Understanding the U.S. Illicit Tobacco Market: Characteristics, Policy Context, and Lessons from International Experiences

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Characteristics, Policy Context, and Lessons from International Experiences

Committee on the Illicit Tobacco Market:
Collection and Analysis of the International Experience

Peter Reuter and Malay Majmundar, *Editors*

Committee on Law and Justice
Division of Behavioral and Social Sciences and Education

Board on Population Health and Public Health Practice
Institute of Medicine

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Acknowledgments

The U.S. Food and Drug Administration (FDA) asked the Committee on Law and Justice (CLAJ) of the National Research Council (NRC) and the Board on Population Health of the Institute of Medicine (IOM) to assess the international illicit tobacco market, including variations by country; the effects of various policy mechanisms on the market; and the applicability of international experiences to the United States. The FDA also asked for recommendations for research and data collection, though not for policy. The NRC appointed the Committee on the Illicit Tobacco Market: Collection and Analysis of the International Experience to carry out this task.

In addition to its own research and deliberations, the committee received input from several other experts at two open meetings. We first thank Mitch Zeller, director of the Center for Tobacco Products at FDA, for a very helpful presentation at our November 2013 meeting, explaining and elaborating on the charge to the committee.

At our open session in January 2014, the committee benefited from presentations from a wide range of experts about enforcement and policy experiences at the federal, state, local, and international levels (with an emphasis on the domestic U.S. experience). We thank Emmy Ansinelli and Alex Finkel, from SICPA Product Security, LLC, Springfield, Virginia; Jerry Bowerman, from the Alcohol and Tobacco Tax and Trade Bureau at the U.S. Department of the Treasury; Paul Carey, from the Northern Virginia Cigarette Tax Board; Jeffrey Cohen and Ryan Kaye, from the Bureau of Alcohol, Tobacco, Firearms, and Explosives at the U.S. Department of Justice; Brent Crawley, from Immigration and Customs Enforcement at the U.S. Department of Homeland Security; Edgar Domenech, from the

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This report would not have been possible without the contributions of many people. Special thanks go to the members of the committee, who dedicated extensive time, thought, and energy to the drafting of the report. Several members of the staff of the NRC also made significant contributions to the report. Project staff Julie Schuck and Emily Backes provided invaluable research and writing assistance and played an important substantive role in the drafting of the report. Leticia Garcilazo Green, Mary Ghitelman, and Barbara Boyd provided key administrative and logistical support and made sure that committee meetings ran smoothly. From the Division of Behavioral and Social Sciences and Education Office of Reports and Communication, Eugenia Grohman helped edit the draft report, Kirsten Sampson Snyder managed the report review process, and Yvonne Wise managed the production process. Finally, throughout the project, CLAJ director Arlene Lee provided helpful guidance and oversight.

This project was one of three requested by the FDA related to tobacco, and thanks are also due to IOM staff for their wonderful collegiality in the endeavor: to the Board on Population Health director Rose Martinez; Kathleen Stratton, study director for the Committee on the Health Implications of Raising the Minimum Age for Purchasing Tobacco Products; and Amy Geller, study director for the Committee on the Assessment of Agent-Based Models to Inform Tobacco Product Regulation.

This report has been reviewed in draft form by individuals chosen for their diverse perspectives and technical expertise, in accordance with procedures approved by the NRC's Report Review Committee. The purpose of this independent review is to provide candid and critical comments that will assist the institution in making its published report as sound as possible and to ensure that the report meets institutional standards for objectivity, evidence, and responsiveness to the study charge. The review comments and draft manuscript remain confidential to protect the integrity of the deliberative process. We thank the following individuals for their review of this report: Georgios A. Antonopoulos, School of Social Sciences and Law, Teesside University, Middlesbrough, United Kingdom; Richard A. Berman, chief executive officer and founder, LICAS; Kenneth Michael Cummings, Holling Cancer Center, Medical University of South Carolina; Michael G. Hering, project director and chief counsel, National Association of Attorneys, General Tobacco Project, Washington, DC; Luk Joossens, Association of European Cancer Leagues; Mark Kleiman, Department of Public Policy, University of California, Los Angeles; Robert MacCoun, Stanford Law School; Kurt Ribisl, Department of Health Behavior and Health Education,

University of North Carolina at Chapel Hill; Thomas C. Schelling, distinguished university professor emeritus, University of Maryland, College Park; Ayda A. Yurekli, Tobacco Control Economics Unit, Prevention of Noncommunicable Diseases Department, World Health Organization, Geneva, Switzerland.

Although the reviewers listed above provided many constructive comments and suggestions, they were not asked to endorse the content of the report nor did they see the final draft of the report before its release. The review of this report was overseen by Robert B. Wallace, Department of Epidemiology, College of Public Health, University of Iowa, and Charles E. Phelps, university professor and provost emeritus, University of Rochester. Appointed by the NRC, they were responsible for making certain that an independent examination of this report was carried out in accordance with institutional procedures and that all review comments were carefully considered. Responsibility for the final content of this report rests entirely with the committee and the institution.

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Committee on the Illicit Tobacco Market:
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Summary

In response to the documented addictive and harmful health effects of tobacco use, governments worldwide and at the local, state, and federal levels in the United States have adopted various policies to reduce or eliminate tobacco use. Common measures in the past decades have included high taxes on tobacco products and bans on advertising. Tobacco use, notably the smoking of cigarettes, has declined because of these efforts, but worldwide there are still more than 1 billion people who regularly use tobacco, including many who purchase their products illicitly. Illicit tobacco markets can undermine public health efforts to reduce tobacco use. These markets can also deprive governments of revenue; in the United States, these losses are especially incurred by the states.

In comparison with other consumer products, cigarettes are currently subject to high taxes in the United States and in most other countries. The high rates of taxation and the large tax differentials between jurisdictions increase incentives for tax evasion and tax avoidance and contribute to existing illicit tobacco markets. Tax evasion means illegal avoidance of tobacco taxes and is done by individuals or criminal networks or other entities; tax avoidance means legal activities and purchases—mostly by individual tobacco buyers—that are in accordance with customs and tax regulations.

In the future, nonprice regulation of cigarettes—such as product design, formulation, and packaging—could, in principle, contribute to the development of new types of illicit tobacco markets if the incentives for such illicit trade are not controlled or mitigated. Although the U.S. Food and Drug Administration (FDA) does not have taxation power or the authority

to enforce tax compliance, the Family Smoking Prevention and Tobacco Control Act of 2009 gave the FDA significant authority to regulate the manufacturing, marketing, and distribution of tobacco products. The FDA cannot ban nicotine entirely, but it can prohibit or restrict allowable levels of the constituents and additives in tobacco products, which could include the reduction of nicotine to a subaddictive threshold. The FDA can also regulate tobacco packaging and messaging. These restrictions may create illicit markets for banned products, and as the FDA considers possible regulations for tobacco products, it is important to understand the potential effects of any such regulations on the illicit tobacco market.

As part of its consideration of possible regulations, FDA asked the National Research Council (NRC) and the Institute of Medicine (IOM) to assess the international illicit tobacco market, including variations by country; the effects of various policy mechanisms on the market; and the applicability of international experiences to the United States. The FDA also asked for recommendations for research and data collection, though not for policy. The Committee on the Illicit Tobacco Market: Collection and Analysis of the International Experience was appointed by the NRC to carry out this task. Because the illicit tobacco trade largely coincides with the illicit trade in cigarettes, the committee report uses the terms "tobacco" and "cigarettes" interchangeably.

EXISTING ILLICIT MARKETS

The worldwide illicit tobacco trade comprises four main schemes: bootlegging, large-scale smuggling, illicit whites, and illegal production. Bootlegging refers to the legal purchase of cigarettes in one jurisdiction and their consumption or resale in another jurisdiction without the payment of applicable taxes or duties. Large-scale smuggling refers to the sale of cigarettes without the payment of any taxes or duties, even in the country of their origin. (It is important to note that "large-scale smuggling" refers *not* to the scale of the evasion activity, but, rather, to the systematic means by which it occurs.) Illicit whites are cigarettes that are legally produced under unique brand names or no brand name at all and that are destined primarily or exclusively for illicit distribution. Illegal production comes in two main forms: the unlicensed or underreported production of legitimate tobacco products, and counterfeiting, which refers to the production of cigarettes with brand labels that are used without the permission of the trademark owner.

In the United States, the illicit tobacco market has traditionally consisted of bootlegging from Native American reservations and low-tax states, such as Virginia, to high-tax states, such as New York. Large-scale smuggling does not appear to be a significant part of the U.S. illicit cigarette market.

Also largely absent from the U.S. market are illicit whites and illegal production, including counterfeiting. The illicit market in the United States is dominated by domestic sources. Several explanations have been offered for why, in comparison with other destination countries for contraband cigarettes, the United States appears to be less affected by large-scale smuggling of brand cigarettes and by counterfeit cigarettes and illicit whites: the effectiveness of general border controls; the relative attractiveness of alternative avenues for illicit trade inside the United States (e.g., bootlegging); and the preferences of U.S. consumers for certain kinds of cigarettes.

Internationally, nonprice factors are at least as important as price factors in the illicit tobacco trade. Those nonprice factors include weak governance, political corruption, the ease and cost of operating in a country, and the availability of retail distribution networks. Countries with high measured levels of corruption have higher levels of tax evasion and tax avoidance than do countries with low measured levels of corruption.

The behaviors of participants in the illicit tobacco market—on both the supply and demand side—shape and drive the illicit trade. Evidence from Europe suggests that the structure of illicit tobacco networks and the methods involved in the illicit tobacco trade (especially bootlegging) are generally relatively simple. In addition, the people involved in all segments of the distribution process of the illicit tobacco trade generally do not have serious criminal records, and the illicit tobacco market is not associated with violence. Although many claims have been made regarding the relationship between the illicit tobacco trade and terrorism, the link between the U.S. illicit tobacco market and terrorism appears to be minor, and there is also no systematic evidence of sustained links between the global illicit tobacco trade and terrorism.

The involvement of the tobacco industry in the illicit market is complicated. Although counterfeit cigarettes result in financial losses for tobacco companies, the tobacco industry can still benefit from other aspects of the illicit tobacco trade, such as by abetting the smuggling of legally manufactured cigarettes as a way of introducing a company's products to new markets or to lower the price, thus expanding its share in existing markets. Studies of internal industry documents, as well as legal investigations and agreements, have shown that tobacco companies at a global level have promoted and facilitated the smuggling of legally manufactured cigarettes. However, there is no evidence that the tobacco industry is currently involved in the illicit trade in the United States. In some cases, manufacturers have provided training and support to U.S. law enforcement agencies to help combat counterfeit cigarette trade and bootlegging.

On the demand side, the consumption of illicit tobacco carries little social stigma (compared with smoking in general), particularly in places where smoking is generally socially acceptable. Individuals with low socio-

economic status and limited education tend to purchase illegal cigarettes locally, while people with higher income and education tend to purchase online or to travel to another location to avoid high taxes on cigarette purchases. Heavier smokers and those less interested in quitting are also more likely to engage in tax avoidance and tax evasion.

Youth access to tobacco in the United States represents a special situation, since the sale of tobacco to people under the age of 18 is illegal in every state. For this study, however, the only relevant circumstance is when youths engage in the same illicit transactions as do adults, and not on the underage—and by definition, illegal—purchase of tobacco products. In this context, a reasonable estimate is that youth purchases constitute about 1 percent of the illicit market. Though small, these transactions are of particular public health concern.

SIZE OF THE U.S. ILLICIT TOBACCO MARKET

It is difficult to measure the size of the illicit tobacco market precisely. Multiple methods have been used to estimate its size, including trade gap analysis; differences in self-reported consumption and tax-paid sales; econometric modeling; population surveys; empty pack collections; pack observation, return, and swap studies; and expert opinion. These methods are not easily comparable: they differ in sample sizes, time periods covered, and scientific rigor, and they yield different estimates and have different sources of error. Another limitation is the difficulty of separating tax avoidance from evasion, a distinction that is important for law enforcement and policy purposes.

In order to estimate the size of the illicit tobacco market in the United States, the committee considered a wide range of studies and carried out its own comparison of self-reported consumption and tax-paid sales. The committee's calculation provides just one estimate of the size of the illicit market. As with other methods, the committee's approach has strengths and limitations. For this reason, multiple methods should be used in order to obtain the most comprehensive picture of the scale of the illicit tobacco market for a specific location and time.

Using its own estimate and plausible estimates from other methods, the committee determined that the percentage of the total market represented by illicit sales in the United States is between 8.5 percent and 21 percent. This range represents between 1.24 to 2.91 billion packs of cigarettes annually and between $2.95 billion and $6.92 billion in lost gross state and local tax revenues. Note, however, that for almost all of these cigarettes, the federal tax has been paid.

The high end of the range (21 percent) is consistent with a pack return survey conducted in the United States. The low end of the range (8.5 per-

cent), which is the committee's own estimate, reflects the net level of tax avoidance and evasion at the state level, aggregated nationally. According to the committee's calculations, the net percentage of sales subject to tax evasion and tax avoidance has grown from 3.2 percent in 1992-1993 to 8.5 percent in 2010-2011.

For states with both positive and negative tax differentials with neighboring states, the difference between tax-paid sales and self-reported consumption will underestimate total cross-border illicit trade. Nevertheless, the committee's estimate has a clear interpretation, the quantity that it is estimating can be defined precisely, and there are no issues with selecting a credible national sample of survey sites.

The committee's state-level estimates show that the illicit tobacco market is not evenly distributed across the country. It may be as high as 45 percent in high-tax states, such as New York, while it is low in many other states and areas. The committee classifies 22 states and the District of Columbia as net exporters, and the remaining 28 states as net importers. Of the total tobacco taxes collected in 2011 by all states and localities of $17.65 billion, the net importing states lost an estimated $2.95 billion in state cigarette excise taxes; New York State accounts for nearly half of this total. The net exporting states gained an estimated $0.82 billion.

For comparison, the estimated revenue lost to the illicit tobacco market can be compared with the estimated loss in income taxes in the United States. For tobacco, the $2.95 billion loss (at the low end of the range) is roughly 10 percent of the total tobacco tax due; the estimates of the "income tax gap" are 17 percent at the federal level and 18 percent at the state level.

POLICY AND ENFORCEMENT INTERVENTIONS

Bootlegging, large-scale smuggling, illicit whites, and illegal manufacturing (including counterfeiting) are each linked to diversion at a particular phase in the legal supply chain of cigarettes, and opportunities exist at the preproduction, production, transit, wholesale, and retail stages for diversion to the illicit market. Opportunities also exist for the government to control the supply chain by imposing licensing and regulatory requirements on tobacco growers, manufacturers, distributors, wholesalers, and retailers.

Digital tax stamps with encrypted information and related tracking technologies also represent an approach to combating the illicit tobacco trade by monitoring and controlling the supply chain. Both methods have recently been adopted by a number of countries around the world, and California and Massachusetts require use of digital tax stamps. The main objective of tracking and tracing is to facilitate investigations into tobacco smuggling and to identify the points at which tobacco products are diverted into illicit markets. Although these technologies would not be able

to trace and investigate illegally manufactured or counterfeit products back through the supply chain, they could be used to identify such products as not having been properly taxed. In the United States, a track-and-trace system that is implemented across state borders would be better able to track and trace cigarettes through the licit distribution system and identify points of diversion into illicit markets. However, low-tax states that are the source of many bootlegged cigarettes have limited incentive to adopt such an approach.

Interventions can also seek to undermine the conditions that make illegal trade possible. For example, the enactment of a tax harmonization program, though politically challenging, would address one key cause of the domestic illicit trade: very different cigarette tax rates across states. Public education campaigns aimed directly at the illicit trade also show some promise for reaching lower socioeconomic populations who disproportionately participate in illicit tobacco markets.

Regulations and technologies to monitor and control the supply chain of tobacco products will have limited impact without enforcement efforts. Illicit tobacco is generally treated as an economic rather than a criminal problem, especially since the trade has been nonviolent and is only weakly opposed by social norms; law enforcement efforts to detect and investigate the illicit trade tend to be weak and uneven, and criminal prosecution of those involved is a low priority for prosecutors. Perhaps unsurprisingly, the committee was not able to obtain systematic, up-do-date information on measures of enforcement activity and success by agencies. Although the paucity of data makes it difficult to estimate the risks faced by tobacco smugglers, the available evidence strongly suggests that the risks of detection and prosecution are small.

Enforcement efforts against the illicit tobacco trade face two additional challenges: the dynamic and adaptive nature of illicit tobacco markets, and the need to coordinate across various agencies, participants, and levels of government. However, these challenges are not unique to the illicit cigarette trade, nor are they insurmountable.

The broad-ranging interventions adopted by several countries are instructive for the United States insofar as they show that it is possible to reduce the size of the illicit tobacco market through the dedication of tobacco-specific enforcement resources, collaboration across jurisdictions, and comprehensive intervention strategies that encompass a variety of regulatory, enforcement, and policy approaches. For example, Spain reduced the share of its illicit market from 15 percent in 1995 to 2 percent in 2001 as the result of licensing and control measures, enforcement efforts, and legal agreements. The United Kingdom used stamping and marking requirements on cigarettes, agreements with tobacco manufacturers, enforcement efforts, and public education campaigns to reduce the size of its share of

the illicit market from 21 percent in 2000 to 9 percent in 2013. Canada reduced the illicit share of its market from nearly 30 percent in the early 1990s to between 7.6 percent and 14.7 percent in 2010 (by the committee's estimate) through sweeping intervention efforts, including licensing, tax stamps, enforcement efforts, tax harmonization, tribal tax revenue agreements, legal agreements with tobacco manufacturers, and public education campaigns. The European Union has also taken an active approach to encouraging coordination among its member states to support implementation of a transnational track-and-trace system, tax harmonization policies, and enforcement efforts.

POTENTIAL EFFECTS OF PRODUCT CHANGES ON ILLICIT MARKETS

The existing illicit markets, both in the United States and most other countries, represent a response to price incentives created by different local, state, and national tax policies. In the future, however, illicit markets that may arise as a consequence of regulations of product design, formulation, or product packaging and marketing would be potentially very different in terms of both demand and supply determinants. Consideration of those determinants needs to recognize that both the legal tobacco market and the illicit tobacco trade are dynamic and adapt in response to regulatory changes.

