Section 1
Introduction

Chapter 1
Overview and Conclusions

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This monograph, a joint effort of the U.S. National Cancer Institute and World Health Organization, examines economic issues in tobacco and tobacco control, including the supply and demand of tobacco products. This first chapter frames the issues addressed in the monograph and describes its organization around key topic areas. Each monograph chapter focuses on the global evidence on these issues, particularly the evidence from low- and middle-income countries (LMICs). The closing sections of this chapter present chapter conclusions and major overall conclusions generated by the work presented here. Experts in economics, tobacco control, public policy, public health, and other related fields from every region in the world, including high-income countries and LMICs, were assembled to provide the research and analyses presented within these pages. It is hoped that this monograph will help inform the implementation of global tobacco control efforts in the 21st century.

Chapter Contents

Introduction

Tobacco use remains one of the world's leading causes of preventable premature death. Today it is also a global public health issue which is increasingly seen in economic and geopolitical terms as well as in social, cultural, and biomedical contexts. These factors have played key roles in the current policy interventions for tobacco control worldwide, most notably the World Health Organization (WHO) Framework Convention for Tobacco Control (WHO FCTC).[1]

This monograph is the 21st volume in the series of monographs on tobacco control produced by the National Cancer Institute (NCI) of the National Institutes of Health, an agency of the U.S. Department of Health and Human Services. This monograph examines the economics of global tobacco control and features the contributions of many leading researchers in the field. It examines the current research and evidence base surrounding the economics of tobacco control—including tobacco use, tobacco growing, manufacturing and trade, tobacco product taxes and prices, and tobacco control policies and other interventions to reduce tobacco use and its consequences—and the economic implications of global tobacco control efforts.

This report follows in the steps of a growing literature base on global economic issues in tobacco control. As early as 1992, the U.S. Surgeon General's report *Smoking and Health in the Americas*[2] included a chapter reviewing international data on the economic costs of smoking, the economics of growing and manufacturing, and the impact of tobacco taxes. This was followed by the 1999 World Bank publication *Curbing the Epidemic: Governments and the Economics of Tobacco Control*[3] and the companion volume, *Tobacco Control in Developing Countries*,[4] which contained the background papers produced for the World Bank report.

Why is a global economics monograph of tobacco and tobacco control needed today? There are several reasons, including:

- Extensive new evidence from low- and middle-income countries (LMICs), much of it derived from research supported by international agencies
- New questions raised by emerging political, supply-side, and health concerns
- New infrastructure issues ranging from privatization to trade liberalization
- New global economic concerns about tobacco use and tobacco control.

As the study of the production, distribution, and consumption of goods and services, economics has become integral to understanding and addressing tobacco use. The history of tobacco control has its origins in direct interventions for tobacco use, such as public education and efforts to promote smoking cessation. In the 21st century, however, it is increasingly recognized that the economic and consumer behavioral factors common to all goods are intimately involved in the process of making further reductions in global tobacco use.

Knowledge from specific subdisciplines of economics has led to new ways of controlling the use of addictive consumer goods such as tobacco. As examples: public finance theory has increased understanding of the powerful influence of excise taxation, and the mix of specific and *ad valorem* taxation; the economics of regulation supports arguments for government intervention in tobacco markets; health economics reveals how tobacco demand and cost modeling can drive policy change; labor economics helps address the employment impact of effective tobacco control policies; and

consumer behavioral theories such as the rational choice model of addiction help us understand how pricing and other correlates such as warning labels and product attributes influence consumption. At a global level, international trade principles provide insight into the mechanics of licit and illicit trade in cigarettes.

Specific chapters of this monograph examine these and other areas in detail, aided by global data sources compiled by various stakeholders, such as WHO, the World Bank, the United Nations Food and Agriculture Organization, the Centers for Disease Control and Prevention (an agency of the U.S. Department of Health and Human Services), private organizations, and others.

WHO FCTC: A Framework for Action

A milestone in the implementation of evidence-based tobacco control interventions has been the entry into force of the legally binding WHO FCTC,[1] which provides a set of actions to reduce demand for, and supply of, tobacco products. The WHO FCTC, which was negotiated between 1999 and 2003[1] and entered into force as international law in February 2005,[5] is an extraordinary public health tool. It is a trend-setting instrument in global, regional, and national tobacco control which has changed the paradigm of health promotion policies. As of November 2015, 179 countries and the European Union were Parties to the WHO FCTC.

The WHO FCTC represents the culmination of years of collaborative, multidisciplinary engagement by governments, elements of civil society, and international organizations to address the tobacco epidemic using international law. It offers a comprehensive set of affordable, evidence-based tobacco control measures that involve many sectors of society and operate in both the demand-reduction and supply-restriction areas. An international instrument for tobacco control policy interventions, the WHO FCTC reflects the gravity of the worldwide tobacco epidemic, the relative weakness of domestic regulatory agencies in most WHO Member States, and the economically driven spread of tobacco marketing strategies at the country level.[6,7] It also reflects the collaboration needed among countries to counteract the globalization of tobacco industry promotional practices with cross-border effects. The transnational nature of the tobacco trade, including trade liberalization and foreign direct investment, tobacco marketing, and the flow of contraband, also points to the need for international regulatory strategies.

Ultimately, the WHO FCTC aims to strengthen tobacco control efforts at the country level by, among other things, facilitating ongoing information-sharing and technical assistance and by creating an international framework through which nations can address the supranational dimensions of tobacco control. A key goal of this monograph is to present the research base for countries implementing the WHO FCTC—to fill the information gap on policy-relevant issues, provide comprehensive global and country-level evidence on the economics of tobacco control, and disseminate information that helps countries build their own tobacco control infrastructure relative to the WHO FCTC.

