell cigarettes by vending machines will serve a maximum of 3 years in jail and be fined a maximum of 500 million RP (US\$ 50,000). Every person that sell cigarettes to children under 18 years will serve a maximum of 3 yrs in jail and be fined a maximum of 500 million RP. Every person that sell cigarettes by the stick will serve a maximum of 1 yrs in jail and be fined a maximum of 100 million RP (US\$ 10,000). |
| Price and tax | Tax rates | None | None | None | Minimum tax should be 65 % of HJE. |
| | Ear-marking | None | None | None | 10% of revenue generated from tobacco excise dedicated to tobacco control. |

Annex 6.5: Comparing firm size as measured by Central Statistical Bureau (BPS) and the Excise Tax Bureau

| BPS (2004) | | | Tax Directorate (2006) | | | |
|-----------------|-----------|--------------|------------------------|-----------|---------------------------|-------------|
| Size definition | No. firms | | Size definition | No. firms | | |
| (No. workers) | Kretek | White | (No. sticks per year) | | | |
| Large | 100+ | 148 | 5 | I | >2 billion | 6 |
| Medium | 20 - 99 | 87 | 5 | II | >500 million - ≤2 billion | 25 |
| Small | 5 - 19 | 3479 | – | IIIA | >6 million - ≤500 million | 96 |
| Home/Very small | 1 - 4 | 16965 | – | IIIB | ≤6 million | 3834 |
| Total | | 20689 | | | | 3961 |

Sources: Firms figures from Central Statistical Bureau, and Tax Figures from Policy Direction Strategy on Tobacco Products-Based Excise (Excise Roadmap) 2007-2010. Directorate of Excise May 2007.

Acknowledgements

This report was developed by a team led by Dr. Sarah Barber, University of California, Berkeley, and Professor Dr. Sri Moertiningsih Adioetomo, Mr. Abdillah Ahsan, and Ms. Diahhadi Setyonaluri, Demographic Institute, Faculty of Economics, University of Indonesia. Team members included Mr. Nurhadi Wiyono, Ms. Dewi Prihastuti, Mr. Muhammad Halley Yudistira, and Mr. Muhammad Sowwam.¹

The research team carried out structured interviews to collect data about tobacco tax administration and implementation. The full interviews are published separately.² Also commissioned for this report was work that aimed to strengthen and expand on a prior study conducted by the Demographic Institute, Faculty of Economics, University of Indonesia, which examined the implications of a tax increase on employment in the manufacturing and agricultural sectors. This work was conducted by Mr. Abdillah Ahsan and Mr. Nurhadi Wiyono, with technical input from Dr. Hana Ross, American Cancer Society.³ Much of the basic data built on sources and citations identified in *The Tobacco Sourcebook*, a multi-year effort to collect data about all aspects of tobacco consumption and production, published in 2004 by the Ministry of Health, Republic of Indonesia.⁴

Mr. Frans Rupang, Director of Excise Tax Directorate, and Mr. Soenaryo, Excise Tax Directorate, Ministry of Finance, were important resource persons for this report. We are grateful for comments and advice from Dr. Teh-Wei Hu, School of Public Health, University of California, Berkeley; Dr. Suahasil Nazara, Demographic Institute, Faculty of Economics, University of Indonesia; Dr. Ari Kuncoro, Institute of Economic and Social Research, Faculty of Economics, University of Indonesia; Dr. Frank Chaloupka, University of Chicago; Dr. Michael Ong, University of California, Los Angeles; Dr. Anne-Marie Perucic, World Health Organization, Geneva; and Dr. Tom Frieden and Dr. Kelly Henning, Bloomberg Philanthropies. Mr. Burke Fishburne, World Health Organization, WPRO, also provided useful advice. Dr. Widyastuti Soerojo, Indonesian Public Health Association (IAKMI), provided us with prevalence data, and Dr. Ayda Yurekli, Research for International Tobacco Control, provided comparative country data about prices and taxes. We are grateful for funding from Bloomberg Philanthropies for this work. Capable grants administration was provided by the International Union Against Tuberculosis and Lung Diseases (The Union) and IAKMI. We thank Ms. Diahhadi Setyonaluri and Ms. Rima Prama Artha for their excellent work on translation. The authors remain responsible for all errors and omissions.

¹ Abdillah Ahsan, Nurhadi Wiyono, Diahhadi Setyonaluri, Dewi Prihastuti, Yudistira, Sowwam. *Tobacco Control Country Study*, Indonesia. Demographic Institute, Faculty of Economics, University of Indonesia, 2007.

