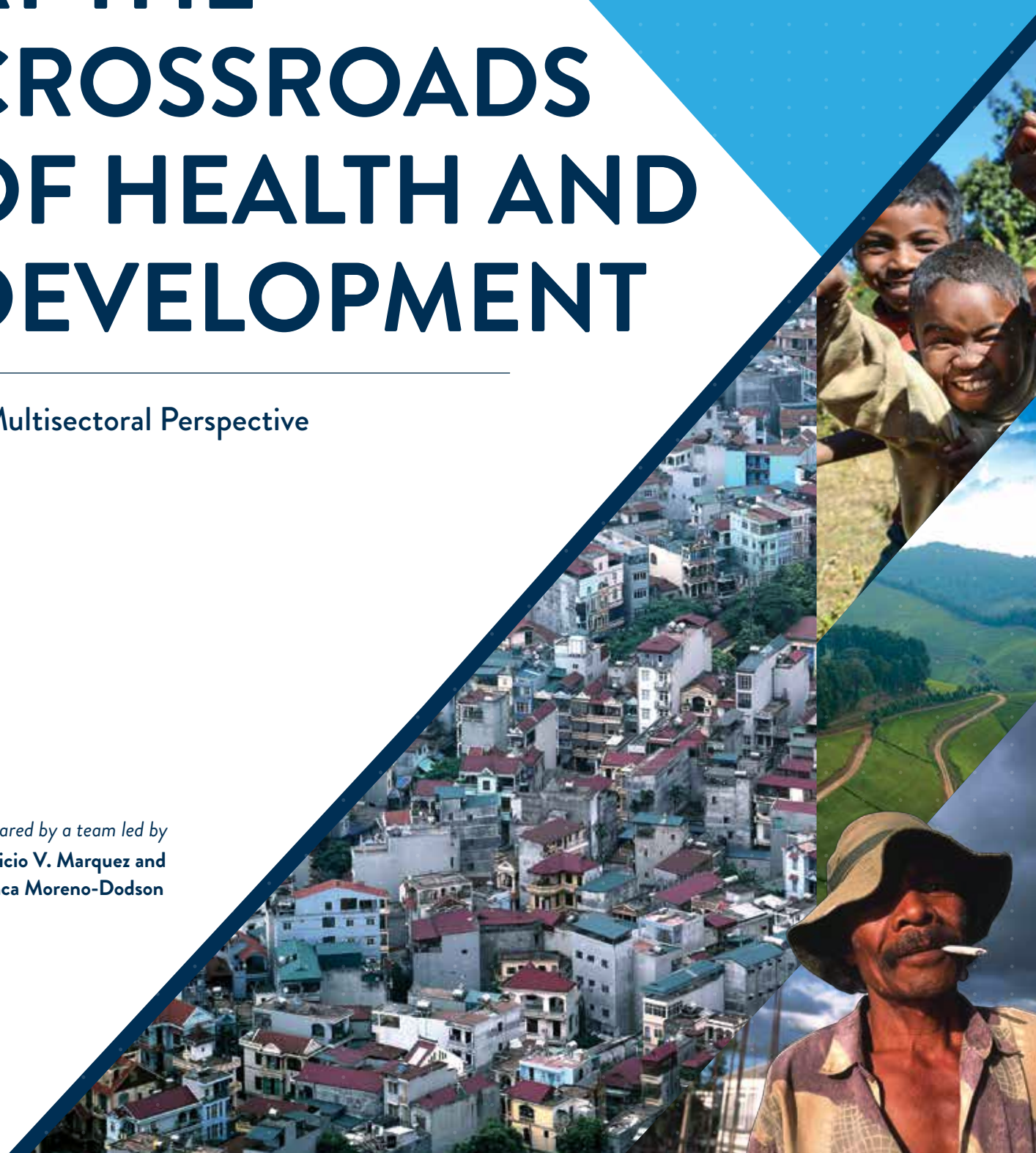


*Tobacco Tax Reform*

# AT THE CROSSROADS OF HEALTH AND DEVELOPMENT

A Multisectoral Perspective

*Prepared by a team led by*  
**Patricio V. Marquez and**  
**Blanca Moreno-Dodson**





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# EXECUTIVE SUMMARY

There is a policy measure that can simultaneously save millions of lives, reduce poverty, and increase countries' domestic resources for financing development.

The policy measure consists of increasing excise tax rates on tobacco in order to reduce its affordability and, as evidence shows, lower its consumption.

Today, this powerful human development and poverty reduction measure remains largely underutilized, especially in low- and middle-income countries (LMICs). This report provides decision support for policy makers on tobacco tax reform, as well as analytical and empirical tools for using tobacco excise taxes to save lives and increase government revenues. The report sets forth the public health, economic, and anti-poverty case for higher tobacco taxes; shows how some countries have already delivered ambitious reforms; and documents measurable results. It shows that, by implementing tobacco tax reforms now, policy makers can choose a fast road to healthier, more prosperous societies.

## THE TOBACCO USE CHALLENGE

Few people today doubt that smoking is bad. But many, including seasoned policy makers, do not realize just *how* bad it is. Bad for people, bad for economies, and bad for poverty reduction. In fact, tobacco use not only kills millions of people each year but places a staggering poverty and economic burden on low-income families and less-developed countries that is deepening inequalities between and within countries.

### Health Damage

Tobacco kills at least half of long-term smokers, accounting for more deaths each year than HIV/AIDS, tuberculosis, and malaria combined. And the burden of sickness and death from tobacco is becoming heavier. There were about 100 million deaths from tobacco in the 20th century. If current patterns persist, tobacco will kill some 1 billion people in this century, most in LMICs (Jha 2009; Peto and Lopez, 2001). Health systems suffer along with individuals. Treatment of the numerous chronic diseases caused or exacerbated by smoking swells countries' annual health care costs and diverts resources that could be used to solve other health challenges or address development priorities.

### Economic Damage

Tobacco-related deaths are not only preventable tragedies but have an important economic cost. Worldwide, the total economic damage of smoking (including productivity losses from death and disability) has been estimated at more than US\$ 1.4 trillion per year, equivalent to 1.8 percent of the world's annual Gross Domestic Product (GDP) (Goodchild, Nargis, and Tursan d'Espaignet 2017).

### Worsening Poverty

This economic burden mainly falls on the people and countries that can least afford it. More than 80 percent of the world's smokers live in LMICs. Within countries, tobacco addiction is concentrated among people with lower incomes and education. Poor smokers spend a larger portion of their income on tobacco products than wealthier smokers, and the poor also suffer most from smoking-related illnesses. The medical expenses and loss of earnings associated with these illnesses contribute to pushing millions of households into financial crisis and deeper poverty every year. Meanwhile, tobacco use reduces future earning potential, especially among young adults, and reduces adult workers' economic productivity.

## THE TOBACCO TAX IMPERATIVE

There is an extraordinary divergence between high-income countries, which are increasingly using price and non-price tools to lower their death rates from tobacco, and LMICs, where the absolute number of tobacco deaths continues to grow. About half of the difference in mortality rates between rich and poor smokers is due to smoking. Equality of opportunity between countries worldwide demands action on tobacco.

By adopting the United Nations Sustainable Development Goals (SDGs), all countries have committed to achieving a 30 percent reduction in death rates from non-communicable 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). How can LMICs cut smoking rates on the scale required and achieve faster progress than even that achieved by high-income countries? Bold increases in tobacco excise tax rates are by far the most powerful tool.

Leaders who raise tobacco excise tax rates can expect the following:

**Longer lives and better health for the people:** The main reason to implement tobacco excise tax rate increases is that they save lives and reduce serious illnesses like cancer and heart disease. Evidence across a wide range of countries shows that a 50 percent increase in cigarette price typically leads to a 20 percent decline in cigarette consumption. Reduced consumption has a powerful impact on subsequent tobacco-related sickness and death within several years. 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 (IARC 2011).

**More resources for development:** Even as they lower cigarette use and improve population health, higher tobacco taxes can substantially boost government tax revenues. Economic modeling carried out for this report 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. This additional revenue could fund development investments (see also Goodchild, Perucic, and Nargis 2016).

## EARLY WINS IN SOME COUNTRIES

The links between tobacco taxes, public health, and government revenues are not just theoretical. Between 2012 and 2014, over a hundred governments used tobacco tax hikes to save lives and increase government revenues. In most cases these tax hikes were still too small to yield substantial declines in cigarette consumption. But this report shows that some countries are taking bolder steps and reaping significant public health and

fiscal revenue benefits. It also shows that much more can be achieved. As of 2015, WHO reported that only 28 LMICs had adopted comprehensive tobacco control policies covering retail-counter cigarette advertising, restrictions on public smoking, and appropriately high excise tax rates. As leaders in more countries weigh the public-health and economic arguments for tobacco taxation, there are opportunities for exceptional progress now.

## MAKING IT HAPPEN

If leaders want to move forward on tobacco excise taxation, what are the critical steps? What are the common pitfalls they should avoid? This report distills a large body of evidence on successful practice in tobacco taxation and the decision-making process. Key lessons include:

- **Go big, go fast.** Tax strategies should focus on health gains first, then on fiscal benefits. This means going for big tobacco excise tax rate increases starting early in the process. Adopting a slow, cautious timeline might sound prudent. But it means condemning large numbers of people to avoidable illness and premature death. In tobacco taxation, the rewards go to those who act boldly.
- **Attack affordability.** Tobacco taxes only reduce tobacco consumption if they reduce cigarette affordability. In most LMICs, wages are rising. Thus, cigarettes will become de facto more affordable for consumers, increasing consumption, unless tobacco taxes rise even faster. Effective strategies will generally involve combining big initial tax increases with recurrent hikes over time, to keep cigarette prices climbing more steeply than per capita real income growth (including inflation).
- **Change expectations:** Communication with the public is also critical. Governments must make sure consumers know that a tax-rate hike is not just a one-off, but that cigarette prices will keep going up. This is a motivator for current smokers to quit and young people not to start.
- **Tax by quantity.** Tobacco tax rates should be simplified and based on the quantity of cigarettes, not their price. This is done in two ways, both of which preempt smokers' switching to cheaper cigarette brands after a tax-rate hike on the brands they previously smoked (a response called "downward substitution"). The first key move is to use *specific* excises, as opposed to *ad valorem* (value-based) excises or other taxes. A key factor that needs to be taken into account is that specific rates require to be adjusted over time to at least keep pace with inflation and, preferably, at a faster rate so that affordability is reduced over time. Any strategy for adopting them should be therefore accompanied by a framework/instrument to allow for annual increases over time (such as the United Kingdom's tobacco duty escalator). The second is to merge the multiple tobacco tax "tiers" used by most developing countries. This way, tax hikes raise prices by the same large amount on all brands at once, pushing smokers to quit completely, rather than switch.



- **“Soft earmarks” can win support.** Earmarking tax revenues through legislation is criticized by fiscal experts as contributing to rigidities, fragmentation, and eventual distortions in public expenditures. However, “soft” earmarking of funds — for example, linking increased taxes to increased health spending — has helped generate grassroots support for the tax hikes. This has been shown by experience in other sectors, and it has worked for tobacco taxes in countries like Australia, Philippines, and the United States.
- **Regional collaboration can boost results.** Momentum for ambitious tobacco tax reform can be enhanced, and cross-border threats like cigarette smuggling minimized, when countries work together in a regional structure. The European Union (EU) provides an example. The EU experience shows that regional cooperation can help countries achieve the dual goals of reducing tobacco consumption while increasing government revenues. Lessons also concern the pace of reforms. EU lawmakers faced early political pressure to “go slow,” by setting a low initial minimum tobacco excise rate to apply to all Member States. However, the EU accelerated progress by convincing Member States to agree up front to relatively high minimum tobacco excise rates, with longer transition periods authorized for some countries facing special challenges.
- **Build broad alliances.** Country leaders face sharp resistance to tax rate increases and other tobacco control measures from the tobacco industry. The industry is both financially powerful and politically astute. Tobacco industry advice to governments promotes the most ineffective interventions and in particular seeks to undercut and weaken tax measures. To counter these pressures requires robust scientific and economic analysis, as well as multi-sectoral policy development. It also demands the mobilization of civil society and opinion leaders. Support from international partners is also required, particularly in low-income countries, to strengthen country capacity for lining up and coordinating all parts of government, while engaging a wide set of stakeholders outside of government.

## KEY POLICY CHALLENGES

As countries plan and implement tobacco tax rate increases, they should anticipate challenges in specific areas. Several issues are important, both intrinsically and because the tobacco industry exploits them to influence public opinion and policy debates. The three most salient of these issues are: (1) how higher tobacco tax rates affect poor people; (2) how tobacco taxes affect employment; and (3) connections between tobacco tax rate hikes and the illicit tobacco trade.

## TOBACCO AND EQUITY: PUTTING POOR PEOPLE AT THE CENTER

As noted above, accumulated evidence from across the globe shows how tobacco taxes help reduce poverty. Yet one of the industry's most insidious arguments against raising tobacco taxes is that these taxes hurt poor people disproportionately. This is based on the claim that tobacco taxes are regressive: meaning that they take a greater share of disposable income from the poor than from the rich. Almost by definition, poor smokers do generally spend a greater proportion of their incomes on tobacco than wealthier smokers. However, poorer smokers respond more to a unit change in price than do richer smokers. Thus, tobacco tax hikes more effectively reduce cigarette affordability among poor people than among the rich. Reducing cigarette affordability does not hurt poor smokers. On the contrary, it will increase their disposable income for other goods and services, and can save many of their lives.

Faced with tobacco tax rate increases, relatively poorer households adjust their behavior relatively more than richer households. A 50 percent increase in cigarette prices will lead to a 30–40 percent decline in tobacco consumption for the poor, a much larger relative decline than among the rich. This also means that poor people get the largest share of health and economic benefits from smoking cessation following a tax rate hike. Evidence from Thailand, for example, shows that the poor paid only 6 percent of increased tobacco taxes but got 58 percent of the health benefits (Jha, Joseph, Moser, et al. 2012).

The health benefits poor people obtain by quitting smoking also translate into long-term economic gains. Households in which someone smokes earn less over time than otherwise similar households where there are no smokers. So by favoring smoking cessation among people at the lower end of the welfare scale, tobacco taxes boost incomes among the poor relative to the better-off, directly advancing equity.

The bottom line is this: when we look at all the facts, tobacco taxes are not regressive, but highly progressive, as the full health and economic benefits of this measure far outweigh its relative cost.

## TOBACCO TAXATION AND EMPLOYMENT: BRIDGING TO BETTER LIVELIHOODS

The tobacco industry warns of potential job losses in agriculture, manufacturing, and distribution as an argument against higher tobacco taxes. However, governments can help facilitate the adjustment of the relatively small numbers of vulnerable workers whose jobs will be affected by tobacco tax rate increases.

On tobacco taxes and employment, the following points merit attention:

- **Job losses in tobacco worldwide have come mostly from manufacturers' own policies, not from tax hikes.** Analysis has shown that observed reductions in tobacco-related employment have come largely from automation and consolidation by the industry itself (NCI and WHO 2016).
- **Today, few jobs in LMICs are completely dependent on tobacco, even in large producer countries.** With few exceptions, the share of total employment involved with tobacco is already very small. Even China, the world's largest producer and consumer of tobacco products, has only about 2 percent of its farmers growing tobacco (Hu, Mao, Shi et al. 2008).
- **Following a tobacco tax rate hike, consumer spending shifts to non-tobacco sectors, creating alternative jobs.** When cigarette consumption drops after a tax rate hike, money not spent on tobacco products will mostly flow to other economic sectors, stimulating their production and so creating jobs there, while contributing to economic diversification. Studies show that over time there is likely to be a net gain rather than a loss in employment in nearly all countries that raise tobacco excise rates (IARC 2011; NCI and WHO 2016).
- **Tobacco tax plans must nonetheless incorporate support for affected workers, especially those with low skills.** Though the numbers are small, some tobacco workers who lack skills to adapt will lose employment and income, as demand for tobacco falls. Governments must anticipate this challenge and be ready with solutions. Successful transitions can be achieved, helping workers access equal or better livelihoods outside tobacco. Policy makers should tackle this issue head-on: on equity grounds, to assist vulnerable workers and their families; and for strategic reasons, to prevent the tobacco industry from appropriating employment as a political weapon against tax rate increases.

## Helping Tobacco Farmers Switch to Other Crops

In the very few countries that are net tobacco producers, an important share of employment in the tobacco industry comes from farming. Governments and their partners can coordinate tobacco tax rate hikes with programs to encourage and help tobacco farmers' transition to other crops. In virtually all settings, alternative crops exist that are both more profitable for farmers than tobacco and without the health risks of tobacco farming, which include green tobacco sickness, a systemic poisoning due to nicotine exposure through contact with tobacco plants.

Today, only a minimum percentage of farmers rely exclusively on tobacco for their livelihoods. In most settings, tobacco is part of multi-cropping schemes, and where

demand is decreasing farmers are diversifying away from dependence on tobacco. Tobacco cultivation is a small and shrinking contributor to economies worldwide. However, targeted support, for example through input credits, agricultural extension, and irrigation, will be needed for some small tobacco farmers, particularly those who are trapped in dependency on the tobacco industry. Industry practices foster such dependency, for example by providing farmers with free inputs and guaranteed purchase of their entire tobacco crop, though often at such low rates that farmers fail to break even and end up in chronic debt to the firms (Kagaruki 2010).

## CURBING THE ILLICIT TOBACCO TRADE

The tobacco industry counsels policy makers that raising tobacco tax rates will spur increases in the illicit tobacco trade, while lowering tobacco tax rates might reduce such criminal activity. The key message for governments on this point is clear: even in the presence of substantial levels of smuggling, higher tobacco tax rates cut cigarette consumption and raise fiscal revenues. Evidence from Canada, which has 3000 miles of open border with the United States, shows that large-scale smuggling occurred only when the cigarette industry colluded with criminal networks (Kelton and Givel 2008). The main driver of the illicit tobacco trade is not higher tax rates but lax enforcement and organized criminal networks. The core strategy for governments remains to go after the criminals and improve tax administration and enforcement of control measures, not to lower tobacco taxes. Turkey, for example, substantially reduced illegal sales by tackling evasion, and simultaneously raised taxes.

A robust repertoire of proven control and enforcement measures exist to curb illicit tobacco. Measures have been successfully implemented by LMICs, as well as rich countries. Many are captured in the WHO Protocol to Eliminate Illicit Trade in Tobacco Products. Effective tools include track-and-trace systems to follow tobacco products through the supply chain; detection equipment at customs posts; and tougher sanctions. Today, it is imperative that the international community advocate and encourage national lawmakers in all countries to ratify and implement the WHO Protocol, securing its status as binding international law (Marquez 2015). Many countries that have adopted broad control and enforcement programs have achieved impressive results. For example, since the “Tackling Tobacco Smuggling” strategy was introduced in the U.K. in 2000, the size of the illicit cigarette market has been cut by almost half, to about 9 percent of national sales, with more than 20 billion cigarettes and over 2,700 tons of hand-rolling tobacco seized. Additionally, the U.K. has seen more than 3,300 criminal prosecutions for tobacco offenses following action by law enforcement officers. In Chile, a country that has one of the highest tax rates on cigarettes in the world, with taxes accounting for 78 percent of the price of each pack, the government has also achieved success in increasing seizures

of smuggled tobacco products. This has affected the country's tobacco supply and is helping curtail the slight growth in illicit trade observed after a 2013 increase in tobacco prices.

## CONCLUSION: EXPANDING THE GLOBAL COALITION

Higher tobacco tax rates could save millions of lives each decade, reduce poverty, and boost public resources for development investment. Yet, today, tobacco taxation remains one of the world's least-used tobacco control measures (Marquez 2017).

The power to change this situation exists. Not in the hands of any single leader or institution, but in a global coalition uniting governments, multilateral agencies, civil society, researchers, the private sector, and communities: a coalition dedicated to ensuring that the life-saving impact of tobacco tax reform reaches the largest possible number of people in the shortest possible time.

Since 2015, the World Bank Group, WHO, the Bill & Melinda Gates Foundation, the Bloomberg Foundation, and others have worked with countries to reinforce the global coalition for tobacco tax reform. In April 2017, the conference "Tobacco Taxation: Win-Win for Public Health and Domestic Resource Mobilization" provided an opportunity to measure progress. Convened at World Bank Headquarters in Washington, D.C., this tobacco tax policy summit drew high-level delegations from the Health and Finance Ministries of 35 countries, who reported on progress and committed to further accelerate reforms. Participants noted that, as countries reframe their development finance plans around domestic resource mobilization, the case for tobacco taxation increasingly resonates.

Measured against the distance to be traveled, these are still early steps. Countries acting boldly remain outnumbered by those that hesitate. The World Bank will leverage its access to Ministries of Finance to further expand country-level policy dialog; ramp up technical support and capacity building; nurture peer-to-peer collaboration among countries; and advance a learning agenda to further improve tobacco tax policy designs, hone advocacy, and increase impact.

Many countries stand at the crossroads on tobacco tax reform: a critical crossroads for health and development. The good news is that countries and partners can come together, not just around a problem, but around a proven solution. A stronger, united effort is required to advance the global tobacco taxation agenda toward better health, less poverty, and greater development opportunity for all.

## REFERENCES

- Furman, J. 2016. "Policy, Politics, and the Tripling of Federal Tobacco Taxes in the United States to Deter People from Smoking, Save Lives, and Mobilize Revenue over the last 30 years. Six Lessons from the U.S. Experience with Tobacco Taxes." Presentation at the World Bank Conference. "Winning the Tax Wars: Global Solutions for Developing Countries," Washington, DC, May 24, 2016. <http://www.worldbank.org/en/topic/health/brief/tobacco>
- Goodchild M, Nargis N, Tursan d'Espaignet E. 2017. "Global economic cost of smoking-attributable diseases." *Tob Control* 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.
- Hu T-w, Mao Z, Shi J, Chen W. 2008. Tobacco Taxation and Its Potential Impact in China. Paris: International Union Against Tuberculosis and Lung Disease.
- IARC (International Agency for Research on Cancer). 2011. Effectiveness of Tax and Price Policies for Tobacco Control. Volume 14, IARC Handbooks.
- Jha P. 2009. "Avoidable global cancer deaths and total deaths from smoking." *Nat Rev Cancer* 9: 655–64.
- Jha P, Joseph RC, Moser P et al, for the Asia Development Bank. 2012. *Tobacco Taxes: A Win-Win Measure for Fiscal Space and Health*. Manila: Asian Development Bank. (Accessed May 8, 2017 at <http://www.adb.org/publications/tobacco-taxes-win-win-measure-fiscal-space-and-health>)
- Jha, P., Marquez, P.V., and Dutta, S. 2017. "Tripling Tobacco Taxes: Key for Achieving the UN Sustainable Development Goals by 2030." The World Bank Blogs, January 24, 2017. Available at: <http://blogs.worldbank.org/health/role-excise-tax-meeting-sdg>
- Junquera-Varela, Raul Felix, Marijn Verhoeven, Gangadhar P. Shukla, Bernard Haven, Rajul Awasthi, and Blanca Moreno-Dodson. 2017. *Strengthening Domestic Resource Mobilization: Moving from Theory to Practice in Low- and Middle-Income Countries*. Washington, DC: World Bank. doi:10.1596/978-1-4648-1073-2.
- Kagaruki, L. K. 2010. Community-based advocacy opportunities for tobacco control: experience from Tanzania. *Global Health Promotion* 17(2) Suppl: 41–4.
- Kaiser, K, Bredenkamp, C., Iglesias, R. 2016. "Sin Tax Reform in the Philippines: Transforming Public Finance, Health, and Governance for More Inclusive Development. Directions in Development — Countries and Regions." Washington, DC: World Bank. Available at: <https://openknowledge.worldbank.org/handle/10986/24617>
- Kelton MH, Givel MS. 2008. Public policy implications of tobacco industry smuggling through Native American reservations into Canada. *Int J Health Serv* 38(3):471–87.
- Marquez, P.V. 2015. "World No Tobacco Day 2015: On Illicit Trade and Taxes." The World Bank Blogs, May 29, 2015. <http://blogs.worldbank.org/health/world-no-tobacco-day-2015-illicit-trade-and-taxes>
- Marquez, P.V. 2017. "Taxation: Most effective but still the least-used tobacco control measure." The World Bank Blogs, July 19, 2017. <https://blogs.worldbank.org/health/taxation-most-effective-still-least-used-tobacco-control-measure>
- NCI (U.S. National Cancer Institute) and WHO (World Health Organization). 2016. *Monograph 21: The Economics of Tobacco and Tobacco Control*. Bethesda, MD, USA: 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](https://cancercontrol.cancer.gov/brp/tcrb/monographs/21/docs/m21_exec_sum.pdf)



Paul, J. 2016. "The Impact of the 2013 Sin Tax Reform in the Philippines." Presentation at World Bank Conference: "Winning the Tax Wars: Global Solutions for Developing Countries," Washington, DC, May 24, 2016. <http://www.worldbank.org/en/topic/health/brief/tobacco>

Peto, R., Lopez, A.D. 2001. "Future worldwide health effects of current smoking patterns." In: Koop, C.E., Pearson, C.E., Schwarz, M.R., eds. *Critical issues in global health*. San Francisco: Wiley (Jossey-Bass): 154–61.

Webber, L., Andreeva, T.I., Sotomayor, R., Marquez, P.V., et al. 2017. "Modeling the Long-Term Health and Cost Impacts of Reducing Smoking Prevalence through Tobacco Taxation in Ukraine." Washington, DC: The World Bank Group.

World Bank Group. 2016. Tobacco Tax Modelling in Armenia, Colombia, Moldova, and Ukraine. Internal Working Documents.





# INTRODUCTION

There is a policy measure that can simultaneously save millions of lives, reduce poverty, and increase countries' domestic resources for financing development. For most countries, this measure is the most effective way to achieve Sustainable Development Goal 3.4, reducing deaths from noncommunicable diseases, such as cancer and heart disease. It will also advance other key development objectives.

The policy measure consists of increasing excise tax rates on tobacco in order to reduce its affordability and, as evidence shows, lower its consumption.

Today, this powerful health and human development tool remains largely underutilized, especially where it could do the most good: in low- and middle-income countries (LMICs).

Those countries that have raised tobacco excise tax rates report impressive results:

- The "Sin Tax" reform in the Philippines shows striking results. Tobacco accounts for about 80 percent of the US\$ 3.9 billion in additional revenues generated by the Philippines' tobacco and alcohol tax policy reform in its first three years of implementation. The additional fiscal space created by the reform increased the Department of Health budget threefold. The number of families whose health insurance premiums were paid by the national government rose from 5.2 million primary members in 2012 to 15.3 million in 2015.
- As shown by the Global Adult Tobacco Survey compared to 2010, in 2017, there was a 20 percent relative reduction in the proportion of the population who smoke tobacco daily. This is largely due to a reduction in smoking among men, as there were no significant reductions seen in the proportion of women who smoke. In total in 2017, 7.2 million adult Ukrainians smoke daily (35.9 percent of all adult men and 7.0 percent of all adult women). This reflects the beneficial impact of Ukraine's tobacco control across many of the indicators measured: the percentage of those who were exposed to secondhand tobacco smoke at home, in the workplace and in public has reduced, as has the proportion of the population who have been exposed to tobacco promotion through marketing of tobacco products; prices for tobacco products has increased significantly, as has people's awareness of the harms of tobacco use (Ministry of Health of Ukraine, et al, 2017).
- Building upon its previous experience with an alcohol levy, Botswana introduced a tobacco levy of 30 percent of unit cost in 2014, on top of the Southern Africa Customs Union (SACU) average excise tax on tobacco. The aim is to control the growing burden noncommunicable diseases, many of them tobacco-related.

With the introduction of the levy, the retail price for a pack of 20 cigarettes of the most-sold brand now stands at US\$ 3.12, and total taxes as a percentage of retail price rose to 62.68 percent, up from 51.99 percent in 2012.

Regarding tobacco taxation, the global community stands at a crossroads. Leaders must choose, time is short, and the stakes are life-and-death. That is why the World Bank Group Tobacco Control Program has worked with its partners to create this report.

## A MAP FOR THE CROSSROADS

This report provides policy makers and those who advise them with decision support for informed choices on tobacco tax policy. The book draws on a vast body of scientific literature and distills the key facts into accessible form, focusing on core issues for tobacco taxation in LMICs.


Contributors explain the “Why?,” “What?,” and “How?” of tobacco tax reform. Starting with the overall rationale (the “Why?”) they summarize the arguments that support tobacco taxation as a unique “win-win” for public health and public finance. And they show how tobacco taxes can work as a development catalyst.

Authors also weigh the evidence on which specific tobacco tax designs work best (the “What?”). They review the advantages and drawbacks of different tax models, especially specific (quantity-based) vs. ad valorem (value-based) tobacco excise regimes. They describe both what leading experts recommend, and what countries are doing in practice.

On “How-to?” issues, the report provides options for decision makers and implementers to translate good policy models into action and results. Contributors review implementation challenges countries have encountered, the solutions used, and the outcomes obtained. Authors provide both high-grade quantitative evidence and qualitative insights into political processes in countries.

## WHY THIS REPORT NOW?

The literature on tobacco and its health effects is vast. Recent landmark publications, such as the technical monographs from the U.S. National Cancer Institute (NCI) and the World Health Organization (WHO), have organized an immense body of knowledge on the medicine, public health, economics, law, and political economy of tobacco use and tobacco control. Since the passage of the WHO Framework Convention on Tobacco Control (FCTC), WHO and its partners have continued to produce a steady and remarkable array of research, analysis, and policy recommendations for States Parties to use.



Yet the experience of World Bank teams and other partners providing frontline tobacco tax advice in countries is that policy makers and their advisers are still hungry for decision-oriented evidence and options on tobacco taxation. Precisely because the scientific (and pseudoscientific) literature is vast, decision makers may search in vain for a clear bottom line. All the more so, since the tobacco industry works hard to maintain confusion around critical issues.

This report builds on the existing outstanding resources in the tobacco control literature. It cannot replace them. The distinctive expertise of the World Bank Group in tax policy can, though, help us to present key information in a format and a level of detail that policy makers and their teams can use to plan policies, take action, and save lives.

We focus on a series of topics that are fundamental for the design, political management, and implementation of tobacco taxes in LMICs. Our choice of topics had been guided by ongoing frontline policy dialog on these issues involving national policy makers, World Bank staff, technical experts from other agencies, academic researchers, civil society organizations, and other stakeholders. We aim to provide answers to the questions decision makers and stakeholders actually ask, when our technical teams are on the ground in countries. Often, policy makers' concerns are prompted by the misinformation the tobacco industry puts out. Thus, our choice of topics also privileges the subjects we regularly see the industry try to exploit to cast doubt on tobacco taxation.

## STRUCTURE OF THIS VOLUME

The remainder of this report is structured as follows. **The first five chapters** offer a detailed public health, public finance, and development case for tobacco taxation. **Chapter 1** presents the book's main arguments through the lens of integrated development. The chapter analyzes the tobacco epidemic's economic impact and development consequences. Turning from problems to solutions, it shows how higher tobacco taxes can contribute to development gains and details the outstanding progress some countries have made. It describes how the World Bank Group is playing a leading role in broadening and strengthening a global partnership to support countries in tobacco tax reform, with impressive early results. The chapter situates these issues within the context of the SDGs and current debates in development finance, emphasizing the transformative potential of improved domestic resource mobilization.

**Chapter 2** further anchors the discussion in the epidemiology of the global tobacco epidemic, tracing the epidemic's past, present, and possible futures. The chapter offers powerful public-health arguments for tobacco tax hikes. To inform policy makers and opinion leaders, the authors provide a summary of the hazards of smoking from early adult

life, the benefits of stopping at various ages, the eventual magnitude of the epidemic if current smoking patterns persist, and the effectiveness of tax increases and other interventions to reduce cigarette consumption. Worldwide, a reduction of smoking prevalence by about a third could be obtained by doubling the real price of cigarettes, which in many low- and middle-income countries could be achieved by tripling the real excise tax on tobacco. Without large price increases, a one-third reduction in smoking will be difficult to achieve, leaving large numbers of people exposed to sickness and death that could have been prevented.

**Chapter 3** focuses on the pragmatic aspects of tobacco tax reform, linking policy makers' practical concerns to the key arguments deployed throughout the report. This chapter further clarifies the rationale for raising tobacco taxes; compares specific tax designs; and explores successful approaches to implementing tobacco tax hikes in the real world. It also explains what employment and social equity effects policy makers can anticipate when they raise tobacco taxes, thus preparing leaders to proactively address the concerns of vulnerable social constituencies (e.g., tobacco farmers). Protecting these constituencies is intrinsically important for equity reasons. It may also be strategic, given that in some settings they exert significant political influence.

**Chapter 4** uses an economic model of the global cigarette market to quantify the health and fiscal benefits that would accrue to countries by raising tobacco taxes. Hiking cigarette excise by the equivalent of US\$ 0.25 per pack in all developing countries (an average increase of 40 percent) is forecast to cut cigarette consumption in LMICs by 8 percent and generate an extra US\$ 41 billion in revenue. This would mean a 29 percent increase in LMICs' total cigarette excise revenues. The chapter closes with empirical data confirming that countries taking leadership are already translating such mathematical tobacco tax opportunities into real-world policy change, lives saved, and money in the bank.

**Chapter 5** further builds the case for bold tobacco tax reform by showing how regional collaboration can enhance results. The chapter focuses on the example of the European Union (EU). The EU experience with harmonizing tobacco taxation at the regional level shows that regional cooperation can help countries achieve the dual goals of reducing tobacco consumption and increasing government revenues. Lessons also concern the pace of reforms. EU lawmakers faced early political pressure to "go slow," by setting a low initial minimum tobacco excise rate to apply to all Member States. However, the EU accelerated progress by convincing Member States to agree up front to relatively high minimum tobacco excise rates, with longer transition periods authorized for some countries facing special challenges.

With the broad public health and economic case for tobacco taxation in place, **Chapters 6–9** focus on a series of key issues for the actual design, political marketing, and implementation of higher tobacco taxes. These chapters provide evidence that decision makers



and implementers can use to tackle specific challenges that typically arise in tobacco taxation. While the topics are important in their own right, their practical significance increases, because these are subjects that the global tobacco industry preferentially exploits in its efforts to manipulate public opinion and influence policy. Thus, these are topics on which it is important that decision makers and opinion shapers be armed with the best evidence.

**Chapter 6** looks at how tobacco tax hikes affect poor people. The starting point is the often-cited concern that tobacco tax hikes are regressive: i.e., that they disproportionately burden poorer smokers, who spend a larger portion of their incomes on tobacco products than do wealthier people. To assess this argument, our authors provide an in-depth analysis of the demographics of tobacco use; compare poorer and wealthier smokers' adjustment behaviors when tobacco taxes rise; and make explicit the assumptions and limitations of traditional fiscal incidence analyses — which ignore health benefits and effects on productivity and risk — for tobacco taxation. The authors propose an alternative analytic approach, incorporating a wider view of longer-term health and economic costs and benefits by income group. This more inclusive analytic model reverses the initial appearance of tobacco tax regressivity. Far from unfairly burdening the poor, tobacco taxes deliver the greatest share of their potent long-term benefits to people with low incomes. It is smoking that is regressive and tobacco tax increases that are progressive.

**Chapters 7 and 8** explore another area crucial for the political marketing of tobacco taxes. This is the question of how tax hikes and the resulting drop in smoking prevalence will affect employment in a country. Policy makers are sensitive to this issue for understandable reasons. Industry-sponsored research habitually predicts major job losses when higher tobacco taxes are imposed. Fully reviewing the evidence, our chapters show that employment in tobacco is already low in most countries, that losses in tobacco employment come mostly from industry practices rather than tobacco taxes, and that declines from tobacco taxes will be quite gradual. They agree, though, that because of political sensitivity and difficulties for some workers to find alternate equivalent employment, programs to help such workers and encourage transition are crucial.

**Chapter 7** shows that higher tobacco taxes' net employment impact is generally the opposite of industry forecasts. Higher tobacco taxes lead to a redistribution of consumer spending and accelerated job creation in non-tobacco sectors. In most cases, the new taxes actually generate a modest net gain in employment for the economy as a whole. Meanwhile, by cutting smoking rates, higher tobacco taxes will increase overall worker productivity across the economy by reducing work time lost to smoking breaks and tobacco-related illness. The chapter explicitly deconstructs the flawed methodologies utilized by industry-supported researchers and explains the systematic distortion in their results.

**Chapter 8** addresses the special situation of tobacco farmers. The chapter shows, first, that any effects of tobacco taxes on farm livelihoods will be gradual and initially very small, providing ample time for farmers to adjust, with appropriate support. Equally important, contrary to industry claims, tobacco is generally not the most profitable crop these farmers could be growing. In fact, tobacco has numerous downsides, including for farmers' own health. Currently, however, many tobacco farmers are not well informed about the risks they run, and unaware of their other options. Even those farmers who may already want to shift away from tobacco to alternative crops often find themselves caught in a cycle of dependence on tobacco firms for loans, inputs, and market opportunities, effectively making it impossible for many farmers to undertake otherwise profitable crop substitution. This chapter argues that national policy makers and international partners can work together to protect and empower farmers, and to assist them to transition from tobacco to other, better livelihoods.

**Chapter 9** examines a crucial nuts-and-bolts consideration for policy makers that has also provided a foothold for industry misinformation. This is the challenge of controlling the illicit tobacco trade. Industry experts often "counsel" policy makers that the fiscal gains from higher tobacco taxes will be erased by surges in cigarette smuggling and other illicit activities when cigarette prices rise. The chapter marshals extensive empirical evidence to disprove this claim and show that numerous countries have successfully controlled illicit trade, including forms involving the tobacco industry itself, while raising tobacco taxes. It provides examples of good practice, as well as pitfalls to avoid, and furnishes details on specific technical solutions countries have adopted with success.

The volume's **Conclusion** recommends key lines of collaborative action at country and global level, as well as a research agenda, to accelerate progress in tobacco tax reform in the years ahead.

## REFERENCES

Jamison, D., Summer, L., Alleyne, G., Arrow, K., Berkley, S., Binagwaho, A., Bustreo, F., Evans, D., Feachem, R., Frenk, J., Ghosh, G., Goldie, S., Guo, Y., Gupta, S., Horton, R., Kruk, M., Mahmoud, A., Mohohlo, L., Ncube, M., Pablos-Mendez, A., Reddy, K.S., Saxenian, H., Soucat, A., Ulltveit-Moe, K., & Yamey, G. 2013. "Global Health 2035: a world converging within a generation." *Lancet* 382: 1898–955.

Junquera-Varela, Raul Felix, Marijn Verhoeven, Gangadhar P. Shukla, Bernard Haven, Rajul Awasthi, and Blanca Moreno-Dodson. 2017. *Strengthening Domestic Resource Mobilization: Moving from Theory to Practice in Low- and Middle-Income Countries*. Washington, DC: World Bank. doi:10.1596/978-1-4648-1073-2.

Webber, L., Andreeva, T.I., Sotomayor, R., Marquez, P.V., et al. 2017. "Modeling the Long-Term Health and Cost Impacts of Reducing Smoking Prevalence through Tobacco Taxation in Ukraine." Washington, DC: The World Bank Group.

Zheng, R., Yang, W., Xiaoxia, E., Hu, X., Marquez, P.V. 2017. "Cigarette affordability in China: 2001–2016." Washington, DC: The World Bank Group.

# ABSTRACT

Tobacco use imposes an unparalleled health and economic burden on countries, hindering development gains worldwide.

The United Nations Sustainable Development Goals (SDGs) include the commitment to reduce premature mortality from non-communicable disease by one-third by 2030. The achievement of this and related health and development targets may require a significant increase in tobacco excise taxes to control tobacco use, with taxes regularly adjusted to match or outpace inflation and per capita income growth. The aim is to make tobacco products unaffordable relative to rising incomes, reduce tobacco use, and improve health conditions in low- and middle-income countries, while enhancing countries' domestic resource mobilization. By boosting revenue collection, tobacco taxes can help countries fund investments and programs that benefit the entire population. Momentum for tobacco taxation builds, as domestic resource mobilization claims center stage in development strategies.

The World Bank Group, working with the World Health Organization, the Bill & Melinda Gates Foundation, the Bloomberg Foundation, and other partners, is committed to support tobacco taxation as an essential intervention to tackle non-communicable diseases, build healthy and productive societies, and advance inclusive development. Today, more and more countries are adopting tobacco tax policy reforms, and many already report strong results. Their successes confirm tobacco tax reform as one of the most powerful health and development catalysts for the 21st century.



# 1

## *Global Tobacco Control*

# A DEVELOPMENT PRIORITY

*Patricio V. Marquez*

This chapter presents the public-health and economic rationale for tobacco taxation, situating these arguments in the context of the global development agenda. Then it looks at how countries are designing and implementing tobacco tax hikes today, and how the World Bank Group is supporting this work. Tobacco tax reform is still in early stages in many countries, but initial results are compelling.

## THE TOBACCO USE CHALLENGE

The scientific evidence accumulated over the past five decades is clear: tobacco kills. Smokers who begin early in adult life and do not stop smoking face a three-fold higher risk of death compared to otherwise similar non-smokers, resulting in a loss, on average, of at least one decade of life (Jha and Peto 2014). The landmark Surgeon General's Report on Smoking and Health, issued in 1964 by U.S. Surgeon General Dr. Luther Terry, first drew wide public attention to the evidence linking smoking and ill health, including lung cancer and heart disease. Since then, a vast, rigorous body of evidence has accumulated, showing that tobacco use imposes an unparalleled health and economic burden across countries, hindering development gains worldwide (Marquez 2017c; NCI and WHO 2016; U.S. Department of Health, Education and Welfare 1964).

Cigarette smoking is one of the leading causes of preventable death. Both active smoking and exposure to secondhand smoke cause disease and kill prematurely (Marquez 2017c). More than 7 million people die from tobacco use every year, a figure that is predicted to grow to more than 8 million a year by 2030, without intensified action (WHO 2017). Most of these deaths are due to direct tobacco use, while close to 10 percent of deaths are the result of non-smokers' being exposed to secondhand smoke. The number of deaths from tobacco-related diseases is more than the deaths from HIV/AIDS, tuberculosis, and malaria combined (WHO 2008).

Accumulated evidence shows that nicotine (a chemical in tobacco): (1) is a highly addictive stimulant that at high levels produces acute toxicity; (2) activates multiple biological pathways through which smoking increases risk for disease; (3) adversely affects maternal

and fetal health during pregnancy, contributing to adverse outcomes such as preterm delivery and stillbirth, as well as congenital malformations (e.g., cleft lips or palates); and (4) during fetal development and adolescence has lasting adverse consequences for brain development. Evidence also shows that tar, the resinous, partially combusted particulate matter produced by the burning of tobacco, is toxic and damages the smoker's lungs over time. Carbon monoxide, a colorless, odorless gas produced from the incomplete burning of tobacco, accumulates indoors and reduces the oxygen-carrying capacity of the blood.

Cigarette smoking is causally linked to diseases of nearly all organs of the body (U.S. Department of Health and Human Services 2014). The evidence is sufficient to conclude that the risk of developing lung cancer from cigarette smoking has actually increased since the 1950s, due to changes in the design and composition of cigarettes. There is also evidence for a causal relationship between smoking and other types of cancer, including liver, colorectal, and prostate cancers. Smoking or chewing tobacco can immediately raise blood pressure, albeit temporarily, as the chemicals in tobacco can damage the lining of artery walls, causing arteries to narrow, increasing blood pressure. Secondhand smoke can increase blood pressure, as well. Smoking is the dominant cause of chronic obstructive pulmonary disease (COPD), including emphysema and chronic bronchitis. Smoking also increases the risk of tuberculosis. Research continues to identify diseases caused or exacerbated by smoking, including such common diseases as diabetes. Scientists now know that the risk of developing diabetes is 30–40 percent higher for active smokers than nonsmokers.

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Smoking-related illness costs billions of dollars each year, imposing a heavy economic toll on countries, both in terms of direct medical care costs and lost productivity among affected workers (NCI and WHO 2016; Xu et al. 2015). According to recent estimates, tobacco-related diseases account for US\$ 422 billion in health care expenditures annually, representing almost 6 percent of total global spending on health. The total economic cost of smoking (including productivity losses from death and disability) amounts to more than US\$ 1.4 trillion per year, equivalent to 1.8 percent of the world's annual Gross Domestic Product (GDP) (Goodchild, Nargis, and Tursan d'Espaignet 2017).

Already 40 percent of these economic costs are estimated to be borne by low- and middle-income countries (LMICs), and there is a risk that these costs will escalate, if effective and sustained action is not supported over the medium term. This poses a major challenge for countries, such as those in Sub-Saharan Africa, with large youth populations vulnerable to manipulation and deception by tobacco advertisement, and where smoking is on the rise. These countries often lack the resource base, the health systems, or the social safety nets required to protect their populations from the negative

health, social, and economic consequences of tobacco-related chronic diseases (Marquez and Farrington 2013b; for a discussion on the economics of deception and manipulation, see the work of Nobel Laureates George Akerlof and Robert Schiller [2015]).

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). Cessation is now common among adults in high-income countries. For example, in Canada there are now over one million more ex-smokers than just a decade ago. However, due in large part to the marketing and pricing strategies of the tobacco industry, cessation remains a major public health challenge in most LMICs, where more than 80 percent of smokers live (Jha, Marquez, and Dutta 2017).

## ADDRESSING THE TOBACCO USE CHALLENGE

Since the World Health Organization's Framework Convention on Tobacco Control (WHO's FCTC) was adopted in 2003 and came into force in 2005, over 180 countries have become Parties to the accord. The FCTC covers nearly 90 percent of the world's population. Over the past decade, progress has been made in expanding the coverage of the FCTC's supply- and demand-reduction tobacco control measures (WHO 2015). More than half the world's countries, accounting for 40 percent of the total global population, have implemented at least one tobacco control policy measure supported under WHO's MPOWER technical assistance package. MPOWER includes the six most important and effective tobacco control policies: raising taxes and prices; banning advertising, promotion, and sponsorship; protecting people from secondhand smoke; warning everyone about the dangers of tobacco; offering help to people who want to quit; and carefully monitoring the epidemic and prevention policies. These policy actions are proven to reduce tobacco use (WHO 2008).<sup>1</sup>

A recent study shows that the accelerated implementation of all key FCTC demand-reduction measures since 2005 was significantly associated with a decrease in smoking prevalence in all 126 countries studied: from 24.7 percent in 2005 to 22.1 percent in 2015, an average decrease in prevalence of 2.55 percentage points (Gravely et al. 2017).

However, despite the progress observed in many countries, much more needs to be done to control this health scourge. This observation is particularly important when taking into

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<sup>1</sup> The MPOWER package corresponds to the following WHO FCTC articles: article 6 (raise taxes on tobacco), article 8 (protect people from tobacco smoke), articles 11 and 12 (warn about the dangers of tobacco), article 13 (enforce bans on tobacco advertising, promotion, and sponsorship [TAPS]), article 14 (offer help to quit tobacco use), and article 20 (monitor tobacco use) (WHO 2008).

account that the global trends in smoking-prevalence reduction mask important differences in countries, such as rising smoking rates among youth and women in some urban areas of Latin America and Eastern Europe, or the marked change in South Asia from consuming local “bidis” (small, generally untaxed cigarettes) to cigarettes (Mishra et al. 2016).

## THE IMPERATIVE OF TOBACCO TAXATION

A scaled-up and stronger tobacco control effort is required to achieve the WHO-recommended target of at least 30 percent reduction in smoking prevalence by 2030, which would avoid at least 200 million deaths among current and future smokers by the end of the 21st century (WHO 2013). A reduction in smoking prevalence of this magnitude is also critical to reach the health and social targets of the United Nations Sustainable Development Goals (SDGs) (United Nations 2015).

How can such reductions in smoking be achieved in the next decade? The path from policy to reductions in tobacco use depends on the likelihood that a country will implement tobacco control measures, and on the measures’ effectiveness (Gravely et al. 2017). Raising taxes sharply on tobacco products, and then adjusting for inflation and increased affordability due to growing incomes, is the single most cost-effective measure to reduce tobacco consumption. It is especially powerful when linked to the rest of the MPOWER program of tobacco control and especially powerful in LMICs, where smokers are more price-sensitive (IARC 2011; NCI and WHO 2016; World Bank 1999).

Indeed, as noted in *The Economist* (2017), “As the success in rich countries shows, there is no mystery about how to get people to stop smoking: a combination of taxes and public-health education does the job. This makes the abysmal record in poor countries a grave failure of public policy. The good news is that, following recent research, it is one that has just become easier to put right.”

Given this dire situation, experts advocate a focused effort to support countries in raising tobacco taxes. The only plausible way to reduce smoking on the scale required to meet the WHO and UN goals would be to triple tobacco excise taxes in most LMICs. A tripling of the excise tax would roughly double the retail price of cigarettes, reduce tobacco consumption by about 40 percent (Jha, Marquez, and Dutta 2017), and lower the risk of tobacco-related diseases and premature death, as shown by recent assessments in China and Ukraine (Verguet et al. 2015; Webber et al. 2017).

### Tobacco Taxes Discourage Tobacco Use

The public-health rationale for tobacco taxation is clear (Furman 2016) (Figure 1). Research into the relationship between cigarette prices and smoking typically estimates elasticities of demand: the percentage decrease in cigarette demand that would result

from a 1 percent increase in price. Meta-analyses of the relationship between tobacco prices and use suggest that the overall elasticity of demand for adults lies between 0.3 and 0.8, meaning that a 10 percent increase in cigarette prices will lead to a 3 to 8 percent decline in consumption (CBO 2012; Chaloupka and Warner 2000; Gallet and List 2003; IARC 2011). Due to the addictive nature of tobacco products, additional indicators of price-hike impacts, beyond the quantity of cigarettes consumed, need to be considered. For example, authorities may monitor the impact of prices on smoking initiation, the impact of price on quit attempts, or changes in the fraction of the population that smokes (Furman 2016).

As illustrated by longitudinal data from the United States, price plays an important role in smoking, and cigarette taxes play an important role in cigarette prices (Furman 2016) (Figures 2 and 3).

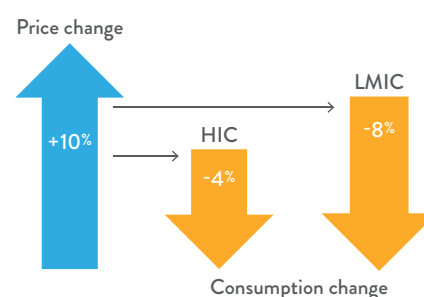
### Higher Tobacco Taxes Can Boost Government Revenues

The positive impacts of higher tobacco taxes go beyond direct health gains and indirect benefits such as higher productivity and reduced health care expenditures (Furman 2016). Increasing tobacco taxes can also enlarge a country's tax base to augment domestic resource mobilization (Marquez 2016h). In turn, this can expand fiscal space to fund priority investments and programs, including expansion of universal health coverage, education for all, and other activities to help countries achieve the SDGs. Indeed, the United Nations has recognized that price and tax measures on tobacco are not just effective means to reduce tobacco consumption, disease, and premature death, along with health care costs. These measures can also represent a revenue stream to finance development in many countries (United Nations 2015).

This double impact of tobacco taxes was acknowledged in the "Financing for Development Action Agenda," approved by country leaders at the July 2015 Third International Conference on Financing for Development, in Addis Ababa. The principle was again

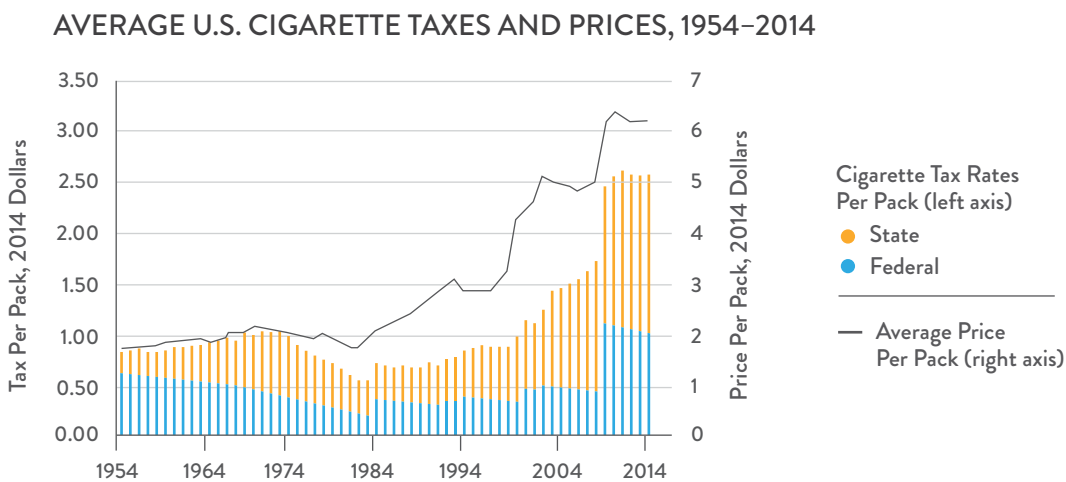
**Figure 1: Rationale for Focusing on Tobacco Taxation: Tax-Hike Impacts on Tobacco Use**

- » Higher tobacco taxes help hike up cigarette prices, which can contribute to significantly reduce prevalence and intensity of smoking in spite of the addictive nature of tobacco.
- » The demand for tobacco products is relatively inelastic:
  - » Price elasticity of demand for high-income countries (HIC) is estimated to be -0.4 and between -0.6 and -0.8 in low- and middle-income countries (LMIC) (IARC, 2014)
- » The poor and the young are more responsive to price changes than the better off and the old.



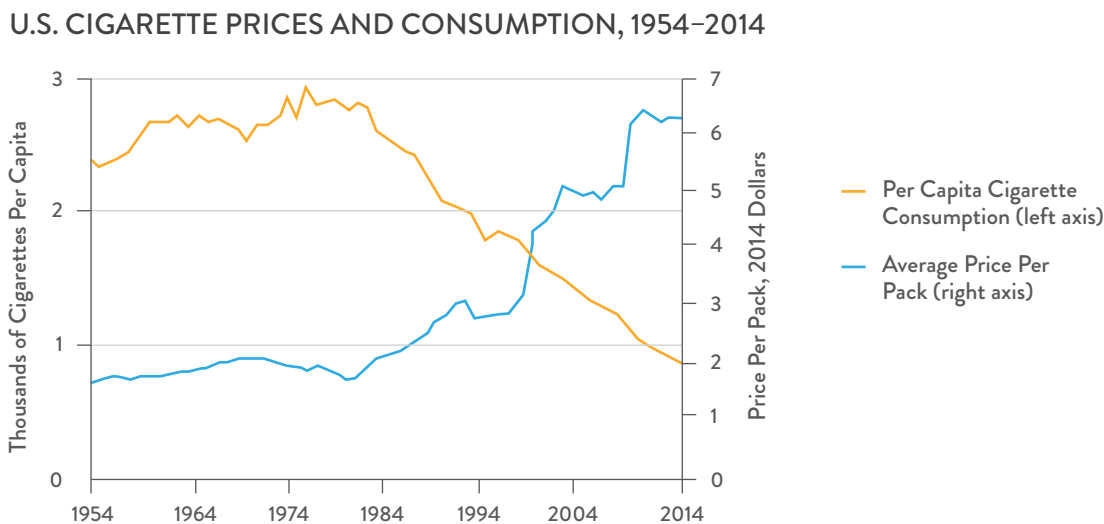
Source: Postolovska and Lavado 2016.

**Figure 2: Cigarette Taxes Play an Important Role in Cigarette Prices**



Source: Furman 2016.

**Figure 3: United States Experience: Price Plays an Important Role in Smoking**



Source: Furman 2016.

endorsed in September 2015, during United Nations General Assembly (UNGA) deliberations on strategies to achieve the SDGs. Today, policy makers and development experts concur in seeing LMICs’ domestic resource mobilization as the primary financing engine for the next wave of development, and they point to tobacco taxation as a potentially decisive contributor (Junquera-Varela et al. 2017).

A recent study (Goodchild, Perucic, and Nargis 2016) used data for 181 countries to estimate the impact of raising cigarette excise in each country by one international dollar ( $\text{\$}$ )<sup>2</sup> per

20-cigarette pack. Results showed that the tax increase would hike the mean retail price of cigarettes by 42 percent (from I\$ 3.20 to I\$ 4.55 per 20-cigarette pack), while raising cigarette excise revenue by 47 percent (from I\$ 402 billion to 593 billion). This would generate an extra I\$ 190 billion in revenue for countries. In LMICs, this increase in revenue could help create the fiscal space needed to fund development priorities.

## GLOBAL TOBACCO CONTROL: WHAT IS THE WORLD BANK GROUP DOING?

The World Bank Group has long been committed to tobacco control, and has had an unambiguous global policy on tobacco since the 1990s. According to its Operational Directive 4.76, the World Bank Group does not: (a) lend directly to tobacco production, processing, or marketing; (b) provide grants for investment in these activities; or (c) guarantee investments, loans, or credits for these industries. In any World Bank Group project, unmanufactured and manufactured tobacco, tobacco processing machinery and equipment, and related services are on the negative list of imports, that is, goods and services for which Bank Group funding cannot be used. Going beyond these supply-side measure, the World Bank Group actively supports use of comprehensive programs to reduce tobacco consumption. This includes multi-sectoral technical assistance, analytic, and financial support for country efforts to increase taxes and prices on tobacco products.

Over the past two decades, the World Bank Group has also carried out substantial work to build the global knowledge base on issues related to tobacco control. A 1999 World Bank report, *Curbing the Epidemic: Governments and the Economics of Tobacco Control*, contributed to the successful negotiations of the WHO FCTC. The World Bank's Economics of Tobacco Toolkit helps researchers analyze the economics of tobacco policies in their countries, while other reports on the challenge posed by non-communicable diseases (NCDs) in numerous regions and countries highlight the importance of tobacco control as a priority public policy intervention. World Bank teams, working with country, regional, and global partners, have provided technical assistance to design and implement tobacco taxation reforms intended to reduce tobacco use by raising the prices of tobacco products.

Since tobacco use disproportionately affects the poorest people, tobacco control is fully aligned with the World Bank Group's twin goals: (1) ending extreme poverty by 2030, and (2) boosting shared prosperity by increasing the incomes of the bottom 40 percent of the world's population. Smoking-attributable diseases are concentrated among the poor,

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<sup>2</sup> An international dollar would buy in the cited country a comparable amount of goods and services as a U.S. dollar would buy in the United States. This term is often used in conjunction with Purchasing Power Parity (PPP) data. For detailed discussion on this topic visit: <https://datahelpdesk.worldbank.org/knowledgebase/articles/114944-what-is-an-international-dollar>.

and such diseases can further exacerbate household poverty through income losses, catastrophic health care expenditures, and premature mortality. This phenomenon is observed in countries across the development spectrum. For example, data on mortality inequality in the United States show that, for those who have reached middle age, the gap in life expectancy between higher-income individuals and lower-income individuals grew substantially between 1989 and 2014. This trend has been attributed to an increasing divergence in “ever-smoker” rates between wealthier and poorer people. The share of poor Americans 50 and older that has ever smoked has grown over the past 25 years, while the share of the non-poor population 50 and older that has ever smoked has decreased (Furman 2016; Wan 2017). In Armenia, meanwhile, a lower middle-income country with almost 30 percent of its population living below the national poverty line, the prevalence of smoking is particularly high among men in the poorest income quintile (49 percent) and the second and third income quintiles (60 percent), compared to 42 percent in the highest income quintile (Postolovska et al. 2017). Such examples from diverse economic contexts confirm the disproportionate impacts of smoking among poorer households and communities. They underscore the potential power of tobacco taxation as a lever to reduce poverty.

Recent assessments done in countries such as Chile further demonstrate that tobacco taxes and other tobacco control measures are progressive. The greatest benefits from these measures accrue to poor households, which tend to allocate larger shares of their budgets than do wealthier households to purchase tobacco (Fuchs and Meneses 2017). Since tobacco taxes have been shown to discourage use, higher taxes reduce some of tobacco’s most serious adverse effects on poor households. Relevant adverse impacts include lower life expectancy, higher medical expenses and risk of having a breadwinner’s death or disability throw families into extreme poverty, added years of disability, higher risks for families for second-hand smoking, and reductions in smokers’ quality of life. Where tobacco control has been reinforced, the main driver of higher incomes among the poor appears to be reduced medical expenses due to fewer tobacco-related health problems.

## RECENT EXAMPLES OF WORLD BANK GROUP ANALYTICAL WORK, TECHNICAL AND OPERATIONAL SUPPORT, AND RESULTS ACHIEVED IN SELECTED COUNTRIES

The World Bank Group’s tobacco tax reform efforts have crystallized in a major global initiative — the WBG Global Tobacco Control Program, in which Bank teams are engaged with countries and partner organizations. The goal is to make tobacco products unaffordable relative to rising per capita incomes, reduce consumption, and improve health conditions in priority LMICs, while enhancing countries’ domestic resource mobilization. The initiative



advances these aims by supporting countries to design, enact, implement, and monitor tobacco tax policy reforms.

The World Bank Group is pursuing this initiative in partnership with the Bill & Melinda Gates Foundation and the Bloomberg Foundation, and in coordination with WHO and other partners. Simultaneously, technical assistance is being provided to strengthen countries' institutional capacity to curtail the illicit tobacco trade. The World Bank Group incorporates this support within a broader package of public-sector modernization efforts to strengthen customs systems.

In its tobacco taxation work, the World Bank Group follows a multi-sectoral approach to support countries to adopt effective tobacco taxation policies. In practice, this translates into joint working arrangements involving teams from the World Bank Group's Health, Nutrition, and Population Global Practice, along with the Macroeconomics and Fiscal Management Global Practice, the Global Taxation Team at the Governance Global Practice, the Poverty and Equity Global Practice, the Trade and Competitiveness Global Practice, and the Agriculture Global Practice. This combined, cross-sectoral effort is allowing World Bank Group teams to:

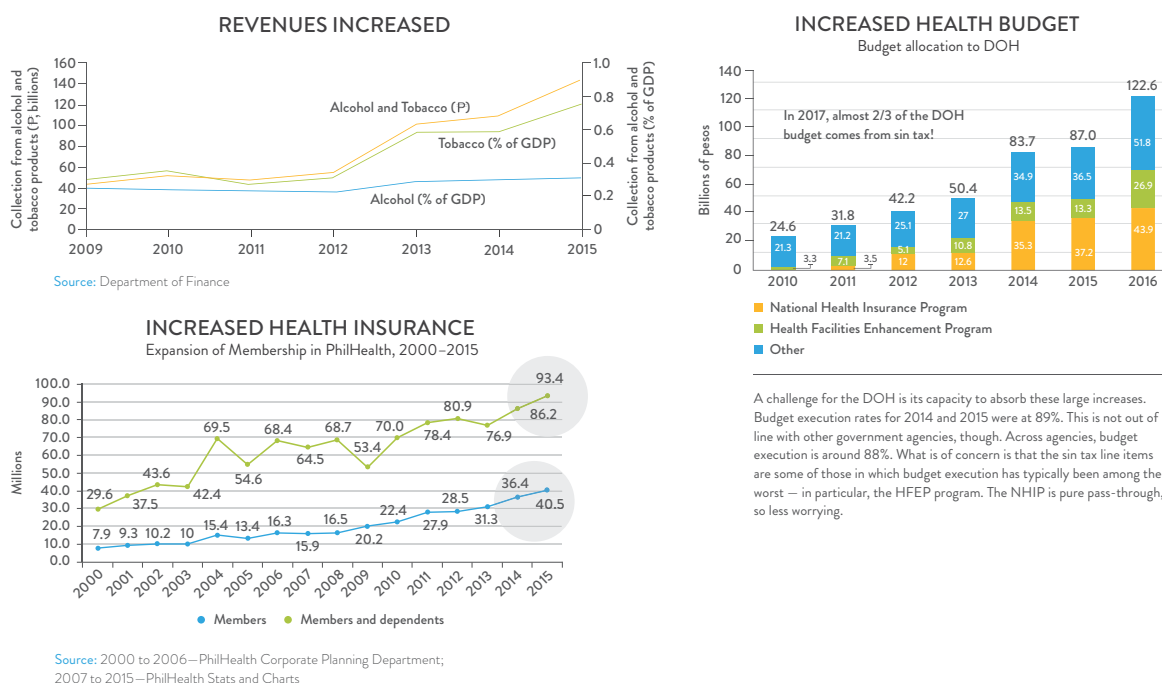
- Leverage access to ministries of finance, ministries of health, and other government agencies to take tobacco taxation efforts to scale
- Expand the use of policy advice, technical assistance, and funding instruments to support countries' tobacco tax reforms
- Institutionalize tobacco taxation as part of the World Bank Group's country partnership strategies globally.

The World Bank Group's multi-sectoral engagement complements WHO's global and country work on tobacco control. Partnerships also include other international, regional, and national actors engaged in tobacco control.