One key question in trying to assess responses to potential regulations is how modification of tobacco products, notably cigarettes, might affect product appeal. Research in several countries has examined the effects of such modifications on smokers' preferences and smoking habits. Two such modifications—reduced ignition propensity (i.e., the requirement that cigarettes extinguish when not actively puffed) and decreased filter ventilation—have been shown in experimental studies to have only modest effect on product appeal among U.S. smokers, at least when considered in isolation from other product features. In contrast, reductions in nicotine levels and mentholation have been shown in experimental studies in both the United States and the United Kingdom to have a stronger effect on reducing product appeal. In consumer research studies, product appeal has also been shown to be reduced by cigarette packs with large graphic warning labels or in plain packaging.

In countries that have required large graphic health warnings or plain packaging on cigarette packs, product appeal has been shown to be reduced, and it has promoted quitting behaviors. Some people who have continued to smoke have taken steps to conceal or avoid exposure to the graphic health warnings, for example, with the use of stickers or branded containers. While these strategies subvert the intent of the law (to reduce

the use of tobacco), they are an alternative to participation in the illicit tobacco market.

On the question of reducing menthol in cigarettes, the research has been limited to consumer surveys and short-term laboratory studies of U.S. smokers using nonmentholated products. That research suggests most smokers would consider legal alternatives, including switching to a nonmentholated cigarette or quitting. Some may choose some kind of self-mentholation technology if the option is available. This research also indicates that highly addicted smokers and daily users would be more likely than other smokers to seek mentholated cigarettes through the illicit market.

On the effect of reducing nicotine levels in cigarettes, studies have shown mixed results on smokers' use and preferences for very low nicotine cigarettes. Some studies have found that most smokers indicate they intend to quit rather than to seek alternative products. Other studies have found that smokers are able to tolerate substantial reductions in nicotine with little to no change in individual cigarette consumption. There are several new research initiatives under way on this issue, and more definitive findings are anticipated.

When product appeal declines, consumers face three options: quit smoking, switch to a legal alternative, or seek a more appealing product from the illicit market. Unlike the current situation, in which the illicit U.S. market reflects only tax differences, a market in banned products would necessarily involve large-scale smuggling from outside the country or illegal domestic manufacturing. Little research has attempted to understand what factors motivate suppliers of illicit tobacco and what factors contribute to the mobilization of supply networks. Because aggressive policies on tobacco products are new in the countries that have adopted them, there have been few studies of their effects on illicit markets. Research on the emerging effects of regulatory actions in other countries, such as Brazil's pending ban on tobacco additives (including menthol), could provide guidance for the United States.

The regulatory task and the prediction of market response are complicated by the relatively recent emergence of electronic nicotine delivery systems (e.g., e-cigarettes), which are expected to eventually fall under the regulatory authority of the FDA. E-cigarettes have been promoted as a safer alternative for delivering nicotine to smokers than conventional products because they deliver nicotine to the user through vaporization of a nicotine solution rather than by burning tobacco. While they appear to be less harmful to one's health than cigarettes, research is just beginning to investigate the impact of e-cigarettes on public health. The prevalence of e-cigarette use has grown rapidly, especially for adolescents, raising concerns about the public health implications of wide adoption of these products. At present, research about the efficacy and safety of e-cigarettes as an aid for smoking

cessation is limited to a small number of trials and small samples. Little is known about the possible impact of e-cigarettes as a gateway product to conventional cigarettes, and subsequent nicotine addiction, among youth or other nonsmokers. Similarly, little is known about the possible effects of the growing popularity of e-cigarettes on the existing or potential illicit tobacco market. However, e-cigarettes (and other emerging technologies for the delivery of nicotine) have the potential to be viable alternatives for some smokers in the future if there is a ban on menthol or if there are regulations that reduce nicotine in conventional cigarettes.

Overall, the limited evidence now available suggests that if conventional cigarettes are modified by regulations, the demand for illicit versions of them is likely to be modest. Some smokers may quit, and demand may also be diminished by the possibility that smokers will continue to use modified products or seek legal alternatives. Although some smokers may seek more appealing illicit products if available and accessible, this would require established distribution networks and new sources of product (which would either have to be smuggled from other countries or produced illegally) to create a supply of cigarettes with prohibited features. In addition to the possible difficulties of making such products available, the profit potential of a new type of illicit tobacco market would be limited by the availability and development of legal products that are close substitutes, as well as the robustness of enforcement.

In summary, however, there is insufficient evidence to draw strong conclusions about how the illicit tobacco market would adapt in response to permanent modifications to tobacco products as the result of any new regulations.

RECOMMENDATIONS FOR RESEARCH AND DATA COLLECTION

In order to better understand the nature of existing illicit tobacco markets and the ways in which they may evolve in the future, additional research and improved data are needed across a broad range of issues. The research and data collection recommendations listed below are numbered according to the report chapter in which they are presented and discussed.

RECOMMENDATION 2-1 Better information about the illicit tobacco market is needed to more accurately measure accounting profits of tobacco smugglers. For example, data could be systematically collected on the prices at which untaxed cigarettes are sold on the wholesale and retail levels, perhaps similar to the way in which the U.S. Drug Enforcement Agency collects information on heroin prices in large cities through its Domestic Monitoring Program, a component of the System to Retrieve Information from Drug Evidence (STRIDE) Program.

RECOMMENDATION 2-2 Research is needed on the extent to which consumer preferences explain why the United States appears to be less affected than other countries by large-scale smuggling of brand cigarettes and by counterfeit cigarettes and illicit whites. Research that directly tests the appeal and acceptability among U.S. consumers of a representative selection of non-American blend cigarettes, chosen from major international markets and Indian reservation producers, would shed light on this issue.

RECOMMENDATION 3-1 Research and data are needed about the individuals and criminal networks who traffic in illicit tobacco in the United States. A deeper understanding of these individuals and networks (criminal histories, motives, ties to organized crime, financing mechanisms, links to adjacent markets, etc.) would provide valuable knowledge about the supply chain and illicit procurement paths and the ways in which they may evolve in the future. Qualitative approaches should be complemented with quantitative approaches to measuring supply-side participation in illicit markets, such as surveys of retail store owners, wholesalers, and stamping agents; and systematic data collection (with the assistance of enforcement and regulatory agencies) on items such as the number of licensed and unlicensed sellers in a market, location of sellers, and numbers of violations. Specific questions could be asked about such topics as the nature of their sales and where, from whom, and for how much they purchase cigarettes for resale. Since sellers might be hesitant to reveal their participation in the illegal market, survey techniques aimed at soliciting true participation in stigmatized activities would need to be used.

RECOMMENDATION 3-2 Because youths under the age of 18 are of particular concern to policy makers, research is needed about the extent to which they purchase cigarettes in the illicit market and how easily they do so. The National Youth Tobacco Survey should add items that would clarify the nature of the "other commercial sources" that have become more prevalent in recent years.

RECOMMENDATION 4-1 The Tobacco Use Supplement to the Current Population Survey should be expanded in both the number of questions and specificity of questions currently asked regarding tobacco use and illicit tobacco market participation. The survey should continue to include questions that garner information about price paid and location and place of purchase; it should add questions on frequency of purchase at certain locations, last purchase location and price, and nature of the purchase (i.e., licit or illicit). Other questions that should

be added would cover the particular factors contributing to one's seeking out lower-priced products and what price levels might influence a consumer's decision to switch between the legal and illicit markets.

RECOMMENDATION 4-2 A large-scale pack swap survey that is representative of the U.S. population should be conducted. This survey could be integrated into a current nationwide survey capable of also providing state-level estimates, such as the Tobacco Use Supplement to the Current Population Survey, so that questions regarding a customer's last purchase would be coupled with a pack swap component that would allow researchers to examine stamps and markings to determine if appropriate taxes were paid, and conduct an analysis of the product's design characteristics and chemistry in order to determine if counterfeits or illicit whites had entered the market.

RECOMMENDATION 4-3 Methods should be improved in order to better differentiate between tax evasion and tax avoidance. More accurate estimates of the size of the illicit market separately attributable to tax avoidance and tax evasion could be obtained by combining more systematic data collection on discarded packs in states with significant illicit trade with (1) an expansion in the number and specificity of questions currently asked in representative population surveys regarding tobacco use and illicit tobacco market participation and (2) a large-scale pack swap survey that is similarly representative of the U.S. population.

RECOMMENDATION 6-1 Because an appropriately scaled and well-targeted enforcement effort against the illicit tobacco trade requires systematic data on the array of current efforts, the U.S. federal government should assemble and publish a periodic report on indicators of the extent of bootlegging, international smuggling, and illicit production, together with indicators of enforcement activities by the relevant federal agencies. The federal government should also consider developing a voluntary reporting system by state and local governments.

RECOMMENDATION 6-2 Systematic evaluations should be conducted of existing and future enforcement interventions in the illicit tobacco trade in the United States. State- and local-level efforts, such as the tobacco task force led by the New York City Sheriff's Office, should be evaluated by independent researchers.

RECOMMENDATION 8-1 Research is needed to examine how smokers respond to the permanent loss of specific product features that they have previously found desirable, as a result of bans and restric-

tions on key constituents and additives as well as changes to packaging. Research should assess consumers' intentions to seek products with banned features through the illicit market in comparison with other options, such as quitting and using alternative products. Factors that promote individual variation in response should also be examined.

RECOMMENDATION 8-2 Research is needed on the relationship between the use of e-cigarettes and the use of conventional tobacco products and on the role of e-cigarettes as an alternative to participation in the illicit tobacco market. Longitudinal studies are needed to understand the dynamics of the relationship and to determine the extent of full substitution of e-cigarettes compared with dual use or reversion to conventional products. Such work will require improvements to sources of data, including unique coding for e-cigarettes in international commerce. Furthermore, although some current surveys include questions on e-cigarette use and awareness, more detailed questions are needed on factors that affect use and their relationship to the use of conventional cigarettes.

RECOMMENDATION 8-3 The paucity of studies on the supply side of the illicit tobacco market presents challenges for research, and creative methodologies will be needed. One potential source of needed information may come from reviews of analogous markets, perhaps in other countries, where existing products have been removed from the market, but similar or related products continue to be available in legal commerce, to determine what factors influenced the emergence of illegal supply.

1

Introduction

Many factors, both in the United States and elsewhere, give rise to illicit tobacco markets. Cigarettes in the United States and most other countries are subject to high taxes, which create incentives for tax evasion and tax avoidance. Although high tax margins may provide an initial incentive for smuggling and other evasion schemes, other factors—such as the ease and cost of operating in a country, corruption, and the strength of border controls—are also important contributors (Merriman et al., 2000; Joossens et al., 2010, pp. 1,642, 1,646). Illicit tobacco markets can deprive governments of revenue and undermine public health efforts to reduce tobacco use.

CONTEXT AND COMMITTEE CHARGE

The illicit trade refers to "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" (World Health Organization, 2013a, p. 6; see also Family Smoking Prevention and Tobacco Control Act of 2009 [P.L. 111-31]). Unlike some other illicit or illegal[1] products, the illicit tobacco market exists in the context of legal markets, and the product itself, tobacco, is not illegal. Thus, in order to understand the illicit market, one has to consider the context of the legal market and the relationship of the two markets.

[1] Although there can be differences in the use of these two terms, they are used interchangeably in this report. Similarly, "licit" and "legal" are used interchangeably.

As discussed further below, the U.S. Food and Drug Administration (FDA) does not have the authority to levy taxes or enforce tax compliance, but it does have the authority to regulate tobacco products so as to improve public health. Such regulations may have an effect on consumer behavior: if the FDA issues product regulations, consumers, in response, may quit smoking, continue using the modified product, switch to a licit alternative, or switch to an illicit product (e.g., the original product, obtained illicitly).

Figure 1-1 presents a model of the dynamic interactions among consumers, licit markets, and illicit markets. The model illustrates that the magnitude of the change in product appeal before and after any given regulation will affect an individual's choice of the four potential alternatives for tobacco use. The model shows a dynamic state in which complex combinations of product-level factors interact with the characteristics or preferences of individual users to determine the overall appeal of a product. The model also shows the supply- and demand-based moderators that could influence

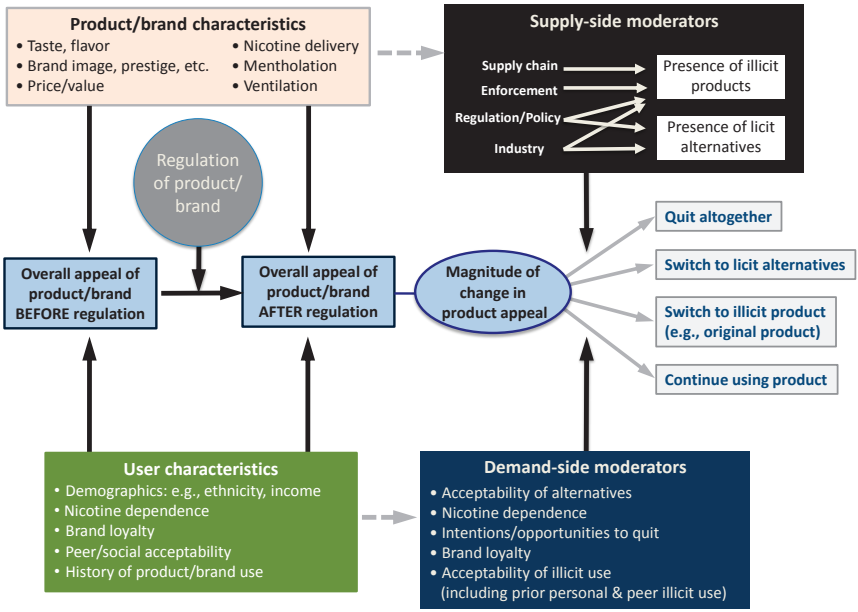

FIGURE 1-1 Model of factors that influence consumer participation in the illicit tobacco market.
NOTE: Moderators are factors that affect the likelihood that the user will make a particular choice.

BOX 1-1
Statement of Task

The Committee on Law and Justice (CLAJ) in the Division of Behavioral and Social Sciences and Education (DBASSE) of the National Research Council (NRC), in collaboration with the Board on Population Health (BPH) of the Institute of Medicine (IOM), shall convene a committee of approximately fifteen members to assess the scope of the international illicit tobacco market, including demand, structure, volume, variations by country and the impact of changes on policy. The committee shall examine existing literature and consult international experts on the illicit tobacco market. The committee may also examine specific case studies to assess various policy mechanisms and the impact on the illicit trade in tobacco products. The report shall include committee recommendations about the strengths and weaknesses of the currently available research and the applicability of international experiences to the illicit tobacco market in the United States.

the likelihood that a consumer will engage in the illicit market or pursue other product use options.

Because tobacco product regulation could engender illicit markets, particularly for products that would no longer be legal, the FDA has joined with others in the policy and public health communities to study the factors that are likely to determine the extent of such illicit markets and to encourage the development of a research agenda to improve understanding of these factors.

An understanding of illicit markets is important to FDA's regulatory mission since such markets are among the potential "unintended consequences" that may arise in pursuit of FDA public health goals. To that end, the FDA asked the National Research Council (NRC) and the Institute of Medicine to assess and evaluate the state of knowledge on the global illicit tobacco market, with an emphasis on the lessons that can be learned by the United States.[2] The NRC appointed the Committee on the Illicit Tobacco Market: Collection and Analysis of the International Experience to carry out this task; Box 1-1 represents the specific charge to the committee.

As illustrated by Figure 1-2 and Table 1-1, the diversion of tobacco products into the illicit market can take place in various ways, and the different pathways of diversion can vary in the taxes and fees that are avoided.

[2]Because the illicit tobacco trade largely coincides with the illicit trade in cigarettes, the committee report uses the terms "tobacco" and "cigarettes" interchangeably.

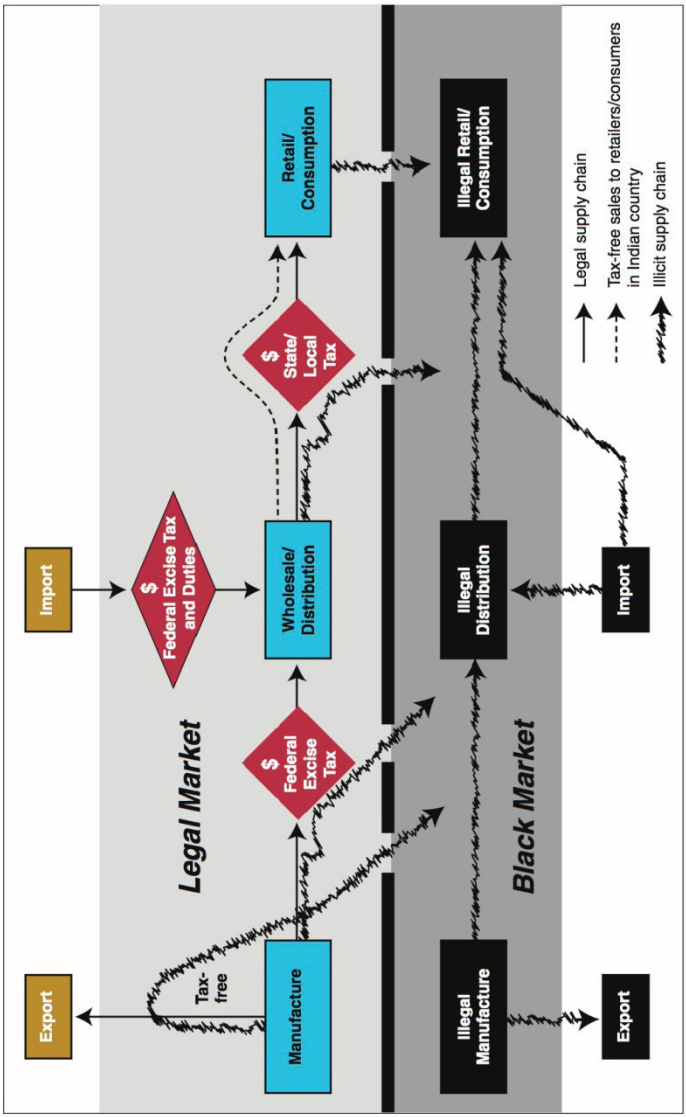

FIGURE 1-2 Opportunities to divert tobacco products into illicit markets.
NOTES: Some domestic websites sell cigarettes that people purchase in a low-tax jurisdiction and resell in a high-tax jurisdiction. Some websites also sell "duty-free" cigarettes (see Ribisl et al., 2001) where the federal excise tax was not paid.
SOURCE: U.S. Government Accountability Office (2011, p. 15).

