



WORLD BANK GROUP

THE ECONOMICS OF TOBACCO TAXATION AND EMPLOYMENT IN INDONESIA

Policy Implications

Technical Brief

May 2018

THE ECONOMICS OF TOBACCO TAXATION AND EMPLOYMENT IN INDONESIA

Policy Implications
Technical Brief

The World Bank Group
May 2018

ACKNOWLEDGMENTS

This policy brief summarizes findings from the World Bank and American Cancer Society Indonesia Tobacco Employment Studies, and assesses tobacco taxation policies and their social impact. The study team comprised: Edson C. Araujo (Senior Economist, World Bank), Pandu Harimurti (Senior Health Specialist, World Bank), Gumilang Aryo Sahadewo (Research Faculty, Universitas Gadjah Mada), Nigar Nargis (Scientific Director, American Cancer Society), and Jeffrey Drope (Scientific Vice-President, American Cancer Society).

This policy brief includes contributions from Patricio V. Marquez (Lead Public Health Specialist, World Bank), Jaffar Al Rikabi (Economist, World Bank), Paul Isenman (Senior Fellow, R4D), Anne-Marie Perucic (Economist, WHO/TFI), and Frederico Gil Sander (Lead Economist, World Bank). Alexander Irwin edited the brief. Spaeth Hill designed the brief.

The Indonesia Tobacco Employment Studies were carried out under the World Bank Group Global Tobacco Control Program, coordinated by Patricio V. Marquez, with the support of the Bill & Melinda Gates Foundation and the Bloomberg Philanthropies.

Washington, D.C., May 2018

TABLE OF CONTENTS

Acknowledgments	3
Executive Summary	6
1. Purpose and Methods of the Paper	13
2. Tobacco Consumption in Indonesia	14
3. Tobacco Taxes in Indonesia	19
4. Tobacco Employment in Indonesia	23
5. Simulations of the Effects of Raising Cigarette Taxes on Employment	28
6. Policy Recommendations	31
7. Conclusion: What Smart Tobacco Tax Policy Can Achieve	33
References	35

EXECUTIVE SUMMARY

Key Policy Messages:

Indonesia has one of the highest rates of cigarette consumption in the world. Tobacco use heavily burdens population health, undermines the quest for universal health coverage, and inflicts heavy direct and indirect economic costs.

Higher tobacco taxes to increase cigarette prices contribute to reducing tobacco consumption and hence tobacco-related disease and death, while increasing public resources for development. The Indonesian government has recently raised tobacco tax rates. This strategy has brought initial gains and should be aggressively ramped up.

By raising tobacco taxes toward WHO-recommended levels (at least 70 percent of retail price) and streamlining its tobacco excise tax structure, Indonesia can rapidly cut smoking rates, save many lives, and boost government revenue. Such policies would contribute to realizing Indonesia's demographic dividend by keeping people healthy.

An average 12 percent tax hike that increases cigarette prices in Indonesia by an average 5 percent would cut demand for cigarettes by 1.89 percent and raise government revenue by 6.41 percent. It would reduce gross employment in tobacco manufacturing by just 0.43 percent.

As the government strengthens tobacco taxes, it can use the new revenue obtained to expand programs and investments that benefit the entire population, including universal health coverage. Some new revenue can also be dedicated to protecting tobacco and clove farmers and kretek rollers, smoothing their transition to better, more profitable, and sustainable livelihoods.

This paper addresses high-level policy makers in Indonesia and their technical teams. It summarizes key findings and policy lessons from the Indonesia Tobacco Employment Studies, conducted by the World Bank and American Cancer Society. The paper clarifies relationships between tobacco tax increases and employment in Indonesia's tobacco sector. It places this analysis in the context of current knowledge on linkages between tobacco taxation, public health, domestic resource mobilization, and development.

Tobacco Consumption in Indonesia: A Burden on Development

- **Indonesia has one of the highest rates of cigarette consumption in the world, particularly among males. It is estimated that there were 85 million smokers in Indonesia in 2016.** Indonesian youth are starting to smoke younger and younger.

Twenty percent of the country's youth were categorized as smokers in 2016. An estimated 68.1 percent of adult men smoke, the highest rate in the world. Exposure to second-hand smoke is common in Indonesia, posing additional health risks to non-smokers. The relatively low prices charged for cigarettes in Indonesia fuel tobacco use. A package of cigarettes can be bought for less than a US\$ 1, among the lowest prices in the world (Indonesian Investments, 2018; WHO, 2017). Access to cigarettes is facilitated by a distribution network that penetrates all corners of the archipelago.

- **Indonesia's five leading causes of death are all tobacco-related.** They include ischemic heart disease, cerebrovascular disease, tuberculosis, diabetes, and chronic respiratory diseases (IHME, 2017). Morbidity from smoking-related diseases accounts for more than 21 percent of all cases of chronic disease in the country. Global evidence shows that tobacco use also helps to fuel the global epidemic of tuberculosis, and that it worsens problems such as mental illness, HIV infection, and alcohol abuse (Drope et al., 2018; NCI/WHO, 2016; WHO, 2017).
- **Paternal smoking is a predictor of an increased probability of short-term and chronic child malnutrition in Indonesia.** In households where the father was a smoker, tobacco accounted for 22 percent of weekly per capita household expenditures, with less money spent on food compared with households in which the father was a non-smoker (Semba et al., 2007). This is troubling as Indonesian children suffer from high rates of malnutrition with a prevalence of stunting at 37 percent and of wasting at 12 percent (World Bank, 2016). Indonesia has the fifth-highest number of stunted children in the world (Millennium Challenge Account-Indonesia 2015). Stunting in the first two years of life can lead to irreversible damage, including shorter adult height, lower schooling attainment, reduced adult income, and increased incidence of morbidity in later life, which undermines human capital development.
- **Along with its health impacts, tobacco consumption imposes a heavy economic burden, primarily on Indonesia's poor.** The economic burden connected with smoking falls hardest on low-income smokers who risk lost income, reduced labor productivity, and impoverishment due to out-of-pocket payments for the treatment of tobacco-related diseases. While the poor suffer most, all of Indonesian society is affected.
- **The costs of tobacco use include illness, disability, premature death, and for-gone consumption and investment.** The smoking-attributable health expenditure in

Indonesia is estimated at about US\$ 1.2 billion per year (Goodchild et al., 2017; Barber et al., 2008). This represents about 8 percent of total public expenditures on health (including government budgetary and social insurance expenditures) and about 3.3 percent of total health expenditures (including government budgetary and social insurance expenditures, out-of-pocket, and other private) (World Bank, 2016). This figure is consistent with the observed experience in other countries. For example, using data from medical spending surveys in the United States, researchers calculated that 8.7 percent of all health care spending, or US\$170 billion a year, is for illness caused by tobacco smoke, and public programs like Medicare and Medicaid paid for most of these costs (Xu et al. 2015). In terms of indirect economic costs, a study (Kosen, 2009) to estimate the cross-sectional direct health costs for 11 tobacco-related diseases, and lost productivity attributable to ill health and mortality from smoking in Indonesia for 2005, estimated that the indirect morbidity and mortality costs in Indonesia amounted to about US\$ 1.9 billion and US\$ 4.9 billion, respectively, for a total indirect cost of US\$ 6.8 billion.

- **The problem is getting worse.** If the tobacco use pattern now observed in Indonesia is not controlled, the country risks a future *“public health and fiscal tsunami”* due to increasing rates of noncommunicable diseases (NCDs) that are costly to treat and that will place growing strain on government and household budgets (World Bank, 2016). This in turn will undermine human capital development and the total wealth of the country. Decisive policy action is needed to avert this threat and drive rapid reductions in smoking rates.

Tobacco Taxation, Cigarette Consumption, and Fiscal Revenue: Seizing the Opportunity

- **Aggressive tobacco tax hikes are the best policy tool to swiftly cut smoking rates.** The Government of Indonesia has followed a cautious approach to increasing tobacco taxes. However, the powerful health and fiscal benefits of higher tobacco taxes are now well established across the world (Marquez and Moreno-Dodson, 2017; Global Tobacco Economics Consortium, 2018). Demand for tobacco is relatively inelastic, meaning that higher prices lead to a less-than-proportionate fall in demand. **Thus, higher tobacco taxes can both reduce cigarette consumption and increase domestic resources for investments that benefit the entire population, for example pursuing universal health coverage.** Today, major increases in government revenues from higher and better structured tobacco taxes remain a low-hanging fruit for Indonesia’s leaders to seize.

- **Recent policy action has begun to reduce Indonesia’s smoking rates, but much more can be done.** Cigarette affordability in Indonesia fell by 10.2 percent over 2011-2017, reflecting the price impact of regular tobacco tax increases during these years (Zheng, Ahsan, Marquez, Hu, and Wang, 2018). Meanwhile, the years 2013 – 2016 saw an encouraging decline in the country’s smoking prevalence, from 36.3 to 32.8 percent of the population, although the 68.1 percent estimated prevalence among adult males remains the world’s highest. These initial gains can now be leveraged and expanded. Despite recent reduction in tobacco tax tiers and modest tax hikes, Indonesia’s cigarette prices remain extremely low by global standards. More ambitious tax policy reforms, including both tier consolidation and aggressive tax rate increases to raise prices and reduce consumption, are required.
- **Taxes on tobacco cost little to implement and deliver multiple benefits.** Higher taxes on tobacco make tobacco products less affordable, helping smokers to quit and preventing nonusers—especially young people, women, and the poor—from ever starting to smoke. Higher tobacco taxes also provide countries with additional revenue that can be used to expand fiscal space for priority investments and programs that benefit the entire population, including the progressive realization of universal health coverage—a highly relevant option for Indonesia, given the size of the country’s current budget deficit, which has averaged 2-2.5 percent of GDP over the past years.