**Country Work.** Over the 2013–2017 period, multi-sectoral teams supported under the World Bank Group's Global Tobacco Control Program have assisted national governments in adopting tobacco tax reforms in countries such as Armenia, Botswana, Colombia, Ghana, Lesotho, Moldova, Montenegro, Peru, the Philippines, and Ukraine. The tobacco taxation reforms adopted in these nations cover a total of more than 262 million people, and collaboration is expanding to more countries. The work done in these countries is relevant widely, as follows:

**Philippines:** The experience generated by the Government of the Philippines over 2012–2016 is one of the most compelling examples of ambitious national tobacco tax reform. The Philippines' bold effort was supported by the World Bank Group, WHO, and other international partners. It involved a fundamental restructuring of the country's tobacco excise tax structure, including: reduction in the number of tax tiers; indexation

**Figure 4: Sin Tax Revenues, 2009–15 (Revenues doubled as a share of GDP), Philippines**



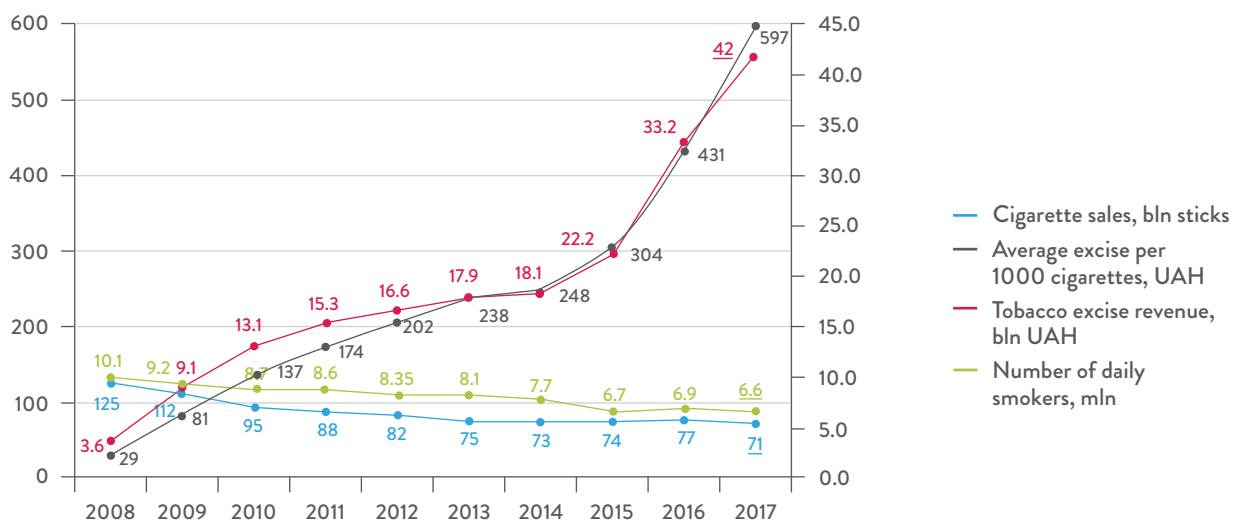
of tax rates to inflation; and substantial tax increases to multiply public health impact. The Philippines’ experience shows that such a bold reconfiguration of tobacco tax structures can be good for both fiscal and public health.

Tobacco accounts for about 80 percent of the US\$ 3.9 billion in additional revenues generated by the Philippines’ tobacco and alcohol tax policy reform in its first three years of implementation. The additional fiscal space created by the reform increased the Department of Health budget threefold. The number of families whose health insurance premiums were paid by the national government rose from 5.2 million primary members in 2012 to 15.3 million in 2015. The Philippines’ success confirms that tobacco taxation may be “low-hanging fruit” for countries that want to increase domestic resources to attain the SDGs (Figure 4).

**Ukraine:** On December 19, 2016, the Ukrainian Parliament approved the country’s 2017 budget, which includes a 40 percent specific excise tax increase on tobacco products over the 2016 level, while maintaining a 12 percent ad valorem tax. Building upon tobacco tax increases in previous years, the average excise tax burden (excise tax as percentage of retail price) will increase from 41 percent in 2016 to 46 percent in 2017 (Figure 5). The total tax burden (including excise taxes, value added tax [VAT], and other duties on tobacco as a percentage of retail price) will increase from 63 percent in 2016 to 67 percent in 2017.

Modelling work done with support from the World Bank Group estimates that the tobacco tax increase included in Ukraine’s 2017 Budget could help generate excise tax revenues

Figure 5: Results of Tobacco Excise Policy in Ukraine, 2008–2017



Source: World Bank Group 2016.

amounting to about 1.7 percent of GDP in 2017, up from 1.5 percent of GDP in 2016. Also, total tobacco tax revenue (combining excise taxes, VAT, and levies on tobacco) will represent about 2.4 percent of GDP in 2017, up from 2.3 percent in 2016. These tax increases are also expected to help reduce tobacco consumption by about 8 percent, generating a public health benefit (World Bank Group 2016).

The Ukraine Global Adult Tobacco Survey (GATS) 2017, carried out using the same methods as GATS 2010 to ensure comparability of results and assess changes that occurred during the interval period, show that compared to 2010, in 2017, there was a 20 percent reduction in the proportion of the population who smoke tobacco daily. This is largely due to a reduction in smoking among men, as there were no significant reductions seen in the proportion of women who smoke. In total in 2017, 7.2 million adult Ukrainians smoke daily (35.9 percent of all adult men and 7.0 percent of all adult women) (GATS Ukraine, 2017).

Additional World Bank Group-supported microsimulation modelling in Ukraine estimated the public-health impact from tobacco taxation measures along with other tobacco control measures. The health impacts, which were calculated relative to the status quo before the tax hike, were modeled for 2025 and 2035, for coronary heart disease (CHD), stroke, chronic obstructive pulmonary disease (COPD), and lung cancer. Relative to a scenario with no change in tobacco taxes, the model estimated that, by 2035, Ukraine's tobacco tax hike will avoid: 126,730 new cases of smoking-related disease; 29,172 premature deaths; and 267,098 potential years of life lost. Reductions in disease and death will save 1.5 billion Ukrainian hryvnia (UAH) (about US\$ 57 million) in healthcare costs and UAH 16.5 billion (about US\$ 631 million) in premature mortality costs (Webber et al. 2017).

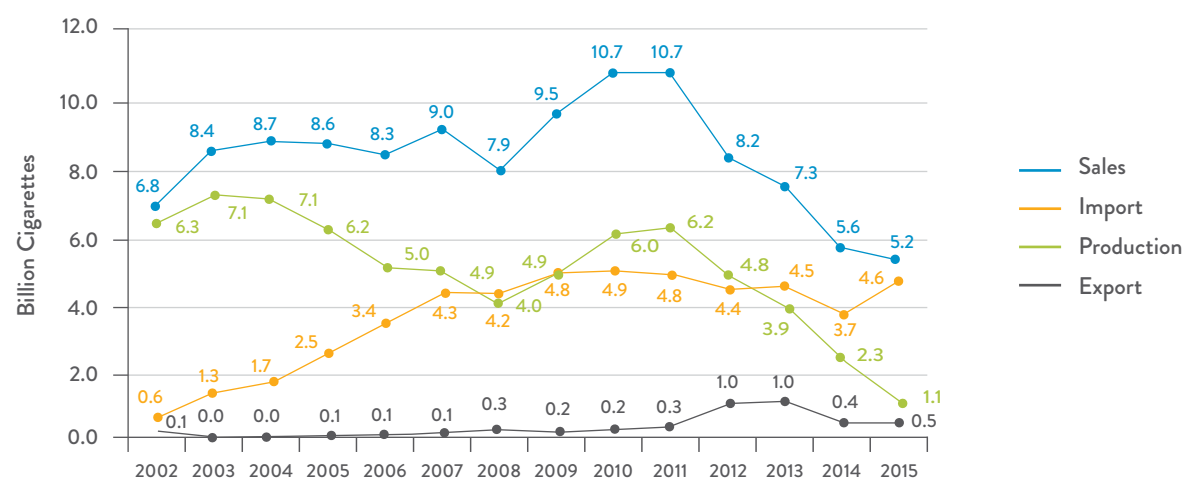
**Colombia:** As part of a broad fiscal reform package approved by Colombia's Congress on December 23, 2016, the specific excise tax on a pack of 20 cigarettes was increased from Colombian Pesos (COP) 700 (US\$ 0.25) in 2016 to COP 1400 (US\$ 0.50) in 2017, and COP 2100 (US\$ 0.75) in 2018, with annual adjustments of Consumer Price Index (CPI)+4 points in subsequent years. The ad valorem excise tax component was maintained at 10 percent of the total sale price of a 20-cigarette pack, and the general VAT rate was raised from 16 percent to 19 percent. As a result, the total tax burden as a percentage of the retail price of a pack of 20 cigarettes will increase from 50 percent in 2016 to 68 percent in 2018. The average price of a pack of 20 cigarettes will increase by 64 percent, from US\$ 0.97 in 2016 to US\$ 1.60 in 2018.

The expected fiscal and health impacts of this measure are noteworthy. It is estimated that COP 1 trillion (about US\$ 347 million) in additional revenue will be generated through 2022, along with a reduction of approximately 20 percent in the mortality associated with tobacco consumption. In addition, the fiscal reform law mandates the earmarking of tobacco tax revenues to finance health insurance coverage (World Bank Group 2016).

The fiscal reform program adopted by the Colombian government, including tobacco and alcohol tax increases, is supported under the World Bank Group's US\$ 600 million fiscal Development Policy Operation, approved on March 9, 2017. The tax reforms are accompanied by stronger anti-contraband measures to prevent illicit tobacco trade.

**Moldova:** On December 12, 2016, Moldova's Parliament approved the 2017–2019 budget submitted by the Ministry of Finance, including a significant increase in tobacco taxes. For filter cigarettes, in addition to a 12 percent ad valorem tax, minimum specific excise taxes will increase to 480 Moldovan Leu in 2017, 540 in 2018, and 610 in 2019. For nonfilter

**Figure 6: Cigarette Production, Import, Export, and Sales in the Republic of Moldova, 2002–2015**



Source: World Bank Group 2016.

cigarettes, the corresponding minimum specific excise taxes will rise to 120 Moldovan Leu in 2017, 160 in 2018, and 200 in 2019. The average excise tax burden (excise tax as percentage of retail price) will increase from 39 percent in 2016 to 45 percent in 2017. The total tax burden (including excise taxes, VAT, and other duties on tobacco as a percentage of retail price) will increase from 56 percent in 2016 to 62 percent in 2017 (World Bank Group 2016).

In increasing the tobacco tax rates to raise the price of cigarettes, the goal is to confront a widespread smoking epidemic in Moldova, where a quarter of the population (25.3 percent) currently smokes (Figure 6). Moldovan men smoke much more than women (43.6 percent vs. 5.6 percent), contributing to lung disease mortality rates that are more than twice as high among men as among women. Other characteristics of Moldova’s current tobacco-use epidemic include the following: nine out of ten smokers (92.0 percent) smoke approximately 17 cigarettes daily; 20 percent of daily smokers are young people aged 24–35; 14 percent of people with at least one chronic disease are smokers.

The main causes of death in Moldova are diseases of the circulatory system followed by cancer and diseases of the digestive system. Many of these deaths can be attributed to very heavy tobacco and alcohol consumption — 57.6 percent of total male mortality and 62.3 percent of female mortality in 2010 could be attributed to smoking-related causes, while 18.8 percent of male mortality and 13.7 percent of female mortality were related

**Figure 7: Tobacco Tax Increases in Armenia, 2017–2021**

PROPOSED CHANGES	REVENUE IMPACT, BLN AMD				
	2017	2018	2019	2020	2021
<b>Gradual increase of Excise Tax rates on:</b>					
In 2017–2021, GoA increased the excise tax rate by 15% annually on vodka, whiskey, and rum (other than vodka made with fruit and berries)	+1.69	+1.86	+2.05	+2.24	+2.46
<b>Tobacco products</b>					
In 2017: 15% of maximum retail price (MRP), but not less than AMD 6,325 for the quantity of 1000;	+4.86				
In 2018: 15% of maximum retail price (MRP), but not less than AMD 7,275 for the quantity of 1000;		+4.67			
In 2019: 15% of maximum retail price (MRP), but not less than AMD 8,370 for the quantity of 1000			+4.52		
In 2020: 15% of maximum retail price (MRP), but not less than AMD 9,625 for the quantity of 1000;				+5.84	
In 2021: 15% of maximum retail price (MRP), but not less than AMD 11,070 for the quantity of 1000					+6.53

Source: World Bank Group 2016.

to alcohol consumption. Though incidence of chronic liver disease and cirrhosis has decreased over the last five years, this remains a very significant overall cause of mortality in Moldova (118.95 per population of 100,000 men and 89.82 per population of 100,000 women in 2010) (Health for All database, WHO/Europe, <http://data.euro.who.int/hfad/>, accessed June 2017). Besides improving health outcomes, tobacco tax revenue collection is estimated to reach 1.5 percent of GDP, up from less than 1 percent, helping to expand the fiscal capacity of the government.

**Armenia:** The tobacco taxation system in Armenia began to change in 2017, as stipulated in the new Tax Code approved in October 2016. The current excise tax, which only includes an ad valorem excise tax without mandatory annual indexation, will be replaced by a combination of a 15 percent ad valorem tax rate and a new specific excise tax, to be adjusted by 15 percent every year (Figure 7). The current excise tax accounts for 31 percent of the average price of the most popular category of cigarettes smoked in the country. After introduction of the new tax regime in 2017, the excise tax burden will double, increasing to 62 percent of the average retail price by 2020. This reform is part of a larger reconfiguration of the tax code that was included in the US\$ 50 million fiscal consolidation Development Policy Operation approved by the World Bank Group Board of Directors on December 9, 2016.

**Montenegro:** A new law setting tobacco tax increases for the next three years (along with taxes on alcohol and sugary drinks) was approved by Parliament and took effect on August 1, 2017, to reach EU Tobacco Tax Directive minimum level by 2019. This is an important achievement in a country that just joined NATO and will soon join the EU. Montenegro's action could have a positive spillover impact on the rest of the Balkans. This measure, along with other fiscal reform measures, will be codified as part of an upcoming fiscal Development Policy Operation to be approved by the World Bank Group in October 2017.

The reform includes the following schedule for tax increases:

#### Excise on cigarettes:

##### *Specific excise on cigarettes:*

- Until 1 August 2017, EUR 24.00 per 1000 pieces
- From 1 August to 31 December 2017, EUR 30.00
- From 1 January to 31 December 2018, EUR 40.00,
- From January 1 to December 31, 2019, EUR 50.00.

##### *Proportional excise on cigarettes (ad valorem):*

- From 1 August 2017 to 31 December 2017, 32 percent,
- From January 1, 2018 to December 31, 2018, 32 percent.

The average retail price for a pack of 20 cigarettes will increase from the current € 1.80 – € 1.90 to € 2.30 – € 2.60. Average excise tax burden (excise tax as percentage of price of a pack of 20 cigarettes) will increase: from the current 53 percent level to 57.2 percent and then to 60.0 percent. Total tax burden (including excise tax, VAT, and duties) on a pack of 20 cigarettes is expected to increase from 69 percent in 2016 to 76 percent in 2019. Total government tax revenue on tobacco is expected to increase from € 60.9 million in 2016 to an estimated € 107.2 million in 2019.

**Botswana:** Botswana is a member of the Southern African Customs Union (SACU), which comprises five countries in southern Africa, all bordering South Africa (Botswana, Lesotho, Namibia, South Africa, and Swaziland). The SACU is one of the oldest customs unions in the world. All member states with the exception of Botswana form part of the Common Monetary Area. Trade integration takes the form of free movement of goods and services, internally, and a common external tariff. All tariff revenues form part of a common revenue pool. Coordination of domestic taxes also occurs, with a harmonized excise tax regime where domestic excise taxes on products including tobacco and alcohol are set by South Africa and matched by all other member states. However, member states are still able to levy excise taxes independently of the customs union (e.g., fuel taxes in South Africa), or above the South African excise tax (e.g., tobacco and alcohol levies in Botswana). However, these “extra” excise taxes are termed levies, and they do not form part of the common revenue pool.

Building upon its previous experience with an alcohol levy, the Government of Botswana introduced a tobacco levy of 30 percent of unit cost in 2014, on top of SACU average excise tax on tobacco. The aim was to address the growing burden of tobacco use and its negative impact on population health, due to the rapid growth of noncommunicable diseases, many of them tobacco-related. The money obtained from the levy is collected by the Botswana Unified Revenue Services, within the Ministry of Finance and Development Planning, and deposited in a central account managed by the Ministry of Health, in recognition of the impact of tobacco use on the health sector, which deals with the morbidity and mortality caused by tobacco. With the introduction of the levy, the retail price for a pack of 20 cigarettes of the most-sold brand now stands at US\$ 3.12, and total taxes as a percentage of retail price of the most-sold brand rose to 62.68 percent, up from 51.99 percent in 2012.

**Work in Other Countries.** Besides the technical support provided over 2013–2015 in Botswana, Gambia, Ghana, Namibia, Peru, and Philippines, ongoing support by World Bank Group teams is being provided to governments in Azerbaijan, Belarus, Ethiopia, Gabon, Indonesia, Lesotho, Nigeria, Senegal, Sierra Leone, Tonga, and Trinidad & Tobago to model the impact of tobacco tax policy reforms on price, consumption, and revenue flows. Policy dialogue and/or initial work is underway with an expanding group of countries

around the world, including Bangladesh, China, Cote d'Ivoire, Mongolia, Mozambique, and Sri Lanka, as well as with the Organization of Eastern Caribbean States (OECS) and the West Africa Economic Monetary Union (WAEMU).

**Analytical Work.** The World Bank Group is supporting analytical work focusing on country experiences to expand the global tobacco taxation knowledge base and inform policy making on the basis of evidence. A list of recent assessment reports, which are being widely disseminated, is provided in Box 1 below.

**Knowledge Management.** Under the World Bank Group's Global Tobacco Control Program, support is also being provided to facilitate knowledge sharing and peer-to-peer exchanges, building upon existing platforms such as the Joint Learning Network (JLN) for universal health coverage. Knowledge sharing among policy makers and practitioners is being fostered through conferences and policy forums, such as "Tobacco Taxation: Win-Win for Public Health and Domestic Resource Mobilization," a conference convened at the 2017 World Bank Group-International Monetary Fund (IMF) Spring Meetings, in Washington, DC.<sup>3</sup> Delegations from ministries of finance and health from 35 countries, representatives from regional economic and political bodies, and partner organizations joined this two-day forum to share their implementation experiences in designing tobacco tax policies that address the dual goals of reduced tobacco use and increased domestic resource mobilization.<sup>4</sup>

## ADVANCING THE TOBACCO TAXATION AGENDA

While international financial assistance is necessary to help countries grow and develop, governments of LMICs have an obligation to mobilize domestic resources to realize the vision of a world free of extreme poverty, where there is opportunity for all. It is clear that domestic resource mobilization depends in large measure on economic growth, which is supported by an enabling economic, social, and environmental policy environment, including counter-cyclical fiscal policies, adequate tax policies and their implementation, and good governance. However, while growth can energize domestic resource mobilization, better domestic revenue generation can also fund investments to ignite economic growth. As noted before, this mutually supportive relationship is recognized in the 2015 Financing for Development Addis Ababa Action Agenda, which countries collectively adopted (United Nations 2015). The Action Agenda places the mobilization and use of domestic resources, reflecting national ownership, at the heart of the common pursuit of sustainable development (Junquera-Varela 2017).

<sup>3</sup> To download a video that summarizes key interventions at the event, see: <http://www.worldbank.org/en/news/video/2017/04/18/tobacco-taxation-win-win-for-public-health-domestic-resources-mobilization-conference-highlights>

<sup>4</sup> See detailed documentation on this event, including a summary report, at <http://www.worldbank.org/en/events/2017/04/18/tobacco-taxation-win-win-for-public-health-domestic-resources-mobilization-conference>



## Box 1 // Recent World Bank Group Reports on Tobacco Taxation and its Impact in Countries

“Estimating the distributional impact of increasing taxes on tobacco products in Armenia” (2017): <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>

“Tobacco Taxation in Turkey: An Overview of Policy Measures and Results” (2017): <http://documents.worldbank.org/curated/en/320121492424907154/Tobacco-taxation-in-Turkey-an-overview-of-policy-measures-and-results>

“Cigarette Affordability in China: 2001–2016” (2017): <http://documents.worldbank.org/curated/en/130301492424519317/Cigarette-affordability-in-China-2001-2016>

“Tobacco taxation in the European Union: an overview” (2017): <http://documents.worldbank.org/curated/en/493581492415549898/Tobacco-taxation-in-the-European-Union-an-overview>

“Modeling the Long-Term Health and Cost Impacts of Reducing Smoking Prevalence through Tobacco Taxation in Ukraine” (2017): <http://documents.worldbank.org/curated/en/417831489985759573/Modeling-the-long-term-health-and-cost-impacts-of-reducing-smoking-prevalence-through-tobacco-taxation-in-Ukraine>

“Expanding the Global Tax Base: Taxing to Promote Public Goods: Tobacco Taxes” (2016): <http://documents.worldbank.org/curated/en/820951485943150390/Summary-report>

“Are Tobacco Taxes Really Regressive? Evidence from Chile” (2017): <http://documents.worldbank.org/curated/en/389891484567069411/Are-tobacco-taxes-really-regressive-evidence-from-Chile>

“Sin Tax Reform in the Philippines Transforming Public Finance, Health, and Governance for More Inclusive Development” (2016): <https://openknowledge.worldbank.org/handle/10986/24617>

Section on tobacco taxation included in: “Indonesia: Health Financing System Assessment: Spend More & Better” (2016): <https://openknowledge.worldbank.org/handle/10986/26311>

“Ukraine – Public Finance Review” (2017) see tobacco taxation section: <http://documents.worldbank.org/curated/en/476521500449393161/Ukraine-Public-finance-review>

Infographics: “Stop Smoking: It’s Deadly and Bad for the Economy” (2017): <http://www.worldbank.org/en/news/infographic/2017/05/31/stop-smoking-its-deadly-and-bad-for-the-economy>

A dedicated Tobacco Control site has been established to offer access to posted WBG reports, blogs, and other documentation: <http://www.worldbank.org/en/topic/health/brief/tobacco>

The development community needs to redouble its commitment to support national governments to raise taxes on tobacco products as a “win-win” policy measure for public health and domestic resource mobilization. As we move into the third decade of the 21st century, the achievement of smoke-free societies should be a critical marker of sustainable development. Raising tobacco taxes to make these deadly products unaffordable is the most cost-effective measure to reduce tobacco use or to prevent young people from becoming tobacco addicts. The benefits of higher tobacco taxes and prices are obvious, as better health outcomes for individuals and entire communities result from reduced consumption of tobacco products. Higher tobacco taxes also help expand a country’s tax base, generating resources to fund the progressive realization of programs that benefit the entire population: universal health coverage; scaling up mental health services; early childhood development initiatives; and education for all, to name only these few. Data from different countries indicate that the annual tax revenue from excise taxes on tobacco can be substantial.

Over the short and medium terms, the World Bank Group is committed to support the implementation of the global tobacco control effort outlined in the FCTC, with a focus on tobacco taxation. In advancing this agenda, the World Bank Group, working together with WHO and other partners in support of countries, will contribute to preventing the human tragedy of tobacco-related illness and saving large numbers of lives each year. By doing so, it will help honor the memory of loved ones who suffered and were lost to tobacco-related diseases. This shared effort will contribute to more inclusive economic and social development across the world.

## REFERENCES

- Akerloff, G.A. 2016. "Phishing for Phools: The Economics of Manipulation and Deception, Taxing to Promote Public Goods, and Tobacco Taxes." Presentation at World Bank Conference: "Winning the Tax Wars: Global Solutions for Developing Countries," May 24, 2016. <http://www.worldbank.org/en/topic/health/brief/tobacco>
- Akerlof, G.A., Shiller, R.J. 2015. *Phishing for Phools: The Economics of Manipulation and Deception*. New Jersey: Princeton University Press.
- Brumby, J. 2014. "The seven salvos of sin (taxes)". The World Bank Blogs, March 25, 2014. Available at: <http://blogs.worldbank.org/health/seven-salvos-sin-taxes>
- Bouw, A. 2017. "Tobacco taxation in the European Union: an overview." Washington, D.C.: The World Bank Group.
- Carpenter, C., and Cook, P.J. 2008. "Cigarette Taxes and Youth Smoking: New Evidence from National, State, and Local Youth Risk Behavior Surveys." *Journal of Health Economics* 27 (2): 287–299.
- Centers for Disease Control and Prevention (CDC). 2016. "Table 17. Age-Adjusted Death Rates for Selected Causes of Death, by Sex, Race, and Hispanic Origin: United States, Selected Years 1950–2014." National Center for Health Statistics.
- Chaloupka, F.J., Hu, T-w., Warner, K.E., Jacobs, R., and Yurekli, A. 2000. "The Taxation of Tobacco Products." In Jha, Prabhat and Frank J. Chaloupka, eds., *Tobacco Control in Developing Countries*. Oxford: Oxford University Press.
- Chaloupka, F.J., and Warner, K.E. 2000. "The Economics of Smoking." *Handbook of Health Economics* 1B: 1539–1627.
- Chetty, R., Stepner, M., Abraham, S., Lin, S., Scuderi, B., Turner, N., Bergeron, A. and Cutler, D. 2016. "The Association Between Income and Life Expectancy in the United States, 2001–2014." *Journal of the American Medical Association* 315 (16): 1750–1766.
- Christiansen, V., Smith, S. 2012. "Externality-correcting taxes and regulation." *Scandinavian Journal of Economics* 114(2):358–383.
- Conference of the Parties to the WHO Framework Convention on Tobacco Control (FCTC). 2016. "Delhi Declaration." Seventh session Delhi, India, 7–12 November 2016. [http://www.who.int/fctc/cop/cop7/FCTC\\_COP7\\_29\\_EN.pdf?ua=1](http://www.who.int/fctc/cop/cop7/FCTC_COP7_29_EN.pdf?ua=1)
- Congressional Budget Office (CBO). 2012. "Raising the Excise Tax on Cigarettes: Effects on Health and the Federal Budget." Report.
- Cook, P. 2011. *Paying the Tab: The Costs and Benefits of Alcohol Control*. Princeton, New Jersey: Princeton University Press.
- Cook, P. 2016. "Paying the Tab: The Costs and Benefits of Tobacco and Alcohol Control." Presentation at World Bank Conference: "Winning the Tax Wars: Global Solutions for Developing Countries," May 24, 2016. <http://www.worldbank.org/en/topic/health/brief/tobacco>

- Council of Economic Advisers (CEA). 2016. "Inequality in Early Childhood and Effective Public Policy Interventions." 2016 Economic Report of the President.
- Currie, J. and Schwandt, H. 2016. "Mortality Inequality: The Good News from a County-Level Approach." *Journal of Economic Perspectives* 30 (2): 29–52.
- Department of Health and Human Services (HHS). 2015. "Valuing Utility Offsets to Regulations Affecting Addictive or Habitual Goods." Report.
- Fuchs, A., and Meneses, F. 2017. "Are Tobacco Taxes Really Regressive?: Evidence from Chile." World Bank Report Number 112072. 112072. Washington, D.C.: World Bank Group. <http://documents.worldbank.org/curated/en/389891484567069411/Are-tobacco-taxes-really-regressive-evidence-from-Chile>
- Furman, J. 2016. "Policy, Politics, and the Tripling of Federal Tobacco Taxes in the United States to Deter People from Smoking, Save Lives, and Mobilize Revenue over the last 30 years. Six Lessons from the U.S. Experience with Tobacco Taxes." Presentation at World Bank Conference: "Winning the Tax Wars: Global Solutions for Developing Countries," May 24, 2016. <http://www.worldbank.org/en/topic/health/brief/tobacco>
- Gallet, C. and List, J.A.. 2003. "Cigarette Demand: A Meta- Analysis of Elasticities." *Health Economics* 12 (10): 821–835.
- Goodchild M., Nargis N., Tursan d'Espaignet, E. 2017. "Global economic cost of smoking-attributable diseases." *Tob Control* 2017;0:1–7. doi:10.1136/tobaccocontrol-2016-053305.
- Goodchild, M., Perucic, A-M., Nargis, N. 2016. "Modelling the impact of raising tobacco taxes on public health and finance." *Bull World Health Organ* 94:250–257. Available at: <http://www.who.int/bulletin/volumes/94/4/15-164707.pdf>
- Government Accountability Office (GAO). 2012. "Tobacco Taxes: Large Disparities in Rates for Smoking Products Trigger Significant Market Shifts to Avoid Higher Taxes." Report No. GAO-12–475.
- Gravely, S., Giovino, G.A., Craig, L., Commar, A., Tursan D'Espaignet, E., Schotte, K., Fong, G.T. 2017. "Implementation of key demand-reduction measures of the WHO Framework convention on Tobacco Control and change in smoking prevalence in 126 countries: an association study." *Lancet Public Health* 2017;2: e166–74. Published Online March 21, 2017 [http://dx.doi.org/10.1016/S2468-2667\(17\)30045-2](http://dx.doi.org/10.1016/S2468-2667(17)30045-2)
- Gruber, J., and B. Koszegi. 2001. "Is Addiction Rational? Theory and Evidence." *Quarterly Journal of Economics* 116(4):1261–1303.
- Gruber, J. 2008. "A Modern Economic View of Tobacco Taxation". Paris: International Union Against Tuberculosis and Lung Disease.
- Hu, T-W. (Editor). 2016. *Economics of Tobacco Control in China: From Policy Research to Practice*. Hackensack, NJ: World Scientific Publishing.
- Huang, J. and Chaloupka, F.J. 2012. "The Impact of the 2009 Federal Tobacco Excise Tax Increase on Youth Tobacco Use." NBER Working Paper No. 18026.
- International Agency for Research on Cancer (IARC). 2011. "Effectiveness of Tax and Price Policies for Tobacco Control." IARC Handbooks of Cancer Prevention: Tobacco Control, Vol. 14.
- International Centre for Settlement of Investment Disputes (ICSID). 2016. "ICSID's Award of the Tribunal (July 8, 2016). Philip Morris Brand Sàrl (Switzerland), Philip Morris Products S.A. (Switzerland) and Abal Hermanos S.A. (Uruguay) v. Oriental Republic of Uruguay (ICSID Case No. ARB/10/7)." English (Original); Spanish (Original). Available at: <http://www.italaw.com/sites/default/files/case-documents/italaw7417.pdf> and <https://www.iisd.org/itn/2016/08/10/philip-morris-brands-sarl-philip-morris-products-s-a-and-abal-hermanos-s-a-v-oriental-republic-of-uruguay-icsid-case-no-arb-10-7/> Philip Morris Brand Sàrl (Switzerland), Philip Morris Products S.A. (Switzerland) and Abal Hermanos S.A. (Uruguay) v. Oriental Republic of Uruguay (ICSID Case No. ARB/10/7)
- Jha, P. and Chaloupka, F.J. 1999. *Curbing the Epidemic: Governments and the Economics of Tobacco Control*. Washington, DC: World Bank.

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

Jha, P. and Peto, R. 2014. "Global Effects of Smoking, of Quitting, and of Taxing Tobacco." *N Engl J Med* 370:60–68. Available at: <http://www.nejm.org/doi/full/10.1056/NEJMra1308383#t=article>

Kaiser, K., Bredenkamp, C., Iglesias, R. 2016. "Sin Tax Reform in the Philippines: Transforming Public Finance, Health, and Governance for More Inclusive Development. *Directions in Development — Countries and Regions*". Washington, DC: World Bank. Available at: <https://openknowledge.worldbank.org/handle/10986/24617>

Khokhar, T. 2016. "The global state of smoking in 5 charts." *The World Bank Blogs*, May 31, 2016. Available at: <http://blogs.worldbank.org/opendata/global-state-smoking-5-charts>

Kremer, A. 2016. "Do the right thing: Tax tobacco!" *The World Bank Blogs*, December 13, 2016. Available at: <http://blogs.worldbank.org/europeandcentralasia/do-right-thing-tax-tobacco>

Laxminarayan, R., and Deolalikar, A. 2004. "Tobacco Initiation, Cessation, and Change: Evidence from Vietnam." *Health Economics* 13 (12): 1191–1201.

Lancet Editorial. 2017. "Tobacco Elimination; Economic and Public Health Imperative." *The Lancet* 389: 225. January 21, 2017.

Marquez, P.V. 2012. "Tobacco Kills: So what to do in Africa?" *The World Bank Blogs*, May 15, 2012. Available at: <http://blogs.worldbank.org/nasikiliza/tobacco-kills-so-what-to-do-in-africa>

Marquez, P.V. 2013a. "Back from the Cold: Russia Confronts Tobacco." *The World Bank Blogs*, April 5, 2013. Available at: <http://blogs.worldbank.org/health/back-from-the-cold-russia-confronts-tobacco>

Marquez, P.V. 2014. "The Tobacco Dilemma: Corporate Profits or Customers' Health?" *The World Bank Blogs*, March 26, 2014. Available at: <http://blogs.worldbank.org/health/tobacco-dilemma-corporate-profits-or-customers-health>

Marquez, P.V. 2015a. "Good News from the Global War on Tobacco Use." *The World Bank Blogs*, March 26, 2015. Available at: <http://blogs.worldbank.org/health/good-news-global-war-tobacco-use>

Marquez, P.V. 2015b. "World No Tobacco Day 2015: On illicit trade and taxes." *The World Bank Blogs*, May 29, 2015. Available at: <http://blogs.worldbank.org/health/world-no-tobacco-day-2015-illicit-trade-and-taxes>

Marquez, P.V. 2015c. "Making the public health case for tobacco taxation." *The World Bank Blogs*, July 7, 2015. Available at: <http://blogs.worldbank.org/health/making-public-health-case-tobacco-taxation>

Marquez, P.V. 2015d. "Running away from "Tobacco Road." *The World Bank Blogs*, December 15, 2015. Available at: <http://blogs.worldbank.org/health/running-away-tobacco-road>

Marquez, P.V. 2016a. "Time to put "health" into universal health coverage." *The World Bank Blogs*, January 14, 2016. Available at: <http://blogs.worldbank.org/health/time-put-health-universal-health-coverage>

Marquez, P.V. 2016c. "Economic slowdown and financial shocks: can tobacco tax increases help?" *The World Bank Blogs*, Feb 8, 2016. Available at: <http://blogs.worldbank.org/voices/economic-slowdown-and-financial-shocks-can-tobacco-tax-increases-help>

Marquez, P.V. 2016d. "Taxing tobacco and the new vision for financing development." *The World Bank Blogs*, April 18, 2016. Available at: <http://blogs.worldbank.org/voices/taxing-tobacco-and-new-vision-financing-development>

Marquez, P.V. 2016e. "Plain packaging & tobacco taxes: an antidote for manipulation and deception." *The World Bank Blogs*, May 31, 2016. Available at: <https://blogs.worldbank.org/health/plain-packaging-tobacco-taxes-antidote-manipulation-and-deception>

Marquez, P.V. 2016h. "Expanding the Global Tax Base: Taxing to Promote Public Goods: Tobacco Taxes. Summary Report." Washington, D.C.: World Bank Group. Available at: <http://documents.worldbank.org/curated/en/820951485943150390/Summary-report>

- Marquez, P.V. 2017c. "Re-energizing tobacco control with evidence-based findings." The World Bank Blogs, March 30, 2017. Available at: <http://blogs.worldbank.org/health/re-energizing-tobacco-control-evidence-based-findings>
- Marquez, P.V. and Farrington, J.L. 2013b. "The challenge of non-communicable diseases and road traffic injuries in Sub-Saharan Africa : an overview." Washington D.C: World Bank Group.
- Marquez, P.V., and Moreno-Dodson, B. 2016b. "Economic slowdown and financial shocks: Can tobacco tax increases help?" The World Bank Blogs, February 8, 2016. Available at: <http://blogs.worldbank.org/voices/economic-slowdown-and-financial-shocks-can-tobacco-tax-increases-help>
- Marquez, P.V., Moreno-Dodson, B., and Dutta, S. 2017b. "Recent Gains on Global Tobacco Taxation." The World Bank Blogs, March 20, 2017. Available at: <http://blogs.worldbank.org/health/recent-gains-global-tobacco-taxation>
- Marquez, P.V., and Walker, M. 2016f. "Uruguay: A giant leap to prevent tobacco-assisted suicide." The World Bank Blogs, October 10, 2016. Available at: <http://blogs.worldbank.org/health/uruguay-giant-leap-prevent-tobacco-assisted-suicide>
- Marquez, P.V., and Walker, M. 2017a. "Healthy women are the cornerstone of healthy societies." The World Bank Blogs, January 12, 2017. Available at: <http://blogs.worldbank.org/health/healthy-women-are-cornerstone-healthy-societies>
- Marquez, P.V., and Zheng, R. 2016g. "China's 2015 tobacco tax adjustment: a step in the right direction." The World Bank Blogs, November 9, 2016. Available at: <https://blogs.worldbank.org/health/china-s-2015-tobacco-tax-adjustment-step-right-direction>
- Ministry of Health of Ukraine, Kiev International Institute of Sociology, World Health Organization Regional Office for Europe, National Academy of Medical Sciences of Ukraine, and U.S. Centers for Disease Control and Prevention. 2017. "Global Adult Tobacco Survey Ukraine 2017." Available at: <http://www.euro.who.int/en/countries/ukraine/publications3/global-adult-tobacco-survey-ukraine-2017>
- Mishra S, Joseph R.A, Gupta P.C., et al. 2016. "Trends in bidi and cigarette smoking in India from 1998 to 2015, by age, gender and education." *BMJ Global Health* 1:e000005. doi:10.1136/bmjgh-2015-000005.
- National Academies of Sciences, Engineering, and Medicine. 2015. *The Growing Gap in Life Expectancy by Income: Implications for Federal Programs and Policy Responses*. Washington: National Academies Press.
- 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](https://cancercontrol.cancer.gov/brp/tcrb/monographs/21/docs/m21_exec_sum.pdf)
- Orzechowski and Walker. 2015. *The Tax Burden on Tobacco: Historical Compilation, Volume 49, 2014*. Arlington, VA.
- Paul, J. 2016. "The Impact of the 2013 Sin Tax Reform in the Philippines." Presentation at World Bank Conference: "Winning the Tax Wars: Global Solutions for Developing Countries," May 24, 2016. <http://www.worldbank.org/en/topic/health/brief/tobacco>
- Petit, P., and Nagy, J. 2016. "How to design and enforce tobacco excises?" How-to notes. Fiscal Affairs Department, International Monetary Fund, October 2016.
- Peto R et al. 1996. "Mortality from smoking worldwide." *British Medical Bulletin* 52(1):12–21.
- Postolovska, I., and Lavado, R. 2016. "Sector Specific Sources of Revenue: Tobacco Tax." Power point presentation at World Bank Group Country Office, Yerevan, Armenia, May 2016.
- Postolovska I, Lavado, R., Tarr, G., Verguet, S. 2017. "Estimating the distributional impact of increasing tobacco taxes in Armenia: Results from an extended cost-effectiveness analysis." Washington, DC: The World Bank.
- Rosenberg, J. 2015. "The Distributional Burden of Federal Excise Taxes." Tax Policy Center. Report.
- Savedoff, W. and Alwang, A. 2015. "The Single Best Health Policy in the World: Tobacco Taxes." CGD Policy Paper 062. Washington DC: Center for Global Development. <http://www.cgdev.org/publication/single-best-health-policy-world-tobacco-taxes>

Sayginsoy, O., Yurekli, A.A., and de Beyer, J. 2002. "Cigarette Demand, Taxation, and the Poor: A Case Study of Bulgaria." Health, Nutrition, and Population Discussion Paper, Economics of Tobacco Control Paper No. 4.

Schelling, T.C. 1986. "Economics and Cigarettes." *Preventive Medicine* 15:549-560.

Schelling, T.C. 1992. "Addictive drugs: the cigarette experience." *Science* 255:5043: 430+. Science in Context, link.galegroup.com/apps/doc/A11922197/SCIC?u=duke\_perkins&xid=c8222b07. Accessed 18 Dec. 2016.

Serra, F. 2016. "Tobacco Taxation and International Litigation: Uruguay's Experience." Presentation at World Bank Conference: "Winning the Tax Wars: Global Solutions for Developing Countries," May 24, 2016.

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

Sunley, E. 2009. "Taxation of cigarettes in the Bloomberg Initiative Countries: overview of policy issues and proposals for reform." [http://www.tobaccofreeunion.org/images/stories/economic-report/Sunley\\_White\\_paper\\_12\\_09\\_09.pdf](http://www.tobaccofreeunion.org/images/stories/economic-report/Sunley_White_paper_12_09_09.pdf)

The Economist. 2017. "Cough up. How to cut smoking in poor countries." Leaders, June 1, 2017. Available at: <http://www.economist.com/news/leaders/21722828-recipe-get-people-quit-well-known-why-are-so-many-governments-ignoring-it-how?frsc=dg%7Cc>. Accessed on June 1, 2017.

United Nations. 2015. Transforming our world: the 2030 Agenda for Sustainable Development. New York: United Nations.

<http://www.un.org/sustainabledevelopment/sustainable-development-goals/>

U.S. Department of Health, Education, and Welfare. 1964. *Smoking and Health: Report of the Advisory Committee to the Surgeon General of the Public Health Service*. Washington: U.S. Department of Health, Education, and Welfare, Public Health Service, Center for Disease Control, 1964. PHS Publication No. 1103. U.S. Department of Health, Education, and Welfare. Available at: [https://profiles.nlm.nih.gov/NN/B/C/FT/\\_/nnbcft.pdf](https://profiles.nlm.nih.gov/NN/B/C/FT/_/nnbcft.pdf)

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, 2014. Printed with corrections, January 2014. Available at: <https://www.surgeongeneral.gov/library/reports/50-years-of-progress/full-report.pdf>

U.S. National Cancer Institute and World Health Organization. 2016. "The Economics of Tobacco and Tobacco Control." National Cancer Institute Tobacco Control Monograph 21. NIH Publication No. 16-CA-8029A. Bethesda, MD: U.S. Department of Health and Human Services, National Institutes of Health, National Cancer Institute; and Geneva, CH: World Health Organization; 2016. This monograph and its supplemental materials may be found electronically at <http://cancercontrol.cancer.gov/brp/tcrb/monographs/21/index.html>

van Hasselt, M., Kruger, J., Han, B., Caraballo, R.S., Penne, M.A., Loomis, B. and Gfroerer, J.C. 2015. "The Relation Between Tobacco Taxes and Youth and Young Adult Smoking: What Happened Following the 2009 U.S. Federal Tax Increase on Cigarettes?" *Addictive Behaviors* 45: 104–109.

van Walbeek, C. P. 2002. "The Distributional Impact of Tobacco Excise Increases" *South African Journal of Economics* 70 (3):258–267.

Verguet, S., Gauvreau, C.L., Mishra, M., et al, 2015. "The consequences of tobacco tax on household health and finances in rich and poor smokers in China: an extended cost-effectiveness analysis." *Lancet Glob Health* 3: e206–16.

Wan, W. 2017. "America's new tobacco crisis: The rich stopped smoking, the poor didn't." *The Washington Post*, June 13, 2017. Available at: [https://www.washingtonpost.com/national/americas-new-tobacco-crisis-the-rich-stopped-smoking-the-poor-didnt/2017/06/13/a63b42ba-4c8c-11e7-9669-250d0b15f83b\\_story.html?tid=ss\\_tw&utm\\_term=.7be1f38a972c](https://www.washingtonpost.com/national/americas-new-tobacco-crisis-the-rich-stopped-smoking-the-poor-didnt/2017/06/13/a63b42ba-4c8c-11e7-9669-250d0b15f83b_story.html?tid=ss_tw&utm_term=.7be1f38a972c). Accessed on June 16, 2017.

Wang, S., Marquez, P.V., and Langenbrunner, J. 2011. "Toward a Healthy and Harmonious Life in China: Stemming the Rising Tide of Non-Communicable Diseases". World Bank Report Number 62318-CN. Washington, D.C.: World Bank Group.

- Webber, L., Andreeva, T.I., Sotomayor, R., Marquez, P.V., et al. 2017. "Modeling the Long-Term Health and Cost Impacts of Reducing Smoking Prevalence through Tobacco Taxation in Ukraine." Washington, D.C.: The World Bank Group.
- World Bank Group. Global Tobacco Control Program website: <http://www.worldbank.org/en/topic/health/brief/tobacco>
- World Bank Group. 2016. Tobacco Tax Modelling in Armenia, Colombia, Moldova, and Ukraine. Internal Working Documents.
- World Health Organization (WHO). 2003. "WHO framework convention on tobacco control." [http://www.who.int/fctc/text\\_download/en/](http://www.who.int/fctc/text_download/en/) (accessed May 2, 2017).
- World Health Organization (WHO). 2008. "WHO Report on the Global Tobacco Epidemic, 2008: the MPOWER package." Geneva:WHO.
- World Health Organization (WHO). 2009. "WHO Report on the Global Tobacco Epidemic, 2009: Implementing Smoke-Free Environments". Geneva: WHO.
- World Health Organization (WHO). 2010. "WHO Technical Manual on Tobacco Tax Administration." Geneva: WHO.
- World Health Organization (WHO). 2013. Global action plan for the prevention and control of noncommunicable diseases 2013–2020. Geneva: WHO. [http://apps.who.int/iris/bitstream/10665/94384/1/9789241506236\\_eng.pdf](http://apps.who.int/iris/bitstream/10665/94384/1/9789241506236_eng.pdf)
- World Health Organization (WHO). 2015. "WHO Report on the Global Tobacco Epidemic, 2015: Raising Taxes on Tobacco." Geneva: WHO.
- World Health Organization (WHO). 2017. World No Tobacco Day, 31 May 2017. <http://www.who.int/campaigns/no-tobacco-day/2017/event/en/>
- 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.
- Yach, D., and H. Wipfli. 2006. "A Century of Smoke." *Annals of Tropical Medicine and Parasitology* 100(5–6):465–79.
- Zheng, R. 2016. "2015 Tobacco Taxation Reform in China: Results and Challenges." Presentation at World Bank Conference: "Winning the Tax Wars: Global Solutions for Developing Countries," May 24, 2016. <http://www.worldbank.org/en/topic/health/brief/tobacco>
- Zheng, R., Yang, W., Xiaoxia, E., Hu, X., Marquez, P.V. 2017. "Cigarette affordability in China: 2001–2016." Washington, D.C.: The World Bank Group.





## 2

*Death and Taxes*

# GLOBAL EFFECTS OF SMOKING, OF QUITTING, AND OF TAXING TOBACCO

*Prabhat Jha and Richard Peto*

## BACKGROUND

On current smoking patterns, with about 50 percent of young men and 10 percent of young women becoming smokers in early adult life and relatively few stopping, annual tobacco deaths will rise from about 5 million in 2010 to more than 10 million a few decades hence (Jha 2009; Peto and Lopez 2001; Peto et al. 2015), as the young smokers of today reach middle and old age.<sup>5</sup> This is due partly to population growth and partly to generations where few smoked substantial numbers of cigarettes throughout adult life being succeeded by generations where many did so. There were about 100 million deaths from tobacco in the 20th century, most in developed countries (Jha 2009; Peto and Lopez 2001). If current smoking patterns persist, tobacco will kill about 1 billion people this century, most in low- or middle-income countries (LMICs). About half of these deaths will be before age 70 years (Jha 2009; Peto and Lopez 2001; Peto et al. 2015; WHO 2015).

The 2013 World Health Assembly called on governments to decrease the prevalence of smoking by about a third by 2025 (WHO 2013a), which would avoid more than 200 million deaths from tobacco during the remainder of the century (Jha 2009; Peto and Lopez 2001). Price is the key determinant of smoking uptake and cessation (IARC 2011; Jha and Chaloupka 1999; Jha et al. 2015; WHO 2010). Worldwide, a reduction of about a third in smoking prevalence could be achieved by doubling the real price of cigarettes, which in many LMICs could be achieved by tripling the real excise tax on tobacco. Other non-price interventions recommended by the WHO Framework Convention on Tobacco Control (FCTC) and the WHO “MPOWER” package (WHO 2015) comprise information and regulations. These also help reduce consumption (Jha and Chaloupka 1999; Jha et al. 2015) and could

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<sup>5</sup> This chapter is an edited and updated version of a paper published in the *New England Journal of Medicine* on January 4, 2014. The journal's editors have kindly granted permission for its adaptation here.

help make substantial increases in real excise tax politically acceptable. Without large price increases, a one-third reduction in smoking would be difficult to achieve.

The United Nations has endorsed the Sustainable Development Goals (SDGs), including a call for countries to achieve a 30 percent reduction in the age-standardized death rates from non-communicable disease (NCD) between ages 30 and 70 years (Norheim et al. 2015; WHO 2013b). Widespread cessation of smoking is the most important way to help achieve both the SDG and WHO goals, as continuing to smoke throughout adult life substantially increases mortality from several major non-communicable diseases (and from tuberculosis) (Doll et al. 2004; Gajalakshmi et al. 2003; Gupta et al. 2005; Jha 2009; Jha et al. 2008; Jha et al. 2010; Jha et al. 2013; Peto and Lopez 2001; Peto et al. 2015; Pirie et al. 2103; Sakata et al. 2012; Thun et al. 2013).

To help achieve a large reduction in smoking in the 2010s or 2020s, governments, economists, health professionals, journalists and other opinion leaders should appreciate the full eventual hazards of smoking cigarettes from early adult life, the benefits of stopping at various ages, the eventual magnitude of the epidemic if current smoking patterns persist, and the effectiveness of tax increases and other interventions to reduce cigarette consumption.

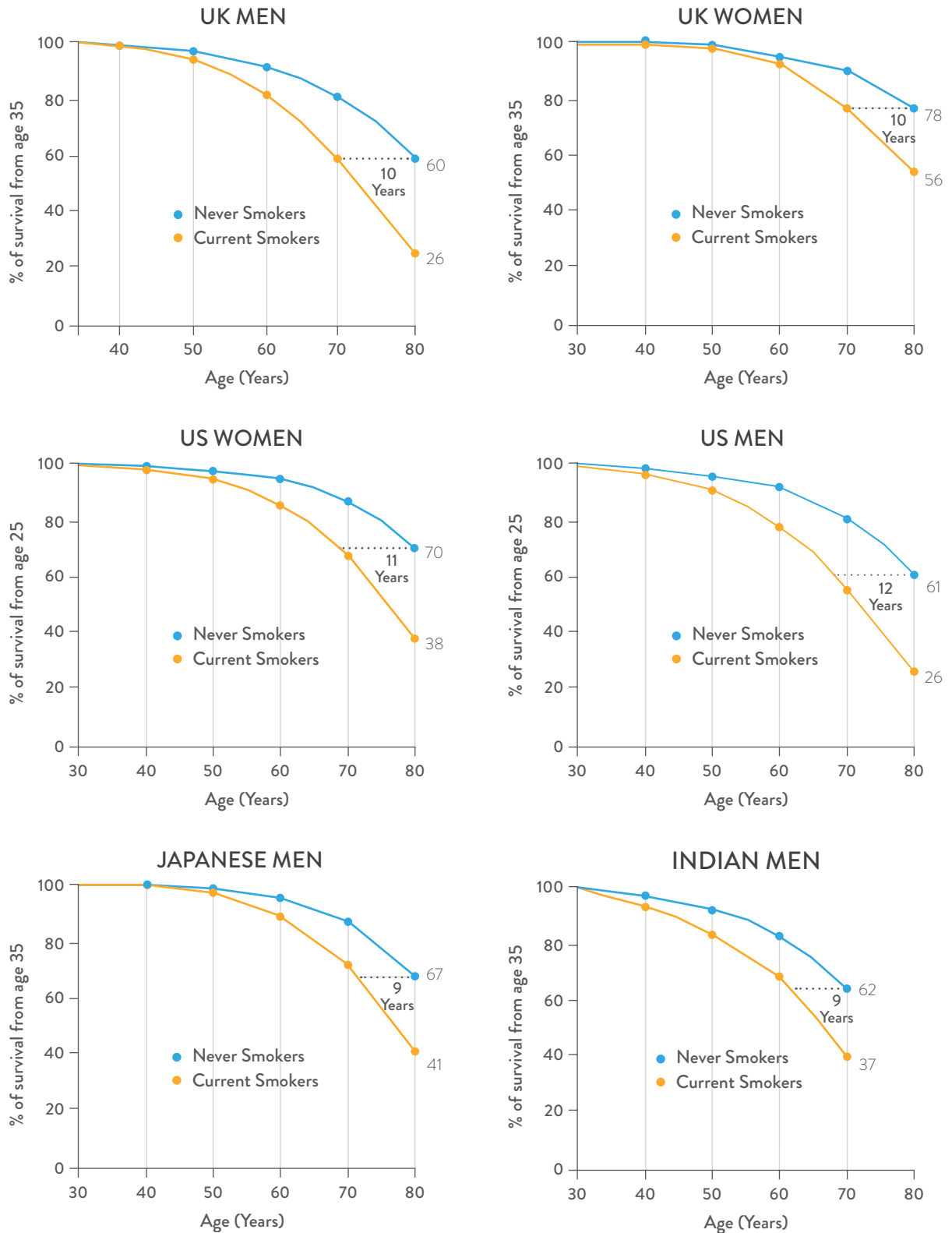
## THREE KEY MESSAGES FOR THE INDIVIDUAL CIGARETTE SMOKER IN THE 21<sup>ST</sup> CENTURY

**First, the risk is big.** Large recent studies in the United Kingdom, United States, Japan, and India have examined the eventual effects on mortality in populations of men and of women where many began to smoke in early adult life and did not quit (Doll et al. 2004; Jha et al. 2008; Jha et al. 2013; Pirie et al. 2103; Sakata et al. 2012; Thun et al. 2013). All found that in middle age (about 30–69 years) cigarette smokers had two or three times the mortality rate of otherwise similar never-smokers, leading to a reduction in lifespan by an average of about 10 years (Figure 1). This average reduction combines zero loss for those not killed by tobacco with an average loss of two decades or more for those who are killed by it.

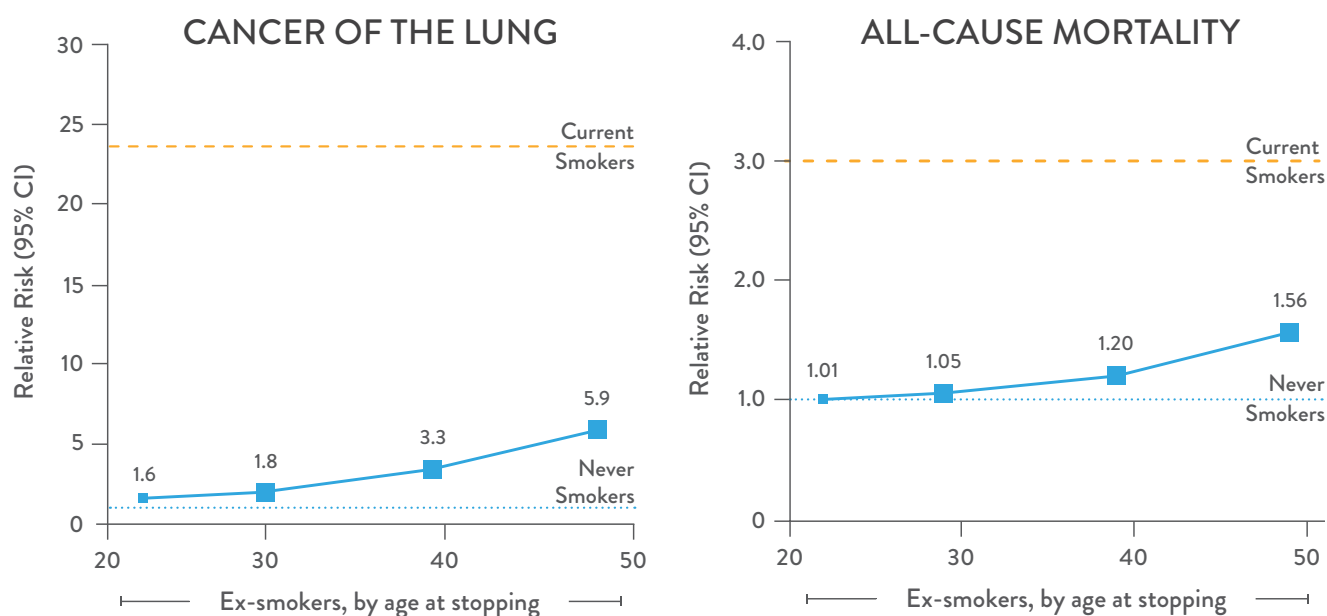
**Second, many of those killed are still in middle age, losing many years of life.** Some of those killed in middle age might have died soon anyway, but others might have lived on for decades. On average, those killed by smoking in middle age lose about 20 years of never-smoker life expectancy.

**Third, stopping smoking works.** Those who have smoked cigarettes since early adult life but stop at 30, 40, or 50 years of age gain, respectively, about ten, nine, and six years of life expectancy, compared with those who continue smoking (Figure 2).

**Figure 1: Loss of a Decade of Life Expectancy from Smoking Cigarettes Throughout Adulthood**



Cigarette smoker versus never-smoker probabilities of survival from age 35 among U.K. men (Doll et al. 2004) and women (Pirie et al. 2013), U.S. men and women (Jha et al. 2013), Japanese men (Sakata et al. 2012), and Indian men (Jha et al. 2008).

**Figure 2: The Benefits of Stopping Smoking at about 30, 40 or 50 Years of Age in Women**

Left, all-cause mortality, right: lung cancer mortality. Multivariate-adjusted relative risks (1.0 for never-smokers) in ex-smokers by age at stopping, and in current smokers. Ex-smokers and smokers had both on average begun to smoke at age 19 years, and consumed similar numbers of cigarettes per day.

Source: UK Million Women Study of women born around 1940 (Jha et al. 2013)

## SLOW EMERGENCE OF THE FULL EVENTUAL HAZARDS OF SMOKING

Tobacco is the biggest external cause of non-communicable disease, responsible for even more deaths than obesity both in countries such as the United States (Peto, Whitlock, and Jha 2010) and globally (Finucane et al. 2011). Though the main hazards are not seen until middle age, the risks in middle age are far greater for smokers who started in early adult life than for those who started somewhat later. This means that the smoker versus never-smoker mortality rate ratio is much more extreme now (Figures 1 and 2) than it was half a century earlier, when the epidemic was at an earlier stage (Doll et al. 2004; Jha et al. 2013; Pirie et al. 2103; Sakata et al. 2012; Thun et al. 2013).

Cigarette smoking was uncommon throughout the world in 1900, but increased substantially in many high-income countries during the first half of the 20th century, first among men and then, in some countries, among women (Forey et al. 2016). By 1950, in the United States and United Kingdom, substantial numbers not only of men but also of women smoked, and lung cancer rates were increasing steeply, particularly among men (Peto et al. 2015). In 1950, major studies in both countries (Doll and Hill 1950; Wynder and Graham 1950) showed that smoking was a cause of most lung cancer deaths, and subsequent reports soon showed smoking caused even more deaths from other diseases

than from lung cancer (Royal College of Physicians 1962; U.S. Department of Health, Education and Welfare 1964).

After 1950, cigarette consumption continued to rise for some decades in high-income countries, and has risen among men (though generally not among women) in LMICs. Although there has been widespread cessation in many high-income countries (in some of which consumption per adult has halved since the 1970s) (Forey et al. 2016), worldwide about 1.3 billion people now smoke, most in LMICs, where cessation remains uncommon (WHO 2015). About half of all smokers live (in descending order of numbers smoking) in China, India, the European Union (EU, where central tobacco legislation can influence 28 countries), Indonesia, the United States, Russia, Brazil, and Bangladesh, and an additional 200 million live in 12 other countries (Table 1) (GBD 2015 Tobacco Collaborators 2017; Giovino et al. 2012; Zatoński and Mańczuk 2010). In India, manufactured cigarettes are now displacing bidis (locally manufactured small cigarettes) (Jha et al. 2011; Mishra et al. 2016). In China, cigarette consumption continues to rise steeply, and is now more than 2 trillion out of a world total of about 6 trillion cigarettes per year (Euromonitor International 2012). A useful approximation suggested by studies in high-income countries is that 1 ton of tobacco makes about 1 million cigarettes and causes about 1 death, so each trillion cigarettes consumed a year should in the long run cause about a million deaths a year.

One reason why the mid-century evidence of hazard was not at first taken with appropriate seriousness, even in countries where it was generated, is the delay of about half a century between widespread adoption of smoking by young adults and the main effect on mortality in later life (Jha 2009; Peto and Lopez 2001; Peto et al. 2015). In U.S. adults, for example, cigarette consumption averaged one, four, and ten per day in 1910, 1930 and 1950, after which it stabilized. The long-delayed result of this increase in consumption during the first half of the century was seen in the second half of the century; in 1950 and 1990 tobacco caused, respectively, about 12 percent and then about 33 percent of all U.S. deaths in middle age (Peto et al. 2015). A similar pattern was seen about 40 years later in Chinese men, who consumed about one, four, and ten cigarettes per day in 1952, 1972, and 1992. In 1990, tobacco caused about 12 percent of Chinese male deaths in middle age, and it could well cause about 33 percent in 2030 (Gu et al. 2009; Liu et al. 1998). Smoking causes few deaths in women, as fewer than 1 percent of Chinese women born since 1950 smoke (Giovino et al. 2012; Liu et al. 1998). (The claim that smoking causes about 8 percent of deaths in Chinese women [GBD 2015 Tobacco Collaborators 2017] is thus misleading).

Because men started smoking before women, the effects of men's smoking throughout adult life are now apparent in several high-income countries. The full eventual effects of persistent smoking among women can, however, be assessed directly in only a few countries (e.g., the United States or United Kingdom), and only in the present (21<sup>st</sup>) century. The U.S. female lung cancer death rate ratio (current versus never smoker) has increased greatly

**Table 1: Prevalence and Number of Current and Future Smokers, 2008–12 Selected Countries**

COUNTRY (YEAR)	CURRENT SMOKING PREVALENCE, AGES 15+ (PERCENT)			CURRENT SMOKERS, AGES 15+ (MILLIONS)	CURRENT AND FUTURE SMOKERS, AGES 0-34 (MILLIONS)
	Male	Female	Total		
China (2010)	52.9	2.4	28.1	317	193
India (2009)	24.3	2.9	14.0	122	95
EU-28 (2012)	32.4	21.5	26.8	115	54
Indonesia (2011)	67.0	2.7	34.8	61	58
United States (2011)	21.9	17.4	19.6	50	26
Russian Federation (2008)	60.2	21.7	39.1	47	32
Brazil (2008)	21.6	13.1	17.2	26	19
Bangladesh (2009)	44.7	1.5	23.0	25	25
Philippines (2008)	47.6	9.0	28.2	18	22
Turkey (2008)	47.9	15.2	31.2	17	18
Vietnam (2010)	47.4	1.4	23.8	17	14
Mexico (2009)	24.8	7.8	15.9	14	14
Thailand (2009)	45.6	3.1	23.7	13	8
Ukraine (2010)	50.0	11.3	28.9	11	8
Egypt, Arab Rep. of (2009)	37.6	0.5	19.4	11	12
Argentina (2012)	29.4	24.4	22.1	7	7
Canada (2011)	19.7	15.6	17.3	5	2
Malaysia (2011)	43.9	15	23.1	5	5
Nigeria (2012)	7.3	1.0	3.9	4	6
Australia (2012)	17.4	16.7	15.3	3	1
Uruguay (2009)	30.7	0.4	25.0	0.7	0.6
Subtotal (HICs)				173	107
Subtotal (LMICS)				714	537
<b>Total (countries above)</b>				<b>887</b>	<b>644</b>

**Note:** For future smokers in low- and middle-income countries, we apply the smoking prevalence at ages 25–34 from GATS the United Nations 2012 population under age 25 years, plus current smokers at ages 25–34. For future smokers in high-income countries, we apply the smoking prevalence at ages 18–24 or 20–24 to the under-25 population (Blecher 2010).

**Source:** Global Adult Tobacco Surveys (Zatoński and Mańczuk 2010), EU smoking prevalences (GBD 2015 Tobacco Collaborators 2017), and Canadian Tobacco Use Monitoring Survey (ages 15+); Australian Health Survey (ages 15+), US National Health Interview Survey (Forey et al. 2016), adjusted to the United Nations population estimates for 2012.

over the last half-century (Thun et al. 2013): it was only 3-fold in the 1960s, but it was 13-fold in the 1980s and 26-fold (similar to that among men) in the 2000s. This is because in the 2000s many U.S. women in their 60s who were smokers had smoked ever since early adult life, whereas back in the 1960s few women in their 60s who were smokers had done so.