TABLE 1-1 Illicit Trade Pathways to Evade Taxes and Fees

		Taxes and Fees Avoided			
Relationship to Supply Chain	Examples of Illicit Trade Schemes	Customs Duties	Federal Excise Taxes	State and Local Excise Taxes	MSA/Escrow Payments Under the Master Settlement Agreement (MSA)[a]
Import	▪ Smuggling genuine or counterfeit cigarettes into the United States ▪ Purchasing cigarettes from foreign Internet websites without appropriate payment of tax	√	√	√	√
Export	▪ Diverting export-only cigarettes into U.S. commerce	n/a[b]	√	√	√
Manufacture	▪ Manufacturing cigarettes in the United States without a license ▪ Underreporting cigarette production to federal government	n/a	√	√	√
Wholesale/ Distribution	▪ Purchasing tobacco products from wholesaler in one state for illegal transportation and resale in another state ▪ Underreporting tobacco product sales to state governments	n/a	Paid	√	√

continued

TABLE 1-1 Continued

Relationship to Supply Chain	Examples of Illicit Trade Schemes	Taxes and Fees Avoided			
		Customs Duties	Federal Excise Taxes	State and Local Excise Taxes	MSA/Escrow Payments Under the Master Settlement Agreement (MSA)[a]
Retail	▪ Purchasing tobacco products from retailer in one state for illegal transportation and resale in another state ▪ Purchasing cigarettes in Indian country for resale to nontribal members ▪ Purchasing cigarettes from domestic Internet websites without appropriate payment of tax	n/a	Paid	√	√
Other	▪ Underreporting cigarette sales to MSA states	n/a	Paid	Paid	√

NOTE: In some wholesale/distribution and retail schemes, state excise taxes are paid in the state where the tobacco products are purchased but unpaid in the state where the tobacco products are illicitly resold.
[a]See Box 1-3 for a discussion of the Master Settlement Agreement.
[b]n/a = not applicable.
SOURCE: U.S. Government Accountability Office (2011, p. 16).

FDA AUTHORITY AND RESPONSIBILITIES

The Family Smoking Prevention and Tobacco Control Act of 2009 (known as the Tobacco Control Act) gave the FDA comprehensive authority to regulate the manufacturing, marketing, and distribution of tobacco products. Among other things, the law restricts cigarettes and smokeless tobacco retail sales and tobacco product advertising and marketing to youth;[3] requires bigger, more prominent warning labels for cigarettes and smokeless tobacco products; and authorizes the FDA to require standards for tobacco products (e.g., tar and nicotine levels) as appropriate for the protection of public health (U.S. Food and Drug Administration, n.d.). Three key sections of the act have particular significance because they provide authority to FDA to regulate specific features of products to reduce consumer demand and reduce harms: product standards (Section 907), new products and substantial equivalence (Section 910), and modified risk tobacco products (Section 911). The FDA's authority over product standards gives it the power to prohibit or restrict allowable levels of the substances, constituents, and additives that are delivered in finished tobacco products. As long as nicotine levels are not set to zero, the FDA could, in principle, render tobacco products non-addictive by mandating reductions in the nicotine content.

The Tobacco Control Act gives the FDA direct authority over cigarettes, cigarette tobacco, roll-your-own tobacco, and smokeless tobacco, and it enables the FDA to use its rule-making process to assert jurisdiction over other products that are made or derived from tobacco but do not qualify as drugs. In April 2014, FDA issued a proposed rule to extend its tobacco authority to other products, including cigars, pipe tobacco, hookah, and electronic cigarettes. The emergence of electronic cigarettes (or e-cigarettes) as an alternative to conventional cigarettes is discussed in Chapter 8. The law also has a section on the illicit trade that requires the FDA to promulgate record-keeping regulations for the tracking and tracing of tobacco products through the distribution system. However, the Tobacco Control Act does not authorize the FDA to tax tobacco products (U.S. Food and Drug Administration, n.d.).

In addition to the Tobacco Control Act, the key federal laws that address the illegal tobacco trade and product diversion are the Jenkins Act, the Contraband Cigarette Trafficking Act, the Prevent All Cigarette Trafficking Act of 2009 (PACT Act), and the Family Smoking Prevention and Tobacco Control Act (Alderman, 2012): see Box 1-2. The enforcement of these laws is largely the responsibility of the Bureau of Alcohol, Tobacco,

[3]The law directs the FDA to issue regulations that, among other things, ban the sale of packages of fewer than 20 cigarettes and limit the color and design of packaging and advertisements.

BOX 1-2
Key Federal Laws Addressing the Illicit Tobacco Trade

Jenkins Act

The Jenkins Act of 1949 requires any person who sells cigarettes across a state line to a buyer, other than a licensed distributor, to report the sale to the buyer's state tobacco tax administrator. Compliance enables states to collect cigarette excise taxes from consumers. Failure to comply with the Jenkins Act's reporting requirements is a misdemeanor offense, and violators are to be fined not more than $1,000, or imprisoned not more than 6 months, or both (U.S. Department of the Treasury, 2010). However, prior to the passage of the PACT Act, the Jenkins Act was rarely enforced by the federal government, though some states were successful in using it to combat cigarette purchases over the Internet by state residents (Chaloupka et al., 2011; Alderman, 2012).

Contraband Cigarette Trafficking Act

Enacted in 1978 (and amended in 2006), the Contraband Cigarette Trafficking Act makes it a felony for any person to ship, transport, receive, possess, sell, distribute, or purchase more than 10,000 cigarettes (500 packs) per month that bear no evidence of state cigarette tax payment in the state in which the cigarettes are found. The maximum penalty for violating this law, a felony crime, is 5 years in prison and a fine (U.S. Department of Justice, 2009). The act also contains record-keeping requirements for any person who ships, sells, or distributes more than 10,000 cigarettes or 500 single-unit cans or packages of smokeless tobacco in one transaction. Violations of reporting requirements, including failure to document the name, address, destination, and vehicle license number of the purchaser, can result in a fine or up to 3 years' imprisonment.

Prevent All Cigarette Trafficking Act

The Prevent All Cigarette Trafficking Act (PACT Act) of 2009 was intended to regulate Internet cigarette sales and close gaps in the Jenkins Act. The act des-

Firearms and Explosives in the U.S. Department of Justice, the Immigration and Customs Enforcement and Customs and Border Protection agencies in the U.S. Department of Homeland Security, and the Alcohol and Tobacco Tax and Trade Bureau in the U.S. Department of the Treasury. In additional, states and localities can enact and enforce laws that govern the illicit tobacco trade. For example, every state has laws with civil and criminal consequences for possessing, transporting, or selling illicit cigarettes. The agencies that enforce these laws are also varied and range from public health and tax and revenue departments to sheriff's offices and local

ignates cigarettes and smokeless tobacco as U.S. Postal Service "nonmailable" materials. It applies reporting requirements for tobacco taxes to sales, advertising of sales, and the shipping and transporting of cigarettes and smokeless tobacco; regulates (and imposes record-keeping requirements regarding) the mailing of tobacco products from sellers to customers, including requiring Internet and mail-order sellers to pay all applicable federal, state, local, or tribal tobacco taxes, affix tax stamps before delivery, and check the age and identification of customers at purchase and delivery; authorizes the Bureau of Alcohol, Tobacco, Firearms and Explosives to enter the business premises of delivery sellers and inspect their records and any cigarettes or smokeless tobacco stored at such premises; and expands the powers of state, local, and tribal governments, giving any of these entities that charge a tobacco tax broad enforcement powers and making preemption issues less likely.

The PACT Act imposes a fine or prison term of up to 3 years for violators and increases civil penalties for delivery sellers to the greater of $5,000 for a first violation or $10,000 for any other violation; or 2 percent of the gross sales of cigarettes or smokeless tobacco of the delivery seller during the 1-year period ending on the date of the violation. The penalties for a common carrier or other delivery service are $2,500 for a first violation or $5,000 for any violation within 1 year of a prior violation (see Alderman, 2012). The recommended maximum penalties for violations of the Jenkins and PACT Act are lower than federal penalties for violations of major drug trafficking offenses, but they are roughly comparable to recommended sanctions for trafficking in schedule V drugs (standard prescription drugs), which are currently up to 1 year in prison or a $100,000 fine for a first offense and no more than 4 years or a $200,000 fine for a second offense.

Family Smoking Prevention and Tobacco Control Act

The Family Smoking Prevention and Tobacco Control Act of 2009 authorizes the FDA to regulate tobacco products. Title III of the law, which deals with tobacco smuggling, sets forth new requirements for labeling, inspection, and records to track merchandise (see Alderman, 2012).

tax boards. The 1998 agreement to settle tobacco-related lawsuits and to recover costs associated with smoking-related illnesses, commonly referred to as the Master Settlement Agreement (MSA), also has implications for cigarette prices and the illicit trade: see Box 1-3.[4]

[4] According to the U.S. Government Accountability Office (2011), MSA and escrow fees are passed on to the consumer. Based on a cigarette pack bought for $13 in New York City in 2010, these payments amount to $0.56 per pack or roughly 4.3 percent of the price.

BOX 1-3
The Master Settlement Agreement and the Illicit Tobacco Trade

Forty-six states, the District of Columbia, and five U.S. territories reached an agreement with the four largest U.S. tobacco companies in 1998 to settle tobacco-related lawsuits and to recover costs associated with smoking-related illnesses: this agreement is commonly referred to as the Master Settlement Agreement (MSA). Since 1998, roughly 50 other cigarette manufacturers have signed on to the agreement as participating manufacturers.

The agreement requires tobacco manufacturers to pay approximately $195.9 billion to the signatory states by 2025, with additional payments continuing after 2025. Payments increase annually to account for inflation, with a minimum increase of 3 percent per year; payments are reduced when participating manufacturers' combined U.S. cigarette sales or their combined percentage share of the total U.S. cigarette market falls below 1997 levels (Campaign for Tobacco-Free Kids, 2003). The U.S. cigarette sale levels used to calculate settlement payments from participating manufacturers to the states are based on the quantity of tobacco products for which federal excise taxes were paid. Cigarettes diverted to the illicit market, which evade federal excise taxes, are not counted in total cigarette sales, thereby reducing manufacturers' payments. For example, the Massachusetts Attorney General's Office estimates that for every 1 million federally untaxed cigarettes in his state, the state loses about $1,000 of its MSA payment (Massachusetts Commission on Illegal Tobacco, 2014).

As part of the agreement, 46 states, the District of Columbia, and five U.S. territories enacted a "qualifying statute." The statute requires nonparticipating manufacturers (NPMs)—those who did not sign the MSA—to make annual payments into a qualified escrow account. The escrow payments effectively eliminate any cost advantage NPMs would have against participating manufacturers and ensures that the NPMs bear some burden for the health costs that cigarette smoking imposes on states. The payment amounts are based on the quantity of product for which each state collects excise taxes. Therefore, cigarettes for which state excise taxes are not collected are not counted in the cigarette sales numbers used to determine each state's escrow payment.

The qualifying statute also contains language requiring states to "diligently enforce" this statute; failure to do so makes states potentially liable for reductions in their settlement payments from participating manufacturers, known as the "NPM adjustment" (Campaign for Tobacco-Free Kids, 2003). If the participating manufacturers' lost market share is a result of lax enforcement of escrow payments (i.e., states are not diligently enforcing the enacted qualifying statutes), participating manufacturers can claim they are entitled to an NPM adjustment. In an arbitration regarding such claims, participating manufacturers charged a number of states with not enforcing escrow payments on nontaxed cigarette sales. They argued that smuggled products for which escrow is not paid entitled them to payment reductions. The arbitrators found in favor of some states but against others, and several states settled. Thus, states may have an additional incentive to bolster enforcement and reduce cigarette tax avoidance and evasion in order to reduce the risk of an elimination or reduction in their annual MSA payments through litigation (Massachusetts Commission on Illegal Tobacco, 2014).

TAX AVOIDANCE AND TAX EVASION

In contrast with many other commodities, taxes comprise a substantial proportion of the retail price of cigarettes in the United States and most other nations. Cigarette taxation is a powerful, straightforward, and widely used way for governments to raise the price that consumers pay for cigarettes. From a purely economic standpoint, taxes that raise the price of cigarettes are socially desirable in that they discourage smoking while at the same time generating government revenues. However, this can also create incentives for tax avoidance and tax evasion.

Tax avoidance consists of legal activities and purchases—mostly by individual tobacco buyers—that are in accordance with customs and tax regulations (International Agency for Research on Cancer, 2011, p. 298). It includes cross-border shopping, tourist shopping, duty-free shopping, and Internet and other direct purchases (e.g., through the mail or over the phone). Tax avoidance typically involves consumers who legally purchase tobacco for their own use from a jurisdiction with lower taxes than their home jurisdiction.

For example, consumers can travel to nearby states, provinces, or countries with relatively low taxes to pay lower prices for tobacco for their own use.[5] Typically, jurisdictions determine whether or not a tobacco purchase is for personal consumption using quantity rules (e.g., two cartons). Consumers can also avoid paying higher taxes in duty-free shops or on Native American reservations (in the United States) and Native reserves (in Canada), where some or all taxes are not levied. Manufacturers may also change product characteristics or descriptors in an attempt to pay lower excise taxes: for example, some U.S. small cigar manufacturers began producing heavier cigars by adding weight to the filter in order to qualify for the lower tax rate on large cigars.

Tax evasion consists of illegal methods of circumventing tobacco taxes. It may be undertaken by individuals as well as by criminal networks or other such organizations or entities. It includes small-scale smuggling (commonly referred to as bootlegging), large-scale smuggling, and illegal production (International Agency for Research on Cancer, 2011, pp. 298-299). Bootlegging refers to the legal purchase of cigarettes in one jurisdiction and their consumption or resale in another jurisdiction without the payment of applicable taxes or duties (Merriman et al., 2000, p. 366). Large-scale smuggling occurs when cigarettes are sold without the payment of

[5] Although many states require purchasers to pay a "use tax," usually assessed on out-of-state purchases, as well as on items ordered through the mail, by phone, or over the Internet from other states, that use tax is typically assessed at the same rate as all applicable taxes, including excise and sales taxes, that would have been owed had the same goods been purchased in the purchaser's state of residence.

any taxes or duties, even in the country of their origin (Merriman et al., 2000, p. 366). Illegal production involves the manufacturing of cigarettes in violation of the law: the main forms of illegal production are unlicensed or underreported production of legitimate tobacco products and the production of counterfeit cigarettes (where brand labels are used without the permission of the trademark owner).

Tax evasion can also include smaller-scale efforts, such as individuals' purchase of tobacco products online without paying their jurisdiction's sales and excise taxes or individuals' purchase of tobacco products from neighboring lower-tax jurisdictions that exceed permitted quantities. In the latter situation, consumers may not be aware that they are purchasing more than the legally allowed amount of out-of-state cigarettes, or that appropriate taxes on Internet sales have not been paid.[6] Many activities that may appear to be tax avoidance would technically be regarded as tax evasion—albeit on a small scale—given that most states have use taxes that require consumers to pay the appropriate local tax (or the difference between local tax and the tax they paid), though those taxes are little advertised and rarely enforced.[7] The situation is a bit different in other parts of the world. In the European Union (EU), for example, there are fairly generous allowances on how much someone can buy in a lower-tax jurisdiction for consumption at home.[8]

The illicit trade that is of more concern to policy makers involves larger-scale and longer-distance smuggling of tobacco products across tax jurisdictions in order to evade paying taxes; the net social returns from reducing large-scale smuggling are almost certainly higher than from reducing individual tax evasion. In the United States, cigarette taxes vary widely across states, and smuggling operations have exploited these differences, particularly along the I-95 corridor in the eastern United States. In this area, cigarettes are purchased in large quantities in a low-tax state and transported for resale in a higher-tax state. Similar operations can exploit differences between countries.

[6] Y. Chen (2008) notes: "[O]nce the [cigarette] packs are delivered, few consumers remit the owed taxes. . . . Some do not realize they are still required to pay taxes on Internet purchases, while others take a more generally cavalier attitude toward the law."

[7] As described in Box 1-2 (above), the Jenkins Act (as amended by the PACT Act) imposes federal tax reporting requirements on vendors.

[8] Cigarettes for which duty and tax have been paid in one EU member state can be brought to another member state in unlimited amounts as long as they are for personal use or as a gift. However, under EU law, customs officers may ask questions and carry out checks if they believe the goods may be for commercial use. The EU directive mandates that the levels that trigger the questioning must not be lower than 800 cigarettes, but member states can set a higher threshold level for customs checks. See Article 32, Council Directive 2008/118/EC, available: http://www.hmrc.gov.uk/customs/arriving/arrivingeu.htm#1 [January 2015].

Both tax avoidance and tax evasion reduce the overall amount of revenue generated by a given tobacco tax in high-tax jurisdictions,[9] and they also mitigate the positive effects of tobacco taxes on cessation of tobacco use. Whether or not consumers avoid or evade taxes is an important distinction, and this report—like most discussions of illicit trade—is primarily interested in the latter. Unfortunately, the evidence from most studies reflects a combination of tax avoidance and tax evasion. It is often very difficult to discriminate between smuggled goods, legal cross-border purchases, and illegal cross-border purchases. For example, current survey questions are not detailed enough to distinguish between low-tax cigarettes acquired through formal and informal channels. And studies that are based on discarded cigarette packages (see Chapter 4) that have out-of-state tax stamps cannot distinguish among tax avoidance, tax evasion, tourism, and commuting patterns.

Recent estimates indicate that about 11.6 percent of global cigarette consumption is illicit—or 657 billion illicit cigarettes annually (Joossens et al., 2010). Using its own calculations and reasonable estimates derived from other methods, the committee determined that the percentage of the total market represented by illicit sales in the United States is between 8.5 percent and 21 percent. Nationally, the percentage represents 1.24 to 2.91 billion illicit packs of cigarettes. Of course, the illicit tobacco market is not evenly distributed across the country. It may be as high as 45 percent in high-tax states, such as New York and Washington, while in other states participation in the illicit tobacco market appears to be extremely low (see Chapter 4).

The illicit tobacco trade, like most illicit activity, is dynamic in nature. For example, according to Joossens and Raw (2012), 25 years ago the global illicit trade was dominated by the large-scale smuggling of cigarettes: containers of cigarettes were exported (legally and duty unpaid) only to then disappear into the contraband market. Since then, however, the illegal production of cigarettes has become an increasingly important component of contraband activity in many parts of the world, and policy measures that may have effectively addressed the smuggling of legally manufactured cigarettes in the 1990s may be less effective in dealing with problems of counterfeit and other illegally produced cigarettes.

[9] Although revenues will be higher in low-tax jurisdictions because of avoidance and evasion, the magnitude of this increase will be smaller than the magnitude of the revenue decline in high-tax jurisdictions.