Employment in Indonesia’s Tobacco Industry

- **Policymakers considering tobacco tax hikes are often concerned about impacts on employment.** This paper presents fresh evidence from field studies and economic simulations focusing on Indonesia’s specific situation. The results provide clearer understanding of the relationship between tobacco taxation and employment in Indonesia. These findings could enable informed policy choices.
- **Tobacco manufacturing represents only a small share of Indonesia’s economy-wide employment (0.60 percent)** and a relatively low percentage of jobs in the manufacturing sector (**5.3 percent**). This compares to the food (**27.43 percent**), garment (**11.43 percent**), and textile (**7.90 percent**) sectors. The productivity of tobacco manufacturing workers is also quite low relative to the productivity of workers in other comparable sectors. Indonesia’s tobacco manufacturing is geographically concentrated in East and Central Java (**76 percent**) and West Nusa Tenggara (**18 percent**). Only a few districts are substantially dependent on tobacco sector employment.

- **Most tobacco farmers and manufacturing workers rely only partially on tobacco income.** Income from kretek rolling represents 43 percent of household income among kretek households on average. About three-quarters of tobacco-farming households derived less than 50 percent of their income from tobacco cultivation, and over half of clove farmers generate less than 20 percent of their household income from cloves.
- **Tobacco cultivation is not profitable for most farmers, and producing tobacco has high opportunity costs.** In recent studies, this finding was mostly consistent across regions, type of tobacco grown, and whether the farmer was on contract to grow tobacco. Despite poor returns typically, farmers reported being drawn to the assured market, the better prospects for credit, and the potential to earn cash.

Effects of Tobacco Tax Increases on Employment

- **Economic simulations suggest that raising cigarette taxes by an average of 12 percent that increases cigarette prices by an average 5 percent and simplifying Indonesia's cigarette tax structure to six tiers will reduce cigarette demand by 1.89 percent, increase government revenue by 6.41 percent, and reduce gross employment in the tobacco manufacturing sector by 0.43 percent.** This represents a reduction of 2,914 tobacco manufacturing jobs, most of them in the hand-made kretek industry (2,245 fewer jobs). Importantly, these estimates do not consider the creation of jobs in other sectors due to the shift in consumers' spending away from tobacco (the net effect). A recent study of net employment effects in Indonesia, and four of six such studies in other countries, report net increases in employment across the whole economy following tobacco tax hikes.
- **The estimated total household income loss from reduced employment in the handmade kretek industry amounts to a small fraction of 1 percent (0.16 percent) of the revenue gain that Indonesia will obtain by increasing cigarette taxes (Rp 10,916 billion in our scenario).** Raising tobacco taxes is a win-win policy change. Higher taxes, yielding higher retail prices, will cut tobacco consumption and reduce economic losses due to health care costs and compromised productivity. Aggressive tobacco tax hikes will generate additional revenue that can more than compensate for the income loss following a reduction in employment in the kretek industry.

Policy Recommendations

This paper supports the following recommendations for Indonesian tobacco control policy:

Optimizing Tobacco Taxation for Health and Fiscal Gains

- Accelerate the simplification of cigarette tax tiers through new regulations
- Rapidly raise tobacco excise taxes to the current legal ceiling (57 percent of retail price)
- Decisively remove the 57 percent ceiling, and aim for WHO's recommended tax level: 70 percent of retail price

Protecting Kretek Rollers, Tobacco Farmers, and Clove Farmers as Tax Hikes Roll Out

- Act preemptively to target income support and training to kretek hand rollers who may gradually lose income because of higher tobacco taxes. Ample support for these workers can probably be delivered using less than 2 percent of the new revenue from a substantial tobacco tax increase.
- Support tobacco and clove farmers to transition to more profitable, sustainable livelihoods. Measures may include access to credit, training, and extension services, as well as strengthening supply and value chains for alternative products in tobacco- and clove-growing areas.

Conclusion: What Bold Tobacco Tax Policy Can Achieve

By adopting the United Nations Sustainable Development Goals (SDGs), Indonesia has committed to achieving a 30 percent reduction in death rates from noncommunicable diseases like cancer, stroke, and heart disease by 2030. Reducing tobacco use is critical for countries to reach this goal (Jha, Marquez, and Dutta, 2017). To swiftly cut Indonesia's smoking rates, bold increases in tobacco excise tax rates are by far the most powerful tool.

High smoking prevalence condemns large numbers of Indonesians to avoidable sickness and death and weakens the country's economic development. By consolidating tobacco tax tiers and aggressively raising tobacco tax rates, the Government of Indonesia can secure three objectives:

- Longer lives and better health for the people
- Greater economic and health equity
- More resources for development

1. PURPOSE AND METHODS OF THE PAPER

This paper addresses high-level policy makers in Indonesia and their technical teams. It clarifies relationships between tobacco tax increases and employment in Indonesia's tobacco sector. The paper places this analysis in the context of current knowledge on linkages between tobacco taxation, public health, and economic development.

As the Indonesian government considers continuing reform of its cigarette excise taxes by simplifying the tax structure and raising tax rates, concerns have emerged about the possible effects of tax reforms on employment and the livelihoods of tobacco farmers and manufacturing workers. The World Bank and the American Cancer Society launched the Indonesian Tobacco Employment Studies to inform this important policy debate. The studies use microdata from the Indonesian Central Bureau of Statistics and a series of household surveys among tobacco and clove farmers and kretek rollers in Indonesia's largest tobacco-growing regions (Central Java, East Java, and West Nusa Tenggara), the main clove-growing regions (Central Java and North Sulawesi), and the main kretek-producing districts (Kudus in Central Java and Malang in East Java).

This paper distills key results of the Indonesian Tobacco Employment Studies, integrating them with a wider body of national and global evidence. The findings can inform Indonesia's leaders as they weigh tobacco tax hikes to increase prices and other policy options to improve wellbeing and accelerate progress toward the country's development goals.

The paper is structured as follows. Part 2 frames the problem by marshaling current data on tobacco use in Indonesia and its impacts on the country's health and economy. Part 3 discusses the structure and evolution of Indonesia's tobacco tax system, looking in particular at recent reforms that have opened promising paths. Part 4 analyzes employment in Indonesia's tobacco sector. Drawing on new data, it shows that tobacco plays a small and dwindling role in the Indonesian economy. It argues that future policy must consider improved livelihood options for small, potentially vulnerable constituencies of tobacco and clove farmers and kretek rollers. In Part 5, we present the results of economic simulations that quantify the likely impact of different tobacco tax measures on demand for cigarettes in Indonesia, employment in the country's tobacco sector, and government revenue. The final sections of the paper formulate policy recommendations and conclusions.

2. TOBACCO CONSUMPTION IN INDONESIA

Machine-rolled kretek cigarettes contribute around 73 percent to the total cigarette supply in Indonesia, while hand-rolled cigarettes account for nearly 21 percent, and machine-made white cigarettes represent 6 percent of the market share (Zheng, Ahsan, Marquez, Hu, and Wang, 2018). Kretek cigarettes are clove cigarettes, which consist of tobacco (70 percent) and ground cloves, clove oil, and other additives (30 percent). Cigarette production has risen dramatically in the period between 2005 and 2016, from 222 billion to 342 billion sticks. This represents an increase of 120 billion sticks within 11 years or 10.9 billion sticks every year. A deceleration of cigarette production over 2013 and 2016 (345bn, 344bn, 348bn, 342bn per year) was mostly due to the country's economic slowdown.

Indonesia's cigarette consumption is among the highest in the world, especially among men. Adult smoking prevalence in Indonesia increased from 27 percent to 32.8 percent over 1995-2016. However, in recent years, reflecting the positive impact of tobacco control measures adopted by the Government, prevalence declined from 36.3 percent in 2013 to 32.8 percent in 2016. There are sharp gender differences. In 2016, only 2.5 percent of Indonesian women smoked, but smoking prevalence among adult men was estimated at 68.1 percent—the highest in the world.

Exposure to secondhand smoke is common in Indonesia, where more than 80 percent of people are exposed in restaurants, posing health risks to non-smokers (Drope et al., 2018). Global evidence shows that exposure to secondhand smoke is associated with numerous adverse health effects, even among children and unborn babies, and causes substantial mortality and morbidity globally. In 2016 alone, for example, secondhand smoke exposure caused an estimated 884,000 deaths worldwide. The years of life lost globally due to ill-health, disability, or early death because of secondhand smoke reached 6.4 million years for lower respiratory infections, 2.5 million for chronic obstructive pulmonary disease, and more than 200,000 for middle ear infection.

Tobacco use is an important contributor to the global burden of morbidity and mortality, accounting for 11.5 percent of deaths worldwide (GBD 2015 Tobacco Collaborators, 2016). Tobacco is harmful and kills almost one-half of its long-term

consumers on an average of more than a decade prematurely (Jha and Peto 2014). As shown by recent estimations, tobacco accounts for the highest substance-attributable mortality rates globally. At 110.7 deaths per 100,000 population, it is three times higher than those attributable for alcohol (33.0 per 100,000), and 17 times higher than those for illicit drugs (6.9 per 100,000). In East Asia, including Indonesia, the tobacco attributable mortality rate at 145.9 deaths per 100,000, is second highest in the world only to Oceania (Papua New Guinea, Kiribati, Federated States of Micronesia, Solomon Islands) at 269.3 deaths per 100,000 (Peacock, A., Leung, J., Larney, S, et al, 2018).