Even though U.S. female lung cancer death rates were still low in the 1960s, U.S. women who were then in their 20s and who continued to smoke without quitting faced substantial hazards 40 years later (Jha et al. 2013; Thun et al. 2013). Male mortality from tobacco is already substantial in LMICs such as China (Gu et al. 2009; Liu et al. 1998), India (Gajalakshmi et al. 2003; Gupta et al. 2005; Jha et al. 2008), Bangladesh (Alam et al. 2013), and South Africa (Sitas et al. 2013), and on current smoking patterns the hazards in LMICs are likely to increase. Indeed, among men in LMICs where many smoke but the death rates in middle age from smoking are not yet substantial, a full decade of life expectancy will eventually be lost by young adults who continue to smoke. Worldwide, about half a billion of the children and young adults below age 35 already smoke (Table 1), or will do so if current uptake rates persist, and at current cessation patterns relatively few will quit (Giovino et al. 2012). In all countries, *young* adults who smoke face about a decade of life lost if they continue, and have much to gain by stopping. Among these half a billion younger smokers, at least half (and perhaps as many as two-thirds) of continuing smokers will be killed by their smoking. Conversely, if this group did not start or quit by age 40 (and preferably earlier), they would avoid nearly all of these 250 million deaths.

## RELATIVELY RAPID EMERGENCE OF SUBSTANTIAL BENEFITS OF STOPPING

In comparison with the slow increase in tobacco-attributable mortality following the uptake of smoking, the effects of cessation emerge more rapidly (Doll et al. 2004; Jha et al. 2013; Pirie et al. 2013; Sakata et al. 2012; Thun et al. 2013). Those who began smoking in early adult life but stopped before age 40 avoid more than 90 percent of the excess risk over their next few decades of life compared to those who continue to smoke, and even those who stop at age 50 avoid more than half of the risk, although some hazards do persist (Figure 2) (Doll et al. 2004; Jha et al. 2013; Pirie et al. 2013; Sakata et al. 2012; Thun et al. 2013). Cessation is the only practicable way to avoid a substantial proportion of tobacco deaths before 2050, as a substantial reduction by 2025 in uptake by adolescents will have its main effect on mortality rates after 2050 (Jha 2009; Peto and Lopez 2001). The prevalence of ex-smoking in middle age is a useful measure of the success of tobacco control. At ages 45–64 there are now, in the EU and the United States, about as many former as current smokers (Jha 2013; Zatoński and Mańczuk 2010); by contrast, in most LMICs (with the notable exception of Brazil) there are far fewer former than current smokers (Table 2).

**Table 2: Numbers (Millions) of Former Smokers at Ages 45–64, 2008–12: Selected Areas**

AGE 45–64 YEARS			
REGION OR COUNTRY	CURRENT	FORMER	STOPPED SMOKING (FORMER AS % OF CURRENT + FORMER)
European Union	37	36	49%
United States	18	22	55%
Japan	9	5	36%
<b>LOW AND MIDDLE-INCOME COUNTRIES</b>			
China	115	21	15%
India	46	7	13%
Indonesia	17	2	11%
Russia	15	4	19%
Brazil	9	10	53%
Bangladesh	7	2	22%
Bangladesh	7	2	22%

Data are from Giovino et al (2012) and Zatoński and Mańczuk (2010), combined with United Nations population estimates for 2012. † The percentage of persons who have stopped smoking is calculated as former smokers divided by the sum of current smokers and former smokers.

‡ There are approximately 25 million current smokers in Pakistan but no standardized surveys (Blecher 2010)

## TRIPLE PRICE, HALVE SMOKING, DOUBLE REVENUE

Comprehensive tobacco control programs using several price and non-price interventions can substantially raise smoking cessation rates and decrease youth initiation (WHO 2015). Uruguay implemented most of the FCTC provisions and reduced consumption more rapidly than otherwise similar Argentina, which implemented only a few (Abascal et al. 2012). Large increases in tobacco excise tax are, however, particularly important, as they can have a substantial and rapid effect on consumption (IARC 2011; Jha and Chaloupka 1999; Jha et al. 2015; WHO 2010). Reviews of comprehensive control programs in various states of the United States (CDC 1999; Levy et al. 2006) and other high-income areas (Chaloupka et al. 2000) concur about the central role of higher prices in much, but not all, of the decline in smoking.

Likewise, an International Agency for Research on Cancer review of over 100 econometric studies confirmed that tobacco taxes and consumption are strongly inversely related (IARC 2011). It concluded that a 100 percent increase in real tobacco prices decreases



consumption by about 40 percent in both high-income countries and LMICs (IARC 2011; Jha and Chaloupka 1999; Jha et al. 2015; WHO 2010), suggesting a price elasticity of about -0.4. Hence, doubling the real prices should reduce consumption by at least one-third (in which case it would increase revenue, as the effect of reduced demand would be outweighed by the extra revenue per pack). About half of the effect among adults is due to quitting (or not starting), and about half due to reduced consumption per smoker (IARC 2011). Higher taxes are particularly effective in poorer or less educated groups (IARC 2011; Jha and Chaloupka 1999; Jha et al. 2015; WHO 2010), and help prevent young smokers moving from experimentation into regular smoking (Kostova et al. 2011).

The two major types of tobacco tax are specific excise taxes (which, being based on quantity or weight, are difficult for the industry to manipulate) and ad valorem taxes (which are based on notional value, and can be manipulated more easily). In high-income countries about 50–60 percent of the retail price of the most-sold brand is excise tax, but in LMICs this proportion is typically only about 35–40 percent (Figure 3) (Jha et al. 2017;

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**In contrast, high specific excise taxes on all brands encourage cessation rather than switching, are easier to administer than ad valorem taxes, and produce a steadier revenue stream.**

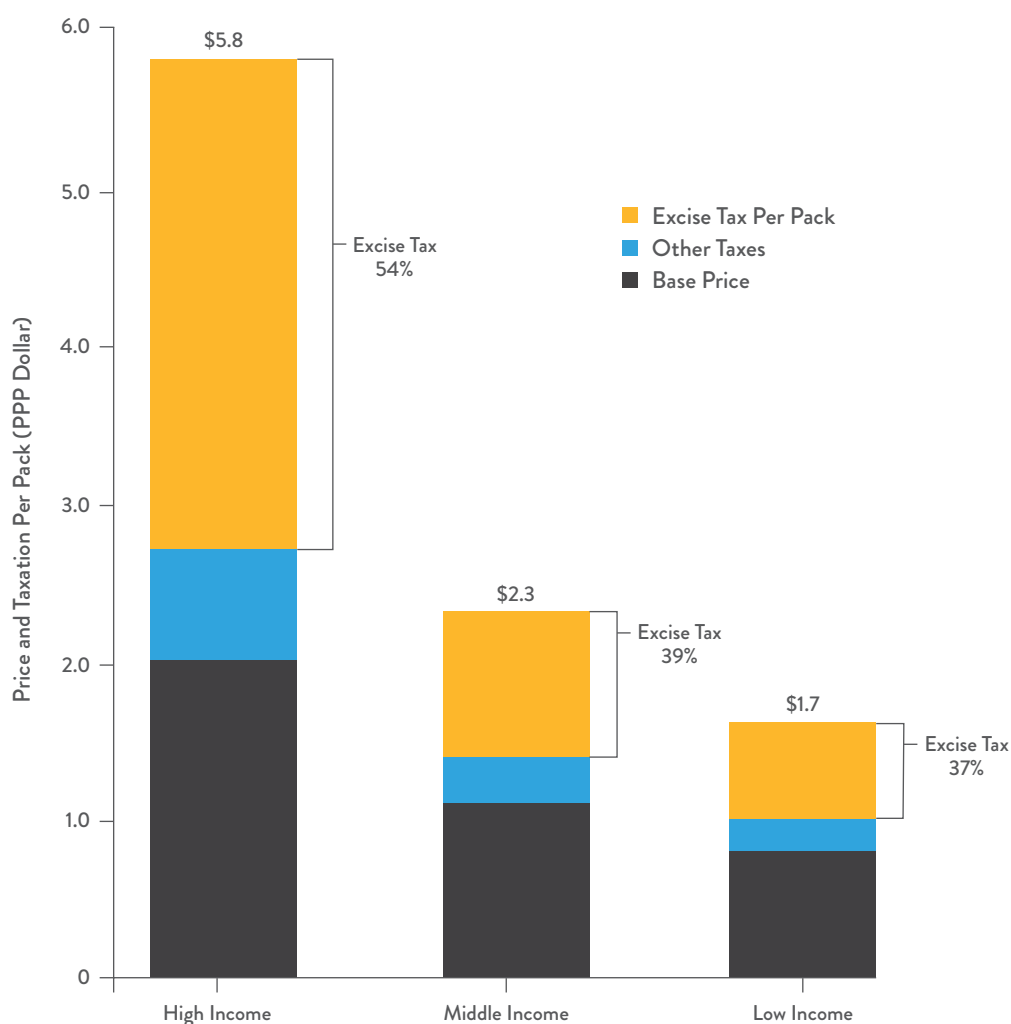
WHO 2010; WHO 2015). Low excise taxes contribute to cigarettes' being about 70 percent cheaper (even after adjustment for purchasing power) in low-income than in high-income countries. Moreover, rapid income growth in many LMICs is making the lower-priced tobacco products more affordable (Blecher 2010) and helping cigarettes to displace bidis (a smaller, locally manufactured smoked product) in India (Mishra et al 2016).

A low reliance on excise taxes by China (Hu et al. 2008), India (Jha et al. 2011), Indonesia (Barber et al. 2008), and other LMICs (Jha et al. 2017; WHO 2010; WHO 2015) means that the prices of commonly-sold cigarette brands vary greatly (more than ten-fold in China, as against only about two-fold in the United Kingdom or United States),

and this continued availability of low-cost brands discourages cessation. In contrast, high excise taxes on all brands encourage cessation rather than switching, are easier to administer than ad valorem taxes, and produce a steadier revenue stream (IARC 2011). In many LMICs, although excise tax accounts for under half the total retail price of cigarettes, tripling it approximately doubles the retail price, partly by triggering small increases in other taxes (e.g., sales tax) and mark-up. In high-income countries excise tax already accounts for over half the retail price, so even just doubling them would approximately double prices.

The United States and United Kingdom took more than 30 years to halve adult cigarette consumption per adult, in part because of limited use of large tax hikes in both countries (which occurred only in 1999 and 1981 in the United States and United Kingdom, respectively) (Forey et al. 2016). Using large tax increases, however, France and South

**Figure 3: Contributions of Excise Tax and Other Taxes to the Total Cost per Pack of the Most-Sold Brand of Cigarettes in High, Middle and Low-Income Countries.**

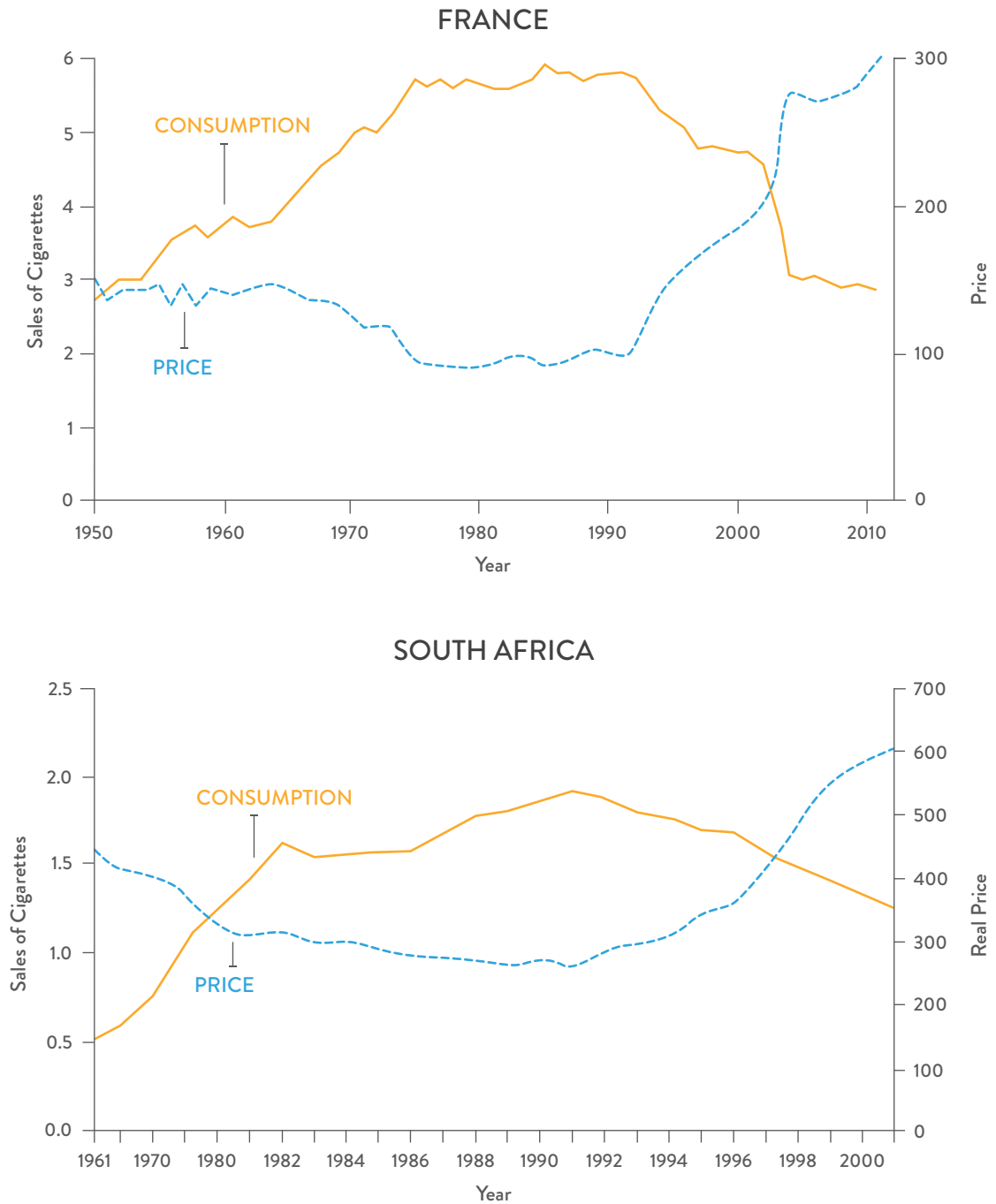


Prices are expressed in purchasing-power-parity-adjusted dollars (PPP dollars). In low- or in middle-income countries, tripling excise tax would approximately double street prices, as non-excise taxes (e.g., sales tax) and retailer mark-up would also rise.

**Source:** WHO data for 48 high-income, 95 middle-income and 30 low-income countries (WHO 2015).

Africa halved consumption in only 15 years (Figure 4) (Hill, Jougl, and Beck 2010; Jha 2009; Van Walbeek 2006). From 1990 to 2005, France tripled inflation-adjusted cigarette prices by raising taxes 5 percent or more every year in excess of inflation, halved cigarette consumption and doubled real tobacco revenues. Today, the French ex-smoking prevalence at ages 45–64 years comfortably exceeds the European average (Jha 2013; Zatoński and Mańczuk 2010). Over a similar time period, South Africa also tripled the real price of cigarettes, halved cigarette consumption, and doubled real tobacco revenues (Van Walbeek 2006).

**Figure 4: Changes in the Real Price of Cigarettes and in Cigarette Consumption per Adult in France and South Africa**



Prices in both countries are scaled to be 100 in the baseline year of 1990 (Hill, Jougla, and Beck 2010; Van Walbeek 2006).

## OTHER EFFECTIVE INTERVENTIONS: INFORMATION, REGULATIONS, AND SUPPORT FOR QUITTING

Though tobacco advertising is banned throughout the EU, China, and some other countries, cigarettes are still among the most heavily advertised and promoted products in the world, with spending on tobacco marketing reaching nearly \$9 billion annually in the United States alone (U.S. Federal Trade Commission 2015). In 2011, Australia, which had already banned advertising, introduced plain packaging for tobacco products, removing all brand imagery. The brand is printed only in small standard lettering below a pictorial warning. Recent evidence suggests plain packaging increases cessation attempts (Cancer Research UK n.d.; Wakefield et al. 2013). Canada, Norway, and New Zealand will introduce plain packaging, and many other countries are considering do so. Plain packaging goes beyond the prominent, rotating pictorial warning labels on tobacco products that have helped increase cessation attempts in Canada, Thailand, and elsewhere (Hammond 2010). Pictorial warnings can reach even illiterate individuals — and half the deaths from tobacco in India occur among the illiterate (Jha et al. 2008).

In the United States and United Kingdom, bans on television tobacco advertising coincided with the start of the long-term downturn in sales (Kenkel and Chen 2000), although partial bans on advertising allowed the industry to shift to other forms of advertising or promotion. In contrast, comprehensive bans on all direct or indirect advertising or promotion of any tobacco goods or trademarks do help reduce consumption (Blecher 2008; Saffer 2000), and have the advantage of severing any dependence of the media on the tobacco industry. Bans on smoking in public places reduce non-smoker exposure to tobacco smoke and can also help decrease overall consumption (Callinan et al. 2010; Fichtenberg and Glantz 2002). Well-designed mass media campaigns can reduce uptake and raise cessation (Bala et al. 2013; Brennan et al. 2008; Durkin, Brennan, and Wakefield 2012; Sims et al. 2014).

The most effective are those which communicate serious health harms of tobacco use and target both current smokers and younger age cohorts that have not yet initiated smoking behavior (Sims et al. 2014). Low-cost epidemiological studies of various types that monitor convincingly the changing extent to which tobacco is causing premature death in populations with many long-term smokers help to raise political awareness of tobacco control and information for the individual smoker (Alam et al. 2013; Gu et al. 2009; Jha 2013; Jha et al. 2008; Liu et al. 1998; Peto et al. 2015; Sitas et al. 2013).

Throughout the world, most former smokers managed to quit unaided, but physician support or telephone-based or internet-based counseling and support can increase the likelihood of success. In motivated individuals, pharmacological treatments can also increase quit rates (Hartmann-Boyce et al. 2013).

## DEATH AND TAXES

WHO (2015) reports that many countries now use non-price interventions, and that 106 raised excise taxes between 2012 and 2014. However, only a few (including Mauritius, Mexico, Poland, the Philippines, Thailand, and Turkey) are recently using large excise tax increases to reduce smoking (WHO 2010). Notably, the Philippines tripled excise taxes once, narrowing the gap between cheaper and more expensive cigarettes, and has committed to continuing increases (Kaiser, Bredenkamp, and Iglesias 2016). Similarly large increases need to be a key component of any realistic strategy to reduce smoking substantially during the 2010s or 2020s (Jha et al. 2012). The manufacturers' worldwide profits of about \$50 billion in 2012 (Eriksen, Mackay, and Ross 2012) (approximately \$10,000 per tobacco death) yield enormous political influence that is used, among other things, against large tax increases.

Tripling real excise taxes would, in many LMICs, approximately double the average price of cigarettes (and more than double prices of cheaper brands), decrease consumption by about a third and *increase* tobacco revenues by about a third. Where government owns most of the industry, as in China, distinction between taxes and profit is fairly arbitrary, but still doubling the average prices would substantially reduce consumption and increase revenue. Worldwide, raising excise taxes to double prices would raise about another US\$ 100 billion a year in tobacco tax revenues, in addition to the approximately US\$ 300 billion that governments already collect on tobacco (WHO 2010; WHO 2015).

The main argument for reducing smoking is, however, the hundreds of millions of tobacco deaths if current smoking patterns persist. Tobacco revenue losses or gains are of secondary importance, as tobacco taxes are a relatively small proportion of overall revenue in most countries (except China). In addition, money not spent on tobacco is spent on other taxable goods or services (Jha and Chaloupka 1999), although generally at lower tax rates. Attainment of the UN SDG for adult mortality depends strongly on reducing tobacco use (Norheim et al. 2015). A one-third decrease in smoking prevalence by 2025, involving major decreases not only in high-income countries but also in populous LMICs, would avoid several tens of millions of tobacco deaths during the next few decades (Jha 2009; Peto and Lopez 2001), and about 200 million tobacco deaths over the century as a whole, mostly among people who are already alive, both by helping smokers to quit and by helping adolescents not to start.

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## REFERENCES

- Abascal W, Esteves E, Goja B, et al. 2012. "Tobacco control campaign in Uruguay: a population-based trend analysis." *Lancet* 380: 1575–82.
- Alam DS, Jha P, Ramasundarahettige C, et al. 2013. "Smoking-attributable mortality in Bangladesh: proportional mortality study." *Bull WHO* 2013; (epub ahead of print).
- Bala MM, Strzeszynski L, Topor-Madry R, Cahill K. 2013. "Mass media interventions for smoking cessation in adults." *Cochrane Database Syst Rev* 2013;6:CD004704. doi: 10.1002/14651858.CD004704.pub3.
- Barber S, Adioetomo SM, Ahsan A, Setyonaluri D. 2008. *Tobacco economics in Indonesia*. Paris: IUATLD.
- Blecher E. 2010. "Targeting the affordability of cigarettes: a new benchmark for taxation policy in low-income and middle-income countries." *Tob Control* 19: 325–30.
- Blecher E. 2008. "The impact of tobacco advertising bans on consumption in developing countries." *J Health Econ* 27: 930–42.
- Brennan E, Jeong M, Momjian-Kybert A, Hornik R. 2016. "Preventing and Reducing Tobacco Use among Youth and Young Adults: A Systematic Review of the Effectiveness of Mass Media Interventions, 2008–2013." (Accessed May 8, 2017 at [http://repository.upenn.edu/asc\\_papers/471](http://repository.upenn.edu/asc_papers/471))
- Callinan JE, Clarke A, Doherty K, Kelleher C. 2010. "Legislative smoking bans for reducing second-hand smoke exposure, smoking prevalence and tobacco consumption." *Cochrane Database Syst Rev* 2010;(4):CD005992.
- Cancer Research UK. No date. Plain Packaging Campaign. (Accessed May 8, 2017, at [http://www.youtube.com/watch?feature=player\\_embedded&v=c\\_z-4S8iicc](http://www.youtube.com/watch?feature=player_embedded&v=c_z-4S8iicc))
- Centers for Disease Control and Prevention. 1999. "Decline in cigarette consumption following implementation of a comprehensive tobacco prevention and education program — Oregon, 1996–1998." *Morb Mortal Wkly Rep*. 26:140-3.
- Chaloupka FJ, Hu T-W, Warner KE, Jacobs R, Yurekli A. 2000. "The taxation of tobacco products." In: *Tobacco control in developing countries*, edited by P Jha and FJ Chaloupka, 237–272. Oxford, United Kingdom: Oxford University Press.
- Doll R, Hill AB. 1950. "Smoking and carcinoma of the lung." *BMJ* 221: 739-48.
- Doll R, Peto R, Boreham J, Sutherland I. 2004. "Mortality in relation to smoking: 50 years' observations on male British doctors." *BMJ* 328: 1519-33.
- Durkin S, Brennan E, Wakefield M. 2012. "Mass media campaigns to promote smoking cessation among adults: an integrative review." *Tobacco Control* 21:127-138.
- Eriksen M, Mackay J, Ross H. 2012. *The Tobacco Atlas*. Fourth Ed. Atlanta, GA: American Cancer Society; New York, NY: World Lung Foundation. (Accessed May 8, 2017 at [www.TobaccoAtlas.org](http://www.TobaccoAtlas.org))

- Euromonitor International, London. 2012. Euromonitor International [database on the Internet]. Cigarettes: Global. Euromonitor International. (Accessed May 8, 2017 at <http://www.euromonitor.com/tobacco>)
- Federal Trade Commission. 2015. *Cigarette report for 2013*. Washington, DC: FTC. (Accessed May 8, 2015 at <https://www.ftc.gov/system/files/documents/reports/federal-trade-commission-cigarette-report-2013/2013cigaretterpt.pdf>)
- Fichtenberg CM, Glantz SA. 2002. "Effect of smoke-free workplaces on smoking behaviour: systematic review." *BMJ* 325: 188–199.
- Finucane MM, Stevens GA, Cowan MJ, et al. 2011. "National, regional, and global trends in body-mass index since 1980: systematic analysis of health examination surveys and epidemiological studies with 960 country-years and 9.1 million participants." *Lancet* 377: 557–67.
- Forey B, Hamling J, Hamling J, Thornton A, Lee PN. 2016. International smoking statistics: web edition. 2006–16 Sutton, UK: PN Lee Statistics & Computing. (Accessed May 8, 2017 at <http://www.pnlee.co.uk/ISS3.htm>).
- Gajalakshmi V, Peto R, Kanaka TS, Jha P. 2003. "Smoking and mortality from tuberculosis and other diseases in India: retrospective study of 43 000 adult male deaths and 35 000 controls." *Lancet* 362:507–515.
- GBD 2015 Tobacco Collaborators. 2017. "Smoking prevalence and attributable disease burden in 195 countries and territories, 1990–2015: a systematic analysis from the Global Burden of Disease Study 2015." *Lancet*. 2017 Apr 5. pii: S0140-6736(17)30819-X. doi: 10.1016/S0140-6736(17)30819-X. [Epub ahead of print]
- Giovino GA, Mirza SA, Samet JM, et al. 2012. "Tobacco use in 3 billion individuals from 16 countries: an analysis of nationally representative cross-sectional household surveys." *Lancet* 380: 668–79.
- Gu D, Kelly TN, Wu X, et al. 2009. "Mortality attributable to smoking in China." *New Engl J Med* 360: 150–59.
- Gupta PC, Pednekar MS, Parkin DM, Sankaranarayanan R. 2005. "Tobacco-associated mortality in Mumbai (Bombay), India: results of the Bombay cohort study." *Int J Epidemiol* 34: 1395–1402.
- Hammond D. 2010. "Plain packaging regulations for tobacco products: the impact of standardizing the color and design of cigarette packs." *Salud Publica Mex* 52: S226–32.
- Hartmann-Boyce J, Stead LF, Cahill K, Lancaster T. 2013. "Efficacy of interventions to combat tobacco addiction: Cochrane update of 2012 reviews." *Addiction*. 2013 Jul 9. [Epub ahead of print]
- Hill C, Jouglu E, Beck F. 2010. "Le point sur l'épidémie de cancer du poumon dû au tabagisme." *Bull Épidém Hebdom* 19–20: 210–13 (Accessed May 8, 2017 at [http://invs.santepubliquefrance.fr/beh/2016/7-8/2016\\_7-8\\_4.html](http://invs.santepubliquefrance.fr/beh/2016/7-8/2016_7-8_4.html))
- Hu TW, Mao Z, Shi J, Chen W. 2008. *Tobacco taxation and its potential impact in China*. Paris: IUATLD.
- International Agency for Research on Cancer. 2011. *Effectiveness of tax and price policies for tobacco control*. IARC handbooks of cancer prevention, Vol. 14. Lyon: IARC.
- Jha P. 2009. "Avoidable global cancer deaths and total deaths from smoking." *Nat Rev Cancer* 9: 655–64.
- Jha P. 2013. "The 21st century benefits of smoking cessation in Europe." *Euro J Epidemiol* 28:617–619
- Jha P, Chaloupka FJ. 1999. *Curbing the epidemic: governments and the economics of tobacco control*. Washington, DC: World Bank.
- Jha P, Guindon E, Joseph RA, et al. 2011. "A rational taxation system of bidis and cigarettes to reduce smoking deaths in India." *Econ Polit Weekly* 46: 44–51.
- Jha P, Jacob B, Gajalakshmi V, et al. 2008. "A nationally representative case-control study of smoking and death in India." *New Engl J Med* 358: 1137–47.

- Jha P, Joseph RC, Moser P et al, for the Asia Development Bank. 2012. *Tobacco Taxes: A Win-Win Measure for Fiscal Space and Health*. Manila: Asian Development Bank (Accessed May 8, 2017 at <http://www.adb.org/publications/tobacco-taxes-win-win-measure-fiscal-space-and-health>)
- Jha P, Khan J, Mishra S, Gupta P. 2017. "Raising taxes key to accelerate tobacco control in South Asia." *BMJ*. 2017 Apr 11;357:j1176 (Accessed May 8, 2017 at <http://www.bmj.com/content/357/bmj.j1176>)
- Jha P, MacLennan M, Chaloupka FJ, Yurekli A, Ramasundarahettige C, Palipudi K, et al. 2015. "Global hazards of tobacco and the benefits of smoking cessation and tobacco taxes." In *Cancer: Disease Control Priorities*, Third Edition (Volume 3), edited by Gelband H, Jha P, Sankaranarayanan R, Horton S. Washington, DC.
- Jha P, Mony P, Moore JA, Zatonski W. 2010. "Avoidance of worldwide vascular deaths and total deaths from smoking." In *Evidence-based Cardiology*, edited by Yusuf S, Cairns JA, Camm AJ, Gallen EL, Gersh BJ, 111–124. Oxford: Oxford University Press.
- Jha P, Peto R. 2014. "Global effects of smoking, of quitting, and of taxing tobacco." *N Engl J Med* 370(1):60–8.
- Jha P, Ramasundarahettige C, Landsman V, Rostron B, Thun P, Peto R. 2013. "The hazards of smoking and benefits of stopping in the US during the 21st century: nationally representative prospective cohort study." *New Engl J Med* 368: 341–50.
- Kaiser K, Bredenkamp C, Iglesias R. 2016. "Sin tax reform in the Philippines: transforming public finance, health, and governance for more inclusive development." Washington, DC: World Bank.
- Kenkel D, Chen L. 2000. "Consumer information and tobacco use." In *Tobacco control in developing countries*, edited by Jha P, Chaloupka FJ, 177–214. Oxford, United Kingdom: Oxford University Press.
- Kostova D, Ross H, Blecher E, Markowitz S. 2011. "Is youth smoking responsive to cigarette prices? Evidence from low- and middle-income countries." *Tob Control* 20: 419–24.
- Levy DT, Hyland A, Higbee C, Remer L, Compton C. 2006. "The role of public policies in reducing smoking prevalence in California: results from the California tobacco policy simulation model." *Health Policy* 82:167–85. Epub 2006 Oct 19.
- Liu BQ, Peto R, Chen ZM, et al. 1998. "Emerging tobacco hazards in China: 1. Retrospective proportional mortality study of one million deaths." *BMJ* 317: 1411–22.
- Mishra S, Joseph RA, Gupta PC, Pezzack B, Ram F, Sinha DN, et al. 2016. "Trends in bidi and cigarette smoking in India from 1998 to 2015, by age, gender and education." *BMJ Global Health* 1(1).
- Norheim OF, Jha P, Admasu K, Godal T, Hum RJ, Kruk ME, et al. 2015. "Avoiding 40% of the premature deaths in each country, 2010–30: review of national mortality trends to help quantify the UN sustainable development goal for health." *Lancet* 385(9964): 239–52.
- Peto R, Lopez AD. 2001. "The future worldwide health effects of current smoking patterns." In *Critical issues in global health*, edited by Koop E, Pearson CE, Schwarz MR, 154–161. San Francisco: Jossey-Bass.
- Peto R, Lopez AD, Boreham J, Thun M. 2015. Mortality from smoking in developed countries, 1950–2010. (Accessed May 8, 2017 at <http://www.ctsu.ox.ac.uk/~tobacco>)
- Peto R, Whitlock G, Jha P. 2010. "Effects of obesity and smoking on US life expectancy." *New Engl J Med* 362: 855–56.
- Pirie K, Peto R, Reeves GK, Green J, Beral V. 2013. "The 21st century hazards of smoking and benefits of stopping: a prospective study of one million women in the UK." *Lancet* 381: 133–41.
- Royal College of Physicians of London. 1962. *Smoking and health: summary and report of the Royal College of Physicians of London on smoking in relation to cancer of the lung and other diseases*. London: Pitman publishing.



- Saffer H. 2000. "Tobacco advertising and promotion." In *Tobacco Control in Developing Countries*, edited by Jha P, Chaloupka FJ, 215–36. Oxford: Oxford University Press.
- Sakata R, McGale P, Grant EJ, Ozasa K, Peto R, Darby SC. 2012. "Impact of smoking on mortality and life expectancy in Japanese smokers: a prospective cohort study." *BMJ* 345: e7903.
- Sims M, Salway R, Langley T, Lewis S, McNeill A, Szatkowski L, Gilmore AB. 2014. "Effectiveness of tobacco control television advertising in changing tobacco use in England: a population-based cross-sectional study." *Addiction* 109: 986–994.
- Sitas F, Egger S, Bradshaw D, et al. 2013. "Differences among the coloured, white, black and other South African populations in smoking-attributed mortality at ages 35–74 years: case-control study of 481,640 deaths." *Lancet* 382: 685–93.
- Thun MJ, Carter BD, Feskanich D, et al. 2013. "50-year trends in smoking-related mortality in the United States." *New Engl J Med* 368: 351–64.
- U.S. Department of Health, Education and Welfare. 1964. *Smoking and health: report of the Advisory Committee to the Surgeon-General of the Public Health Service*. Washington, DC: Department of Health, Education and Welfare.
- Van Walbeek CP. 2006. "Industry responses to the tobacco excise tax increases in South Africa." *S African J Econ* 74: 110–22.
- Wakefield MA, Hayes L, Durkin S, Borland R. 2013. "Introduction effects of the Australian plain packaging policy on adult smokers: a cross-sectional study." *BMJ Open* 3: e003175.
- WHO (World Health Organization). 2010. *WHO technical manual on tobacco tax administration*. Geneva: WHO.
- WHO (World Health Organization). 2013a. Draft action plan for the prevention and control of non-communicable diseases 2013–2020. Geneva: World Health Assembly WHO A66/9.
- WHO (World Health Organization). 2013b. Draft comprehensive global monitoring framework and targets for the prevention and control of non-communicable diseases. Geneva: WHO A66/8.
- WHO (World Health Organization). 2015. *WHO report on the global tobacco epidemic, 2015: raising taxes on tobacco*. Geneva: WHO.
- Wynder EL, Graham EA. 1950. "Tobacco smoking as a possible etiologic factor in bronchogenic carcinoma: a study of 684 proved cases." *JAMA* 143: 329–36.
- Zatoński WA, Mańczuk M. 2010. "Tobacco smoking and tobacco-related harm in the European Union, with special attention to the new EU member states." In *Tobacco: science, policy, and public health*, edited by Boyle P, Gray N, Henningfield J, Seffrin J, Zatoński WA, 134–155. Oxford: Oxford University Press.

*On the “Why?” question, we argue that the rationale for tobacco taxation must first be explained in terms of public health benefits and health cost savings. More specifically, reducing smoking consumption is associated with major social gains through avoiding premature mortality and impoverishment, while reducing catastrophic health expenses.*

# 3

*Raising Tobacco Taxes: Why, What, and How*

## WHERE PUBLIC HEALTH AND ECONOMICS CONVERGE

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### ABSTRACT

This chapter further clarifies the rationale for raising tobacco taxes (the “Why?”); discusses specific tax policy options (the “What?”); and explores successful approaches to implementing tobacco tax increases in real-world contexts (the “How?”). It also explains what employment and social equity effects policy makers can anticipate when they raise tobacco taxes.

The literature on tobacco taxation generally distinguishes among analyses based on public health, economic, and political-economy perspectives. Our work harnesses all three. On the “Why?” question, we argue that the rationale for tobacco taxation must first be explained in terms of public health benefits and health cost savings. More specifically, reducing smoking consumption is associated with major social gains through avoiding premature mortality and impoverishment, while reducing catastrophic health expenses. Pursuing the “Why?” discussion, this chapter explores the less frequently considered topic of tobacco taxes’ positive impact on labor productivity and human capital formation. It then reviews evidence on how tobacco taxes boost fiscal revenue generation in countries and shows, as well, why higher tobacco taxes can be expected to have long-term positive impacts on the natural environment.

On the “What?” and “How?” issues, excise taxes on tobacco are most effective in achieving public health objectives. Among excise taxes, both specific (quantity-based) and ad valorem models (based on product value) have advantages. Many countries have adopted mixed models. However, specific excise tax systems are generally considered a better practice, as long as their rates are updated over time in order to incorporate affordability factors.

In terms of equity, the experience of several countries (including Chile and the United States) demonstrates that, in the longer term, tobacco tax hikes promote net gains in both disposable income and welfare for socioeconomically disadvantaged groups. Poorer people face short-term potential reductions in disposable income when tobacco taxes

are raised. However, given poor households' high opportunity cost in terms of food consumption and other basic needs, they tend to cut smoking in the short run, and even more in the longer run, in comparison with higher income groups.

Thus, poorer people's share of health benefits greatly outweighs their share of increased tobacco taxes. A range of other benefits discussed in this and other chapters make tobacco taxes overall highly pro-poor.

Regarding employment effects, evidence suggests that tobacco tax hikes are unlikely to provoke large changes in employment patterns. Rather, reductions in tobacco employment occur mainly because the labor intensity of the sector is declining worldwide. Nevertheless, tobacco tax reforms often require a prior analysis of potential effects on local employment, especially in tobacco-growing countries, in order to address social and political-economy concerns.

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## BACKGROUND

Despite the implementation of diverse tobacco control measures worldwide, which have led to modest reductions in prevalence, the absolute numbers of smokers and total tobacco production at global levels continue to increase slightly, with a worrisome upward trend in low- and middle-income countries (LMICs).<sup>6</sup> Regional disparities in the consumption of cigarettes explain these patterns, with China's consumption rising most, Europe's showing a mild decline, and Africa's seeing a slight increase over recent decades. In general, these trends reflect world population growth, aggressive promotion efforts by the tobacco industry in many lower middle-income countries, and still insufficiently large tobacco tax increases, especially in LMICs (Mendez, Alshangeety, and Warner 2013; Ng, Freeman, and Fleming 2014).

As argued in Chapters 1 and 2, tobacco tax reform offers policy makers a powerful instrument to address this challenge. The present chapter spells out additional "Why?," "What?," and "How?" questions associated with tobacco taxation. In so doing, it provides an overview of key ideas developed throughout the rest of this book. To start, extending the analysis in Chapter 1, we further investigate the rationale for raising tobacco taxes (the "Why?"). Then we discuss specific tax policy options countries can consider (the "What?"). Next, we explore successful approaches to implementing tobacco tax increases (the "How?"). We also

<sup>6</sup> Global cigarette consumption increased mildly, from 5.7 trillion cigarettes in 2000 to 5.8 trillion cigarettes in 2014 (The Tobacco Atlas 2016). Eleven countries raised cigarette taxes to more than 75 percent of retail prices between 2012 and 2014, while 106 of 183 countries raised cigarette taxes by smaller percentages. In addition, since 2005, many countries have implemented at least one non-price tobacco control measure, such as smoke-free legislation, a ban on tobacco advertisements, or enforcement of a health warning on tobacco packages. See more detailed discussions in Chapters 1, 2, 4, and 8.

explain what employment and social equity effects policy makers can anticipate when they raise tobacco taxes, a key consideration for fair and inclusive policy.

## ANALYTICAL APPROACH

The extensive literature on tobacco taxation distinguishes among three approaches: public health, economic, and political economy. In our analysis, we harness all three, examining tobacco taxation through the lens of integrated development.

When looking at the potential benefits associated with taxing tobacco, we first consider the positive effects on health, as the public health approach suggests. By triggering a drop in consumption, higher tobacco taxes will bring both direct health benefits (for users) and indirect benefits (for the public health system). Next, using an economic approach, we explore: (a) fiscal revenue generation (as we would with any other tax); (b) technical efficiency effects, reflected in the economic choices made by actors who participate in the global tobacco market, both at the production and consumption levels; and (c) equity effects on the disposable income and welfare of households in different socioeconomic groups. We also consider the reduction of negative spillover effects (externalities) imposed by smoking on individuals and their families, as well as on society as a whole, for example through labor productivity, family welfare, life expectancy, quality-adjusted life years, and environmental effects. Finally, we consider tax administration issues from the viewpoint of efficiency, as well as implementation feasibility from a political-economy perspective.

## THE “WHY?”: ARGUMENTS FOR TOBACCO TAXATION

### Public Health

Given the huge impact that tobacco taxes have been proven to have on rates of death and disease, the rationale for tobacco taxation must be explained first and foremost in terms of public health benefits (reduction in mortality and morbidity) and health care cost savings. It is important to recall at the outset that, while the focus of our analysis is specifically on taxation, tobacco taxes are most effective when they are part of a national package of health regulations and policy actions aimed at reducing tobacco consumption, such as tobacco-free laws, communications campaigns, and targeted medical advice.<sup>7</sup>

The price elasticity of demand for cigarettes is generally found to be highest in low-income countries (-0.5), compared with -0.4 and -0.3 in middle- and high-income countries,

respectively. This means the public-health and other benefits of tobacco tax hikes are expected to be greatest in countries where larger shares of people earn low incomes (see Chapters 1 and 6 in this volume).

It has been demonstrated analytically and empirically that increasing tobacco taxation is a powerful means to reduce smoking prevalence and improve overall population health. At the country level, with the help of tools such as microsimulation models, it is now possible to forecast changes in the consumption of tobacco and thus the prevalence of smoking in a particular country when tobacco taxes rise (Webber and Takano forthcoming). This, in turn, allows us to determine the probable economic and health effects of these tax measures for the society.

The UK Health Forum microsimulation model, for example (Webber and Takano forthcoming), has shown that resetting Britain's tobacco duty escalator from the current rate of 2 percent to 5 percent above consumer price index (CPI) inflation could generate "direct" healthcare cost avoidances in the United Kingdom of £10 million/year (almost US\$ 13 million/year) for stroke, £9 million/year (US\$ 11.6 million/year) for chronic obstructive pulmonary disease (COPD), and £8 million/year (about US\$ 10 million/year) for lung cancer by 2035. The model suggests the tax increase would also generate an additional £0.2 billion (nearly US\$ 0.26 billion) in indirect savings on public health costs.<sup>8</sup> In addition, the tremendous social benefit associated with avoiding premature deaths, not measured in this model, would need to be taken into consideration.

This microsimulation tool has also been applied to Botswana, a country with very different socioeconomic and health parameters, where the exercise also showed that raising tobacco taxes would yield substantial public health benefits. Assuming a price elasticity of demand of -0.6, researchers found that a 4 Botswana pula (BWP) (US\$ 0.39) per pack tax increase in the tobacco levy would result in a 10 percent reduction in Botswana's smoking rate. This in turn would impact the incidence of coronary heart disease, COPD, lung cancer, and stroke, resulting in an estimated 129 million BWP (about US\$ 12.5 million) in health care costs avoided in 2030 alone, relative to baseline. An 8 BWP per pack tax increase would avoid some 202 million BWP (about US\$ 19.5 million) in health care costs annually by 2030.<sup>9</sup> As in the case of the United Kingdom, these estimates do not include a quantification of the benefits associated with the number of lives that would be saved.

Since quitting smoking not only affects individual smokers but also those around them, passive smoking — that is, exposure to secondhand smoke — would also be reduced as

7 Much more progress has been made in the other areas of the MPOWER framework worldwide.

8 The exact amounts, in terms of health benefits and fiscal revenues, would depend on the price elasticity used for the simulations, which varies per country and income group.

9 No healthcare cost data by disease were available for Botswana at the time of analysis, so proxy cost data from South Africa were used (Webber and Takano forthcoming).

a result of higher tobacco taxes. More importantly, parents who smoke increase the chances that their children will smoke.<sup>10</sup> Microsimulation models can also measure the additional health benefits likely to be achieved by reducing cardiovascular disease, lung cancer, and COPD deaths linked to second-hand smoke.

## Labor Productivity and Human Capital

Compared to the public health implications, the negative links between tobacco and labor market outcomes have been much less studied. They include primary, secondary, and tertiary effects on both producers (farmers) and users (smokers) of tobacco. As documented in Chapter 7 in this volume, the overall impact of reducing tobacco consumption on workers' productivity and human capital accumulation can be substantially positive, providing additional arguments for aggressive tobacco taxation.

It is easy to grasp some of the primary pathways by which tobacco use reduces labor productivity. For example, nicotine addiction can reduce the actual length of time workers spend effectively focused on their tasks in the course of the workday, due to smoking breaks and "presenteesim." Emerging research has clarified the remarkable magnitude of economic losses involved in some contexts.

Secondary effects occur as a result of deteriorating health, which can lead to lower educational attainments for students (early smokers) and negative professional development and career progression in the case of workers. Both of these factors negatively affect the productivity of the labor force and human capital formation in a country.

Tertiary effects result from premature deaths among both tobacco farmers and smokers, causing lower overall labor productivity and negatively impacting countries' GDP (Ross et al. 2009a; Ross et al. 2009b).

The negative link between tobacco production and the health of farmers, which also affects labor markets, has attracted little attention, despite its severity. This important topic is explored by Hu and colleagues in this volume (see Chapter 8). Tobacco growing affects farmers' health primarily through the absorption of nicotine. During cultivation and harvesting periods, tobacco farmers' blood nicotine levels can reach those found in active smokers (Schmitt et al. 2007). Switching to other crops would reduce the incidence of so-called "green tobacco sickness" (GTS) — a health problem exclusively related to tobacco growing and occurring as a consequence of nicotine absorption through skin exposure to tobacco leaves.

Tobacco farmers also face substantial toxic exposures through the intensive application of the pesticides, fertilizers, and chemical sprays that are required to improve the yield of the

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<sup>10</sup> See e.g. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2632764/>

tobacco leaf crop and its nicotine concentration. Farmers are often unaware of the health risks associated with these substances and use them without protection (Lecours et al. 2012). Given the demonstrated negative health effects of tobacco farming, under the WHO Framework Convention on Tobacco Control (WHO FCTC), the 180 Parties are obligated to find alternate livelihoods for tobacco farmers. However, many farmers, including children and adolescents, continue to work in tobacco fields without any protection, both in developed and developing countries.<sup>11</sup>

## Fiscal Revenue Generation

Although the primary reason to increase tobacco taxes is to improve health at the individual, family, and society levels, increased revenue from tobacco taxes is often cited as an additional argument to engage policy makers in the reforms. In the short run, higher tobacco tax revenues are expected to stem directly from increased excise tax rates, which are generally accepted as the best instrument to tax tobacco. In the medium to long term, additional tax revenues may be associated with increased productivity and income, as well as higher life expectancy, even if tobacco tax revenues per se will in the longer run gradually decline as lower consumption shrinks the tobacco tax base.

In an example from a high-income country, the United States significantly raised its federal excise taxes on cigarettes in 2009, from \$0.39 to \$1.01 per pack, which increased retail prices by 22 percent within a couple of months and reduced consumption of cigarettes by 11.1 percent. Despite reduced consumption, federal tobacco tax revenues surged by 129 percent in the year following the reform (from \$6.8 billion in FY 2009 to \$15.5 billion in FY 2010).

In 2014, WHO estimated that cigarette excise taxes in developing countries generated a total of US\$ 136 billion in annual excise tax revenue. Other taxes on cigarettes — such as value added taxes (VAT), as well as applicable import duties and surcharges — bring the total amount of tax revenue from cigarettes to US\$ 187 billion, representing 2.88 percent of general government revenue (GGR), on average, in developing countries.

Raising cigarette excise by US\$ 0.25 per pack in all developing countries, as per the WHO global estimate, would generate an extra US\$ 41 billion in excise revenue from cigarettes in LMICs, representing an increase of 30 percent from the 2014 baseline.<sup>12</sup> Total tax revenues in these countries would increase by US\$ 45 billion, or 24 percent, from 2014 levels. Low-income countries could experience the greatest relative tax revenue increases, with total tax revenues expanding by 38 percent.

11 Global Center for Good Governance in Tobacco Control (GGTC) — <http://seatca.org/dmddocuments/Pull%20Out%20Delhi%20Day%204.pdf> and <http://ggtc.world/index.php/2016/11/02/news/>

12 See Chapter 4 in this volume, and compare Furman (2016), where a high elasticity of about -5 was found, indicating that relatively big increases would have a disproportionately high effect on consumption.



Experience from multiple developing countries shows that, even though tobacco consumption decreases as a reaction to the higher price triggered by the tax, the percentage increase in excise tax revenue per unit is greater than the percentage decrease in tobacco consumption. This is because the negative effect of shrinking the tax base is largely compensated by the tax rate increase. However, these revenue effects will be determined by the specific percentage increase in the tobacco tax, as well as by income and price elasticities and overall consumption levels in the countries under consideration.

The trend in revenues generated over time will further depend on the rates and schedule of the tax increases (gradual and marginal versus a combination of gradual and sharp increases), as well as the medium- and long-term price elasticities of smokers. It is expected that, in the medium to long run, as people reduce smoking and levels of addiction decrease, the elasticities would go upwards. And as the tax base gradually erodes, fiscal revenues are expected to decline, unless additional tax rate increases continue to be introduced.

A declining percentage of smokers, solely due to the full range of tobacco control programs, together with rising long-run price elasticities, could lead to declines in revenues in the long run.<sup>13</sup> Country experience indicating at what point and how this occurs, and to what extent further raising of tax rates can alter the effects, does not exist yet.

Higher income countries have been waging, if to varying extents, major anti-tobacco programs, including being effective in banning smoking in public places and active public educational efforts to change norms on smoking. As a consequence, we may observe declines in consumption which cannot be attributed to changes in either income or price elasticities.

Regarding income elasticities, although tobacco control measures may also translate into a drop in consumption unrelated to income variation, it has been demonstrated that income increases do have a direct and measurable offsetting effect on key longer run determinants of smoking, particularly education. This effect is so strong that the correlation of smoking prevalence with per capita income levels (but not changes) is negative and highly significant. So, long-run income elasticities are expected to be higher than short-run elasticities, even though both will vary by country.

The countries of the European Union provide an interesting illustration of these effects. In fifteen higher-income EU countries, tobacco excise tax revenue collection decreased by 0.07 percentage points, on average, between 2002 and 2012, while over the same period, across all 28 EU member countries, the average tobacco tax-to-GDP ratio increased by 0.16 percentage points (Schatzenstaller 2015). These results are likely the consequence

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<sup>13</sup> While good data on short-term price elasticities are available, not enough information exists on either the long-run effect of other key determinants or the long-run price elasticity (holding other determinants constant or not).

of several effects associated with the tobacco control policies applied in the region, and not just a response to tax increases. They can only be explained on a country-by-country basis. In the higher-income core EU countries, consumption has been significantly discouraged, preventing further gains in tobacco tax revenues. However, in newer EU member states with lower per capita income (the countries which were part of the EU's Eastern enlargement in 2004 and 2007), this crossover threshold has not yet been reached. In these countries, tobacco tax increases, as part of tax harmonization with the EU, are still triggering gains in tax revenues. The differences between the two country groups reflect income-level gaps, as well as different stages of the epidemic and the implementation of tobacco control policies, likely affecting prices and elasticities.

In terms of excise tax revenue volatility over time, different types of taxes respond differently to economic up- and downturns. While capital gains taxes can be very volatile due to the fluctuations of the stock market, consumption taxes can be fairly stable, depending on the type of good. The volatility of tobacco excise revenue collection tends to be lower than for other taxes, primarily because of the addictive nature of cigarette consumption, as well as the relatively low price elasticity in the short term.

However, volatility also depends on the income elasticity of cigarette consumption, which can vary significantly across countries, even of similar income (for example, 0.3 in the United Kingdom, and 1.3 in Canada) and across income groups,<sup>14</sup> as discussed in detail in Chapter 5.

The income elasticity of tobacco consumption should be reviewed carefully (and not simply taken as a given) when estimating the effect on revenues of a tobacco excise tax rate increase at a particular moment in time. This is because income elasticity itself can be affected by other contextual variables. Even in countries where tobacco consumption has traditionally been income inelastic, consumption may drop under the impact of other factors. An example is Spain, where excise tax revenues declined by 5.7 percent during the recent financial crisis, as the levels of disposable incomes dropped, while tobacco control regulations were also being more strictly enforced, contributing to reductions in tobacco consumption.

Income elasticities are usually downward when there is full information on the hazards of smoking and strong tobacco policies are in place. For example, in the United States, smoking prevalence is much higher in lower-income groups which tend to be less well informed about the health risks of smoking. In many LMICs, such as Mexico, income elasticity remains high due to the lack of response to these information signals to drive

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<sup>14</sup> It is expected to be higher in low-income countries and socioeconomic groups.

consumption down. Since rising incomes have a direct effect on education, over time they reduce smoking by changing individual decisions directly and, as in the United States and United Kingdom, by changing group norms.

In addition to excise tax revenues, policy makers should also consider the possible impact of higher tobacco taxes on overall revenue collection through other, non-tobacco taxes in the system. As higher tobacco taxes may reduce smoking, the consumption of other goods is likely to increase, since former smokers will now have more disposable income which they may allocate to other goods. As a result, revenues from VAT, corporate income taxes (CIT), and personal income taxes (PIT) may rise in the medium to long term.<sup>15</sup>

Although VAT revenue collection is likely to be reduced as a result of lower tobacco consumption, it will increase when consumers' spending is reallocated to a basket of other types of goods. The net effect on overall VAT collection will depend on the degree of substitution between tobacco and that basket, as well as the VAT rates applied to them, although tobacco tax rates tend to be higher than those for other products in countries with variable VAT rates. Further, as higher consumption of other goods triggers a supply response, higher collection of CIT may also follow as a result of additional profits in those sectors.<sup>16</sup> In addition, these effects should result in increased employment in other industries offering better salaries than tobacco and, consequently, in higher PIT collection. This effect would also be enhanced in the medium term by productivity gains among workers who themselves quit smoking and enjoy better health and career prospects as a result, and by reducing catastrophic declines in income when primary income earners become incapacitated or die prematurely.

In terms of indirect revenue impacts, policy makers may wish to consider that tobacco tax increases worldwide could also bring about greater harmonization in tobacco control policies and help reduce illicit trade motivated by tobacco tax rate differentials regionally and globally (See Chapter 9). This would also help from the point of view of political economy, as countries see what their neighbors and countries in other regions are doing, all the more so given the existing commitments agreed under the Framework Convention on Tobacco Control.

## Environmental Effects

Higher tobacco taxes are predicted to have a positive long-term impact on the environment. This is because these taxes will cut tobacco consumption and ultimately contribute to

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<sup>15</sup> Although no estimates exist yet to quantify these effects at a country level, it is expected that VAT revenues would rise as the consumption of other good increases. CIT revenue would also rise as business and profits expand in companies supplying those goods. PIT revenue increases would be associated with higher labor productivity.

<sup>16</sup> These effects will be of course specific to each country and will be determined by the taxation regimes and rates applied to those goods.

scaling back tobacco production (although this effect will not be observable for some time). Several environmentally destructive practices are prevalent in the tobacco industry, though not unique to it. For example, tobacco farming involves intensive fuel consumption to dry tobacco on the farm. In addition, the heavy nutrients required for tobacco cultivation, including fertilizers to develop plants' nicotine content, alter the quality of the soil and prevent usage of the land for other crops for several years. Switching to other crops will be beneficial for soil quality and overall agricultural diversity. The transition away from tobacco will also reduce forest depletion in some settings, as tobacco farmers often cut down trees to use as fuel for curing tobacco leaf.

Lecours et al. (2012) summarize 45 reports from low- and medium-income countries discussing agricultural practices, including tobacco production, and their two major environmental consequences: ecosystem disruptions and soil degradation. The researchers find, for example, that the use of chemical fertilizers in tobacco farming decreases soil fertility more rapidly than with other crops, since tobacco absorbs relatively more nutrients. The authors also summarize evidence on the effects of tobacco farming on deforestation, global ecosystem disruptions, and food insecurity.

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**Any reduction in global tobacco trade would be gradual and accompanied by a shift in consumers' spending to other goods.**

## THE “WHAT?”: NUTS AND BOLTS OF TOBACCO TAXATION

Most countries tax tobacco products by levying consumption taxes (general sales taxes or VAT), duties on imports, excises, and/or other special taxes. Some also tax the value of the tobacco leaf crop produced or imported.

Although all these taxes aim at increasing tobacco product prices to trigger a reduction in consumption,<sup>17</sup> excise taxes are considered most effective in achieving the desired public health objectives and other related benefits. This is because excise taxes apply uniquely to tobacco products, therefore raising their relative prices vis-à-vis other goods and services. Such measures are fully justified based on the negative effects of tobacco consumption on public health, as opposed, for example, to basic consumption goods. Tobacco is the only mass-market consumer product that kills when used as directed, let alone the fact that it kills about half of its long-term consumers, and those affected lose on average about 20 years of life. This explains why excise taxes are used in 90 percent of the countries that tax tobacco and, in most of them, account for a larger share of tobacco product prices than any other taxes.

<sup>17</sup> In addition to the revenue generation and efficiency effects associated with these taxes, as mentioned before.

There are two types of excise tobacco taxes:

1. Specific excise taxes that can be applied either per cigarette (stick or pack) or by cigarette weight
2. Ad valorem excise taxes that are based on value and can be applied either at the producer or at the consumer level and, in the latter case, either on wholesale or on retail sales.

Most countries also apply a general sales tax or VAT on consumption at the retail level. In addition, importer countries apply an import duty either per cigarette, by weight, or on the declared CIF value. While import duties on cigarettes vary by country, those imposing high rates do so either to protect their domestic production (e.g., Egypt, Guyana, Jordan, Mexico), or to collect more revenues (especially if the domestic production is very small, as is the case in the Gulf Council Countries).

In addition, some countries impose additional taxes on the consumption of tobacco products, whose proceeds are often earmarked to finance specific programs. Examples include Thailand (2 percent surcharge tax on tobacco) and Indonesia (10 percent of the value of the excise tax on tobacco products).

## THE “HOW?”: OPTIONS FOR POLICY MAKING AND IMPLEMENTATION

As with any other policy instruments aimed at taxing “bads” and creating “goods,” the basic idea of taxing tobacco seems simple and appealing. However, designing and implementing effective tobacco taxes can turn out to be surprisingly complex. The challenge is to determine the best total tax burden and tax instruments to levy on tobacco products for a particular country at a particular moment, as well as the strategy to maintain or increase this tax burden in line with per capita GDP growth rates, thus reducing cigarette affordability over time.

Tobacco excise tax structures can be simple or complex, when different taxes and tax rates are applied based on product differences. Large price gaps between brands create opportunities for consumers to switch to cheaper brands, so reducing health and fiscal benefits, while also opening the door to tax avoidance and evasion.

As discussed, there are two major types of tobacco excise tax regimes, namely specific and ad valorem, but countries also employ different combinations of these two types. Internationally, there has been a movement toward the specific system, as pure ad valorem systems are losing favor among many countries. Between 2008 and 2012, the proportion of countries using pure specific tax remained steady at around 30 percent,

while the proportion of those using pure ad valorem tax diminished from 33 to 27 percent (WHO 2009; WHO 2013). As specific and ad valorem systems have complementary advantages, the proportion of countries using a mixture of both systems has also grown, from 26 in 2008 to 32 percent in 2012.

Both specific and ad valorem systems have strengths and flaws. Based on international experience and the empirical literature (WHO 2011), one can generally say that:

- Specific tax systems impose lower risk of non-compliance and lower administrative burdens, since they require only the quantity of tobacco products to be determined. On the other hand, an ad valorem system is more difficult to administer and enforce, requiring more sophisticated tax administration.
- Specific systems require regular adjustments of tariffs to avoid erosion of the value of excise revenues by inflation.
- Ad valorem taxes reduce the incentive to raise consumer prices, because the tax due is calculated based on that price (i.e., multiplier effect). On the contrary, specific taxes are applied to quantity volumes, so they do not influence price setting.
- Ad valorem excise taxes create disincentives to quality improvements that would increase the value of the product and therefore the tax amount due. On the other hand, specific excise taxes systems do not affect the “quality” of tobacco products.

With these factors in mind, in terms of their contribution to public health and revenue mobilization objectives, specific excise tax systems are preferable to ad valorem taxes overall. It is vital, however, that specific excise taxes be applied using a uniform tax rate per cigarette, rather than having “tiers” according to cigarette price or other differences. Differential excises would encourage “downward substitution” in favor of cheaper cigarettes, which diminishes the potential health and revenue effects of tobacco tax increases. Countries that currently have several tax tiers should eliminate them as rapidly as possible.<sup>18</sup>

Despite that fact that specific taxes are demonstrated to be technically superior, many countries have chosen to maintain a combination of specific and ad valorem taxes, and/or replace ad valorem taxes by specific ones gradually over time. This is due mainly to political-economy factors and the perception (often unjustified) that tax revenues will drop when ad valorem taxes are totally replaced. Given the need to continuously adjust specific tax rates as the levels of affordability increase (expected in developing countries), any strategy for adopting them should be accompanied by a framework/instrument to allow for annual increases over time (such as the United Kingdom’s tobacco duty escalator).

Internationally, tobacco tax systems differ significantly in terms of their tax structures. They range from the simplest models, which apply a single tariff (e.g., Norway and the

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<sup>18</sup> A specific tax with a unified rate eliminates the difference between shorter/cheaper cigarettes versus longer/expensive ones.

United States), to very complex systems, such as that in Indonesia, which includes 12 tax tiers, or India, with 11 tax tiers. The Philippines reformed its tobacco tax regime in 2013 by moving from a four-tiered ad valorem system to a two-tiered specific system, which will be further reduced to a single tier in 2017. Multi-tiered, specific systems are almost exclusively found in Asian and Pacific countries, where the traditional local tobacco production is usually protected.

As observed in a recent IMF report (Petit and Nagy 2016), from a revenue-raising perspective, the level of excises needs to be determined within the overall revenue policy of a country, taking into account all costs associated with economic distortions, administration, and redistribution. Excise levels must also be gauged in comparison with other taxes (such as the VAT). The revenue potential of the excise is determined by the current size of the market (price and quantity) and the affordability of tobacco products.

WHO recommends that the tobacco tax be set at a rate to account for “at least” 75 percent of the retail price in order for the tax to have a significant public health impact (WHO 2011). This recommendation is based on the notion that such rates would lead to increases in the retail price large enough to trigger significant reductions in cigarette consumption. This recommendation reflects the experience of countries that have already undertaken tobacco tax reforms, and it is meant to prevent the spread of the tobacco epidemic in developing countries where the associated health risks and costs are highest.

This recommended rate, however, represents only a threshold at which the tax policy is likely going to exert a significant enough impact on public health outcomes. The exact magnitude of excise tax rate increases, as well as their sequence, should be determined on a country-by-country basis, taking into account each country’s health and tobacco-market profile, the composition of the smoking population, and the income and price elasticities. Under any scenario, the fiscal revenues generated with such increases should always be considered as a positive externality and not the main objective leading the sequence of the reform.

This WHO recommendation does not mean that, in countries where tobacco excise tax rates have already reached the 75 percent level, no further tax rate increases or policy actions will be needed. In fact, some governments may well decide to continue increasing the tax rates beyond 75 percent of the retail price in order to trigger further reductions in smoking, keep up with affordability levels, and/or to align their policies with those of neighboring countries.

Over time, tax rates should be increased as needed in order to progressively reduce the affordability of tobacco as per capita income gradually increases in a particular country. Taxes on tobacco should be sufficiently high to increase real prices of tobacco faster than real income growth. Or, from a different perspective, in order to reduce the affordability

of cigarettes in a country, tobacco prices will need to increase by more than the real per capita GDP growth rate (adjusted for inflation). The pace at which such increases are introduced depends on the market structure and political-economy considerations but should be significant, in order to affect both current affordability and expectations of future affordability. Country evidence indicates that big increases have disproportionately big positive effects on public health, due to price shock and impact on expectations (Chaloupka and Jha 1999). Large increases may also be more desirable from a political-economy standpoint, as long as future affordability is also taken into consideration.

## TOBACCO TAXATION EFFECTS: WHAT TO EXPECT

### Employment Effects

Based on current price and production trends worldwide, the global supply of tobacco is not expected to decrease sharply in the immediate term as a result of higher tobacco taxes (see Chapters 7 and 8).<sup>19</sup> However, it is expected that higher taxation in many countries will eventually affect the global tobacco leaf market by increasing consumption prices and lowering worldwide demand, which could ultimately affect tobacco leaf production and tobacco-related jobs at the farming, manufacturing, and distribution stages of the supply chain.

At the individual country level, as tobacco consumption declines, consumers' resources previously allocated to smoking would result in some combination of increase in savings and purchases of other goods/services, therefore stimulating other markets (Barber et al. 2008). Falling employment in the tobacco sector would then be offset by jobs created in other sectors. The net effect on jobs in any particular country would depend on: the magnitude of the change in the total demand for tobacco products; the production and supply response; substitute products' labor intensiveness relative to tobacco; and the flexibility of workers to transition to non-tobacco sectors.

Tobacco accounts for a very small share of employment in most countries. And it is increasingly low in labor intensity, due primarily to automation and technological improvements rather than to increases in taxation. Nevertheless, any potential loss of tobacco-related employment should be carefully analyzed as part of tobacco tax reforms. A plan should be prepared to address issues of transition throughout the tobacco value chain. Sound analysis and transition arrangements are all the more important politically,

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<sup>19</sup> Global supply of tobacco leaf is slightly increasing, a trend led by China, followed by Brazil, India, and lower-income countries. Taking a longer chronological perspective, however, we note that global supply now stands at a level similar to that of the 1980s.



since the tobacco industry exaggerates the threat of employment losses in order to argue against raising tobacco taxes.