LOST LIVES AND LOST REVENUES

The adverse health impacts of tobacco use are well documented and indisputable (Institute of Medicine, 2007). More than 20 million Americans have died as a result of smoking since 1964. Most were adults with a history of smoking, but nearly 2.5 million were nonsmokers who died from heart disease or lung cancer caused by exposure to secondhand smoke. If smoking persists at the current rate among young adults in the United States, 5.6 million of today's Americans who are now younger than 18 years of age are projected to die prematurely from a smoking-related illness (U.S. Department of Health and Human Services, 2014, p. 1). Global figures are even more staggering. According to the World Health Organization, tobacco kills nearly 6 million people each year; 600,000 of those deaths are the result of the exposure to secondhand smoke by nonsmokers. If current trends continue, the global annual death toll could rise to more than 8 million by 2030 (World Health Organization, 2014).

Given the grave public health threat presented by tobacco use, governments worldwide and across localities have instituted measures to reduce or eliminate tobacco use among their citizens (e.g., higher taxes, bans on tobacco advertising, and public health warnings). The illicit tobacco trade undermines these tobacco control policies by increasing the affordability and accessibility of tobacco products (see, e.g., Chaloupka and Warner, 2000; Joossens et al., 2000; Carpenter and Cook, 2008; West et al., 2008; Joossens et al., 2010). For example, one study in the United Kingdom estimated that the price of smuggled tobacco products was about 50 percent of the duty-paid equivalent (West et al., 2008, p. 1028). The availability of these lower-priced cigarettes erodes the benefits of tobacco tax measures—and this takes on additional importance given that the price of cigarettes influences youth smoking to an even greater extent than it influences adult smoking (Chaloupka and Warner, 2000; Carpenter and Cook, 2008). It has been hypothesized that the supply of contraband cigarettes may have the effect of depressing cigarette prices across the board: one estimate is that eliminating the illicit tobacco trade would result in an average price increase of approximately 4 percent in all countries (Joossens et al., 2010). In addition, internationally smuggled cigarettes are less likely to carry appropriate health-warning labels (Joossens et al., 2000).

By undermining the effect of tax measures on tobacco product price and use, the illicit trade has resulted in greater accessibility and consumption of cigarettes, especially among poor people and young people; this, in turn, has increased smoking and tobacco-related diseases. One estimate is that eliminating the global illicit tobacco trade would save approximately 164,000 lives in 2030 and annually thereafter—with 32,000 lives saved in high-income countries and 132,000 in low- and middle-income countries

(Joossens et al., 2010). A similar study for the United Kingdom estimated that eliminating the illicit tobacco trade would result in an annual reduction of 4,000-6,500 smoking-related deaths every year (West et al., 2008).

The illicit tobacco market also results in the loss of government revenues. In the United States, these losses are especially incurred by the states: at least $2.95 billion were lost in state tax revenues in 2010-2011. However, this figure masks significant variation among states. Some, such as New Hampshire, see large tax revenue gains, while others, such as New York, see large tax revenue losses (see Chapter 4). On a global scale, it has been estimated that governments lose $40.5 billion a year due to cigarette smuggling (Joossens et al., 2010). Despite the revenue losses caused by tax evasion and avoidance, however, evidence from Canada, France, Sweden, and the United Kingdom suggests that higher taxes could still lead to increases in revenues (Joossens et al., 2000, pp. 400-402; International Agency for Research on Cancer, 2011). That is, even though tax avoidance and tax evasion might increase in response to higher taxes, the losses from those actions would be less than the gains from higher taxes.

THE ROLE OF THE TOBACCO INDUSTRY

As noted by the Institute of Medicine (2007, p. ix), the tobacco industry[10] has acted to impede and undermine various tobacco control measures:

> Although many social, economic, and political factors have played a role [in prolonging the tobacco problem], perhaps the most important one is that the tobacco industry obscured the addictive properties and health risks of smoking, impeded and delayed many tobacco control interventions, and has so far successfully thwarted meaningful federal regulatory measures.

The tobacco industry has also been at least partly complicit in the global illicit tobacco trade (see Chapter 3).[11] The smuggling of legally manufactured cigarettes is a way of introducing the industry's products into new markets and of expanding its share in existing markets. Moreover, one of the tobacco industry's principal arguments against increased tax rates and more stringent regulatory changes is that such measures will

[10] Although this report refers to the "tobacco industry," the committee recognizes that the industry is not a unitary actor, but rather consists of many firms with various interests. The committee also recognizes that tobacco companies may face substantial collective action problems in supporting political action in their common interests.

[11] Although many claims have been made regarding the relationship between the illicit tobacco trade and terrorism, the link between the U.S. illicit tobacco market and terrorism appears to be minor, and there is no systematic evidence of the ties that may exist between the global illicit tobacco trade and terrorism: see Chapter 3.

fuel the growth of the illicit tobacco market (see, e.g., Smith et al., 2013), although industry-sponsored estimates of the size of the illicit market tend to be inflated (see Chapter 4). More generally, concerns have been raised about the quality and transparency of industry-funded research on the illicit tobacco trade.[12]

Concerns over financial conflicts of interest apply not only to the research and the data provided by the industry on the illicit trade but also to the industry's relationship with law enforcement. The impartiality and objective disposition of law enforcement recently came into question when INTERPOL applied for observer status to the Conference of Parties (COP) to the World Health Organization Framework Convention on Tobacco Control. A recent partnership between INTERPOL and Philip Morris International (PMI), which involved PMI's contributing 15 million euros toward INTERPOL's Fund for a Safer World, raised concerns over potential financial conflict of interest. Specifically, the PMI donation was earmarked, in part, to coordinate information gathering, officer training, and the development of procedures to identify illicit products (Framework Convention Alliance, 2012). To many involved in tobacco control, the tobacco industry seemed oddly placed to support law enforcement activities when the industry itself had been complicit in such criminal efforts in the past. The donation cast a shadow over INTERPOL's application to the COP process and raised questions over its motivations, especially since the industry is not invited to nor is party to this intergovernmental negotiation process, and the COP process had recently resulted in a protocol to address illicit trade of tobacco.

The tobacco industry has also actively worked with law enforcement in the United States to combat the illicit trade—which has raised questions about the motivation for providing such assistance. As detailed in Chapter 3, although sales of counterfeit cigarettes result in financial losses for tobacco companies, the tobacco industry can still benefit from other aspects of the illicit tobacco trade.

LEARNING FROM ELSEWHERE

The illicit tobacco trade in the United States and across the world clearly has important consequences. Opportunities exist for governments to reduce the size of the illicit tobacco market by targeting particular points of diversion and, more generally, by undermining the conditions that make the

[12] For example, an examination of industry-funded studies on the potential impact of regulatory changes on the illicit trade, conducted by Transcrime of the Università Cattolica del Sacro Cuore in Milan, raised questions of neglecting contradictory evidence and making assertions not supportable by available evidence (Fooks et al., 2013).

illicit tobacco trade possible. An examination of international experiences demonstrates that many possible policy interventions and enforcement mechanisms can be implemented for this purpose—and that the challenges presented by the illicit tobacco trade are not unique or insurmountable.

Understanding international experiences with the illicit tobacco trade can provide important insights into the nature of the U.S. illicit tobacco trade, the challenges that may arise in the future, and the effectiveness of policy interventions that may be adopted in response to current and future challenges. If product regulation in the United States spurs demand for illicit products, the nation's illicit tobacco market could change significantly—producing new market characteristics (e.g., illegal imports may become more important relative to interstate bootlegging) and new points for intervention (e.g., border and customs enforcement may become more important relative to interstate coordination). The findings from international experience will contribute to understanding and responding to such changes in the United States.

ORGANIZATION OF THE REPORT

The remaining seven chapters of the report detail various aspects of the illegal tobacco market, the policy responses to it, and the data and research that may lead to deeper understanding of that market.

The next two chapters describe the supply and demand characteristics of the market. Chapter 2 explores some of the market's key features: the cigarette supply chain (with overlapping legal and illegal components), the major illicit procurement schemes, the role of price and nonprice factors in driving illicit trade, and the profitability associated with the illicit market. Chapter 3 turns to the participants in the market: criminal networks, the tobacco industry, terrorist organizations, and the users of illicit tobacco. Among consumers, youths represent a special case because for them, unlike for adults, all purchases of tobacco are illegal. Thus, issues relating to youth access to illicit tobacco are largely embedded in the context of access to legal tobacco.

Chapter 4 describes and assesses methodologies for estimating the size of the illicit tobacco market. It includes the committee's estimates of the size of the illicit market in the United States.

The next three chapters explore interconnected aspects of policy interventions in the illicit tobacco market. Chapter 5 looks to controlling the supply chain, tax harmonization, and public education campaigns. Chapter 6 focuses on law enforcement at the federal and state levels, with case studies of Virginia and New York. Chapter 7 turns to international case studies, considering the experiences of Spain, the United Kingdom, Canada, and the European Union in policy interventions.

Lastly, Chapter 8 considers the demand and supply responses to possible changes in tobacco products. Those include product design, menthol and other constituents of cigarettes, nicotine levels, health warnings, and packaging. The chapter also considers the role of e-cigarettes as an emerging alternative to traditional tobacco products.

Throughout the report, the committee offers recommendations for data collection and research that could further understanding of the illicit market today and its possible evolution in the future.

2

Characteristics of the Illicit Tobacco Market

Tobacco use has been described as a "complex system" that can be thought of in terms of "[t]he product, the person, and the tobacco producer," all of whom "operate in an environment of national-, state-, and community-level factors" (National Cancer Institute, 2007, pp. 13, 19). This chapter describes part of that complex system by exploring some of the key features of the illicit tobacco market. These features include the cigarette supply chain (with overlapping legal and illegal components) and major illicit procurement schemes, the role of price and nonprice factors in driving illicit trade, and the profitability associated with the illicit market. The chapter concludes with the committee's recommendations for research and data.

THE SUPPLY CHAIN AND ILLEGAL PROCUREMENT SCHEMES

Because there is both a legal and an illegal market for cigarettes, it is important to consider the intersections between legal and illegal supply chains, including where and at what scale leakages occur along the legal supply chain of cigarettes. The supply chain of illegal cigarettes is defined by how raw materials are transformed into cigarettes, how—through subsequent phases of packaging, transportation, and storage—these cigarettes are distributed to consumers, and how some, or all, of the phases in the supply chain involve some violation of laws.

The Legal Supply Chain

The schemes that characterize the illegal cigarette trade can be categorized with regard to the point in the supply chain at which the line between legal and illegal conduct is crossed. For this purpose, the legal supply chain of cigarettes can be broken down into five phases: preproduction, production, taxation/in-transit, wholesale, and retail.

Preproduction involves the cultivation, harvesting, and cutting of tobacco and the production of other intermediate products, such as paper and filter tips. Illegal schemes in this phase of the supply chain are rare given the absence of strict regulations in most jurisdictions: that is, given few laws, there are few ways to break them.[1] In the United States, the cultivation of tobacco and the production of other materials necessary for the manufacture of cigarettes, such as filter tips and cigarette paper, are not subject to licensing or other regulatory oversight aimed at curbing the illegal production of cigarettes.

Production involves the manufacturing of cigarettes, typically including packaging in packs of 20 sticks and in cartons of 10 packs (200 sticks). In the United States, manufacturers are required to obtain a license from the Alcohol and Tobacco Tax and Trade Bureau (TTB) of the U.S. Department of the Treasury prior to engaging in business operations.

Taxation involves the payment of taxes and other fees[2] on cigarettes. How this is done varies from jurisdiction to jurisdiction. In the United States, cigarette manufacturers must pay federal excise tax on cigarettes destined for the domestic market when the cigarettes leave the production facility. Cigarettes destined for export—known as "in-transit" cigarettes—are exempt from taxes until they are introduced into a market; in-transit cigarettes may be stored or transported for extended periods of time.

The wholesale phase involves the storage of bulk consignments of taxed cigarettes by wholesale dealers and the eventual distribution to retail dealers. State and local taxes (in addition to the federal excise tax) are commonly paid by wholesale dealers, who have to obtain and affix tax stamps on each pack (U.S. Government Accountability Office, 2011, p. 9).

The retail phase involves the retail sale of cigarettes to consumers. Illicit cigarettes may be sold in public places by street vendors; in semiprivate places, such as stores and bars; in private locations, such as private clubs or apartment buildings; and over the Internet. Although systematic evidence is lacking as to whether consumers of illicit tobacco are aware of the illegal nature of their purchases, anecdotal accounts suggest that consumers may

[1] Australia, where tobacco cultivation has been heavily regulated, is an exception. The Australian experience is discussed in Box 5-2, in Chapter 5.

[2] See the discussion of the Master Settlement Agreement (MSA) in Box 1-3, in Chapter 1.

not be completely ignorant about the legality of their behavior (von Lampe et al., 2014).

Although, as is discussed below, counterfeit cigarettes and "fake brand products" are a minor issue in the United States, the evidence suggests that consumers of illicit tobacco in low-income communities are fully aware that they are engaging in illicit behavior (see Chapter 3).

The Main Illegal Procurement Schemes

Four main schemes have characterized the illegal cigarette trade globally over the past two to three decades: bootlegging, large-scale smuggling, "illicit whites" (cigarettes that are legally produced under unique brand names or no brand name), and illegal production. Each of these schemes is linked to particular phases in the legal supply chain of cigarettes. As shown in Figure 2-1, the green represents the legal portion of the supply chain, and the red represents the illegal portion. In some cases, as discussed below, the green and red paths overlap because there is some variation in where exactly in the supply chain the diversion from legal to illegal takes place.

Bootlegging

Bootlegging, which is also sometimes known as small-scale smuggling, refers to the legal purchase of cigarettes in one jurisdiction and their con-

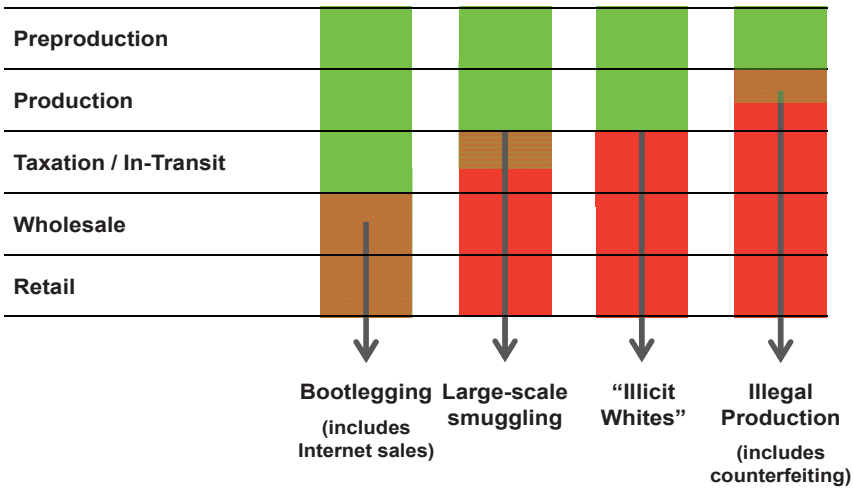

FIGURE 2-1 Phases of the cigarette supply chain.
NOTE: Green indicates a legal path, and red indicates an illegal path.

sumption or resale in another jurisdiction without the payment of applicable taxes or duties (Merriman et al., 2000, p. 366). Bootlegging, in its simplest form, involves the purchase of relatively small amounts of cigarettes from regular retail stores (in the retail phase of the legal supply chain). More sophisticated bootleggers buy cigarettes in bulk from legal wholesalers (in the wholesale phase of the legal supply chain). For example, in Virginia, bootleggers often use "smurfing schemes" in which individuals legally purchase cartons of cigarettes from retail or wholesale stores, and after a sufficiently large quantity of cigarettes has been collected the cartons are transported to high-tax jurisdictions. Accordingly, depending on the volume of business, bootlegging can range from "mom and pop" operations handling a few packs or cartons embedded in private cross-border movement to operations handling truckloads of cigarettes.

The illegal cigarette trade in the United States has traditionally been centered on domestic bootlegging, which is largely a result of different tax rates across U.S. jurisdictions. Bootlegging occurs primarily across state lines, with low-tax states such as Virginia and the Carolinas being the main sources. As discussed below, Native American tribal reservations have also been an important source of bootlegged cigarettes, especially in New York, which typically involves the use of minivans and cars by bootleggers to pick up the cigarettes and bring them to retail sellers in New York City (Guevara and Willson, 2008). A change in the legal framework in 2011, which made the sale of tax-free cigarettes to non-tribal members illegal, has shifted the supply back to interstate bootlegging (Kurti et al., 2012; Davis et al., 2013).

Large-Scale Smuggling

Large-scale smuggling occurs when cigarettes are sold without the payment of any taxes or duties, even in the country of their origin (Merriman et al., 2000, p. 366). Large-scale smuggling involves diversion of untaxed in-transit cigarettes to the illegal market. In these cases, tax-exempt cigarettes are obtained in bulk under the pretense of export trade directly from manufacturers or from wholesalers that supply international markets. It is important to note that "large-scale smuggling" refers *not* to the scale of the evasion activity, but to the systematic means by which it occurs: the committee uses this term because of its widespread usage and acceptance in discussions of the illicit tobacco trade. Although large-scale smuggling is also sometimes referred to as "wholesale smuggling," this evasion activity does not occur only at the wholesale phase of the supply chain.

The major difference between bootlegging and large-scale smuggling is the cost of procuring the cigarettes. In large-scale smuggling, no taxes or fees are paid on the cigarettes, which are usually obtained directly from the manufacturer at low factory rates. Large-scale smuggling, as the term

suggests, also typically involves purchases in bulk, by the truck or container load of several million cigarettes.

The diversion to the illegal market can take place at different phases in the supply chain. In one scheme, cigarettes are first properly exported and then illegally reimported and inserted into illegal distribution channels. In another scheme, false documents are used to indicate export, and the in-transit cigarettes are put directly into the domestic illegal market. Large-scale smuggling typically entails the use of businesses that appear as receivers of exported cigarettes and as senders and receivers of the shipments within which smuggled cigarettes are hidden. These businesses may be specifically set up by smugglers as a front for illegal activity, or they may be existing businesses that are also used for legitimate commercial activity.