Indonesia's five leading causes of death are all tobacco-related. They include ischemic heart disease, cerebrovascular disease, tuberculosis, diabetes, and chronic respiratory diseases (IHME, 2017). Morbidity from smoking-related diseases accounts for more than 21 percent of all cases of chronic disease in the country. Global evidence shows that tobacco use also helps to fuel the global epidemic of tuberculosis, and it worsens problems such as mental illness, HIV infection and alcohol abuse (Drope et al., 2018; IHME, 2017; NCI/WHO, 2016).

Paternal smoking is a predictor of an increased probability of short-term and chronic child malnutrition in Indonesia. In households where the father was a smoker, tobacco accounted for 22 percent of weekly per capita household expenditures, with less money spent on food compared with households in which the father was a non-smoker (Semba et al., 2007). This is troubling as Indonesian children suffer from high rates of malnutrition with a prevalence of stunting at 37 percent and of wasting at 12 percent (World Bank, 2016). With over 8 million children affected, Indonesia has the fifth-highest number of stunted children in the world (Millennium Challenge Account-Indonesia 2015). Stunting in the first two years of life can lead to irreversible damage, including shorter adult height, lower schooling attainment, reduced adult income, and increased incidence of morbidity in later life, which undermines human capital development.

Overall, the economic costs of tobacco use include illness, disability, premature death, and forgone consumption and investment. The smoking-attributable health expenditure in Indonesia is estimated at about US\$ 1.2 billion (Goodchild et al., 2017; Barber et al, 2008). This represents about 8 percent of total public expenditures on health (including government budgetary and social insurance expenditures) and about 3.3 percent of total health expenditures (including government budgetary and social insurance expenditures, out-of-pocket, and other private) (World Bank, 2016).

This figure is consistent with the observed experience in other countries.

For example, using data from medical spending surveys in the United States, researchers calculated that 8.7 percent of all health care spending, or US\$170 billion a year, is for illness caused by tobacco smoke, and more than 60 percent of the attributable spending was paid by public programs, including Medicare, other federally sponsored programs, or Medicaid (Xu et al. 2015).

In terms of **indirect economic costs**¹, a study was done to estimate the cross-sectional direct health costs for 11 tobacco-related diseases, indirect morbidity, and the present value of indirect mortality from smoking in Indonesia for 2005. It estimated that the indirect morbidity and mortality costs in Indonesia amounted to about US\$ 1.9 billion and US\$ 4.9 billion, respectively, for a total indirect cost of US\$ 6.8 billion (Kosen, 2009).

If current smoking rates persist and no effective action is taken, Indonesia's smoking population will grow to 95 million by 2025,² from an estimated 85 million in 2016. Along with devastating public health effects, sustained high tobacco use prevalence will impose a heavy economic burden, particularly for low-income smokers and their families, who risk loss of income and impoverishment from increased health care costs. High smoking rates jeopardize the potential benefits of Indonesia's demographic dividend (around half of the population is below the age of 30).

By aggressively pursuing World Health Organization (WHO) global targets, Indonesia can reduce the share of its population that smokes from 34.3 percent (2010 baseline) to 25 percent by 2025. This corresponds to the global target of a 30 percent relative reduction in smoking prevalence endorsed by the United Nations General Assembly (UNGA, 2011). For Indonesia as for other countries, keeping this commitment could prevent substantial ill health and premature death from noncommunicable diseases (NCDs), such as cardiovascular diseases, cancer, diabetes, and chronic obstructive pulmonary disease. Besides preventable ill health, premature death, and disability, effective tobacco control would help avert the high direct and indirect costs of tobacco-related diseases (Marquez and Moreno-Dodson, 2017). Additionally, by preventing smoking uptake and addiction among youth, and keeping the population healthy, tobacco control would make a significant contribution to maximize the economic benefits of a large, young, and productive population in the future.

¹ Indirect cost of morbidity typically includes lost productivity (measured by compensation) due to disease-related work absence and premature disability. Indirect cost of mortality includes mainly lost productivity due to premature death.

² The estimate of 95 million smokers reflects Indonesia's expected 2025 smoking prevalence if current trends continue, together with the projected size of the country's adult population in that year. The expected smoking prevalence is drawn from the WHO Global Report on Trends in Prevalence of Tobacco Smoking 2015. The population data is from World Population Prospects, 2015 Revision.

While the hazards of smoking accumulate slowly, cessation is effective quickly, helping to reduce tobacco-related mortality, and more importantly, inequality of mortality. People who quit by age 40 get back nearly the full decade of life that they would have lost from continued smoking (Jha and Peto 2014).

In addition, better health as the result of reduced tobacco use would have significant fiscal benefits for Indonesia, as shown by the example of the United States. Besides contributing to reducing health care costs for tobacco-related diseases and mobilizing additional tax revenue, the U.S. Congressional Budget Office (CBO, 2012) estimated that increasing the cigarette tax—thus reducing the number of smokers—could influence earnings in various ways. For example, decreasing the number of people who smoked would result in more people in better health, which in turn could affect their decisions about whether and when to join the labor force and when to retire. In addition, better health could improve employees' earnings while in the workforce by causing them to have fewer absences from work, to be more effective while on the job, or to work for more hours. CBO's analysis suggests that the illustrative tax increase, and the resulting impact on people's behavior and health in the United States, would increase federal revenues by about US\$ 41 billion and reduce spending by US\$ 1 billion over 2013-2021. Almost US\$38 billion of the additional revenues would come from the higher excise tax, and another US\$3 billion in revenues would stem from improvements in health, primarily from additional earnings as better health allowed people to work more and be more productive. Spending on the government's largest publicly funded health care programs, Medicare and Medicaid, would decline slightly during that period as people's health improved.

Table 1. Countries with the Highest Adult Male Smoking Prevalence, 2014

COUNTRY	PREVALENCE (%)
Indonesia	67% (68.1% in 2016)
Russian Federation	61%
Bangladesh	58%
China	53%
Greece	51%
Ukraine	50%
Philippines	49%
Turkey	48%
India	48%

Source: Asma S, Mackay J, Song SY, Zhao L, Morton J, Palipudi KM, et al. 2015. The GATS Atlas. CDC Foundation, Atlanta, GA

The recent experience of Philippines may also be relevant for Indonesia as it shows what the additional revenue raised by the tobacco tax may be used for. In 2012, the Philippine government adopted new taxes on tobacco and alcohol and is using the revenues to fund efforts to expand access to health services and move towards universal health coverage (UHC). After four years of implementation, US\$ 3.9 billion or about 1 percent of GDP in additional revenues have been collected, 80 percent of which has been used to finance the extension of fully-subsidized health insurance to the poorest 40 percent of Filipinos (Kaiser, Bredenkamp, and Iglesias, 2016).

3. TOBACCO TAXES IN INDONESIA

Tobacco taxes in Indonesia have recently risen, thanks to new regulations, but remain low by international standards. Indonesia's tobacco taxes are lower than those applied in some emerging economies and substantially below the rates in most advanced economies. **Excise tobacco taxes account for about 7 percent of central government revenues, and about 1 percent of GDP (World Bank, 2016).** By law, the maximum allowable cigarette excise tariff in Indonesia is 57 percent of the corresponding minimum regulated retail price (harga jual eceran – HJE). The 57 percent maximum tariff makes for a stark international comparison, given **that some countries use 57 percent as a minimum threshold in setting tobacco taxes.** For example, the European Union (EU) tobacco excise duty directive requires EU Member States to levy a minimum overall excise duty on cigarettes consisting of at least €90 per 1000 cigarettes and at least 60 percent of the weighted average retail price (Bouw, 2017; European Commission, 2008; Feldman and Bayer, 2004).³ At the global level, WHO recommends that national tobacco tax levels be set such that taxes represent at least 70 percent of the retail price of a pack of 20 cigarettes (WHO, 2017).

Cigarette taxes play an important role in cigarette prices. The effectiveness of excise tax increases as a tool for reducing tobacco consumption depends largely on how the tax increases impact the retail price. People change their purchasing behavior in response to retail price changes, not in response to excise tax changes (IARC, 2011). Typically, smokers have no incentive to know the tax amount on cigarettes (and probably do not know the quantum of the tax), but they are made aware of the retail price at each purchase occasion (Linegar and van Walbeek, 2017). Evidence from across the world shows that despite the addictiveness of nicotine, an increase in tobacco prices does reduce tobacco consumption (Marquez and Moreno-Dodson, 2017). An excise tax increase typically increases the price of cigarettes. The magnitude of the price increase depends on the degree to which the tax increase is passed through to consumers.

Although recent tobacco tax reforms have boosted retail prices, Indonesian consumers can still buy cigarettes more cheaply than can smokers in most other middle- and high-income countries (Table 2). In international comparison, the Indonesian data clearly suggest that the country's current tax rates are far below what is feasible in terms of revenue potential. Thus, tier consolidation and bold tax increases could serve revenue purposes as well as public health objectives.⁴

³EU Member States that apply an excise duty of €115 or more do not need to comply with the 60 percent criterion

⁴For a valuable discussion, see the recent International Monetary Fund (IMF) report by Petit and Nagy (2016).