Regarding the agricultural production stage of the supply chain, a country's specific role in the global tobacco trade must be considered in order to assess the likely impacts of a tax hike. For a tobacco exporter, changes in local consumption as a result of taxes will be less important, if external demand remains stable or increases. The worldwide demand for tobacco products would need to decline in order to trigger noticeable changes at the country supply level for an exporting country. In addition, in exporting countries, governments may continue to support the tobacco market, as they still see it as a source of foreign exchange. (See for example Poland, South Korea, and Turkey. This is not a major issue in Africa and Latin America.)<sup>20</sup>

On the other hand, a tobacco tax increase is expected to negatively impact farmers' livelihoods in countries like China and Indonesia, where a large majority of the tobacco leaf produced is used for the domestic manufacture and consumption of cigarettes. In those countries, given the many other crops that can offer farmers higher yields and no risk of "green tobacco sickness," a smooth transition to alternative crops could be facilitated by the government, for example through agricultural extension, irrigation, and diversification plans aimed at ensuring adequate income to farmers during their transition out of tobacco production.

In reality, few farms grow only tobacco, and case studies (for example, in China, Indonesia, Kenya, Tanzania, and Zimbabwe) have shown that many other crops, crop combinations, farming systems, and livelihood strategies offer better opportunities and higher yields for farmers than tobacco (see Chapter 8). However, a number of institutional, economic, financial, and technical barriers may prevent farmers from giving up tobacco production. Particular obstacles arise from the oligopolistic global market structure and the close relationship that exists in many settings between the tobacco industry and political institutions. Large tobacco companies discourage farmers from pursuing non-tobacco crop options by providing farmers with multiple forms of "support" for tobacco production, including: free tobacco inputs, guaranteed product purchase, and loans. As farmers come to depend on these arrangements, many effectively become trapped in tobacco production.

Finally, the ability of the tobacco industry (with just four companies dominating the world market) to shift tobacco production around globally contributes to keeping the industry's operations profitable, especially in lower-income countries with undiversified economies, which have become its preferred target. Here well-designed diversification plans placed within broader rural development programs could yield the desired results and help reduce transition costs for poor farmers seeking to move out of tobacco.

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<sup>20</sup> Note, however, that Indonesia and China count respectively for 3.5 percent and 3 percent of total tobacco cigarette exports.

At the global level, in light of recent changes in the global tobacco market, the potential effects of tobacco taxation on net employment should not be overestimated. Improvements in farming techniques have made tobacco farming much less labor-intensive than previously, so that already many fewer farmers are engaged in tobacco cultivation than in earlier times (Capehart 2004). The industry's preference for certain types of tobacco leaves has also resulted in the increasing concentration of tobacco leaf production in a few countries (among them Brazil, China, India, and Zimbabwe), while causing a sharp decline or elimination of tobacco farming jobs elsewhere. In addition, global tobacco leaf export prices are volatile and in a long-term downward trend,<sup>21</sup> discouraging tobacco farmers, many of whom are already switching to other crops (Chapters 7 and 8).<sup>22</sup>

With respect to manufacturing jobs, tobacco leaf drying and warehousing are in general not very labor intensive, thus adding only an insignificant number of jobs to any economy (IARC 2011). The share of tobacco manufacturing in employment worldwide has declined over time due to mechanization, automation, and concentration of the production process (Allen 1993; van Liemt 2001). Paradoxically, factories have been closing in countries with relatively low tobacco taxes (Kyrgyzstan) and manufacturing has been concentrating in countries with higher tobacco taxes and higher prices, like the Russian Federation, South Africa, Nigeria, and Kenya. This suggests that factors like the size of markets and national industrial policies, rather than tax levels, drive decisions on location of tobacco manufacturing jobs., although corporate income, import duties and sales taxes may also play a secondary role as an additional incentive or disincentive.

Finally, regarding the third stage of the supply chain, employment at the distribution level, research has demonstrated that higher cigarette taxes do not significantly affect convenience stores or employment in the retail sector, because these products typically represent a small share of their turnover (Huang and Chaloupka 2013). Nevertheless, possible consequences of higher tobacco taxes for retail stores should be analyzed ex-ante in order to assess employment and other impacts, such as on street sellers of individual cigarettes, and find solutions. Otherwise, political-economy obstacles using employment loss arguments could block the way to reforms.

In sum, a constellation of factors augur against large, abrupt changes in employment patterns due to tobacco tax hikes. The global tobacco market is driven by an oligopolistic structure with four big companies determining tobacco leaf farming prices and production

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**At the global level, in light of recent changes in the global tobacco market, the potential effects of tobacco taxation on net employment should not be overestimated.**

21 They dropped by more than half in real terms between 1980 and 2006 (Yurekli 2012).

22 It is worth highlighting that these three factors that are causing a drop in tobacco farming worldwide are totally unrelated to taxation.

locations, and facilitating inputs to farmers. Meanwhile, the whole tobacco supply chain is becoming less labor intensive due to technological improvements. And money not spent on tobacco will be spent, and create employment, elsewhere. Against this background, employment in the tobacco market worldwide can be expected to show only a modest response as countries raise tobacco taxes.

In countries where production is currently concentrated, employment losses in the tobacco sector as a reaction to lower demand could be accompanied by rural development programs aimed at agricultural diversification and a reduction of transition costs to farmers.<sup>23</sup> The net employment in any given economy will depend on the pace of reduction in domestic demand, how quickly and fully the country's consumers switch their spending to non-tobacco products, and on the labor market's flexibility to add jobs in alternative sectors.

## Equity Effects

Several studies support an association between higher socio-economic status (measured in terms of individual/household income or expenditure levels, or educational attainment) and lower probability of smoking (see Chapter 6).

Based on the results of the Demographic and Health Surveys from 52 countries, there is a smoking prevalence wealth gradient. The gradient appears to be more pronounced in low- and lower-middle income countries, where the smoking prevalence among the poorest quintile is 1.8 and 1.4 times, respectively, higher than the prevalence among the wealthiest quintile.

The likely explanation is that as incomes increase, cigarettes become more affordable to the poor, while those in higher income groups have higher education and so are more aware of, and more likely to act on, the potential risks associated with smoking, and therefore quit.

Not only do people with low incomes generally smoke more than wealthier people (Bobak et al. 2000), the price elasticity is also higher for the poor (Barkat et al. 2012). Therefore, poor smokers are likely to garner more health benefits than rich smokers when tobacco taxes increase.

Evidence from high-income countries such as France, the United Kingdom, and the United States shows us that substantially increasing tobacco taxes leads to a reduction in smoking prevalence and smoking-related diseases and deaths. These countries have had increasingly strong tobacco control programs for a longer period and have shown the strongest results. But there is increasing evidence from LMICs. Evidence in countries at all income levels shows

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<sup>23</sup> For example, such a gradual transition was implemented in North Carolina, USA, with government support.

that the poor are more susceptible to tobacco price changes, therefore, they ultimately benefit most from mortality and morbidity reductions associated with reduced smoking.


The existing literature suggests that, in response to an increase in prices for tobacco items, demand decreases relatively more in developing countries (with higher price elasticity of consumption response), although this varies by country. Relatively poorer households adjust their consumption relatively more than richer households, with an estimated elasticity generally in the range of 0.8 versus 0.4, respectively. This higher elasticity reflects the fact that poor people have a stronger motivation to reduce their addiction because of their straightened financial circumstances. This argument also applies to the young — the next generation of addicts who would fall sick and die prematurely from tobacco — who also have limited disposable income, even if they may have good future earnings prospects.

The demographics of the smoking population across income groups and income levels, as well as the difference in elasticities, must be taken into consideration when analyzing who will ultimately bear the burden of higher tobacco tax rates. In any given country, the equity effects will be determined by the consumption pattern across different socioeconomic groups before the reform, the proposed changes in the tax base and the tax rate, and the elasticity of behavior change as a consequence of the reform.

The standard fiscal incidence analysis, which defines regressivity and progressivity in terms of changes in the disposable income of different socioeconomic groups as a consequence of any fiscal reform, is not adequate to analyze the equity effects of tobacco taxes. This is because such taxes affect not only disposable income but also the ability to earn income, as well as individual and household welfare. The analysis must incorporate behavioral adjustments, as well as economic gains and dynamic considerations that affect welfare in the medium term. Higher productivity of workers and better health are expected to affect households most strongly at the bottom of the welfare distribution, where labor and health are critical assets for survival (as opposed to savings or wealth).

Since the poor have less disposable income to waste (Mullainathan and Shafir 2009), by encouraging individuals to quit smoking, or preventing them from starting in the first place, higher taxes can actually raise welfare among the poor, who are at higher risk of smoking (based on the link between socioeconomic status and probability of smoking), relative to the rich. In other words, the poor are likely to get a disproportionately high share of the benefit associated with higher tobacco tax rates (Chapter 6).

Moreover, smoking cessation would decrease expenditures on treatment for tobacco-related diseases. By encouraging smokers to quit or averting the initiation of tobacco use, taxes can bring financial risk protection to households by reducing such medical expenditures, as well as reducing the related risk of catastrophic effects on family finances




from increased health expenditures and reduced earnings (Verguet et al. 2015). Again, these gains are expected to be relatively higher for poor households and are likely to trigger additional positive family benefits, especially when the smoker is the main breadwinner.

In sum, a dynamic approach is needed to analyze the equity effects of tobacco taxes. Described in detail in Chapter 6, such an approach must balance short-term reductions in disposable income (when paying a higher tax before reducing smoking consumption) against medium- and long-term gains in both disposable income and welfare as a result of: (a) averted preventable illness and premature deaths ; (b) averted out-of-pocket expenditures linked to tobacco-related diseases; and (c) averted impoverishment that would have come as a result of high health care expenditures and potentially lower salary earnings due to tobacco use.

## REFERENCES

- Allen RC. 1993. "The false dilemma: the impact of tobacco control policies on employment in Canada." Ottawa, Ontario: National Campaign for Action on Tobacco.
- Barber S, Adioetomo SM, Ahsan A, Setyonaluri D. 2008. *Tobacco Economics in Indonesia*. Paris: International Union Against Tuberculosis and Lung Disease.
- Barkat A, Chowdhury AU, Nargis N, Rahman M, Khan MS, Kumar A. 2012. *The economics of tobacco and tobacco taxation in Bangladesh*. Paris: International Union against Tuberculosis and Lung Disease.
- Bobak M, Jha P, Nguyen S, Jarvis M, and Mundial B. 2000. "Poverty and smoking." In *Tobacco control in developing countries*, edited by P. Jha and F.J. Chaloupka, 41–61. Oxford: Oxford University Press.
- Capehart T. 2004. *Trends in U.S. Tobacco Farming. Economic Outlook Report*. United States Department of Agriculture. [https://www.ers.usda.gov/webdocs/publications/39463/48597\\_tbs25702.pdf?v=42087](https://www.ers.usda.gov/webdocs/publications/39463/48597_tbs25702.pdf?v=42087)
- Huang J and Chaloupka FJ. 2013. "The economic impact of state cigarette taxes and smoke-free air policies on convenience stores." *Tobacco Control* 22: 91–96.
- IARC. 2011. *Effectiveness of Tax and Price Policies for Tobacco Control*. Volume 14, IARC Handbooks.
- Lecours N, Almeida GE, Abdallah JM, Novotny TE. 2012. "Environmental health impacts of tobacco farming: a review of the literature." *Tobacco Control* 21(2): 191–6.
- Mendez D, Alshangeety O, Warner KE. 2013. "The Potential Impact of Smoking Control Policies on Future Global Smoking Trends." *Tobacco Control* 22 (1): 46–51.
- Mullainathan S, Shafir E. 2009. "Savings policy and decision-making in low-income households." In *Insufficient funds: Savings, assets, credit, and banking among low-income households*, edited by Barr Michael and Blank Rebecca, 121–145. Russell Sage Foundation Press.
- Ng M, Freeman M, Fleming T, et al. 2014. "Smoking Preference and Cigarette Consumption in 187 Countries." *JAMA* 711 (2): 183–212.
- Petit P, Nagy J. 2016. "How to design and enforce tobacco excises?" How-to notes. Fiscal Affairs Department, International Monetary Fund, October 2016.
- Ross H, Shariff S, and Gilmore A. 2009a. *Economics of Tobacco Taxation in Russia*. Paris: International Union Against Tuberculosis and Lung Disease.
- Ross H, Shariff S, and Gilmore A. 2009b. *Economics of Tobacco Taxation in Ukraine*. Paris: International Union Against Tuberculosis and Lung Disease.
- Schmitt NM, Schmitt J, Kouimintzis DJ, et al. 2007. "Health Risks in Tobacco Farm Workers: A Review of the Literature." *J Public Health* 15: 255. doi:10.1007/s10389-007-0122-4
- Schratzstaller M. 2015. "Contribution of the Public Sector to Sustainability." Presentation at the 12<sup>th</sup> Euroframe Conference "Challenges for Europe 2050." Vienna, June 12, 2015. [http://www.foreurope.eu/fileadmin/activities/WFE\\_at\\_Conferences/Euroframe\\_2015/Euroframe\\_Policy\\_Panel\\_Schratzstaller.pdf](http://www.foreurope.eu/fileadmin/activities/WFE_at_Conferences/Euroframe_2015/Euroframe_Policy_Panel_Schratzstaller.pdf)
- The Tobacco Atlas ([www.tobaccoatlas.org/cigarette.use](http://www.tobaccoatlas.org/cigarette.use))
- Verguet S, Gauvreau CL, Mishra S, MacLennan M, Murphy SM, Brouwer ED, et al. 2015. "The consequences of tobacco tax on household health and finances in rich and poor smokers in China: an extended cost-effectiveness analysis." *The Lancet Global Health* 3(4): e206–e216.



Webber L and Takano AK. Forthcoming. "Medium- and Long-Term Effects of Tobacco Taxation on Non-Communicable Diseases and Health Expenditures: Results from Microsimulation Modeling." World Bank Tobacco Policy Research Paper. Washington, DC: World Bank.

WHO (World Health Organization). 2009. *WHO Report on the Global Tobacco Epidemic, 2009: Implementing Smoke-Free Environments*. Geneva: WHO.

WHO (World Health Organization). 2011. *Technical Manual for Tobacco Tax Administration*. Geneva: WHO.

WHO (World Health Organization). 2013. *WHO Report on the Global Tobacco Epidemic, 2013*. Geneva: WHO.

Yurekli AA. 2012. Tobacco Supply & Trade. Presentation at the World Conference on Tobacco or Health, Singapore, March 23, 2012.

# ABSTRACT

This chapter highlights the positive impact that raising tobacco taxes can have on the health and fiscal position of developing countries. As a “win-win” for health and finance, tobacco taxation should be one of the first interventions that countries turn to in their efforts to achieve the Sustainable Development Goals (SDGs).

A simple economic model of the global cigarette market was developed using data from 181 countries. We use this model to demonstrate the impact of raising cigarette excise by the equivalent of US\$ 0.25 per pack in all developing countries – an average increase of 40 percent. This measure is forecast to reduce cigarette consumption in developing countries by 8 percent and to generate an extra US\$ 41 billion in revenue – an increase of 29 percent on the US\$ 144 billion in total excise revenues generated by these countries from cigarettes in 2014.

Countries are already taking action on tobacco taxation, with 106 countries having raised excise rates between 2012 and 2014. The Philippines tax reforms are a prime example. Excise revenue from tobacco increased by 114 percent in the first year of reform, representing US\$ 1.5 billion in extra revenue. The majority of this extra revenue was allocated to the health sector, enabling the number of poor families enrolled in the Philippines National Health Insurance Program to increase from 5.2 to 15.3 million between 2013 and 2015.

Our modeling confirms that higher tobacco taxes could have a significant impact on public health and finance in many developing countries. Higher excise taxes on cigarettes can encourage tens of millions of current smokers to quit, eventually averting millions of smoking-attributable deaths. Tobacco taxes can simultaneously create the fiscal space governments need to achieve their development priorities.



# 4

## THE HEALTH IMPACT OF RAISING TOBACCO TAXES IN DEVELOPING COUNTRIES

*Mark Goodchild, Anne-Marie Perucic, Rose Zheng, Evan Blecher, and Jeremias Paul*

### INTRODUCTION

The aim of this chapter is to highlight the positive impact that raising tobacco taxes can have on the health and fiscal position of developing countries. A simple economic model of the global cigarette market is used to demonstrate the potential for tobacco taxation to generate these positive impacts, with the findings being supplemented by real-world country experiences.

### TOBACCO TAXATION AND THE GLOBAL DEVELOPMENT AGENDA

Tobacco taxation has been a cornerstone of global tobacco control efforts for over a decade, with Article 6 of the World Health Organization Framework Convention on Tobacco Control (WHO FCTC) recognizing tax as an important and effective means of demand reduction for tobacco (WHO 2003). The FCTC is the first international treaty negotiated under the auspices of WHO and has become one of the most widely embraced treaties in UN history, with 180 Parties to the Convention. The sixth session of the Conference of Parties (COP) to the FCTC in Moscow in 2014 subsequently adopted the guidelines for implementation of Article 6 and highlighted the need for taxation in comprehensive tobacco control strategies (WHO 2014).

The 2013 Global Action Plan for Non-Communicable Diseases (NCDs) further emphasized the importance of tobacco taxation as one of the most cost-effective interventions Member States can implement to address the growing burden of NCDs (WHO 2011b; WHO 2013). The UN General Assembly's endorsement of the Sustainable Development Goals (SDGs) in September 2015 has further raised the links between tobacco control and taxation in the global development agenda. This is because tobacco taxation will be a key policy instrument to achieve SDG target 3.4 — to reduce premature mortality from NCDs

by one third — and SDG target 3.a — to strengthen country-level implementation of the FCTC (United Nations 2015b).

There has also been a general recognition that developing countries will need to mobilize more of their own domestic resources to achieve the SDGs (WHO 2015a). The Addis Ababa Action Agenda — the outcome from the Third International Conference on Financing for Development — recognized that “price and tax measures on tobacco can be an effective and important means to reduce tobacco consumption and health-care costs, and represent a revenue stream for financing development in many countries” (United Nations 2015a).

The distinctive feature of tobacco taxation as a “win-win” policy has been emphasized elsewhere, including by Bill Gates’ report to the G20 leaders on innovation with impact (Gates 2011). Similarly, tobacco taxation has consistently been highlighted by the UN and WHO as an important tool for generating more financial resources for the health sector (United Nations 2011; WHO 2010). The Taskforce for Innovative Financing for Health Systems (2009), for example, emphasized domestic sources of financing for sustainable health systems, as opposed to external aid.

Now — following the endorsement of the SDGs — many UN Member States will be looking to turn their commitments into action. As a “win-win” for both health and finance, tobacco taxation should be one of the very first interventions that Member States turn to. This is especially the case for many developing countries, where tobacco taxes and retail prices are still too low, and cigarette affordability levels continue to increase, and hence the scope for raising tobacco taxes remains significant.

## MODELING THE IMPACT OF HIGHER TOBACCO TAXES

A simple economic model of the global cigarette market was recently developed using data for 181 countries that together represent 98 percent of the world’s adult cigarette smokers. We use this model to demonstrate the potential impact of raising cigarette excise by the equivalent of US\$ 0.25 per pack in all developing countries. Most countries can and should raise their excise by significantly more, particularly those well below the WHO target of taxation as at least 75 percent of the retail price. However, we adopted this increase for illustrative purposes, because it raised cigarette retail prices on average by about 20 percent across all developing countries.

The data and behavioral assumptions that underpin this model are explained in a recent *WHO Bulletin* article by Goodchild et al. (2016). In brief, country data on taxes and prices per 20-cigarette pack of the most popular brand of cigarette in 2014 were sourced from

WHO's Report on the Global Tobacco Epidemic (WHO 2015b). The main supply-side assumption is that any increase in excise will be fully passed through to the retail price of cigarettes. This assumption can be relaxed in country-level models to reflect other industry practices (for instance, over-shifting, absorption, or cross-subsidization), but full pass-through is generally a default setting for these types of exercises.

The main demand-side assumption is that the "price elasticity of demand" for cigarettes will determine the extent to which smokers reduce their consumption in response to the higher prices. The price elasticity of demand is the change in cigarette consumption resulting from a 1 percent increase in cigarette prices. Based on global evidence, the model uses price elasticities of -0.3, -0.4 and -0.5 for high-, middle-, and low-income countries, respectively (IARC 2011; Levy et al. 2013). The price elasticity of demand reflects both conditional demand (i.e., sticks per day) and smoking prevalence (i.e., percent of the population who smoke) (Ranson et al. 2000). Global evidence suggests half the impact of higher prices on consumption comes from reductions in prevalence (CDC 1998; Levy et al. 2013; Ranson et al. 2000). Consequently, the model uses prevalence elasticities of -0.15, -0.2 and -0.25 for high-, middle-, and low-income countries. For example, a 10 percent increase in the retail price of cigarettes in low-income countries will reduce total cigarette consumption by 5 percent and the prevalence rate of smoking by 2.5 percent.

Table 1 summarizes the impact of raising cigarette excise by US\$ 0.25 per pack in all developing countries, with Member States categorized as low-income, lower-middle income, and upper-middle income countries. All monetary units are presented in US\$ terms based on bilateral exchange rates against the U.S. dollar for 2014. The tax intervention, as described, would increase the amount of excise per pack by 40 percent on average across all developing countries. The tax increase affects the retail price of cigarettes in low-income countries the most, because these countries have the lowest retail prices to begin with. There, the imposition of an extra US\$ 0.25 per pack would increase average excise by around 86 percent on average.

These tax increases would lead the retail price of cigarettes to increase on average by 18 percent. Cigarette retail prices in low-income countries would increase by 38 percent, compared to 28 percent and 15 percent in the lower-middle and upper-middle income countries, respectively.

Based on the behavioral response of smokers (i.e., the price elasticity of demand for cigarettes), total cigarette consumption in developing countries would decrease by 8 percent or about 18 billion fewer packs of 20 cigarette sticks. The bulk of this decrease in consumption occurs in upper middle-income countries, including China, where current cigarette consumption levels are highest — reflecting both high rates of smoking prevalence, as well as greater intensity of smoking (i.e., average sticks smoked per day).

**Table 1: Impact of Raising Cigarette Excise by US\$ 0.25/Pack**

	LOW INCOME	LOWER MIDDLE	UPPER MIDDLE	ALL DEVELOPING
<b>Excise (US\$/Pack)</b>				
Baseline – 2014	0.29	0.51	0.72	<b>0.65</b>
Simulation	0.54	0.77	0.97	<b>0.92</b>
% change	86%	51%	36%	<b>40%</b>
<b>Retail price (US\$/Pack)</b>				
Baseline – 2014	0.82	1.21	2.03	<b>1.80</b>
Simulation	1.13	1.54	2.33	<b>2.13</b>
% change	38%	28%	15%	<b>18%</b>
<b>Cigarettes (million Packs)</b>				
Baseline – 2014	7,752	48,816	163,438	<b>220,006</b>
Simulation	6,211	42,763	153,198	<b>202,172</b>
Change	-1,541	-6,053	-10,241	<b>-17,835</b>
% change	-20%	-12%	-6%	<b>-8%</b>
<b>Excise revenue (US\$ Million)</b>				
Baseline – 2014	2,263	24,821	116,960	<b>144,044</b>
Simulation	3,376	32,857	149,028	<b>185,261</b>
Change	1,112	8,036	32,068	<b>41,217</b>
% change	49%	32%	27%	<b>29%</b>
<b>Total tax revenue (US\$ Million)</b>				
Baseline – 2014	3,109	33,728	178,900	<b>215,737</b>
Simulation	4,298	42,320	213,711	<b>260,328</b>
Change	1,189	8,592	34,811	<b>44,591</b>
% change	38%	25%	19%	<b>21%</b>
<b>Daily smoking rate (%)</b>				
Baseline – 2014	9.1	9.3	17.5	<b>13.1</b>
Simulation	8.3	8.8	17.0	<b>12.5</b>
% change	-9%	-6%	-3%	<b>-4%</b>
<b>Daily smokers (000 Adults)</b>				
Baseline – 2014	44,584	165,037	337,715	<b>547,335</b>
Simulation	40,622	155,380	327,596	<b>523,599</b>
Change	-3,961	-9,656	-10,119	<b>-23,736</b>
% change	-9%	-6%	-3%	<b>-4%</b>

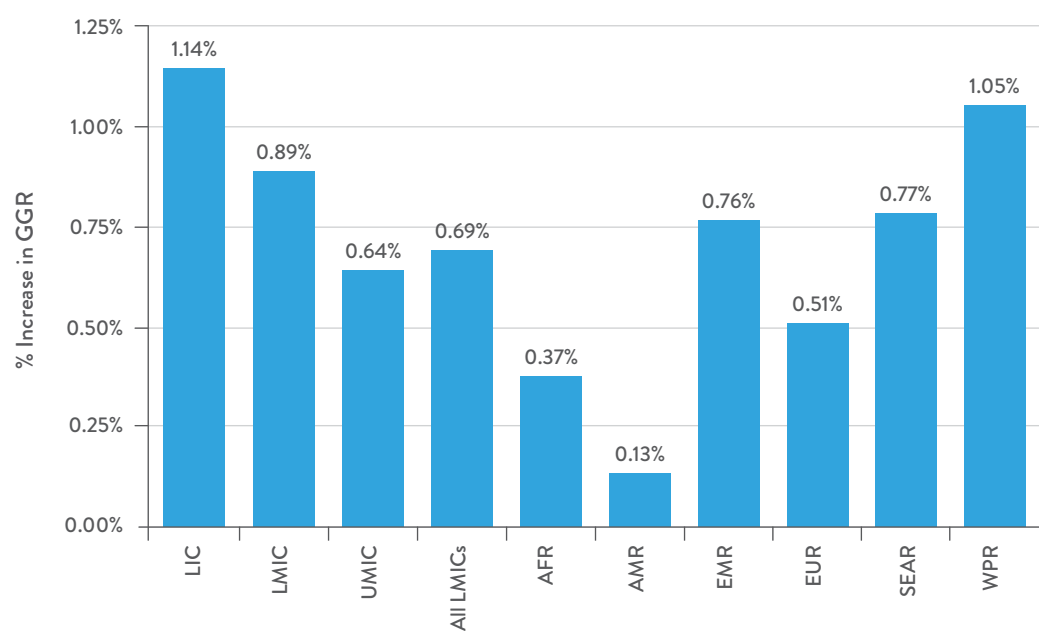
However, the rate of decrease in consumption is greatest in low-income countries, consistent with the higher price elasticity of demand observed in these countries.

Based on the available data, it is estimated that cigarette excise taxes in developing countries generated a total of US\$ 144 billion in annual excise revenue for 2014 (Goodchild, Perucic, and Nargis 2016). Other taxes — such as Value Added Taxes (VAT), as well as applicable import duties and surcharges — bring the total amount of tax revenue from cigarettes to US\$ 216 billion, representing 3.3 percent of General Government Revenue (GGR) as of end 2014 (Goodchild, Perucic, and Nargis 2016; IMF 2015).

Raising cigarette excise by US\$ 0.25 per pack in all developing countries would generate an extra US\$ 41 billion in excise revenue from cigarettes in the following year — a 29 percent increase on the 2014 baseline. Total tax revenues would increase by US\$ 45 billion or by 21 percent on 2014. Low-income countries show the greatest relative increases, with excise and total tax revenues from cigarettes expanding by 49 percent and 38 percent respectively.

Figure 1 shows the potential impact of this increase on the fiscal space of developing countries. Fiscal space is measured here as the increase in General Government Revenue (GGR) as a result of the extra total tax revenue from cigarettes. Low-income countries record the strongest expansion in fiscal space (1.14 percent), as do developing countries in the Western Pacific region (1.05 percent). About 25 percent of all developing countries

**Figure 1: Fiscal Space Created by Raising Cigarette Excise by US\$ 0.25/Pack**



could increase GGR by more than 1.0 percent, including “high tobacco-burden” countries such as Bangladesh (3.0 percent), China (1.1 percent), and Indonesia (2.0 percent).

This analysis highlights the potential for tobacco taxation to mobilize domestic revenue and to create additional fiscal space needed by different countries to finance their development programs, including in the health sector. In particular, low-income countries would be able to generate significant fiscal space from raising tobacco taxes. Table 1 also highlights the potential impact of higher tobacco taxation on smoking rates in developing countries. Raising cigarette excise by US\$ 0.25 would decrease the rate of daily cigarette smoking by 4 percent — or from 13.1 percent to 12.5 percent of the developing world’s adult population. This translates into 23.7 million fewer daily cigarette smokers in developing countries, compared to the 2014 total of 547.3 million daily cigarette smokers.

Such public health outcomes would contribute directly to the 2013 Global Action Plan for NCDs, but also to SDG target 3.4 — to reduce the premature mortality from NCDs by one third. As a benchmark, epidemiological studies have shown that tobacco ultimately kills a third to half of all people who use it (Peto et al. 2003). Thus — without further action — between 182 and 274 million adults from among the 2014 cohort of 547.3 million daily cigarette smokers will die early from a smoking-attributable disease. However, the expected number of smoking-attributable deaths among this cohort would decrease by between 5 and 8 million under the scenario in which 23.7 million of these smokers quit.

Table 2 shows the impact of raising cigarette excise by US\$ 0.25 per pack in four “high tobacco-burden” countries. Domestic cigarette manufacturers have a strong market presence in all four high-burden countries, with China’s cigarette monopoly in particular accounting for more than 40 percent of the global cigarette market on a volume basis. Indonesia is characterized by a high rate of smoking prevalence, while smoking prevalence in India is “artificially” low due to extensive use among the population of smokeless tobacco products such as chewing tobacco.

Bangladesh, which became a lower middle-income country in 2015, was in 2014 the only low-income country to be reflected in this group of high-burden countries. It is notable for the fact that the cigarette market accounts for a large share of the government’s existing revenue base — at approximately 9.9 percent of GGR. Nonetheless, cigarette excise taxes and retail prices are low in Bangladesh, even when compared to other developing countries (Table 1).

Despite these differences, it is evident that all four high-burden countries can generate significant benefits from raising excise on cigarettes. Total tax revenue expands by more than 20 percent in all four high-burden countries, while the number of cigarette smokers can be reduced significantly — even from a global public health perspective.

**Table 2: Country Impact of Raising Cigarette Excise by US\$ 0.25/Pack**

(LCU = 1 US\$)	BANGLADESH (77.5)	CHINA (6.2)	INDIA (60.2)	INDONESIA (11591)
<b>Excise (US\$/Pack)</b>				
Baseline – 2014	0.33	0.58	0.62	0.55
Simulation	0.58	0.83	0.87	0.80
% change	76%	43%	40%	46%
<b>Retail price (US\$/Pack)</b>				
Baseline – 2014	0.63	1.90	2.06	1.28
Simulation	0.93	2.20	2.37	1.63
% change	46%	15%	15%	28%
<b>Cigarettes (Million Packs)</b>				
Baseline – 2014	4,049	130,493	4,771	17,232
Simulation	3,109	122,475	4,482	15,331
Change	-939	-8,018	-288	-1,901
% change	-23%	-6%	-6%	-11%
<b>Excise revenue (US\$ Million)</b>				
Baseline – 2014	1,340	75,177	2,963	9,447
Simulation	1,806	101,177	3,904	12,238
Change	467	25,999	942	2,791
% change	35%	35%	32%	30%
<b>Total tax revenue (US\$ Million)</b>				
Baseline – 2014	1,725	124,634	4,894	13,502
Simulation	2,239	152,800	5,993	16,299
Change	514	28,166	1,099	2,797
% change	30%	23%	22%	21%
<b>Daily smoking rate (%)</b>				
Baseline – 2014	12.0	20.9	2.9	31.1
Simulation	10.6	20.2	2.8	29.4
% change	-12%	-3%	-3%	-6%
<b>Daily smokers (000 Adults)</b>				
Baseline – 2014	13,421	238,326	26,064	56,241
Simulation	11,864	231,004	25,276	53,139
Change	-1,557	-7,322	-788	-3,102
% change	-12%	-3%	-3%	-6%

However, raising tobacco taxes in developing countries is not without certain challenges. There can be strong industry interference in tax policy decision making, and there is a need to firewall tax and other policies from this influence. Many developing countries need to reform the structure of their tobacco tax systems to make them more effective and efficient from both a public health and revenue-generation perspective.

For example, all four of the high-burden countries still operate tiered excise systems. These tiered systems are inefficient, because they enable consumers to “switch down” to brands or products in lower tiers, thereby acting against the intended public health impact of raising tobacco taxes. The tiered structure also means that government tax revenues would be lower after a given tax increase than would be the case under a uniform system without tiers. For such reasons, the guidelines for Article 6 of the FCTC warn countries against using tiered excise systems (WHO 2014). Instead, global evidence shows that uniform excise systems such as single specific or mixed (i.e., specific with ad valorem) lead to better outcomes in terms of cigarette prices and tax revenues (WHO 2015b), as well as to far better health outcomes.

Illicit trade in tobacco can also be a concern in developing countries, including in both high- and low-tax jurisdictions. This highlights that the issue is more than just smuggling, but covers a host of tax avoidance and evasion activities. Nonetheless, many developing countries, including Brazil, Kenya, Turkey, and others, have protected and enhanced tobacco tax revenue collection by strengthening tax administration, including through the introduction of “track-and-trace” systems that allow for digital monitoring and control the tobacco supply chain (see Chapter 9 in this volume). Brazil’s experience is informative, as studies have found that sustained reforms in the country have both increased tax revenue and decreased smoking prevalence, despite an increase in the illicit market (Iglesias 2016; Iglesias et al. 2017). Indeed, cigarette excise tax revenues more than doubled between 2006 and 2013, while tobacco use decreased from 34.4 percent to 14.7 percent of the adult population between 1989 and 2013 (Iglesias et al. 2017).

## TAX POLICY AND PRACTICE IN DEVELOPING COUNTRIES

Countries are already taking action on tobacco taxation, with WHO’s 2015 Report on the Global Tobacco Epidemic recording 106 countries that have raised their excise rates on cigarettes between 2012 and 2014 (WHO 2015b). Furthermore, excise per pack increased by more than 50 percent in about one-fifth of those cases. These larger increases typically occurred in developing countries — like Chad, Kazakhstan, and Mongolia — where excise rates on cigarettes were low to begin with, and thus the scope for large increases was greatest.



Since 2014, the Seychelles merged its two-tier excise on cigarettes into a uniform system by raising excise on cigarette imports by 50 percent. from the equivalent of US\$ 3.30 to US\$ 4.90 per pack. Similarly, the Cook Islands raised its cigarette excise by 33 percent in 2015, from US\$ 8.40 to US\$ 11.20 per pack, after having introduced a uniform excise system in the previous year. In May 2016, Peru announced an increase of 157 percent in cigarette excise, from 1.4 to 3.6 sol per pack (or from the equivalent US\$ 0.40 to US\$ 1.10) (Diario oficial 2016). This announcement could see cigarettes prices in Peru increase by as much as 50 percent.

In 2015, China implemented a major tax reform on the cigarette market. This reform was significant because — unlike the earlier tax announcement in 2009 — cigarette retail prices increased, thus re-establishing the policy linkage between tobacco taxation and public health in China. Cigarette retail prices increased on average by 10 percent, with

cigarette sales volumes declining by about 2 percent (representing the first decrease in China since 2001) (Zheng and Goodchild 2017). Yet the central government generated an extra RMB 70 billion (or about US\$ 11 billion) in tax revenue, representing an increase of 9 percent on the previous year.

Gambia is an example of a low-income country that has successfully raised tobacco taxes significantly over a short period of time. Overall, Gambia raised cigarette excise from the equivalent of US\$ 0.12 to US\$ 0.36 per pack between 2013 and 2016 (Nargis et al. 2016). This

led to dramatic increases in cigarette prices, with import volumes approximately halving. Yet despite this sharp decrease in imports, excise revenues more than tripled, from US\$ 2 million to US\$ 7 million at current exchange rates.

The tax reforms in the Philippines are one of the most successful recent examples of tobacco taxation as a win-win policy. The reforms included a five-year plan to merge the four-tier excise system for cigarettes into a uniform system by 2017. The first year of implementation saw excise per pack roughly double, with the lowest tier of excise increasing by 341 percent, from the equivalent of US\$ 0.06 to US\$ 0.28 per pack (Kaiser, Bredenkamp, and Iglesias 2016). By 2017, this lowest tier of cigarette excise will have increased by more than 1,000 percent to about US\$ 0.70 per pack at current exchange rates. The fiscal impact of these reforms has been dramatic, with excise revenue from tobacco increasing by 114 percent in just the first year of implementation — an extra US\$ 1.5 billion in revenue (WHO 2015b).

These gains have been sustained, with the first three years of implementation generating US\$ 3.9 billion in incremental revenues. Importantly, about 85 percent of the extra revenue generated from the reform was allocated to the health sector. This enabled the Philippines to scale up its health care financing, nearly doubling the Department of

.....  
**The tax reforms in the Philippines are one of the most successful recent examples of tobacco taxation as a win-win policy.**

Health's budget in the first year of implementation and financing the extension of a fully subsidized health insurance to the poorest 40 percent of the population. From 2013 to 2015, the number of poor and near-poor families enrolled in the National Health Insurance Program increased from 5.2 to 15.3 million (Kaiser, Bredenkamp, and Iglesias 2016).

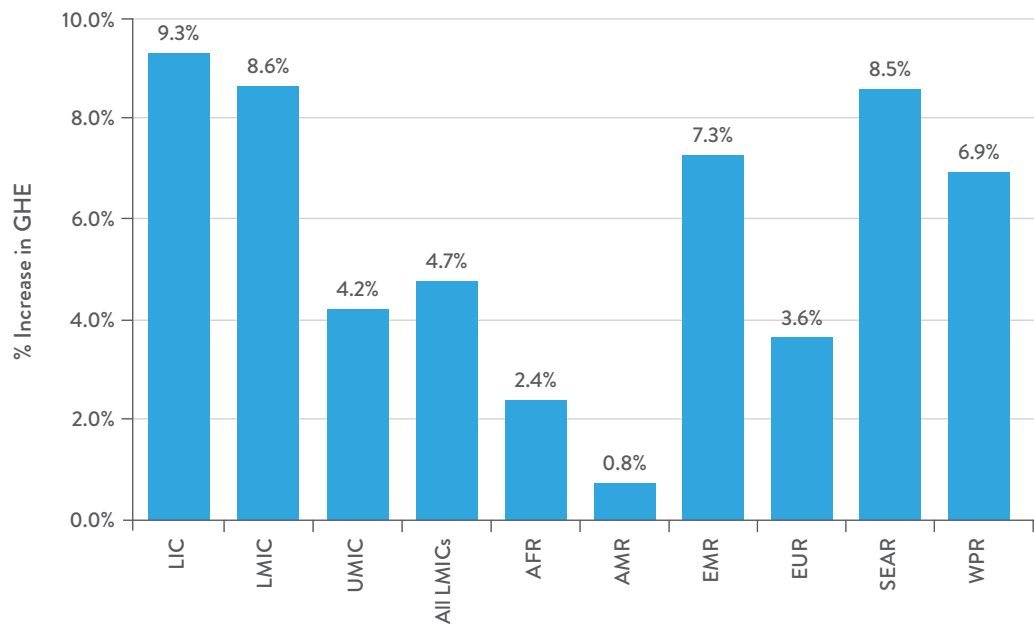
The Philippines' success demonstrates how linking tobacco tax increases to a major flagship initiative with high-level support can generate significant resources for countries to finance their development priorities. Indeed, it is increasingly common for countries to allocate some tobacco tax revenues to social programs through either "hard" or "soft" earmarking practices. In 2014, WHO found at least 36 countries that allocated some tobacco tax revenues to the social sector — 28 of whom allocated to health programs (WHO 2016). This includes Indonesia, which imposes a 10 percent surcharge on excise revenue from tobacco, with at least half of the amount collected being allocated to regional health programs. China applies a small educational surcharge to cigarettes, with the revenue earmarked for public schools. In 2015, Bangladesh introduced a new Health Cess of 1 percent on the retail price of cigarettes.

India has introduced a number of additional excise taxes on tobacco products to help fund new initiatives, including the introduction of a Health Cess in 2005. The revenue from this cess goes into the Consolidated Fund, and is used to help meet expenditures of the National Rural Health Mission (established to improve health infrastructure and strengthen health systems in India's rural areas). In 2001, India had also introduced a National Calamity Contingent Duty following an earthquake in the state of Gujarat (WHO 2011a). The revenue from this duty is transferred into a fund maintained by the central government, with transfers made to help meet the disaster relief expenditures of state governments.

These examples highlight a wide range of health prioritization practices in developing countries, starting from small allocations to help support social-sector programs up to financing the scale-up of major initiatives such as health insurance in the Philippines. Although such allocations are not always feasible, there is clearly a wider need for developing countries to mobilize more domestic resources to finance their development priorities. In this respect, it has been found that earmarking health or other social purposes can increase the public's acceptance of tobacco tax increases — an important consideration for countries needing to mobilize extra resources (WHO 2009). For demonstration purposes, Figure 2 shows the potential increase in Government Health Expenditure (GHE), if the extra revenue generated from raising cigarette excise by US\$ 0.25 per pack in developing countries was allocated to public health budgets.

This highlights the enormous potential for tobacco taxation to benefit the public health sector through the channel of health financing. For example, if the extra US\$ 41 billion in excise revenue from cigarettes (Table 1) was allocated to government health budgets,

**Figure 2: Potential Increase in Government Health Expenditure**



then public spending on health could potentially increase by as much as 4.7 percent in all developing countries. The largest increases in health spending could occur in low- and lower middle-income countries and the South-East Asia region.

It is important to note that such allocations of tax revenue to the social sector should be consistent with medium-term budget plans and sector strategies to ensure the efficient and effective use of these resources, without triggering fragmentation of the budget or putting additional pressure on the limited absorption capacity of these sectors.

## CONCLUSION

Tobacco taxation has been a cornerstone of global tobacco control for over a decade. The UN General Assembly's endorsement of the SDGs has heightened interest in tobacco control and taxation in the development agenda. There has also been a recognition that developing countries will need to mobilize more of their own domestic resources to achieve the SDGs. As a "win-win" policy for both health and finance, tobacco taxation should be one for the very first interventions that Member States turn to.

The modeling work undertaken in this chapter shows that higher tobacco taxes could have a significant impact on public health and finance in developing countries. Higher excise taxes on cigarettes could encourage tens of millions of current smokers to quit, averting millions of smoking-attributable deaths in developing countries. There is also

enormous potential for higher tobacco taxes to create additional fiscal space that governments need to finance the attainment of their development priorities.

Countries throughout the world are taking action on tobacco taxation, with many successful examples of tax policy reform among developing countries. Increasingly, these countries are also strengthening tax administration to protect and enhance tax revenue collection. Others are choosing to allocate some of the revenue from tobacco taxes to finance health and social programs. These examples highlight that tobacco taxation as an important tool for reducing tobacco consumption, while also generating extra tax revenue for financing development.

## REFERENCES

- Centers for Disease Control and Prevention (CDC). 1998. Response to increases in cigarette prices by race/ethnicity, income, and age groups — United States, 1976–1993. *MMWR Morb Mortal Wkly Rep*. 1998 Jul 31;47(29):605–9. PMID: 9699809
- Diario oficial. 2016. <http://diariooficial.elperuano.pe/Normas>
- Gates W. 2011. Innovation with impact: financing 21<sup>st</sup> century development. Report by Bill Gates to G20 leaders.
- 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.
- IARC (International Agency for Research on Cancer). 2011. *Effectiveness of tax and price policies for tobacco control*. IARC handbooks of cancer prevention: tobacco control. Volume 14. Lyon: International Agency for Research on Cancer.
- Iglesias RM, Szklo AS, Souza MC de, et al. 2017. "Estimating the size of illicit tobacco consumption in Brazil: findings from the global adult tobacco survey." *Tob Control* 26:53–59.
- Iglesias RM. 2016. "Increasing excise taxes in the presence of an illicit cigarette market: the 2011 Brazil tobacco tax reform." *Rev Panam Salud Publica* 40(4).
- IMF (International Monetary Fund). 2015. General Government Revenue (GGR) sourced from the World Economic Outlook — April 2015. Washington, DC: International Monetary Fund.
- Kaiser, Kai, Caryn Bredenkamp & Roberto Iglesias. 2016. "Sin tax reform in the Philippines: transforming public finance, health and governance for more inclusive development." Washington, DC: World Bank.
- Levy DT, Ellis JA, Mays D, Huang AT. 2013. "Smoking-related deaths averted due to three years of policy progress." *Bull World Health Organ*. 2013 Jul 1;91(7):509–18.
- Nargis N, Manneh Y, Krubally B, Jobe B, Ouma AE, Tcha-kondor N & Blecher EH. 2016. "How effective has tobacco tax increase been in the Gambia: A case study of tobacco control." *BMJ Open* 6(8):e010413. doi: 10.1136/bmjopen-2015-010413
- Peto R, Lopez AD, Boreham J, Thun M. 2003. *Mortality from smoking in developed countries*. 2nd ed. Oxford: Oxford University Press.

- Ranson K, Jha P, Chaloupka FJ, Nguyen SN. 2000. "The effectiveness and cost-effectiveness of price and other tobacco control policies." In: Jha P, Chaloupka FJ, editors. *Tobacco control in developing countries*. Oxford: Oxford University Press; 2000. pp. 427–447.
- Taskforce on innovative international financing for health systems. 2009. *More money for health, and more health for the money*. Taskforce on innovative international financing for health systems.
- United Nations. 2011. Political declaration of the High-Level Meeting of the General Assembly on the Prevention and Control of Non-Communicable Diseases. New York: United Nations.
- United Nations. 2015a. Addis Ababa Action Agenda of the Third International Conference on Financing for Development. New York: United Nations.
- United Nations. 2015b. Transforming our world: the 2030 Agenda for Sustainable Development. New York: United Nations.
- WHO (World Health Organization). 2003. WHO Framework Convention on Tobacco Control. Geneva: World Health Organization.
- WHO. 2009. *WHO report on the global tobacco epidemic — 2008*. Geneva: World Health Organization.
- WHO. 2010. *Health systems financing: the path to universal coverage. World Health Report 2010*. Geneva, World Health Organization.
- WHO. 2011a. Innovative financing from tobacco taxation for health promotion. Report of the expert group meeting. New Delhi: World Health Organization SEARO.
- WHO. 2011b. *Scaling up action against NCDs: How much will it cost?* Geneva: World Health Organization.
- WHO. 2013. *Global Action Plan for the Prevention and Control of NCDs 2013–2020*. Geneva: World Health Organization.
- WHO. 2014. Guidelines for implementation of Article 6 of the WHO FCTC. Geneva, World Health Organization.
- WHO. 2015a. *Health in 2015: from MDGs to SDGs*. Geneva, World Health Organization.
- WHO. 2015b. *WHO report on the global tobacco epidemic, 2015: raising taxes on tobacco*. Geneva: World Health Organization.
- WHO. 2016. *Earmarked tobacco taxes: lessons learnt from nine countries*. Geneva: World Health Organization.
- Zheng R & Goodchild M. 2017. Understanding tobacco industry pricing strategy: evidence from China's 2015 tax reform. Work in progress.



# 5

## *Harmonizing Tobacco Taxation at the Regional Level*

# THE EUROPEAN UNION EXPERIENCE

*Annerie Bouw*

## INTRODUCTION

The first efforts to harmonize tobacco taxation among European Member States started as early as in the 1970s.<sup>24</sup> With over 40 years of experience, the European Union has the longest experience in tobacco tax harmonization in the world. Over four decades, these harmonization provisions have been enhanced, expanded, and improved. This chapter first describes the beginning and objectives of tobacco tax harmonization in the European Union (hereafter: EU). The focus will thereafter be on the current provisions applicable to manufactured tobacco products in the EU and its Member States.

## BEGINNING OF THE EUROPEAN UNION

In 2017 the EU celebrates its 60th birthday. In 1957 six countries signed a treaty and created the European Economic Community, launching a process that has given rise to the EU as we know it today.<sup>25</sup> During the following years, the foundation of the EU was established and strengthened. The freedom of movement of goods, people, services, and money within the borders of the EU is considered as the concrete outcome of this cooperation. To achieve a properly functioning single market, new treaties were signed, and legislation was adopted and improved. Among others, the Schengen agreement was signed to allow people to travel freely in the Schengen area, regardless of their nationality.<sup>26</sup> With the treaty of Maastricht, the idea to develop a single currency was formalized, and the name “European Union” replaced European Community.<sup>27</sup>

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24 The information and views set out in this chapter are those of the author and do not necessarily reflect the official opinion of the European Union. Neither the European Union institutions and bodies nor any person acting on their behalf may be held responsible for the use which may be made of the information contained therein. Responsibility for the information and views expressed in this paper lies entirely with the author.

25 Treaty Establishing the European Economic Community, Rome Treaty, 25 March 1957

Parties: Belgium, France, Germany, Italy, Luxemburg and the Netherlands

26 Convention Implementing the Schengen Agreement of 14 June 1985 between the Governments of the States of the Benelux Economic Union, the Federal Republic of Germany and the French Republic, on the Gradual Abolition of Checks at their Common Borders (Schengen Implementation Agreement), 19 June 1990

27 Treaty on European Union (Consolidated Version), Treaty of Maastricht, 7 February 1992, Official Journal of the European Communities C 325/5; 24 December 2002

More countries joined; on 1 July 2013, with the accession of Croatia, the EU encompassed a total of 28 Member States with a population of 510 million people. Becoming an EU Member State is a lengthy process. First the conditions for membership need to be fulfilled, and all EU legislation must be implemented. There are currently five candidate countries: Albania, the former Yugoslav Republic of Macedonia, Montenegro, Serbia, and Turkey. In addition, the EU has association agreements with countries that are in the process of bringing their legislation in line with the EU acquis.

## WHY HARMONIZE EXCISE DUTIES ON TOBACCO PRODUCTS?

In order to ensure the functioning of the internal market, a certain degree of harmonization of tax policies was considered necessary, including excise duties applied on manufactured tobacco.<sup>28</sup> National legislation discriminating against foreign products was not compatible with the freedom of movement of goods, one of the requirements for the functioning of the internal market. Only excise duties on energy products, alcoholic beverages, and manufactured tobacco products are harmonized in the EU. The first legal act in the area of tobacco taxation was adopted in 1972.<sup>29</sup> At the time, the establishment of an economic union was the main priority. The objective of tax harmonization was therefore to create a framework which would not distort competition or hinder the free movement of goods within the internal market.

The legislation harmonizing the taxes on consumption of manufactured tobacco has been amended several times since. The damaging effects of smoking were acknowledged by including the objective to protect the health of the citizens of the EU in the recitals of the legal act.<sup>30</sup> Member States also agreed that the harmonized taxation should assure them of the collection of revenue from excise duties. Although some of these objectives may seem to be contradictory, the paragraphs below describe the objectives and the effects of many years of tobacco tax harmonization in the EU, including the current trends.

### Functioning of the Internal Market and Competition

A proper functioning internal market implies the presence of competition, requiring the free setting of prices. Therefore it was agreed that importers or manufacturers of tobacco products should not be restricted in setting a maximum retail selling price.<sup>31</sup> This has

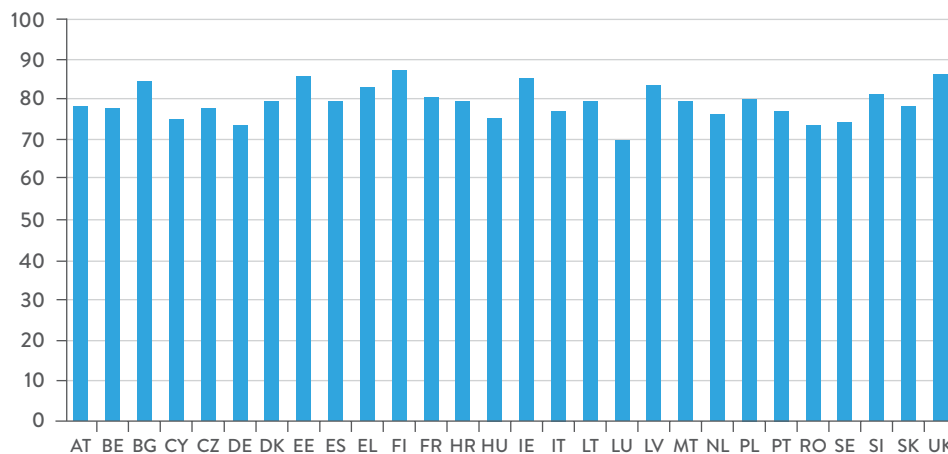
<sup>28</sup> Article 99 of the Treaty Establishing the European Community (Consolidated Version), Rome Treaty, 25 March 1957

<sup>29</sup> Directive 72/464/EEC, 19 December 1972 on taxes other than turnover taxes which affect the consumption of manufactured tobacco

<sup>30</sup> Recital 7 of Council Directive 2002/10/EC of 12 February 2002 amending Directive 92/79/EEC and 95/59/EC as regards the structure and rates of excise duty applies on manufactured tobacco



**Figure 1: Tax Burden on Cigarettes, in % of the Weighted Average Price**



Source: European Commission 2017

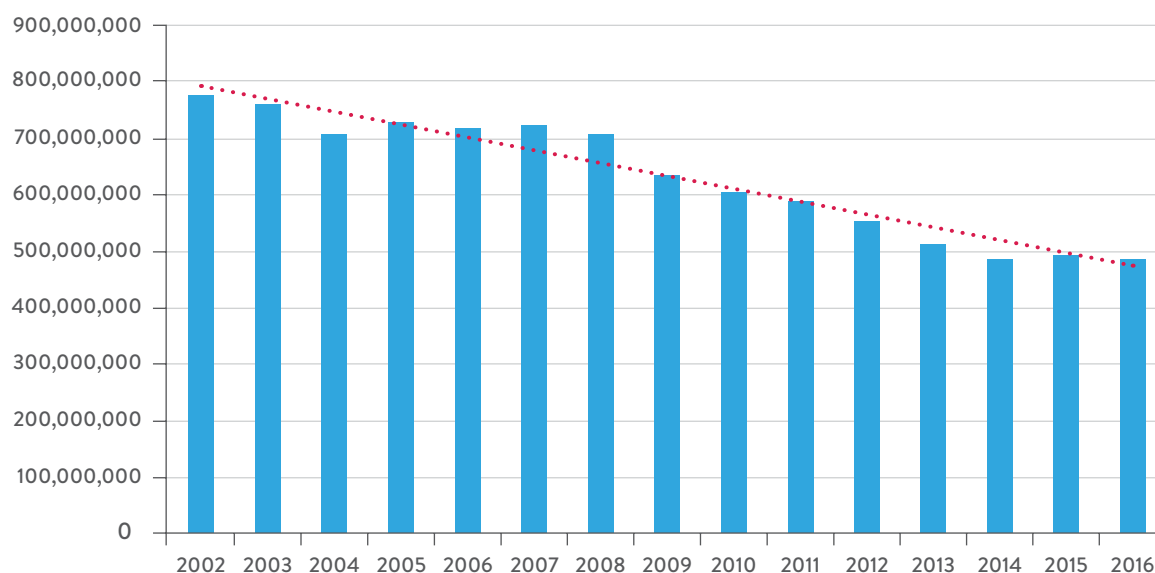
resulted in different price levels across the EU. However, one should not forget that the geographical locations and economic situations of Member States also vary, as therefore does the affordability of products. The current legislation does not interfere in the prices of manufactured tobacco directly. However, depending on its level, taxation can have a major indirect influence on price. In particular in the EU, where tax burdens on cigarettes range from 70 to 87 percent, taxation has a major indirect effect on prices. In line with the objectives of avoiding distortion of competition and ensuring a high level of health protection, it was decided that the tax burden on manufactured tobacco should be similar in each Member State. As shown in Figure 1 above, despite varying prices, a degree of convergence of tax burdens on cigarettes has been achieved across the EU.

### Contributing to a High Level of Health Protection

The consumption of cigarettes has been declining over the years. However, smoking and its consequences remain a major burden on the health of citizens and health care systems in the EU. The decline is also reflected in the quantity of cigarettes released for consumption between 2002 and 2016, as shown in Figure 2 below. Consumption has declined from almost 800 billion pieces in 2002 to below 500 billion pieces in 2016.

It is worth noting that concerns have been expressed about consumers' switching to other tobacco products, such as fine-cut tobacco for the rolling of cigarettes, which have remained cheaper than manufactured cigarettes due to a lower taxation level. This phenomenon is also called "tax-induced" substitution and is monitored at EU level.

31 Article 15 of Council Directive 2011/64/EU of 21 June 2011 on the structure and rates of excise duty applied to manufactured tobacco, PbEU 176/24

**Figure 2: Releases for Consumption of Cigarettes 2002–2016, in 1000 Pieces**

Source: European Commission 2017

In 2010 the EU stated its desire to bring the minimum tax requirements for fine-cut tobacco closer to the minimum levels applied to cigarettes, to take better account of the degree of competition between the products, which are seen as equally harmful to health.<sup>32</sup> Gradual increases in the minimum tax requirements for fine-cut tobacco took place in 2013 and 2015, and further increases are foreseen for 2018 and 2020. Despite these efforts, an increase in the consumption of fine-cut tobacco was indeed observed from 2002 to 2012, although the market seems to have stabilized between 2012 and 2015. Moreover, fine-cut tobacco still represents a comparatively small portion of the market (about 20 percent last year). In preparation for a future review of the legislation, the European Commission has included tax-induced substitution on the list of subjects to look into as part of a possible next revision.<sup>33</sup>

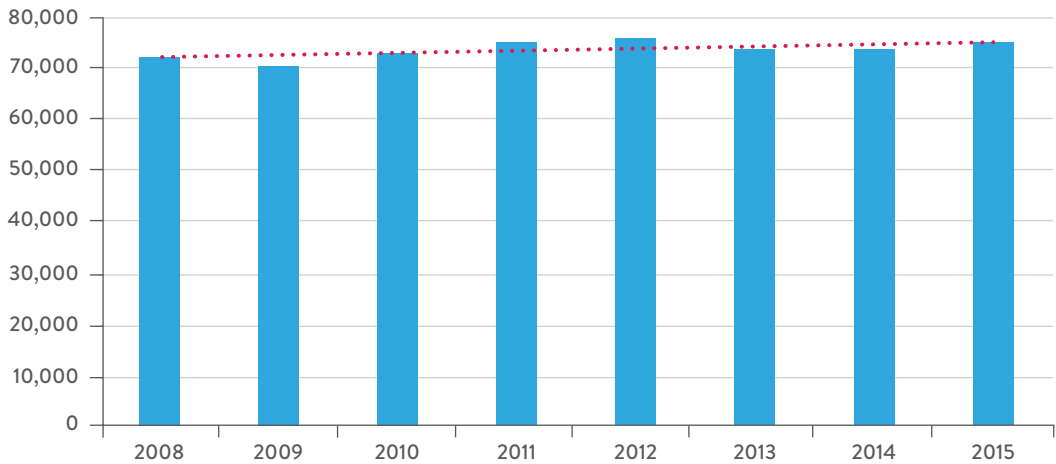
## Ensuring Revenue for Member States

The objective of ensuring revenue from excise duties applied to manufactured tobacco may seem to be contradictory to the objective mentioned above of protecting the health of citizens. This is partly true. However, it does seem possible to reach both objectives. As shown in Figure 3, the total revenue of excise duties on cigarettes was more or less stable between 2008 and 2015.

<sup>32</sup> Council Directive 2011/64/EU of 21 June 2011 on the structure and rates of excise duty applied to manufactured tobacco, PbEU 176/24

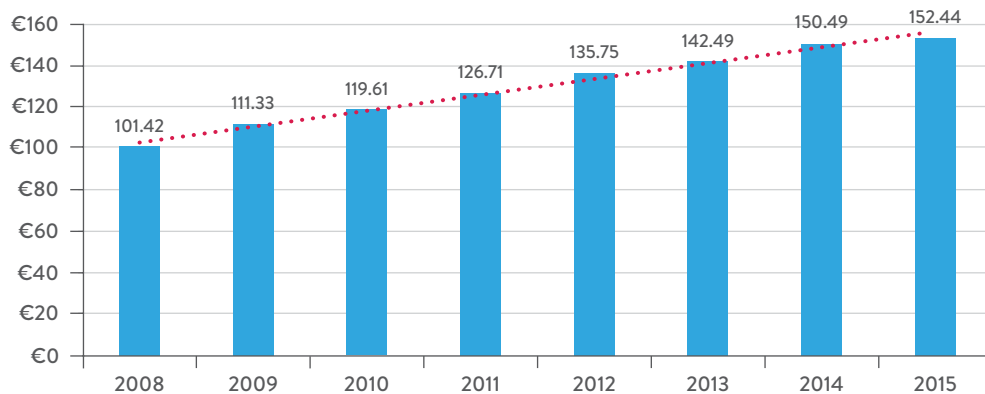
<sup>33</sup> Inception Impact Assessment on the possible revision of Directive 2011/64/EU on the rates and structure of excise duty applied on manufactured tobacco, 16 June 2016

**Figure 3: Total Revenue from Excise Duties on Cigarettes, in Millions of Euros**



Source: European Commission 2017

**Figure 4: Average Revenue from Excise Duties on Cigarettes, in Euros per 1000 Cigarettes**



Source: European Commission 2017

Stable revenues with declining consumption can only be explained in one way: an increase in rates must have taken place, in order to maintain the same level of revenue. This has indeed been the case, as shown in Figure 4 above. The average tax revenue per 1000 cigarettes has been increasing over the years. In other words, the lower consumption and the decrease in revenue this would otherwise generate have been compensated by increased rates.

## CURRENT EXCISE DUTIES ON TOBACCO PRODUCTS IN THE EU

### Tobacco Market in the EU

According to the latest available figures, during 2016, around 485 billion cigarette sticks were released for consumption, equivalent to almost 25 billion packs a year.<sup>34</sup> Moreover, although it represents a much smaller market share, an estimated 87,000 tons of smoking tobacco were also released for consumption during 2016. Smoking tobacco mainly includes fine-cut tobacco used for hand rolling of cigarettes. The revenue generated from excise duties on cigarettes and smoking tobacco was €75 billion and €9 billion, respectively, in 2015. This revenue is collected by Member States and goes entirely to their national budgets.

### Tobacco Taxation Policy in the EU and Decision Procedure

Legal acts in the EU, also called Directives, are adopted by the Council of the EU. The Council is composed of Government ministers from each EU Member State. The decision-making procedure in the Council begins once a proposal from the European Commission is tabled. The Commission has the right of initiative and may table a proposal to amend existing legislation or to adopt new legislation. Most legal acts are adopted if a qualified majority of Member States in the Council agrees. However, Member States consider that some matters are too sensitive, and for legislative acts in these areas the Council must make decisions by unanimity.<sup>35</sup> Harmonization of indirect taxation, such as tobacco taxation, is an example of this. One advantage of this decision-making procedure is that any adopted or amended act will have the full support of all Member States, as no member can be overruled. The disadvantage is that, in practice, it can be very difficult to find a compromise agreement with so many diverging views and differences between the Member States.

### How are Excise Duties Harmonized in the EU?

At the time the first act affecting the taxes on the consumption of tobacco products was adopted, it was considered too ambitious to immediately seek the same tax base, structure, and rate in all countries. The European Economic Community, as the predecessor of the EU was called at that time, decided that harmonization should take place in stages.<sup>36</sup> During the first stage, only the structure and tax base were harmonized. During the

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<sup>34</sup> Assuming a pack of cigarettes contains 20 pieces.

<sup>35</sup> Article 113 of Consolidated version of the Treaty on the Functioning of the European Union, 13 December 2007, 2008/C 115/01

<sup>36</sup> Directive 72/464/EEC, 19 December 1972 on taxes other than turnover taxes which affect the consumption of manufactured tobacco

second phase, Member States agreed upon the different categories of manufactured tobacco products and the tax structure for each category. The adoption of minimum excise duty levels for each category of tobacco products took place during the third stage, in order to achieve a greater convergence between the tax levels applied in the Member States.

### ***General rules for excise duties***

Without legislation governing the collection of tax and the enforcement activities of the competent authorities in the Member States, it would be impossible to put an effective tax system in place. The general rules applicable to all excise goods such as energy products, alcoholic beverages, and manufactured tobacco, are also harmonized in the EU and laid down in a separate legal act.<sup>37</sup> This general excise duty directive contains provisions about the production, storage, and movement of excise goods. Until the excise duty is paid, a system called the Excise Movement and Control System (EMCS) monitors the movement of alcohol, tobacco, and energy products in the EU. In addition, the time and place where excise duties are due and who is liable to pay the excise duty are included in this directive.