Although legally produced U.S. cigarettes in transit to markets abroad could be diverted to the illegal market in the United States through export-reimport schemes, the committee did not find any evidence that such schemes play a major role in the domestic illegal market in the United States. The three major manufacturers in the U.S. tobacco industry—Philip Morris USA, R.J. Reynolds, and Lorillard—have also sold or separated from their international businesses and now focus on the U.S. market (U.S. Government Accountability Office, 2011, p. 5). Moreover, in a presentation to the committee, representatives of the U.S. Bureau of Alcohol, Tobacco, Firearms and Explosives (ATF) referred only to the past involvement of U.S. tobacco manufacturers in the diversion of cigarettes to European black markets. The case that came closest to the scenario of large-scale smuggling was that of a fourth-tier manufacturer falsifying shipping papers indicating that cigarettes were going to a Native American reservation to avoid the escrow deposits required of nonparticipating manufacturer as part of the Master Settlement Agreement (MSA),[3] when in fact the cigarettes were shipped to states where MSA payments were due.

As shown in Figure 2-1 (above), in the case of large-scale smuggling the licit and illicit portions of the supply chain can overlap. Untaxed (in-transit) cigarettes could be legally exported and be moved to a free-trade zone where they are then falsely labeled as a different type of good and smuggled to a destination country. In such a scheme, the first part of what happens in the in-transit phase is legal.

While domestic illegal production (discussed below) and large-scale smuggling of U.S.-made cigarettes do not currently represent major sources of illegal cigarettes, the United States has been and continues to be a destination country for illegal cigarettes from abroad. Those cigarettes have involved counterfeit versions of U.S. brands, genuine or counterfeit international brands, and unlicensed or unbranded cigarettes. In all of these

[3] See Box 1-3, in Chapter 1 for discussion of the MSA.

cases, contraband cigarettes, similar to other contraband (like illegal drugs), may enter the United States under the guise of international commerce or international noncommercial traffic, or they may be brought across the border clandestinely (outside of regular border crossings). In small amounts, contraband cigarettes may also be transported by mail or parcel service (von Lampe, 2011). Counterfeit cigarettes, particularly of foreign origin, have attracted recent attention due to intelligence collected and seizures conducted by ATF and the U.S. Immigration and Customs Enforcement (ICE) (totaling 24 seizures in fiscal 2013 and 124 in fiscal 2012),[4] as well as the discovery of several high-profile counterfeit smuggling rings among 87 people arrested in 2005 for smuggling hundreds of millions of sticks into the United States (U.S. General Accounting Office, 2004; T. Chen, 2008; U.S. Department of Homeland Security, 2013). Still, these illegal cigarettes do not seem to have a major impact on the illegal cigarette market in the United States, especially in comparison with the situation in Europe and other parts of the world (von Lampe et al., 2014).[5]

Given that global cigarette smuggling relies heavily on maritime container traffic, cargo security is particularly relevant in this respect (World Customs Organization, 2013). For example, under the Container Security Initiative (CSI), launched in 2002 in response to the 9/11 attacks, U.S. Customs and Border Protection staff are stationed at foreign seaports and work with local authorities to scrutinize containers bound for the United States (see Chapter 6). In 2013, there were 58 ports in 32 countries included in the CSI, which collectively accounted for more than 80 percent of the container shipments entering the United States (U.S. Government Accountability Office, 2013, pp. 9-10). This program is supported by the 24-Hour Manifest Rule, which requires that cargo manifest data be electronically filed with U.S. customs at least 24 hours before cargo destined for the United States is loaded onto a vessel at a foreign port (Cook, 2012, p. 172).

There are several possible explanations for why, in comparison with other destination countries for contraband cigarettes, the United States appears to be less affected by large-scale smuggling of brand cigarettes and by counterfeit cigarettes and illicit whites. First, although tobacco-specific border control efforts appear to be limited (see Chapter 6), general border

[4]ICE enforcement efforts are discussed in Chapter 6.

[5]For example, industry estimates cited in the media have placed the share of counterfeit cigarettes sold in New York City at about 2 percent (Crudele, 2010). According to another estimate by a cigarette manufacturer, which compares the prevalence of counterfeit cigarettes by world regions, the overall share of counterfeit cigarettes is about 2 percent in the Western Hemisphere, about 4 percent in the Asia-Pacific region, 7 percent in Africa and the Middle East, 12 percent in Western Europe, 49 percent in Eastern Europe, and 80 percent in China (British American Tobacco, 2010, p. 18).

control efforts to stymie illegal trade may deter the illicit tobacco trade,[6] especially because tobacco is bulky and therefore more easily detected than some other contraband.[7] Second, alternative paths for illicit trade inside the United States (e.g., bootlegging) require less complex organization and less investment than large-scale smuggling. As discussed below, other countries do not have the large tax differentials in relatively small geographic areas that exist in the United States, making domestic smuggling of legally produced, brand-name cigarettes unprofitable in other countries. As a consequence, imported contraband and counterfeits have a larger share of the illicit market abroad than they do in the United States.

A third factor could be the preferences of U.S. consumers for certain kinds of tobacco and cigarettes. American consumers tend to be accustomed to "American blend" cigarettes, which differ quite substantially in their chemosensory characteristics from blends used in many international markets. American cigarettes blend flue-cured bright with burley and oriental tobacco varieties to produce the desired basic flavor grade. Extenders, such as reconstituted tobacco sheet and expanded tobacco and stems, are typically combined with the blend to reduce costs. Flavor and sugar additives and humectants are introduced in the form of "casing," which is sprayed onto the tobacco blend in a fine mist. The addition of sugar is important to replace that lost during the air curing process. Further toasting of the burley tobacco produces the "Maillard-Browning" reaction that forms amino-sugar compounds, which contribute desirable flavor characteristics. In contrast, the majority of cigarettes produced in Canada, the United Kingdom, and Australia use a 100 percent flue-cured Virginia tobacco blend (World Health Organization, 2008). Even with the availability in the United States of many major foreign cigarette brands (usually from specialist tobacco retailers), foreign brands have failed to achieve any notable share of the domestic U.S. cigarette market. The historic preference of U.S. consumers for American blend cigarettes may be as important for overall levels of consumer demand as price differences and attempts to avoid or evade taxes. To understand this issue better, research would be needed that directly tests the appeal and acceptability of a representative selection of non-American blend cigarettes, chosen from major international markets, among U.S. consumers.

However, the illicit tobacco market in the United States could change significantly if new product regulations increase demand for cigarettes with

[6]The committee is not aware of any systematic comparative studies of border controls that measure the effectiveness of U.S. controls compared with, for example, controls in the European Union.

[7]The bulkiness of cigarettes also means that transportation, storage facilities, and staff required for handling large numbers of cigarettes can create costs that drug dealers, for example, may not face, at least not to the same extent (von Lampe, 2007).

prohibited features. In particular, an illegal market for cigarettes that have restricted characteristics could develop. Such a market could include illicit whites, genuine cigarettes diverted from other countries, or unlicensed or unbranded cigarettes. (For discussion of potential tobacco product regulation and the U.S. illicit market, see Chapter 8.)

Illicit Whites

Illicit whites, also called cheap whites, are legally produced cigarettes with unique brand names or no brand name, typically sold either in standard packs of 20 cigarettes or in bags with a larger number (e.g., 200) of loose cigarettes. They are destined primarily or exclusively for illicit distribution: typically no efforts are made to market these cigarettes through legal distribution channels (Joossens and Raw, 2012, p. 231).

The overall market structure for illicit whites is similar to large-scale smuggling in several respects. In both cases, legally produced untaxed cigarettes[8] are made available for illegal distribution in large consignments at low costs. And in both cases there is some degree of connivance on the part of manufacturers. However, in the case of illicit whites, the manufacturers are more or less integrated into the illegal cigarette trade.

Historically, illicit whites are an alternative to the production of counterfeit brand cigarettes. Illicit whites, like counterfeits, are produced in large numbers in different countries. For example, the most common illicit white brand, "Jin Ling," is manufactured in Kaliningrad, Russia, as well as in the Ukraine and Moldova. Other important bases of illicit white manufacturers are Cyprus and the United Arab Emirates. The most popular illicit white brands tend to be counterfeited over time (World Customs Organization, 2013, p. 20).

Research based on littered pack surveys, while not measuring the total prevalence of counterfeit cigarettes (see Chapter 4), indicates that illicit whites have no presence at all on the U.S. market. Even Native American brands, which could theoretically play a role similar to illicit whites in Europe, are only of marginal importance (Kurti et al., 2012; Chernick and Merriman, 2013). In addition to the factors discussed above (the role of border security, opportunities for bootlegging, consumer preferences, etc.), the prevalence of illicit whites may be related to the historical prominence of an illegal cigarette distribution infrastructure. Once there is an illegal distribution network in place, switching from one kind of illegal cigarettes

[8]In addition to being produced for export with no local taxes paid, illicit whites can, in principle, be sold domestically in the country of production with all relevant local taxes paid. Because the committee is interested in illicit whites as a global phenomenon, the report focuses on the former.

to another on the supply side is fairly easy. For example, historical experience shows that Jin Lings in Germany and in the United Kingdom replaced other kinds of illegal cigarettes within a short time frame. The importance of established distribution networks for allowing changes in supply is a more general phenomenon (see Joossens and Raw, 1998, p. 67; Shleynov et al., 2008).

As discussed below, some Native American tribes produce their own cigarettes. These brands produced on tribal land have the potential to play the same role as illicit whites, as they could in principle be sold in bulk to smugglers for distribution outside of tribal lands. However, there is no evidence that this has occurred. Like major brand cigarettes, cheap whites are produced in geographically fixed facilities that involve substantial capital investment. However, since the operations are legal in their country of origin, deterring illegal conduct by targeting production is unlikely to be productive absent legal changes and cooperation by the countries in which the cigarettes are produced.

Illegal Production

Illegal production involves the manufacturing of cigarettes in violation of the law. The two main forms are unlicensed or underreported production of unique brand or nonbrand cigarettes and the production of counterfeit cigarettes. In the case of undeclared production, legal manufacturers violate obligations to fully disclose to authorities the amounts of cigarettes they produce, thereby avoiding taxation on some portion of their output (Joossens and Raw, 2012, p. 231).[9] In October 2012, for example, the president of a Virginia cigarette manufacturer was sentenced to 60 months in prison for underreporting production and underreporting cigarettes that were sold in several states; similarly, a Kentucky manufacturer forfeited $8 million to the federal government for underreporting production and sales to avoid paying taxes (Virginia State Crime Commission, 2013a, p. 11).[10] In a presentation to the committee, a representative from ATF indicated that illegal activities of this kind could be attributed to lower-end,

[9] Illegal production of cigarettes by unlicensed manufacturers in the United States has occurred on tribal lands when cigarette manufacturers operate without a U.S. federal license in violation of the Contraband Cigarette Trafficking Act. For details, see http://www.atf.gov/files/press/releases/2011/07/070511-ny-atf-and-ttb-accept-125-million-cigarette-settlement.pdf [January 2015] and https://www.atf.gov/press/releases/2010/04/041210-ny-cigarette-manufacturer-admits-violations.html [January 2015].

[10] For details, see http://www.kentucky.com/2010/06/30/1329526/kentucky-father-and-son-plead.html [January 2015].

"fourth-tier" manufacturers.[11] In the United States, tobacco producers engage in geographically fixed, visible, and regulated operations, factors that make detecting and disrupting illegal activity relatively easy if law enforcement efforts are focused on doing so.

For counterfeited cigarettes, the production is illegal because brand labels are used without the permission of the trademark owner. The annual number of counterfeit cigarettes produced globally is estimated at several billion, and China is considered the main source country (Shen et al., 2010; World Customs Organization, 2013, p. 24). The production of counterfeit cigarettes is not currently prevalent in the United States.

The counterfeit cigarettes that have been seized by U.S. authorities have been traced to foreign countries, including China, North Korea, and Paraguay. Elsewhere, there has been a partial shift of counterfeit production from traditional source countries, such as China, to consumer countries: since the mid-2000s, illegal cigarette production sites that are manufacturing counterfeit brand cigarettes have been discovered in the Czech Republic, Germany, and the United Kingdom (von Lampe, 2006, p. 240; World Customs Organization, 2013, pp. 17-18).

The history of the illicit tobacco trade in China provides one example of conditions that enable illegal manufacturing to arise (von Lampe et al., 2012). In the 1970s, illicitly traded tobacco in China largely came from the diversion of products from state-controlled factories or illegal production beyond the state-set quotas. With the creation of the World Trade Organization (WTO) in 1995 and its oversight of global trade, tariffs on imported cigarettes fell from 65 percent to 25 percent, and the anticipation of increased competition from transnational tobacco companies prompted a restructuring and consolidation of the Chinese domestic tobacco industry. This change resulted in the availability of surplus resources, including skilled staff and production facilities, which could be diverted to illegal production.

Like all cigarette production, counterfeit manufacturing requires infrastructure, inputs, and capital investment: see Box 2-1. As a result, counterfeit manufacturing is usually carried out by stable, organized, sophisticated, and well-networked enterprises, as in the case of Chinese counterfeit cigarettes produced in Fuijan and Guangdong provinces (Shen et al., 2010). The level of organization necessary to make counterfeiting profitable may make counterfeiters more resistant to low-level and intermittent enforcement

[11] Cigarettes are divided into four different price categories or tiers: first-tier or premium brands are produced by major manufacturers; second-tier and third-tier brands are produced by major manufacturers but sold at a substantial discount in comparison with first-tier cigarettes; and fourth-tier brands sell at prices below third-tier brands and are produced by smaller manufacturers. See http://apps.americanbar.org/antitrust/at-committees/at-pdiscr/pdf/discussion-list/07/03-05-07.pdf [March 2015].

BOX 2-1
Material and Inputs Necessary for Illegal Cigarette Production

The specific raw materials that illegal manufacturers need to produce cigarettes include tobacco, acetate tow for filter tips, and cigarette papers. In addition, depending on the level of sophistication of the production, illegal manufacturers need machinery to produce and to package the cigarettes.

Raw Tobacco Given the lack of a regulatory framework, domestically grown tobacco seems to be easily accessible to illegal manufacturers and could be acquired through normal, inconspicuous market transactions. In Canada, domestically grown raw leaf tobacco is considered an important source of illegal cigarettes (Luk et al., 2007, p. 9). In the United States, however, no similar cases have come to the attention of the committee that would suggest there is a trend in this direction.

Acetate Tow Acetate tow is made from cellulose acetate. Most of the acetate tow manufactured globally is made by only a few major corporations, and it is difficult to produce. Although cellulose acetate has several industrial uses, acetate tow is used in very few products, and more than 80 percent of world production is reportedly used in the manufacture of cigarettes. For these reasons, acetate tow could be controlled to make illegal manufacturing of cigarettes more difficult.

Cigarette Papers Papers used in the production of individual cigarettes, such as acetate tow, are a highly specialized product. They are designed to control factors such as density, porosity, and burn rate (Framework Convention Alliance, 2010). Like cellulose acetate, cigarette papers have a unique harmonized tariff code (Framework Convention Alliance, 2010), and they are supplied by a small number of producers (Law Enforcement Alliance of America, 2014). Given this production characteristic, a licensing system would be relatively easy to establish. However, as is true for acetate tow, the production of cigarette papers is not subject to any form of regulation aimed at preventing the illegal manufacturing of cigarettes, either in the United States or elsewhere.

Cigarette Manufacturing Machinery As is the case for the raw products required for the manufacturing of cigarettes, the machinery needed for industrial-scale production of cigarettes is not subject to any legal restrictions. However, some tobacco companies do take actions that have the effect of limiting access to such machinery. British American Tobacco, for example, destroys machinery if there is no authorized buyer, and Imperial Tobacco likewise destroys old production equipment.

efforts. However, integrated vertical criminal organizations that sell counterfeit tobacco could be subject to methods of detection and enforcement often used to disrupt drug enterprises, such as efforts focused on distributors and retailers that trace retail counterfeit cigarettes up the supply chain to production facilities.

Stable infrastructure also makes illegal cigarette production easier to detect, which, in turn, suggests that local law enforcement commitment could be a significant factor in attempts to stop illegal manufacturing. National governments can play an important role in influencing the priorities of local governments. High levels of corruption at either the national or local level, then, can interfere with identifying and disrupting illegal production facilities abroad. And if law enforcement targets fixed facilities, manufacturers will seek smaller, more mobile alternatives. Recently, for example, truck-based production facilities have been discovered in Paraguay and China (von Lampe et al., 2012). Mobile facilities are more difficult to detect than fixed facilities, but they are also more limited in production volume. Given that there are significant economies of scale in cigarette production, shifting suppliers from fixed facilities to mobile facilities will cause substantial increases in the cost of illicit production.

THE ROLE OF TAX AND PRICE FACTORS

Unlike the situation for the vast majority of other commodities, taxes can comprise a substantial proportion of the retail price of cigarettes. In the United States, federal and state cigarette excise taxes on average account for about 44 percent of cigarette prices (Orzechowski and Walker, 2014), not including the MSA payments. In 2013, the average price per cigarette pack in the United States was $5.76, and the average tax per pack was $2.56 (Orzechowski and Walker, 2014). There is wide variation among countries in the kind and amount of taxes applied to tobacco products. Globally, total taxes on the most sold brand of cigarettes varied from 2.5 percent of the price in Afghanistan to 83.9 percent of the price in Slovakia (World Health Organization, 2013b).

There are three categories of taxes that are levied on tobacco products—excise taxes, sales (or consumption) taxes, and import duties. Excise taxes are a product-specific tax that can be applied on a per unit basis (e.g., 5 cents a pack) or as an "ad valorem" excise tax (e.g., 5 percent of the retail price).[12] Sales taxes are generally applied broadly on goods and services as a percentage of the retail price; value-added taxes (VAT) are applied to

[12]The point in the supply chain at which the ad valorem tax is applied varies from jurisdiction to jurisdiction. In the United States, state excise taxes are typically applied at the wholesale (distributor) level.

the value added by the supplier (including capital and labor costs). Excise taxes and VAT on tobacco products vary considerably across the world (World Health Organization, 2013b); in most jurisdictions, taxes on "other tobacco products" are low relative to cigarette taxes, so that excise taxes account for a lower share of prices for these products. (See Box 2-2 for a discussion of other tobacco products.) Import duties are taxes levied on products imported into a country that are intended for domestic consumption; most countries impose duties on imported tobacco products, collected

BOX 2-2
Taxation of Other Tobacco Products

"Other tobacco products," which include cigars, small cigars, smokeless tobacco (snuff or chewing tobacco), pipe tobacco, and roll-your-own tobacco, are broadly defined in the Internal Revenue Code (26 U.S.C. §5702). Small and large cigars are differentiated by weight, and roll-your-own tobacco and pipe tobacco are differentiated by their intended use and defined by characteristics that are based on their appearance, packaging, and labeling.