² Abdillah Ahsan, Nurhadi Wiyono, Diahhadi Setyonaluri, Dewi Prihastuti, Muhammad Halley Yudhistira, Muhammad Sowwam, *Implementation of tobacco tax*. Indonesia, 2007.

³ Abdillah Ahsan, Nurhadi Wiyono, *The Impact Analysis Of Higher Cigarette Prices on Employment In Indonesia*, Demographic Institute, Faculty of Economics, University of Indonesia 2007.

⁴ Ministry of Health, *The Tobacco Sourcebook: Data to support a national strategy*, Republic of Indonesia 2004.

Bibliography

- Achadi A, Soerojo W, Barber S. The relevance and prospects of advancing tobacco control in Indonesia. *Health Policy* 2005;72(3):333-349.
- Adioetomo SM, Djutaharta T, Hendratno. Cigarette consumption, taxation, and household income: Indonesia case study. World Bank. HNP Discussion Paper 26, 2005.
- Ahsan A, Wiyono IN. The impact analysis of higher cigarette prices to employment in Indonesia. Demographic Institute, Faculty of Economics, University of Indonesia, 2007.
- Ahsan A, Wiyono IN, Setyonaluri D, Prihastuti D, Halley YM, Sowwam M. Tobacco Control Country Study, Indonesia, Demographic Institute, Faculty of Economics, University of Indonesia, 2007.
- Ahsan A, Wiyono IN, Setyonaluri D, Prihastuti D, Halley YM, Sowwam M. Implementation of tobacco tax. Indonesia. Demographic Institute, Faculty of Economics, University of Indonesia, 2007.
- Asri IW. Policy on in-direct tax policy: case study on tobacco excise in Indonesia 1969-1992. Post Graduate Program, Social and Economic Science, and Specialized Politic Science University of Indonesia, 1992.
- BAPPENAS, BPS, UNFPA. Proyeksi Penduduk Indonesia 2000-2024, Berdasarkan Hasil Survei Penduduk. (Population projections, Indonesia 2000-2024, based on the Census). Ministry of Planning, Republic of Indonesia, 2005.
- Bates C, Jarvis M, Connelly G. Tobacco additives: cigarette engineering and nicotine addition. *ASH/Product Regulation/Tobacco Additives*, 1999.
- Becker GS, Grossman M, Murphy KM. An empirical analysis of cigarette addiction. *American Economic Review*, 1994;84(3): 396-418.
- Bennett, CPA, Marks SV, Muslimin L. The clove monopoly: Lessons for the future. Trade Implementation and Policy Project, U.S. Agency for International Development and Ministry of Industry and Trade, Jakarta; Republic of Indonesia, 1998.
- Bird K. Advertise or die: advertising and market share dynamics revisited. *Applied Economics Letters* 2002; 9(12):763-767.
- Bird K. Industrial concentration and competition in Indonesian manufacturing. Doctoral Thesis. Australian National University, 2002.
- Bloom D, Canning D, Jamison DT. Health, wealth, and welfare. *Finance and Development, IMF*. 2004;41(1):10-15.
- Britton J, Edwards R. Tobacco smoking, harm reduction, and nicotine product regulation. *Lancet* 2007;371(9610):441-445.
- Bunn WB 3rd, Stave GM, Downs KE, Alvir JM, Dirani R. Effect of smoking status on productivity loss. *Journal of Occupational Environmental Medicine* 2006;48(10):1099-1108.
- Castles L. Religion, politics, and economic behavior in Java: The Kudus cigarette industry. Cultural Report Series No. 15, Southeast Asian Studies, Yale University, 1967.
- Centers for Disease Control and Prevention, US Department of Health and Human Services. Annual smoking-attributable mortality, years of potential life lost, and economic costs, United States, 1995-1999. *Morbidity and Mortality Weekly Review* 2002;51(14):300-303.
- Centers for Disease Control and Prevention, US Department of Health and Human Services. Global Youth Tobacco Surveys (GYTS) Country Fact Sheets.
- Chaloupka FJ, Warner K. The economics of smoking. National Bureau of Economic Research, Working Paper No. 7047, 1999.
- Chaloupka FJ, Warner KE. The economics of smoking. In: Culyer AJ, Newhouse JP (eds.), *Handbook of Health Economics*, edition 1. 2000, volume 1, chapter 29, 1539-1627.
- Chaloupka FJ, Wechsler P. Price, tobacco control policies and smoking among young adults. *Journal of Health Economics* 1997;16(3):359-373.
- Chaloupka FJ, Hu TW, Warner KE, Jacobs R, Yurekli A. The taxation of tobacco products. In: Jha P, Chaloupka FJ, eds. *Tobacco control in developing countries*. New York: Oxford University Press, 2000.
- Clark GC. Comparison of the inhalation toxicity of *kretek* (clove cigarette) smoke with that of American cigarette smoke. I. One day exposure. *Archives of Toxicology* 1989;63(1):1-6.
- Clark GC. Comparison of the inhalation toxicity of *kretek* (clove cigarette) smoke with that of American cigarette smoke. II. Fourteen days, exposure. *Archives of Toxicology* 1990;64(7):515-521.
- Council on Scientific Affairs. Evaluation of the health hazard of clove cigarettes. *JAMA* 1998;260(24):3641-3644.
- Credit Suisse. Indonesian cigarette market. *Asian Daily*, 26 January 2007