Preparation of This Monograph

The NCI, in conjunction with WHO, invited three experts representing the domains of economics, public health, and tobacco control to serve as the editors of this monograph. This ambitious effort included contributions from more than 60 authors selected for their individual and collective expertise. These authors are based or work in all major world regions, with an emphasis on LMICs, which have traditionally been underrepresented in tobacco control economics research.

This monograph was subjected to a rigorous review process, which began with a review of the monograph outline. As each chapter was drafted, the chapter was reviewed by many peer reviewers with expertise on the individual topic. When the entire volume was complete, the full draft was submitted to expert reviewers who evaluated the monograph as a whole, related one chapter to another, and ensured that the volume-level conclusions were supported by the monograph's content. Both NCI and WHO conducted a final review before the monograph was published. Comments from more than 70 expert reviewers formed the basis of the revisions that the authors and editors made to the monograph. These efforts have culminated in a monograph comprising 17 chapters that explore the many dimensions of the economics of tobacco and tobacco control, which are summarized and illustrated by numerous examples, tables, and figures.

Where appropriate, the data for this monograph have been analyzed and reported by geographical area. Countries are organized into WHO Regions: the African, Americas, South-East Asia, Eastern Mediterranean, European, and Western Pacific Regions. The data are also presented using the World Bank's analytical classification of countries based on gross national income per capita: high-income, upper middle-income, lower middle-income, and low-income countries.[8] These classifications are updated each year, thus the country income groups across the monograph are based on the year that best reflects the data referenced. Appendix 1A lists countries by WHO Region and by 2014 country income level.

Major Accomplishments

This volume accomplishes several "firsts."

- It examines the economics of tobacco control through the lens of the rapidly emerging body of research that explores the impact of tobacco control in LMICs as well as the continually growing research evidence from high-income countries (HICs). Although much of the new evidence from LMICs corroborates the findings from work in HICs, much has been learned about the unique challenges of implementing tobacco control in LMICs and many other areas where such efforts have a potentially greater impact on economic and public health outcomes.
- This monograph is one of the first publications to examine global tobacco control efforts since the 2003 adoption and 2005 entry into force of the WHO FCTC, including the observed or projected impact of specific articles of this global public health treaty and the subsequent implementation assistance provided by the WHO MPOWER package.[9]
- This report presents a growing base of data on tobacco control interventions and their impact—data that were derived from public and private sources and from local and global tobacco surveillance systems. Since the publication of *Curbing the Epidemic: Governments and the Economics of Tobacco Control*, a considerable amount of new knowledge has been generated using these data regarding the effectiveness of specific interventions and their relative impact on the economies of countries at varying income levels.
- Above all, this monograph confirms that effective, evidence-based tobacco control interventions—such as increased taxes; complete bans on tobacco marketing; comprehensive, smoke-free policies; dissemination of information on the health consequences of tobacco use; and many other types of interventions—make sense from an economic as well as a public health standpoint.

Major Conclusions

Nine broad conclusions that emerge from this volume are as follows:

1. **The global health and economic burden of tobacco use is enormous and is increasingly borne by low- and middle-income countries.** Already, around 80% of smokers live in LMICs. While smoking prevalence is falling at the global level, the total number of smokers worldwide is not decreasing, largely due to population growth. There is a strong possibility that the global target of a 30% relative reduction in tobacco use by 2025 agreed to by WHO Member States will not be met. The number of tobacco-related deaths is projected to increase from about 6 million deaths annually to about 8 million annually by 2030, with more than 80% of these occurring in LMICs.
2. **Failures in the markets for tobacco products provide an economic rationale for governments to intervene in these markets.** These market failures include (1) the public's imperfect and asymmetric information about the health and economic consequences of consuming tobacco products, particularly in LMICs, which is further complicated by the time-inconsistency of individual preferences for tobacco and the uptake of tobacco use during youth and adolescence; and (2) the externalities of tobacco use for nonusers. These externalities include the fact that nonsmokers, both children and adults, experience adverse health consequences when exposed to secondhand smoke (SHS) and that the cost of treating diseases caused by tobacco use and SHS exposure is borne, in part, by the public. The external costs of tobacco use are greater in countries where public funds are used to pay for a greater share of health care costs, given public spending to treat the diseases caused by tobacco use.
3. **Effective policy and programmatic interventions are available to reduce the demand for tobacco products and the death, disease, and economic costs that result from their use, but these interventions are underutilized.** The WHO FCTC and its implementation guidelines provide an evidence-based framework for governmental action to reduce tobacco use. Technical resources included in the MPOWER package in line with the WHO FCTC can support the implementation of tobacco control demand-reduction provisions on the ground. In addition, numerous other documents—including U.S. Surgeon General's reports, NCI monographs, and reports of the Institute of Medicine (U.S.), the WHO Tobacco Free Initiative, and the WHO International Agency for Research on Cancer—summarize the science and provide guidance on effective policy and program interventions. However, the vast majority of the world's population is still not adequately covered by the most effective of these interventions, including sufficiently high levels of tobacco taxation, comprehensive smoke-free policies, complete bans on tobacco marketing, information interventions, and cessation support.
4. **Policies and programs that work to reduce the demand for tobacco products are highly cost-effective.** Significant tobacco tax and price increases, comprehensive bans on tobacco industry marketing activities, and prominent pictorial health warning labels are generally the least costly tobacco control interventions, followed by the implementation and enforcement of smoke-free policies and the provision of population-wide tobacco cessation programs. Significant tobacco tax and price increases are the most cost-effective of these interventions. Despite the considerable revenues generated by tobacco taxes, few governments are investing more than a fraction of these revenues in tobacco control or in other health programs. WHO estimated that in 2013–2014, global tobacco excise taxes generated nearly 269 billion U.S. dollars (US$) in government revenues, but governments spent a combined total of less than US$ 1 billion on tobacco control.[10]