Like excise taxes on cigarettes, disparities in the taxation of other tobacco products exist between the states. As with taxes at the federal level, some states use weight-based taxes, ad valorem taxes, or a combination of both. Pennsylvania does not tax any other tobacco products, while Minnesota taxes all of them (as well as e-cigarettes) at 95 percent of the wholesale price (Campaign for Tobacco-Free Kids, 2014b).

Taxes also vary across products at the federal level. Federal excise tax rates for cigarettes, roll-your-own tobacco, pipe tobacco, smokeless tobacco, small cigars, and large cigars increased in 2009 with the passage of the Children's Health Insurance Program Reauthorization Act. The act equalized federal excise tax rates for cigarettes, roll-your-own tobacco, and small cigars. Although federal excise taxes on pipe tobacco and large cigars also increased, these products are still taxed at significantly lower rates than roll-your-own tobacco and small cigars. The discrepancies in these tax rates have created opportunities for tax avoidance and have led to significant market shifts by manufacturers and consumers toward the lower-taxed products. For example, manufacturers of roll-your-own tobacco products made minor changes to the packaging of their products—without changing the appearance of the actual tobacco product produced—in order to have the product labeled as pipe tobacco, saving more than $20 per pound in excise taxes due. A similar market shift occurred for cigars. Small cigar manufacturers began producing heavier cigars that would qualify for the lower-tax rate for large cigars by adding weight to a filter or packing the tobacco tighter. The U.S. Government Accountability Office (2014) has estimated that from April 2009 to February 2014, $2.6 billion to $3.7 billion in federal revenues was lost as a result of these market shifts.

from the importer when the product enters the country and typically based on the cost (the price paid by the importer, including insurance and freight costs).

In the United States, cigarettes are subject to excise taxes, levied on a per unit basis. Unlike the United Kingdom and most countries in the European Union, where the same cigarette tax is applied throughout the entire county, cigarette taxation in the United States is highly decentralized. Because of the homogeneity in tax rates within most countries, there is little incentive for within-country smuggling in comparison with the United States. Overall, interstate tax differentials in the United States are greater than cross-country differences in the European Union,[13] while the average tax burden on cigarettes in the United States is significantly lower than in the European Union (von Lampe et al., 2014, p. 270).

In Canada, as in the United States, there are significant disparities in provincial taxes (Non-Smokers' Rights Association, 2014). Although the difference between the lowest price per carton and highest prices (after all taxes are taken into account) is large—Can $85.39 in Quebec and Can $125.80 in Manitoba—it does not appear to provide an incentive for bootlegging between provinces. This may be due to the considerable geographic distances between population centers in different Canadian provinces. Moreover, smuggling cigarettes from Native reserves, where all taxes can be evaded, is highly profitable, further limiting incentives to bootleg between provinces.

Cigarette taxes became an attractive revenue source for the states in the wake of the 1964 report of the U.S. Surgeon General linking smoking with cancer, and cigarette tax evasion began to pose serious problems for state administrators in the late 1960s as tax rate differentials among the states began to widen (Advisory Commission on Intergovernmental Relations, 1985, p. 1). State cigarette excise taxes now range from $0.17 in Missouri to $4.35 in New York. Significant local taxes add further variability, with local taxes as high as $3.00 in Cook County, Illinois, and $1.50 in New York City. The average state cigarette tax increased from 43.1 cents per pack at the end of 2001 to 153.1 cents by the end of 2013.

The tax differential between "tobacco states" (Georgia, Kentucky, North Carolina, South Carolina, Tennessee, and Virginia[14]) and non-tobacco states also increased during this period. At the end of 2001, the average cigarette tax was 7.1 cents in tobacco states and 48.3 cents in

[13] However, because of significant differences in production/distribution costs and in income, intercountry price differentials in the European Union are still larger than interstate price differentials in the United States (see, e.g., Blecher et al., 2014).

[14] These states account for more than 90 percent of all cigarette tobacco leaf grown in the United States and contain more than 90 percent of all the U.S. tobacco farms that grow cigarette tobacco (Campaign for Tobacco-Free Kids, 2014c).

non-tobacco states; by the end of 2013, the average cigarette tax was 48.5 cents in tobacco states and 167.0 cents in non-tobacco states (Campaign for Tobacco-Free Kids, 2014c).[15] In this section, we explore the role of price factors in driving the domestic and global illicit tobacco trade.[16] We highlight select key studies and emphasize, to the extent possible, evasion rather than avoidance.[17]

Baltagi and Levin (1986, 1992) estimated dynamic demand for cigarettes using pooled state-tax-paid cigarette sales data from 46 states from 1963 to 1988. The authors modeled a "bootlegging" effect by allowing for a "neighboring price elasticity,"[18] which they found to be substantively small but statistically significant: a 10 percent price increase in a neighboring state tax was found to cause, on average, a 0.8 percent increase in taxed sales in the short run and a 0.21 percent increase in the long run.

In a similar study, Saba and colleagues (1995) examined cigarettes sales from 1960 to 1986 using data from 48 states. The authors found that although border shopping accounted for less than 2 percent of sales in most states, it accounted for a substantial portion of sales when many people resided in high-tax jurisdictions in proximity to low-tax ones. Moreover, estimates of the price elasticity for total cigarette demand that take border crossing flows into account "exceed by a wide margin" estimates that do not account for cross-border shopping. In other words, total cigarette consumption is higher in high-tax jurisdictions that border low-tax jurisdictions than in high-tax jurisdictions that border high-tax jurisdictions. This suggests that "[n]aively instituted state policies, at the very least, will clearly have the effect of exporting taxpayers" (Saba et al., 1995, pp. 197, 201).

Thursby and Thursby (2000) developed a smuggling measure based on cigarette tax rate differentials with North Carolina (at that time thought to be the primary source of cigarettes smuggled by truck).[19] The level of enforcement was posited as being a function of, among other things, whether the state was a member of the Interstate Revenue Research Center or the Eastern Seaboard Interstate Cigarette Tax Enforcement Group, the severity of the felony penalty for smuggling, and the rebate offered to wholesalers

[15] The federal excise tax on cigarettes increased from $0.34 in 2000 to $1.01 in 2009 (U.S. Government Accountability Office, 2011); as this report was being written, the tax remained at $1.01 (Campaign for Tobacco-Free Kids, 2014a).

[16] Because tobacco excise taxes generally represent the largest proportion of tobacco prices and uniquely differentiate tobacco product prices from prices of other goods and services, our discussion focuses on excise taxes.

[17] Studies that appear to deal solely or predominantly with tax avoidance are discussed in Chapter 3.

[18] The bootlegging specification did not account for bootlegging done over long distances by truck (Baltagi and Levin, 1986, p. 149). The bootlegging effect also does not differentiate between tax evasion and tax avoidance.

[19] The authors' results did not change when Kentucky or Virginia tax rates were used.

for each legal sale. Using annual data from 1972 to 1990 for 39 states, the authors found that declines in the real level of state tax differentials explained more of the decline in smuggling activity during the early 1980s than the Contraband Cigarette Trafficking Act (CCTA) of 1978.[20] This finding conflicted with that of the Advisory Commission on Intergovernmental Relations (1985, p. 4), which found that "[t]he decline in cigarette tax evasion activities is due mainly to the enactment of the Federal Cigarette Contraband Act of 1978." However, the commission acknowledged that "[i]t is also possible that the reduction in smuggling is partly due to the declining real value of interstate price differences that began in the mid-1970s and continued until 1981" (p. 4).

Using state-level cross-sectional data from 2002, Goel (2008) similarly found that nonprice inducements—such as the level of state corruption (measured as the average federal public corruption convictions per 100,000 population) and police presence (the number of police per 1,000 inhabitants—did not have a significant influence on bootlegging, even as a 10 percent increase in the minimum cigarette price in adjoining states increased a state's cigarette sales by around 10 percent.[21] It should be noted, however, that this study does not address the issue about the rate and nature of enforcement that might be needed to create a threshold of deterrence, or econometric identification issues in measuring the relationship between law enforcement and crime that are now standard in the economic and criminology literature (Nagin, 2013).

Looking globally, Merriman and colleagues (2000) analyzed cross-border shopping and bootlegging in Europe using data from 1989 to 1995 from 23 countries. They estimated a demand curve for cigarettes and simulated the impact of two specific policy changes: a 10 percent price increase in just one country and a 10 percent price increase in all countries. The impacts varied across high-price countries such as Germany and low-price countries such as Poland. In low-price countries, small to moderate increases in price had relatively little effect on bootlegging, but the simulation suggested that bootlegging may be a problem in relatively high-price countries if increases in cigarette taxes and policies are not coordinated.

Increases in federal tobacco taxes in the United States would, in principle, reduce incentives for bootlegging and individual tax avoidance, given that relative price differences across jurisdictions would fall. However, unless the federal tax increase is substantial (so that federal taxes account for a much larger proportion of the taxes on cigarettes than state-level taxes

[20] The CCTA made commercial cigarette smuggling a federal offense and charged ATF with augmenting the enforcement efforts of state and local officials.

[21] As with Baltagi and Levin (1986, 1992), Goel's (2008) bootlegging effect reflects overall cross-border sales and does not distinguish between tax evasion and tax avoidance.

than is currently the case), the narrowing of price differentials would likely be modest, and it is unlikely that the profitability of bootlegging would be much affected. At the same time, federal tax increases would raise the incentives for other forms of illicit trade to emerge or increase, everything else being constant. However, in other forms of illicit trade, significant increases seem unlikely given that existing policies and enforcement efforts appear, to date, to have largely deterred large-scale smuggling.

THE ROLE OF NONPRICE FACTORS

Tax and price differentials, as discussed above, are important determinants of the illicit trade in the United States, which mostly consists of bootlegging. Tax and price differentials are also major drivers of bootlegging between countries in Europe, with third countries sometimes used as conduits to create a façade of legitimacy and to make the smuggling and money trails less transparent. However, when it comes to the overall illicit global cigarette trade—encompassing both large-scale smuggling and bootlegging—tax differentials do not tell the whole story. Although high-tax margins may provide an initial incentive to smuggle, other factors—such as the ease and cost of operating in a country and the strength of border controls—are also important (Merriman et al., 2000; Joossens et al., 2010, pp. 1,642, 1,646). Large-scale smuggling also requires good local distribution networks through which smuggled cigarettes can be easily and quickly sold. Such a network most often involves extensive street selling, which is more common in low- and middle-income countries than in high-income countries (Joossens et al., 2000).

In a regression analysis using survey data from the Pricing Policies and Control of Tobacco in Europe (PPACTE) project, which were collected in 18 countries between January and July 2010,[22] Joossens and colleagues (2014a) found no significant associations between cigarette prices and the prevalence of illicit cigarettes. The authors also found that illicit purchases were more common in countries that had a land or sea border with Belarus, Moldova, Russia, or Ukraine, which are major suppliers of cheap and illicit cigarettes.

In an econometric analysis using the "corruption perception index" from Transparency International as a measure of the ease with which cigarettes could be imported and distributed, Merriman and colleagues (2000, p. 376) found that "each 1-point increase in a country's transparency index

[22] The PPACTE survey is able to distinguish between tax evasion and tax avoidance, identifying tax-evaded cigarette packs as those that were bought "from 'individuals selling cigarettes independently at local markets, delivery service, door-to-door, just in the street, or, for UK and Spain, cheap cigarettes sold from legitimate retailers'" (Joossens et al., 2014a, p. e18).

is associated with a 2%-point decrease in experts' estimates of cigarette smuggling."[23] Yürekli and Sayginsoy (2010) conducted a similar analysis using World Bank corruption indicators, which they used as a proxy for the quality of anti-smuggling law enforcement. Estimating a static global demand model using data for 110 countries in 1999 and then simulating the effect of increasing the average price of a pack of cigarettes by increased taxes, the authors found that the level of global cigarette smuggling is higher in places with high taxes and low-quality law enforcement (i.e., high levels of corruption), but that global smuggling activities are lower when higher cigarette taxes were accompanied by improved enforcement.[24]

Of course, causal policy conclusions cannot be drawn from cross-national correlational studies, but these findings suggests that the relationship between taxes and international smuggling may be a function of the law enforcement environment.

ESTIMATES OF PROFITABILITY

Anecdotal reports about the high profitability of cigarette smuggling are easy to find (Guevara and Willson, 2008; Alderman 2012). However, by and large, they are not actual estimates of profit in the strict economic sense, which take into account the opportunity cost of the smuggler's time; the perceived expected costs of engaging in this sort of criminal offense, which in turn include the social costs of being stigmatized as a smuggler; and the legal risks associated with being apprehended by law enforcement. Rather, they refer to a crude measure of the potential of monetary returns to be had by purchasing cigarettes in a low-tax state and selling them in a high-tax state. This distinction is important because economic profits, rather than simple monetary return, are typically better predictors of people's behavior.

Although the legal risk associated with trafficking in illicit cigarettes is probably quite low (see Chapter 6), this fact begs the question: setting legal risk aside, which includes the probability of being apprehended by law enforcement and potential exposure to violence, exactly how much money could plausibly be made smuggling cigarettes across state borders in the United States? Comparing the relative simple monetary returns associated with different trafficking routes to what is known about actual trafficking routes can provide a sense of the perceived economic costs of

[23]The authors' smuggling measure is based on expert estimates from Joossens (1998) and Market Tracking International Ltd. (1996, 1997a, 1997b).

[24]The authors' measure for organized smuggling is based on intercountry price disparities and a smuggler risk perception function, which is derived from an analysis of an extensive set of interviews with incarcerated drug dealers by Anthony (2004).

cigarette smuggling. If most smuggling traffic does not occur along the most (potentially) high-return routes, then it can be assumed that unobserved nonmonetary costs, such as law enforcement efforts or consumer demand for illicit goods, are also larger along those routes than other routes.

In order to provide some quantitative estimate of the maximum potential accounting profit associated with tobacco smuggling in the United States, the committee constructed a simple distance matrix. This matrix is based on two sources of data: cigarette excise taxes as of December 2013, compiled by the Campaign for Tobacco-Free Kids, and the driving distance between various population-weighted county centers in different states, as measured by the Oak Ridge National Laboratory. The committee's analysis also accounted for some clearly defined business costs, such as vehicle wear and tear and a minimum estimate of a driver's wages, based on the minimum wage in the originating state.

We estimated the relative revenue associated with buying cigarettes in a low-tax jurisdiction and selling them in a high-tax jurisdiction by identifying the largest difference in per-pack taxes levied at the retail level across states, including all local taxes (tracked by the Center for Tobacco-Free Kids). This approach obviously involves a simplifying assumption, as the actual sales price of a pack of cigarettes will vary across different stores and markets, depending on the market structure, the price elasticity of supply, and the price elasticity of demand in different counties. It is also probably not the case that all smugglers purchase their cigarettes at retail prices; as discussed above, cigarettes can be diverted into the illicit market at various earlier phases.

We then calculated the cost of driving from the origin to the destination county based on the physical mileage, average national gas prices in April 2014 ($3.683/gallon), and the average highway miles per gallon (mpg) of a Ford Expedition (15 mpg). Using data from ATF seizures, we assumed that a Ford Expedition can hold 2,410 packs of cigarettes, and a Dodge Grand Caravan can hold 8,200 packs. We also assumed about $0.50 of depreciation per mile traveled for the vehicle and that one driver was paid the state or federal minimum wage (whichever was lower) for a round-trip journey. We then identified the county-to-county smuggling route for each state pair that yielded the highest potential monetary return. Consistent with law enforcement reports, New York and Illinois are the most profitable destinations for smuggled cigarettes, and so our analysis focuses on the return to smuggling various goods to and from those states.

Tables 2-1 and 2-2 present the top 10 most "profitable" routes to Illinois and New York, respectively, excluding legal and social costs and assuming that smuggled cigarettes enter the illicit market after retail purchase. Law enforcement reports identify the Virginia to New York I-95 corridor as being the most active route for cigarette smuggling. Technically, the

TABLE 2-1 Top 10 Retail Cigarette Smuggling Routes to Illinois, Based on Tax Differentials and Estimated Transportation Costs, Compared with Returns for Alcohol and Cocaine Smuggling

		Source State to Illinois				Illinois to Source State		
Rank	Source State	Cigarettes	Alcohol	Cocaine	Pure Cocaine	Alcohol	Cocaine	Pure Cocaine
1	Missouri	$14,364	$4,140	–$18,338	–$27,567	–$4,166	$18,312	$27,541
2	Virginia	$13,986	–$7,817	–$36,481	–$54,479	$7,398	$36,062	$54,060
3	Georgia	$13,803	$2,864	–$4,682	–$8,566	–$3,182	$4,363	$8,247
4	Louisiana	$13,798	$3,634	–$1,679	$5,724	–$4,051	$1,262	–$6,141
5	North Dakota	$13,631	$2,191	-	-	–$2,760	-	-
6	North Carolina	$13,608	–$3,040	–$4,962	$22,465	$2,615	$4,537	–$22,890
7	Alabama	$13,536	–$6,267	–$36,785	–$61,234	$6,015	$36,532	$60,982
8	West Virginia	$13,410	$3,455	–$51,475	–$106,719	–$3,823	$51,106	$106,350
9	Kentucky	$13,326	$1,062	–$15,399	–$60,756	–$1,081	$15,380	$60,737
10	South Carolina	$13,295	$1,732	$16,657	$48,124	–$2,254	–$17,180	–$48,647

NOTES: The analysis assumes that the vehicle used travels 15 miles per gallon of gas. One shipment is equal to 2,410 packs of cigarettes, 200 cases of alcohol, or 1 kilogram of cocaine. The analysis assumes the driver is paid the state minimum wage of the originating state. For other assumptions used in the analysis, see text.