Chapman S, Richardson J. Tobacco excise and declining consumption: the case of Papua New Guinea. *American Journal of Public Health* 1990;80(5):537-540.

Collin J, LeGresley E, MacKenzie R, Lawrence S, Lee K. Complicity in contraband: British American Tobacco and cigarette smuggling in Asia. *Tobacco Control* 2004;13, ii104-ii111.

Department of Health and Human Services, National Institutes of Health, National Cancer Institute. Risks associated with smoking cigarettes with low machine-measured yields of tar and nicotine. *Smoking and Tobacco Control Monograph No. 13*. Bethesda, MD, NIH Pub. No. 02-5074, 2001.

Department of Health and Human Services. The health consequences of smoking: A report of the Surgeon General. US Department of Health and Human Services, Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, Office on Smoking and Health, 2004.

Department of Health and Human Services. The Health Consequences of Involuntary Exposure to Tobacco Smoke: A Report of the Surgeon General-Executive Summary. U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, Coordinating Center for Health Promotion, National Center for Chronic Disease Prevention and Health Promotion, Office on Smoking and Health, 2006.

Djutaharta T, Surya HV, Pasay NHA, Hendratno, Adioetomo SM. Aggregate Analysis of the Impact of Cigarette Tax Rate Increases on Tobacco Consumption and Government Revenue: The Case of Indonesia, World Bank, HNP Discussion Paper 25, 2005.

Euromonitor. Cigarettes in Indonesia, 2007.

Erwidodo, Molyneaux J, Pribadi N. Household food demand: An almost ideal demand system (AIDS). Working Paper. 2002.

Facts about light and mild cigarettes. The Johns Hopkins Bloomberg School of Public Health.

Federal Trade Commission. Tar, Nicotine, and Carbon Monoxide Report, 2000.

Frieden TR, Bloomberg MR. How to prevent 100 million deaths from tobacco. *Lancet* 2007;369(9574):1758-1761.

Fontham ET, Correa P, Reynolds P, Wu-Williams A, Buffler PA, Greenberg RS, et al. Environmental tobacco smoke and lung cancer in nonsmoking women: A multicenter case-control study. *Journal of the American Medical Association* 1994;271:1752-1759.

Framework Convention Alliance. How big was the global illicit tobacco trade problem in 2006? Framework Convention Alliance (FCA), Prepared for the 2nd session of the Conference of the Parties to the WHO FCTC, June 30-July 6, 2007, Bangkok, Thailand.

Framework Convention Alliance. The Framework Convention for Tobacco Control. Text, Part II: Objective, guiding, principles and general obligations.

Framework Convention on Tobacco Control. A briefing for the Government of Malaysia. Tackling the illicit trade in tobacco, ASEAN inter-sessional meeting, 4-7 March 2002.

Givel M. A comparison of US and Norwegian regulation of coumarin in tobacco products. *Tobacco Control* 2003;12, 401-405.

Global Agricultural Information Network (GAIN) Report #2032. Indonesia Tobacco and Products New Cigarette Excise and Minimum Retail Prices 2002. Washington, DC: United States Department of Agriculture.

Global Agricultural Information Network (GAIN) Report #3021. Indonesia Tobacco and Products Annual 2003. Washington, DC: United States Department of Agriculture.

Global Agricultural Information Network (GAIN) Report #4027. Indonesia Tobacco and Products Annual 2004. Washington, DC: United States Department of Agriculture.