Table 2: Retail Price for a Pack of 20 Cigarettes - Most Sold Brand – and Excise Tax as % of Price

Indonesia And Selected Countries, 2016, in US\$

Country	Most Sold Brand Price	Excise tax as % of Price
Australia	\$15.80	51.17%
New Zealand	\$15.36	61.90%
United Kingdom	\$ 10.94	63.83%
Singapore	\$ 9.65	59.69%
Canada	\$7.89	57.42%
Sri Lanka	\$6.86	51.43%
Germany	\$6.67	54.42%
United States	\$6.43	37.81%
Malaysia	\$4.19	47.06%
Rep. of Korea	\$4.02	64.76%
Argentina	\$2.67	76.10%
Mexico	\$2.51	53.50%
Thailand	\$2.47	66.93%
India	\$2.36	24.46%
South Africa	\$2.33	4.12%
Brazil	\$1.91	31.98%
Indonesia	\$1.65	48.74%
China	\$1.50	36.30%
Bangladesh	\$1.28	62%
Philippines	\$0.86	51.85%
Vietnam	\$0.91	28.70%
Nigeria	\$.0.70	15.87%

Source: WHO, 2017

Indonesia's overly complex, multi-tiered tobacco tax system incentivizes downward substitution to lower-priced products and therefore has little impact on smoking reduction. While Indonesia's 2016 tax rate on the most-sold cigarette brand was 44.3 percent, lower-priced cigarettes manufactured by small domestic firms were taxed at half that rate or less. Such differentials encourage smokers to switch to a cheaper brand when tobacco taxes rise, rather than quitting altogether: a pattern known as downward substitution. Thus, the tier system blunts the potential health

benefits of tobacco tax hikes. Indonesia's 2017 cigarette excise tax regulation still includes 12 tiers, which are based on cigarette type, the number of cigarettes produced, and per-unit maximum retail price.

The tiers in the excise tax structure aim to accommodate small-scale cigarette firms, especially hand-rolled kreteks (SKT) firms. The rationale is that these firms account for more than half of all factories in Indonesia's domestic tobacco industry and are responsible for employing a significant share of workers in tobacco manufacturing (44 percent).⁵ Indonesia's tobacco tax regulations have consistently appeared to prioritize minimizing employment losses in the SKT industry. As a result, SKT products remain affordable despite higher taxes.

Indonesia's government has issued a Ministerial-level regulation that sets out a four-year simplification roadmap for its tobacco excise tax structure. The implementation of PMK 146 (October 2017) began in 2018. If fully implemented, this regulation will gradually reduce the number of excise tiers from 12 in 2017 to 5 in 2021. Tier simplification will reduce the distortionary impacts of the cigarette excise and reduce opportunities for tax avoidance and tax evasion. In the near term, however, the cigarette excise system will remain complex, as the number of tiers will remain at 10 for 2018. Even reducing tiers to five would fall far short of World Bank recommendations, which call for merging into a single tier.⁶

Cigarette affordability in Indonesia fell by 10.2 percent over 2011- 2017, reflecting the price impact of regular tobacco tax increases during these years (Zheng, Ahsan, Marquez, Hu, and Wang, 2018). During this period, taking account of inflation, the unweighted average minimum regulated price of cigarettes in Indonesia decreased by 3 percent, and the minimum retail prices for cigarettes with the largest market share, types SKM I and SKT IB, are lower in real terms. However, the country's new regulations include provisions that partially offset this increased affordability. Article 9 and Article 11 3b prohibit manufacturers from lowering prices of existing products below 85 percent of the new HJE and any HJE that applied previously, and forbid existing manufacturers to launch a new brand of cigarette with a lower HJE than that which is applied to their existing products. Moreover, strict monitoring of market prices is introduced for the first time as part of the excise regulation.⁷

⁵ Looking internationally, other governments have sometimes actively promoted domestic tobacco firms vis-à-vis large foreign players, but the practice may be losing steam. In the last decade, Brazil stopped the promotion of its small-scale domestic tobacco manufacturers. More recently, as part of its successful "Sin Tax" reform, the Philippines abandoned the policy of offering tax advantages to smaller local tobacco companies. A combination of public health and fiscal arguments prompted the Philippines' approach. Leaders recognized that gains for the poor and the overall economy far outweigh short-term employment losses in tobacco manufacturing. For more on the experience in the Philippines, see Kaiser, Bredenkamp, and Iglesias (2016).

⁶ See <http://www.worldbank.org/en/topic/health/brief/tobacco>

⁷ Factories/importers that sell tobacco for less than 85 percent of the HJE will be notified, and if their practices continue, the Directorate General of Customs and Excises can force an "adjustment."

The latest tobacco tax regulation increases the excise tax per cigarette stick by a weighted average of 11 percent. The average excise tax burden will increase from 34.2 percent in 2017 to 40.1 percent in 2018. However, this remains significantly lower than the 57 percent legal limit (and far below the 70 percent WHO-recommended level which is applied in several middle- and high-income countries).

Besides tax tier consolidation and bold rate increases, an automatic adjustment mechanism could be incorporated into the tariff design and anchored in a regulation. This could ensure that the public health and revenue impacts of the reform are not reduced in the coming years due to inflation and per capita income growth. The inflation feedback loop is impossible to avoid, no matter how retail prices are determined. However, it might be minimized by applying a properly designed formula. Using the chosen formula, excise tariffs and regulated prices would be automatically adjusted annually for inflation and changes in affordability due to per capita income growth. One possible formula design might be to incorporate the previous 12-month average inflation rate and the Bank of Indonesia inflation target with certain weights.

4. TOBACCO EMPLOYMENT IN INDONESIA

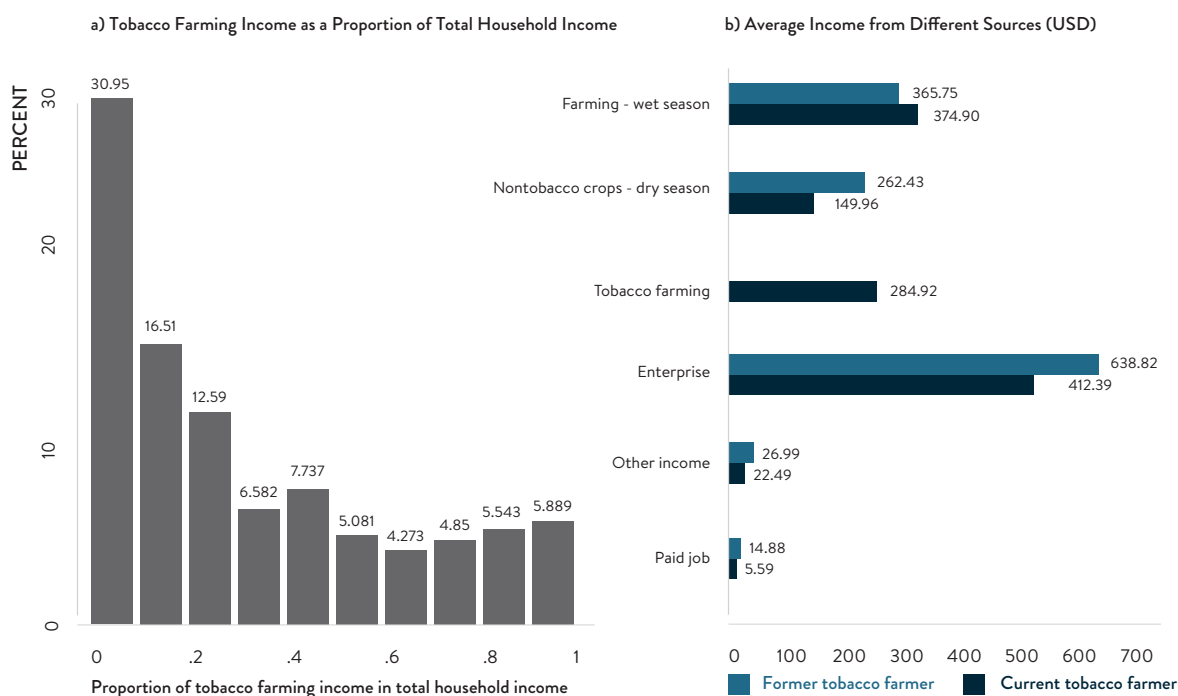
This section analyzes recent employment conditions and trends in the Indonesian tobacco industry. Subsequent parts of the paper will estimate the potential effects of higher cigarette taxes on employment and livelihoods among tobacco and clove farmers and tobacco manufacturing workers. Our discussion draws primarily on new data from the Indonesian Tobacco Employment Studies.

We do not calculate the effect of tobacco tax hikes on employment in Indonesia's broader economy (net effect). Research has confirmed that when cigarette prices increase, consumers shift their consumption to other goods and services, thus creating jobs in other sectors. The challenge – for estimation and for addressing political pressures – is that employment losses are relatively concentrated, whereas employment gains tend to spread throughout the economy. Four out of six recent studies in low and middle-income countries (LMICs) showed positive net employment effects after the implementation of tobacco control policies, including raising taxes. In the case of Indonesia, Ahsan and Wiyono (2007) estimated net positive effects varying from 84,340 to 281,135 additional jobs with tax increases of 25 percent and 100 percent, respectively. However, in Indonesia as in other countries, it is important to take proactive action to assist those losing jobs in tobacco to shift to other jobs. This is even more important because the employment issue is used to argue against bigger and better-structured tobacco taxes.