5. **Control of illicit trade in tobacco products, now the subject of its own international treaty, is the key supply-side policy to reduce tobacco use and its health and economic consequences.** There is broad agreement that control of illicit trade will benefit tobacco control and public health and result in broader benefits for governments. Other supply-side policies, such as support for economically viable alternatives to tobacco production and restrictions on youth access to tobacco products, can be effective, especially as part of a comprehensive strategy to reduce tobacco use.
6. **The market power of tobacco companies has increased in recent years, creating new challenges for tobacco control efforts.** The global tobacco market has become increasingly concentrated over the past 25 years and is being driven by the same forces that have contributed to globalization in other industries, including reductions in barriers to trade and foreign direct investment, privatization of state-owned tobacco enterprises, and a wave of mergers and acquisitions. Policies aimed at limiting the market power of tobacco companies are largely untested but hold promise for reducing tobacco use.
7. **Tobacco control does not harm economies.** The number of jobs that depend on tobacco has been falling in most countries, largely thanks to technological innovations, the shift from state-owned to private ownership of tobacco manufacturing, and globalization, which have facilitated efficiencies in tobacco growing and manufacturing. For the vast majority of countries, implementation of tobacco control measures will have only a modest impact on tobacco-related employment, and will not lead to net job losses. For the few countries particularly dependent on tobacco growing and tobacco leaf exports, job losses due to global tobacco control efforts are likely to be gradual, predictable, and far enough in the future to have little effect on the current generation of tobacco farmers, and programs could be implemented that help tobacco farmers make the transition to alternative livelihoods. Evidence from high-income countries and LMICs shows that smoke-free policies do not adversely affect the hospitality sector.
8. **Tobacco control reduces the disproportionate burden that tobacco use imposes on the poor.** Tobacco use is concentrated among the poor and other vulnerable groups, and tobacco use accounts for a significant share of the health disparities between the rich and poor. These disparities are exacerbated by a lack of access to health care and the diversion of household spending from other basic needs, such as food and shelter, to tobacco use. Moreover, tobacco use contributes to poverty, as illnesses caused by tobacco lead to increased health care spending and reduced income. Research indicates that tobacco control interventions lead to reductions in tobacco use among all population groups. Additionally, significant increases in tax and price lead to greater reductions in tobacco use among the poor than among the rich, and thus contribute to reducing health disparities. Tobacco taxes also provide the opportunity to dedicate tax revenues specifically to health programs that benefit the poor, thus increasing their ability to reduce health disparities between population subgroups.
9. **Progress is now being made in controlling the global tobacco epidemic, but concerted efforts will be required to ensure that progress is maintained or accelerated.** In most world regions and country income groups, the prevalence of tobacco use is stagnant or falling. In HICs, progress in tobacco control has been ongoing over several decades; in LMICs, progress has generally been more recent and has sometimes been more rapid. Factors contributing to recent progress include the galvanizing effort of the WHO FCTC, research documenting the health and economic burden of tobacco use and evidence-based tobacco control interventions, the contributions of private funders and civil societies in promoting tobacco control policies, and broad recognition of the tobacco industry's role in promoting tobacco use around the world.

Despite this progress, many threats remain, including increasing tobacco use in some world regions and the potential for tobacco use to increase in regions that are still at an early stage of the tobacco epidemic. Maintaining and increasing progress will require continued research and surveillance of the epidemic and implementation of the evidence-based strategies set forth in the WHO FCTC, as well as vigilant monitoring of the tobacco industry's tactics and strategies to undermine or subvert tobacco control efforts.

Chapter Summaries and Conclusions

Section 1—Introduction

Chapter 1. Overview and Conclusions

Chapter 1 introduces this monograph, describes its framework, and explains how it was prepared and organized. It also presents the volume's major conclusions and the individual chapter conclusions.

Section 2—Situation Analysis/Mapping

Chapter 2. Patterns of Tobacco Use, Exposure, and Health Consequences

Chapter 2 examines the global distribution and health consequences of cigarette and smokeless tobacco use and SHS. This chapter draws on many data sources including the *WHO Global Report on Trends in Prevalence of Tobacco Smoking, 2015*, the *WHO Global Report: Mortality Attributable to Tobacco*, the National Cancer Institute – Centers for Disease Control and Prevention report *Smokeless Tobacco and Public Health: A Global Perspective*, as well as data from the Global Youth Tobacco Survey and the Global Adult Tobacco Survey.