Government of the Republic of Indonesia. Undang-Undang Republik Indonesia Nomor 11, 1995 Tentang Cukai (Law of the Republic of Indonesia, Number 11, 1995, about Excise).

Government of the Republic of Indonesia. Undang-Undang Republik Indonesia Nomor 39 Tahun 2007 Tentang Perubahan Atas Undang-Undang Nomor 11 Tahun 1995 Tentang Cukai (Law of the Republic of Indonesia, Number 39, 2007, about the Amendments to Law Number 11, 1995, about Excise).

Guerin B. Smoking US-Indonesia trade debate. *Asia Times* Sept 12, 2007.

Guidotti TL. Critique of available studies on the toxicology of *kretek* smoke. *Archive of Toxicology* 1989;63:7-12.

Guidotti TL, Laing L, Prakash UB. Clove cigarettes: the basis for concern regarding health effects. *Western Journal of Medicine* 1989;151:220-228.

Guindon E, Perucic AM, Boisclair D. Higher tobacco prices and taxes in South-east Asia: An effective tool to reduce tobacco use, save lives and generate revenue. World Bank. Health, Nutrition and Population Discussion Paper 11. *Economics of Tobacco Control*, 2003.

- Grossman M. On the concept of health capital and the demand for health. *Journal of Political Economy* 1972;82: 223-255.
- Gruber J, Koszegi B. A modern economic view of tobacco taxation. Paris: The International Union Against Tuberculosis and Lung Disease, 2008.
- Hackshaw AK, Law MR, Wald NJ. The accumulated evidence on lung cancer and environmental tobacco smoke. *BMJ* 1997;315:980-988.
- Halpern MT, Shikar R, Rentz AM, Khan ZM. Impact of smoking status on workplace absenteeism and productivity. *Tobacco Control* 2001;10:233-238.
- Hanutz M. *Kretek*, the culture and heritage of Indonesia's clove cigarettes. Jakarta: Equinox Publishing, 2000.
- Hu TW, Mao Z. Effects of cigarette tax on cigarette consumption and the Chinese economy. *Tobacco Control* 2002;11:105-108.
- Hu TW. Cigarette taxation in China: lessons from international experiences. *Tobacco Control* 1997;6:136-140.
- Indonesia Advertising Industry. Persatuan Perusahaan Periklanan Indonesia (PPPI), US Department of Commerce, 2006.
- Isdijoso B. Studi Alternatif Penerimaan dan Tarif Cukai Tembakau (Study about alternative revenues and tobacco excises), 2004.
- International Labor Organization. Employment trends in the tobacco sector: Challenges and prospects. Report for discussion at the Tripartite Meeting on the Future of Employment in the Tobacco Sector, Geneva, 2003.
- Jardin Fleming Research. Indonesian tobacco: Indonesian cigarettes still hot. Jakarta, 1999.
- Jha P, Chaloupka FJ. The economics of global tobacco control. *BMJ* 2000;321:358-361.
- Jha P, Chaloupka FJ, Moore J, Gajalakshmi V, Gupta PC, Peck R, et al. Tobacco addiction. *Disease Control Priorities in Developing Countries* (2nd Edition) ed. 869-886. New York: Oxford University Press. DOI: 10.1596/978-0-821-36179-5/Chpt-46, 2006.
- Jha P, de Beyer J, Heller PS. Death and taxes. *Economics of tobacco control. Finance and Development*, IMF 1999;36(4).
- Kawague T. Chapter 11. Income and employment generation from agricultural processing and marketing at the village level: A study in upland Java, in: von Braun J, Kennedy E, eds. *Agricultural Commercialization, Economic Development, and Nutrition*. International Food Policy Research Institute, 1994.
- Kemp M. The unknown industrial prisoner: women, modernisation and industrial health. *Inside Indonesia* 1993;37: 20-22.
- Keyser JC, Juita NR. Smallholder tobacco growing in Indonesia: costs and profitability compared with other agricultural enterprises. World Bank. HNP discussion paper, 2007.
- Law MR, Morris JK, Wald NJ. Environmental tobacco smoke exposure and ischemic heart disease: an evaluation of the evidence. *BMJ* 1997;315 (7114):973-980.
- Lee K, Collin J. Key to the future. British American Tobacco and cigarette smuggling in China. *PLoS Med* 2006;3(7), e228.
- Levine D, Gertler P, Ames M. Schooling and parental death. *Review of Economics and Statistics* 2004;86(1):211-225.
- Ling PM, Landman A, Glantz SA. It is time to abandon youth access tobacco programmes. *Tobacco Control* 2002;11:3-6.
- Manning C. The economic crisis and child labour in Indonesia, Australian National University. International Labor Office, International Programme on the Elimination of Child Labour, Geneva, 1999.
- Malsion JL, Lee EM, Murty R, Moolchan ET, Pickworth WB. Clove cigarette smoking: biochemical, physiological, and subjective effects, *Pharmacology Biochemistry and Behavior* 2003;74(3):739-745.
- Marks S. Cigarette excise taxation in Indonesia, an economic analysis. Partnership for economic growth, BAPPENAS and USAID, 2003.
- Mathers CD, Loncar D. Projections of global mortality and burden of disease from 2002 to 2030. *PLoS Med* 2006;3(11), e442.
- Max W. The financial impact of smoking on health-related costs: A review of the literature. *American Journal of Health Promotion* 2001;15:321-331.
- Max W, Rice DP, Sung HY, Zhang X, Miller L. The economic burden of smoking in California. *Tobacco Control* 2004;13: 264-267.
- Merriman D, Yurekli A, Chaloupka FJ. How big is the worldwide cigarette smuggling problem? In: *Tobacco control in developing countries*. Oxford University Press, 2002.
- Miller LS, Zhang X, Max W. State estimates of total medical expenditures attributable to smoking, 1993. *Public Health Reports*, 1998; 113(5):447-58.
- Miller VP, Ernst C, Collin F. Smoking-attributable costs in the U.S.A. *Social Science and Medicine* 1999;48:375-439.