Farmers: In Search of Better Livelihoods

Only a minority of Indonesia's tobacco-farming households rely on tobacco farming as their major income-earning activity (Figure 1a). Additionally, household incomes of farmers who had given up tobacco production were found to be higher than those of current tobacco farmers. Former tobacco-farming households on average generated US\$3,797.68 in total income in 2016, while current farming households generated US\$2,921.19. During focus group discussions, farmers described a dynamic in which they planted tobacco most years, understanding that it rarely generates much income, but occasionally, when prices are high, and the weather is favorable, they can make extra income growing tobacco. Notably, former tobacco-farming

Figure 1: Tobacco Farming Income in Indonesia



Source: World Bank, 2017c.

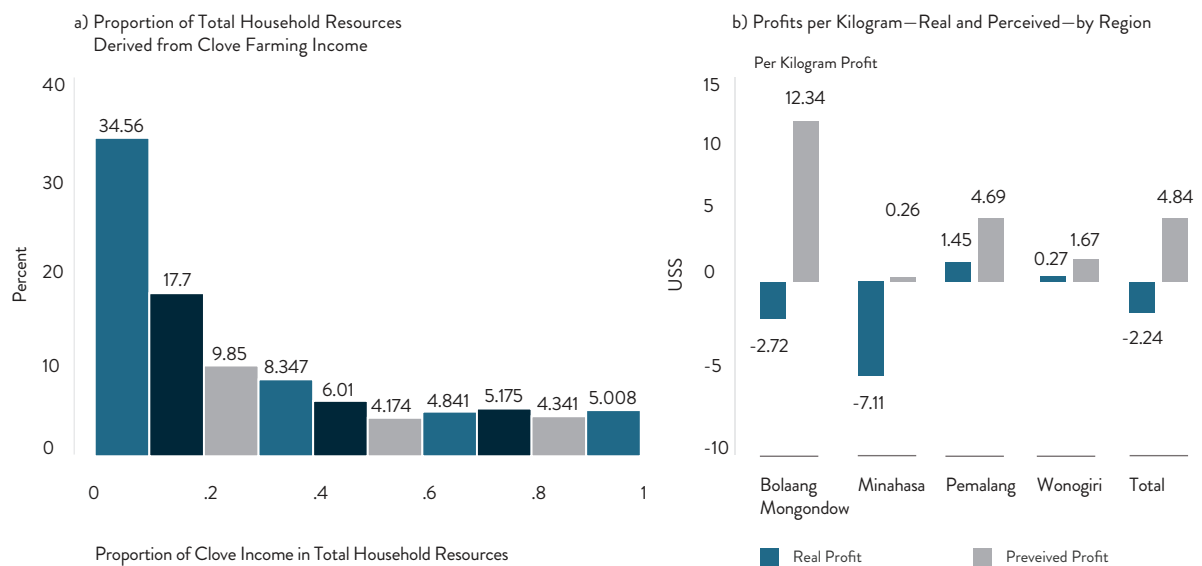
households generate more income from non-agricultural sources (US\$639 compared to US\$412 for tobacco farming households). This difference is likely due primarily to the extra time that former farmers dedicate to other economic activities (Figure 1b).

Tobacco cultivation is not profitable for most farmers. Though studies have found some variation, the overall result of a lack of profitability in tobacco cultivation is consistent across regions, type of tobacco grown, and whether or not the farmer is on contract with a leaf-buying company to grow tobacco. Even when we consider only non-labor costs—or what agricultural economists term “gross margins”—most tobacco-farming households were spending more on their tobacco cultivation than they were making from it. When only a minimum value for household labor is considered, overall profitability drops further. In addition, tobacco farmers spend disproportionately large amounts of their household labor time cultivating tobacco leaf, meaning that their economically productive time is almost completely subsumed by tobacco growing. In contrast, their neighbors who are no longer growing tobacco are generally developing more robust and varied economic lives.

As Indonesia typically imports significant amounts of tobacco leaf to satisfy demand from domestic kretek and cigarette manufacturers, any decline in demand for tobacco leaf from tobacco tax reform would primarily decrease imports, not domestic tobacco production. Though Indonesia by global standards is a large producer of tobacco leaf, it can only satisfy domestic manufacturers' demand for kretek and cigarettes by importing tens of thousands of tons of tobacco leaf each year. Therefore, any decline in consumption from a tobacco excise tax reform is unlikely to affect tobacco farmers in Indonesia.

Like tobacco-farming households, most clove-farming households are cultivating cloves as a secondary economic pursuit. Results from the clove farmers' survey (Figure 2) demonstrate that more than half of these clove-farming households generated less than 20 percent of their total household resources from cloves. At the same time, less than a quarter of the clove-farming households in the survey obtained 50 percent or more of their overall resources from clove farming. The nature of cloves as a relatively low-maintenance perennial plant reasonably lends itself to this dynamic, though there are bursts of more labor-intensive activity during the year, particularly at harvest and postharvest times.

Figure 2: Clove Farming Income in Indonesia



Source: World Bank, 2017d.

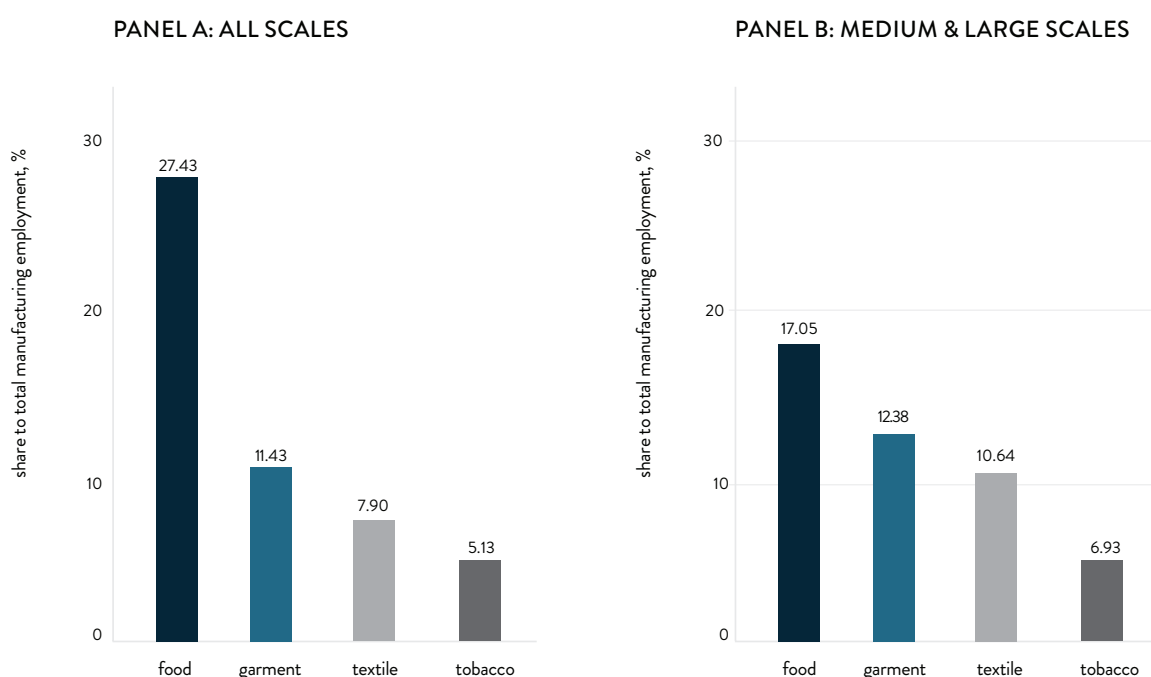
Note on Figure 2b: The blue bars represent what may be considered "real profits," because they assign a value to the household labor dedicated to clove cultivation.

Like tobacco cultivation, clove farming is not profitable for most households that pursue it. The results of the survey suggest that, when the value of household labor is considered, clove farmers are losing an average of two dollars per kilogram of cloves.

Tobacco Manufacturing Workers: A Small Constituency with Special Vulnerabilities

The contribution of the tobacco manufacturing sector to Indonesia’s total manufacturing employment is relatively small, relative to other sectors. Tobacco manufacturing employment represented 5.13 percent of Indonesia’s total manufacturing employment in 2014, while food processing employed 27.43 percent of the country’s manufacturing workforce, garment manufacturing 11.43 percent, and textiles 7.90 percent (see Figure 3). The contribution of tobacco manufacturing employment to economy-wide employment was also quite low. Furthermore, because of substantial mechanization in the tobacco sector and growth in overall manufacturing in Indonesia, the contribution of cigarette manufacturing to total manufacturing employment has declined precipitously. It dropped from 28 percent in 1970 to 5.13 percent in 2014, or less than 0.3 percent of total employment, despite the substantial increase in cigarette production (Ahsan and Wiyonwo, 2007; World Bank, 2017a). Although scant overall, tobacco manufacturing jobs were heavily concentrated and proportionally more important in several districts in Central and East Java.