### ***Tax structure***

As mentioned above, Member States agreed in the early 1970s that the tax structure should be harmonized to eliminate factors that are likely to hinder free movement and distort competition. Already in the first legal act affecting the taxes on consumption of tobacco products, it was required that the excise duty for cigarettes should consist of two components, also known as the “mixed structure.” This mixed structure was at the time a compromise between southern Member States (themselves producers of raw tobacco), which favored an ad valorem system, and northern Member States (not producers of raw tobacco), which preferred a specific excise duty. The current legal act, Council Directive 2011/64/EU (hereafter: tobacco excise duty directive), requires that the excise duty on cigarettes must consist of:

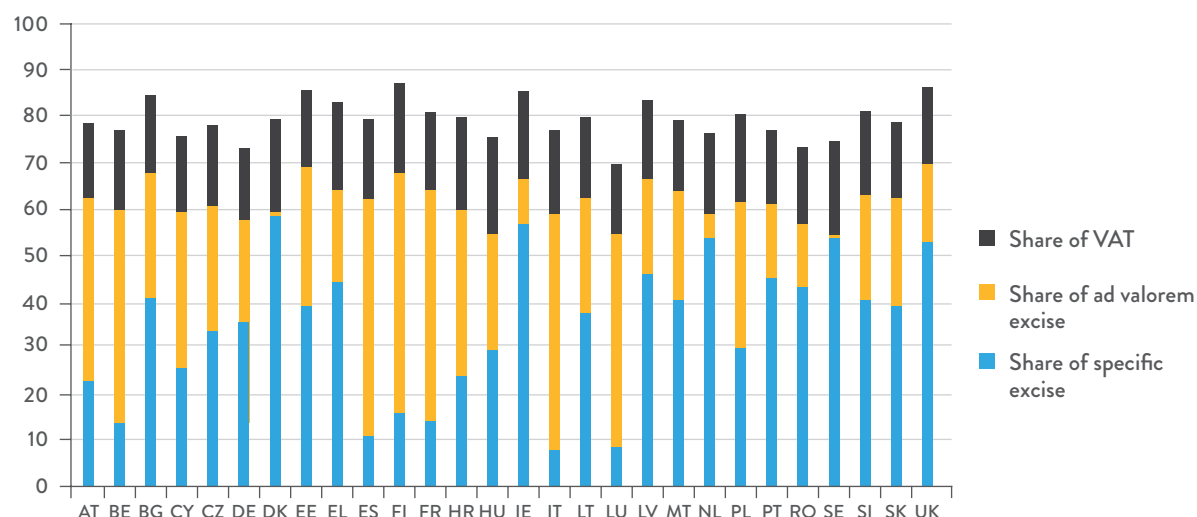
- A specific component of between 7.5 percent and 76.5 percent of the total tax burden (TTB) — expressed as a fixed amount per 1000 cigarettes;
- An ad valorem component — expressed as a percentage of the maximum retail selling price.

As shown in Figure 5, the percentage of each component varies from country to country. However, in each Member State, a specific component, ad valorem component, and value added tax are applied to cigarettes.

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<sup>37</sup> Council Directive 2008/118/EC of 16 December 2008 concerning the general arrangements for excise duty and repealing Directive 92/12/EEC

**Figure 5: Structures of Excise Duties on Cigarettes, in % of the Retail Selling Price**



Source: European Commission 2017

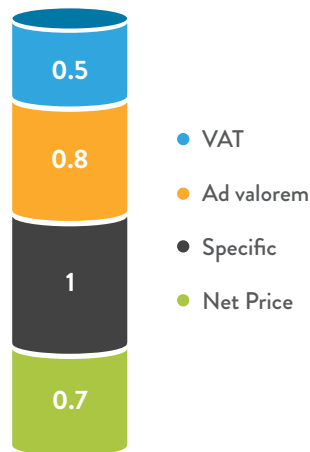
### Minimum rates

To achieve a greater approximation of rates, the EU Member States decided to introduce minimum rates in 1992, in order assist in establishing the internal market. The tobacco excise duty directive requires Member States to levy a minimum overall excise duty on cigarettes. Member States that apply an excise duty of €115 or more, however, do not need to comply with the 60 percent criterion above.

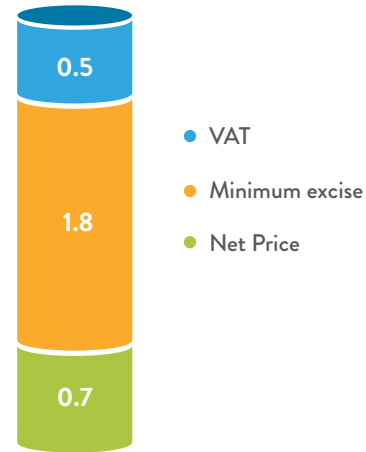
PRODUCT CATEGORY	MINIMUM RATE
Cigarettes	At least EUR 90 per 1000 cigarettes and At least 60% of the weighted average retail selling price

Figure 6 shows how a Member State could comply with these minimum requirements. The fact that the minimum tax consists of an ad valorem component, which is related to the price, could be an incentive to market products at a low(er) price since it would lead to a lower ad valorem tax. This could in turn undermine tobacco control policies and cause erosion of the tax base. This weakness could be compensated by a higher specific component of the tax. However, the tobacco excise duty directive foresees yet another mechanism to overcome this problem. The Member States also have the possibility to set a tax floor which applies regardless of the price of a product. Figure 7 shows the effect of such a tax floor.

**Figure 6: Example of a Tax Structure for a Package of Cigarettes of 3 Euros**



**Figure 7: Example of the Tax Floor on a Package of Cigarettes of 3 Euros**



Unlike in the example in Figure 6, there is no possibility to reduce the ad valorem component of the tax. If a product had a lower price, the tax burden would increase, because the tax floor is expressed in a fixed amount per unit, while with the mixed system a lower amount of ad valorem tax would be due.

The tobacco excise duty directive also lays down minimum excise duty rates for manufactured tobacco products other than cigarettes. The structure for taxing these products is slightly different (and simpler) than that used for cigarettes. Member States can choose between applying a specific component or an ad valorem component, or if they wish, they may apply a mixture of the two. Minimum rates are set out for three separate categories.

The minimum rates for fine-cut smoking tobacco will gradually be increased up to 50 percent and €60 per kilogram in 2020.<sup>38</sup>

PRODUCT CATEGORY	MINIMUM RATE
<b>Fine-cut smoking tobacco</b>	46% of the weighted average retail selling price Or €54 per kilogram
<b>Cigars and cigarillos</b>	5% of the retail selling price Or €12 per 1000 or per kilogram
<b>Other smoking tobacco</b>	20% of the retail selling price Or €22 per kilogram

<sup>38</sup> According to Article 14 of Directive 2011/64/EU

## ASSOCIATION AGREEMENTS

The European Union has Association Agreements with many countries, including neighboring countries such as Bosnia and Herzegovina, Georgia, Moldova, Montenegro, Serbia, and Ukraine. An Association Agreement is a bilateral agreement between the European Union and its members on one side and a country outside the European Union (non-EU country) on the other side. The agreements are adapted to the specific situation of each non-EU country. The aim of the agreements is to further develop, strengthen, and extend the relations between the parties to the agreement. Sometimes setting up a Deep and Comprehensive Free Trade Area (DCFTA) is part of an Association Agreement. This results in an opening of the markets by removing the custom duties on import and export and involves harmonization of legislation in the relevant sectors. By ratifying such an agreement, the non-EU country commits, among other things, to implement EU law in the national legislation. This also involves approximation of excise duty rates. Implementation of DCFTA often takes several years. Therefore, also some non-EU countries are in the process of aligning their excise duty rates and legislation applied to manufactured tobacco to the EU requirements.

## LESSONS LEARNED

One of the lessons learned relates to the decision-making procedure in the EU and reaching agreement on the level of minimum rates. Experience in the EU in the area of excise duties has shown that agreeing on relatively high minimum rates with transitional periods for some Member States gives better results than agreeing on lower minimum rates with the aim of constantly revising them over short periods of time. Although in the first situation not all members reach the minimum at the beginning of the process, having a deadline in a legal act obliging them to do so has proven to be a strong incentive to start with increases even before the transitional period ends. In contrast, in the second situation, negotiations to increase minima could well prove difficult, with the result that the “old” legislation and rates would remain in place. For example, in both the areas of energy taxation and alcohol taxation, no agreement on new minima has been reached despite several attempts to amend the legislation.<sup>39</sup> Obviously, Member States in such a situation are still free to decide individually to increase rates above the minimum. However, greater divergence between the highest and lowest rates is more likely to occur, and an agreement on new minima would be preferable.

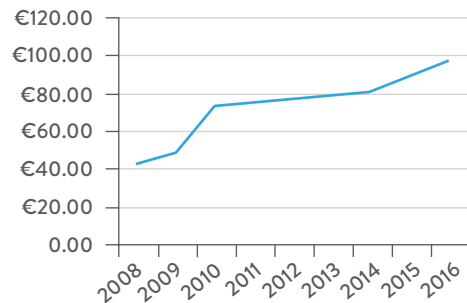
<sup>39</sup> COM (2006) 486, Proposal for a Council Directive amending Directive 92/84/EEC on the approximation of the rates of excise duty on alcohol and alcoholic beverages

COM (2011) 169, Proposal for a Council Directive amending Directive 2003/96/EC restructuring the Community framework for the taxation of energy products and electricity

Both withdrawn by: Withdrawal of Commission proposals, 7 March 2015, (2015/C 80/08), OJ C 80, p. 17–23



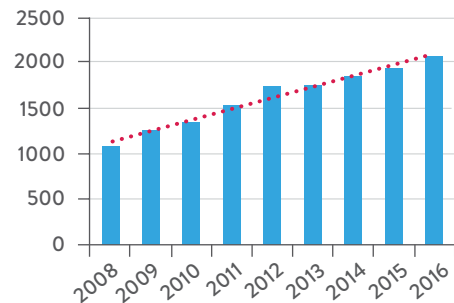
**Figure 8: Romania, Excise Duty per 1000 Cigarettes, Euros**



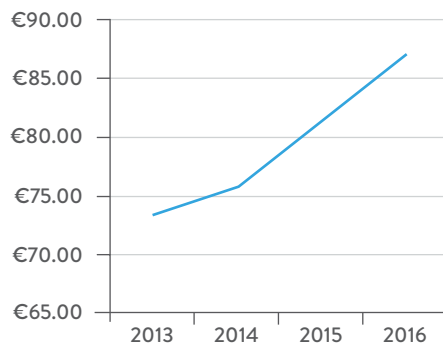
Source: European Commission 2017

Note: Romania successfully doubled its rates and revenues and has reached the minimum rates already.

**Figure 9: Revenue from Excise Duties on Cigarettes, € Million**

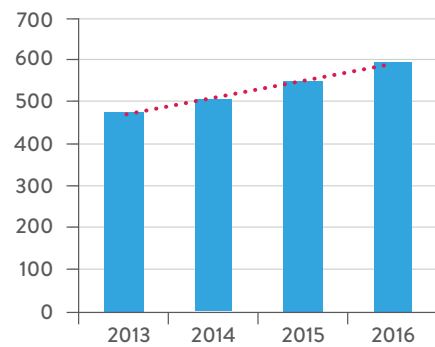


**Figure 10: Croatia, Excise Duty per 1000 Cigarettes, Euros**



Source: European Commission 2017

**Figure 11: Revenue from Excise Duties on Cigarettes, € Million**



In the tobacco excise duty directive, an increase in the minimum rates for cigarettes from €64 to €90 per 1000 pieces was foreseen on 1 January 2014. Of the 28 Member States, nine were granted a transitional period until 31 December 2017.<sup>40</sup> However, even though this period has not ended, six out of nine Member States have already reached the minima. The remaining three are very close and seem to be up to speed to comply before the end of this year. A long-term tobacco tax policy, including gradual increases, seems to be the success factor to align rates to the EU minima in new Member States. Figures 8–11 show the developments of rates and revenues in Romania and Croatia, two of the nine Member States with a transitional period.

<sup>40</sup> Bulgaria, Estonia, Greece, Latvia, Lithuania, Hungary, Poland, Romania, and Croatia.

Although Croatia's experience began much more recently, the situation appears similar; both rates and revenues have increased.

These experiences are in line with the overall developments in the EU, namely: increased or stable revenues from excise duties on cigarettes, and declines in consumption which are achieved by increasing rates resulting in a higher average excise duty collected per 1000 cigarettes.

## CONCLUSION

The experience of the EU shows that both the establishment of economic and political cooperation and the harmonization of tobacco taxation are lengthy processes that require improvements and updates over time. Both processes took place in stages in the EU. Finding agreements among members of a cooperative group is sometimes challenging, and it has proven worthwhile to think ahead and aim to agree upon legislation that is as "future proof" as possible. Currently, the definitions, the tax base, and the structure of tobacco taxes on consumption are harmonized within the EU. Member States have to respect minimum overall excise duty rates for all product categories of manufactured tobacco.

The experience of the EU also confirms that different — and perhaps at first glance contradictory — objectives can be reached with harmonization of tobacco taxation. During the first stage of harmonization of tobacco taxation in the EU, the objective was to create a framework which ensured the proper functioning of the internal market. Distortion of competition and hindering the free movement of goods had therefore to be avoided. To achieve this, it was decided that the tax burden on manufactured tobacco should be similar in each Member State, which also supports the objective of ensuring a high level of health protection. Another objective of the harmonized tobacco tax was to ensure the collection of revenues for the Member States. Experiences in the EU have proven that it is possible to achieve these different objectives: a properly functioning internal market, a declining tobacco consumption trend, and stable revenues. The lower consumption has been compensated by increased rates. Achieving these objectives is also within reach of new Member States, where establishing a long-term tax policy with gradual increases to reach the EU requirements has been a success factor in aligning their rates to the EU minima.



# ABSTRACT

Some observers have used the potential regressivity of tobacco excise taxes as an argument against raising these taxes. Since in many countries the poor spend a larger proportion of their income on smoking than the better off, higher tobacco tax rates appear to hurt poor households disproportionately. This chapter focuses on the equity considerations raised by such claims. We review key demographic facts on smoking prevalence, explore smokers' adjustment behavior as tobacco taxes are increased, and marshal empirical evidence from countries.

Smoking behavior and consumption expenditure on tobacco show large disparities across population groups. Smoking prevalence is generally higher among the poor. Worldwide, almost 30 percent of those in the poorest wealth quintile currently smoke, compared to 21 percent of those in the wealthiest quintile. From a tax perspective, an increase in tobacco excise taxes is almost always financially regressive. However, such an analysis considers only short-term changes in disposable income and fails to include additional, highly relevant outcomes.

A complete, accurate picture of the impacts of increasing tobacco excise taxes must incorporate health benefits such as higher productivity in labor markets, deaths averted and future (public and private) health expenditures saved, as well as impoverishment averted. The price elasticity of demand for tobacco is higher among poor households, which means that these show a stronger response in their smoking behavior and receive a greater share of the health and subsequent economic benefits of a tobacco tax increase than do better-off households. There will be poor households who will suffer from higher taxes on tobacco; however, good policy design can help these losers from higher taxes to become winners in the medium and long term. When these factors are considered, health gains and higher long-term labor-market productivity among poorer people offset the apparent short-term financial regressivity of an increase in tobacco excise taxes. What was portrayed as a regressive measure is in fact a progressive policy change that creates welfare gains for poor and vulnerable households.

# 6

*Beyond the Perceived Regressivity of Higher Tobacco Taxes*

## TURNING SHORT-TERM LOSERS INTO LONG-TERM WINNERS?

*Rouselle F. Lavado, Moritz Meyer, Iryna Postolovska, and Renzo Efren Sotomayor*

### INTRODUCTION<sup>41</sup>

There are about 1.1 billion smokers in the world, and the tobacco burden is increasingly affecting low- and middle-income countries (LMICs), where around four in five smokers live. Secondhand smoke exposure remains a major problem; of the six million annual deaths from tobacco-related diseases, 600 thousand are connected to secondhand smoke exposure (NIH and WHO 2016). Tobacco taxation is a cornerstone of the World Health Organization Framework Convention on Tobacco Control (WHO FCTC) and has been described by some experts as the single most important population-based health intervention (Jamison et al. 2013). However, some policy makers have used the potential regressivity of tobacco excise taxes as an argument against further tax increases.

From a public health perspective, raising the price of cigarettes reduces consumption, therefore saving lives and sparing scarce health system resources. From an economic perspective, taxes are generally accepted as a means to correct for the negative consequences of certain individual decisions on society as a whole, termed externalities: for example, the increased costs to the health system and loss of productivity caused by smoking-related illnesses among smokers and non-smokers. However, introducing or increasing taxes on tobacco items raises concerns about their distributional impact. Since in many countries the poor spend a larger proportion of their disposable income on smoking than the better off, some observers argue that higher tobacco tax rates will disproportionately hurt the poor.

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<sup>41</sup> Comments on this chapter were provided by Alan Fuchs and Patrick Hoang-Vu Eozenou. The authors would like to thank Blanca Moreno-Dodson and Patricio V. Marquez for guidance.

Using a broader definition of welfare, which goes beyond short-term changes in financial status, shows that a tax on tobacco could actually be both progressive on the individual and family level,<sup>42</sup> as well as socially desirable. Even though individuals are often aware of tobacco's harms, they become prolonged smokers — i.e., tobacco addicts — in large part because they neglect self-induced damage for their health and abstract from negative externalities for society. This reflects the psychological tendency to assign more weight to costs and benefits near at hand than to those in the distant future — a pattern known as hyperbolic discounting (Laibson 1997). Such behavior can ultimately generate large long-run individual costs for smokers. In this context, tobacco taxation could act as a device to help smokers internalize both the financial and health cost by reinforcing people's self-control (Cherukupalli 2010). This is consistent with the evidence, discussed below, of the high percentage of smokers who would like to quit and often have tried several times to do so. The expected impact at both individual and societal level strengthens the case for increased tobacco taxation.

This chapter focuses on equity considerations relevant to tobacco taxation, and how these may inform tax policy. Identifying households and individuals who will be impacted by tax changes is critical in analyzing equity implications. Accordingly, the first section of this chapter reviews key demographic facts on smoking prevalence and tobacco consumption at the individual and household levels, including characteristic socioeconomic gradients in smoking. The second section explores the adjustment behavior of households and individuals as tobacco taxes are increased. The third reviews empirical literature on countries that have increased tobacco taxes. The last section concludes.

## WHO SMOKES? SOCIAL AND ECONOMIC PATTERNS OF PREVALENCE

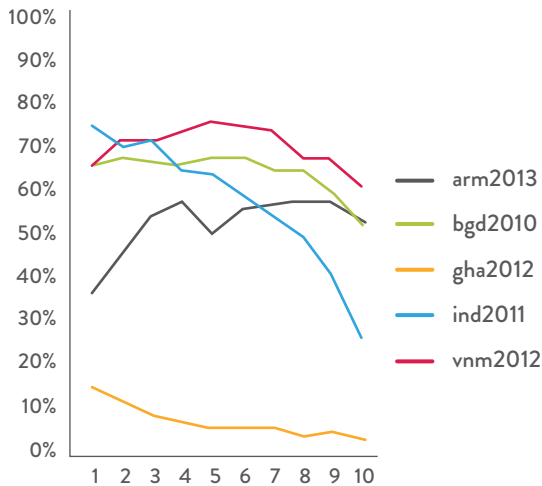
Smoking behavior and consumption expenditure on tobacco show large disparities across population groups. Findings in this section present the latest available data on smoking prevalence (across the welfare distribution, between adults and adolescents, and by gender) and update findings from earlier studies (Bobak et al. 2000; IARC 2011; Yurekli et al. 2016). We have compiled the latest available data on smoking prevalence from national budget and consumption surveys, the Global Adult Tobacco Surveys (GATS), Global Youth Tobacco Surveys (GYTS), and the Demographic and Health Surveys (DHS). These data reveal the heterogeneity in smoking patterns across various socioeconomic categories.

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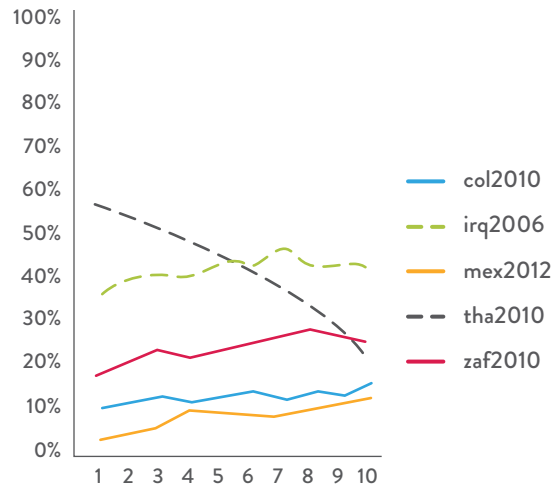
42 The assumption here is that households share resources among individuals in the household. When one member of the family smokes, the rest of the family have to consume less as the budget constraint becomes binding.

**Figure 1: Share of Households Which Reports Positive Expenditure on Tobacco Items (by Decile of National Welfare Distribution)**

**LOWER MIDDLE INCOME COUNTRIES**



**UPPER MIDDLE INCOME COUNTRIES**

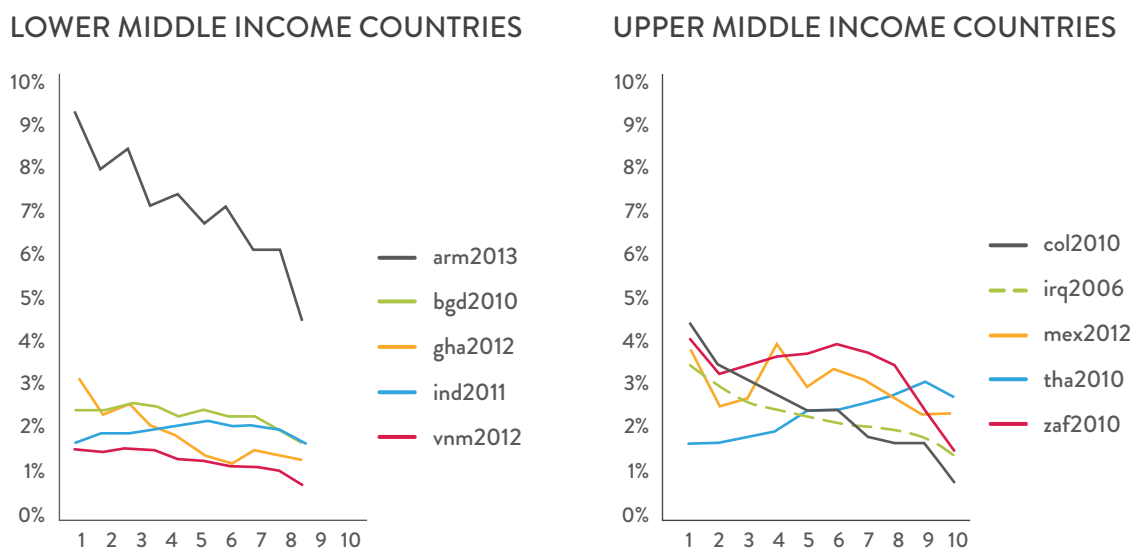


Data source: Global consumption data base.

Note: Horizontal axis shows decile of the welfare distribution (from poorest to richest). Countries are Armenia (arm), Ghana (gha), South Africa (zaf), Bangladesh (bgd), Vietnam (vnm), India (ind), Colombia (col), Mexico (mex), Thailand (thai), and Iraq (irq). Lower middle-income economies are those with a GNI per capita between \$1,026 and \$4,035; upper middle-income economies are those with a GNI per capita between \$4,036 and \$12,475.

A global comparison of smoking behavior shows that the share of households reporting consumption of tobacco products differs substantially across countries but also along the welfare distribution within each country (between relatively poor and rich households). Consumption can also differ by population groups, as in the case of South Africa, where smoking prevalence differs among the black (African), white, colored (mixed black and white ancestry), and Asian (mainly Indian) populations (Sitas et al. 2013). For lower and upper middle-income countries, Figure 1 shows that countries exhibit marked differences in the share of households reporting tobacco consumption. These patterns reflect different social norms and price levels, among other factors. At the same time, data compiled from household surveys suggest that, in the large majority of countries, the share of households consuming tobacco is higher among the relatively poor than among richer households.<sup>43</sup> Additional analysis of consumption behavior in Armenia, for example, shows that, not just the quantity, but also the quality of tobacco items consumed changes substantially across the welfare distribution. Moving from the poorest

43 A limitation of reporting by household is the possibility of confounding factors varying across deciles, such as household size and the number of adults (potential smokers) in the households. If poorer households have more potential smokers compared to richer ones, then it is more likely that they will report positive expenditure. Moreover, the analysis by household does not look into sharing of resources between household members, and between men and women who often show different smoking behavior.

**Figure 2: Share of Expenditure Which Goes to Tobacco Items (by Decile of National Welfare Distribution)**

Data source: Global consumption data base.

Note: Horizontal axis shows decile of the welfare distribution (from poorest to richest). Countries are Armenia (arm), Ghana (gha), South Africa (zaf), Bangladesh (bgd), Vietnam (vnm), India (ind), Colombia (col), Mexico (mex), Thailand (thai), and Iraq (irq). Lower middle-income economies are those with a GNI per capita between \$1,026 and \$4,035; upper middle-income economies are those with a GNI per capita between \$4,036 and \$12,475

to the richest decile in Armenia, the share of households consuming high-quality tobacco items almost triples.<sup>44</sup>

Additionally, across all countries included in the analysis, relatively poorer households spend a higher share of their available budget on tobacco than richer households. Figure 2 shows that, in both lower middle-income and upper middle-income countries, smoking prevalence and the share of household expenditure devoted to tobacco vary along the welfare distribution: higher in the first decile (poor) and declining as we approach the tenth decile (rich).

### Differences by Welfare Status

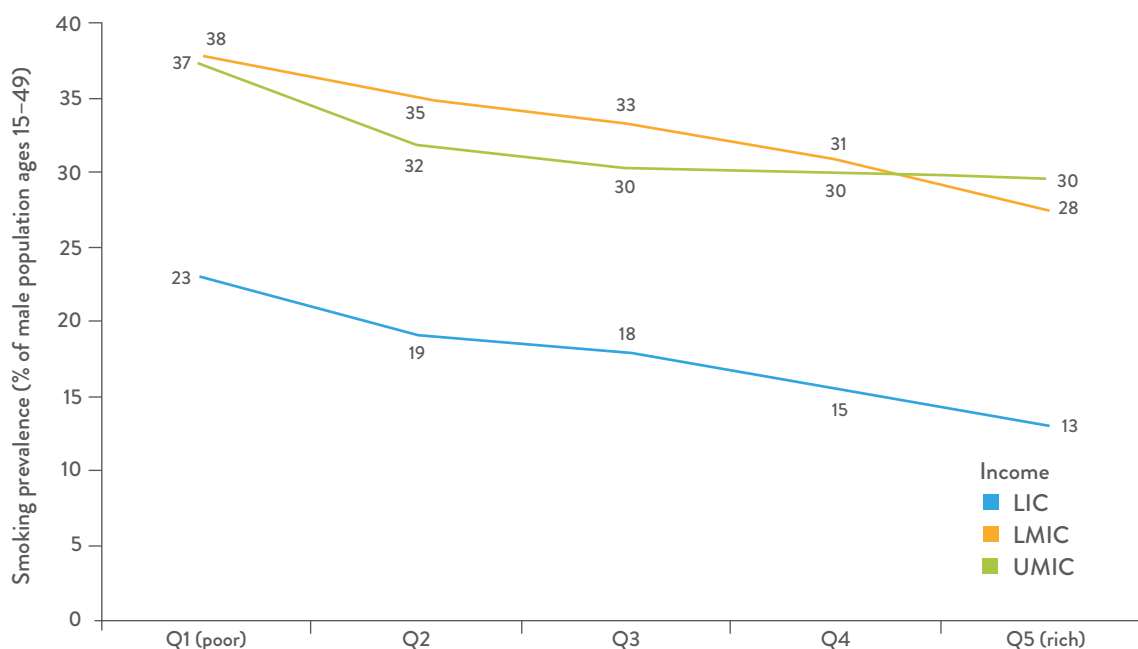
Smoking prevalence is generally higher among the poor. Based on the results of the Demographic and Health Surveys from 52 countries,<sup>45</sup> we find a consistent wealth gradient in smoking prevalence. Worldwide, almost 30 percent of those in the poorest wealth quintile currently smoke, compared to 21 percent of those in the wealthiest quintile. The gradient appears to be more pronounced in low- and lower middle-income countries,

<sup>44</sup> Total expenditure reflects both quantities and prices. Based on the country example of Armenia, where relatively richer households consume higher-quality tobacco products that are expected to be more expensive, it is likely that not only total expenditure on tobacco items decreases over deciles but also the total quantities of tobacco consumed.

<sup>45</sup> Raw datasets are obtained from: <http://dhsprogram.com/data/>



**Figure 3: Adult Male Smoking Prevalence by Country Income Classification and Quintile of the Welfare Distribution**



**Data Source:** Demographic and Health Surveys (DHS) latest year since 2007; World Bank income classification.

where the smoking prevalence among the poorest quintile is 1.8 and 1.4 times higher, respectively, than the prevalence among the wealthiest quintile (Figure 3 and Figure 4).<sup>46</sup> These results align with those of previous studies, which have found associations between higher socioeconomic status (typically measured in terms of individual or household income or expenditure levels, or educational attainment) and lower probability of smoking (Bobak et al. 2000; IARC 2011; Kostova et al. 2013). The relationship is quite consistent in most countries for which DHS data are available, with the exception of Armenia,<sup>47</sup> the Kyrgyz Republic, Mali, Namibia, and Niger (Annex Figure 1). The atypical findings in this group of countries probably reflect their early stages in the tobacco epidemic (Lopez et al. 1994; Thun et al. 2012). In the early phases of the epidemic’s characteristic “natural history,” when overall smoking prevalence is still increasing within a country, smoking rates are more likely to be higher among the better off. As countries transition, cigarettes become more affordable for the poor, while those in the higher socio-economic strata become more aware of the potential risks associated with smoking.<sup>48</sup> As a result, the relationship is reversed, with the poor now more likely to smoke than the rich.

<sup>46</sup> David and colleagues (2010) also find a similar pattern using data from the World Health Surveys.

<sup>47</sup> Raw datasets are obtained from: <http://dhsprogram.com/data/>

<sup>48</sup> The transition period takes quite some time, as smoking is an addiction, awareness is limited, and elasticity is low for higher households. Hence, this process takes some time and big gains are difficult in the short term.



deprivation — or a reward (Droomers et al. 2002; Graham 1994; Peretti-Watel et al. 2009). There is also some evidence that poor people are more likely to become nicotine dependent, as indicated by markers such as the time between waking up and smoking the first cigarette of the day, or perceived difficulty in abstaining from cigarettes; these findings may be related to non-cognitive skills, including self-control (Jarvis 1998; Wardle et al. 1998). Moreover, from an opportunity-cost perspective, given the same perceived benefits and adverse outcomes related to smoking, potential loss of labor income due to ill health is lower for the poor.<sup>49</sup> Such socially stratified smoking patterns impose a heavier disease burden on the poor, and therefore contribute to widening social and economic disparities between more and less privileged segments of society.

### Differences by Age

Almost 22 percent of the world's adult population currently smoke. Adult smoking prevalence is highest in East Asia and the Pacific, where 30 percent of adults smoke.<sup>50</sup> Meanwhile, the lowest rates are currently found in Sub-Saharan Africa (16 percent), although recent trends have shown significant increases.

Globally, almost 10 percent of students reported smoking at least one cigarette in the 30 days prior to being surveyed. This finding is based on data from the Global Youth Tobacco Surveys (GYTS), a school-based survey of students aged 13–15 years. The highest rates are observed in East Asia and the Pacific (16 percent), Latin America and the Caribbean (11 percent), and Europe and Central Asia (10 percent) (Figure 5). In some countries, smoking prevalence among youth is alarmingly high. We find that over 30 percent of students in Czech Republic, Lithuania, and Latvia reported smoking cigarettes in the past month. In Papua New Guinea, this number reached 44 percent.

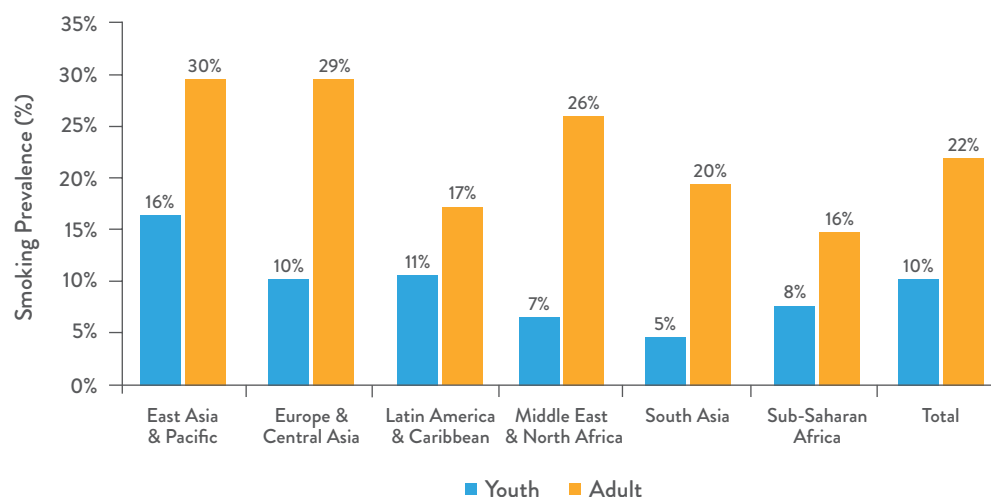
### Differences by Gender

Prevalence of smoking is significantly lower among females as compared to males. This can largely be attributed to social and cultural norms. Based on the latest available data, only 7 percent of women smoke globally compared to 36 percent of men (Figure 6). The gender differential, however, appears to be much smaller among youth. In many countries, young women report rates of tobacco use similar to those of their male counterparts. This could be a result of changing norms influenced by aggressive tobacco marketing campaigns specifically targeting young women (Yurekli et al. 2016). This trend suggests that the number of adult women smoking in the future is also likely to increase,

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49 While the poor would lose less in absolute terms, in relative terms, the cost to their and their families' resiliency is greater, including the risk of falling into more extreme poverty due to incapacity of the key breadwinner.

50 Smoking prevalence is highest in Kiribati (55 percent), Lao PDR (38 percent), and Indonesia (35 percent).

**Figure 5: Smoking Prevalence: Youth vs. Adults, Latest Year Available Since 2006**

Source: Global Youth Tobacco Surveys and WHO Global Health Observatory, latest available year.

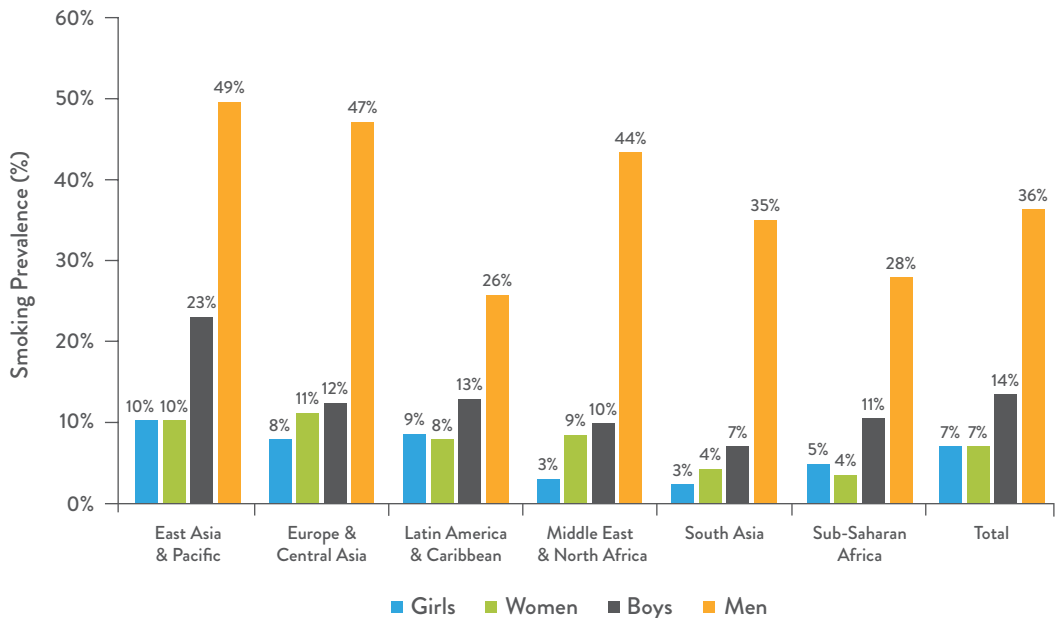
Notes: Smoking prevalence for youth is from the Global Youth Tobacco Surveys for latest year available since 2006. Only includes data from nationally representative surveys. The GYTS is a school-based survey of students aged 13–15 years. One limitation of GYTS is that it misses out-of-school youth who will most likely have higher smoking prevalence. The adult smoking prevalence is from the WHO Global Health Observatory estimates based on data from the Global Adult Tobacco Surveys (GATS) and other national statistics.

but the extent of such increases is likely to differ by region and will depend on other factors, such as gender empowerment (Hitchman and Fong 2010). In fact, Thun et al. (2012) have posited that the stages of the tobacco epidemic in LMICs might differ significantly by gender.

## HOW HOUSEHOLDS ADJUST WHEN TOBACCO TAXES RISE

How regressive or progressive the incidence of taxation will be can be assessed by well-established methodologies. The following data are required: (a) information on total expenditure and expenditure on tobacco products, which can be obtained from household surveys; and (b) information on the tax rates, both excise and VAT. Price elasticities of consumption are a crucial input when simulating expected changes in consumption behavior in response to an increase in tobacco taxes. Reliable estimates at the country level are still limited in developing countries but are becoming increasingly available. They, together with more comprehensive data available for higher income countries, provide a basis for modeling consumption behavior in developing countries. Estimates show that price elasticities are concentrated in the -0.20 to -0.60 range, but there is larger variation in elasticities in LMICs than in HICs, with estimates ranging from -0.15 to -0.90

**Figure 6: Smoking Prevalence by Gender and Region, Latest Year Available Since 2006**



**Source:** Smoking prevalence for adolescents is from the Global Youth Tobacco Surveys for latest year available since 2006. The adult smoking prevalence is from the WHO Global Health Observatory estimates based on data from the Global Adult Tobacco Surveys (GATS) and other national statistics.

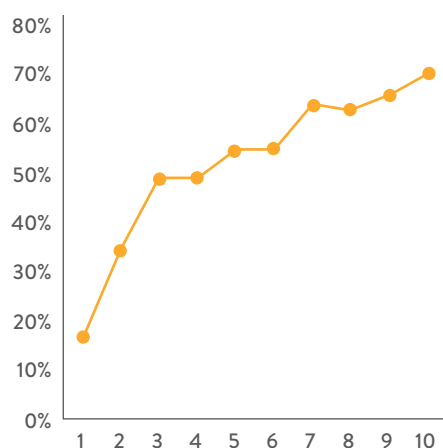
(IARC 2011; Jha et al. 2015). Recent estimates from Lebanon and the Kyrgyz Republic, for example, have found elasticities of -0.26 and -0.54, respectively (Postolovska et al. 2017; Salti et al. 2016).

The distributional impact of higher excise rates on tobacco<sup>51</sup> is primarily determined by the consumption behavior across different groups of the welfare distribution before the reform, the proposed changes in tax base and tax rate, and the elasticity to change behavior following the reform. Here, the standard fiscal incidence analysis describes regressivity and progressivity in terms of short-term changes in the available budget for different segments of the welfare distribution. We will argue shortly that a broader definition of welfare, encompassing more than financial welfare or taking account of medium- and long-term welfare as well as short-term changes in consumption behavior, can actually shift the results of a fiscal incidence analysis.

Findings from a fiscal incidence analysis describe the distributional impact of taxes (but also transfers) and can guide the design of tax policies in terms of equity considerations. This analysis revolves around the observation that most taxes do have a distributional

<sup>51</sup> Either through a higher value added tax or an increase in the excise rate.

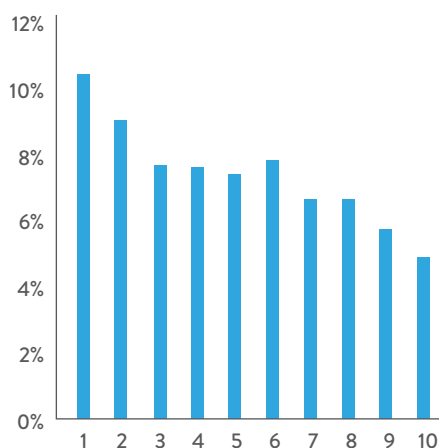
**Figure 7 (a): Share of Households (by Decile of the Welfare Distribution) which Report Tobacco Consumption**



**Note:** Horizontal axis shows decile of the welfare distribution (from poorest to richest).

**Data sources:** Global consumption data base, ILCS Armenia

**Figure 7 (b): Share of Consumption Expenditure on Tobacco (by Decile, Conditional on Smoking)**



**Note:** Horizontal axis shows decile of the welfare distribution (from poorest to richest).

**Data sources:** Global consumption data base, ILCS Armenia

impact, as they impose a larger burden for some individuals or households than for others. Traditionally, a fiscal incidence analysis uses market income to rank households from the poorest to the richest and then assesses the tax payment across the welfare distribution. A tax is progressive if the proportion paid — in relation to market income — increases as income rises. A tax is regressive if the opposite is true: if, as people's incomes rise, they pay out a smaller proportion of their income for the tax. In other words, a regressive tax is a tax that takes a larger percentage of market income from low-income earners than from high-income earners.

We explore this issue in greater depth by looking at the situation in a specific country, Armenia (Figure 7). According to data collected from the national household budget survey, the share of Armenian households that report tobacco consumption is smaller for the bottom of the welfare distribution. (As discussed earlier, Armenia is one of a small number of countries where this pattern is observed.) In 2013, 36 percent of households in the second decile of the welfare distribution reported positive expenditure on tobacco products. This share increases almost monotonically to 56 percent for the ninth decile (that is, as we move up the income scale from poorer to richer). However, if we look at the share of each household's consumption expenditure that is spent on tobacco, this picture changes systematically. Restricting the sample to households that report positive expenditure on tobacco, the share spent on tobacco (relative to total expenditure) decreases from 9 percent for the second decile to 6 percent for the ninth decile. This being the case,

## Box 1 // What Guides Optimal Tax Policy?

Under the Twin Goals, the World Bank is promoting policies that seek to end absolute poverty and boost the income growth of the bottom 40 percent of the welfare distribution. Putting these goals into practice implies that policy recommendations pay special attention to the distributional impact of any policy reform, to ensure that the relatively poor in the population are not adversely hit either by higher costs or lower benefits.

Tax policy provides multiple examples where considerations of equity influence the definition of the tax base and the design of tax rates. For instance, a personal income tax with multiple brackets and increasing marginal tax rates ensures that households which show a higher ability to pay also contribute more to tax collection. However, equity is not the only consideration that should guide policy makers in the design of tax policies.

The literature on public finance establishes at least four major considerations which should guide the optimal design of tax policy:

- **Revenue collection and administrative cost:** Mobilize revenues that ensure financial and fiscal sustainability of the government budget, taking account of the feasibility and administrative cost of enforcing the policy. Accordingly, any proposal to change tax base or tax rates needs to be evaluated in terms of gains or losses of revenues.
- **Efficiency:** Minimize dead-weight loss of taxation by prioritizing taxation of goods that are inelastic in demand. Under this principle, tax policy should aim to reduce distortions to taxpayers' decisions. Note, though, that this general principle needs to be interpreted with caution for decisions warped by addiction (such as smoking).

- **Equity:** Tax policy is fair if all individuals in society contribute (bear the burden of taxes) according to their ability to pay. Under this consideration, taxes contribute to reducing inequality.
- **Externalities imposed by consumption of some goods and services:** Discourage harmful behavior that has negative externalities for other members of society. For instance, higher excises on health-damaging addictive products trigger a reduction in their consumption, therefore benefiting society as a whole.

Each of these considerations supports policy makers to evaluate the potential welfare implications of taxes from an ex-ante perspective. However, there are numerous trade-offs among these objectives, which authorize different policy choices depending on overall development goals and priorities. Furthermore, complementary measures such as redistributive policies can help to mitigate negative effects, and turn losers of a reform into winners.

For example, an excise tax on tobacco must be designed taking into account all these objectives, using a medium-term horizon, in order to make a policy choice that is consistent with broader development goals. More specifically, the assessment on the distributional impact needs to go beyond short-term changes in the financial status, but should also account for behavioral changes in smoking behavior and long-term gains related to higher productivity in labor markets and better health. Moreover, policy makers need to account for private and public gains, because an excise tax on tobacco helps to eliminate negative externalities and thereby raises social welfare.

we expect that any increase in taxes or excises on tobacco will be financially regressive, at first glance: it will reduce available budgets more for relatively poor households than for relatively richer households.

The preliminary findings we've described concerning the financial regressivity of higher tobacco taxes and excises do not account for changes in consumption behavior, which might also show differences across the welfare distribution. Results concerning regressivity

change if the analysis incorporates: behavioral adjustments, other economic gains, and additional dynamic considerations that affect people's welfare, beyond direct changes to their available budgets (Fuchs and Meneses 2016). We will look carefully at each of these elements in turn.

## Behavioral Adjustments

As evidenced by numerous empirical studies, the demand for tobacco products is relatively inelastic, due to the addictive element of tobacco consumption and lack of substitutes. This means that an increase in the price of tobacco products will lead to a less than proportional decrease in quantity sold. Existing literature suggests that in response to a 10 percent increase in prices for tobacco items, demand decreases by around 4 percent (IARC 2011). This effect is higher in developing countries and varies according to income. Relatively poorer households adjust their behavior more than richer households, with an estimated elasticity of 0.8 versus 0.4, respectively, which sharply reduces apparent regressivity.

The addiction to tobacco may be a rational decision made by individuals; this may influence adjustment behavior when prices change. The most commonly used framework to explain rational addiction behavior was introduced by Gary Becker and Kevin Murphy in 1988. Their model suggests that individuals may rationally engage in addictive behaviors to maximize their utility over their lifespan (Becker and Murphy 1988). The model distinguishes between myopic and rational addiction. Myopic addiction determines the person's current consumption only based on his or her past consumption and discounts the future at an infinitely high rate. On the other hand, a person with a rational addiction determines his or her consumption not only based on past consumption (or past prices), but also based on future prices. In other words, if a rationally addicted person expects the price to increase in the next period, he or she will decrease his or her consumption in the current period. It is important to note that the future price not only includes the actual price of the good but also the cost associated with its consumption (such as health care costs).

The rational addiction model has been widely criticized, particularly for its assumption of perfect information and of the individual's ability to correctly assess the risk of smoking (Chaloupka and Warner 2000; Chaloupka et al. 2000). These assumptions contradict empirical evidence, which shows that individuals regret that they ever started smoking and would like to quit but are not able to (Fong et al. 2004; Gruber and Koszegi 2002). According to 2013 Gallup polling, 74 percent of smokers in the United States would like to quit, and more than 85 percent of smokers report having tried to quit at least once. Quitting success rates, however, are quite low. Moreover, as discussed earlier, knowledge of tobacco-related risks is also quite low in many settings, particularly among the poor (Oncken et al. 2005; Rutten et al. 2008; Siahpush et al. 2006;) and among young people.



An important element to consider when discussing decisions related to tobacco consumption is the notion of time-inconsistent preferences. A person who exhibits different relative preferences on two separate occasions has time-inconsistent preferences (Becker and Mulligan 1997; Gruber and Kozsegi 2002; Laibson 1997; O'Donoghue and Rabin 2003; O'Donoghue and Rabin 2015). In relation to smoking, individuals often indicate that they would like to quit after a certain amount of time, but fail to do so when the time comes. While individuals appear to make long-run decisions taking into account all costs and benefits, in the short-run they base their decision on immediate costs or gratification. In other words, they discount the future. This is the phenomenon of hyperbolic discounting evoked previously.

A central assumption in rational addiction theory is that of constant preferences. Empirical evidence, however, has suggested that most individuals exhibit present-biased preferences. This results in self-control problems, as individuals may constantly postpone their plans to stop smoking. A number of studies have investigated this phenomenon. For example, Kan (2007) and Choi and Boyle (2013) find that an individual's intention to quit smoking is associated with her support for commitment devices (such as smoking bans and cigarette excise tax increases). This further challenges the validity of time-consistent preferences. Notably, Gruber and Mullainathan (2002) find that tobacco taxes can make smokers happier. This indicates that a time-inconsistent model of smoking is more appropriate. It also suggests that cigarette taxes can improve welfare.

Since the adverse health outcomes related to tobacco consumption are only observed in the long run, with few immediate consequences of smoking, time-inconsistent preferences negatively influence the individual's ability to exhibit self-control. The poor, in particular, might be willing to quit but have fewer resources available to them to stop smoking.

Tobacco taxes can thus be viewed as a self-commitment device. While behavioral anomalies may be costly to all individuals, the poor have less disposable income to waste (Mullainathan and Shafir 2009). By encouraging individuals to quit or preventing them from starting smoking, the distortion in behavior caused by taxes can actually raise welfare among those who are at risk of smoking.

Monetary incentives to stop smoking have been found to be successful. A bank in the Philippines, for example, offered smokers an opportunity to open a CARES (Committed Action to Reduce and End Smoking) savings account as an incentive to quit (Gine et al. 2010). The authors found that smokers randomly offered the CARES plan were 3 percentage points more likely to pass the urine test for smoking cessation at the end of the study (Gine et al. 2010).

The nature of smoking addiction also helps us predict, to a large extent, the possible responses to tobacco price increases. Literature shows that youth are more responsive to price changes than older populations, as recent reviews suggest that price elasticity for

youth may be two to three times higher than for older smokers (IARC 2014; WHO 2011), primarily due to lower disposable incomes. Since adolescent smokers have shorter smoking histories than adults, they are likely to respond more to price changes than long-time smokers who are addicted (IARC 2011; Lewitt, Coate, and Grossman 1981). Moreover, price changes can lead to peer effects, which have been found to be a large determinant of smoking among youth (Clark and Loheac 2007; Fletcher 2010; Powell, Tauras, and Ross 2005). Not only can higher prices directly reduce youth smoking, but also they can indirectly affect smoking by decreasing peer smoking.

### Other Economic Gains

Thanks in part to the higher elasticity of demand for tobacco products among relatively poorer households, such households will be the main beneficiaries of other economic gains, both monetary and non-monetary, when tobacco taxes rise. These additional benefits include higher productivity in the labor market and better health, resilience through lower risk of breadwinners falling ill or dying prematurely, as well as cost saving (both private and public health expenditure) in the treatment of tobacco-related illness.

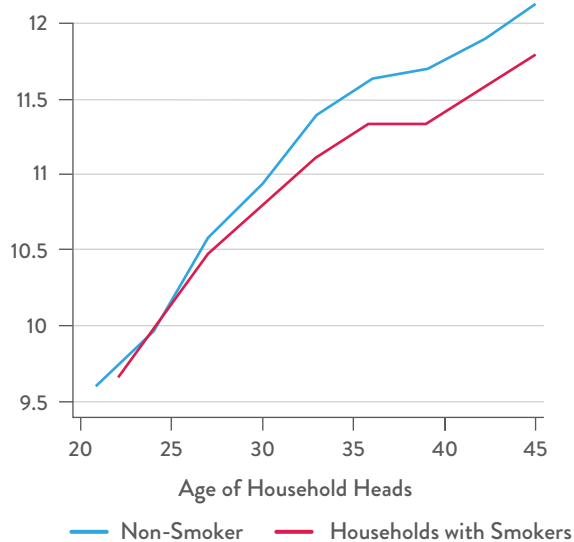
When considering the potential for smoking cessation to improve people's labor productivity and earnings, we recall that households in which someone smokes appear to earn less over time than otherwise similar households in which there are no smokers. Such evidence comes, for example, from the Philippines Family Income and Expenditure Survey (FIES), in which researchers have applied cohort analysis to repeated waves of FIES data to capture the long-term effects of smoking. Results show that, over time, the incomes of smokers and non-smokers diverge, with smokers earning less (Figure 8). By favoring smoking cessation among people at the lower end of the welfare scale, tobacco taxes have the potential to reduce the number of people suffering from this smoking-related earnings handicap.

### Dynamic Considerations

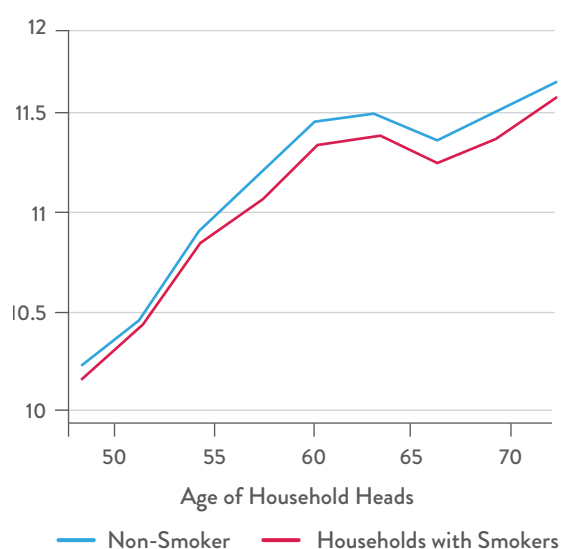
Undoubtedly, the most important reason to increase tobacco taxes is to discourage use of the product and, as a result, avert the potential adverse health consequences of smoking. Not only can higher excise rates reduce the number of deaths through induced smoking cessation, but they can also decrease expenditures on treatment for tobacco-related diseases. Given the large costs associated with such treatment, by encouraging smokers to quit or averting initiation, tobacco taxes can bring financial risk protection to households by preventing such medical expenditures altogether (Verguet et al. 2015). Again, these gains will be higher for relatively poor households — as they show a higher smoking prevalence today and their demand is more responsive to price changes. In sum, the multiple benefits accruing to low-income households have the potential to offset the additional monetary burden imposed on these households through an increase in tobacco prices.

**Figure 8: Smokers Tend to Earn Less over Time**

**COHORT 1: AGE 21 TO 47**



**COHORT 10: AGE 48 TO 74**



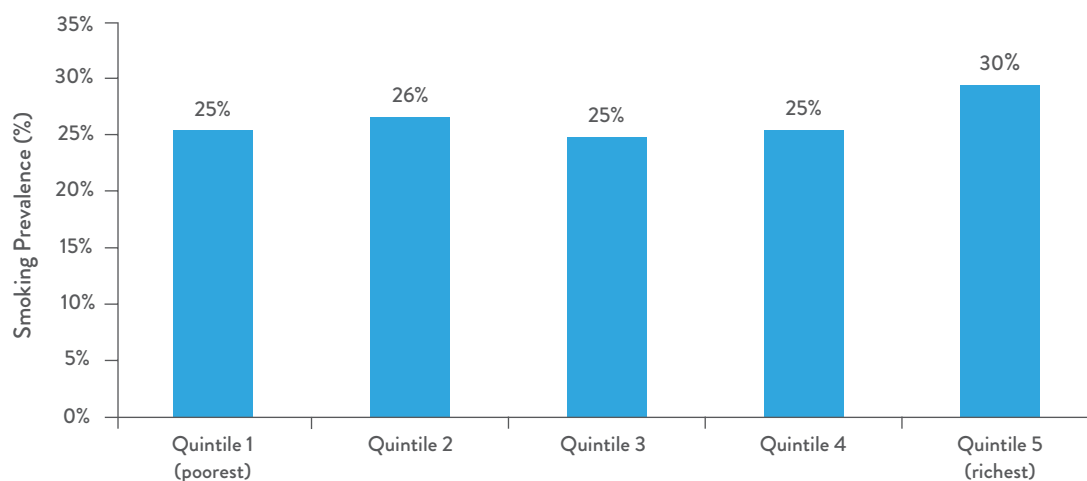
Source: FIES 1997, 2000, 2003, 2006, and 2009

Box 2 illustrates the overall results of this dynamic. It presents the potential consequences of increasing the tobacco tax in Kyrgyz Republic (Figure 9).

As many of these gains are difficult to quantify monetarily, the standard fiscal incidence analysis traditionally ignores these changes. To have a holistic view of the impact of tobacco taxation, its effect has to be viewed as incorporating the following: (i) averted premature deaths; (ii) higher incomes; (iii) averted out-of-pocket expenditures from tobacco-related diseases; and (iv) averted impoverishment (considering that poverty is not just low income

### **Box 2 // Estimating the Potential Consequences of Increasing Tobacco Taxes in the Kyrgyz Republic**

At present, tobacco taxes in the Kyrgyz Republic are among the lowest in the region. Yet smoking is one of the country's top causes of mortality, implicated in more than 20 percent of deaths among males. An extended cost-effectiveness analysis (ECEA) was conducted for the Kyrgyz Republic to assess the health, financial, and distributional consequences of raising cigarette taxes, with a particular focus on financial risk protection. In particular, we estimated the number of premature deaths averted, out-of-pocket expenditures on tobacco-related diseases averted, and number of poverty cases averted as a result of tobacco tax increases. Estimates were made using the WHO-recommended 75 percent tax rate. Given that smoking is heavily concentrated among men in the Kyrgyz Republic, the ECEA was conducted for the male population only.

**Figure 9: Smoking Prevalence (% of Adult Population) by Wealth Quintile: Kyrgyz Republic**

Source: Authors' calculations using KHS 2015

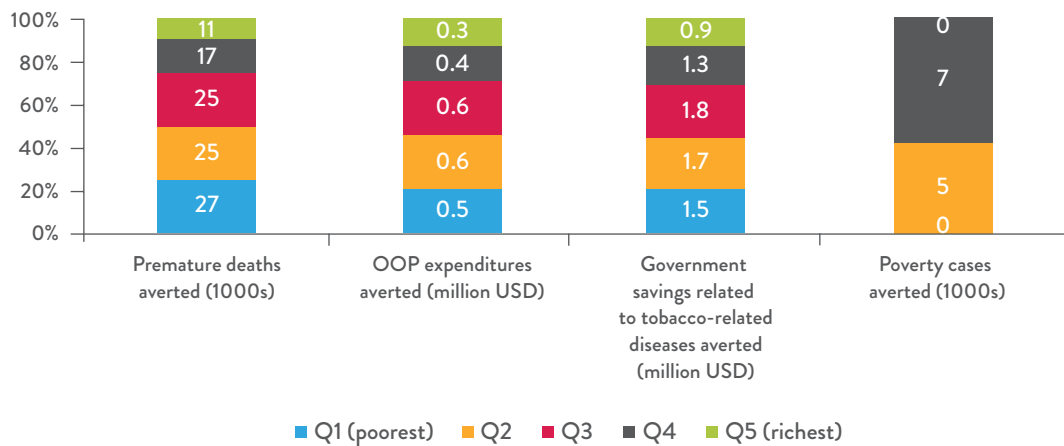
### Box 3 // Higher Tobacco Taxes Would Bring Large Health and Financial Benefits

Our results indicate that a higher tobacco tax would bring large health and financial benefits to Kyrgyz households and be pro-poor. Under the 75 percent tax, 104,000 premature deaths would be averted, along with US\$ 2.4 million in out-of-pocket expenditures and 12,100 new poverty cases. In addition, government savings on tobacco-related health expenditures would amount to US\$ 7.3 million. As shown in Figure 10, the benefits of tobacco tax increases are concentrated among the bottom 60 percent of the population, with almost 50 percent of averted deaths and 45 percent of out-of-pocket expenditures averted accruing to the bottom two consumption quintiles. Given, however, the higher smoking prevalence among the richer quintiles, the price increase would also bring about benefits for the highest quintile in terms of reductions in out-of-pocket expenditures related to tobacco-related diseases.

but also includes human development and social inclusion variables). Averted premature deaths among quitters were the primary health outcome. The averted deaths were then used to calculate numbers of averted cases of impoverishment and averted out-of-pocket expenditures due to the lower incidence of tobacco-related diseases.

This dynamic approach thus balances short-term (financial) losses against long-term (financial and non-financial) gains (see Box 3). Meanwhile, the possibility to change behavior and thereby reduce negative smoking-related externalities for society makes tobacco taxes a good candidate for inclusion within so-called "sin taxes."

**Figure 10: Extended Cost-Effectiveness Analysis Results by Individual Consumption Quintile for a Shift to a 75 Percent Tobacco Excise Tax Rate**



**Note:** No poverty cases are averted in the poorest consumption quintile given that 32 percent of the population is already below the poverty line.

## EMPIRICAL EVIDENCE FROM COUNTRIES

### Tobacco Tax Increases and Smoking Prevalence

Even though low-income individuals smoke more than wealthier people (Bobak et al. 2000), the price elasticity is also higher for the poor (Barkat et al. 2012; Townsend 1994). Based on this, poor smokers are likely to accrue relatively more health benefits than rich smokers as a result of a tax increase, while wealthier smokers are expected to pay the bulk of the tax burden. Estimates from Thailand suggest that the lowest socioeconomic class would pay 6 percent of an increase in tobacco tax revenues but benefit from 58 percent of averted deaths (Jha et al. 2012). Results from China (Verguet et al. 2015) indicate that a 50 percent increase in excise tax on cigarettes would lead to 79 million years of life gained; reduce household expenditures on tobacco by US\$21 billion; diminish expenditures on tobacco-related diseases by US\$6.6 billion; and provide financial risk protection equivalent to US\$1.3 billion for the lowest-income quintile of households over a 50-year period.

A study by Kim et al. (2006) investigated the effect among teenage students of an average 29.0 percent increase in tobacco prices in Korea in 2004. They found that 11.7 percent quit smoking and 20.5 reduced consumption; however, 32 percent substituted cheaper brands, which indicates that tax increases are more effective in curbing consumption when applied on specific taxes rather than ad valorem.

A longitudinal study by Tabuchi and colleagues (2016) among Japanese smokers reported that from 2005 to 2012, smoking prevalence decreased from 30 to 24 percent. The

researchers found that a tobacco price increase of 37 percent in 2010 was significantly associated with cessation and prevention of relapse among quitters — particularly those with the lowest incomes.

In a systematic review for Latin American countries, Guindon and colleagues (2015) found that cigarette prices have a negative and statistically significant effect on tobacco consumption in 32 studies examined.

More recent country experience in the Philippines shows that the increase in the country's tobacco taxes, that raised the minimum tax more than fourfold, led to a decrease in smoking prevalence — from 30 percent in 2011 to 25 percent in 2015 (Kaiser et al. 2016). Results from surveys also reveal that the number of cigarettes smoked per day decreased from 10 to 9. Reduction in smoking was greatest among youth (18–24 years old), with prevalence dropping from 35 to 22 percent from 2012 to 2015. For the wealthiest, smoking prevalence fell from 25 to 14 percent, among the middle class it stayed the same at 26 percent, and among the poorest, prevalence fell from 38 to 27 percent.

Finally, there is a concern that higher cigarette taxes might simply lead to smokers' replacing cigarettes with other health-damaging products. However, there are few close substitutes for tobacco and a relatively small variety of tobacco products besides cigarettes (bidis, cigars, pipes). Jha et al. (2011) found that the substitution between cigarettes and bidis in India are quite limited, involving switching from bidis to cigarettes and not the other way around. In settings outside the particular consumption patterns of India, substitution effects are more common. Chaloupka et al. (2012) have reported that part of the reduction in consumption of one tobacco product might be offset by increases in the use of other tobacco products, if the prices of these other products do not also rise. This has also been observed for roll-your-own tobacco in the United States (Furman 2016). Therefore, the recommendation is to implement comparable increases in the taxes on all tobacco products where this is practicable. In the case of South Asia, it is more prudent to start with higher cigarette taxes while better regulating bidis (Jha et al. 2017).

## Tobacco Tax Increase and Government Revenues

Some policy makers express concerns that an increase in tobacco tax could lead to lower revenues. The decrease in consumption provoked by the higher tax might actually push revenues below the baseline level (Laffer 2014). This relationship between rates of taxation and resulting government revenue is the so-called Laffer curve, one implication of which is that increasing tax rates beyond a certain point will no longer lead to higher revenue.<sup>52</sup>

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52 The IMF report on "How to design and enforce tobacco excises" (Petit and Nagy 2016) summarizes the most recent discussion on the optimal design of tax instruments on the revenue side of the government budget. This report explores whether excises on tobacco should be ad valorem or specific and outlines options on how to use incentives on the expenditure side to raise accountability and maximize health impact, for example by earmarking for expenditures.

In practice, however, this point is difficult to identify (Petit and Nagy 2016). The Laffer curve has also yet to be observed in countries that have increased taxes for tobacco. Experience from various countries shows that, even though tobacco consumption decreases because of the tax, the percentage increase in excise tax per unit is greater than the percentage decrease in tobacco consumption. In Thailand, tax revenue doubled when the cigarette excise rose from 60 percent to 80 percent of wholesale prices between 1994 and 2007 (Vethesatogit 2008). From 1990 to 2012, excise tax per pack increased by 552 percent in real terms, while excise tax revenues increased by 283 percent (Blecher and Van Walbeek 2014). In the Philippines, one year after the implementation of the “sin tax” law, tax collections from excise had increased by 86 percent, compared to the previous year. In 2015, total sin tax collection amounted to approximately US\$ 3 billion, more than 1 percent of the country’s GDP (Kaiser, Bredenkamp and Iglesias 2016).