TABLE 2-2 Top 10 Retail Cigarette Smuggling Routes to New York, Based on Tax Differentials and Estimated Transportation Costs, Compared with Returns for Alcohol and Cocaine Smuggling

		Source State to New York				New York to Source State		
Rank	Source State	Cigarettes	Alcohol	Cocaine	Pure Cocaine	Alcohol	Cocaine	Pure Cocaine
1	Missouri	$13,453	$2,432	$3,500	–$10,946	–$3,198	–$4,265	$10,180
2	Virginia	$13,308	–$9,076	–$14,195	–$37,408	$8,828	$13,947	$37,161
3	Georgia	$13,017	$1,288	$17,288	$8,188	–$2,072	–$18,072	–$8,972
4	Louisiana	$12,920	$1,918	$20,151	$22,338	–$3,079	–$21,311	–$23,498
5	North Carolina	$12,917	–$4,379	$17,244	$39,455	$3,965	–$17,658	–$39,869
6	Alabama	$12,723	–$7,909	–$14,880	–$44,546	$7,067	$14,039	$43,704
7	West Virginia	$12,709	$2,189	–$29,195	–$89,655	–$2,402	$28,982	$89,442
8	North Dakota	$12,688	$519			–$1,738		
9	South Carolina	$12,573	$320	$38,791	$65,042	–$974	–$39,445	–$65,695
10	Kentucky	$12,504	–$481	$6,603	–$43,970	$51	–$7,033	$43,540

NOTES: The analysis assumes that the vehicle used travels 15 miles per gallon of gas. One shipment is equal to 2,410 packs of cigarettes, 200 cases of alcohol, or 1 kilogram of cocaine. The analysis assumes that the driver is paid the state minimum wage of the originating state. For other assumptions used in the analysis, see text.

analysis suggests that if tax differentials and transportation costs were the only concern of smugglers, cigarettes purchased in Missouri should be at least as common in Chicago and New York City as cigarettes from Virginia. Louisiana and North Dakota also appear to be attractive sources for illicit cigarettes, yielding returns within a few hundred dollars of the southeastern "tobacco states" of Georgia, North Carolina, and South Carolina. Notably, due to local taxes, purchasing the same number of cigarettes in a low-tax county in Illinois and reselling them in Chicago yields roughly $10,000, which is only $2,000 less than the return from smuggling cigarettes from Indiana.

Of course, whether or not the roughly $13,500 that can be earned driving an SUV of cigarettes across state lines constitutes an attractive and profitable activity depends on the return from smuggling cigarettes relative to some other product. For comparison, we include in Tables 2-1 and 2-2 the same return from transporting two other goods along the same routes: 634 gallons of alcohol (roughly 200 cases) and 1 kilogram of (pure or cut) cocaine. State excise taxes on spirits, per gallon, as of January 2013, were taken from the Tax Foundation, and the sales price for 1 kilogram of pure (or of unknown purity) cocaine is based on the mean price paid by federal undercover agents in 2007, as reported in the Drug Enforcement Agency's publicly available System to Retrieve Information from Drug Enforcement (STRIDE) dataset.[25]

In comparison with cigarettes, smuggling alcohol across state lines does not appear to be profitable. The overall lower return from smuggling alcohol relative to cigarettes is primarily driven by the assumption that a smaller amount of alcohol can be transported at a time: on a per-unit basis (a gallon of alcohol or a carton of cigarettes), cross-state tax differentials for the two goods are roughly comparable, ranging from $0 to $35 for 1 gallon of alcohol and from $1.70 to $61 for a carton of cigarettes. If one assumes that smugglers moved roughly the same number of units of alcohol as they could packs of cigarettes, the net return would be approximately the same as the return to smuggling cigarettes.[26] On average, transporting alcohol along the most profitable tobacco routes is associated with less than $9,000 in profit, and as little as $50 for the route between Kentucky and

[25]The validity of STRIDE data has been the subject of controversy. Horowitz (2001) expanded on criticism by the National Research Council (2001), which showed inconsistencies in various series generated by STRIDE through 2000. Responses to Horowitz can be found in Caulkins (2001a) and Rhodes and Kling (2001). A number of studies have found that STRIDE data have been consistent with other measures of market conditions: see, for example, Caulkins (2001b) on its predictive value for emergency room admissions.

[26]Interestingly, there is apparently only a weak correlation between tobacco and alcohol taxes. Depending on the state, in some cases it is more profitable to buy alcohol in Illinois or New York and resell it in a low-cigarette tax state, the reverse route of tobacco.

New York. Smuggling the same amount of alcohol to Washington State, which levies the highest taxes on alcohol, would yield a profit of $16,000 if the alcohol came from Illinois and $17,000 if it came from New York. These profit estimates almost certainly do not reflect the reality of the illicit tobacco (or alcohol) market in the United States, particularly the extent to which smugglers are compensated for the legal risks that they face or the price discounts that consumers of illicit cigarettes expect.

In order to provide a better sense of how legal risk affects the prices at which goods are bought and sold, the committee also considered the return to smuggling cocaine along the same routes. The actual street prices paid for cocaine incorporate the legal risk of being apprehended, as well as demand and supply costs, none of which is included in the above calculations of profitability, which are based solely on tax differentials for cigarettes or alcohol.

SUMMARY AND RECOMMENDATIONS

Opportunities exist at all phases of the cigarette supply chain for diversion to the illicit market: preproduction, production, taxation/in-transit, wholesale, and retail. Every illicit procurement scheme, from bootlegging and large-scale smuggling to the production of illicit whites and counterfeiting, is linked to a particular phase in the supply chain.

In the United States, the illicit tobacco market has traditionally consisted of bootlegging from Native American reservations and low-tax states, such as Virginia, to high-tax states, such as New York. Large-scale smuggling, including the diversion of untaxed in-transit cigarettes to the black market, has not been a significant part of the U.S. illicit market, nor is there any evidence that unlicensed and underreported production, counterfeiting, or illicit whites are a significant source of the illicit market. In contrast, these paths have played a significant role in shaping illicit tobacco markets abroad.

There are several possible explanations for why the United States appears to be less affected by large-scale smuggling of brand cigarettes and by counterfeit cigarettes and illicit whites than other countries: (1) general border control efforts may deter the illicit tobacco trade, especially because tobacco is bulky and therefore more easily detected than some other contraband; (2) U.S. consumers may prefer certain kinds of tobacco and cigarettes that differ quite substantially in their chemosensory characteristics from blends used in many international markets; and (3) alternative paths for illicit trade inside the United States—namely, bootlegging—requires less complex organization and less investment than large-scale smuggling.

The dominance of bootlegging in the United States reflects the fact that, in comparison with other countries, there is great heterogeneity in

the amount of taxes that are levied by different jurisdictions in the United States. Consequently, bootlegging from low-tax jurisdictions to high-tax jurisdictions has been an attractive profit source. However, tax differentials cannot be the only factor that affects bootlegging in the United States, as law enforcement reports consistently identify specific smuggling routes (e.g., the I-95 corridor from Virginia and other southeastern states to New York City), even though there are other sources of low-tax cigarettes that would appear to generate roughly the same profit. The relative absence in New York City of bootlegged cigarettes from Missouri or North Dakota may be due to several factors: the tax differentials may not fully reflect the actual monetary costs and revenues in the illicit market, existing law enforcement activities may impose a substantially large cost on smugglers, or there are high entry costs (e.g., only being able to distribute through ones social networks) that inhibit bootlegging over some theoretically profitable routes. Similarly, evidence from other countries suggests that overall levels of smuggling are affected by factors—such as weak governance and political corruption, the ease and cost of operating in a country, and the availability of retail distribution networks—that affect the total cost of smuggling at least as much as, if not more than, "sticker price" factors.

RECOMMENDATION 2-1 Better information about the illicit tobacco market is needed to more accurately measure accounting profits of tobacco smugglers. For example, data could be systematically collected on the prices at which untaxed cigarettes are sold on the wholesale and retail levels, perhaps similar to the way in which the U.S. Drug Enforcement Agency collects information on heroin prices in large cities through its Domestic Monitoring Program, a component of the System to Retrieve Information from Drug Evidence (STRIDE) Program.

RECOMMENDATION 2-2 Research is needed on the extent to which consumer preferences explain why the United States appears to be less affected than other countries by large-scale smuggling of brand cigarettes and by counterfeit cigarettes and illicit whites. Research that directly tests the appeal and acceptability among U.S. consumers of a representative selection of non-American blend cigarettes, chosen from major international markets and Indian reservation producers, would shed light on this issue.

3

Participants in the Illicit Tobacco Market

Understanding the complexities of the illicit tobacco market requires understanding the major participants, on both the supply side and the demand side, whose behaviors shape and drive the illicit trade. Supply-side actors obtain cigarettes that are cheaper than their legal alternatives, undermining the effect of tax measures on the prices and use of tobacco products, which results in greater accessibility and consumption of cigarettes. Users of illicit tobacco products, often enabled in their addiction to nicotine by the availability of cheap cigarettes, prolong tobacco use and, thus, are likely to suffer the adverse health consequences of addiction and tobacco-related diseases. This chapter explores what is known about the key participants in the illicit tobacco market, including the major supply-side actors in the illicit trade, the characteristics of users of illicit tobacco, and youth with access to illicit tobacco. The chapter also provides recommendations for research and data.

SUPPLY-SIDE PARTICIPANTS

The major participants in the global illicit tobacco trade include criminal networks and the tobacco industry. In the United States and Canada, cigarette wholesale and retail dealers on sovereign territories of Native American tribes have also played an important role. Though terrorist organizations are commonly portrayed as active in the illicit tobacco trade, the committee found no evidence of substantial links between the illicit tobacco trade and the financing of terrorist activity.

Native American Tribes

The Native American tribal lands that are scattered throughout the United States have played an important and complicating role in the illicit cigarette trade. There are numerous examples of non-Native American consumers purchasing tax-free cigarettes from Native American tribal lands.[1] The purchase of cheap cigarettes from Native American tribal lands was originally a problem for states in the western part of the country; the center of the tribal cigarette business shifted over the course of the 1980s and 1990s to reservations located in New York State (von Lampe et al., 2014).

The question that has long been debated is whether or not Native American tribes can legally sell tax-free cigarettes to non-Native Americans. State and federal governments legally recognize that Native American tribes are sovereign nations. That is, each tribe has an inherent right to govern itself. However, there are limits to this sovereignty. According to the U.S. Constitution, Congress can regulate commerce between the states, with foreign nations, and with Native American tribes. In addition, the Supreme Court has ruled that states may impose sales taxes on goods sold by Native Americans on tribal land to purchasers who are non-Native Americans. Federal law prohibits states from taxing cigarettes that are purchased by tribal members on tribal lands for personal use.

New York: An Example Involving Tribal Lands

This tension between tribal sovereignty and cigarette excise taxes has played out in New York State for decades. There are eight federally recognized tribes in New York State: Cayuga, Mohawk, Onandaga, Oneida, Seneca, Shinnecock, Tonawanda Band of Seneca, and Tuscarora. As cigarette taxes in New York State increased from $0.56 in 2000 to $4.35 per pack beginning in 2010 (and $5.85 in New York City), the incentive for non-tribal members to purchase tax-free cigarettes from tribal lands has increased. Data on tax avoidance by smokers in New York from 2007 to 2010 (see RTI International, 2011, Fig. 21) show slight increases in the percentage of adults who purchased from low-tax or untaxed sources (e.g., from 48.3 to 53.8 percent for any low-tax location). Although the data suggest that tax avoidance and evasion may have increased as the tax rate went up, it does not allow one to distinguish an actual change in behavior from variation due to random statistical chance.

In 1988, the New York Department of Taxation and Finance created regulations that established an annual quota for tax-free sales. The quota

[1] In addition to such direct sales, many Internet cigarette vendors are located on tribal lands. In January 2005, an estimated 63.4 percent of domestic vendors had a Native American affiliation (Ribisl et al., 2007, p. M-3).

was determined by either "multiplying the 'New York average consumption per capita' by the number of enrolled members of the affected tribe," or by analyzing data submitted by the tribe (Center for Public Health and Tobacco Policy, 2011, p. 10). Before the 1988 regulations were implemented, they were challenged in court by cigarette wholesalers who did business with Native American retailers. The wholesalers argued that federal laws governing trade with Native Americans preempted state law and, therefore that states could not collect taxes on cigarettes sold by wholesalers to Native American tribes. The case worked its way up to the U.S. Supreme Court, which ultimately affirmed that "States have a valid interest in ensuring compliance with lawful taxes that might easily be evaded through purchases of tax-exempt cigarettes on reservations," and that the state's interest in collecting lawfully owed taxes "outweighs tribes' modest interest in offering a tax exemption to customers who would ordinarily shop elsewhere."[2] The court approved the state's quota scheme, although it noted that it could be challenged in the future if the quota system proved to be inadequate or unnecessarily burdensome.

However, the 1988 law was never enforced and, prior to 2011, smokers in New York could travel to tribal lands (especially in western New York, home to several Native American reservations) and purchase cigarettes free of both state and local taxes and, in some instances, free of federal taxes. In addition to selling major cigarette brands to non-tribal members, some tribes produce their own cigarettes as a way to control their supply chain. For example, in 1994, Smokin Joe was the first Native American-owned and -operated producer to receive a tobacco manufacturer's license. In 2008, the Oneida purchased Sovereign Tobacco and moved the operation to tribal lands in an attempt to avoid paying state cigarette excise taxes. The Seneca Nation also produces several unique brand cigarettes.

The lack of enforcement of the 1988 law resulted in high volumes of bootlegging from Native American reservations to other parts of New York State, as well as throughout the country through reservation-based smoke shop sales, online sales, and van networks. According to data from the New York Department of Finance, 200 million untaxed cigarettes were delivered to Native American reservations in 1984; by 2005, the number had grown to 9.5 billion untaxed cigarettes (von Lampe et al., 2014, p. 276). In order to curtail these tax-free sales, New York State joined with other states in an agreement with the major credit card companies and PayPal to stop processing payments for online cigarette sales and with the major delivery services to stop deliveries of cigarettes sold online (see Box 5-3, in Chapter 5). In addition, in 2010, the New York tax code was amended in an attempt to

[2]Department of Taxation and Finance of New York v. Milhelm Attea & Bros., Inc. 512 U.S. 61, 65 (1994).

bolster the collection of revenue by the state. As with the 1988 law, this law was challenged, but it was upheld and went into effect in June 2011. One month later, Governor Andrew Cuomo announced that his administration would step up efforts to enforce state laws that limit cigarette sales (through quotas) from wholesalers to Native American tribes.

As a result of these developments in recent years, tribes have to either pay all applicable state taxes or get cigarettes from low-tax states,[3] and there has been a dramatic drop in sales of cigarettes to tribal stores in New York State. The share of wholesale cigarettes sales in New York State that was made to tribal stores dropped from around 35 percent in 2010 to 0.01 percent in 2012 (see von Lampe et al., 2014). Several other studies have also documented this shift in supply. Cigarette packs sold on many reservations do not have tax stamps, so the proportion of discarded cartons without stamps can serve as a proxy for the proportion of cigarette purchases coming from Native American reservations. According to a study done by Davis and colleagues (2013), there is evidence that cigarette trafficking sources are shifting away from reservations and toward long-distance low-tax states, such as Virginia. This shift is aligned with the implementation of the state's regulations restricting wholesalers from selling untaxed cigarettes to reservations. Using data collected in December 2011, the authors found that the proportion of discarded cigarette packs without stamps in New York City (15.7 percent) was considerably lower than the proportion found by Chernick and Merriman (2013) in New York City using a similar method in 2008 (24.0 percent) and the proportion found by Kurti and colleagues (2012) in the South Bronx using data from March 2011 (42 percent). In addition, the authors found an increase in the proportion of cigarettes from Virginia compared with the proportion found by Chernick and Merriman (2013) prior to this regulation change, further explaining this shift in cigarette sourcing.

Criminal Networks

In the United States, members and associates of the New York mafia are said to have become involved with organized bootlegging in the mid-1960s (when cigarette taxes began to go up). However, mafia dominance over the cigarette black market does not appear to have lasted long. One reason may have been the Contraband Cigarette Trafficking Act (CCTA) of

[3] Since tribes are only allowed to acquire tax-free cigarettes for their tribal members, they needed new sources of supply—which could come from on-reservation production or by purchasing cigarettes from low-tax states. There is no system in place for tracking the tobacco trade to and from tribal lands. Although some states that have developed revenue-sharing agreements with tribes may have such accounting measures, they are not the states of major interest for policy and tax purposes.

1978, which increased the risk for large interstate bootlegging operations (von Lampe et al., 2014, pp. 274-275),[4] or the broader federal crackdown on organized crime through enforcement of the Racketeer Influenced and Corrupt Organizations Act of 1970 (Jacobs and Gouldin, 1999).

Research on experiences in Europe also provides valuable information on the particular organizational and criminological contexts within which the trafficking of illicit tobacco takes place. In Germany, for example, the illicit tobacco market has not been subject to cartelization or monopolization, and most cigarette smugglers operate within self-sufficient, small-sized enterprise structures (von Lampe, 2002, 2005, 2007). The illicit tobacco market may not be unusual in this regard, since cartels and monopolies do not represent the majority of individuals and groups operating in illegal markets. Due to the constraints of illegality, many illegal markets tend to be rather fragmented and dominated by small and ephemeral criminal organizations (see Reuter, 1983; for a recent review, see Bouchard and Morselli, 2014).

In the Netherlands, van Duyne (2003) distinguished between local traders in the illicit tobacco market, with no or limited administrative skills and professional experience, and international traders, who had higher levels of skill and professional access. According to van Dijck (2009, p. 123),

> [case files from the Netherlands] give the impression that networks are limited and that black market participants are not aware of each other beyond these limited networks of three layers, in which traffickers (middle layer) only know their (regular) suppliers (supply layer) and their (regular) buyers (demand layer).

Evidence from the United Kingdom similarly suggests that the methods involved in the illicit tobacco trade are not particularly complex. Because of the nature of the U.S. problem—primarily bootlegging—the barriers to entry into the illicit market and the skills needed are probably lower than those found in Europe, where the dominance of cross-border smuggling requires access to transportation and loads or companies involved in cigarette distribution. In the United States, circumventing border controls is not part of the logistical problem, and many more people are able—at least in principle—to buy cigarettes in a low-tax state and transport them to a higher-tax state.

Research into the relationship between tobacco smuggling and other kinds of criminal activity is scarce, but it appears that links between drug and cigarette smuggling may vary by country. Vander Beken and colleagues (2008) found few cigarette traffickers arrested in Belgium to have prior

[4] The shift away from large-scale bootlegging operations in response to the CCTA is an example of the adaptive nature of the illicit trade.

criminal records, which was also the finding in a study of German cigarette traffickers by von Lampe (2005). According to van Duyne (2003), tobacco traffickers in the Netherlands do not have strong connections to drug markets, but they are involved in "adjacent markets" such as piracy of brand-name goods. Also in the Netherlands, van Dijck (2009, p. 122) found that "the case files show a broad spectrum of offender types, ranging from the more 'experienced' criminal shifting between drug trafficking and other illegal activities, to freelance truck drivers smuggling up to several hundreds of sleeves on their (licit) professional journeys throughout Europe." A similar connection to drug markets may exist in the United Kingdom (Hornsby and Hobbs, 2007, p. 559):

> Contraband cigarettes are increasingly supplied by coordinated criminal collaborations that often deploy "commodity hopping" techniques. This involves shifting the focus of importation of illicit goods (i.e., drugs), to other lesser-risk-associated commodities (for example, tobacco products) and vice versa.