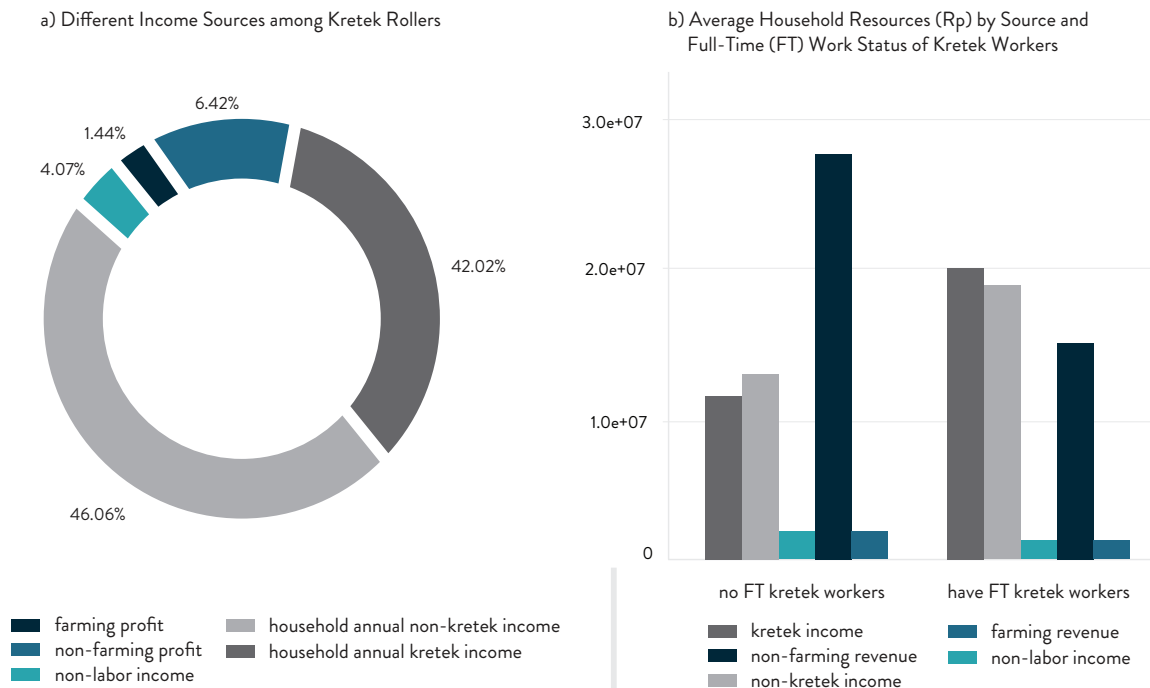
Figure 3: Share of Tobacco Employment in Total Manufacturing Employment, 2014



Source: Calculated using data from ASMSI (2000–2014) and aggregated statistics of micro and small industry (2014).

The survey among kretek workers shows that these workers are typically older adult women with a low level of schooling. The average age of the kretek workers surveyed was 40 years, and about 94 percent were female. More than half of surveyed kretek workers had obtained only an elementary education. Only 15 percent had pursued a senior high school education. The majority (65 percent) have an unwritten contract with their firms. While the study found no significant difference between the wages of contract and casual workers, a significantly larger fraction of contract workers reported receiving nonwage benefits from their employers, such as paid sick leave, paid holiday/vacation, and paid maternity leave. Given that kretek workers are predominantly women who are less likely to be household heads and more likely to have nonmarket responsibilities (e.g., child care, household chores), it is typically the motivation to provide supplementary income for the family that drives the partial-employment nature of kretek rolling. On average, wage income from kretek rolling contributed 42 percent of total household income among the study subjects (Figure 4a). Households with kretek workers who work less than full-time in the kretek industry, on average, earn higher nonfarm revenue compared to the households with full-time kretek workers (Figure 4b).

Figure 4: Kretek Rollers' Household Income



Source: World Bank, 2017b.

5. SIMULATIONS OF THE EFFECTS OF RAISING CIGARETTE TAXES ON EMPLOYMENT

To estimate the likely employment impacts of cigarette excise tax reforms, the Indonesian Tobacco Employment Studies developed two main alternative simulation scenarios for such reforms. The first reflects a hypothesis of moderate government action. The second assumes a more ambitious reform program. Both scenarios use the 2018 regulation as the baseline for simulations.

The moderate scenario raises taxes and simplifies the tariff structure from 10 to 8 tiers. We assume that excise taxes would increase real prices of SKM and SPM by a weighted average of 6 percent. However, real prices of SKT products produced using a labor-intensive technology are assumed to be absorbed by producers and remain unchanged. Under this scenario, we would expect higher excise tax revenue but minimum loss of employment. Indeed, results of the simulation suggest that estimated revenue would increase by Rp 7.542 trillion, while the loss of employment in the tobacco sector would be 0.09 percent.

Table 3: The Employment Effects of Raising Tobacco Taxes: Moderate Action Scenario

Type	A: Tier	B: Price Changes	C: Number of workers (2014)	D: Price elasticity of demand	E: Change in demand (%)	F: Labor elasticity of output	G: Change in employment (%)	H: Loss of employment
SKM	I	5%	1,167	-0.412	-2%	0.160	-0.33%	-4
	IIA	2%	7,005	-0.412	-1%	0.160	-0.11%	-8
	IIB	4%	12,342	-0.412	-2%	0.160	-0.25%	-31
Total								-42
SKT	IA	0%	651	-0.412	0%	0.160	0.00%	0
	IB	0%	9,771	-0.412	0%	0.160	0.00%	0
	IIA	0%	13,680	-0.412	0%	0.160	0.00%	0
	IIIA	0%	263,176	-0.412	0%	0.160	0.00%	0
Total								0
SPM	I	6%	408	-0.502	-3%	0.160	-0.48%	-2
	IIA	5%	2,853	-0.502	-2%	0.160	-0.37%	-10
	IIB	7%	7,337	-0.502	-4%	0.160	-0.59%	-43
Total						-56		-56
Tobacco processing		4%	352,086		-2%	0.092	-0.14%	-505 -603
					Actual	Loss	%	
A: Actual total workers, kretek (2014)					307,793	-42	-0.01%	
B: Actual total workers, white (2014)					10,598	-56	-0.53%	
C: Actual total workers, processing (2014)					352,086	-505	-0.14%	
A+B+C: Total tobacco industry workers					670,477	-603	-0.09%	

Source: Authors' calculations.

Note: The change in demand for the tobacco processing sector is the weighted average of cigarette demand changes.

The more ambitious tax reform scenario accelerates tier mergers and rate hikes.

It would produce the following results: reduce cigarette demand by 1.89 percent; increase government revenue by 6.41 percent; and reduce gross employment in the tobacco manufacturing sector by 0.43 percent. This scenario assumes simplifying the cigarette tax structure from 10 to 6 tiers. The number of SKT tiers would drop from 5 to 2. Tiers with lower cigarette taxes would experience a higher tax increase to compress the price structure. Under this scenario, we recommend raising cigarette taxes by a weighted average of 12 percent. This would increase cigarette prices by a weighted average of 5 percent. Even with these relatively bold measures, the average excise tax burden on cigarettes would be just 49 percent of retail price, still well below the 57 percent legal limit. The scenario foresees a total reduction of 2,914 jobs in tobacco manufacturing.

Under the ambitious scenario, the total income loss from employment shrinkage in the handmade kretek industry amounts to less than 1 percent of the revenue that would be gained from higher tobacco taxes. The World Bank estimates the annual revenue gain at Rp 10,916 billion and the employment loss in the handmade kretek industry at 2,245 jobs. Given the mean annualized kretek income at Rp 15,500,000 and a projected decrease in wage income by 42 percent, the loss of 2,245 kretek industry jobs would imply a total income loss amounting to Rp 14.615 billion, or 0.13 percent of the simultaneous revenue gain. This is a win-win policy change. The tax and price increases will not only reduce tobacco use and related health costs, but will generate additional revenue that can more than compensate for income foregone in the kretek industry.

Table 4: The Employment Effects of Raising Tobacco Taxes: Ambitious Scenario

Type	A: Tier	B: New Tax	B: Price Change	D: Change in demand (%)	E: Change in employment (%)	F: Loss of employment	G: Change in Estimated Revenue
SKM	I	630	5%	-2%	-0.33%	-4	5,746
	IIA	390	2%	-1%	-0.11%	-8	46
	IIB	390	4%	-2%	-0.25%	-31	293
Total						-42	
SKT	IA	370	1%	0%	-0.08%	-1	41
	IB	370	2%	-1%	-0.15%	-15	3,058
	IIA	195	2%	-1%	-0.14%	-19	131
	IIIA	195	13%	-5%	-0.82%	-2,169	1,019
Total						-2,203	
SPM	I	675	6%	-3%	-0.48%	-2	479
	IIA	400	5%	-2%	-0.37%	-10	42
	IIB	400	7%	-4%	-0.59%	-43	60
Total						-56	
Tobacco processing		4%	352,086	-2%	-0.17%	-613	-2,914
					Actual	Loss	%
A: Actual total workers, kretek (2014)					307,793	-2,245	-0.73%
B: Actual total workers, white (2014)					10,598	-56	-0.53%
C: Actual total workers, processing (2014)					352,086	-613	-0.17%
A+B+C: Total tobacco industry workers					670,477	-2,914	-0.43%

Source: Authors' calculations.

Notes: The change in demand for the tobacco processing sector is the weighted average of cigarette demand changes.