## LONG-TERM HEALTH GAINS FROM TOBACCO TAXATION: THE EXPERIENCE OF HIGH-INCOME COUNTRIES

The full impact of reducing smoking prevalence on the occurrence of smoking-attributable diseases in developing countries will take many decades to become evident. However, low- and middle- income countries can benefit from the experience of developed countries that succeeded in reducing smoking prevalence during the previous century.

At the beginning of the twentieth century, lung cancer was rare in the United Kingdom; however, as the consumption of manufactured cigarettes increased, the incidence of lung cancer became epidemic. By the middle of the century, with 80 percent of British men and 40 percent of women smoking, lung cancer became a major cause of death in the country (Doll et al. 1994). In the 1950s, based on case-control studies, the scientific community concluded that smoking was the main cause of lung cancer. Later, more evidence would show that smoking was connected to cardiovascular and respiratory diseases, low birth weight, and other forms of cancer, as is well known today.

In the second part of the twentieth century, the United Kingdom managed to substantially decrease the prevalence of smoking, which eventually translated into a reduction in lung cancer occurrence. The prevalence of smoking among men in early middle age was halved between 1950 and 1990, while the lung cancer death rate fell even more rapidly. Today, in the United Kingdom, there are twice as many ex-cigarette smokers as smokers above the age 50 years (Peto et al. 2000).

The U.K. experience shows us the following:

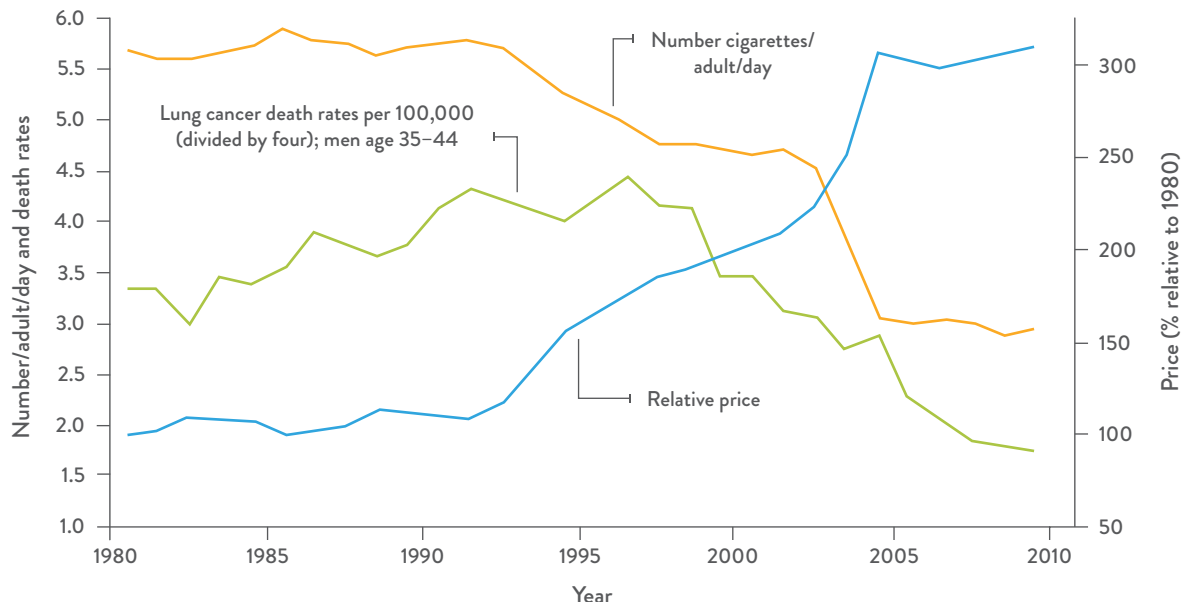
- Widespread smoking cessation has approximately halved lung cancer mortality from the level that would have been expected if former smokers had continued to smoke.
- People who start smoking in early adulthood but stop smoking before 40 years of age avoid more than 90 percent of the risk of developing lung cancer and other diseases. Even those who quit at age 50 avoid more than half the excess risk.
- Smokers who stop before 30 years of age have a risk not significantly different from that of non-smokers.
- In terms of life expectancy, people who quit smoking at 60, 50, 40, and 30 years of age gain around 3, 6, 9, and nearly 10 years of life, respectively, compared to persistent smokers. Similarly, the cumulative risk of getting lung cancer by age 75 in these groups was 10, 6, 3, and 2 percent, respectively.
- On average, cigarette smokers die about 10 years younger than non-smokers (Doll et al. 1994; Peto et al. 2000).

France also followed the trend of widespread smoking cessation in high-income countries. But unlike the United States and the United Kingdom, which each took about 35 years to halve per-adult cigarette consumption (from ten to five cigarettes per adult per day), France only took 15 years to halve its consumption (Jha 2012). Smoking prevalence in France, as in many other developed countries, increased during the first half of the 20<sup>th</sup> century, then particularly after the Second World War. At the beginning of the 1990s, France adopted a more aggressive tobacco taxation policy that led to a threefold increase in the inflation-adjusted price of cigarettes, and, by 2005, to a halving of cigarette consumption from six to three cigarettes per adult per day (Figure 11). According to Jha and Peto (2014), the sharp increase in tobacco taxation was the most important reason for the dramatic decline in cigarette consumption. Consequently, the corresponding lung cancer rates among men aged 35–44 fell sharply from 1999 onwards. Finally, the revenues collected in real terms during this period passed from around 6 to 12 billion euros (Jha 2012).

Finally, the United States is a third case providing evidence of the population health benefits associated with cutting smoking prevalence. “Smoking and Health” was the Surgeon General’s Report that started a half-century campaign against smoking, based on the dangers and negative health outcomes exposed in that seminal report (CDC 2010). During the second part of the 20<sup>th</sup> century, the United States make considerable efforts to reduce cigarette consumption, including limiting smoking in public places, educational campaigns to alert people about the dangers of smoking, and — most importantly — substantial excise tax hikes to raise cigarettes prices (Moolgavkar et al. 2012). According to CDC data, all these measures have produced a clear negative trend in tobacco consumption



**Figure 11: Smoking, Male Lung Cancer, and Cigarette Price. France 1980–2010**



**Source:** Jha (2012). The lung cancer death rates per 100,000 are divided by 4, so as to enable these to be on the same scale as smoking amount per day.

in the United States, where the smoking prevalence among adults fell from 42.4 percent in 1964 to 16.8 in 2014.

The impact of changes in smoking prevalence on the prevalence of tobacco-related diseases can be evaluated. In the case of lung cancer, tobacco is responsible for the vast majority of cases (90 percent). From 1991 to 2003, the observed lung cancer death rate (per 100,000) decreased from 59.0 to 54.2 (an 8.1 percent reduction). Among men, during the same period, the lung cancer death rate passed from 89.9 to 71.9, a 20.0 percent reduction (Thun and Jemal 2006).

A study by Moolgavkar et al. (2012) quantifies the cumulative impact of changes in smoking behaviors on lung cancer mortality in the United States for the period 1975–2000. These behavior changes were the fruit of policies adopted starting in the mid-1950s. The authors' model compares the actual smoking trends and lung cancer deaths with a scenario in which the Surgeon General's report never existed, and no tobacco control policies were implemented. The analysis shows that approximately 795,851 lung cancer deaths were averted during the 1975–2000 period: 552,574 among men and 243,277 among women.

Evidence from high-income countries such as the United Kingdom, France, and the United States, shows us that substantially increasing tobacco taxes and prices leads to a reduction in smoking prevalence and smoking-related diseases and deaths. The poor are

more sensitive to tobacco price changes. Therefore, they have benefited most from these mortality and morbidity reductions.

While disease and death rates from smoking-attributable causes have fallen sharply in developed countries, smoking prevalence and smoking-related diseases are accumulating in the developing world. Based on the evidence from developed countries, substantially increasing taxes on tobacco could rapidly modify the trend in developing countries, improving outcomes in population health, particularly among the poor.

## CONCLUSIONS

From a tax perspective, an increase in excise tax on tobacco is almost always going to be financially regressive. However, this view is quite myopic, since the broader (short- and medium-term) picture includes health effects such as deaths averted and future health expenditures saved, as well as higher earnings and impoverishment averted. There will be poor households who will suffer financially from higher taxes on tobacco; however, good policy design can help these losers of higher taxes to become winners financially in the medium and long term. The extent that tobacco taxes are regressive can also be offset by dedicating a part of the incremental tax revenue to health, as in the Philippines, where proceeds from tobacco taxes were used to pay health insurance premiums for the poor. When all these factors are considered, health gains, coupled in the longer term with higher productivity and reduced health-related risks in labor markets, offset the regressive nature of an increase in tobacco taxes. When all these relevant outcomes are included in the reckoning, they often turn what appeared as a regressive measure into a progressive policy change that creates considerable welfare gains for poor and vulnerable households.

## REFERENCES

- Andreasyan, D., Manukyan S., Tsaturyan S., Gharakhanya, N., Postosyan, A., Bazachayan, A., Zelvian, P. 2013. Health System Performance Assessment, 2013. Yerevan: National Institute of Health.
- Barkat, A., Chowdhury, A. U., Nargis, N., Rahman, M., Khan, M. S., & Kumar, A. 2012. "The economics of tobacco and tobacco taxation in Bangladesh." Paris: International Union against Tuberculosis and Lung Disease.
- Becker, G. S., & Murphy, K. M. 1988. "A theory of rational addiction." *The Journal of Political Economy*, 675–700.
- Becker, G. S., & Mulligan, C. B. 1997. "The endogenous determination of time preference." *The Quarterly Journal of Economics*, 729–758.
- Blecher, E. and van Walbeek, C. 2014. "COP6Update: An increase in the excise tax does not reduce government revenue." Geneva: Framework Convention Alliance.
- Bobak, M., Jha, P., Nguyen, S., Jarvis, M., & Mundial, B. 2000. "Poverty and smoking." In *Tobacco control in developing countries* (pp. 41–61). Oxford University Press.
- Carvalho, L. 2010. *Poverty and Time Preference* (No. 759). RAND Corporation Publications Department.
- Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, Office on Smoking and Health. 2014. *The Health Consequences of Smoking — 50 Years of Progress: A Report of the Surgeon General*. Atlanta, USA.
- Chaloupka, F. J., Tauras, J. A., & Grossman, M. 2000. "The economics of addiction." In *Tobacco control in developing countries*, 107–129.
- Chaloupka, F. J., & Warner, K. E. 2000. "The economics of smoking." *Handbook of health economics*, 1, 1539–1627.
- Chaloupka, F. J., Yurekli, A., Fong, G.T. 2012. "Tobacco taxes as a tobacco control strategy." *Tobacco Control* 2012;21:172–180.
- Cherukupalli, R. 2010. "A behavioral economics perspective on tobacco taxation." *American Journal of Public Health* 2010; 100: 609–615.
- Choi, K., & Boyle, R. G. 2013. "Minnesota smokers' perceived helpfulness of 2009 federal tobacco tax increase in assisting smoking cessation: a prospective cohort study." *BMC Public Health* 13(1), 965.
- Clark, A. E., & Lohéac, Y. 2007. "It wasn't me, it was them!" Social influence in risky behavior by adolescents." *Journal of Health Economics* 26(4), 763–784.
- David, A., Esson, K., Perucic, A. M., & Fitzpatrick, C. 2010. "Tobacco use: equity and social determinants." *Equity, social determinants and public health programmes*, 199.
- Doll, R., Peto, R., Wheatley, K., Gray, R., Sutherland, I. 1994. "Mortality in relation to smoking: 40 years' observations on male British doctors." *BMJ*, 901–911.
- Droomers, M., Schrijvers, C., & Mackenbach, J. P. 2002. "Why do lower educated people continue smoking? Explanations from the longitudinal GLOBE study." *Health Psychology* 21(3), 263.
- Forouzanfar, M. & GBD Collaborators. 2016. "Global, regional and national comparative risk assessment of 79 behavioral, environmental and occupation, and metabolic risks or clusters of risks, 1990–2015: a systematic analysis for the Global Burden of Disease Study 2015." *Lancet* 386(10010): 2287–323. doi: 10.1016/S0140-6736(15)00128-2.

Fletcher, J. M. 2010. "Social interactions and smoking: Evidence using multiple student cohorts, instrumental variables, and school fixed effects." *Health Economics* 19(4), 466–484.

Fong, G. T., Hammond, D., Laux, F. L., Zanna, M. P., Cummings, K. M., Borland, R., & Ross, H. 2004. "The near-universal experience of regret among smokers in four countries: findings from the International Tobacco Control Policy Evaluation Survey." *Nicotine & Tobacco Research* 6 (Suppl 3), S341-S351.

Fuchs, Alan & Meneses, F. 2016. "Are Tobacco Taxes Really Regressive? Evidence from Chile. The World Bank. Draft mimeo.

Furman, J. 2016. "Policy, Politics, and the Tripling of Federal Tobacco Taxes in the United States to Deter People from Smoking, Save Lives, and Mobilize Revenue over the last 30 years. Six Lessons from the U.S. Experience with Tobacco Taxes." Presentation at the World Bank Conference. "Winning the Tax Wars: Global Solutions for Developing Countries," Washington, DC, May 24, 2016. <http://www.worldbank.org/en/topic/health/brief/tobacco>

Giné, X., Karlan, D. & Zinman, J. 2010. "Put Your Money Where Your Butt Is: A Commitment Contract for Smoking Cessation." *American Economic Journal: Applied Economics* 2(4): 213–35.

Graham, H. 1994. "Gender and class as dimensions of smoking behaviour in Britain: insights from a survey of mothers." *Social Science & Medicine*, 38(5), 691–698.

Gruber, J., & Mullainathan, S. 2002. "Do Cigarette Taxes Make Smokers Happier?" (No. 8872). National Bureau of Economic Research, Inc.

Guindon, E., Paraje, G., & Chaloupka, F. 2015. "The impact of prices and taxes on the use of tobacco products in Latin America and the Caribbean." *American Journal of Public Health*, 105:e9-e19.

Hitchman, S. C., & Fong, G. T. 2011. "Gender empowerment and female-to-male smoking prevalence ratios." *Bulletin of the World Health Organization* 89(3), 195–202.

International Agency for Research on Cancer. 2011. *IARC Handbooks of Cancer Prevention, Tobacco Control, Volume 14, Effectiveness of Tax and Price Policies for Tobacco Control*. IARC.

Jamison, D., Summer, L., Alleyne, G., Arrow, K, Berkley, S., Binagwaho, A., Bustreo, F., Evans, D., Feachem, R., Frenk, J., Ghosh, G., Goldie, S., Guo, Y., Gupta, S., Horton, R., Kruk, M., Mahmoud, A., Mohohlo, L., Ncube, M., Pablos-Mendez, A., Reddy, K.S., Saxenian, H., Soucat, A., Ulltveit-Moe, K, & Yamey, G. (2013). "Global Health 2035: a world converging within a generation." *Lancet*, 382: 1898-955.

Jha, Prabhat. 2012. "Death and Taxes: Epidemiological and Economic Evidence on Smoking." *Global Heart*, 139–142

Jha, P., Guindon, E., Joseph, R., Nandi, A., John, R., Rao, K., Chaloupka, F., Kaur, J., Gupta, P., and Rao, M. 2011. "A Rational Taxation System of Bidis and Cigarettes to Reduce Smoking Deaths in India." <http://www.cghr.org/wordpress/wp-content/uploads/A-rational-taxation-system-of-bidis-and-cigarettes-to-reduce...India-2011.pdf>

Jha, P., Khan, J., Mishra, S., Gupta, P. 2017. "Raising taxes key to accelerate tobacco control in South Asia." *BMJ* 357:j1176 doi: <https://doi.org/10.1136/bmj.j1176>

Jha, P., MacLennan, M., Chaloupka, F. J., Yurekli, A., Ramasundarahettige, C., Palipudi, K., ... & Gupta, P. C. 2015. "Global hazards of tobacco and the benefits of smoking cessation and tobacco taxes." *Disease Control Priorities*, Third Ed.

Jha, Prabhat, and R. Peto. 2014. "Global Effects of Smoking, of Quitting, and of Taxing Tobacco." *NEJM* 370:60-68.

- Kaiser, K., Bredenkamp, C. & Iglesias, R. 2016. *Sin Tax Reform in the Philippines: Transforming Public Finance, Health, and Governance for More Inclusive Development*. Directions in Development. Washington, DC: World Bank. doi:10.1596/978-1-4648-0806-7.
- Kan, K. 2007. "Cigarette smoking and self-control." *Journal of Health Economics* 26(1), 61–81.
- Kim, H., Cho K., Kwon, S., & Lim, J. "The Effect of the Increase in Tobacco Price on Adolescent Smoking in Korea: Smoking Reduction and Brand Switching." *Health and Social Welfare Review* 32(3), 429–460.
- Kostova, D., Tesche, J., Perucic, A. M., Yurekli, A., Asma, S., & GATS Collaborative Group. 2014. "Exploring the relationship between cigarette prices and smoking among adults: a cross-country study of low-and middle-income nations." *Nicotine & Tobacco Research* 16 (Suppl 1), S10-S15.
- Laffer, A B. 2014. *Handbook of tobacco taxation: theory and practice*. San Francisco: Laffer Center at the Pacific Research Institute.
- Laibson, D. 1997. "Golden eggs and hyperbolic discounting." *The Quarterly Journal of Economics*, 443–477.
- Lewit, E., Coate, D., & Grossman, M. 1981. *The effects of government regulation on teenage smoking*.
- Lopez, A. D., Collishaw, N. E., & Piha, T. 1994. "A descriptive model of the cigarette epidemic in developed countries." *Tobacco Control* 3(3), 242.
- Moolgavkar, S.H., Holford, T.R., Levy, D.T., Kong, C.Y., Foy, M., Clarke, L., Jeon, J., Hazelton, W.D., Meza, R., Schultz, F., McCarthy, W., Boer, R., Gorlova, O., Gazelle, G.S., Kimmel, M., McMahon, P.M., de Koning, H.J., Feuer, E.J. 2012. "Impact of Reduced Tobacco Smoking on Lung Cancer Mortality in the United States during 1975–2000." *JNCI* 104 (7).
- Mullainathan, S., & Shafir, E. 2009. "Savings policy and decision-making in low-income households." In *Insufficient funds: Savings, assets, credit, and banking among low-income households*, 121, 140–42.
- O'Donoghue, T., & Rabin, M. 2003. "Studying optimal paternalism, illustrated by a model of sin taxes." *The American Economic Review* 93(2): 186–191.
- O'Donoghue, T., & Rabin, M. 2015. "Present bias: Lessons learned and to be learned." *The American Economic Review* 105(5), 273–279.
- Oncken, C., McKee, S., Krishnan-Sarin, S., O'Malley, S., & Mazure, C. M. 2005. "Knowledge and perceived risk of smoking-related conditions: a survey of cigarette smokers." *Preventive medicine* 40(6), 779–784.
- Peretti-Watel, P., Seror, V., Constance, J., & Beck, F. 2009. "Poverty as a smoking trap." *International Journal of Drug Policy* 20(3): 230–236.
- Petit, P., & Nagy, J. 2016. "How to design and enforce tobacco excises?" Washington, DC: Fiscal Affairs Department, International Monetary Fund.
- Peto, R., Darby, S., Deo, H., Silcocks, P., Whitley, E., Doll, R. 2000. "Smoking, smoking cessation, and lung cancer in the UK since 1950: combination of national statistics with two case-control studies." *BMJ*, 323–329.
- Postolovska I., Lavado, R., Tarr, G., Verguet, S. 2017. "Estimating the distributional impact of increasing tobacco taxes in Armenia: Results from an extended cost-effectiveness analysis." Washington, DC: The World Bank.
- Powell, L. M., Tauras, J. A., & Ross, H. 2005. "The importance of peer effects, cigarette prices and tobacco control policies for youth smoking behavior." *Journal of Health Economics*, 24(5), 950–968.

Rutten, L. J. F., Augustson, E. M., Moser, R. P., Beckjord, E. B., & Hesse, B. W. 2008. "Smoking knowledge and behavior in the United States: sociodemographic, smoking status, and geographic patterns." *Nicotine & Tobacco Research* 10(10): 1559–1570.

Salti, N., Brouwer, E., & Verguet, S. 2016. "The health, financial and distributional consequences of increases in the tobacco excise tax among smokers in Lebanon." *Social Science & Medicine* 170: 161–169.

Siahpush, M., McNeill, A., Hammond, D., & Fong, G. T. 2006. "Socioeconomic and country variations in knowledge of health risks of tobacco smoking and toxic constituents of smoke: results from the 2002 International Tobacco Control (ITC) Four Country Survey." *Tobacco Control* 15 (Suppl 3): iii65-iii70.

Sitas, F., Egger, S., Bradshaw, D., Groenewald, P., Laubscher, R., Kielkowski, D., Peto, R. 2013. "Differences among coloured, white, black, and other South African populations in smoking-attributed mortality at ages 35–74 years: a case-control study of 481 640 deaths." *Lancet* 382 (9893):685–93.

Tabuchi, T., Fujiwara, T., & Shinozaki, T. 2017. "Tobacco Price Increase and smoking: behavior changes in various subgroups: a nationwide longitudinal 7-year follow-up study among a middle-aged Japanese population." *Tobacco Control* 26(1):69–77. doi: 10.1136/tobaccocontrol-2015-052804. Epub 2016 Feb 15.

Talhout, R., Schulz, T., Florek, E., van Benthem, J., Wester, P., & Opperhuizen, A. 2011. "Hazardous Compounds in Tobacco Smoke." *International Journal of Environmental Research and Public Health* 8(2): 613–628. <http://doi.org/10.3390/ijerph8020613>

Townsend J, Roderick P, Cooper J. 1994. "Cigarette smoking by socioeconomic group, sex, and age: effects of price, income, and health publicity." *BMJ* 309:923–927.

Thun, M., Jemal, A. 2006. "How much of the decrease in cancer death rates in the United States is attributable to reductions in tobacco smoking?" *Tobacco Control* 15 (5): 345–347.

Thun, M., Peto, R., Boreham, J., & Lopez, A. D. 2012. "Stages of the cigarette epidemic on entering its second century." *Tobacco Control* 21(2): 96–101.

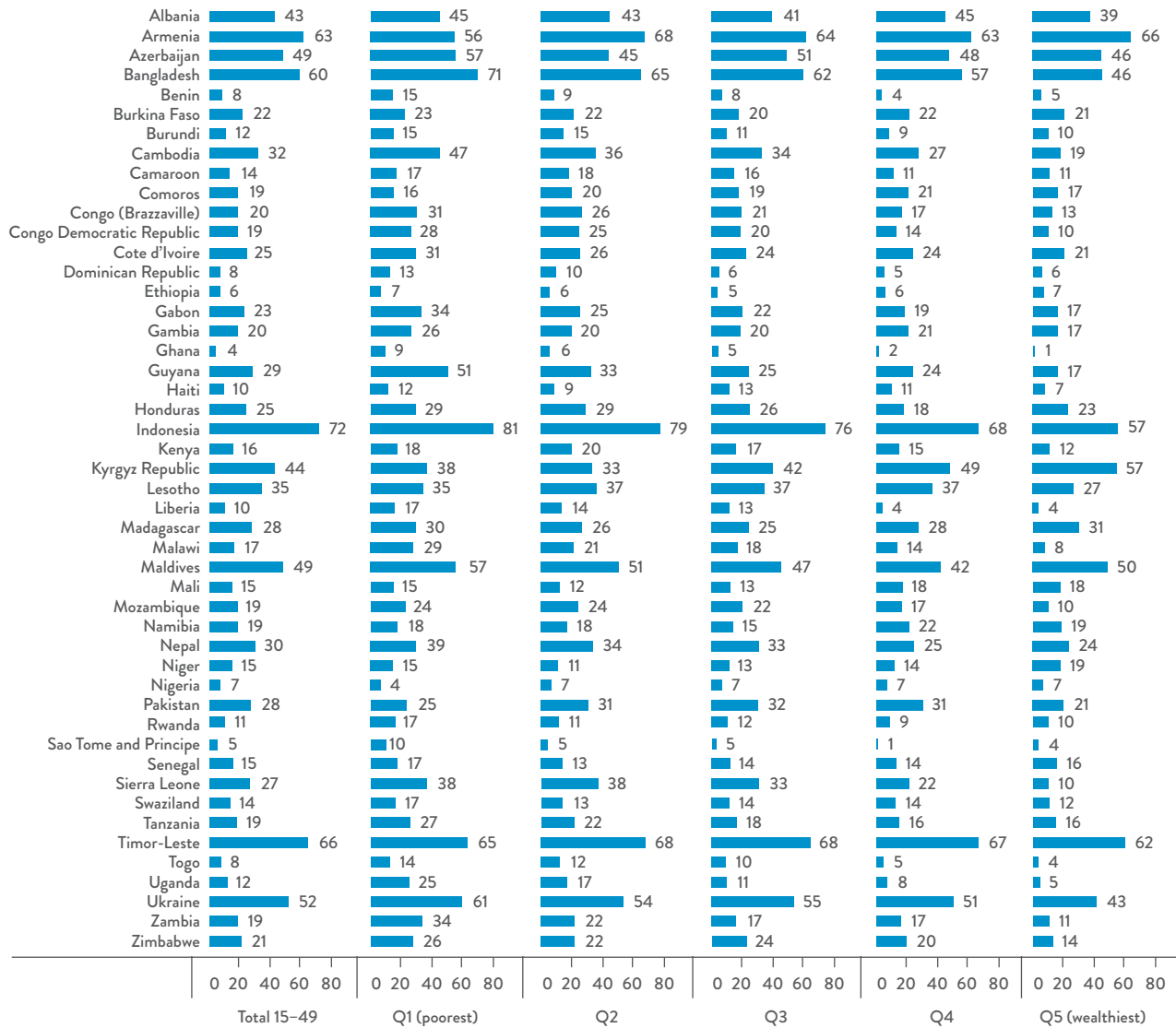
U.S. National Cancer Institute and World Health Organization. 2016. *The Economics of Tobacco and Tobacco Control*. National Cancer Institute Tobacco Control Monograph 21. NIH Publication No. 16-CA-8029A. Bethesda, MD: U.S. Department of Health and Human Services, National Institutes of Health, National Cancer Institute; and Geneva, CH: World Health Organization.

Venthesatogit, P. 2008. "Benefits that Thailand tobacco control law and program brings to the country." *Tobacco and Health*. Geneva: World Health Organization.

Verguet, S., Gauvreau, C. L., Mishra, S., MacLennan, M., Murphy, S. M., Brouwer, E. D., ... & Jamison, D. T. 2015. "The consequences of tobacco tax on household health and finances in rich and poor smokers in China: an extended cost-effectiveness analysis." *The Lancet Global Health*, 3(4), e206-e216.

Yurekli, A., Nargis, N., Goodchild, M., Visaruthvong, C., Delipalla, S., Blecher, E., ... & Chaloupka, F. 2016. "Economics of Tobacco Control and Health." In *World Scientific Handbook of Global Health Economics and Public Policy: Volume 2: Health Determinants and Outcomes* (pp. 191–283).

Annex Figure 1: Smoking Prevalence (% of Population Ages 15-49) by Wealth Quintile



Source: Demographic and Health Surveys. Latest year available since 2006.

**Annex Table 1: Smoking Prevalence (% of Population Aged 15 or Older) by Country, Estimates from GATS Surveys since 2007**

	TOTAL	FEMALES	MALES
Argentina	22%	16%	29%
Bangladesh	23%	2%	45%
Brazil	17%	13%	22%
China	28%	2%	53%
Egypt	19%	1%	38%
India	14%	3%	24%
Indonesia	35%	3%	67%
Malaysia	23%	1%	44%
Mexico	16%	8%	25%
Philippines	28%	9%	48%
Poland	30%	24%	37%
Romania	27%	17%	37%
Russian Federation	39%	22%	60%
Thailand	24%	3%	47%
Turkey	31%	15%	48%
Ukraine	29%	11%	50%
Uruguay	25%	20%	31%
Vietnam	24%	1%	47%

Source: Global Adult Tobacco Surveys.

Notes: Data are for different years: Brazil and Turkey (2008); Bangladesh, Egypt, India, Mexico, Philippines, Poland, Russian Federation, and Uruguay (2009); China, Ukraine, and Vietnam (2010); Indonesia, Malaysia, Romania, and Thailand (2011); and Argentina (2012).





*Lower demand for tobacco products in response to steeper taxes increases consumers' available resources for purchasing other goods and services and for savings. More spending outside the tobacco sector can then spark job creation in other parts of the economy, with the net result of creating more employment for a country.*

# 7

## THE EFFECTS OF TOBACCO TAXES ON EMPLOYMENT AND LABOR PRODUCTIVITY

*Hana Ross*

### ABSTRACT

Since tobacco-tax increases have the potential to cut tobacco consumption, they are also expected to reduce the number of tobacco-related jobs. The tobacco industry regularly invokes potential job losses as an argument against stronger tobacco control. This chapter provides an analytical framework for assessing the impact of higher tobacco taxes on employment and summarizes the available empirical evidence. It also explores the probable effects of tobacco taxes on labor productivity.

Evidence suggests that raising tobacco taxes will have a gradual and relatively small impact on employment in the tobacco sector. At the same time, lower demand for tobacco products in response to steeper taxes increases consumers' available resources for purchasing other goods and services and for savings. More spending outside the tobacco sector can then spark job creation in other parts of the economy with the net result of creating more employment for a country. Country studies confirm this. In one striking case, a study in Indonesia found that a 100 percent increase in the tobacco tax would eliminate 66,077 domestic tobacco-farming jobs while creating, over time, more than four times as many new jobs in other sectors.

Tobacco industry-sponsored research often predicts that higher tobacco taxes will cause job losses. However, these studies do not account for the shift in consumers' expenditures and exhibit other serious methodological flaws.

Nevertheless, the industry still manages to organize opposition to higher tobacco taxes on the grounds of employment losses. To address these concerns, it is important to widely disseminate the scientific evidence and expose the industry's role in job losses. At the same time, the government should promote the development of economically sustainable alternatives for tobacco growers and workers to reduce the size of any transitional job losses.

Tobacco use and working on a tobacco farm compromise labor productivity through multiple channels. Since both smoking and tobacco farming damage health, they increase absenteeism and shorten the work career with negative consequences for lifetime income. In addition, an early smoking onset and the use of child labor in tobacco farming adversely affect educational performance, which reduces future labor productivity and wages. By prompting reductions in use, tobacco taxes tend to favor labor productivity gains. Governments seeking to raise tobacco taxes may find allies in the non-tobacco private sector, since firms have an inherent interest in improved labor productivity.

## INTRODUCTION

The tobacco industry often highlights the issue of tobacco-related employment when seeking to forestall tobacco control measures, including taxation. Industry predictions that higher tobacco taxes will cause net job losses in a country can hardly fail to awaken policy makers' concerns. But are these claims credible? Clarifying the issue is important, so leaders can weigh tobacco policy choices with a realistic grasp of their probable social and economic consequences.

This chapter provides an analytical framework for assessing the impact that higher tobacco taxes will have on employment and summarizes the most recent empirical evidence. I then take up a related topic, the impact of tobacco taxes on labor productivity. I review evidence on how tobacco use compromises workers' productivity, ultimately supporting the hypothesis that higher tobacco taxes can be expected to contribute to labor productivity gains.

## THE IMPACT OF TOBACCO TAXES ON EMPLOYMENT

Since tobacco tax increases have the potential to decrease consumption of tobacco products, they are also expected to impact the number of tobacco-related jobs in both the industrial and agricultural sectors. The tobacco industry claims that tax increases will lead to significant reductions in employment in tobacco growing and manufacturing, as well as wholesale, retail, and other economic sectors. On this basis, the industry claims to defend farmers and small businesses against what it portrays as "unfair tobacco control regulations." Policy measures likely to result in job destruction often face significant, and understandable, public skepticism. To what extent should policy makers give credence to industry assertions about the employment impacts of tobacco taxes?

## Background and Analytical Framework

In a dynamic economy, production inputs — including labor — are constantly shifting between sectors due to interaction between supply and demand. An assessment of the effects on the economy of any public policy measure, including higher tobacco taxes, needs to take those dynamics into account.

Lower demand for tobacco products in response to higher taxes would free the resources previously allocated to purchasing tobacco, making them available for the purchase of other goods and services or for savings (Barber et al. 2008; Merrill et al. 2009). These new expenditures outside the tobacco sector will create new jobs in other parts of the economy (U.S. National Cancer Institute and World Health Organization 2016). Additional job-creating measures on the supply side could also be undertaken in parallel, as is happening in the Philippines since 2013, where 15 percent of incremental excise tobacco and alcohol tax revenue is earmarked to help tobacco farmers transition to alternative livelihoods (Republic of the Philippines 2012).

Likewise, additional tax revenues generated from raising tobacco taxes would boost government expenditures or reduce the deficit, which could lead to lowering the national debt (Allen 1993). Higher savings or debt reduction would enhance fiscal sustainability, which could lower interest rates and increase investments to further contribute to job creation. These impacts would be amplified by the positive effects of higher tobacco taxes on health, ability to work, and public health cost savings that smoking reduction would also generate.

Nonetheless, the problem of transition can be difficult for those directly affected, particularly for those with limited transferable skills or capital. This poses challenges of political economy, because the losses in employment in the tobacco sector, even if caused by the industry itself and not by tobacco tax, are highly politicized by the industry. In contrast, gains elsewhere in the economy are diffuse and harder to identify specifically.

There are two important economic factors to consider during the transition toward a tobacco-free economy: the magnitude of the change in demand for tobacco products and the speed of market adjustment to a new equilibrium. The empirical evidence points to small and gradual changes in the demand for tobacco products at the country level, which would allow sufficient time for the transition of employees to other sectors experiencing higher demand due to the shift in consumer expenditures (Allen 1993). In the United Kingdom, for example, it took cigarette sales 30 years to fall from 138 billion to 50 billion, or by 64 percent (Nicolaidis-Bouman et al. 1993). This represents a reduction of about 3.4 percent per year (Standford and Bates 1998).<sup>53</sup>

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<sup>53</sup> This decline resulted in some job losses. Between 1963 and 1985, the U.K. tobacco sector lost 19,400 jobs. However, 82 percent of this loss (or 16,000 jobs) has been attributed to higher labor productivity, not to the decline in consumption (Sandford and Bates 1998). The declining cigarette consumption in the country did not have any detrimental impact on the U.K. economy: according to the United Kingdom Office for National Statistics, U.K. GDP growth was 1.5 percent in 1962 and 4.3 percent in 1986.

The global cigarette market experienced a boom from 1970 to 2004, with production of cigarettes increasing by 78 percent (Yurekli 2012). Despite this upward trend, the global employment in tobacco manufacturing has been declining due to technological advances and higher labor productivity (U.S. National Cancer Institute and World Health Organization 2016). Recent data on global cigarette sales, however, indicate that growth is slowing down. Between 2005 and 2010 global cigarette sales volume increased by 4.7 percent and has been flat since 2011 (Euromonitor 2017). The latest figures point to about a 1 percent annual decline in global cigarette market volume, with analysts expecting this pattern to continue till 2020 (Euromonitor 2017). However, the retail value of the market is still growing — it increased by 40.5 percent between 2005 and 2010, by 2.2 percent between 2011 and 2015, and is expected to grow by about 1 percent annually till 2020. This means that at the global level any job losses in the short or medium term will be affected minimally by the shrinking size of the cigarette market.

The same is true for tobacco farming. Between 2003 and 2012 alone, the global market rose from 6.03 million tons to 7.5 million tons of tobacco leaves, a 25 percent increase (Hu and Lee 2015). This rise occurred despite tobacco industry-driven scientific advances that lowered the amount of tobacco leaves needed per cigarette (Brown & Williamson 1990; U.S. National Cancer Institute and World Health Organization 2016). Nevertheless, employment in tobacco farming has been falling over time due to improvements in farming techniques and higher labor productivity (Capehart 2004; van Liemt 2002).

The effects of any tax increase on employment at the level of a specific country will also depend on the extent to which the country is engaged in global trade. In a country that is a net importer of tobacco products, the impact of higher tax on labor demand should be positive, because money spent on tobacco products tends to leave the country, while the switch of expenditures to other products/services tends to boost the domestic economy and local jobs (U.S. National Cancer Institute and World Health Organization 2016). On the other hand, for a net tobacco exporter, the volume of tobacco products exported would be unrelated to domestic tax policy, but would depend on tobacco control efforts in recipient countries. The reduction in domestic cigarette sales will have smaller effects on employment as former cigarette users purchase alternative goods and services. If the worldwide demand for tobacco products declines in response to higher taxes, the volume of tobacco trade would also decline regardless of tax policy in the source country. Since any reduction in global tobacco trade would be gradual and accompanied by a shift in consumers' spending to other goods, trade-related jobs would be affected by tobacco taxes only in a limited way (U.S. National Cancer Institute and World Health Organization 2016).

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**Any reduction in global tobacco trade would be gradual and accompanied by a shift in consumers' spending to other goods.**

Depending on a country's production and sales, there could be some temporary small employment losses due to reduced demand for tobacco products, with the magnitude and duration of this loss depending on the extent to which investments in the tobacco sector are specific to that sector. For example, farmland has many alternative uses, and those who manufacture equipment for cigarette factories could retool to supply other sectors. The employment effects of reduced demand for tobacco can also vary for different regions within a country. Therefore, some regions could experience a net employment loss while others would see an increase in employment. However, many of the job losses would be temporary and relatively small, given the small share of tobacco-related jobs in overall employment.

## Empirical Evidence

Jacobs et al. (2000) summarized 20 studies published before 1999 on the impact of tobacco policies (including taxation) on employment. The IARC Handbook (2011), published more than 10 years later, added only three new studies on the subject, suggesting that the issue is considered settled among academics. This chapter adds to the body of empirical evidence on the matter of tobacco taxes and employment with a particular focus on low- and middle-income countries, where the evidence until recently has been rather sparse.

### ***Agriculture and Leaf Processing***

Even though tobacco farming is relatively labor intensive, few farms grow only tobacco, meaning that there are fewer full time tobacco-related jobs than there are people working on those farms. Tobacco leaf drying and warehousing is not very labor intensive, thus adding only an insignificant number of jobs to the economy (IARC 2011).

The size of tobacco-related agricultural employment is small even in the few major tobacco-growing countries. For example, the largest producer of tobacco leaves, China, has only about 2 percent of its farmers growing tobacco (Hu, Mao, Shi et al. 2008). In Indonesia, the fifth-largest producer of tobacco leaves (Statista, accessed 5/20/16), less than 2 percent of farmers are involved in tobacco farming. Hence, an increase in Indonesia's tobacco tax/prices is not expected to have a large impact on jobs in agriculture, given the minor role of the agricultural sector in the overall economy (Barber et al. 2008). The agricultural sector in Indonesia is ranked 62<sup>nd</sup> out of 66 sectors in terms of its contributions to overall output, employment, and wages. A study predicts that a 100 percent increase in the tobacco tax in Indonesia, that would lead to an 8.9 percent decline in tobacco consumption, would reduce the number of tobacco farming jobs by 10.6 percent (66,077 jobs) while increasing overall employment by generating 281,135 new jobs (Ahsan and Wiyono Ir 2007). Malawi, the sixth-largest tobacco leaf producer in the world (Hu and Lee 2015) and the country with the highest relative tobacco farming

employment, has only 2.3 percent of its agricultural labor involved in tobacco farming (Jacobs et al. 2000).

In Ukraine, for example, tobacco-related employment in agriculture has declined steadily since 1989. By 2005, almost all domestically produced cigarettes used imported tobacco leaves. However, this was due to the tobacco industry's preference for a type of raw tobacco that cannot grow in the country. A study found no relationship between tobacco tax policy and the elimination of tobacco farming in Ukraine (Ross et al. 2009b).

In Uganda, BAT cancelled their contracts with all tobacco farmers, blaming the 2014 Tobacco Control Bill. However, the underlying reason for this decision was not tobacco control, but the unpredictability of the tobacco crop in Uganda. BAT also closed its leaf processing plant in Uganda in 2013, a year before the Tobacco Control Bill was approved, and relocated it to Kenya (Gilmore et al. 2015).

A study in China using a simulation model predicted the impact of a 55 percent tax increase on tobacco farming using a simple linear production relationship model. Using a price elasticity of tobacco demand of -0.15 and assuming conservatively no increase in expenditures for other products and services, the tax increase was expected to reduce land use for tobacco farming by about 2 percent and to lower tobacco farmers' gross revenue by about 2 percent.<sup>54</sup> This demonstrated the minimal negative economic impact a significant tobacco tax increase would have on tobacco farmers in China without even taking into account the jobs created in other sectors of the economy as result of an expenditure shift (Hu, Mao, Shi et al. 2008).

Some studies suggest that since tobacco grows well on land that is usually less suitable for other crops, the use of that land and associated labor could not be more productive compared to an alternative. The skills and experience specific to tobacco growing may also not be readily transferable to other crops (IARC 2011). However, case studies have shown that many other crops, crop combinations, farming systems, and livelihood strategies offer better opportunities for farmers than tobacco (Hu and Lee 2015; Leppan et al. 2014). In Yunnan Province in China, for example, tobacco leaves had the lowest revenue-to-cost ratio in 2004, indicating that other crops such as mulberry, silkworm, fruit, vegetable oil, rice or wheat were more profitable (Hu, Mao, Shi et al. 2008). Tobacco farming is a risky undertaking that rarely generates a net gain and often leaves farmers in a vicious cycle of poverty and debt to tobacco companies (Hu and Lee 2015; Leppan et al. 2014).

Tobacco farmers are quite vulnerable to the global prices of tobacco leaves, which are under the control of highly concentrated tobacco leaf dealers, with just four companies dominating the trade (U.S. National Cancer Institute and World Health Organization 2016).

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<sup>54</sup> Some scholars have questioned the cited price elasticity as inappropriately low.



As result of the oligopolistic nature of the business, the export prices of tobacco leaves dropped by more than half in real value just between 1980 and 2006 (Yurekli 2012), motivating many tobacco farmers to switch to other crops (Wanzala, January 30, 2011; The New Nation, June 28, 2010). Thus, these job losses in tobacco farming have been caused by the market power of the leaf traders rather than by tobacco tax policy. In addition, the industry's preference for certain types of tobacco leaves has resulted in concentration of tobacco leaf production in a few countries, while causing a sharp decline or elimination of tobacco farming elsewhere.

### ***Manufacturing***

The production of tobacco products is not very labor intensive. Tobacco manufacturing rarely employs more than 1 percent of total manufacturing labor (Jacobs et al. 2000), and that share has declined over time due to mechanization, automation, and concentration of the production process (Allen 1993; van Liemt 2002).

In Indonesia, for example, mechanization is one of the most important factors affecting employment in cigarette manufacturing. As a result of mechanization and of the growth in overall manufacturing in Indonesia, the contribution of cigarette manufacturing to total manufacturing employment has declined precipitously. It went from 28 percent in 1970 to less than 6 percent in 2005, or less than 0.3 percent of total employment, even while cigarette production increased by about 480 percent during the same period (Barber et al. 2008). The decline in cigarette manufacturing employment is occurring despite government tax policy designed explicitly to protect tobacco-manufacturing employment (Barber and Ahsan 2009).

The experience of Indonesia is not unique. In Ukraine, cigarette production grew by 112 percent from 2000 to 2006, while employment in cigarette manufacturing fell by 25 percent. The real tobacco tax was virtually unchanged during that period (Krasovsky 2010).

Even the less mechanized, but politically very visible bidi industry in India employs only 0.7 percent of the manufacturing labor force while paying 0.09 percent of the average compensation provided by the sector (Nandi, Ashok, Guindon et al. 2015).

Many job losses in tobacco product manufacturing can be attributed to industry restructuring decisions, not to tobacco taxation. For example, a company merger in China in 2006 resulted in 59,000 job losses. In contrast, a 55 percent tax increase would only lead to about 1,660–5,550 job losses in cigarette manufacturing (Hu, Mao, Shi et al. 2008). Moreover, this calculation of job losses is almost certainly overestimated, because the simulation model did not take into account the jobs created in other sectors of the economy as a result of an expenditure shift (Hu, Mao, Shi et al. 2008).

In 2006 and 2007, BAT closed factories in Uganda, Ghana, Mauritius, Zambia, and Cameroon, and began to supply these markets from its main production facilities in

South Africa, Nigeria, and Kenya. This decision could not have been motivated by tobacco tax policies, because South Africa and Kenya have some of the highest taxes on the African continent. BAT explained the move as an effort “to establish a more cost-effective operational base for the future” (BAT Annual Report 2011).

Similarly, despite the fact that Kyrgyzstan has one of the lowest tobacco excise taxes in the region (WHO 2015), Imperial Tobacco decided in 2010 to close its local factory and replace domestic production by imported cigarettes. In 2014, 82 percent of imported cigarettes came to Kyrgyzstan from Kazakhstan and the Russian Federation, countries with substantially higher cigarette taxes and cigarette prices (WHO 2015).

These examples demonstrate that tobacco taxes have played no role in job losses in cigarette manufacturing.

### ***Distribution***

Many wholesale and retail businesses distributing tobacco products are not dependent on them, since these products typically represent a small share of their turnover (Huang and Chaloupka 2013). Even at duty-free stores at airports and on board airlines and ferries, tobacco sales represent only 8 percent of global retail turnover (ETRC 2016).

A recent development in Ukraine clearly demonstrates the impact of a large tobacco tax increase on the retail sector. When the government of Ukraine began to consider the tax increase in 2008, the tobacco industry estimated that it would reduce the number of licensed tobacco retailers from 90,000 to 30,000, or by two-thirds. When the tobacco tax doubled in May 2009, the country had 89,758 licensed tobacco retailers. By December 2010, there were 90,916 licensed tobacco retailers in Ukraine, a slight increase as opposed to the sharp decline predicted by the industry (Krasovsky et al. 2014).

A study in the USA investigating the impact of higher tobacco taxes on the density of convenience stores, a proxy for profit of outlets responsible for approximately 51 percent of the annual total retail sales of tobacco products in 2002, found a small positive effect of higher tobacco taxes on convenience store density across states. The study concluded that, contrary to tobacco industry and related organizations’ claims, higher cigarette taxes and stronger tobacco control policies do not negatively affect convenience stores or employment in the retail sector (Huang and Chaloupka 2013). The finding confirmed earlier research demonstrating that the reduction in cigarette consumption has had no impact on overall employment and the number of establishments in the retail sector in the USA between 1990 and 2004 (Ribisl et al. 2011).

### ***Overall Impact on Employment***

Research on the impact of reduced demand for tobacco products on total employment usually compares the current level of employment with the predicted level of employment when tobacco expenditure is reduced. The explicit assumption is that these released

resources will be reallocated to other goods and services according to a certain expenditure pattern. Even though many studies assume that money not spent on tobacco would be spent elsewhere according to consumers' existing (average) expenditure patterns, the empirical evidence shows that recent quitters have different expenditure patterns, often buying labor-intensive services such as recreation, education, and communications (van der Merwe 1998d). In the U.K., for example, those who quit increased their expenditures on luxury items, recreational goods, transport, communication, and educational services (Buck et al. 1995).

Given that those who quit smoking use their tobacco money to consume other goods and services, falling employment in the tobacco sector will be offset by jobs created in other sectors, and the net impact will depend on the labor intensity of these other industries relative to the tobacco industry. The most important studies of the impact of reduced demand for tobacco products on total employment are summarized in Table 1. They either apply a static input-output model (or its extension in the form of a social accounting matrix) or a dynamic regional econometric model. The static models compare two alternative scenarios in a given year — one with and one without (or with reduced) tobacco expenditure. The dynamic models simulate trade flows and feedbacks across different sectors of the economy over time to capture the impact of a policy change on outputs and employment.

Both the static and dynamic models found that lower demand for tobacco products eliminates jobs in sectors directly linked to tobacco product production, such as cigarette manufacturing and farming, but these losses are in most cases outweighed by increases in employment in other industries. The result is a small positive effect on employment, with the exception of a few economies with sizeable tobacco farming (e.g., Zimbabwe). The size of the estimated net change of employment depends on the specific assumptions used in the models such as changes in spending patterns after reduced tobacco demand among previous users and governments, as well as the structure of the domestic economy.

### Industry-Sponsored Studies

The industry's vested interest in demonstrating the negative impact of higher tobacco taxes on employment may have an influence on the methodology, presentation, and interpretation of the results of the studies they fund. In contrast to academic studies, tobacco industry-sponsored reports predict a devastating effect of eliminating tobacco use on the economy and claim that there are no economically sustainable alternatives to tobacco farming, particularly in low- and middle-income countries (Gilmore et al. 2015).

There are four major reasons why the estimates presented by the industry differ so dramatically from the results of scholarly research. First, the industry focuses on a reduction in the gross number of jobs, assuming that the demand for tobacco products disappears

Table 1: Studies of the Impact of Reduced Demand for Tobacco Products on Total Employment

WHERE	WHEN	METHOD	ASSUMPTION	RESULT	SOURCE
Bangladesh	1994	Static input-output model	Eliminating tobacco use (including <i>bidis</i> ); quitters spent as an average person	Net gain of 1,098,919 jobs (+0.4% employment)	Van der Merwe (1998b)
Bangladesh	2006/2007	Social accounting matrix	Tobacco expenditures eliminated; 3 scenarios for quitters – spent as an average person, spent on food, and spent on recreation and entertainment	Output increased 0.75–1.3%; GDP increased 1.57–1.75%; household income increased 1.4–1.58%	Husain and Khondker (2016)
Canada	1993	Qualitative assessment	Strong TC policies with focus on tax policies; lost jobs absorbed via normal workforce attrition	Negligible negative impact on employment	Allen (1993)
Canada	1995	Static input-output model	20% decline in domestic cigarette demand; quitters spent as an average person	Net loss of 6,129 jobs (-0.1% employment)	Irvine and Sims (1997)
Glasgow (Scotland)	1989	Static input-output model	Eliminating domestic tobacco consumption; quitters spent as an average person	Net gain of nearly 8,000 jobs (+0.3% of employment)	McNicoll and Boyle (1992)
Indonesia	2003	Static input-output model	100% increase in tobacco tax	Net job increase by 281,135 (0.3% of employment)	Ahsan and Wiyono (2007)
Pacific Islands	1997	Qualitative assessment	Tobacco use substantially reduced; easy to switch to alternative crops; quitters spent as recent quitters	Small increase in employment; improved balance of payments	Collins and Lapsley (1997)
South Africa	1995	Static input-output model	Eliminating tobacco use; quitters spent as recent quitters	Net gain of 50,236 jobs (+0.1% employment)	Van der Merwe (1998a)
U.K.	1990	Static input-output model	40% of tobacco expenditure goes to other products/services; quitters spent as recent quitters	Net increase of 115,688 jobs (+0.5% of employment)	Buck et al. (1995)
USA, state Michigan	1992–2005	Dynamic economic model	Eliminating tobacco use; quitters spent as an average person	Net job gain of 5,600 in 1992; additional job gain of 1,500 by 2005 (+0.1% employment)	Warner and Fulton (1994)
USA	1993–2000	Dynamic economic model	Eliminating tobacco use	Net job gain of 47 in 1993; net job gain of 133,000 by 2000.	Warner et al. 1996
USA	1993–2000	Dynamic economic model	Doubling the rate of tobacco consumption decline	Net job gain of 19,719.	Warner et al. 1996
Zimbabwe	1980	Static input-output model	Eliminating tobacco use; farmers move to alternative crops	47,463 jobs lost (-6.7% employment)	Van der Merwe (1998c)

overnight and is not replaced by corresponding demand for other products and services (Agro-Economic Services Ltd. and Tabacosmos Ltd. 1987; Arthur Anderson Economic Consulting 1993; PEIDA 1991; Price Waterhouse Economic Consulting 1992; Tobacco Merchant Association 1995). This is a very unrealistic scenario given the gradual reduction in the demand for tobacco products and the dynamic nature of the market economy.

Second, the industry estimates employ a multiplier that translates job losses in the tobacco sector to other sectors via “expenditure-induced employment.” This employment refers to jobs created when tobacco workers spend their incomes on other goods and services, and dominates the estimates of the total employment loss (Jacobs et al. 2000; Warner 2000). Interestingly, the industry-sponsored studies do not use a similar multiplier when funds not spent on tobacco are spent elsewhere in the economy. In other words, these studies assume both no alternative spending and no multiplier from that spending.

Third, the industry counts part-time and seasonal jobs as full time jobs (Jacobs et al. 2000). This is particularly relevant for estimating the number of tobacco-related jobs in agriculture, because few farms grow only tobacco.

Fourth, in countries that export tobacco leaf or tobacco products, the industry deliberately confuses the negligible impact of domestic tax policies on domestic tobacco employment with the larger impacts that could result from changes in the global tobacco market (Gilmore et al. 2015).

Many of the industry-funded reports are not peer-reviewed and/or are prepared under specific clients’ terms that are not disclosed. In addition, the methods and data used and assumptions made are often not adequately described, or the data are not publicly available to allow other researchers to replicate the results. In contrast to academic studies, the results are often presented as point estimates without any confidence intervals, and the weaknesses of the applied methodology/data are not acknowledged or discussed. Therefore, many industry-sponsored studies fall far short of the criteria for high-quality research, which greatly undermines the credibility of their results.

### ***Discussion***

The results of academic studies clearly demonstrate the limited and gradual impact of higher tobacco taxes on tobacco-related employment that will allow the economy to adjust. In fact, tobacco-growing communities have been making such adjustments for decades, diversifying to other crops while the younger and more educated generations of tobacco farmers pursue other careers (U.S. National Cancer Institute and World Health Organization 2016).

Despite this scientific evidence, the tobacco industry still manages to organize opposition to higher tobacco taxes on the grounds of employment losses, particularly among tobacco

farmers and small business owners, because the job losses can be relatively concentrated, whereas employment gains tended to be spread throughout the economy.

To address these concerns, governments and non-government organizations should widely disseminate evidence based on solid academic research. It needs to be made clear that the significant decreases in employment in the tobacco sector have been caused by improvements in technology as result of the tobacco industry's pursuit of higher productivity and profits. Both country case studies and global analyses of the industry's practices will further demystify the industry's claims about job losses and highlight its role in declining tobacco-related employment. At the same time, the government should promote the development of economically sustainable alternatives for tobacco growers and workers to reduce the size of any transitional job losses.

Given the global nature of the tobacco leaf market and relative ease of securing alternative suppliers, policies such as crop diversification or buy-outs are largely ineffective (Jacobs et al. 2000; PAHO 1992). On the other hand, diversification, placed within broader rural development programs, could reduce transition costs for poor farmers (Leppan et al. 2014). Research shows that tobacco farmers are receptive to shifting out of tobacco production, if they get adequate support, such as access to public extension services, access to credit/subsidies for alternative crops, and access to functioning market structure (Leppan et al. 2014).

Crop diversification programs and retraining of workers currently engaged in tobacco-product manufacturing could, given overall government funding constraints, be funded by some of the revenues from the tax increase. In the Philippines, for example, 15 percent of the incremental tax revenue from tobacco and alcohol products is earmarked to support alternative livelihoods for tobacco farmers (Republic of the Philippines 2012).

However, the development of adequate measures to address small transitional unemployment should not halt other tobacco control measures, including tobacco tax increases. The tobacco industry's vested interest in defeating or slowing down the implementation of tobacco control policies leads it to argue that these two measures are interlinked and need to be implemented simultaneously. Insisting on this linkage can only delay implementation of the various provisions of the FCTC, including Article 6, dealing with price and tax measures to reduce the demand for tobacco.

As the evidence above has shown, tobacco taxes have a relatively minor impact on employment. In contrast, their positive effects on health, as well as on government revenues, are substantial, as documented in the previous chapters.

## THE IMPACT OF TOBACCO TAXES ON LABOR PRODUCTIVITY

Tobacco use is negatively associated with labor market outcomes. This relationship has been extensively documented in high-income countries (U.S. Department of Health and Human Services 2014). Low- and middle-income countries have sufficient evidence on the impact of tobacco use on health outcomes, but the link between labor market outcomes and tobacco use has been less studied.

There are both direct and indirect effects of smoking on overall labor market performance.<sup>55</sup> The direct effects are related to lower productivity while at work. This primarily reflects smoking breaks taken throughout the working day, which substantially reduce the total number of hours worked and workers' productivity (Halpern et al. 2001). In addition, nicotine addiction can also reduce productivity even when workers remain on the job (so-called presenteeism).

The indirect effects occur through two important forms of human capital: health status and educational attainment. Poor health due to smoking is associated with higher absenteeism, therefore lower labor productivity (Bunn et al. 2006; Halpern et al. 2001).

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**The effects of tobacco use on education can be formed early in life and remain persistent. Therefore, early smoking initiation can have significant consequences on short- and long-term labor market performance.**

Higher absenteeism can also lead to negative career developments, smaller probability of receiving a promotion, and lower wage increases (Cowan and Schwab 2011; Kristein 1983; Levine et al. 1997; Weng et al. 2013). In addition, an employer may consider smoking behavior as a signal of a lifestyle that is socially less acceptable and discriminate against smokers (Levine et al. 1997; Wang et al. 2014). At the macro level, premature deaths among smokers decrease overall labor productivity and negatively impact countries' GDP (CDC 2008; Ross et al. 2009a; Ross et al. 2009b).

An early smoking onset can also negatively affect educational performance (Zhao et al. 2012). Since it is often forbidden to smoke at schools, smokers need to leave the campus during breaks, which results in distraction from school-based activities and late return to classrooms. Students who smoke are more motivated to search for side jobs, because they need to finance their habit. Time spent working eventually reduces the time spent on studying, and this subsequently harms students' performance at school. Therefore, early smoking onset indirectly deteriorates labor market performance through compromised education. The effects of tobacco

<sup>55</sup> This is different from the negative effects of tobacco on the health of farmers who grow it.

use on education can be formed early in life and remain persistent. Therefore, early smoking initiation can have significant consequences on short- and long-term labor market performance.

## Empirical Evidence

Among the direct causes of lower labor productivity among smokers, smoking breaks dominate in terms of magnitude, even though the time lost varies widely due to individual companies' policies. In the United States, smoking breaks are responsible for 8 to 30 minutes (1.7–6.5 percent) lost time per day (Javitz et al. 2006), while presenteeism accounts for 1–4 percent of productivity loss per year (Berman et al. 2013).

A U.S. study assuming 30 minutes unsanctioned smoking break per day per smoker attributed about 87 percent of the direct effect of smoking on productivity to these breaks, and the rest to presenteeism (Berman et al. 2013). However, the study assumed only 1 percent presenteeism productivity loss, meaning that the weight of smoking breaks in the estimate could have been inflated. The productivity loss caused by absenteeism represented 16.8 percent of the productivity loss due to smoking breaks and was only 12 percent larger than the presenteeism productivity loss (Berman et al. 2013).

A meta-analysis of occupational studies in the U.K. revealed that current smokers had a 33 percent higher risk of absenteeism and were absent for an average of 2.74 more days per year compared to non-smokers. The total cost of absenteeism due to smoking in the United Kingdom was estimated to be £1.4 billion in 2011 (Weng et al. 2013).

A recent study from Uganda estimated the value of smoking-break productivity loss in the military. Smokers took on average two additional breaks, each lasting about 14 minutes, which resulted in productivity loss of Ugshs 88,138.8 (US\$ 25.51) per smoker per year using average salary to value the productivity (Basaza et al. 2016). In addition, tobacco use was associated with higher absenteeism. Smokers and non-smokers in the army reported 11.6 and 3.2 days absent from work in one year, respectively. The excess sick days translated to 30,466.8 Ugshs (US\$ 8.82) per soldier per year (Basaza et al. 2016). The total costs of smoking related to labor productivity in the Uganda People's Defense Forces with 45 thousand active duty personnel was approximately US\$ 576,229 per year (Basaza et al. 2016).

Current smokers have been found to earn less than non-smokers, even after controlling for education: 1-8 percent less in the United States (Leigh and Berger 1989; Levine et al. 1997), 8 percent less in Canada (Auld 1998), and 10 percent less among male workers in the Netherlands (van Ours 2004). In Europe, smoking reduced wages by up to 22.7 percent (Bondzie 2016). A study using longitudinal data representing the U.S. population suggests that smoking has a negative effect on wages via health status, but also via



other common factors among persistent smokers such as myopia that leads to reduced investment in human capital, including health (Grafova and Stanfford 2009).

Using nationally representative data from the Netherlands, a 2015 study found that early smoking onset among men, but not among women, adversely affects educational performance, which later results in lower labor market performance. In addition, early onset of cigarette use reduced labor market performance even after controlling for education and other socio-economic characteristics (Palali 2015).

In general, smokers also have lower lifetime income measured by earnings over a 15-year period (Böckerman et al. 2015), are more likely to be on sick leave (Lundborg 2007; Skillgate et al. 2009; Tsai et al. 2005), and are more likely to receive disability pensions (e.g. Eriksen et al. 1998; Haukenes et al. 2013; Husemoen et al. 2004; Lalluka et al. 2015).

A 2016 study used national representative data from Sweden to investigate the long-term effects of smoking on disability retirement. It found that smokers in the 50–64 age group had a six percentage point higher probability of receiving (full) disability pension. The results are largely driven by health problems severe enough to merit hospitalization. Accounting for confounding factors such as family environment reduced the effect size, but the relationship was still significant (Bengtsson and Nilsson 2016).

In the United States, the average annual smoking-attributable productivity loss due to premature death from 2005–2009 amounts to \$156.4 billion, including \$5.7 billion in lost productivity due to secondhand smoke exposure. Since this estimate does not include other important costs, such as the lost productivity due to morbidity, it significantly underestimates the full value of lost productivity due to smoking (U.S. Department of Health and Human Services 2014).

The annual productivity loss due to smoking-related premature mortality in the Russian Federation amounted to at least US\$ 24.7 billion in 2006, or more than 3.22 percent of GDP (Ross et al. 2009a). Increasing tobacco tax to the level of 70 percent of retail price could have reduced this loss by US\$3 billion while averting up to 2.7 million tobacco-related deaths (Ross et al. 2009a).

Smoking-related productivity loss due to premature mortality in Ukraine reached comparable proportions, amounting to 3.6 percent of Ukraine's GDP, or US\$ 3 billion, in 2005. This loss could have been reduced by US\$ 356 million by setting the tobacco tax level at 70 percent of retail price, a policy change that would also prevent between 249,000 and 994,000 tobacco-related deaths. Fewer smoking breaks at work after the tax increase would have further improved labor productivity by US\$ 249 million. The combined effect would have resulted in a productivity gain of US\$ 605 million, or 0.7 percent of GDP, in 2005 (Ross et al. 2009b).

In Vietnam, the productivity losses due to smoking-attributable morbidity and mortality reached US\$ 126.1 million and US\$ 454.6 million in 2011, respectively. This productivity-related cost represented about 49.5 percent of the total costs of smoking in Vietnam and was equivalent to approximately 0.48 percent of the country's GDP (Hoang Anh et al. 2016).

Tobacco growing often comes at the expense of staple crop production on the farm, with serious environmental, health, and socio-economic impacts (Leppan et al. 2014; Wood et al. 2013). For example, two World Bank studies in Malawi found a negative correlation between child anthropometric measures and tobacco farming (World Bank 2007; Wood et al. 2013). Further, tobacco farms frequently use child labor, which has adverse impacts on children's school attendance, their education, and thus on their future labor productivity (Lecours et al. 2012).

As discussed in Chapter 8, working on a tobacco farm can lead to adverse health consequences due to chemical exposures or the absorption of nicotine through skin, which causes green tobacco sickness (Hu and Lee 2015; Leppan et al. 2014). In fact, the health of many people living near a tobacco farm can be negatively impacted due to the improper disposal of containers with chemicals and runoff of pesticides and other chemicals damaging the local water supply (Hu and Lee 2015; Leppan et al. 2014).

Thus, tobacco farming can reduce labor productivity due to its negative impact on both education and health (Hu and Lee 2015; Leppan et al. 2014).

## Discussion

The empirical evidence from both high-income settings and low- and middle-income countries points to sizeable losses of labor productivity due to tobacco use and tobacco farming. Many of those losses are due to the negative impact of smoking and tobacco farming on health, but this is not the only channel of influence. Early smoking onset and tobacco farm child labor reduce educational attainment, while smoking breaks lower productivity on the job.

Evidence presented in this chapter is dominated by high-income country studies. Very little is still known about the impact of smoking on wages and unemployment in low- and middle-income countries and among the poor, for example.

The few macro-level studies that have projected the impact of higher taxes on labor productivity reported a sizeable improvement in economic performance. Some of this impact will be experienced in the long run due to the delayed effect of higher tobacco taxes on numerous public health outcomes and possibly education, but a country can expect an immediate improvement in labor productivity due to fewer smoking breaks and an instantaneous improvement in some population-level health indicators.