Conclusions:

1. There are about 1.1 billion smokers in the world, and about 4 in 5 smokers live in LMICs. Nearly two-thirds of the world's smokers live in 13 countries.
2. Substantial progress has been made in reducing tobacco smoking in most regions, especially in HICs. Overall smoking prevalence is decreasing at the global level, but the total number of smokers worldwide is still not declining, largely due to population growth. Unless stronger action is taken, it is unlikely the world will reach the WHO Member States' 30% global reduction target by 2025.
3. Globally, more than 80% of the world's smokers are men. Differences in prevalence between male and female smokers are particularly high in the South-East Asia and Western Pacific Regions and in LMICs.
4. Globalization and population migration are contributing to a changing tobacco landscape, and non-traditional products are beginning to emerge within regions and populations where their use had not previously been a concern.
5. An estimated 25 million youth currently smoke cigarettes. Although cigarette smoking rates are higher among boys than girls, the difference in smoking rates between boys and girls is narrower than that between men and women. Smoking rates among girls approach or even surpass rates among women in all world regions.

6. Worldwide, an estimated 13 million youth and 346 million adults use smokeless tobacco products. The large majority of smokeless tobacco users live in the WHO South-East Asia Region. Smokeless tobacco use may be undercounted globally due to scarcity of data.
7. Secondhand smoke exposure remains a major problem. In most countries, an estimated 15%–50% of the population is exposed to secondhand smoke; in some countries secondhand smoke exposure affects as much as 70% of the population.
8. Annually, around 6 million people die from diseases caused by tobacco use, including about 600,000 from secondhand smoke exposure. The burden of disease from tobacco is increasingly concentrated in LMICs.

Chapter 3. The Economic Costs of Tobacco Use, With a Focus on Low- and Middle-Income Countries

Chapter 3 provides a framework for estimating the direct and indirect costs of tobacco use, including the cost of illness, disability, premature death, and forgone consumption and investment. It also reviews studies that estimate these costs for many HICs and some LMICs, as well as global estimates.

Conclusions:

1. The economic costs of tobacco use are substantial and include significant health care costs for treating the diseases caused by tobacco use and the lost productivity that results from tobacco-attributable morbidity and mortality.
2. In high-income countries, lifetime health care costs are greater for smokers than for nonsmokers, even after accounting for the shorter lives of smokers.
3. Evidence on the economic costs of tobacco use in low- and middle-income countries is limited but growing; the comprehensiveness of these studies varies greatly within and across countries, as do the existing cost estimates.
4. Past and current trends in tobacco use, together with improvements in health care systems and access to health care, suggest that the economic costs of tobacco use in low- and middle-income countries are likely to increase considerably in coming years.
5. The public's share of tobacco-attributable economic costs varies significantly among countries, reflecting differences in the role of government in providing health care.

Section 3—Price Determinants of Demand

Chapter 4. The Impact of Tax and Price on the Demand for Tobacco Products

Chapter 4 explains the rationale for levying excise taxes on tobacco products, describes models of consumer demand, and reviews studies of the relationship between tobacco taxes, prices, affordability, and consumer demand for tobacco products in both HICs and LMICs.

Conclusions:

1. A substantial body of research, which has accumulated over many decades and from many countries, shows that significantly increasing the excise tax and price of tobacco products is the single most consistently effective tool for reducing tobacco use.

2. Significant increases in tobacco taxes and prices reduce tobacco use by leading some current users to quit, preventing potential users from initiating use, and reducing consumption among current users.
3. Tobacco use by young people is generally more responsive to changes in taxes and prices of tobacco products than tobacco use by older people.
4. Demand for tobacco products is at least as responsive and often more responsive to price in low- and middle-income countries as it is in high-income countries.

Chapter 5. Design and Administration of Taxes on Tobacco Products

Chapter 5 examines topics relating to tobacco tax policy and administration, including the implications of tax increases for tobacco tax revenue. It explains the types of tobacco product taxes and their differential effects on price, product substitution, product differentiation, and tax avoidance. This chapter also discusses key components of effective tobacco product tax administration.

Conclusions:

1. Governments have a variety of reasons for taxing tobacco products, including generating revenue and improving public health by reducing tobacco use. Although price and tax measures are among the core demand reduction measures of the WHO FCTC, they are among the least implemented.
2. Almost all governments tax tobacco products, applying a variety of different taxes and using different tax structures. The different taxes and tax structures vary in their impact on public health. Relying on import duties to generate revenue is not an effective tax policy and does not substantially affect public health. More reliance on high, uniform, and specific excise taxes on tobacco products will have the greatest public health impact.
3. Because of the low share of tax in the retail prices of cigarettes and the relative inelasticity of demand for tobacco products, increases in tobacco taxes will ensure higher revenues.
4. A number of countries dedicate part of their tobacco tax revenues for health promotion and/or tobacco control. Dedicating part of tobacco tax revenues for comprehensive tobacco control or health promotion programs (i.e., earmarking) increases the public health impact of higher tobacco taxes.
5. An effective tax system is one that is well-designed and -administered. A well-designed system sets appropriate tax rates to achieve public health and revenue objectives; a well-administered system ensures high tax compliance and minimizes tax avoidance and evasion.

Section 4—Non-Price Determinants of Demand

Chapter 6. The Impact of Smoke-Free Policies

Chapter 6 describes the economic rationale for comprehensive smoke-free policies as well as studies that assess enforcement, compliance, and the degree of public support for these policies. The chapter examines studies of the impact of comprehensive smoke-free policies on secondhand smoke exposure, smoking behavior, and health outcomes. This chapter also discusses studies of the economic consequences of smoke-free policies, including costs or savings to various stakeholders, particularly business establishments.