- Ministry of Finance, Republic of Indonesia. Policy Direction Strategy on Tobacco Product Excise 2007-2010. 2007.
- Ministry of Finance, Republic of Indonesia. Data Pokok (Budget statistics) APBN 2006-2007. 2007.
- Ministry of Finance, Republic of Indonesia. Kebijakan ekstensifikasi cukai dan intensifikasi cukai hasil tembakau (Policies about expanding and intensifying tobacco products excise).
- Ministry of Health, Republic of Indonesia. The Tobacco Sourcebook. Data to support a national strategy 2004, Ministry of Health, Republic of Indonesia.
- Ministry of Planning, Republic of Indonesia. Indonesia Progress Report on the Millennium Development Goals, 2004 and 2005, Republic of Indonesia and the United Nations Development Program (UNDP).
- Ministry of Trade and Industry, Republic of Indonesia. Roadmap Industri Hasil Tembakau (IHT); Direktorat Jenderal Industri Agro dan Kimia; Kesepakatan Hasil Tembakau, (Industrial Roadmap for Tobacco Products, Directorate General for Agro-chemical Industries, Proceedings from the meeting about Opportunities for Tobacco Products), 2007.
- Ministry of Trade and Industry, Republic of Indonesia. Government raises cigarette taxes. Press Release, July 2007.
- Morbidity and Mortality Weekly (MMWR). Epidemiologic notes and reports illnesses possibly associated with smoking clove cigarettes. May 31, 1985;34(21):297-299.
- National Toxicology Program. 11th Report on Carcinogens, Research Triangle Park. NC: U.S. Department of Health and Human Sciences, National Institute of Environmental Health Sciences, 2005.
- National Institutes of Health. National Cancer Institute. Smoking and Tobacco Control Monograph #10: Health effects of exposure to environmental tobacco smoke, 2002.
- Ngi N, Weinehall L, Ohman A. 'If I don't smoke, I'm not a real man'-Indonesian teenage boys' views about smoking, Health education research 2007;22(6):794-804.
- Nifisastro W. Population trends in Indonesia. Ithaca: Cornell University Press, 1970.
- Otsuka R, Watanabe H, Hirata K, Tokai K, Muro T, Yoshiyama M, et al. Acute effects of passive smoking on the coronary circulation in healthy young adults. JAMA 2001;286(4):436-441.
- Pechacek TF, Babb S. How acute and reversible are the cardiovascular risks of secondhand smoke? BMJ 2004; 328(7446):980-983.
- Polzin GM, Stanfill SB, Brown CR, Ashley DL, Watson CH. Determination of eugenol, anethole, and coumarin in the mainstream cigarette smoke of Indonesian clove cigarettes. Food and Chemical Toxicology 2007;45(10):1948-1953.
- Pradono J, Kristanti CM. Passive smokers, the forgotten disaster. Institute of Health Research and Development, Ministry of Health, Republic of Indonesia, 2002.
- Pradono J, Kristanti CM. Perokok Pasif Bencana Yang Terlupakan (Passive Smokers Unawareness Problem). Buletin Penelitian Kesehatan, 2003.
- Ranson KM, Jha P, Chaloupka FJ, Nguyen SN. Global and regional estimates of the effectiveness and cost-effectiveness of price increases and other tobacco control policies, Nicotine & Tobacco Research 2002;4(3):311-319.
- Reid A. From betel chewing to tobacco smoking in Indonesia. Journal of Asian Studies 1985;XLIV:3.
- Reynolds C. Tobacco advertising in Indonesia: The defining characteristics for success. Tobacco Control 1999;8:85-88.
- Ross H. An overview of the tobacco control economic literature and evidence for Indonesia. Open Society Institute and Research Triangle Park, 2005.
- Semba RD, Kalm LM, de Pee S, Ricks MO, Sari M, Bloem MW. Paternal smoking is associated with increased risk of child malnutrition among poor urban families in Indonesia. Public Health Nutrition 2006;10(1):7-15.
- Schick S, Glantz SA. Sidestream cigarette smoke toxicity increases with aging and exposure duration. Tobacco Control 2006;15:424-429.
- Schwartz A. Battle of the brands. Far Eastern Economic Review. April 19 1990:32-33.
- Stanley K. Control of tobacco production and use. In: Jamison DT, Mosley WH, Measham AR, Bobadilla JL, eds. Disease control priorities in developing countries. New York: Oxford University Press, 703-723, 1993.
- Sunley EM, Yurekli A, Chaloupka FJ. The Design, Administration, and potential revenue of tobacco excises. In: Jha P, Chaloupka FJ, eds. Tobacco control in developing countries. New York: Oxford University Press, 2000.
- Tarmidi L. Changing structure and competition in the kretek cigarette industry. Bulletin of Indonesian Economic Studies 1996;32 (3), 85-107.
- Tjahyaprijadi C, Indarto WD. Analisis Pola Konsumsi Rokok Sigaret Kretek Mesin, Sigaret Kretek Tangan, dan Sigaret Putih. Mesin (Analysis of consumption patterns for SKM, SKT, and SPM). Economic and Fiscal Policy 2003;7(4).