In order to maximize the impact of a tax increase in improving labor productivity, tax policy should be accompanied by additional measures such as support for cessation services and more comprehensive smoke-free laws that are enforced. Collaboration with the private sector on that front will be essential, as private firms have an inherent interest in labor-productivity outcomes. The additional revenue from a tax increase could contribute to financing these measures, if needed. This approach has already been adopted in several countries, including Thailand (Meeyai et al. 2015).

## REFERENCES

- Ahsan A, Wiyono N. 2007. The impact analysis of higher cigarette price to employment in Indonesia. Demographic Institute, Faculty of Economics, University of Indonesia.
- Allen RC. 1993. The false dilemma: the impact of tobacco control policies on employment in Canada. Ottawa, Ontario: National Campaign for Action on Tobacco.
- Anh PHT, Thu LT, Ross H, Anh NQ, Linh BN. 2016. "Direct and Indirect Costs of Smoking in Vietnam." *Tobacco Control* 25:96-100. Published Online First: 15 Dec 2014, doi: 10.1136/tobaccocontrol-2014-051821.
- Auld, M.C. 1998. Wage, Alcohol Use, and Smoking: simultaneous estimates. Discussion Paper No. 98/08, Department of Economics, University of Calgary.
- Barber S and Ahsan A. 2009. "The tobacco excise system in Indonesia: Hindering effective tobacco control for health." *Journal of Public Health Policy* Vol. 30, 2, 208–225.
- Barber S, Adioetomo SM, Ahsan A, Setyonaluri D. 2008. Tobacco Economics in Indonesia. Paris: International Union Against Tuberculosis and Lung Disease.
- Basaza R, Otieno E, Musinguzi A, Mugenyi P, Haddock CK. 2016. "Factors influencing cigarette smoking among soldiers and costs of soldier smoking in the work place at Kakiri Barracks, Uganda." *Tobacco Control* 2016.
- Bengtsson T and Nilsson A. 2016. Smoking Behaviour and Early Retirement Due to Chronic Disability. IZA Discussion Paper No. 9881.
- Berman M, Crane R, Seiber E, et al. 2013. "Estimating the cost of a smoking employee." *Tobacco Control* 23: 428–33.
- Böckerman P, Hyytinen A and Kaprio J. 2015. "Smoking and long-term labour market outcomes." *Tobacco Control* 2015.
- Bondzie EA. 2016. Effect of Smoking and Other Economic Variables on Wages in the Euro Area. <http://ssrn.com/abstract=2727228>
- British American Tobacco. 2011. Annual Report, 2011.
- Brown & Williamson. 1990. Product Knowledge Seminar. Spring 1990. Internal document No. 594000683
- Buck D, Godfrey C, Raw M, Sutton M. 1995. *Tobacco and jobs*. Society for the Study of Addiction and Centre for Health Economics, York: University of York.
- Bunn WB 3rd, Stave GM, Downs KE, et al. 2006. "Effect of smoking status on productivity loss." *J Occup Environ Med* 48: 1099–108.

- Capehart T. 2004. Trends in U.S. Tobacco Farming. Economic Outlook Report. United States Department of Agriculture. [https://www.ers.usda.gov/webdocs/publications/tbs25702/48597\\_tbs25702.pdf](https://www.ers.usda.gov/webdocs/publications/tbs25702/48597_tbs25702.pdf)
- Collins D, Lapsley H. 1997. The economic impact of tobacco smoking in Pacific Islands. Sydney: Pacific Tobacco and Health Project, Adventist Development and Relief Agency, Australian International Development Assistance Bureau.
- Cowan B, Schwab B. 2011. "The incidence of the healthcare costs of smoking." *J Health Econ* 30: 1094–102.
- Eriksen W, Natvig B, Rutle O, Bruusgaard. 1998. "Smoking as a predictor of long-term work disability in physically active and inactive people." *Occupational Medicine* 48: 315–320.
- Euromonitor International. 2017. Cigarettes: Global. Euromonitor International.
- Gilmore AB, Fooks G, Drope J, Bialous SA, Jackson RR. 2015. "Exposing and addressing tobacco industry conduct in low and middle-income countries." *Lancet* 385: 1029–1043.
- Grafova, Irina B. and Frank P. Stanford. 2009. *Industrial Labor Relationship Review* 62(3): 381–393.
- Halpern MT, Shikar R, Rentz AM, Khan ZM. 2001. "Impact of smoking status on workplace absenteeism and productivity." *Tobacco Control* 10: 233–238.
- Haukenes I, Riise T, Haug K, Farbu E, Maeland JG. 2013. "Smokers' increased risk for disability pension: social confounding or health-mediated effects? Gender-specific analysis of the Hordaland Health Study Cohort." *Journal of Epidemiology and Community Health* 67: 758–764.
- Hu T and Lee AH. 2015. "Tobacco Control and Tobacco Farming in African Countries." *Journal of Public Health Policy* 36(1): 41–51.
- Hu T-w, Mao Z, Shi J, Chen W. 2008. Tobacco Taxation and Its Potential Impact in China. Paris: International Union Against Tuberculosis and Lung Disease.
- Huang J and Chaloupka FJ. 2013. "The economic impact of state cigarette taxes and smoke-free air policies on convenience stores." *Tobacco Control* 22: 91–96.
- Husain MJ and Khondker BH. 2016. "Tobacco-free Economy: A SAM-based Multiplier Model to Quantify the Impact of Changes in Tobacco Demand in Bangladesh." *Margin-the Journal of Applied Economic Research* 10: 1 (2016): 55–85.
- Husemoen LLN, Osler M, Godtfredsen NS, Prescott E. 2004. "Smoking and subsequent risk of early retirement due to chronic disability." *European Journal of Public Health* 14: 86–92.
- IARC. 2011. Effectiveness of Tax and Price Policies for Tobacco Control. Volume 14, IARC Handbooks.
- Irvine IJ, Sims WA. 1997. "Tobacco control legislation and resource allocation effects." *Can Public Policy* 23: 259–73.
- Jacobs R, Gale F, Capehart T, Zhang P, Jha P. 2000. "The supply-side effects of tobacco-control policies." Chapter 13 in *Tobacco Control in Developing Countries*. Editors Prabhat Jha and Frank Chaloupka. Oxford: Oxford University Press.
- Javitz HS, Zbikowski SM, Swan GE, et al. 2006. « Financial burden of tobacco use: an employer's perspective." *Clin Occup Environ Med* 5: 9–29.
- Krasovsky K, Andreeva T, Grygorenko A, Polishchuk M, Skipalsky A, Stoyka O. 2014. Tobacco Control in Ukraine. Second National Report.—Kyiv: Ministry of Health of Ukraine.
- Krasovsky KS. 2010. "The lobbying strategy is to keep excise as low as possible" — tobacco industry excise taxation policy in Ukraine." *Tobacco Induced Diseases* 8(10).

- Kristein MM. 1983. "How Much Can Business Expect to Profit from Smoking Cessation?" *Preventive Medicine* 12(2): 358–81.
- Van Liemt G. 2002. The world tobacco industry: Trends and prospects. International Labour Office, WP 179-2002. <http://www.thenetwork.org.pk/Resources/Reports/PDF/24-7-2011-22-20-13-894-Tobacco%20industry%20trend.pdf>
- Lallukka T, Rahkonen O, Lahelma E, Lahti J. 2015. "Joint associations of smoking and physical activity with disability retirement: a register-linked cohort study." *BMJ Open* 5: e006988.
- Lecours N, Almeida GE, Abdallah JM, Novotny TE. 2012. « Environmental health impacts of tobacco farming: a review of the literature." *Tobacco Control* 21(2): 191–6.
- Leigh, J. P., and Berger, M. C. 1989. "Effects of smoking and being over- weight on current earnings." *American Journal of Preventative Medicine*, Vol. 5, no. 1, pp. 8–14.
- Leppan W, Lecours N and Buckles D. 2014. Tobacco Control and Tobacco Farming. Separating Myth from Reality. IDRC. <http://idl-bnc.idrc.ca/dspace/bitstream/10625/53191/1/IDL-53191.pdf>
- Levine PB, Gustafson TA, and Velenchik AD. 1997. "More Bad News for Smokers? The Effects of Cigarette Smoking on Labor Market Outcomes." *Industrial and Labor Relations Review*, April 1997, pp. 493–509.
- Lundborg P. 2007. "Does smoking increase sick leave? Evidence using data on Swedish workers." *Tobacco Control* 16: 114–118.
- McNicoll IH, Boyle S. 1992. "Regional economic impact of a reduction of resident expenditure on cigarettes: a case study of Glasgow." *Appl Econ* 24: 291–6.
- Meeyai A, Yunibhand J, Punkrajang P, Pitayarangsarit S. 2015. "An evaluation of usage patterns, effectiveness and cost of the national smoking cessation quitline in Thailand." *Tobacco Control* 24: 481–488.
- Merrill RM, Castleton RA, Lindsay GB. "Sectors of the Russian economy that would benefit from reduced cigarette sales." *Tobacco Control* 18: 505–508.
- Nandi A, Ashok A, Guindon GE, Chaloupka FJ, and Jha P. 2015. "Estimates of the economic contributions of the bidi manufacturing industry in India." *Tobacco Control* 24:369–375.
- Nicolaides-Bouman A, Wald N, Forey B, and Lee P. 1993. *International Smoking Statistics: A Collection of Historical Data From 22 Economically Developed Countries*. New York: Oxford University Press.
- Oxford Economics. 2013. The Economic Impact of the Tobacco Products Directive from Reductions in Incidental Purchases. November 2013.
- Palali A. 2015. Early Smoking, Education, and Labor Market Performance. Discussion Paper. No. 2015-03325. Tilburg University. June 2015. <http://ssrn.com/abstract=2623037>
- Pan American Health Organization (PAHO). 1992. Tobacco or health: status in the Americas. A report of the Pan American Health Organization. Pan American Health Organization.
- Republic of the Philippines. 2012. Republic Act No. 10351: Sin Tax Reform Act of 2012. Manila.
- Ribisl KM, Evans WN, Feighery EC. 2011. "Falling cigarette consumption in the U.S. and the impact upon tobacco retailer employment." In: Bearman P, Neckerman K, Wright L, eds. *Social and Economic Consequences of Tobacco Control Policy*. New York: Columbia University Press.
- Ross H, Shariff S and Gilmore A. 2009a. Economics of Tobacco Taxation in Russia. Paris: International Union Against Tuberculosis and Lung Disease.

- Ross H, Shariff S and Gilmore A. 2009b. Economics of Tobacco Taxation in Ukraine. Paris: International Union Against Tuberculosis and Lung Disease.
- Standford A & Bates C 1998. Job losses in the tobacco industry: the impact of tobacco policies. London: Action on Smoking and Health.
- Skillgate E, Vingård E, Josephson M, Holm LW, Alfredsson L. 2009. "Is smoking and alcohol consumption associated with long-term sick leave due to unspecific back or neck pain among employees in the public sector? Results of a three-year follow-up cohort study." *Journal of Rehabilitation Medicine* 41: 550–556.
- Statista, <http://www.statista.com/statistics/261173/leading-countries-in-tobacco-production/>, accessed 5/20/16.
- The European Travel Retail Confederation (ETRC). <http://www.etc.org/current-issues/tobacco-retailing.html>. Accessed 5/25/16.
- "Tobacco growers in a fix." *The New Nation, Bangladesh's Independent News Source*. June 28, 2010.
- Tsai SP, Wen CP, et al. 2005. « Workplace smoking related absenteeism and productivity costs in Taiwan." *Tobacco Control* 14: i33–7.
- 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: 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.
- U.S. National Cancer Institute and World Health Organization. 2016. *The Economics of Tobacco and Tobacco Control*. National Cancer Institute Tobacco Control Monograph 21. NIH Publication No. 16-CA-8029A. Bethesda, MD: U.S. Department of Health and Human Services, National Institutes of Health, National Cancer Institute; and Geneva, CH: World Health Organization.
- Van der Merwe R. 1998a. "The economics of tobacco control in South Africa." In: Abedian I, van der Merwe R, Wilkins N, Jha P, eds. *The economics of tobacco control: towards an optimal policy mix*. Cape Town: Medical Association of South Africa Press: 251–71.
- Van der Merwe R. 1998b. "Employment and output effects for Bangladesh following a decline in tobacco consumption." Washington, DC: Population, Health and Nutrition Department, World Bank.
- Van der Merwe R. 1998c. Employment and output effects for Zimbabwe with the elimination of tobacco consumption and production. Washington, DC: Population, Health and Nutrition Department, World Bank.
- Van der Merwe R. 1998d. "Employment issues in tobacco control." In *The Economics of Tobacco Control: Towards an Optimal Policy Mix* (ed. I. Abedian, R. van der Merwe, N. Wilkins, and P. Jha), pp. 199–209. Cape Town: Medical Association of South Africa Press.
- Van Ours JC. 2004. "A pint a day raises a man's pay; but smoking blows that gain away." *Journal of Health Economics* 23: 863–886.
- Wang Ji-Wei, Zhi-Ting Cui, Ning Ding, Cheng-Gang Zhang, Tricia Usagawa, Helen Louise Berry, Jin-Ming Yu, Shen-Sheng Li. 2014. "A qualitative study of smoking behavior among the floating population in Shanghai, China." *BMC Public Health* 14: 1138. <http://www.biomedcentral.com/1471-2458/14/1138>
- Wanzala O (January 30, 2011). "High premiums push farmers out of tobacco." *Daily Nation*.
- Warner KE. 2000. "The economics of tobacco: myths and realities." *Tobacco Control* 9:78–89.

Warner KE, Fulton GA, Nicolas P, Grimes DR. 1996. "Employment implications of declining tobacco product sales for the regional economies of the United States." *Journal of the American Medical Association* 275(16): 1241–1246.

Warner KE, Fulton GA. 1994. "The economic implications of tobacco product sales in a non-tobacco state." *JAMA* 271: 771–6.

Weng SF, Ali S, and Leonardi-Bee J. 2013. "Smoking and absence from work: systematic review and meta-analysis of occupational studies." *Addiction* 108: 307–319.

Wood B, Nelson C, Kilic T, Murray S. 2013. Up in Smoke? Agricultural Commercialization, Rising Food Prices and Stunting in Malawi. The World Bank. Policy Research Working Paper 6650. October 2013.

World Bank. 2007. Malawi poverty and vulnerability assessment: Investing in our future. Full Report 36546-MW. Washington, DC: World Bank.

World Health Organization. 2015. Tobacco taxation policy in Kyrgyzstan. Regional Office for Europe of the World Health Organization.

Yurekli Ayda A. 2012. Tobacco Supply & Trade. World Health Organization. Presentation at the World Conference on Tobacco or Health Singapore, March 23, 2012.

Zhao M, Konishi Y, Glewwe P. 2012. "Does smoking affect schooling? Evidence from teenagers in rural China." *Journal of Health Economics* 31: 584–598.





# 8

## *The Supply Side of Tobacco Consumption*

# WHAT WILL IT TAKE FOR FARMERS TO SWITCH TO OTHER CROPS?

*Teh-Wei Hu, Angela Lisulo, and Melissa Brown*

## ABSTRACT

This chapter seeks to: (a) review trends in global tobacco supply and producer incentives in the face of changing global demand; (b) document the relative financial returns for farmers from tobacco versus alternative crops, based on recent trends in global tobacco demand and prices; and (c) discuss the feasibility of farmers' switching from growing tobacco to other crops. We give special attention to the potential impact of current patterns on vulnerable groups, including women and poor smallholder farmers.

Although taxes may eventually affect the market for tobacco leaf by lowering demand, global supply is not expected to decrease sharply in the immediate term, based on current price and production trends. Indeed, today, the global demand for tobacco is increasing despite strengthened control measures, including higher taxes on cigarettes. In China, a dominant actor in the global tobacco market, current trends show a steady increase in demand with a domestic supply that is relatively insulated from consumption tax effects.

The long-term prospects of shrinking the tobacco leaf market suggest that opportunities exist for tobacco farmers to switch to other crops, but this will require addressing market failures and advantages provided by governments as well as the tobacco industry, particularly in low-income countries. A large-scale crop switch from growing tobacco to alternative crops would require assistance with technical knowledge, capital investment, other forms of agricultural support by governments, and marketing channels for farmers who shift to alternative crops. In the meantime, tobacco production creates unique negative externalities and health effects for farmers that require management, particularly as they may disproportionately impact vulnerable populations, especially in some African countries. There is a tendency for tobacco companies to under-grade the tobacco in order to maximize their profits. As a result, many farmers do not earn enough to repay their loans and get caught in a spiral of perpetual indebtedness to the companies.

A number of institutional, financial, and technical barriers impact switching away from tobacco production. These include: the tobacco industry's ability to shift tobacco production around globally to maintain supply; countries' reliance on tobacco exports for foreign exchange; farmers' limited access to capital and value-chain financing for alternative crops; and the lack of technical expertise or services to facilitate other cash-crop production. Reducing tobacco supply in line with the Framework Convention on Tobacco Control will require addressing these issues. Both producer-country governments and international partners have roles in helping tobacco farmers adopt alternative crops.

## INTRODUCTION

The World Health Organization Framework Convention on Tobacco Control (WHO FCTC) calls for measures to reduce the demand for tobacco products and address tobacco supply issues globally. With respect to tobacco supply, the treaty has specified that signatories should promote economically viable alternatives to tobacco for farmers, reduce the amount of land cultivated for tobacco leaf, and protect the environment and health of farmers. The FCTC specifically acknowledges that tobacco control efforts would be expected to impact tobacco producers and farmers while also reducing demand for tobacco products. While tobacco control efforts may have limited economic impact in some tobacco producing countries, those with a narrow export base or greater reliance on tobacco for foreign exchange may experience a larger impact.

This chapter explores issues around tobacco production and supply in light of tobacco control efforts and the anticipated lower demand for tobacco leaf. In particular, this chapter seeks to:

- Review trends in global tobacco supply and producer incentives in the face of changing global demand,
- Document the relative financial returns from tobacco versus alternative crops, based on recent trends in global tobacco demand/prices, and
- Discuss the feasibility of farmers' switching from growing tobacco to other crops.

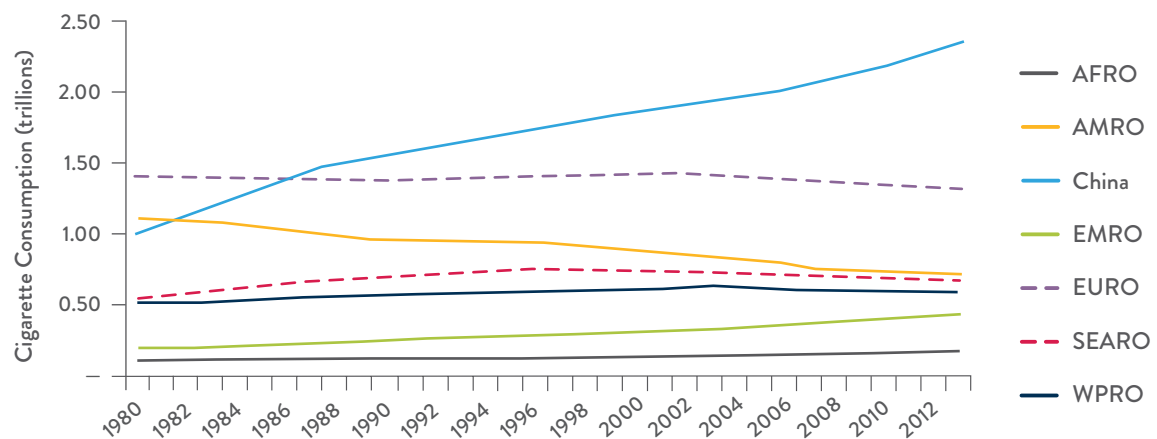
We give attention to the potential impact of current patterns and policy options on vulnerable groups, including women and poor smallholder farmers. Overall, our findings show that opportunities exist for tobacco farmers to switch to other crops, but that, in most settings, farmers will require technical and investment support to make this transition successfully.

## POTENTIAL EFFECTS OF HIGHER TOBACCO TAXES ON GLOBAL AND LOCAL TOBACCO SUPPLY

Today, the global demand for tobacco is increasing despite increased taxes on its main product, cigarettes. Around the world, tobacco leaf is primarily used in the form of cigarettes. In recent years, various control measures have been employed in an attempt to curb the use of tobacco.<sup>56</sup> As part of these efforts, 11 countries raised cigarette taxes to more than 75 percent of retail prices between 2012 and 2014, while 106 of 183 countries raised cigarette taxes by smaller percentages (WHO 2015).<sup>57</sup> In addition, since 2005, many countries have implemented at least one non-price tobacco control measure, such as smoke-free legislation, a ban on tobacco advertisements, or enforcement of a health warning on tobacco packages (WHO 2015). Despite the implementation of these various tobacco control measures, global cigarette consumption increased from 5.7 trillion cigarettes in 2000 to 5.8 trillion cigarettes in 2014 (The Tobacco Atlas 2016).

China is currently leading global consumption of tobacco leaf through cigarette use. Although global cigarette use is stable, there are regional disparities in the consumption of cigarettes, with Europe seeing a mild decline and Africa a mild increase in their respective consumption of cigarette products over recent decades. China remains the primary source of demand. This is attributed to a combination of higher GDP per capita, thus

**Figure 1: Global Cigarette Consumption by WHO Region (in Trillions of Cigarettes), 1980–2013**

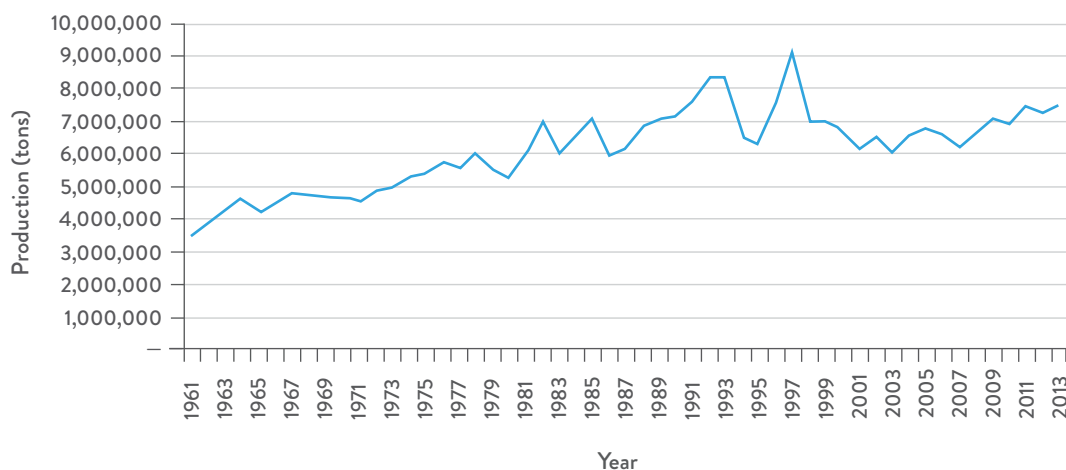


AFRO: Africa, AMRO: Americas, EMRO: Eastern Mediterranean, EURO: Europe, SEARO: South-East Asia, WPRO: Western Pacific.  
 Source: The Tobacco Atlas, 2016.

<sup>56</sup> WHO's MPOWER strategy focuses on six elements: monitoring tobacco use, protecting people from tobacco smoke, offering help to quit tobacco use, warning about the dangers of tobacco, enforcing bans on tobacco promotion, and raising taxes on tobacco.

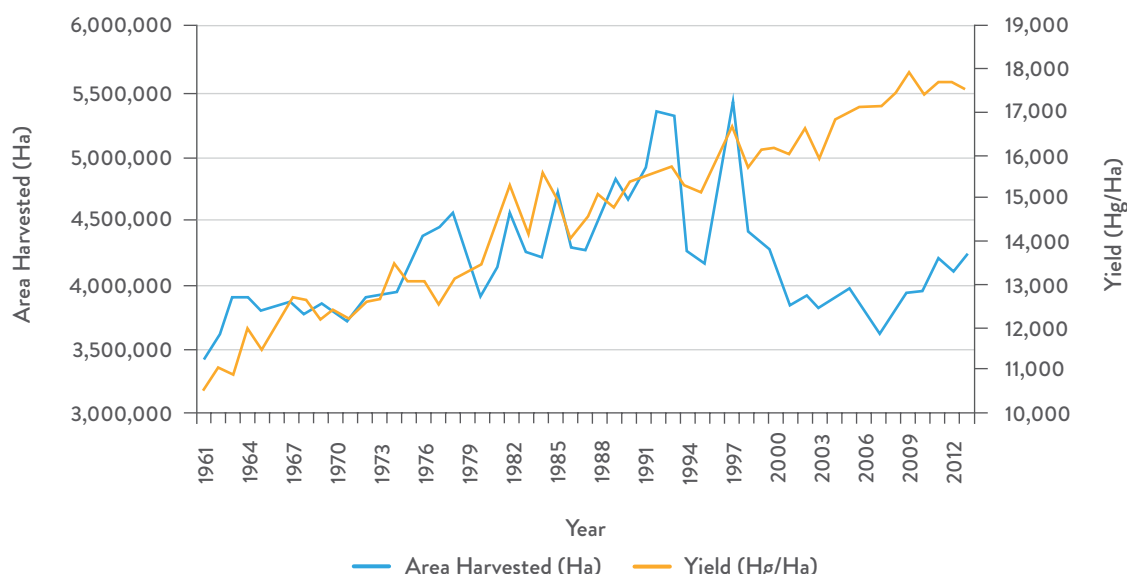
<sup>57</sup> WHO (2015), Appendix IX, Tax and Price Data, table 9.5: Average national taxes and retail prices for a pack of 20 cigarettes, globally listed 11 countries have raised cigarette taxes to more than 75 percent of retail prices of tobacco: Bangladesh, Bosnia, Chile, Czech Republic, Estonia, France, Greece, Herzegovina, Latvia, Romania, Slovenia, and the United Kingdom.

**Figure 2: Global Production of Tobacco Leaf (tons)**



Source: FAOSTAT (2016).

**Figure 3: Global Area Harvested (Ha) and Global Yield (Hg/Ha) for Tobacco Leaf**

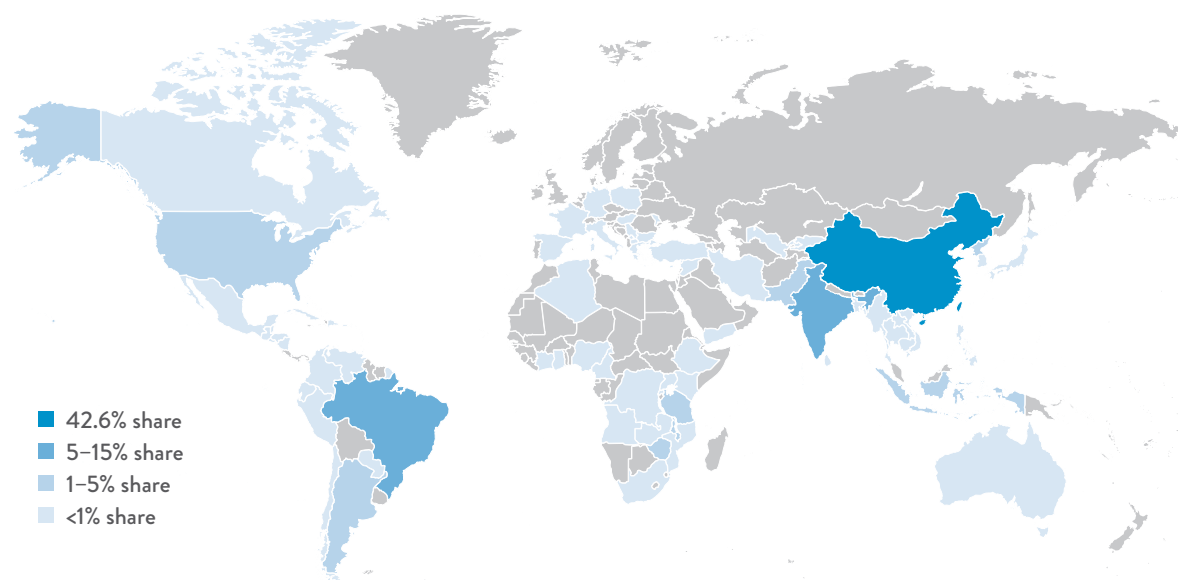


Source: FAOSTAT (2016).

greater affordability, and population growth (The Tobacco Atlas 2016). In general, the continuous increase in tobacco consumption is attributed to world population growth, insufficiently large tobacco tax increases, and aggressive promotion efforts by the tobacco industry in many lower middle-income countries (Mendez, Alshangeety, and Warner 2013; Ng, Freeman, and Fleming 2014).

The global supply of tobacco leaf is moderately increasing, such that it now stands at levels similar to those seen during the 1980s. Despite annual fluctuations, tobacco leaf production has been on an upward trend over the past few decades, although a sharp

**Figure 4: Country Share of Total Tobacco Production (%) (2011–2013 Average)**



Source: FAOSTAT (2016).

**Table 1: Shares of Global Annual Production of Tobacco Leaf by Region (%)**

	2000	2013
Africa	7.9	8.5
Asia	63.2	67.8
China	38.1	42.4
Caribbean	0.8	0.5
Central America	1.1	0.8
Northern America	7.9	5.1
South America	11.4	13.9
Europe	7.7	3.4
Oceania	0.1	0.1

Source: Shares calculated from data provided by FAOSTAT (2016).

decline was experienced in the late 1990s. Latest figures for annual tobacco production stand at 7.4 million tons (2013) (FAOSTAT 2016), which represents an increase of 10.4 percent from 2000. Global production increases can largely be attributed to the rising productivity in tobacco farming. Global average yields have increased markedly, while the area under cultivation has been decreasing since its peak in the late 1990s, despite a moderate recent increase. Analysis of supply and demand trends have shown that the global supply of tobacco leaves exceeds demand (Bialono 2008; Jones, Austin, Beach et al. 2008; Otanez and Glantz 2011).

An increasing share of world tobacco leaf production has shifted from higher-income countries to lower-income countries over time. In recent years, the share of global annual tobacco leaf production has increased for the regions of Africa, Asia, and South America, while the shares held by North America, Europe, Central America, and the Caribbean have declined. As of 2013, China has the largest share of global tobacco leaf production (42.4 percent), followed by Brazil (11.4 percent) and India (11.1 percent) (FAOSTAT 2016).

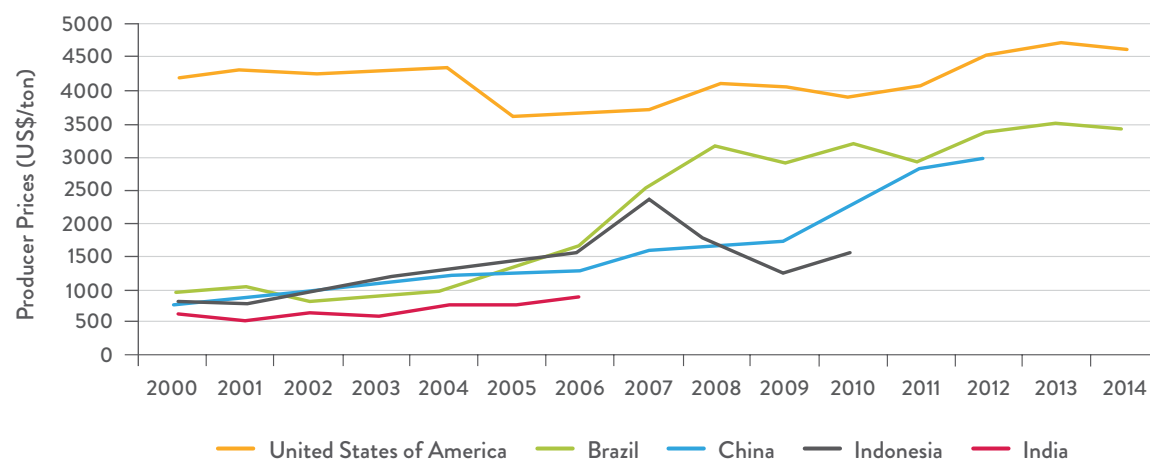
Increased taxes on tobacco consumption could be expected to reduce demand and translate into lower supply. Tobacco leaf has a global market, however, so a tax increase on tobacco leaf products in one country may not translate into a significant negative impact on tobacco leaf production within that country, depending on trade policy and leaf quality. A tobacco tax increase is therefore expected to negatively impact farmers' livelihoods if the economy is closed to tobacco trading, as in China and Indonesia, where most of the tobacco leaf produced is used for the domestic manufacturing and consumption of cigarettes.

To better examine the impact of a cigarette tax increase on tobacco leaf production within a country, we use China and Indonesia as examples. According to the latest statistics, as noted above, China is the world's largest tobacco leaf producer with 42.4 percent of total global production; Indonesia ranks fifth, with 3.5 percent of total world tobacco leaf production (FAOSTAT 2016).

**China:** In a study on tobacco taxation and its potential economic impact in China (Hu, Mao, Shi, and Chen 2008), the authors used two estimates of price elasticities of the demand for cigarettes in China: a lower estimate (-0.15) and a higher estimate (-0.50). Calculations were based on China's cigarette tax rate in 2005, when taxes represented 40 percent of the retail pack price, or 4.52 RMB (US\$ 0.55) per pack. China consumed 94.1 billion packs in 2005. A tax increase of 1 RMB (US \$ 0.12) per pack to 5.52 RMB (US\$ 0.67), yielding a new tax rate equivalent to 51 percent of the retail price, was found to reduce cigarette consumption by anywhere from 3.1 billion packs to 10.4 billion packs, depending on the price elasticity used. Since the Chinese tobacco industry estimated that it requires 0.041 tons of tobacco leaf to produce one case (50,000 pieces) of cigarettes, the estimated reduction in demand for tobacco leaf would range from 26,055 tons to 87,296 tons. China produced 2.7 million tons of tobacco leaf in 2013. The reduction in the demand for tobacco leaf thus represented just 1–3 percent of total Chinese tobacco leaf production — a minor impact on the overall volume of national tobacco leaf production.

**Indonesia:** In January 2010, the government of Indonesia increased its excise tax rate by 10 percent (to 57 percent of the cigarette retail price). The tobacco industry argued that this tax increase would reduce tobacco farmers' income and employment in the tobacco

**Figure 5: Producer Prices for Five Leading Tobacco Leaf Producers (2013)**



Source: FAOSTAT (2016).

industry. A study was conducted to ascertain the effects of the excise tax rate change. Researchers interviewed a random sample of more than 500 tobacco farmers in tobacco-producing areas of central Java, eastern Java, and western Nusa Tenggara in June 2010. The results of the study showed that almost 80 percent of respondents were not aware of the tobacco tax increase and did not report any effect on their tobacco growing (Triasih, Hasbullah, Santii, and Vetty 2012).

The tobacco tax and resulting increase in cigarette prices in Indonesia do not appear to have had a significant impact on tobacco farming because: (1) Tobacco farmers grow diverse crops and engage in both farming and non-farming economic activities; (2) Tobacco crops in Indonesia tend to be rotated on a given plot of land once every three years, and farmers usually grow tobacco as a secondary crop along with other crops, such as chili, garlic, potatoes, and fruits; and (3) Indonesia's total arable land devoted to tobacco leaf production has fluctuated with a slight decline in recent years (Barber, Adioetomo, Ahsan, and Setyonaluri 2005; FAOSTAT 2014).

Despite increased taxes, tobacco leaf producer prices have been rising in recent years for at least some producers. Producer prices have generally been climbing over the past decade for the five countries that lead global tobacco leaf production: China, Brazil, India, USA, and Indonesia. This trend has also been evident for smaller global producers, such as Zimbabwe, despite price fluctuations in the past two decades. Notably, producer prices in Zimbabwe in 2015 had increased by more than 80 percent since 2005.

Although taxes may eventually affect the market for tobacco leaf by increasing consumption prices and lowering demand,<sup>58</sup> the global supply of tobacco leaves is not expected to decrease sharply in the immediate future. Tobacco leaf production is likely to remain

stable, given the lack of any rapid decline in global demand for tobacco leaf and the trend of increasing producer prices. The global supply of tobacco leaves does not immediately appear to be affected by increased cigarette taxes, given the nature of the tobacco value chain, as we saw in the cases of China and Indonesia.

Although not explored here, the profitability incentive of the tobacco industry is also likely to maintain steady global supply. Generally, tobacco processors and cigarette producers seek the lowest labor costs among lower-income countries and establish vertical integration through contracting tobacco leaf farmers as a monopoly buyer, and encouraging economies of scale in growing tobacco leaves (Lappan, Lecours, and Buckle 2013).

## RELATIVE RETURNS FROM TOBACCO VERSUS ALTERNATIVE CROPS

Many countries believe that tobacco farming can bring in much-needed government revenue, provide employment to rural populations, earn foreign exchange for the country, and provide cash income for individual farmers. Tobacco farmers often consider tobacco farming as more profitable than growing other crops, when they do not take into account their own labor inputs and potential health hazards. The tobacco industry is interested in having a stable supply and relatively low price of tobacco leaf. Thus, the tobacco industry and the government often work together to promote tobacco farming. This section provides a few examples of the relative returns from growing tobacco versus alternative crops in several tobacco-growing countries.

Farmers' incentive to shift away from tobacco cultivation will be driven by the relative costs and returns from growing tobacco leaf versus alternative crops. Relative returns were compared in a number of tobacco growing countries and are grouped by the type of tobacco growing economy, according to the World Bank classification, i.e., low-income countries, lower middle-income countries, and upper middle-income countries.<sup>59</sup> It is important to notice that this comparison does not take into account the environmental and health damage caused by growing tobacco, which is not associated with growing the crops used for comparison. These issues, along with the reasons for this apparently irrational behavior by farmers, are discussed later in this chapter.

<sup>58</sup> This will only happen if tax rates are increased to the point where affordability is reduced, and in the context of a comprehensive tobacco control program that includes additional measures such as advertising, education, and medical targeted advice.

<sup>59</sup> Each study has used different approaches to estimate cost and revenue. Some studies do not include own labor time as costs, other imputed hired labor cost to own labor costs. The methodology is noted under each country example.



**Table 2: Comparison of Returns for Tobacco Leaf and Alternative Crops (in US\$), Low-Income Countries**

ZIMBABWE			TANZANIA	
(Keyser 2007)	Net Profit per Day		(Kidani et al. 2013)	Net Profit per Acre
	Small Communal Farmers	Small Commercial Farmers		
Tobacco	1.29–1.78	3.30	Tobacco	161
Paprika	2.75	4.18	Maize	116
Maize	0.21	0.79	Ground nut	194
Soy Beans	1.76	1.76		
Cotton	1.79	1.64		
Groundnuts	1.60	1.47		
Coffee	3.17			

### Low-Income Countries

In Zimbabwe, for communal tobacco farmers in 2007, growing tobacco leaf was more profitable than growing maize, but was not as profitable as coffee and paprika. Tobacco yielded a return comparable with soybeans, groundnuts, and cotton. For small-scale commercial tobacco farmers, growing tobacco leaf was more profitable than all other crops except paprika. Paprika, however, is a nontraditional crop that depends on special marketing channels and had a particularly strong market at the time of the study. In this study, total production costs included all variable costs or cash costs, as well as fixed investment costs. However, total production costs were not defined so as to include an unpaid value for family labor.

In Tanzania, the earnings from growing tobacco leaf were higher than from growing maize, but less than the earnings from growing groundnuts. In this study, total labor cost was calculated as the imputed local hired labor wage multiplied by farmers' own labor time.

### Lower Middle-Income Countries

In Kenya, results show that tobacco had the smallest returns of all the crops included in the study. Cost and return data were collected in the Kuria and Migori Kenya tobacco-growing region (INRS 2007). Results for tobacco were compared with those for several commercial crops, including passion fruit, pineapple, soybeans, watermelon, and pepper. One measure used was the net returns to family land, labor, and management per day. Of note, families spent 176 days growing tobacco, 173 days for pineapple, 31 days for pepper, and around 50 days for other crops. Another study comparing maize versus tobacco was conducted in Kenya during 2010 (Lu 2010) and similarly found higher returns for maize. The total per-acre cost of growing tobacco leaf was estimated at KSH 73,000 (US\$ 723; 1 USD = KSH 101), with a total revenue per acre of KSH 88,000 (US\$ 871) and total labor

time of 83 person-days per acre. In contrast, the total cost to grow one acre of maize was KSH 5,005 (US\$ 50), with the total revenue per acre of maize calculated at KSH 23,400 (US\$ 232). Maize production required 65 person-days per acre. This gave maize a higher per-acre return and lower labor requirements than tobacco. Neither of these studies included own-family labor costs, which are likely to be higher for tobacco, as for hired labor.

In Indonesia, an in-depth study of the costs and returns of tobacco farming in Central Java (Keyser and Juita 2003) showed that potatoes, groundnuts, and corn had a better net profit per day than tobacco leaf, but tobacco leaf showed a better return than carrot or garlic production.

**Table 3: Comparison of Returns for Tobacco Leaf and Alternative Crops (in US\$), Lower Middle-Income Countries**

KENYA		INDONESIA	
(Ochola and Kosura, 2007)	Net Profit Per Acre/Per day	(Keyser 2007)	Net Profit Per Acre/Per day
Tobacco	2.02	Tobacco (Kretek)	1.42
Passion Fruit	47.71	Potato	9.32
Pineapple	7.47	Carrots	0.81
Soy beans	3.63	Garlic	0.25
Watermelon	43.9	Ground nuts	2.42
Pepper	24.78	Corn	2.61
<b>Lu (2010)</b>			
Tobacco	1.79		
Maize	2.84		

### Upper Middle-Income Countries

In China, returns on tobacco are clearly lower than for other crops, despite subsidies and production quotas established by the Government. Field surveys were conducted with over 1,000 farmers in two tobacco-growing provinces of Southwest China, Guizhou and Sichuan, in 2007 and 2008. The study cohort ranged from farmers growing 100 percent tobacco to those growing mixed crops to farmers growing no tobacco at all. The revenue-to-cost ratio was found to be 2.6 for tobacco, 2.5 for grain, 4.3 for beans, and 3.7 for oil-seed/or fruit (Jiang, Chen, Mao, and Hu 2009). These costs did not include families' own labor time; however, since tobacco is more labor-intensive than other crops, tobacco leaf would have a lower revenue-to-cost ratio than the other crops if labor were considered.

Similarly, during 2008 and 2010, UCLA School of Public Health researchers joined with the Yuxi Municipality Bureau of Agriculture in a pilot study to organize a farmers' cooperative. Yuxi is situated in a major tobacco-growing area in Yunnan Province. The cooperative provided assistance to farmers to undertake tobacco crop substitution. The cooperative recruited 458 farmers by providing high-yield alternative crop seeds, pesticides, and crop-marketing information. The cooperative collected cost and revenue data for 458 families farming non-tobacco crops and 282 tobacco-farming families. They found that the average net profit (income minus cost) per acre was US\$ 4,586 for growing tobacco, US\$ 5,554 for broccoli, US\$ 5,550 for cauliflower, and US\$ 10,175 for grapes. The overall income for non-tobacco farmers was higher by between 21 percent and 110 percent per acre than for those who were growing tobacco leaf (Li, Wang, Xia, et al. 2012). It should be noted that this study did not mention whether farmers' own labor time was included in their cost estimations.

Assessing returns to tobacco production in China is complicated by the government subsidies provided for growing tobacco and the production "quotas" assigned. Even with subsidies included, if farmers' own labor cost (opportunity cost) is factored in, many tobacco farmers still do not make a better return than those who grow other crops (Jiang 2009; Zhang, Jiang, Mao, and Hu 2009). Nevertheless, surveys show that local village officials often strongly encourage farmers to grow tobacco leaf so that the village can meet its assigned "quota."

**Table 4: Comparison of Returns for Tobacco Leaf and Alternative Crops (in US\$), Upper Middle-Income Countries**

CHINA		BRAZIL	
(Hu et al. 2008)	Revenue cost ratio (per acre)	(Vargas and Campos 2013)	Per ha per day
Tobacco	2.6	Virginia tobacco	3.05
Grain	2.5	Burley tobacco	2.69
Beans	4.3	Corn	0.07
Vegetable oil	3.7	Beans	(1.62)
Fruit	3.7		
(Li et al. 2012)	Net profit per acre		
Tobacco	4,586		
Broccoli	5,554		
Cauliflower	5,550		
Grapes	10,175		

By contrast, in Brazil, a 2013 case study comparing the costs and returns for four crops — Virginia tobacco, Burley tobacco, corn, and beans — suggested that growing tobacco is far more profitable than growing the other two traditional crops. The methodology for estimating costs and return figures is not described in this study. Virginia tobacco showed net returns per day of US\$ 3.05; Burley tobacco, \$2.69; corn, only \$0.07; and beans, a negative return. However, farmers spent between 134–149 days growing tobacco and 22–26 days growing corn and beans, respectively (Vargas and Campos 2005). In addition, it should be noted that, since this study was supported by the Association of Brazilian Tobacco Growers (Afubra), the findings may be biased toward tobacco growing.

### Cross-Cutting Issues

The long-term prospects of shrinking the tobacco market suggest that opportunities exist for tobacco farmers to switch to other crops, but that this will require addressing market failures. The studies reviewed have shown that many crops are more profitable than growing tobacco leaf, especially nontraditional commercial crops. This is more likely in higher-income countries than low-income settings and assumes that markets are fully functioning. In many cases, growing tobacco is highly profitable either because of government subsidies or tobacco industry support to remedy market failures in terms of access to credit, inputs, or output markets. In many countries, tobacco is produced under contract farming arrangements where companies provide low-interest cash loans or credit, fertilizer, seeds, and construction of tobacco leaf-curing facilities for those farmers who can potentially produce high-quality tobacco leaf. Guaranteed cash payment upon delivery of the crops reduces uncertainties around marketing.

A large-scale crop switch from growing tobacco to alternative crops would require assistance with technical knowledge, capital investment, other forms of agricultural support by governments, and marketing channels for growing alternative crops. Farmers may lack the technical knowledge or investment capital to switch from tobacco leaf to other potentially profitable crops, and some land may not be suitable for growing other crops, especially after negative effects on land fertility due to years of tobacco growing.

The main findings of the Keyser and Juita study (2003) in Indonesia indicated that, although other crops could offer a potentially better financial return to tobacco farmers, substituting alternative crops in place of tobacco would require providing farmers with financial, technical, and marketing assistance during the transition period. Table 4 incorporates the Yuxi farmers' cooperative approach that has been used in China to enable farmers' transitioning away from tobacco. The model involves building farmers' skills to assess and identify the best possible alternative crops, for example: gherkin, cauliflower, broccoli, mushroom, and grapes. This skills-building is provided together with fertilizer, product-marketing channels, warehouse storage, and distribution channels.

This comprehensive approach has been adopted as a model of crop substitution in Yunnan Province.<sup>60</sup> Additional successful examples from other countries are yet to be documented.

## NEGATIVE EXTERNALITIES FROM TOBACCO PRODUCTION

Unlike subsistence or other cash crop production, tobacco farming has two major negative externalities: its impact on the environment, and its impact on human health.

The negative environmental impact of tobacco farming is the result of the heavy fuel demand required to dry tobacco on the farm and the heavy nutrient requirement associated with tobacco cultivation. In addition, tobacco farmers often cut down trees to use for curing tobacco leaf, which has led to the depletion of forests.

In a 1999 study, China was assessed as having the most serious deforestation problem in the world, followed by Tanzania, Zambia, and Indonesia (Geist 1999). In China, the tobacco-related annual deforestation rate was 87,000 hectares, meaning that 17.8 percent of annual deforestation is attributed to tobacco (Campaign for Tobacco Free Kids 2001). Instances of deforestation also have been reported in Brazil, Cambodia, Kenya, and other lower middle-income countries. Furthermore, growing tobacco leaf requires nutrient-rich soil to stimulate leaf growth and nicotine content. This requirement leads to constant clearing of new land as well as heavy use of fertilizers. Unlike other crops, which generate benefits in the form of crop residues useful for soil nutrition or livestock feeding, the tobacco plant does not provide any replacement to the soil and cannot be used for livestock.

Tobacco farming also impacts human health through the heavy use of chemicals and through farmers' absorption of nicotine during cultivation and harvesting. Tobacco requires intensive application of pesticides, fertilizers, and chemical sprays to improve the yield of the tobacco leaf crop. Farmers often have little knowledge of the toxicity of such chemicals and have not been informed about the right ways to store, handle, and use them. In areas where occupational safety and farm management practices are weak, these chemicals are applied via handheld or backpack sprayers by farmers without protective gear (Lecours et al. 2011). Tobacco farmers in low- and middle-income countries use toxic DDT, which has been banned in high-income countries. These farmers are often exposed to chemical poisoning through pesticides and fertilizers.

Farmers face health hazards through the absorption of nicotine during harvesting and curing of the tobacco leaf. The risk is substantially higher when the leaves are moist from rain or dew, or when the workers do not wear protective clothing, which is often the case.

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<sup>60</sup> Results are shown in Table 4.

Tobacco farmers try to save money by not providing such protection, and their knowledge level concerning the problem is low (Hu and Lee 2014). Nicotine absorption and exposure cause green tobacco sickness (GTS), whose characteristic symptoms include nausea, vomiting, headache, muscle weakness, and dizziness. Other symptoms may include lethargy, abdominal cramps, and fluctuations in heart rate and blood pressure (McKnight and Spiller 2005). Children are more vulnerable to the sickness because of their smaller body mass, which gives them less tolerance to the nicotine absorbed. A 2007 literature review found that nonsmoking tobacco harvesters showed cotinine and nicotine levels similar to those among active smokers in the general population, and that toxicity to the cardiovascular system and carcinogenicity of chronic skin nicotine exposure were likely to exist (Schmitt, Schmitt, Kouimintzis, et al. 2007).

According to a U.S. government-funded study, about 25 percent of workers harvesting tobacco in one area of North Carolina suffered from GTS in a single season (Arcury et al. 2001). Similarly, a 2010 health survey of 500 farmers in Indonesia found that almost two-thirds of the farmers reported having body pain during the tobacco leaf planting, maintenance, and harvesting periods. Fifty percent of tobacco farmers reported having headaches during the same periods. Other tobacco sickness symptoms were reported, including nausea/vomiting/stomachache, extensive sweating, itching, and shortness of breath (Triasih, Hasbullah, Santi, and Vetty 2012). Similarly, in a recent survey of 400 women tobacco farmers in Tanzania, almost 70 percent reported having tobacco farming-related illnesses, while 60 percent of the respondents were not aware of the negative health consequences of tobacco farming. Within this group of women, 70 percent had engaged in tobacco farming beyond 6 months of pregnancy (Hu and Lee 2016). In China, half of 400 women tobacco farmers interviewed reported experiencing dizziness, 33 percent experienced headaches, and 17 percent experienced nausea. About 40 percent of respondents were not aware of the negative health effects of tobacco farming (Hu and Lee 2016).

Given the potential negative health impacts of tobacco farming, international best practices identified by the International Labor Organization should be followed.<sup>61</sup> The U.S. Department of Labor, for instance, requires that employers who hire tobacco workers provide information and training about nicotine hazard, GTS prevention, and appropriate personal protective accessories, such as gloves, long-sleeve shirts, long pants, and water-resistant clothing, before letting farmers handle tobacco leaves.<sup>62</sup> The U.S. example could be considered, given the cost and climate conditions for countries that do not have such regulations.

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61 See ILO Standards for Safety and Health in Agriculture: [http://www.ilo.org/safework/info/standards-and-instruments/codes/WCMS\\_161135/lang--en/index.htm](http://www.ilo.org/safework/info/standards-and-instruments/codes/WCMS_161135/lang--en/index.htm)

62 See [https://www.osha.gov/SLTC/green\\_tob\\_sickness/index.html](https://www.osha.gov/SLTC/green_tob_sickness/index.html)

## BARRIERS AND FEASIBILITY OF SWITCHING FROM TOBACCO TO OTHER CROPS

Tobacco farmers face three types of barriers that make it difficult to switch to alternative crops: (1) institutional barriers, (2) financial barriers, and (3) informational/technical barriers.

### Institutional Barriers

The tobacco industry encourages most governments to promote tobacco farming based on the arguments that tobacco farming: (1) contributes to government earnings and tax revenues; (2) improves farmers' employment and income, especially cash income, and relieves household poverty; (3) takes advantage of low-fertility land that is suitable for growing tobacco leaf but would otherwise be underutilized; (4) generates export earnings; and (5) promotes local economic development. These arguments have been formulated to challenge advocates of tobacco control (Jacobs, Gale, Capehart, Zhang, and Jha 2000).

In China, tobacco farmers experience strong pressure from local government officials to engage in tobacco farming. In China, tobacco farming is entirely under the control of the China National Tobacco Corporation (CNTC), from central government through to the local village level. The CNTC is government-owned, and it is also the largest cigarette manufacturer in the world. The CNTC has the overall responsibility of setting tobacco leaf production quotas for all provinces in the country. It sets the purchase price for tobacco leaf and determines marketing channels. CNTC is the sole legal buyer of tobacco leaf from tobacco farmers. It is illegal for farmers in China to sell tobacco leaf to private cigarette producers (Hu, Mao, Jiang, et al. 2007). Furthermore, the Chinese government has set a 20 percent tax on tobacco leaf to be used entirely for local government finance, and the revenue is collected by the CNTC on behalf of local governments. This economic incentive encourages local governments to fulfill their tobacco leaf production quotas, and it ensures a steady supply of tobacco leaf for cigarette manufacturing.

Even when the tobacco industry is privately owned, as in Indonesia and African countries, tobacco leaf is viewed as a valuable source of foreign exchange to the national economy and therefore carries political weight. When the tobacco industry is under private ownership, a contract system is established whereby tobacco companies provide loans to farmers for inputs such as seeds, fertilizers and pesticides, to ensure a steady supply of tobacco. In exchange, the farmers sell their tobacco leaf exclusively to their contracted companies. This arrangement is widespread in producer countries. Since the tobacco companies grade and price the leaf harvested by the farmers, and the tobacco company is the sole buyer, there is a tendency for these companies to under-grade the tobacco in order to maximize their profits. As a result, many farmers do not earn enough to repay their loans and get caught in a spiral of perpetual indebtedness to the companies. These farmers have no choice but to grow tobacco, resulting in what some have called "lifetime

debt bondage” (Kagaruki 2010). As a result of the close relationship between the tobacco industry and political institutions in these settings, small tobacco farmers face major obstacles in switching from tobacco leaf to other crops. Many become effectively trapped in tobacco farming.

## Financial Barriers

Access to significant financing would be required for most tobacco farmers to make a successful switch to growing other crops. Tobacco farmers interested in switching to other crops would require initial capital to purchase seeds, fertilizers, and other farm supplies, as well as to invest in the storage of and transportation for their alternative crops. Furthermore, at least 18 months could be needed for tobacco farmers to realize their income from other crops, from the initial identification of seed selection until revenue collection from the alternative crop; farmers would require substantial and affordable loans or funding to support their living expenses while they are growing alternative crops.

Some countries, such as Tanzania, do not allow traditional crops such as rice, wheat, and soybeans to be exported to neighboring countries, thus restricting the markets for these crops, which creates additional difficulty for farmers. Farmers do not find it easy to sell these products to the market, and/or they do not get a fair price. This export policy reduces incentives for tobacco farmers to grow alternative crops.

The relatively lower financial barriers in tobacco farming make it difficult for current tobacco farmers to switch to other crops. In African countries, special provisions have been made by the tobacco industry and financial institutions to allow farmers easier access to borrowing money to grow tobacco, as opposed to other crops. In fact, in some countries, such as Kenya and Tanzania, no loans are available for farmers to grow other crops. Moreover, farmers always face a risk of losing a crop due to weather, transportation, or storage problems, regardless of the crop. Tobacco farmers often have the backup of the contract from the tobacco industry or risk insurance from the tobacco industry to mitigate these costs, so farmers who grow other crops may encounter greater financial risks.

## Information/Technology Barriers

Tobacco farmers are not adequately informed of their alternative crop choices. Surveys of tobacco farmers were carried out in Tanzania and Kenya during which respondents were asked to identify alternative crops they could grow. The results revealed a lack of knowledge about crop choices: more than 60 percent of respondents could not identify any alternative crops, and even those farmers who were aware of possible alternative crops were unaware of how different crops may rely on a particular climate and soil conditions, irrigation requirements, and overall market potential. Tobacco farmers often lack access to this type of information (Hu and Lee 2016).



Tobacco farmers generally underestimate the opportunity cost of their own intensive labor inputs in growing tobacco and the tobacco industry lets its farmers believe that growing tobacco is more profitable than growing other crops. Without knowing the comparative economic returns and the costs of growing alternative crops on the one hand, and the negative effects on their health on the other hand, tobacco farmers may have no desire or intentions to switch to other crops. Many farmers are not aware of the negative health effects of tobacco farming. If they had knowledge of these potential illnesses, tobacco farmers might have more incentives to switch to other crops.

Geographical conditions influence the location of tobacco farming. The factors that can influence crop decisions include soil conditions, weather, water resources, and marketing availability. For instance, many high-yield tobacco-growing areas are situated in hilly areas such as in Southern China, Yunnan and Guizhou provinces, and in Southern Brazil. To grow good quality tobacco leaf requires suitable soil content and organic ingredients which have a bearing on the flavor of the tobacco leaf and provide a good yield of tobacco crop. Weather conditions, including the right temperature, sunlight, and rainfall are critical to special tobacco crops. For instance, in China the government has been shifting tobacco growing from Northern China to Southern China, which is more suitable to growing tobacco.

### **Feasibility of Switching from Tobacco Crops to Alternative Crops**

To produce a crop requires four major input elements: land, labor, capital, and technology. The profitability of a crop also depends on an efficient market infrastructure to make sure the crop has a good market outlet and sustains its profits in the long term. Encouraging tobacco farmers to switch to other crops requires removing the institutional barriers, economic barriers, and information/technology barriers discussed above.

Governments have a role to play in assisting tobacco farmers to switch to alternative crops. Based on the cited comparative economic returns from tobacco leaf versus alternative crops, and even without considering environmental and health damages, there are other options for tobacco farmers besides tobacco. The government can take the initiative to provide financial incentives, offer affordable loans, disseminate health information, provide technical assistance, provide agriculture extension and irrigation, and create market channels for alternative crop market output. The government could also raise the taxes on cigarettes while ensuring that additional, fiscally sustainable budget allocations assist tobacco farmers to switch from growing tobacco to growing other crops. The example of the Philippines in 2012, when the government raised the tax on cigarettes and designated the earmarked tax for alternative crops, is relevant due to its success in triggering the switch. However, countries that do not have earmarked increases in tobacco taxes can prioritize agriculture-sector spending that encourages farmers to produce other crops.

The international development community also has an important role to play in assisting tobacco farmers to switch to alternative crops. For instance, the International Development Research Center (IDRC) in Canada provided an experiment by growing bamboo as an alternative crop livelihood strategy for tobacco smallholders in Kenya. The FAO, United Nations Environmental Program (UNEP), and United Nations Conference on Trade and Development (UNCTAD) provided technical assistance to Ghana to support tobacco farmers to grow alternative crops (CTCA [date?]). In addition to assistance from relevant government agencies, the implementation of large-scale tobacco-alternative farming programs would require financial support, technology and know-how from international organizations to help tobacco farmers shift to other crops. Institutions that could contribute include United Nations technical agencies, as in the Ghana project, as well as development banks, for example the World Bank Group and the African Development Bank. Global, national, and local civil society organizations and academic research institutions could also contribute decisively.

Governments, international NGOs and development agencies, and other trusted partners might convince tobacco farmers to gradually diversify to alternative crops while they are exiting tobacco. This option would reduce farmers' financial risk and crop production risk while at the same time demonstrating the feasibility of crop substitution during the transition period.

## SUMMARY AND CONCLUSIONS

**Although tobacco production may not be immediately affected by rising consumption taxes, long-term trends point towards lower demand and the need to find alternatives.** Many countries are engaged in implementing tobacco control programs focused on education, medical advice, and tax increases in order to reduce cigarette use, with the aim of improving population health. However, as noted above, the impact of these measures on global cigarette consumption has been rather limited. The empirical evidence and available literature have also shown that the impact of tobacco consumption taxes on the growth of tobacco farming has been very slow to materialize. Thus, to date, taxes and other control measures have had a minimal effect on tobacco farmers' income. On the other hand, incentives to increase the supply of tobacco have continued to operate forcefully. Upward drivers of tobacco production include industry marketing strategies, financial incentives to farmers, and the oligopolistic global tobacco production structure itself, as well as the industry's political and institutional connections. These forces have thus far prevented a decline in the production of tobacco leaf. Nonetheless, long-term trends, as demonstrated by the shift in consumption in certain regions, imply that demand will decline in the long run, requiring adjustments on the part of producers.

**Given the challenges farmers will face in transitioning away from tobacco, governments in countries in which tobacco is a major crop may choose to initiate support strategies early, to progressively assist tobacco farmers in adopting alternative crops.** Examples provided in this chapter illustrate that it is feasible for tobacco farmers in a number of countries to grow other crops, which are often more profitable and less detrimental than tobacco leaf. A successful switch to growing other crops will ultimately improve the health and livelihoods of many tobacco farmers. However, wholesale substitution of other crops in place of tobacco will require the effort of government agencies, international organizations, and NGOs to help tobacco farmers overcome the numerous barriers they face in switching to alternative outputs. Mounting well-publicized programs to do so may in some cases be an important part, from the point of view of political economy, of justifying significant increases in tobacco taxes. Depending on the country, this could be important even if the share of agricultural employment in tobacco production is quite small: all the more so, because the industry makes use of employment loss as an argument against significant tobacco tax increases.

**Safeguards should be applied in tobacco production irrespective of the diversification agenda.** As tobacco is still a major crop in many countries, to protect the health of tobacco farmers, it would be important for governments to adopt health and safety measures for current tobacco farmers in line with the best practices, such as those required by the ILO.

**The most appropriate role of institutions such as the World Bank may be in supporting policy reforms and investments to improve agricultural productivity and bolster the profitability of alternative crops.** The World Bank does not provide loans or support for tobacco-growing activities in any countries and is also not involved in any large-scale projects involving crop substitution for tobacco leaf. Indeed, there is currently no known large-scale crop substitution effort for tobacco leaf in the world, and the model of crop substitution programs undertaken by drug control efforts is not applicable to tobacco. Support from government agencies, international organizations, and NGOs could catalyze ambitious crop-substitution programs for tobacco farmers, addressing the institutional, financial, and technical barriers identified above. Key obstacles include: countries' overreliance on tobacco exports for foreign exchange; farmers' limited access to capital and value-chain financing for alternative crops; and the lack of technical expertise and services to facilitate the production of non-tobacco cash crops. In terms of political economy, it is important to develop such alternative-crop programs to counter industry arguments against large tax increases.

## REFERENCES

- Arcury, T., Quandt, S., Preisser J., Norton, D. 2001. "The Incidence of Green Tobacco Sickness among Latino Farmers." *Journal of Occupational and Environmental Medicine* 43(7): 601–609.
- Barber, S., Adioetomo, S., Ahsan, A., & Setyonaluri, O. 2008. *Tobacco economics in Indonesia*. Paris: International Union against Tuberculosis and Lung Disease.
- Bialous, S. A. 2008. "Corporate practices undermining the implementation of economically sustainable alternatives to tobacco growing." Study conducted for the second meeting of the Study Group on Economically Sustainable Alternatives to Tobacco Growing. Mexico City, June 17–19.
- Campaign for Tobacco-Free Kids. 2001. *Golden leaf, barren harvest: the cost of tobacco farming*. Washington, D.C.
- CTCA (Center for Tobacco Control in Africa). (No date) Factsheet on Alternative Livelihoods to tobacco farming in Africa. Facebook: [facebook.com/CTCAFRICA](https://www.facebook.com/CTCAFRICA)
- FAOSTAT, The Statistics Division of the FAO at <http://www.fao.org>
- Geist, H. J. 1999. "Global assessment of deforestation related to tobacco farming." *Tobacco Control* 8(1):18–28.
- Hu, T., Lee, A. 2015. "Tobacco control and tobacco farming in African countries." *Journal of Public Health Policy* 36 (1):41–51
- Hu, T., Lee, A. 2016. "The role of women in tobacco farming." A report submitted to the Gates Foundation, the Public Health Institute, Oakland, CA.
- Hu, T., Mao, Z., Jiang, H., Tao, M., & Yurekli, A. 2007. "The role of government in tobacco leaf production in China: national and local intervention." *International Journal of Public Policy*, Vol. 2, pp. 235–248.
- Hu, T., Mao, Z., Shi, J., & Chen, W. 2008. *Tobacco taxation and its potential impact in China*. Paris: International Union against Tuberculosis and Lung Disease.
- ILO. 2001. Tanzania child labour in commercial agriculture — tobacco: a rapid assessment. International Labour Organization International Programme on the Elimination of Child Labour. Investigating the Worst Forms of Child Labour. No. 9. Geneva.
- INRS. 2007. Case study on tobacco cultivation and possible alternative crops — Kenya. Study conducted as a technical document for the first meeting of the Ad Hoc Group on Alternative Crops established by the Conference of Parties to FCTC. Retrieved from [who.int/tobaccoframework/cop/events/2007/kenya\\_case\\_study.pdf](http://who.int/tobaccoframework/cop/events/2007/kenya_case_study.pdf)
- Jacobs R., Gale F., Capehart, T., Zhang, P., & Prabhat, J. 2000. "The supply-side effect of tobacco control policies." In P. Jha, & F. Chaloupka (Eds.), *Tobacco control in developing countries*. Oxford: Oxford University Press.
- Jiang, H., Chen, J., Mao, Z., & Hu, T. 2009. "On tobacco leaf tax reform and tobacco control" (in Chinese). In T. Hu (Ed.), *China tobacco tax: Historical development, current and future reform*. Beijing: China Taxation Press, pp.65–69.
- Jones, A. S., Austin, W.D., Beach, R. H., & Altman, D.G. 2008. "Tobacco farmers and tobacco manufacturers: implications for tobacco control in tobacco growing developing countries." *Journal of Public Health Policy* 29 (4): 406–423.
- Kagaruki, L. K. 2010. "Community-based advocacy opportunities for tobacco control: experience from Tanzania." *Global Health Promotion*, 17(2) Suppl: 41–4.