Conclusions:

1. Comprehensive smoke-free policies reduce exposure to secondhand smoke; compliance with these policies is generally high, and public support for them is strong.
2. Comprehensive smoke-free policies in workplaces reduce active smoking behaviors including cigarette consumption and smoking prevalence.
3. Overall, rigorous empirical studies (largely from high-income countries) using objective economic indicators find that smoke-free policies do not have negative economic consequences for businesses, including restaurants and bars, with a small positive effect being observed in some cases. Findings from the limited existing research conducted in low- and middle-income countries are generally consistent with those from high-income countries.
4. Around the world, the tobacco industry is the greatest obstacle to enacting comprehensive smoke-free policies, often by arguing, despite strong evidence to the contrary, that smoke-free policies harm businesses.
5. Other economic benefits of smoke-free policies for businesses include increased worker productivity, health care savings, reduced cleaning and maintenance costs, and reduced insurance costs.

Chapter 7. The Impact of Tobacco Industry Marketing Communications on Tobacco Use

Chapter 7 describes the many forms of tobacco marketing communications and reviews the global implementation of policy interventions directed toward these activities. The chapter also covers econometric studies of the impact of tobacco advertising and advertising bans, providing new evidence on the impact of advertising bans globally and in LMICs. It also discusses cross-sectional and longitudinal studies of consumer response to tobacco advertising and the impact of other tobacco marketing initiatives such as sponsorship, price promotions, and marketing via emerging communication platforms such as the Internet and social media.

Conclusions:

1. Tobacco companies engage in a wide variety of marketing activities, ranging from traditional advertising, promotion, and sponsorship to emerging marketing techniques in the digital arena. These marketing activities have the potential to affect key populations, such as young people and women, particularly in low- and middle-income countries, who may be particularly susceptible to these efforts.
2. The weight of the evidence from multiple types of studies done by researchers from a variety of disciplines and using data from many countries indicates that a causal relationship exists between tobacco company marketing activities and tobacco use, including the uptake and continuation of tobacco use among young people.
3. In high-income countries, comprehensive policies to ban the marketing activities of tobacco companies are effective in reducing tobacco use, but partial marketing bans have little or no effect.
4. Comprehensive policies to ban the marketing activities of tobacco companies leads to larger reductions in tobacco use in low- and middle-income countries than in high-income countries.

Chapter 8. The Impact of Information on the Demand for Tobacco Products

Chapter 8 reviews evidence on awareness of the health risks of tobacco use in HICs and LMICs, and on the role of tobacco industry practices in influencing this awareness. The chapter also discusses studies of the impact of information dissemination efforts—including anti-tobacco mass media campaigns, school-based education programs, pictorial warning labels, and packaging interventions—by public health authorities.

Conclusions:

1. Imperfect understanding of the impact of cigarette smoking and other tobacco use on health, particularly in low- and middle-income countries, provides an economic rationale for interventions to disseminate information about the addictive and harmful nature of tobacco products.
2. Tobacco industry disinformation practices have directly contributed to the information failures associated with consumers' imperfect knowledge of the risks of disease and addiction.
3. Well-designed and -implemented anti-tobacco mass media campaigns are effective in improving understanding about the health consequences of tobacco use, building support for tobacco control policies, strengthening social norms against tobacco use, and reducing tobacco consumption among youth and adults.
4. School-based tobacco education programs, when implemented as part of comprehensive tobacco control programs, can improve knowledge, contribute to denormalizing tobacco use, and help prevent tobacco use. Emerging evidence suggests that school-based programs can be as or more effective in reducing tobacco use among young people in low- and middle-income countries, where knowledge of the hazards of tobacco use is lower compared with high-income countries.
5. Large pictorial health warning labels on tobacco packages are effective in increasing smokers' knowledge, stimulating their interest in quitting, and reducing smoking prevalence. These warnings may be an especially effective tool to inform children and youth and low literacy populations about the health consequences of smoking.
6. Plain (standardized) packaging (i.e., devoid of logos, stylized fonts, colors, designs or images, or any additional descriptive language) reduces the appeal of tobacco products, enhances the salience of health warnings, minimizes consumers' misunderstanding of the harms of tobacco, and has contributed to a decline in tobacco use in Australia, the first country to implement plain packaging.
7. The stock of information about the harms of tobacco use is subject to potential erosion over time (wear-out) and needs to be replenished and maintained.

Chapter 9. Smoking Cessation

Chapter 9 examines studies of the health and economic benefits of cessation as well as individual- and population-level interventions to provide cessation support. It examines economic factors influencing demand for cessation services, such as the cost of cessation services and the price of tobacco products, and the literature on how tobacco control policies affect cessation. This chapter also describes some of the challenges and opportunities in enhancing implementation of cessation services.

Conclusions:

1. Rates of tobacco cessation among current tobacco users will need to increase in order to significantly reduce the health consequences of tobacco use worldwide, in both the short and mid term.
2. Tobacco control policies, such as increased taxation, anti-smoking media campaigns, and comprehensive smoke-free policies, increase the demand for tobacco dependence treatment and the rates of subsequent cessation.
3. Research from high-income countries demonstrates that a number of effective and cost-effective tobacco dependence treatments can increase the likelihood of successful cessation. Relatively little evidence is available on the effectiveness and cost-effectiveness of tobacco dependence treatments in low- and middle-income countries and on the transferability of effective interventions from high-income countries to low- and middle-income countries.
4. Demand for cessation support exists in low- and middle-income countries, but in most of these countries, cessation services and products are often of limited availability or accessibility, or are unaffordable for most of the population.