Tjandraningsih I, Anarita P. Pekerja Anak di Perkebunan Tembakau Bandung (Child labor on tobacco plantations in Bandung), Akatiga, 2002.

Townsend JL, Roderick P, Cooper J. Cigarette Smoking by Socio-Economic Group, Sex, and Age: Effects of Price, Income, and Health Publicity. *BMJ* 1998;309(6959):923-926.

Warner KW. The economics of tobacco: myths and realities. *Tobacco control* 2000;9:78-89.

Warner KE, Hodgson TA, Carroll CE. Medical costs of smoking in the United States: Estimates, their validity, and their implications. *Tobacco Control* 1999;8(3):290-300.

Warner KW, Chaloupka FJ, Cook PJ, Manning WG, Newhouse JP, Novotny TE, et al. Criteria for determining an optimal cigarette tax: the economist's perspective. *Tobacco Control* 1995;4:380-386.

Witoelar F, Rukumnuaykit P, Strauss J. Smoking behavior among youth in a developing country: Case of Indonesia. Yale University, 2005.

World Bank. Curbing the Tobacco Epidemic in Indonesia: World Bank Watching Brief, 2000.

World Bank. Selected Fiscal Issues in a New Era. Report No. 25437-IND. Poverty Reduction and Economic Management Unit, 2004.

World Bank. Curbing the Tobacco Epidemic in Indonesia, Evidence and Options. Draft 2004.

World Bank. East Asia Decentralizes. Making Local Government Work, 2004.

World Bank. Spending for Development: Making the Most of Indonesia's New Opportunities, Indonesia Public Expenditure Review, 2007. Washington, DC: The World Bank.

World Bank. County Update, Indonesia. April 2007.

World Health Organization. Advancing Knowledge on Regulating Tobacco Products. 2000.

World Health Organization. Tobacco control legislation: An introductory guide. 2nd ed. 2004.

World Health Organization. National Health Accounts, Indonesia, 2006.

World Health Organization. Towards health with justice. 2002.

June 2008

ISBN: 978-2-914365-40-6