6. POLICY RECOMMENDATIONS

The analysis presented in this paper supports the following recommendations for Indonesian tobacco control policy:

TOBACCO TAXES: HIGHER, FASTER, SIMPLER

- **Accelerate the simplification of cigarette tax tiers through new regulations.** Faster and more sweeping tier simplification will lower the distortionary impacts of the cigarette excise, reduce the government's costs for enforcing compliance, and decrease opportunities for tax avoidance and evasion.
- **Adopt a tax hike principle of "Go big, go fast."** Tax strategies should focus on health gains first, then on fiscal benefits. This means pursuing large tobacco excise tax rate increases early, to reap the greatest health rewards.
- **Raise excise taxes to the existing legal threshold through new regulations.** Despite recent hikes, Indonesia's tobacco tax rates remain well below the current legal maximum (57 percent of retail price). Higher excise rates will raise substantial additional revenues, which can then be earmarked partly for spending on priority areas such as health, and partly for mitigating negative impacts of the tax reform on the most vulnerable groups of tobacco workers/regions.
- **Remove the current legal ceiling on tobacco taxation, and aim for WHO's recommended tax level of at least 70 percent of retail price.** Even as they take full advantage of the existing legal margin to further raise tobacco taxes, leaders can move to eliminate this arbitrary ceiling altogether. WHO research suggests that powerful downward impacts on smoking prevalence emerge when tobacco taxes rise to equal 70 percent or more of retail cigarette price.
- **Address affordability.** Tobacco taxes only reduce tobacco consumption if they reduce cigarette affordability. This means increasing excise taxes such that prices outpace both per capita income growth and inflation. Otherwise, tobacco consumption, and so death and disease, will increase.

MEASURES TO PROTECT KRETEK HAND ROLLERS

- **Provide transitional income support and training to affected workers.** The groups affected by the reform who may need income or other transitional support in the event of job loss include workers who are less educated, older, heads of their households, or who derive a significant proportion of total household income from kretek rolling. Any job or income losses for these workers are likely to be gradual. The government could provide ample support to affected workers using less than 2 percent of the revenue gained from a tax increase.
- **Deliver support through existing social assistance programs.** Partnering with the Ministry of Finance and the Ministry of Social Affairs may enable support to be provided through mechanisms such as Indonesia's unconditional cash transfer program, *Bantuan Langsung Sementara Masyarakat* (BLSM). This will avoid the creation of duplicative delivery mechanisms. Partners from multiple sectors can also help identify alternative employment or income-generating opportunities in affected regions. The re-training of kretek workers should be designed to accommodate transitions into clearly identified alternative employment opportunities.

MEASURES TO PROTECT TOBACCO AND CLOVE FARMERS

- Strengthen supply and value chains for alternative products in tobacco- and clove-growing areas. Many former tobacco farmers are making a better living growing other common, locally produced crops (e.g., corn, sweet potato, and green vegetables), an outcome that could be further enhanced with modest government investments in improved supply and value chains for these products. It is largely an issue of shifting land, labor, and financing to maximize economic opportunity.
- Facilitate access to credit for tobacco and clove farmers, for example with temporary subsidies or social impact bonds that draw private investment. Greater access to capital through improved credit schemes can enable affected farmers to cultivate alternative crops and/or develop non-agricultural enterprises.
- Improve educational opportunities for affected farmers, including extension services for non-tobacco/non-clove crops and agricultural management courses. These efforts will significantly assist farmers in transitioning to alternative crops.

7. CONCLUSION: WHAT BOLD TOBACCO TAX POLICY CAN ACHIEVE

By adopting the United Nations Sustainable Development Goals (SDGs), Indonesia has committed to achieving a 30 percent reduction in death rates from noncommunicable diseases like cancer, stroke, and heart disease by 2030. Reducing tobacco use is critical for countries to reach this goal (Jha, Marquez, and Dutta, 2017). To swiftly cut Indonesia's smoking rates, bold increases in tobacco excise tax rates are by far the most powerful tool.

High smoking prevalence condemns large numbers of Indonesians to avoidable sickness and death and weakens the country's economic development. By consolidating tobacco tax tiers and aggressively raising tobacco tax rates, the Government of Indonesia can secure three objectives:

- Longer lives and better health for the people
- Greater economic and health equity
- More resources for development

Longer lives and better health. The main reason to implement tobacco excise tax rate increases, and thus raise cigarette prices, is that these increases save lives and reduce serious illnesses like cancer and heart disease. The effect is swift. Within a few years, reduced cigarette consumption powerfully impacts tobacco-related sickness and death. About half of this effect comes from getting current smokers to quit. Higher tobacco prices also reduce smoking initiation among young people and so help stop them from becoming addicted to tobacco in the first place. This compounds the long-term health gains (IARC 2011), and would help realize the great demographic dividend potential in Indonesia by keeping the population healthy.

Greatest benefits for the most vulnerable. Recent research has confirmed the long-term pro-equity impact of tobacco tax increases. Low-income groups tend to have the highest smoking rates, but they are also most responsive to cigarette price hikes, giving up smoking in larger numbers when tax increases reduce the affordability of tobacco products. Accordingly, higher cigarette prices provide more health and financial gains to the poorest 20 percent than to the richest 20 percent of the population

(Global Tobacco Economics Consortium, 2018).⁸ Higher tobacco taxes are a key policy instrument to narrow health and economic equity gaps.

More resources for development. Even as they lower cigarette use and improve population health, higher tobacco taxes can substantially boost government tax revenues. For example, economic modeling shows that raising cigarette excise tax rates in all developing countries by the equivalent of US\$ 0.25 per pack would generate an extra US\$ 41 billion in government tobacco excise revenue for LMICs: raising these countries' tobacco excise revenue intake by 29 percent from the 2014 level (see Goodchild, Perucic, and Nargis, 2016).⁹ In Indonesia, the additional revenue from bold tobacco tax policy reforms could expand fiscal space for priority development investments and programs, such as the progressive realization of universal health coverage. This is a path to reinforce Indonesia's health and human capital, the critical determinant of the nation's future prosperity.

⁸These findings are consistent with recent assessments conducted in Armenia, Colombia, Kyrgyz Republic, Moldova, Ukraine, South Africa, and the United States (Fuchs and Meneses, 2017a, 2017b; Fuchs et al., 2018; Marquez, 2016; Postolovska et al., 2016 and 2018).

⁹Accumulated country experience validates the assumptions and results of this assessment, as shown by experiences in countries such as Colombia, China, European Union member states, South Africa, Turkey, Ukraine, and the United States (Centinkaya and Marquez, 2017; Marquez and Moreno-Dodson, 2017; Zheng, R., et al., 2017).

REFERENCES

- Ahsan A, Wiyono N. 2007. An Analysis of the Impact of Higher Cigarette Prices on Employment in Indonesia. Washington, DC: World Bank Group.
- Ahsan A, Wiyono NH, Setyonaluri D, Denniston R, So AD. 2014. Illicit cigarette consumption and government revenue loss in Indonesia. *Globalization and Health*. 10:75. doi:10.1186/s12992-014-0075-7.
- Asma S, Mackay J, Song SY, Zhao L, Morton J, Palipudi KM, et al. 2015. *The GATS Atlas*. Atlanta: CDC Foundation. Available at: <http://www.who.int/tobacco/publications/surveillance/gats-atlas/en/>
- Barber, S., S.M. Adioetomo, A. Ahsan, and D. Setyonaluri. 2008. Tobacco Economics in Indonesia. Paris: International Union Against Tuberculosis and Lung Disease.
- Bouw A. 2017. Tobacco Taxation in the European Union. An Overview. Washington, D.C.: World Bank Group. Available at: <http://documents.worldbank.org/curated/en/493581492415549898/Tobacco-taxation-in-the-European-Union-an-overview>
- Centinkaya V, Marquez PV. 2017. Tobacco Taxation in Turkey: An Overview of Policy Measures and Results. Washington, DC: World Bank.
- Congressional Budget Office (CBO). 2012. Raising the Excise Tax on Cigarettes: Effects on Health and the Federal Budget. Washington D.C.: Congress of the United States. Available at: http://www.cbo.gov/sites/default/files/cbofiles/attachments/06-13-Smoking_Reduction.pdf
- Doll R, and Peto R. 1981. The causes of cancer. Oxford, England: Oxford University Press.
- Drope J, Schluger N, Cahn Z, Drope J, Hamill S, Islami F, Liber A, Nargis N, Stoklosa M. 2018. *The Tobacco Atlas*. Atlanta: American Cancer Society and Vital Strategies.
- Ezzati M, Lopez A, Rodgers A, and Murray CJL, editors. 2004. Comparative quantification of health risks: global and regional burden of disease attribution to selected major risk factors. Vol. 1-2. Geneva: World Health Organization. Available from: http://www.who.int/health-info/global_burden_disease/cra/en.
- European Commission. 2008. Council Directive 2008/118/EC of 16 December 2008 concerning the general arrangements for excise duty and repealing Directive 92/12/EEC.
- Feldman E, and Bayer R (eds.). 2004. *Unfiltered: conflicts over tobacco control policy and public health*. Cambridge: Harvard University Press.