Section 5—Policy and Other Influences on the Supply of Tobacco Products

Chapter 10. Tobacco Growing and Tobacco Product Manufacturing

Chapter 10 describes tobacco growing around the world, including the increased role of LMICs in tobacco farming, case studies of efforts to provide alternative livelihoods for tobacco farmers, and cigarette production by country income group. This chapter also discusses changes in cigarette design and manufacturing over time, and studies of efforts to regulate tobacco products such as bans on certain tobacco products, mandated reductions in constituents, and efforts to reduce addictiveness or appeal and to limit brand proliferation.

Conclusions:

1. In 2013, ten countries accounted for most of the world's tobacco leaf production (80%); China alone produced more than 40% of the world's tobacco leaf. Tobacco is increasingly grown in low- and middle-income countries, and many of these countries export a large proportion of the world's tobacco leaf.
2. In the past, governments have sought to control price and quantity in the tobacco leaf market through quotas and pricing restrictions and to provide technical assistance to tobacco growers, along with other agricultural producers. Although most high-income countries have reduced or eliminated subsidies for tobacco growing, many low- and middle-income countries still provide support for the tobacco-growing sector.
3. The vast majority of workers in the tobacco production chain are tobacco farmers doing highly labor-intensive work on small family farms, which are increasingly located in low- and middle-income countries. In contrast, cigarette manufacturing—the higher value phase of the chain—is highly mechanized and dominated by a few large multinational corporations largely based in high-income countries.
4. Tobacco growing is relatively profitable, but farming of other crops has the potential to be as or more profitable than tobacco growing. Alternatives to tobacco growing tend to be highly specific to a country or region. Policies that encourage crop diversification or substitution are useful as

part of a comprehensive tobacco control strategy, but alone they will have little impact on tobacco use.

5. Changes in product design—often made in response to consumer concerns about the adverse health consequences of tobacco as well as to reduce costs to the manufacturer—have likely contributed to increased tobacco use.
6. Product regulation is a rapidly developing component of a comprehensive tobacco control strategy. Regulation of tobacco products is a highly technical area, which poses many challenges for regulators, including the diversity of products, the ability of the tobacco industry to respond quickly to changing market conditions, and the need for sufficient capacity for testing and enforcing regulatory measures; addressing these issues is likely to be particularly challenging for low- and middle-income countries.

Chapter 11. Policies Limiting Youth Access to Tobacco Products

Chapter 11 examines policy interventions designed to limit youth access to tobacco products, including the economic rationale for these policies. It reviews studies of sources of tobacco products for youth; country adoption of youth access laws including implementation, enforcement, and compliance; and the impact of youth access policies on smoking behaviors in both HICs and LMICs.

Conclusions:

1. Information failures in the market for tobacco products are particularly pronounced during the ages at which most tobacco use begins, providing an economic rationale for interventions to limit youth access to tobacco products.
2. Youth access policies, when consistently enforced, can reduce commercial access to tobacco products among underage youth. Sufficient resources are needed to implement and enforce these policies well enough to effectively limit youth access to commercial sources of tobacco.
3. Evidence from high-income countries indicates that strongly enforced youth access policies that successfully disrupt the commercial supply of tobacco products to underage youth can reduce youth tobacco use, although the magnitude of this effect is relatively small.
4. Emerging research suggests that youth access policies can also be effective in reducing youth tobacco use in low- and middle-income countries, although the amount of reduction is unclear.

Chapter 12. Tobacco Manufacturing Privatization and Foreign Direct Investment and Their Impact on Public Health

Chapter 12 examines foreign direct investment within the tobacco sector and factors that have driven the privatization of state-owned tobacco companies. The chapter reviews studies of the impact of foreign direct investment and of privatization on the tobacco industry, tobacco use, and global tobacco control efforts. The evolution and consolidation of the tobacco industry and trends in international investment law are also discussed.

Conclusions:

1. Over the past few decades, the privatization of domestic tobacco companies and direct investment by multinational tobacco companies, particularly in low- and middle-income countries, have contributed to the globalization of the tobacco industry.

2. The impact of privatization on public health is varied and is influenced by the strength of domestic regulation. Some countries have implemented strong tobacco control measures after privatization, leading to reductions in tobacco use. However, in the majority of countries, privatization leads to significantly greater efficiency and production, massive marketing campaigns, and increased cigarette consumption—particularly among women and young people.
3. China's state tobacco monopoly is a market leader, with over 40% of global cigarette market share, almost all of which is consumed domestically. The China National Tobacco Corporation appears poised to expand beyond domestic sales by using foreign direct investments, partnerships with multinational tobacco companies, development of an international supply chain to support its premium brands, and by other means.
4. Increasingly, the tobacco industry is using trade and investment treaties to challenge innovative tobacco control policies. The tobacco industry also uses the threat of litigation, with its attendant costs, and lobbying campaigns to deter governments from advancing tobacco control policies, especially in low- and middle-income countries.

Chapter 13. Licit Trade in Tobacco Products

Chapter 13 provides an overview of trends in trade in tobacco leaf and manufactured tobacco products by WHO Region and country income group. It reviews studies on the effects of trade liberalization on tobacco use and provides new estimates to update and extend existing research on this topic. It also briefly discusses the impact of trade agreements on tobacco control.