- Keyser, J. 2007. "Crop substitution and alternative crops for tobacco." Study conducted as a technical document for the first meeting of the Ad Hoc Study Group on Alternative Crops established by the Conference of the Parties to the WHO Framework Convention for Tobacco Control.
- Keyser, J., & Juita, N. 2003. "Smallholder tobacco growing in Indonesia: costs and profitability compared with other agricultural enterprise." HNP Discussion Paper, World Bank Economics of Tobacco Control Paper No. 27.
- Kidene, A., Mduma, J., Naho A., Hu, T. 2016. "Economic returns and costs of tobacco, maize and ground nuts: The case of Tabora region, Tanzania." *African Statistical Journal*, Vol. 19.
- Lecours, N., Almeida, G. E., Abdallah, J. M., & Novotny, T.E. 2012. "Environmental health impacts of tobacco farming: a review of the literature." *Tobacco Control* 21(2): 191–96.
- Li, V., Wang Q., Xia, N., Tang, S., & Wang, C. 2012. "Tobacco crop substitution: pilot effect in China." *American Journal of Public Health* 102(9): 1660–1663.
- McKnight, R. H., and Spiller, H.A. 2005. "Green tobacco sickness in children and adolescents." *Public Health Reports* 9, 120(6): 602–605.
- Mendez D, Alshangeety O, Warner KE. 2013. "The Potential Impact of Smoking Control Policies on Future Global Smoking Trends." *Tobacco Control* 22 (1): 46–51.
- Ng M, Freeman M, Fleming, T et al. 2014. "Smoking Preference and Cigarette Consumption in 187 Countries." *JAMA* 711 (2): 183–212.
- Ochola, S. A and Kosura W. 2007. Case Study on Tobacco Cultivation and Possible Alternative Crops — Kenya, a report presented at the meeting of the Ad Hoc Study Group on Alternative Crops, organized by WHO, February 2007.
- Otanez, M., and Glantz, S. A. 2011. "Social responsibility in tobacco production? Tobacco companies' use of green supply chains to obscure the real costs of tobacco farming." *Tobacco Control* 20(6): 403–411.
- Schmitt, N.M., Schmitt, J., Kouimintzis, D.J. et al. 2007. "Health Risks in Tobacco Farm Workers: A Review of the Literature." *J Public Health* 15: 255. doi:10.1007/s10389-007-0122-4
- The Tobacco Atlas ([www.tobaccoatlas.org/cigarette.use](http://www.tobaccoatlas.org/cigarette.use))
- Triasih, D., Hasbullah, T., Santi, Y., and Vetty, Y. 2012. "The impact of excise increase on income of tobacco farmers." In T. Hasbullah and P. Sarnantio (Eds.), *Indonesia: The Heaven for Cigarette Companies and the Hell for the People*. Jakarta: University of Indonesia, School of Public Health, pp. 27–42.
- Vargas MA, Campos RR. 2005. Crop substitution and diversification strategies: empirical evidence from selected Brazilian municipalities. Washington, DC, World Bank, March 2005 (Health, Nutrition, and Population Family (HNP) Discussion Paper, Economics of Tobacco Control Paper No. 28).
- Waddie Leppan, Lecours N, Buckles, D. 2013. "Tobacco Control and Tobacco Farming: Separating Myth from Reality." International Development Research Center.
- WHO (World Health Organization). 2015. WHO Report on the Global Tobacco Epidemic, 2015: Raising Taxes on Tobacco. Geneva: WHO.
- Yu, V. 2010. "A financial comparison of farming maize versus tobacco." [www.nuruinternational.org](http://www.nuruinternational.org)

*Illicit tobacco trade affects most regions. It is estimated that the illicit tobacco trade share (as a percentage of retail sales) ranges from 7.9 percent in North America upward to 8.4 percent in Eastern Europe and Asia and the Pacific, 8.7 percent in Western Europe, 10.6 percent in the Middle East and Africa, and 16.7 percent in Latin America (Euromonitor estimates).*

*Illicit tobacco trade is estimated to represent 9.9 percent of retail sales worldwide (Euromonitor estimates, as reported by WHO).*

*This situation constitutes a major public health problem, as the lower retail prices of illicit cigarettes lead to increased cigarette consumption.*

# 9

## PREVENTING AND CONTROLLING ILLICIT TOBACCO FLOWS

*Enrique Fanta and Magaly Garcia*

### ABSTRACT

The illicit tobacco trade diminishes the capacity of increased taxes to cut tobacco use. It also costs governments some \$40 to \$50 billion annually in lost revenue. Thus, measures to control the illicit flow of tobacco products are a necessary complement to tobacco tax policy and public education campaigns. This chapter highlights the administrative options authorities have in controlling the illegal tobacco trade and presents successful examples from countries.

The fraudulent sale of tobacco products constitutes about 10–12 percent of cigarette consumption worldwide. In low- and middle-income countries, 50 percent of cigarettes are thought to come from illicit sources. Besides its negative public-health and fiscal effects, illicit tobacco has been linked to organized criminal activity and terrorism.

Proven tools are available to countries that want to combat illegal tobacco. The WHO Protocol to Eliminate Illicit Trade in Tobacco Products identifies effective measures, including: track-and-trace systems to follow tobacco products through the supply chain; excise tax stamps and other product markings; detection equipment at customs posts; physical control measures, such as separation of production and storage facilities; and penalties and sanctions. For each of these mechanisms, we discuss technical aspects and policy considerations. Beyond measures included in the WHO Protocol, we recommend that countries: (1) identify and measure non-compliance before launching a control program, so as to target control action effectively; and (2) rigorously apply the rule of law. As enforcement capacities increase in sophistication, so too should the legal means tax and customs authorities have available to enforce compliance.

Case studies from Turkey and the United Kingdom show how these countries successfully reduced illicit tobacco flows. Evidence from these and other contexts supports the following conclusions: (1) control and enforcement mechanisms significantly increase the impact of tobacco tax increases; (2) high-level political leadership speeds success; (3)

a global convergence toward common control and enforcement standards would benefit all countries; (4) countries may improve outcomes by going beyond the strict requirements of the WHO Protocol; (5) control programs often pay for themselves through improved tax compliance; and (6) tackling illicit tobacco may unmask illicit activity in other sectors and act as a deterrent for all such activity.

## BACKGROUND: WHY IS CONTROL IMPORTANT?

In the fight to curb tobacco-related disease, disability, and death, enforcement of measures to control the illicit flow of tobacco is the necessary counterpart to a well-developed tax policy and public education campaign. Illicit tobacco, in fact, diminishes the effectiveness of increased taxes designed to reduce tobacco use and costs governments millions of dollars in foregone revenue (World Bank 1999). Developing an effective control policy involves multiple stakeholders and close collaboration with several government authorities. Such an approach can increase revenues, many times exceeding implementation costs, while improving public health outcomes. This chapter will highlight the administrative options tax and customs authorities have in controlling the illegal trade of tobacco products and present successful examples from around the world.

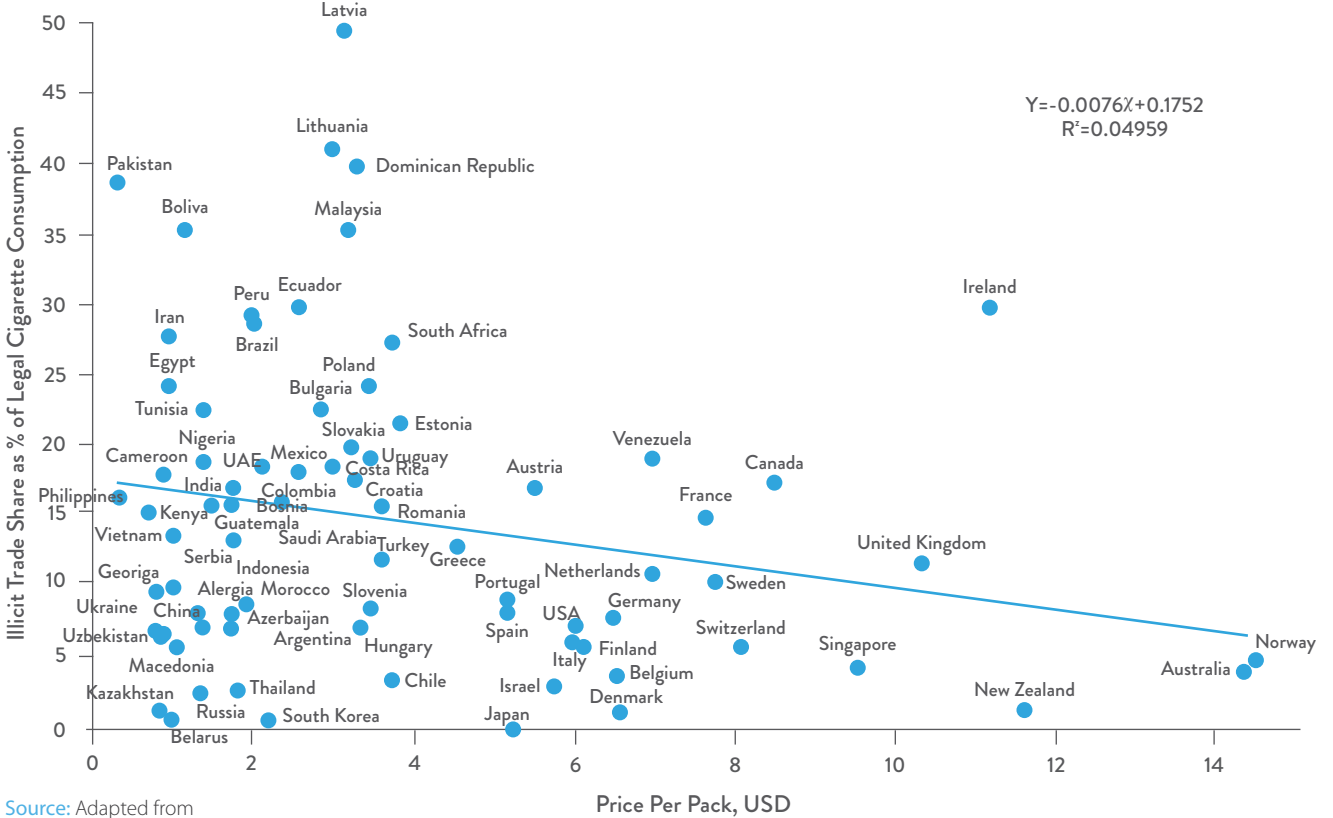
The World Health Organization (WHO) Protocol to Eliminate Illicit Trade in Tobacco Products ("Protocol") defines illicit tobacco trade as:

Any practice or conduct prohibited by law and which relates to production, shipment, receipt, possession, distribution, sale or purchase, including any practice or conduct intended to facilitate such activity. (WHO 2012, Article 1.6)

Illicit tobacco trade affects most regions. It is estimated that the illicit tobacco trade share (as a percentage of retail sales) ranges from 7.9 percent in North America upward to 8.4 percent in Eastern Europe and Asia and the Pacific, 8.7 percent in Western Europe, 10.6 percent in the Middle East and Africa, and 16.7 percent in Latin America (Euromonitor estimates). Illicit tobacco trade is estimated to represent 9.9 percent of retail sales worldwide (Euromonitor estimates, as reported by WHO). In 2015, the volume of duty-not-paid cigarettes consumed in the world was some 463 billion sticks, with an estimated value of US\$ 40 billion (Euromonitor 2016). This situation constitutes a major public health problem, as the lower retail prices of illicit cigarettes lead to increased cigarette consumption. The numerous regulatory obligations and excise taxes on legally traded products create large potential profit margins for smugglers, as does the smuggling of other specially taxed products like alcohol and cars. Since cigarettes themselves are neither large nor heavy products, they are relatively easily concealed and smuggled by a variety of means: personal vehicles, luggage, postal services,



Figure 1: Illicit Cigarette Market Share and Cigarette Prices by Country



Source: Adapted from CDC 2016. Created from data in Euromonitor International, 2015 (illicit trade percentage), and WHO, 2010 (price).

boats, cargo trains, donkeys, and shipping containers (Melzer 2010). The degree of the problem varies widely across the world, as can be seen in Figure 1. However, while Figure 1 presents cross-country estimates of illicit tobacco trade reported by Euromonitor International (2015) and price per pack data reported by WHO (2010), recent data from countries such as Ireland, show that the market penetration of illicit cigarettes is being contained with effective control mechanisms. For example, recent cigarette survey data for Ireland show that only 10 percent of the packs held by smokers surveyed are classified as illegal, and that only a further 8 percent of the packs are found to be legal Non-Irish Duty Paid (Ireland Office of the Revenue Commissioners, et al 2017). Countries such as Malaysia and Ecuador (see Box 3 below) have also adopted effective measures to curb tobacco smuggling.

### What Does the Illicit Tobacco Trade Look Like?

There are four kinds of illicit tobacco products. *Contraband cigarettes* are genuine products that have been bought and are illegally resold outside the country of origin for financial profit. *Counterfeit cigarettes* are illegally manufactured and sold by those other than the original trademark owner.<sup>63</sup> *Illicit whites* are manufactured legitimately in one country for the sole purpose of being smuggled into and sold in another country.

63 When detecting counterfeit cigarettes, it is important to meet with the legitimate tobacco companies to learn the differences between legitimate and counterfeit products. For example, the paper used or images displayed may be different. Illicit tobacco is generally more dangerous for public health.

And *unbranded tobacco* is often sold as finely cut loose leaf tobacco and consumed in roll-your-own form or inserted into empty cigarette tubes. It may be grown illicitly without a license or imported.

Contraband or smuggled cigarettes that are sold through illicit trade networks and avoid tax and duty altogether represent the biggest percentage of the illicit tobacco trade, up to 90 percent of the total (CDC 2016). There are two ways in which they are traded: *Boot-legging* is the illegal resale outside the country of origin of legally purchased duty-paid cigarettes. And *wholesale smuggling* is the cross-border trade in untaxed cigarettes. The illicit market for smuggled and counterfeit cigarettes has fallen worldwide (as an example, 21 percent of cigarettes in the United Kingdom were smuggled at the start of the 2000s, and by 2007/08 that number fell to 10 percent). However, the market share of illicit roll-your-own tobacco, estimated at 47 percent of illicit tobacco trade, is not showing a decline (HM Government 2010). In addition to cigarettes being smuggled outside of countries, genuine products are also diverted from production facilities directly into local markets by illicit networks complicit with tobacco firms. These also avoid duties and regulatory requirements.

The supply of smuggled, cheap cigarettes (roughly half the price of duty-paid premium brand cigarettes in most cases) reduces the effectiveness of government attempts to make the products unaffordable by increasing excise taxes. Cheap cigarettes allow for greater youth uptake and continued use by lower-income smokers whose demand for cigarettes is most sensitive to price. The sale of illicit cigarettes also undermines other tobacco control measures such as age-of-sale restrictions and public health campaigns, since contraband cigarette units often do not display health warnings (HM Government 2010).

Various studies have tried to determine what factors most influence the illicit trade in tobacco products. Contributing factors to illicit trade are complex. Studies have shown

### **Box 1 // The Tobacco Industry Weighs In: Do Increased Taxes Lead to Increased Levels of Illicit Tobacco?**

The tobacco industry has often taken a position on whether increasing prices on cigarettes increases or decreases illicit trade and applied significant lobbying efforts to convince policy-makers of the industry's point of view. In the early 1990s, the tobacco industry in Kenya strongly encouraged authorities to raise taxes. It was later discovered that the tobacco industry was complicit with the smugglers and was under-declaring production and values. Thus, in this case, the industry stood to gain significantly from the government's focusing on raising taxes and doing little else (Ngeywo 2017). More commonly, the tobacco industry has taken the position that increased prices will increase illicit trade and thus lower government revenues. Experience in Canada and Sweden, however, has shown this is not the case. In the 1990s, Canadian and Swedish authorities lowered tobacco taxes at the encouragement of the tobacco industry. Within one year, tax revenues had fallen significantly, and cigarette consumption had increased (Cetinkaya and Marquez 2017). To date, there is no conclusive evidence showing that increases in tobacco taxation directly cause increases in illicit trade.

## Box 2 // Follow the Money

The U.K., Canada, and Chile have all organized their illicit tobacco reform efforts by adopting a strategy that essentially “follows the money.” By identifying the financiers of the production, storage, transportation, and distribution of illicit tobacco, governments can target these sources and have a broader-reaching effect. Most often the financiers are organized crime groups. The U.K., Canada, and Chile all created special teams tasked with identifying and targeting these groups. Once identified, the groups found to be involved in the financial chain of the contraband should be audited by the appropriate authorities including tax, customs, police, and money laundering units.

that higher levels of the following variables contribute to a higher share of illicit trade: purchasing price, proximity to borders, Internet penetration, taxation levels, smoking prevalence rates, sales per capita, GDP per capita or estimated disposable income, unemployment rates, corruption, and presence of organized crime networks. In contrast, higher levels of the following variables contribute to a lower share of illicit trade: perceived legitimacy of tobacco taxes, rule of law/good governance indexes, prosecution rates, punishments, and variables measuring law enforcement actions/effectiveness (including border security and seizure rates) (OECD 2016).

## Political, Social, and Economic Consequences of Illicit Tobacco Trade

An illicit distribution network, by virtue of its being illicit, is unregulated and creates opportunities for exploitative behavior. Illegal networks both thrive in and contribute to public and political corruption. Such networks provide unfair competition to legitimate enterprises that do abide by the numerous regulatory requirements placed on the growing of tobacco and the distribution and sale of cigarettes.

The sale of illicit tobacco has also been linked to serious organized criminal activity, fueling what has been called the “unholy trinity of transnational crime, corruption, and terrorism” (Shelley 2005). In Turkey, the government was able to gain a broader base of support for tobacco control efforts when they made the link between the sale of illicit tobacco products and the terrorist networks that the country had been fighting to dismantle (Cetinkaya 2017). Since the 1980s, there is evidence that tobacco smuggling operations have helped finance terrorist organizations around the world (Alderman 2012; Brady 2013). And quite often, multiple sectors of the illicit economy interact and help support each other. Groups that have been found to participate in the illicit trade of humans, weapons, gemstones, antiquities, pirated electronics, narcotics, and more have included the following: the Provincial Irish Republican Army (PIRA), the Liberation Tigers of Tamil Eelam (LTIE), Hezbollah in Lebanon, Hamas in Palestine, the Kosovo Liberation Army (KLA), the Islamic Movement of Uzbekistan (IMU), the Kurdistan Workers’ Party (PKK), the Revolutionary Armed Forces of Colombia (FARC), Al Qaeda in the Islamic Maghreb (AQIM), and the Taliban in Afghanistan (OECD 2016).

## Enforcement Measures Are Effective

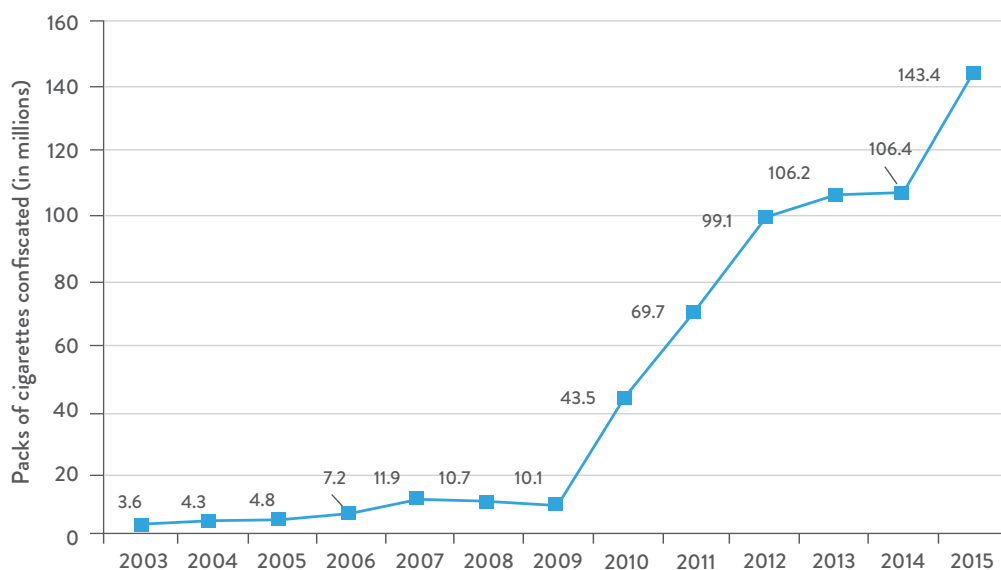
Regulatory, health, and fiscal measures have helped reduce the sale of legitimate cigarettes but have had limited effectiveness in reducing the number of smuggled products. Control and enforcement measures, on the other hand, have proven to be among the most effective tools in reducing contraband and illicit trade (IMF 2016). An effective control strategy encompasses the entire supply chain and all of its points: from the fields where tobacco leaves are grown, or the port of entry, to the final purchase by the individual product consumer. Detection, seizure, and elimination must be accompanied by thorough and systematic investigations.

Where comprehensive tobacco control policies that include increases in excise taxes, public education efforts, smoking bans, and stronger control of illicit trade flows have been implemented, there have been significant declines in cigarette consumption. In the United States, those states that have made larger, sustained investments in comprehensive tobacco control programs have seen cigarette sales drop approximately twice as much as in the United States overall. In fact, smoking prevalence among adults and youths has declined faster as spending for tobacco control programs has increased (CDC 2012).

In Turkey, strengthened tax administration and customs control efforts along with an increase in taxes proved to be the most effective policy combination. Between the years of 2003 to 2009, there was a 3.5 percent increase in the tax burden that led to 6.5 million more packs of cigarettes being confiscated by authorities. Between 2010 and 2015, the tax burden rose by a similar increment (3.4 percent). However, during this period Turkey also implemented a series of non-price tobacco control initiatives. As a result, the number of packs of cigarettes confiscated by authorities increased by 100 million. In 2015 alone, the estimated tax loss resulting from seized smuggled cigarettes would have been approximately 800 million Turkish Lira or US\$ 265 million (Cetinkaya and Marquez 2017). Figure 2 illustrates the dramatic increase in confiscations as a result of control and enforcement initiatives.

Though programs such as these do have significant associated costs, several localities have demonstrated overall national cost savings after implementation. Recent research suggests that if the illicit tobacco market in the United Kingdom is reduced by 80 percent there would be a savings in the economy of £5.7 billion over 50 years (at net present value) (HM Government 2010). Many countries and municipalities have funneled revenue gains from higher excise tax rates to pay for control programs. When the U.S. state of California increased its state excise tax rate in 1988, the government also dedicated a portion to tobacco prevention and control programs. California has maintained relatively stable funding since then and has since seen adult smoking rates fall from 22.7 percent in 1988 to 13.1 percent in 2009. (CDC 2012). The tobacco control program has also been associated with saving \$86 billion in personal health care expenditures. (CDC 2012).

**Figure 2: Cigarette Seizures Increase as Total Tobacco Tax Burden Rises: Turkey 2003–2015**



Source: Cetinkaya and Marquez 2017.

## MEASURES TO CONTROL ILLICIT TOBACCO FLOWS

As mentioned earlier, many variables affect the illicit trade of tobacco. Thus, a tobacco control strategy must be multi-sectoral and involve all levels of public administration. The ministries of finance and trade, foreign affairs, justice, interior, customs, education, and health should be involved. Country examples indicate that where working groups have been formed with representatives of all these ministries, reforms are more easily enacted.<sup>64</sup> Civil society also has an important role to play in advocacy and education. Strong governance institutions have proven to be the best equipped to implement tobacco control policies. Weak governance situations with poor tax administration and weak borders are the easiest targets for smuggling. Reform efforts in Turkey indicate control programs need to be firm yet flexible enough to respond to increases and decreases in contraband, and to changes in methods and suppliers as they adapt to counter-smuggling efforts.

### Tobacco-Related Controls

Prioritizing and coordinating control of the supply chain and enforcement of tobacco regulations have proven to be effective measures in reducing tax evasion along with

<sup>64</sup> Chile created a special task force to control the illicit trade of tobacco under the "Oficina de Seguridad Pública," with representatives of the Prosecutor General's Office and customs, tax, health, and transportation authorities, as well as the Coastguard and the Police. The task force develops a single agenda, and the reforms are implemented in tandem and with coordination among all members.

the consumption of tobacco products. The most comprehensive and coordinated approaches — at the federal, state, and local levels — have been the most effective and shown the capacity to strengthen existing and future comprehensive tobacco prevention and control work.

The WHO Protocol to Eliminate Illicit Trade in Tobacco Products (“the Protocol”) is an international treaty that seeks to eliminate all forms of illicit trade in tobacco products through a series of measures to be taken by countries acting in cooperation. The Protocol’s obligations cover tobacco, tobacco products, and manufacturing equipment (machinery to make tobacco products). It is an important base of enforcement action that has proven effective. The key elements of the Protocol are the following:

- **To secure the supply chain:** establishment of a global tracking and tracing regime within five years of entry into force of the Protocol; licensing and record-keeping requirements; and regulation of Internet sales, duty-free sales, and international transit.
- **To address current illicit trade:** establishment of offenses, liability and seizure payments, as well as the disposal of confiscated products.
- **To boost international cooperation:** obligations on information sharing, technical and law enforcement cooperation, mutual legal and administrative assistance, and extradition.

Below is a broad categorization of the most common measures that can be adopted to control the illicit trade of tobacco.

The technological options used for control and enforcement are many and evolving quickly. Some general issues should be considered when countries contemplate adopting one of the tools described later in this section. These general concerns include:

1. It is important to budget not only the acquisition of the tool, but also the maintenance and eventual upgrading that technology requires.
2. A government should not rely on providers for access to data. This stipulation can be ensured through legislation or in the writing of the contract. Relatedly, there should be a governance model written that identifies the ministries that will have access to the data and the level of confidentiality that will be required of each.
3. Each technological tool that is adopted should have the IT infrastructure that allows for the data captured to be used online and in real time by the relevant ministries.
4. Logistical considerations should be assessed in order to allow placement of the equipment in the selected control areas.
5. Dependence on any single provider should be avoided and efforts should be made to ensure a transfer of knowledge so that the country may build its own expertise.
6. Lastly, there should be periodic performance audits undertaken by a third party

**Table 1: Brief Definitions of Common Control and Enforcement Tools**

APPROACH	DEFINITION
Licensing	Official authorization for engaging in any activity within the tobacco supply chain, from tobacco growing to product manufacturing to product transportation, retail, and export.
Product markings/ stamps	Counterfeit-resistant, affixed images on product packaging that indicate date and location of manufacture and the intended retail market. Also known as authentication systems.
Track-and-trace	Systems incorporating both markers and national record-keeping structures to enable tracking of tobacco products throughout the supply chain; tracing the movement of products by transferring the tracking data into a national information-sharing database.
Enforcement	Commitment to detect and prosecute illicit trade activity.
Agencies' coordination	Coordination between agencies within and across borders to support intelligence gathering, joint customs operations, and sharing of best practices.
Penalties	High/escalating fines, license revocation, or other measures that can be aimed at retailers, consumers, and other participants in illicit trade to act as deterrents.
Public awareness	Disseminating information about the risks associated with illicit tobacco trade to motivate support for enforcement activities.

that would relieve the host country of the requirement of maintaining the most up-to-date knowledge of the technology used.

One of the most important elements of a control strategy is the implementation of a **track-and-trace system**, required of all member countries in Article 8 of the Protocol. This system involves systematic, real-time monitoring of the movement of products through the supply chain (WHO 2012a). It is both a crime-prevention tool and a way to pinpoint where tobacco products are diverted into illicit markets. Albania, Brazil, Canada, Kenya, Malaysia, Morocco, Panama, the Philippines, Turkey, and select states in the United States have implemented track-and-trace systems with varying degrees of sophistication.

The system performs several functions: it verifies the quantity produced or imported, verifies correct tax payments, tracks products through the supply chain, traces products back to their sources, and ensures a product's authenticity (WHO 2012a). In order for the system to work as it was designed, all legally manufactured and imported unit packs (including those for export) need to be marked by unique identification numbers in a way that is not predictable and aggregation needs to be possible. This means that the identification numbers on individual unit packs need to be linked to those on cartons, master cases, and palettes. These numbers are applied by the manufacturer or at the exporter/importer

site and contain data that allow for tracking and tracing and help ensure products are authentic. The exchange of this data takes place at two levels: 1) between supply chain partners or manufacturers and national authorities; and 2) between national and international authorities. Because this system is only as good as its interoperability at different levels, common data standards are important.

The costs of implementing a track-and-trace system vary by country. The main determinants are the size of the market, scope of domestic manufacturing, imports and exports, the comprehensiveness and the length of the contract with a vendor, the level of industry concentration, and the implementation strategy (CDC 2016). Several countries that have implemented these systems have required the tobacco industry to bear the costs. This approach saves scarce government funds while generating more revenues. If the industry passes the cost increase along to consumers, the arrangement will also increase health benefits. The system components can be implemented by the industry relatively easily and in bulk at the point of manufacture, reducing the cost per pack.

So far, there is no common set of standards for a track-and-trace system, nor a governance model that is recommended by the Protocol. The Protocol only requires governments to implement the system on a national scale, including small businesses, and to collaborate and share the information generated on an international level.

KPMG recently noted that experience implementing track-and-trace systems in other industries suggests the following:

- Open standards drive costs down and raise adoption rates by increasing interoperability between different national systems;
- Incorporating track-and-trace systems into existing business processes can effectively lead to more rapid and reliable implementation;
- Competition among providers should be encouraged by conducting open procurement, allowing for varied technology and service offerings;
- Regional and global cooperation is essential;
- Effective track and trace requires collaboration between industry and regulators; and
- A dedicated forum to help develop track-and-trace guidelines is critical and might provide a “base” tracking and tracing system to enable low-cost deployment (KPMG et al. 2014).

**Excise tax stamps** and other product markings are other important control measures that serve as a product authentication, track-and-trace, and revenue collection tool. These stamps inform consumers if the product is legitimate and if the appropriate duties have been paid. Such a stamp is issued by the excise authority at the value of the excise tax and purchased by the producer or importer. Currently, stamps are mostly used on



### Box 3 // Experience from Ecuador

Ecuador recently underwent a bidding process for a track-and-trace system. The steps they took were the following:

1. Analyzed the local regulatory environment.
2. Commissioned a robust product market analysis that looked at what tools other countries were using. At this stage, Ecuador familiarized itself with the technologies on the market, services, and costs. Though it is not necessary to become an expert on the different technologies, which is a particular concern for least-developed countries, it is essential to know the goals the country wishes to accomplish with the technology.
3. Visited local tobacco companies to observe the installations. Specifically important were the number of plants, equipment, the generation of the equipment (to ensure compatibility with the technology), and the steps in the production process. This helps in establishing contracting goals and adjusting the request for proposals in the most effective way possible.
4. Invited the largest number of providers to apply by not specifying any single technological option or brand names.
5. Trained tax and customs staff to utilize the system selected.

There are three options that a government can undertake in the contracting of a track-and-trace system: i) hiring a single provider; ii) establishing minimum requirements so that only qualified candidates may apply (the tobacco companies then choose the winner); and iii) hiring a third party to carry out the process. Ecuador went with the second method and invited the three finalists to site visits. This helped the companies refine their proposals to ensure seamless compatibility with existing procedures and materials used by the tobacco companies. By adjusting the proposal, the one firm that did meet all the requirements was able to reduce its initial budget by 20 percent (Trujillo 2017).

cigarette packs but requiring them on other tobacco products, such as roll-your-own, would eliminate even more opportunities for the sale of contraband products.

Over the years, the production of excise stamps has increased in sophistication and enforcement capabilities, making them increasingly harder to counterfeit. Some of these stamping technologies include embedded threads and watermarks, special inks and coatings, such as “invisible” inks, holograms and foils, and calculated or changeable content. In the first decade that the state of California in the United States implemented and upgraded its encrypted tax stamp, the state recovered an estimated \$450 million in additional tax revenue, well beyond implementation and enforcement costs (CDC 2016). The market is currently heading toward stamps that allow for GPS tracking and can be read by standard devices such as iPhones.<sup>65</sup>

**Detection equipment** at customs posts is uniquely capable of detecting contraband merchandise. The most common tools are X-ray scanners that are available for small

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<sup>65</sup> Ecuador has implemented this type of excise stamp on alcohol and perfumes.

parcels, containers, trucks, and trains. Less sophisticated and less costly equipment can include endoscopes, mirrors, night vision equipment, cameras, and automatic license plate readers (IMF 2016). The initial motivation for the United Kingdom to invest in scanners was for the detection of contraband cigarettes. However, they proved beneficial for the detection of a variety of other illicit merchandise. While the cost of a scanner can seem prohibitive especially for countries with limited resources, it is important to note that they can often pay for themselves. In the late 1990s, the Netherlands purchased their first scanner in the Port of Rotterdam. After only 6 months, the cost of the scanner was recovered through the detection of contraband cigarettes alone, not even considering other illicit merchandise. A far less expensive alternative is canine use. Dogs can be trained to detect cigarettes and other organic products. Many countries use both scanners and canines to detect contraband tobacco products.

Special **physical control measures** should also be applied in order to reduce contraband. This includes the separation of processing operations from the sealed storage of taxed and untaxed products. Physical and direct control by the officials of the excise authority during a part or the whole operation can be applied (for example, physical escort of the transit consignment from border to border by individual trucks or in a convoy, application of radio or satellite tracking systems such as GPS-enabled devices to goods or conveyances/vehicles/containers).

Control at the border is essential and should include integrated technology and cooperation with other agencies at the border station. Front-line officers should be supported by appropriate intelligence, background support and service, guidance, and supervision from management, and technical aids to enforcement.

Within the country, mobile excise control units are helpful in verifying the legality of excisable goods as they are transported domestically. These units should be dispatched to important transport corridors, communication centers, and areas of congestion such as bridges, ferries, and passes. These operations require close coordination between police, border guards, and other public services.

Lastly, **penalties and sanctions** have long been an underutilized tool. It is recommended to apply them even more extensively than the Protocol suggests. Historically, countries have assigned far less severe penalties for trading illicit tobacco products than for other illicit goods such as narcotics. Deterrence would increase if fines and jail time were increased. Stricter penalties are perhaps the easiest reform measure, since they require no additional purchase of equipment or implementation costs. Currently, the most common penalties are directed only to the smugglers themselves and include, in addition to fines, imprisonment for the smuggler and the seizure and destruction of the illicit merchandise. Penalties and sanctions should be also applied to the other actors in the supply and logistics chain, such as the trucking companies<sup>66</sup> and storage owners. In accordance

with a “follow the money” approach, financing and possible money-laundering actors should also be affected. For maximum impact, penalties and sanctions should be applied in a timely fashion.

In addition to those enforcement and control options mentioned in the Protocol, two other considerations have proven to be important in the fight to control the trade of illicit tobacco.

**Identifying and measuring noncompliance.** Before a government can appropriately devise an illicit tobacco control reform plan, it is important to know: 1) the noncompliance rates, 2) where the illicit tobacco is produced, and 3) through what means it is transported and distributed. Many customs offices already carry out tax evasion and contraband studies, some specifically targeting tobacco noncompliance, that are helping improve outcomes. In 1993, Chile’s customs authorities carried out an illicit tobacco noncompliance study in conjunction with the national tobacco companies. The study included all forms of the illegal tobacco trade. Using a survey-based approach, the study quantified the size of the problem in terms of volume and foregone taxes by each method of evasion found: smuggling operations, Free Trade Zones, diversion of local production, and illegal counterfeit production. Results indicated that 13 percent of cigarette sales were contraband. The study found that the main supply source of illegal tobacco products was the country’s Free Trade Zones that were diverting production back into the country. After targeted reform efforts for just three years, contraband sales of tobacco products were reduced to 3 percent. Noncompliance studies can also be implemented as a comparison between registered production and net imports versus consumption. The combination of survey and production versus consumption methodologies gives authorities robust data in order to set goals and monitor tax and customs administration performance. Developed countries are best equipped to support less-developed countries in carrying out these studies.

**Application of the rule of law.** While enforcement capacities increase in sophistication, so too should the legal recourses tax and customs authorities have in enforcing compliance and deterring noncompliance. The application of sanctions should increase, as argued above, yet they fail to be effective if not clear in their intent and legally sound. Customs and tax authorities should monitor the implementation of sanctions to ensure timely compliance. Legal codes should be up to date, including budget allocations to enforce sanctions such as the destruction of confiscated tobacco.

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<sup>66</sup> For example, an effective sanction for a trucking company involved in the transportation of illicit cigarettes is the temporary seizure of the trucks used in the contraband.

## CASE STUDIES

### TURKEY

The smuggling of tobacco products has been a persistent national revenue, security, and health problem for Turkey. In 2014, it was estimated that the tax loss caused by smuggled cigarettes reached 520 million Turkish Lira. Much earlier, Turkish police had established a strong link between smuggled tobacco products and financing for the PKK/CKC, labeled a terrorist organization by Turkey, the European Union, and the United States. Eighty percent of the seized smuggled cigarettes that cross into Turkey enter from the borders of the East and Southeast regions, where the organization is known to collect the majority of its revenues (KOM Presidency 2014). In terms of the effects on the country's health, a recent study by Nazmi Bilir, professor of public health at Ankara's Hacettepe University, revealed a sharp drop in acute health problems caused by tobacco use following anti-smoking efforts. When compared to data from before the smoking ban went into effect, he found a 10–12 percent decrease in these conditions (WHO 2012b).

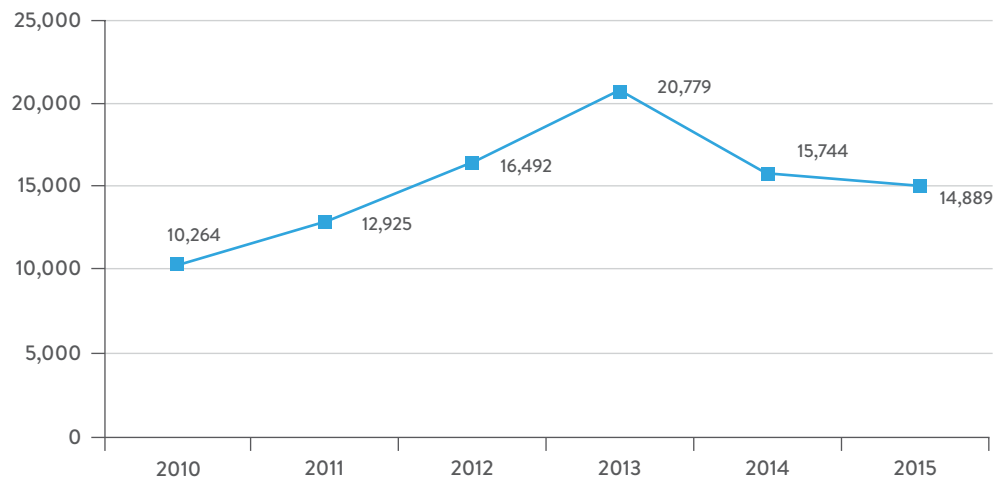
In 2014, the most common methods by which cigarettes were smuggled into Turkey were the following (KOM Presidency 2014):

- Border violations by human couriers or vehicles;
- Violation of the customs transit regime;
- Abuse of the passenger exemption;
- Stocking/hiding; and
- Cargo delivery methods.

In late 2007, Turkey passed its first anti-smoking laws, following growing national and international recognition of the health problems smoking causes. In 1991, then-President Ozal vetoed broad reforms that would have raised excise taxes and improved control. The proposed reforms were cancelled because of fears that higher taxes would result in increased smuggling, and that the advertising ban included in the proposed legislation went against free trade. In 1992, a revised tobacco control bill was defeated because the Justice Commission found the health evidence inadequate. In 2003, President Erdoğan assumed leadership and became a staunch anti-smoking activist with two clear messages — that smoking was killing Turkey's population, and that the smuggling of tobacco was financing the country's most violent terrorist organizations. President Erdoğan also garnered international support and cooperation for his tobacco-control program at international forums such as NATO.

The experience in Turkey has been exemplary not only because it has drawn support from the highest levels of authority, but also for its inter-ministerial approach. Toker Erguder, tobacco control program manager at the WHO Turkey country office,

**Figure 3: Incidents of Tobacco Products and Alcoholic Beverages Smuggled in Turkey**



Source: 2014 Turkish Report of Anti-Smuggling and Organized Crime, Ministry of Interior.

reported: “A key success of the policy on tobacco control is the whole-of-government approach lead by Erdoğan and strong intersectoral collaboration by the health minister, Recep Akdağ, to combat the tobacco epidemic. The head of parliament’s health commission, Cevdet Erdöl, was instrumental in the preparation and adoption of the tobacco control laws” (WHO 2012b). The Ministry of Interior Affairs, Ministry of Customs, Ministry of Finance, and Ministry of Health all worked together to devise and implement the broad-based reforms.

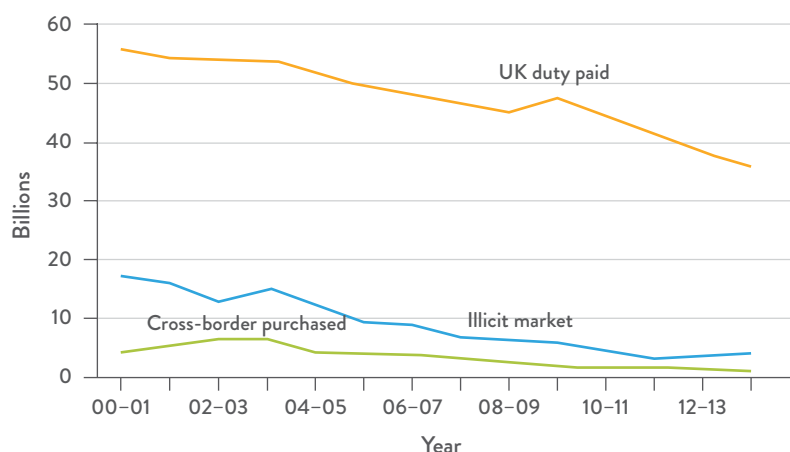
## UNITED KINGDOM

In the early 2000s, the United Kingdom had one of the highest levels of illicit tobacco trade in Western Europe. An estimated 22 percent of cigarette consumption and over 61 percent of roll-your-own tobacco consumption avoided or evaded taxes, costing the government about 3.4 billion pounds in foregone taxes (HM Revenue and Customs and Border Force 2015). The majority of this was accounted for by tax evasion through tobacco smuggling, while a small portion stemmed from tax avoidance through individual cross-border shopping.

In 2000, the British government deployed a comprehensive and adaptive reform strategy, “Tackling Tobacco Smuggling.” The main elements of the strategy were the following:

- Coordination of enforcement activities.
- Enhanced penalties for those engaged in illicit tobacco trade, such as seizure of vehicles/vessels used in illicit trade, confiscation of assets, collection of lost taxes and jail sentences.

**Figure 4: Estimated Number of Cigarettes Consumed by Duty-Paid, Illicit, and Cross-Border Purchased Status, 2000–2001 to 2013–2014**



Source: HM Revenue and Customs and Border Force 2014.

- Significantly increased resources for enforcement, including the initial addition of 1,000 new customs officers/investigators and acquisition of x-ray scanners and other equipment to improve detection of illicit products, as well as implementation of public awareness programs.
- Introduction of pack markings with “UKDUTYPAID” printed on licit cigarette packs and pouches of roll-your-own tobacco.
- Negotiating with major tobacco manufacturers to enlist their help in addressing illicit trade.

By 2013/14, the illicit cigarette market share had been halved, to 10 percent, with an even larger reduction in the absolute volume of illicit cigarettes. Figure 4 demonstrates the drop in illicit sales.

Since this initial success, the United Kingdom has updated its strategy, as the illicit market adapted to the new regulatory environment. Updates included new enforcement actions and sanctions, the addition of covert security markings on cigarette packs and roll-your-own pouches intended for sale in the U.K. market, and additional public education efforts. The United Kingdom has also played an important role in furthering international cooperation with other regional and global initiatives.

## CONCLUSIONS

1. Enforcement and control mechanisms are proven to significantly increase the effectiveness of tobacco tax increases in the fight against illicit tobacco products.
2. Political commitment from the government is important: starting at the highest levels and running through all relevant ministries.
3. A global convergence toward common standards for the governance and implementation of control and enforcement mechanisms would drive down costs and go a long way in facilitating the necessary cross-border cooperation by increasing interoperability between different national systems.
4. The WHO Protocol to Eliminate Illicit Trade in Tobacco Products details enforcement mechanisms necessary for comprehensive control. It is recommended that countries go beyond what the Protocol requires in order to improve outcomes.
5. In addition to a proper control regime, public education campaigns and a greater commitment of resources is necessary. Investments are often recovered within a few years through greater tax compliance.
6. Recent experience demonstrates that curbing one form of illicit trade can cause positive overlapping effects. Since illicit networks are linked, reform efforts in one sector often reveal illicit activity in other sectors and act as a deterrent for all such activity.

## REFERENCES

- Alderman, J. 2012. *Strategies to Combat Illicit Tobacco Trade*. Tobacco Control Law Consortium.
- Brady, B. 2013. "NY Cigarette-Smuggling Ring May Have Terror Link." CNN.
- Centers for Disease Control and Prevention (CDC). 2012. *Morbidity and Mortality Weekly Report* Vol. 61, No. 20, 25 May 2012.
- Centers for Disease Control and Prevention (CDC) Office on Smoking and Health. 2016. "Preventing and Reducing Illicit Tobacco Trade in the United States." Retrieved from: <https://www.cdc.gov/tobacco/stateandcommunity/pdfs/illicit-trade-report-121815-508tagged.pdf>
- Cetinkaya, Volkan. 2017. "Turkey's Experience." Presentation at the World Bank conference "Tobacco Taxation: Win-Win for Public Health and Domestic Resources Mobilization." April 19, 2017. World Bank Headquarters, Washington, DC.
- Centinkaya, Volkan and Patricio Marquez. 2017. "Tobacco Taxation in Turkey: An Overview of Policy Measures and Results." World Bank Group Discussion Brief. Washington, DC: World Bank.
- Euromonitor International. 2015. *Passport - tobacco*. London, GB: Euromonitor International.
- Euromonitor. 2016. *Illicit Trade in Tobacco Products*. Strategy Briefing. Available at: <http://www.euromonitor.com/illicit-trade-in-tobacco-products/report>
- HM Government. 2010. "A Smokefree Future: A Comprehensive Tobacco Control Strategy for England." Retrieved from: [http://webarchive.nationalarchives.gov.uk/20130107105354/http://www.dh.gov.uk/prod\\_consum\\_dh/groups/dh\\_digitalassets/@dh/@en/@ps/documents/digitalasset/dh\\_111789.pdf](http://webarchive.nationalarchives.gov.uk/20130107105354/http://www.dh.gov.uk/prod_consum_dh/groups/dh_digitalassets/@dh/@en/@ps/documents/digitalasset/dh_111789.pdf)
- "Illicit Tobacco Trade in Canada — the Next Chapter." 2016. *Reconnaissance Tax Stamp News*. July 2016 (Volume 8).
- International Monetary Fund. 2016. "Fiscal Policy: How to Design and Enforce Tobacco Excises?" (Volume 3).
- International Tax and Investment Center. 2011. "The Illicit Trade in Tobacco Products and How to Tackle It."
- Ireland Office of the Revenue Commissioners, IPSOS, MRBI, National Tobacco Control Office. 2017. *Illegal Tobacco Products Research Surveys 2016*. Survey fieldwork conducted in October/November 2016, results published April 2017. Available at: <https://www.revenue.ie/en/corporate/documents/research/illegal-tobacco-survey-2016.pdf>
- Ko, Shwe Zin. 2016. "Proposed Collective Action against Corruption: Myanmar's Experience in Illicit Trade." 2016 OECD Integrity Forum: Fighting the Hidden Tariff: Global Trade Without Corruption. Paris. Retrieved from: <https://www.oecd.org/cleangovbiz/Integrity-Forum-16-Shwe-Zin-Ko.pdf>
- KOM Presidency. 2014. *Smuggling and Organized Crime 2014 Report*. Ankara: KOM Publications.
- KPMG LLP and GS1 UK. May 2014. "Track and Trace: Approaches in Tobacco." Retrieved from: [https://www.gs1uk.org/~/\\_media/documents/white-papers/gs1\\_uk\\_and\\_kpmg\\_track\\_and\\_trace\\_in\\_tobacco\\_may\\_2014.pdf?la=en](https://www.gs1uk.org/~/_media/documents/white-papers/gs1_uk_and_kpmg_track_and_trace_in_tobacco_may_2014.pdf?la=en)
- Melzer, S. 2010. *Counterfeit and Contraband Cigarette Smuggling: Opportunities, Actors, and Guardianship*. Washington, DC: American University.



Nagy, Janos. 2012. "Tackling cigarette smuggling with enforcement: case studies reviewing the experience in Hungary, Romania, and the United Kingdom." *World Customs Journal* Vol. 6, No. 2.

National Research Council & Institute of Medicine. 2015. *Understanding the U.S. Illicit Tobacco Market: Characteristics, Policy Context, and Lessons from International Experiences*. Washington, DC: The National Academies Press.

Ngeywo, Caxton Masudi. 2017. "Kenya's Experience." Presentation at the World Bank conference "Tobacco Taxation: Win-Win for Public Health and Domestic Resources Mobilization." April 19, 2017. World Bank Headquarters, Washington, DC.

OECD (Organisation for Economic Co-operation and Development). 2016. *Illicit Trade: Converging Criminal Networks*. OECD Reviews of Risk Management Policies. Paris: OECD Publishing. Retrieved from: <http://dx.doi.org/10.1787/9789264251847en>

Shelley, Louise. 2005. "The Unholy Trinity: Transnational Crime, Corruption, and Terrorism." *Brown Journal of World Affairs*. Vol. XI, Issue 2.

Times of Malta. 2016. "Illicit trade in tobacco rises by 28 percent, 10 million in lost revenue." *Times of Malta*. 19 September 2016. Retrieved from: <http://www.timesofmalta.com/mobile/articles/view/20160919/local/illicit-trade-in-tobacco-rises-by-28-per-cent-10m-in-lost-revenue.625477>

Trujillo, Santiago. 2017. "Sistemas de Track and Tracing — consideraciones para su implementation. La experiencia en Ecuador." Presentation at the Pan American Health Organization (PAHO). March 13, 2017.

World Bank. 1999. *Curbing the Epidemic: Governments and the Economics of Tobacco Control*. Washington, DC: World Bank.

World Health Organization (WHO). 2005. "The Role of Health Professionals in Tobacco Control." Retrieved from: [http://www.who.int/tobacco/resources/publications/wntd/2005/bookletfinal\\_20april.pdf](http://www.who.int/tobacco/resources/publications/wntd/2005/bookletfinal_20april.pdf)

World Health Organization. 2010. *Technical Manual on Tobacco Tax Administration*. Geneva, CH: World Health Organization.

World Health Organization (WHO). 2012a. *Protocol to Eliminate Illicit Trade in Tobacco Products*. Geneva: WHO.

World Health Organization (WHO). 2012b. "Turkey's Transformation." *Bulletin of the World Health Organization*. Retrieved from: <http://www.who.int/bulletin/volumes/90/6/12-030612/en/>

World Health Organization (WHO). (n.d.) "Illicit trade in tobacco: a summary of the evidence and country responses." PowerPoint presentation available at: <http://www.who.int/tobacco/economics/illicittrade.pdf>



# CONCLUSION

Tobacco presents a case of unique harm and unique opportunity. Tobacco, like carbon, requires special taxes, because both are so noxious. But, in addition, tobacco is the only common consumer product that kills when used as directed. Unlike most health interventions, its taxation can generate additional domestic resources. Tobacco taxes thus offer a unique policy proposition. They yield fast and measurable benefits — the higher the tax increases, the bigger the health and fiscal gains.

The scientific evidence accumulated over five decades has provided a detailed understanding of how tobacco use imposes an unparalleled health and economic burden across countries. It has also shown the need for a sustained and multi-sectoral response. The World Bank Group, working closely with the World Health Organization (WHO) and other partners, supports countries in the implementation of the global tobacco control effort outlined in WHO's Framework Convention on Tobacco Control (WHO FCTC), with a focus on tobacco taxation.

Tobacco taxation is one of the world's top policy "best buys," not just in public health but across all sectors. Tobacco tax reform aims to make tobacco products unaffordable (relative to rising per capita incomes), reduce consumption, and improve public health, while enhancing countries' domestic resource mobilization. This multi-impact strategy takes on fresh importance under the 2015 Financing for Development Addis Ababa Action Agenda, which recognizes that, in low- and middle-income countries, domestic resources will increasingly fuel development. Evidence across a diversity of countries shows that revenue from tobacco excise taxes can contribute substantially to domestic resource mobilization.

## FROM EVIDENCE TO ACTION

At today's tobacco tax policy crossroads, renewed efforts must support countries to design, enact, implement, and monitor tobacco tax policy reforms. This work will cut across sectors to combine expertise in public health, macroeconomics, tax policy administration, customs systems, and governance. It will leverage access to ministries of finance, revenue and tax administration authorities, ministries of health, customs and law enforcement agencies, and other government entities. This broad collaboration is needed to take tobacco taxation efforts to scale and to provide effective policy advice, technical assistance, and funding to support countries' tobacco tax reforms, as well as to institutionalize tobacco taxation globally. For maximum effectiveness, this work must respect the specific epidemiological and institutional context of each country.

This implies understanding the country-specific political economy of tobacco control and its societal dimensions, in order to promote the adoption and implementation of strong anti-tobacco measures.

Over the past decade, since entry into force of WHO's FCTC, efforts to control tobacco have intensified globally. More than 100 countries have made at least partial progress in raising tobacco taxes. Notably, however, far fewer have implemented increases that are both large (with major discrete increases complemented by interim smaller increases well above the combined rate of growth of inflation and per capita income) and optimally structured (to maximize health impact and prevent switching to cheaper brands). Country experience shows wide differences in progress on policy and implementation, data availability, and political economy.

The prime objective of tobacco taxes is improved health. Higher government revenues are, however, an important positive “externality” of tobacco taxes. Fiscal benefits are not only positive but, if countries act boldly, substantial. Some countries, such as Moldova, Philippines, Turkey, and Ukraine, raise between 1 and 2 percent of GDP from tobacco taxes. Significantly, net fiscal benefits are proving to be long lasting, even as tobacco consumption gradually falls.

Aggressive increases in tobacco taxes are required to influence cigarette smokers to stop or sharply cut back their tobacco consumption and to persuade young people not to initiate this addictive habit. In addition, annual tax increases need to keep up with or exceed affordability — i.e., per capita economic growth as well as inflation. Some countries have well-established policy arrangements with indexing that serve to increase tobacco taxes at or above the rate of inflation. Going too slowly or timidly on tax increases or letting affordability increase should be recognized as condemning large numbers of people to tobacco addiction. For half of them, the consequences will be fatal.

While some countries have made outstanding gains, much more can and must be achieved. Countries and international agencies have embraced ambitious goals. WHO recommends that taxes constitute at least 75 percent of the selling price of cigarettes in all jurisdictions, and countries have committed to reduce premature deaths from non-communicable diseases by 30 percent under the SDGs. Today, however, tobacco control progress in most countries lags behind the pace needed to reach these targets. After setting bold goals, even bolder action is needed.

## SEIZING THE “WIN-WIN-WIN”

Specific excise taxes — taxing by the number of cigarettes, preferably at the same rate for all cigarette lengths and prices — bring greater reductions in smoking than ad valorem

excise taxes. Ad valorem taxes — taxing by the price of cigarettes — encourage downward substitution to cheaper cigarettes instead of less smoking. They are more complex to administer and are more subject to manipulation by the tobacco industry. While ad valorem taxes have the advantage of de facto indexing for affordability, this advantage can be offset by building automatic adjustments for affordability into excise laws excise laws (such as the United Kingdom's tobacco duty escalator). Interim measures should include raising the ratio of specific to ad valorem excise taxes and reducing the number of specific tax “tiers.” Tax policy also needs to take account of tax rates on other tobacco products to reduce substitution.

Individual country circumstances are important, but all country experiences evidence the win-win-win nature of tobacco taxation: good health outcomes, poverty reduction, and fiscal gains. Tobacco taxes work. On the other hand, good tax policies don't “just happen.” Countries need to have a clear strategy that relies on solid analytical work, identifies champions and leaders, and builds coalitions. They need to make tobacco taxes simple (structure matters) and to stand up to the challenges that will be posed by the tobacco industry. Three of the main arguments usually presented to oppose tax increases relate to claimed tax regressivity, encouragement of illicit trade, and loss of employment. The corresponding chapters of this volume have explored these topics and brought out the critical lessons for policy design and political messaging.

Contrary to industry claims, it is smoking that is regressive, not tobacco taxes. Tobacco taxes are in fact highly progressive on a net economic basis. Country studies show consistently that the poor smoke more and are more price responsive and so get greater health benefits than the rich. They receive a far higher share of resultant health benefits than they pay in taxes, for example from 1.5 times to 10 times higher in data from five Asian countries. Other important pro-poor benefits, each linked to one or more SDGs, include freeing up scarce family income for higher-priority needs, higher productivity and incomes, reducing the chances of catastrophic health events that drive families into extreme poverty from medical costs and lost earnings, and reducing the risks of second-hand smoking and of fire.

Countering criminal networks and strengthening customs and tax administration provide another angle on the tobacco policy “win-win-win”: better health, more revenue, and less tax avoidance. The risk of unintentionally reinforcing the illicit tobacco trade is one of the main arguments raised by the tobacco industry against aggressive tax increases on tobacco products. However, while high taxes may create incentives for illicit trade, evidence indicates that other factors have a much bigger effect on illicit trade of tobacco products. The main cause of cigarette smuggling is not tobacco taxes, but a range of institutional issues that include: weak government enforcement capacity; overly complex tax systems; organized crime and corruption; complicity of the tobacco industry; and lack

of sufficient regional and international cooperation. It is important to diagnose, prioritize, and act on these issues as part of reform and modernization efforts of customs systems. Country cases have shown clearly that higher tobacco taxes reduce consumption and increase revenues even in the presence of moderate illicit flows.

Country studies also show that, since consumer funds not spent on tobacco will be freed up for other uses, net employment across a country's economy is unaffected and may even increase when tobacco tax rates rise. Loss of employment in tobacco comes more from automation and consolidation than reductions in demand, which is still growing in developing countries. That said, it is important to establish programs to help workers transition out of tobacco production, such as input credits for small tobacco farmers — all the more so, because the tobacco industry often tries to make alleged job losses a political issue when tobacco tax hikes are proposed.

Tobacco taxes are synergistic with other cost-effective elements of tobacco control programs. These include complete bans on smoking in public places and on cigarette advertising and promotion, as well as plain packaging regulations or prominent warning labels that reduce the social acceptability of tobacco use.

Political commitment coupled with international support is required for the planning and implementation of country strategies for tobacco control. Progress will accelerate through knowledge sharing and solidarity among those working on tobacco taxes at global, regional, and country levels. After all, what is accomplished at global level is significant only to the extent that it makes a positive difference in country-level outcomes.

## THE ROAD AHEAD

As we move into the third decade of the 21st century, the achievement of smoke-free societies should be a critical marker of sustainable development. Advancing tobacco taxation today requires intensified efforts in the following areas:

**Demand-driven technical assistance to countries.** In many low- and middle-income countries, tobacco excise tax structures are weak and too complex, failing to maximize feasible health or revenue benefits. Technical capacity on tobacco taxation remains limited. Growing numbers of policy makers are requesting technical support to solve these problems efficiently.

Effective country-based technical assistance requires sharing good practice experiences and engaging high-level government officials from Ministries of Finance and Health, together with multilateral and bilateral organizations and civil society. Support from international partners is required, particularly in low-income countries, to strengthen country capacity for lining up and coordinating all parts of government, while engaging a wide

set of stakeholders outside of government. Also, it is important to identify strategic entry points for action on tobacco taxation at the country and regional or sub-regional levels (such as customs and monetary unions). Higher and better-structured tobacco taxes should be increasingly a default part of broader tax-system and fiscal reforms.

Country strategies for tobacco taxation should be integrated into comprehensive tobacco control strategies and should establish both monitoring systems and targets to mobilize political support and drive action. Targets may include reduction in smoking prevalence by age-gender cohorts, tobacco-related deaths averted, and revenue generated. Partners supporting country efforts should help in documenting and tracking successes and challenges in tobacco control.

**Capacity development and knowledge sharing.** Countries that have successfully raised tobacco taxes have gained valuable expertise and can share evidence and good practices with others. The global community must also be ready to respond to country-level demand for further capacity development. This should include capacity building on the use of simulation models, which can assess fiscal and health implications of alternative tax levels and structures.

**Further strengthening the global evidence base.** In addition to fostering knowledge exchange between countries, the global tobacco-taxation evidence base should be deliberately reinforced in the following areas:

- **Progressivity, employment, and poverty:** Current evidence indicates that tobacco taxes are highly progressive on a net basis, given that the poor are more price responsive and so gain greater health benefits than the rich. To complete this picture, we need additional country-specific examples of the impacts of tobacco taxation on poverty, health, and employment.
- **Crop substitution:** Additional country-specific studies examining good practices and economic impacts of crop substitution are needed, including evaluation of institutional and financial mechanisms to support farmers in transitioning away from dependence on tobacco.
- **Better economic surveillance:** There is a need for global efforts to create rapidly accessible data on tobacco prices, illicit sales, and demand for tobacco products, along with better tracking of industry practices. This includes a much stronger information base concerning the response to non-price strategies, most specifically industry efforts to subvert bans on tobacco and advertising and efforts to lobby Ministries of Finance.
- **Illicit trade:** Research as well as technical assistance is needed to strengthen countries' institutional capacity in customs and related areas in order to curtail illicit tobacco trade. This should be incorporated within a broader package of public-sector modernization efforts

**Strengthening the global partnership.** It is crucial to have a strengthened global partnership to help support countries in their efforts to increase and better structure their tobacco taxes and to achieve win-win-win results. An effective partnership is mostly about action on policy and implementation, but this also requires generating robust epidemiologic and economic evidence at the country level. Today, more and more countries are joining the global tobacco-taxation partnership. A number of strongly committed countries already report compelling results. But there is a need to do far more in order to tap the potential of tobacco tax reform, which can save and improve the lives of many millions of individuals and families, and reduce poverty. In so doing, it can be one of the most powerful health and development catalysts for the 21st century.

**Driving policy change nationally and globally.** The point of delivering technical support, expanding the global knowledge base, and reinforcing the global tobacco tax alliance is ultimately to change policies. This report has identified national policy entry points and shown how regional collaboration can also strengthen results. Global treaties can provide additional leverage for change. One such treaty is the WHO Protocol to Eliminate Illicit Trade in Tobacco Products, a supplementary agreement to the WHO Framework Convention on Tobacco Control. Forty formal country ratifications are needed to make the Protocol binding international law, but the total has not yet been reached. The Protocol's entry into force will help provide every country with the legal, political, and technical tools to beat illicit tobacco trafficking and get the most from tobacco tax reforms. It is imperative that the international community encourage lawmakers from all countries and across the political spectrum to ratify and implement the Protocol. Lives and the social well-being of nations depend on it. This is just one example of how global collaboration can support national policy action, while country-level choices (e.g., treaty ratification) can empower global policy instruments for the common good. National and global policy action reinforce each other.

**World Bank role.** The World Bank Group, working with the World Health Organization, the Bill & Melinda Gates Foundation, the Bloomberg Foundation, and other global and country partners, is committed to the joint effort to harness tobacco tax reform within a comprehensive strategy to end the tobacco scourge. Along with its financing instruments, the World Bank Group commits to use its technical assistance, research, knowledge management, convening role, and policy dialogue to this end.