- Fuchs, Alan, Giselle Del Carmen, and Alfred Kechia Mukon. 2018. Long-run impacts of increasing tobacco taxes: evidence from South Africa (English). Washington, D.C.: World Bank Group. <http://documents.worldbank.org/curated/en/705011519972901407/Long-run-impacts-of-increasing-tobacco-taxes-evidence-from-South-Africa>
- Fuchs A, Meneses F. 2017a. Are tobacco taxes really regressive? Evidence from Chile. Washington, D.C.: World Bank Group. <http://documents.worldbank.org/curated/en/389891484567069411/Are-tobacco-taxes-really-regressive-evidence-from-Chile>
- Fuchs A, Meneses F. 2017b. Progressive or Regressive: The Impact of Tobacco Taxation in Ukraine. Washington, D.C.: World Bank Group. Available at: <http://documents.worldbank.org/curated/en/28024185>
- Fuchs A, Meneses F. 2018. Tobacco price elasticity and tax progressivity in Moldova (English). Washington, D.C.: World Bank Group. Available at: <http://documents.worldbank.org/curated/en/924021517562834920/Tobacco-price-elasticity-and-tax-progressivity-in-Moldova>
- Global Tobacco Economics Consortium. 2018. The health, poverty, and financial consequences of a cigarette price increase among 500 million male smokers in 13 middle income countries: compartmental model study. *BMJ*. 361 doi: <https://doi.org/10.1136/bmj.k1162>
- Goodchild M, Nargis N, d'Espaignet E. 2017. The global economic cost of smoking-attributable diseases. *Tobacco Control*. Published Online First: 30 January 2017. doi: 10.1136/tobaccocontrol-2016-053305.
- Goodchild M, Perucic AM, Nargis N. 2016. Modelling the impact of raising tobacco taxes on public health and finance. *Bull World Health Organ* 94: 250–257.
- Kaiser K, Bredenkamp C, Iglesias R. 2016. Sin Tax Reform in the Philippines. Washington, D.C.: World Bank Group. Available at: <https://openknowledge.worldbank.org/handle/10986/24617>
- IARC (International Agency for Research on Cancer). 2011. Effectiveness of Tax and Price Policies for Tobacco Control. Volume 14, IARC Handbooks.
- IHME (Institute for Health Metrics and Evaluation). 2017. Indonesia Country Profile. Seattle: Institute for Health Metrics and Evaluation. Available at: <http://www.healthdata.org/indonesia>.
- Indonesia Investments. Available at: <https://www.indonesia-investments.com/business/industries-sectors/tobacco/item6873>. Accessed on April 26, 2018.
- James, Erin, Akshar Saxena, Camila Franco Restrepo, Blanca Llorente, Andrés Vecino Ortiz, Manuela Villar Uribe, Roberto F. Lunes, and Stéphane Verguet. 2017. The distributional consequences of increasing tobacco taxes on Colombia's health and finances: An extended

cost-effectiveness analysis (English). Washington, D.C.: World Bank Group. <http://documents.worldbank.org/curated/en/463121507058748037/The-distributional-consequences-of-increasing-tobacco-taxes-on-Colombia-s-health-and-finances-An-extended-cost-effectiveness-analysis>

Jha, P., Marquez, P.V., and Dutta, S. 2017. "Tripling Tobacco Taxes: Key for Achieving the UN Sustainable Development Goals by 2030." World Bank Group Blogs, January 24, 2017. Available at: <http://blogs.worldbank.org/health/role-excise-tax-meeting-sdg>

Jha P, Peto R. 2014. "Global effects of smoking, of quitting, and of taxing tobacco." *N Engl J Med* 370(1):60–8.

Kosen S. 2009. Economic impact of tobacco use in Indonesia. Paper 593. Presented at the 14th World Conference on Tobacco or Health, Mumbai, India.

Lange, GM, Wodon, Q, Carey, K. 2018. The Changing Wealth of Nations 2018: Building a Sustainable Future. Washington, DC: World Bank Group. Available: <https://openknowledge.worldbank.org/handle/10986/29001>

Linegar DJ, van Walbeek C. 2017. The effect of excise tax increases on cigarette prices in South Africa *Tob Control*. Published Online First March 24, 2017: doi:10.1136/tobaccocontrol-2016-053340.

Lopez AD, Mathers CD, Ezzati M, Jamison DT, Murray CJL, editors. 2006. Global burden of disease and risk factors. Washington, DC: World Bank. Available from: http://www-wds.worldbank.org/external/default/WDSContentServer/WDSP/IB/2006/06/06/000160016_20060606163437/Rendered/PDF/364010PAPER0GI101OFFICIAL0USE0ONLY1.pdf.

Marquez, P.V. 2016. Expanding the global tax base: taxing to promote public goods: tobacco taxes. Summary report (English). Washington, D.C.: World Bank Group. Available at: <http://documents.worldbank.org/curated/en/820951485943150390/Summary-report>

Marquez, P.V., and Moreno-Dodson, B. (eds.) 2017. *Tobacco Tax Reform: At the Crossroads of Health and Development*. Washington, D.C.: World Bank Group. Available at: <http://documents.worldbank.org/curated/en/docsearch/report/119792>.

Millennium Challenge Account - Indonesia. 2015. "Stunting and the Future of Indonesia." Jakarta: MCA Indonesia.

Murray CJ, Lopez AD. 1997. Alternative projections of mortality and disability by cause 1990-2020: Global Burden of Disease Study. *Lancet*. 349(9064):1498-504. doi: 10.1016/S0140-6736(96)07492-2.

National Cancer Institute (NCI), in collaboration with World Health Organization (WHO). 2016. *Monograph 21: The Economics of Tobacco and Tobacco Control*. Bethesda, Md.: U.S.

Department of Health and Human Services, National Institutes of Health. Available at:

https://cancercontrol.cancer.gov/brp/tcrb/monographs/21/docs/m21_exec_sum.pdf

Petit, P., and Nagy, J. 2016. "How to design and enforce tobacco excises?" How-to notes.

Fiscal Affairs Department, International Monetary Fund, October 2016.

Postolovska, I. 2018. An Extended Cost Effectiveness Analysis of Tobacco Price Increases in the Kyrgyz Republic. Washington, D.C.: World Bank Group. Available at: <https://hubs.worldbank.org/docs/imagebank/pages/docprofile.aspx?nodeid=29870608>

<https://hubs.worldbank.org/docs/imagebank/pages/docprofile.aspx?nodeid=29870608>

Postolovska, Iryna, Rouselle F. Lavado, Gillian Tarr, and Stephane Verguet. 2017. Estimating the distributional impact of increasing taxes on tobacco products in Armenia: results from an extended cost-effectiveness analysis (English). Washington, D.C.: World Bank Group.

<http://documents.worldbank.org/curated/en/604501492414938391/Estimating-the-distributional-impact-of-increasing-taxes-on-tobacco-products-in-Armenia-results-from-an-extended-cost-effectiveness-analysis>

Semba, R.D., Kalm, L.M., de Pee, S., Ricks, M.O., Sari, M., and Bloem, M.W. 2007. Paternal smoking is associated with increased risk of child malnutrition among poor urban families in Indonesia. *Public Health Nutrition*: 10(1), 7–15.

United Nations General Assembly. 2011. Political Declaration of the High-level Meeting of the General Assembly on the Prevention and Control of Non-Communicable Diseases (document A/66/L.1).

U.S. Department of Health and Human Services. 2014. "The Health Consequences of Smoking: 50 Years of Progress. A Report of the Surgeon General." Atlanta, GA: 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. Available at: <https://www.surgeongeneral.gov/library/reports/50-years-of-progress/full-report.pdf>

World Bank. 2015. Indonesia tobacco excise tax reform: Evaluating potential revenue and public health impact of a reform proposal to streamline the excise tax structure and increase the average excise tax rate for machine-made cigarettes. World Bank Policy Note, July, 2015.

World Bank. 2016. Indonesia Health Financing System Assessment: Spend More, Right and Better. Washington, D.C. World Bank Group. Available at: <https://openknowledge.worldbank.org/handle/10986/25363>

World Bank. 2017a. The Economics of Tobacco Taxation and Employment in Indonesia. Indonesia Tobacco Employment Studies. Washington, D.C.: World Bank.

- World Bank. 2017b. The Economics of Kretek Rolling in Indonesia. Indonesia Tobacco Employment Studies. Washington, D.C.: World Bank Group.
- World Bank. 2017c. The Economics of Tobacco Farming in Indonesia. Indonesia Tobacco Employment Studies. Washington, D.C.: World Bank Group.
- World Bank. 2017d. The Economics of Clove Farming in Indonesia. Indonesia Tobacco Employment Studies. Washington, D.C.: World Bank Group.
- World Bank. 2018. Indonesia Economic Quarterly: Towards Inclusive Growth, March 2018. Washington, D.C.: World Bank Group.
- World Health Organization (WHO). 2008. WHO Report on the Global Tobacco Epidemic, 2008: The MPOWER Package. Geneva: WHO.
- World Health Organization (WHO). 2017. WHO Report on the Global Tobacco Epidemic, 2017: Monitoring Tobacco Use and Prevention Policies. Geneva: WHO.
- Xu, X., Bishop, E.E., Kennedy, S.M., Simpson, S.A., Pechacek, T.F., 2015. Annual Healthcare Spending Attributable to Cigarette Smoking. An Update. *Am J Prev Med* 48(3):326–333.
- Zheng, R., Ahsan, A., Marquez, P.V., Hu, X., Wang, Y. 2018. Tobacco Affordability in Indonesia. Washington, D.C.: World Bank Group, forthcoming.
- Zheng, R., Wang Y., Wang, Y., Hu, X., and Marquez, P.V. 2017. Cigarette affordability in China: 2001-2016 (English). Washington, D.C.: World Bank Group. Available at: <http://documents.worldbank.org/curated/en/130301492424519317/Cigarette-affordability-in-China-2001-2016>