Conclusions:

1. Trade in tobacco leaf accounts for a very small proportion (<1%) of global agricultural imports and exports, and very few countries rely heavily on earnings from trade in tobacco leaf.
2. Although many countries participate in either the export or import of manufactured cigarettes, these products account for only a very small share of overall global trade in goods and services.
3. International, regional, and bilateral trade agreements have reduced tariff and non-tariff barriers to trade, increased trade in tobacco leaf and tobacco products, and contributed to the globalization of the tobacco industry.
4. Increased liberalization of trade has contributed to increased tobacco use in low- and middle-income countries. During the period when trade in tobacco products was liberalized, most low- and middle-income countries had weak or no tobacco control measures in place.
5. Recent World Trade Organization decisions involving challenges to domestic tobacco control policies suggest that governments can address public health concerns associated with increased liberalization of trade in tobacco leaf and tobacco products by adopting and implementing effective tobacco control policies and programs that apply evenly to domestic and foreign tobacco growers and manufacturers.

Chapter 14. Tobacco Tax Avoidance and Tax Evasion

Chapter 14 examines tax avoidance and tax evasion—activities aimed at circumventing taxes on tobacco products through legal and illegal means, respectively—and reviews studies of the determinants and extent of these activities. This chapter also discusses measures to counteract tax evasion, in particular the Protocol to Eliminate Illicit Trade in Tobacco Products adopted by the WHO FCTC.

Conclusions:

1. Tax avoidance and tax evasion, especially large-scale smuggling of tobacco products, undermine the effectiveness of tobacco control policies and reduce the health and economic benefits that result from these policies.
2. While tobacco product tax and price differentials create incentives for tax evasion, other factors, such as high levels of corruption, lack of commitment to addressing illicit trade, and ineffective customs and tax administration, play an equal or greater role.
3. Illicit trade has sometimes included the involvement of tobacco companies themselves.
4. Experience from many countries demonstrates that illicit trade can be successfully addressed, even while raising tobacco taxes and prices, resulting in increased tax revenues and reduced tobacco use.
5. Implementing and enforcing strong measures to control illicit tobacco trade would enhance the effectiveness of significantly increased tobacco taxes and prices and strong tobacco control policies in reducing tobacco use and its health and economic consequences.

Section 6—Economic and Other Implications of Tobacco Control

Chapter 15. Employment Impact of Tobacco Control

Chapter 15 examines employment issues related to tobacco, providing an overview of tobacco-related employment (focusing on jobs directly dependent on tobacco) and trends in employment in both tobacco growing and manufacturing. The chapter also discusses studies of the effect of tobacco control policies on employment in the tobacco sector and other sectors.

Conclusions:

1. The number of jobs that depend on tobacco—tobacco growing, manufacturing, and distribution—is low and has been falling in most countries.
2. Adoption of new production technologies and improved production techniques, together with the shift from state to private ownership in many countries, has reduced employment in both the tobacco-farming and -manufacturing sectors.
3. In nearly all countries, national tobacco control policies will have either no effect or a net positive effect on overall employment because any tobacco-related job losses will be offset by job gains in other sectors.
4. In the few countries that depend heavily on tobacco leaf exports, global tobacco control policies could lead to job losses, but these losses are expected to be small, gradual, and unlikely to affect the current generation of tobacco farmers in these countries.

Chapter 16. The Impact of Tobacco Use and Tobacco Control Measures on Poverty and Development

Chapter 16 focuses on the interaction between tobacco use and poverty, especially in LMICs. It examines studies of tobacco use by poverty status and country income level and the impact of tobacco use on individual finances and economic development more broadly. The chapter also reviews studies on the ability of tobacco control policies to reduce disparities in tobacco use and tobacco-related disease.

Conclusions:

1. Tobacco use and its consequences have become increasingly concentrated in low- and middle-income countries and, within most countries, among lower socioeconomic status populations.
2. Tobacco use in poor households exacerbates poverty by increasing health care costs, reducing incomes, and decreasing productivity, as well as diverting limited family resources from basic needs.
3. By reducing tobacco use among the poor, tobacco control policies can help break the cyclical relationship between tobacco use and poverty.
4. Tobacco control efforts that are integrated with other public health and development policies can improve the overall health of the poor and can help achieve the Sustainable Development Goals.
5. Lower income populations often respond more to tobacco tax and price increases than higher income populations. As a result, significant tobacco tax and price increases can help reduce the health disparities resulting from tobacco use.

Section 7—Global Implications of Tobacco Control

Chapter 17. Ending the Epidemic

Chapter 17 provides an in-depth review of the major conclusions of this monograph and highlights research and surveillance priorities needed for a greater understanding of the economics of tobacco and tobacco control in both HICs and LMICs.

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Appendix 1A. Country Groupings

World Health Organization Grouping of Countries	
African Region	Algeria, Angola, Benin, Botswana, Burkina Faso, Burundi, Cabo Verde, Cameroon, Central African Republic, Chad, Comoros, Congo, Côte d'Ivoire, Democratic Republic of the Congo, Equatorial Guinea, Eritrea, Ethiopia, Gabon, Gambia, Ghana, Guinea, Guinea-Bissau, Kenya, Lesotho, Liberia, Madagascar, Malawi, Mali, Mauritania, Mauritius, Mozambique, Namibia, Niger, Nigeria, Rwanda, Sao Tome and Principe, Senegal, Seychelles, Sierra Leone, South Africa, South Sudan, Swaziland, Togo, Uganda, United Republic of Tanzania, Zambia, Zimbabwe
Region of the Americas	Antigua and Barbuda, Argentina, Bahamas, Barbados, Belize, Bolivia (Plurinational State of), Brazil, Canada, Chile, Colombia, Costa Rica, Cuba, Dominica, Dominican Republic, Ecuador, El Salvador, Grenada, Guatemala, Guyana, Haiti, Honduras, Jamaica, Mexico, Nicaragua, Panama, Paraguay, Peru, Saint Kitts and Nevis, Saint Lucia, Saint Vincent and the Grenadines, Suriname, Trinidad and Tobago, United States of America, Uruguay, Venezuela (Bolivarian Republic of)
South-East Asia Region	Bangladesh, Bhutan, Democratic People's Republic of Korea, India, Indonesia, Maldives, Myanmar, Nepal, Sri Lanka, Thailand, Timor-Leste
European Region	Albania, Andorra, Armenia, Austria, Azerbaijan, Belarus, Belgium, Bosnia and Herzegovina, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Georgia, Germany, Greece, Hungary, Iceland, Ireland, Israel, Italy, Kazakhstan, Kyrgyzstan, Latvia, Lithuania, Luxembourg, Malta, Monaco, Montenegro, Netherlands, Norway, Poland, Portugal, Republic of Moldova, Romania, Russian Federation, San Marino, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Tajikistan, The former Yugoslav Republic of Macedonia, Turkey, Turkmenistan, Ukraine, United Kingdom of Great Britain and Northern Ireland, Uzbekistan
Eastern Mediterranean Region	Afghanistan, Bahrain, Djibouti, Egypt, Iran (Islamic Republic of), Iraq, Jordan, Kuwait, Lebanon, Libya, Morocco, Oman, Pakistan, Qatar, Saudi Arabia, Somalia, Sudan, Syrian Arab Republic, Tunisia, United Arab Emirates, Yemen
Western Pacific Region	Australia, Brunei Darussalam, Cambodia, China, Cook Islands, Fiji, Japan, Kiribati, Lao People's Democratic Republic, Malaysia, Marshall Islands, Micronesia (Federated States of), Mongolia, Nauru, New Zealand, Niue, Palau, Papua New Guinea, Philippines, Republic of Korea, Samoa, Singapore, Solomon Islands, Tonga, Tuvalu, Vanuatu, Viet Nam

World Bank Income Grouping of Countries (2014)	
High-Income	Andorra, Antigua and Barbuda, Australia, Austria, Bahamas, Bahrain, Barbados, Belgium, Brunei Darussalam, Canada, Chile, Croatia, Cyprus, Czech Republic, Denmark, Equatorial Guinea, Estonia, Finland, France, Germany, Greece, Iceland, Ireland, Israel, Italy, Japan, Kuwait, Latvia, Lithuania, Luxembourg, Malta, Monaco, Netherlands, New Zealand, Norway, Oman, Poland, Portugal, Qatar, Republic of Korea, Russian Federation, Saint Kitts and Nevis, San Marino, Saudi Arabia, Singapore, Slovakia, Slovenia, Spain, Sweden, Switzerland, Trinidad and Tobago, United Arab Emirates, United Kingdom of Great Britain and Northern Ireland, United States of America, Uruguay
Upper Middle-Income	Albania, Algeria, Angola, Argentina, Azerbaijan, Belarus, Belize, Bosnia and Herzegovina, Botswana, Brazil, Bulgaria, China, Colombia, Cook Islands, Costa Rica, Cuba, Dominica, Dominican Republic, Ecuador, Fiji, Gabon, Grenada, Hungary, Iran (Islamic Republic of), Iraq, Jamaica, Jordan, Kazakhstan, Lebanon, Libya, Malaysia, Maldives, Marshall Islands, Mauritius, Mexico, Montenegro, Namibia, Nauru, Niue, Palau, Panama, Peru, Romania, Saint Lucia, Saint Vincent and the Grenadines, Serbia, Seychelles, South Africa, Suriname, Thailand, The former Yugoslav Republic of Macedonia, Tonga, Tunisia, Turkey, Turkmenistan, Tuvalu, Venezuela (Bolivarian Republic of).

World Bank Income Grouping of Countries (2014)	
Lower Middle-Income	Armenia, Bhutan, Bolivia (Plurinational State of), Cameroon, Cabo Verde, Congo, Côte d'Ivoire, Djibouti, Egypt, El Salvador, Georgia, Ghana, Guatemala, Guyana, Honduras, India, Indonesia, Kiribati, Kyrgyzstan, Lao People's Democratic Republic, Lesotho, Mauritania, Micronesia (Federated States of), Mongolia, Morocco, Nicaragua, Nigeria, Pakistan, Papua New Guinea, Paraguay, Philippines, Republic of Moldova, Samoa, Sao Tome and Principe, Senegal, Solomon Islands, South Sudan, Sri Lanka, Sudan, Swaziland, Syrian Arab Republic, Timor-Leste, Ukraine, Uzbekistan, Vanuatu, Viet Nam, Yemen, Zambia.
Low-Income	Afghanistan, Bangladesh, Benin, Burkina Faso, Burundi, Cambodia, Central African Republic, Chad, Comoros, Democratic People's Republic of Korea, Democratic Republic of the Congo, Eritrea, Ethiopia, Gambia, Guinea, Guinea-Bissau, Haiti, Kenya, Liberia, Madagascar, Malawi, Mali, Mozambique, Myanmar, Nepal, Niger, Rwanda, Sierra Leone, Somalia, Tajikistan, Togo, Uganda, United Republic of Tanzania, Zimbabwe.

*Cook Islands, Nauru, and Niue were not allocated to an income group by the World Bank. To avoid excluding these three countries from analyses, we used the World Bank allocation criteria and the GDP sourced from the CIA Factbook to allocate them to the appropriate income group.