One implication of this finding is that changes in enforcement against other crimes, such as intellectual property theft crimes and drug crimes, could affect the illicit trade in tobacco.

Although criminal behavior typically peaks when offenders are in their 20s and levels off as they grow older, data from Belgium and the Netherlands[5] suggest that people involved in the illicit tobacco trade are considerably older, with an average age of close to 40 (van Duyne, 2003; Vander Beken et al., 2008; van Dijck, 2009). Evidence from Belgium, the Netherlands, and Germany also suggests that those involved in all segments of the distribution phase of the illicit tobacco trade generally do not have extensive criminal records (van Duyne, 2003; von Lampe, 2005; Vander Beken et al., 2008). In the Netherlands, Germany, and the United Kingdom, evidence suggests that the illicit tobacco trade is not much associated with violence (von Lampe, 2002; van Dijck, 2009; L'Hoiry, 2013).[6] Although violence is rare in Greece, instances of violence have been noted in "open markets" that are on the street and in other public places (Antonopoulos, 2008).[7] Violence appears to be more prevalent in the manufacture and trade of counterfeit cigarettes in China (Shen et al., 2010).

[5] Belgium and the Netherlands are important transit countries for the supply of illegal cigarettes to Great Britain (Vander Beken et al., 2008; van Dijck, 2009).

[6] Evidence from Germany and the United Kingdom also suggests that there is a limited relationship between the illicit tobacco trade and police and state corruption (von Lampe, 2002, 2005; L'Hoiry, 2013).

[7] In Greece, there have also been systematic reports of bribes paid to customs officers, police officers, coast guard officials, and of cooperation by judges and prosecutors with cigarette smuggling networks (Antonopoulos, 2008).

Vander Beken and colleagues (2008), van Duyne (2003), and van Dijck (2009) suggest that the "moral threshold" for stepping into the world of illegal cigarette trafficking in Belgium and the Netherlands is rather low and that market participants tend to share in a "moral absent-mindedness" in which they regard their activities as illegal, but not criminal. Hornsby and Hobbs (2007, pp. 223-224) noted the existence in the United Kingdom of "almost unanimous support for the smugglers within the working-class communities that constituted not only the clientele, but also much of the smuggling operations workforce." Similarly, research in two socially disadvantaged, lower-income urban settings, Nottingham, England (Stead et al., 2013), and central Harlem in New York (Shelley et al., 2007), shows that vendors of illicit tobacco have the respect of many in their communities. These local vendors were seen as providing a valuable service and economic benefit in response to an unpopular government action that was seen as disproportionally affecting less affluent people. One caveat, however, was that in Nottingham there appeared to be some ambivalence about potential links between illicit tobacco sales and organized crime and drug dealing and sales to children.

The research on the organizational and criminological contexts of the illicit tobacco trade in Europe has benefited from the use of a variety of information sources. For example, Vander Beken and colleagues (2008) analyzed customs and prosecution files and also conducted interviews with law enforcement officials and an industry representative. Hornsby and Hobbs (2007) interviewed members of a tobacco smuggling operation in the United Kingdom. L'Hoiry (2013) conducted a series of informal interviews with a bootlegger actively involved in a long-term tobacco bootlegging enterprise operating from the northeast of England and illegally importing tobacco from northern Europe. van Dijck (2009) analyzed files and data provided from Netherlands customs and also conducted interviews with law enforcement officials and an industry representative. van Duyne (2003) analyzed criminal investigation files from the Dutch Ministry of Finance. von Lampe (2002, 2005, 2007) used data from the German Customs Service database (INZOLL), samples of criminal files accessed through the Berlin public prosecution offices and investigations conducted by the Berlin branch of the customs service, media reports, and interviews conducted with law enforcement officials, informants, and a representative of the German association of cigarette manufacturers. Similar research approaches have not been undertaken in the United States.

One other aspect of the relationship of criminal networks to the illicit tobacco trade about which little in known, in either the United States or Europe, is the market mechanisms that affect the ease with which the illicit trade is financed. For example, is a significant amount of cash required upfront to purchase cigarettes? What kinds of volumes are usually purchased

at one time? A related question is how profits from illicit trade are laundered. These characteristics are relevant to the ease with which the market for illicit tobacco could be disrupted through financial control measures.

The Tobacco Industry[8]

Studies of internal industry documents, along with legal investigations and agreements, have shown that tobacco companies at a global level have promoted and facilitated the smuggling of legally manufactured cigarettes in order to circumvent import bans, high tax rates, and duty fees on legal imports; gain a competitive advantage over other cigarette companies; and create pressure on governments to reduce cigarette taxes and duty fees or to not increase them (Campaign for Tobacco-Free Kids, 2000, pp. 1-2). Evidence suggests that in the recent past the tobacco industry was complicit in the illicit trade in Asia (Campaign for Tobacco-Free Kids, 2000; Joossens, 2003; Collin et al., 2004; Lee and Collin, 2006), Eastern Europe and the former Soviet Union (Gilmore and McKee, 2004), Africa (Campaign for Tobacco-Free Kids, 2000; LeGresley et al., 2008), Canada (Campaign for Tobacco-Free Kids, 2000; International Agency for Research on Cancer, 2011, p. 308), Latin America (Campaign for Tobacco-Free Kids, 2000), and the European Union (Campaign for Tobacco-Free Kids, 2000). Recently, the UK government fined British American Tobacco for "oversupplying" cigarettes into the low-tax Belgium market—cigarettes that are at high risk of being subsequently smuggled back into the United Kingdom (Evans, 2014).

The tobacco industry's role in facilitating the smuggling of legally manufactured cigarettes in Europe has also been brought to light through investigations conducted by the European Union. In November 2000, as a result of its investigations, the European Union sued Philip Morris International (PMI) and several other tobacco manufacturers, alleging that they were smuggling cigarettes into Europe. In exchange for dropping all charges, PMI and the European Union reached an agreement, in 2004, stipulating a $1 billion payout over 12 years and repayment of all duty required on seizures of PMI products. Additionally, PMI agreed to implement know-your-customer protocols and tracking and tracing mechanisms (see Chapter 5 for a discussion of industry-sponsored track-and-trace schemes). The European Union negotiated similar agreements with Japan Tobacco International, British American Tobacco, and Imperial Tobacco Limited in

[8]In this section, the discussion of the tobacco industry is limited to the role in the supply chain. Chapter 4 discusses tobacco industry-sponsored estimates of illicit market size. Chapter 5 discusses industry-sponsored track-and-trace schemes, and Chapter 7 discusses enforcement actions taken by the European Union against transnational tobacco companies.

2007 and 2010 (Sweeting et al., 2009). The agreements—reinforced by the threat of litigation—have been credited with cutting off the supply of illicit cigarettes in Spain and Italy and leading to a decrease in consumption of illegal tobacco products in those countries from 15 percent in the 1990s to 1-2 percent of consumption in 2006. In Italy, the volume of seized cigarettes decreased from 1,700 tons in 1998 to just 333 tons in 2002, indicating declining levels of smuggling; also, legal sales increased from 1998 to 2000 in Campania and Puglia by 121 percent and 55 percent, respectively (Joossens and Raw, 2008). It is the combination of these two trends that makes the effectiveness of these agreements apparent. The decline in the illicit market following litigation (or threats of litigation) underscores the industry's role in facilitating the illicit trade.

One noteworthy and important characteristic of the U.S. domestic tobacco industry today is that it has become separated from international operations (although the transnational tobacco companies maintain a significant U.S. presence).[9] Although there may be a lag in detection, there is no evidence that the tobacco industry presently contributes to the domestic illicit trade, and enforcement officials from Virginia and New York City told the committee that tobacco companies had been helpful in providing training and other assistance to combat the illicit trade.[10] In the case of counterfeit products, cigarette companies lose financially and with respect to infringement of trademarks and other intellectual property, and major tobacco firms have taken direct legal action against U.S. sellers of counterfeit products (see, e.g., *CSP Daily News*, 2013).

Terrorist Organizations

Any high-profit criminal activity has the potential to be used to cross-fund ideologically motivated (rather than profit-motivated) crime, and many claims have been made that the illicit tobacco trade and terrorism

[9]PMI is incorporated as a publicly traded U.S. holding company in Virginia with its headquarters in New York City. PMI spun off from Altria in 2008, leaving Philip Morris USA as a wholly owned subsidiary of Altria that is responsible for producing and marketing the brands of Altria, formerly Philip Morris Companies. In a similar move, in 1999, R.J. Reynolds sold all non-U.S. operations to Japan Tobacco International, and in 2004, it merged with the U.S. operations of British American Tobacco, formerly held by Brown & Williamson, forming Reynolds American Inc. Two different companies are Lorillard, which exclusively markets inside the United States, having sold its cigarette trademarks outside of the United States in 1977 (Lorillard Inc., 2013), and Ligget-Vector, which also conducts all sales within the United States (Vector Group Ltd., 2012).

[10]For example, a representative from the Northern Virginia Cigarette Tax Board informed the committee of an Altria-sponsored conference in 2013 on illicit tobacco trafficking and organized crime, of which one of the sessions involved training exercises in building a legal case following a presumed interstate intercept.

are linked. In the United States, however, only a few cases that have been prosecuted illustrate such a link, despite the fact that law enforcement authorities make cases with a terrorism connection a high priority.

Terrorist organizations may rely on "alternative financing mechanisms" by trading in such commodities as illicit drugs, weapons, contraband cigarettes, diamonds, and gold. However, the extent of terrorists' use of such mechanisms is unknown because of their inherent low visibility to outsiders and the lack of systematic data collection and analysis of case information. The U.S. General Accounting Office (2003, highlights) recommended that "the Director of the FBI systematically collect and analyze data concerning terrorists' use of alternative financing mechanisms" and that "the Secretary of the Treasury and the Attorney General produce the planned report [required under the 2002 National Money Laundering Strategy[11]] based on up-to-date law enforcement investigations on precious stones and commodities."

The Bureau of Alcohol, Tobacco, Firearms and Explosives (ATF) initiated 138 tobacco investigations in fiscal 2002 and 153 in fiscal 2003. According to ATF, however, only eight of its investigations in those years were linked to terrorism (U.S. General Accounting Office, 2004, p. 20). One prominent case involved the trafficking of cigarettes, from 1996 to 2000, between North Carolina and Michigan with some of the proceeds being funneled back to the Islamist terrorist organization Hezbollah.[12] The total value of assets seized (consisting of cigarettes, real property, and currency) was about $1.5 million, and the investigation resulted in two convictions (for cigarette trafficking, money laundering, and providing material support to a terrorist organization) and an additional 22 convictions by plea bargain on related charges (U.S. General Accounting Office, 2003, p. 12; see also Shelley and Melzer, 2008). Another commonly provided example of the relationship between the illicit tobacco trade and terrorism is that of the gas station owner in the Lackawanna area of New York who was convicted of cigarette smuggling in 2005 and is alleged to have provided $14,000 to the "Lackawanna Six" to travel to Al Qaeda's Al Farooq Terrorist Training Camp in the summer of 2001 (Bureau of Alcohol, Tobacco, Firearms and Explosives, 2014; see also Virginia State Crime Commission, 2013a, p. 19). Overall, given the total number of terrorism-related tobacco investigations in the United States (keeping in mind that smuggling cases are likely to receive priority if they can be linked to terrorism), as well as

[11]The report required under the 2002 National Money Laundering Strategy "was to form the basis of a strategy to address how money is moved or value transferred via trade in precious stones and commodities" (U.S. General Accounting Office, 2003, highlights).

[12]The exact amount that was funneled to Hezbollah is unclear, at least in published accounts of the case.

the dollar amounts involved in those cases, the link between the U.S. illicit tobacco market and terrorism appears to be minor.

Outside of the United States, the illicit tobacco trade has been linked to terrorist and insurgent financing for the Irish Republican Army (Watt, 2002), Basque Fatherland and Liberty (Coker, 2003; Willson, 2009), the Kurdistan Worker's Party (Coker, 2003; Willson, 2009), the Taliban, the Revolutionary Armed Forces of Colombia, and the National Congress for the Defence of the People in the Congo (Willson, 2009). However, these accounts do not provide systematic information regarding either the absolute or relative importance of the illicit tobacco trade for financing terrorist activity.

USERS OF ILLICIT TOBACCO

Knowing the characteristics of those who use illicit tobacco can help target policies to control the illicit trade. Unfortunately, the factors that make it difficult to measure the extent of illicit activity (see Chapter 4) also make it difficult to characterize the average user. In addition, most studies have focused on adults ages 18 and older (in some countries outside the United States, research has been conducted on people ages 15 and older), so it is difficult to draw strong conclusions about the purchase and use of illicit tobacco by youth. Most of what is known about adult users of illicit tobacco is based on self-reported information collected in a number of surveys within and across different countries, either through large population surveys with questions related to tobacco use or localized surveys of smokers in selected communities: see Box 3-1.

These surveys collect demographic information (location, age, gender, and race and ethnicity) and measures for levels of education, income, and tobacco use per day,[13] in addition to inquiries about recent tobacco purchases. In some surveys, respondents have been asked about their intentions to quit smoking and their attitudes toward the purchase of illicit tobacco. Most surveys show that the majority of smokers report acquiring their cigarettes through legal means; therefore, users of illicit tobacco are often a small subset of smokers surveyed (Pesko et al., 2012; Nagelhout et al., 2013; Joossens et al., 2014a).

Understanding illicit tobacco use requires an understanding of tobacco consumption in general. Smoking has declined in the United States (and other nations) as tobacco control interventions (e.g., tax increases, smoke-free policies, and marketing restrictions) and public awareness of the dangers have increased. Perhaps equally important, smoking has been deglamorized. Smoking and tobacco use became increasingly stigmatized

[13] Most surveys collect information on cigarette use and purchases of cigarette packs.

BOX 3-1
Tobacco Surveys

Research on tobacco use often relies on information collected through surveys designed to measure behaviors, knowledge, and attitudes of specific populations at the national, state, or community levels. These surveys usually collect individual responses on use of different tobacco products, quitting attempts, risk perception, social and health influences, media exposure, and other indicators useful for measuring progress on tobacco control. Some surveys have collected recently purchased cigarette packs from respondents as part of the data collection and analysis.

There are three basic dimensions along which surveys can be distinguished: (1) design, (2) goal, and (3) size of population of interest (local or community, state, national). The design of a survey is classified as cross-sectional—either administered one time or repeated periodically (e.g., annually or biannually), but sampling different respondents each time—or as longitudinal cohort (also known as panel), conducted periodically with the intention of recontacting and resurveying the same respondents over time.

There are two distinct goals of surveys that have been used to study tobacco use and the impact of tobacco control policies, programs, and other interventions: surveillance and evaluation. Surveillance surveys are designed to gather data on key variables of interest so that the survey findings can be generalized to the population from which the survey respondents have been sampled (e.g., surveys that periodically gather data that are nationally representative for the purpose of using results to make inferences about behavioral trends: one example is the Tobacco Use Supplement to the Current Population Survey (TUS-CPS) sponsored by the U.S. National Cancer Institute and administered as part of the U.S. Census Bureau's Current Population Survey).

Evaluation surveys can have many of the features of surveillance surveys, including sampling methods and size of population surveyed, but their value lies in measuring the impact of some event (such as a policy intervention) by comparing patterns of responses to key questions before and after the event. Some evaluation surveys employ longitudinal cohort designs. An example is the International Tobacco Control Policy Evaluation Project (the ITC Project), an international research collaboration across 22 countries. In more than half of the countries, the population surveys are at the country or national level; in the other countries, the surveys are at the local/community level (e.g., seven cities in China). Many of the evaluation studies conducted with the ITC survey data use quasi-experimental methods to examine the effects of tobacco control policies by comparing the difference before and after a particular policy was implemented in a country that has implemented with a country or countries in which the policy did not change in the relevant time period.

by mainstream media and a wide range of the general population, with growing recognition of its harm to the user and others. Today, tobacco use is most prevalent in low-income, socially disadvantaged areas. U.S. adults living below the poverty line have higher smoking rates than more affluent adults (27.9 and 18.1 percent, respectively, in 2012) and are less likely to quit (Shelley et al., 2007; Agaku et al., 2014).

Research in socially disadvantaged, lower-income English and American urban settings—Nottingham (Stead et al., 2013) and central Harlem (Shelley et al., 2007), respectively—has clarified the factors that attract residents to tobacco. The social acceptability of smoking, a stressful socioeconomic environment, and the easy availability of cigarettes (legal or illegal) together reinforce smoking and undermine cessation in those areas. Specifically, the studies showed that people used tobacco to mitigate stresses associated with poverty, crime, unemployment, and discrimination. In both Harlem and Nottingham, the consumption of illicit tobacco was regarded as a normative rather than a marginal behavior—so much so that in Nottingham smokers who bought tobacco legally might be mocked for being deliberately extravagant, as trying to impress others with a show of wealth. Similarly, a study of socioeconomically deprived areas in Edinburgh, Scotland, found that most users of illicit tobacco believed that its purchase was rational in the face of material hardship and that the vendors of illicit tobacco (who were contacted by users through social networks, family, and friends, and whose identity and location were also often commonly known) provided a valuable service to the community (Wiltshire et al., 2001).

Nevertheless, there is a cost associated with buying illicit cigarettes, and there are varying motivation levels for consumers to pay that cost. Merriman (2002, p. 494) refers to an "inconvenience price":

> This is the time and discomfort consumers incur in order to engage in a transaction. A shop that is centrally located and which many consumers pass in the course of their daily affairs has a low inconvenience price. A shop located in a dark corner of the city and which requires a special trip to visit has a high inconvenience price. . . . The locations of street sellers who deal in smuggled cigarettes can be undependable, or there may be uncertainty about the authenticity of brand marking on the cigarettes. Consumers may even fear embarrassment or legal penalties if they are detected buying smuggled cigarettes.

The inconvenience price paid by consumers in Harlem and Nottingham will presumably be lower than the inconvenience price paid by consumers in higher-income communities.

In the studies of low-income communities discussed above, most current smokers were not only aware of a growing illegal cigarette market, but also admitted to buying illicit cigarettes to avoid higher prices. Consistent

with that finding, a survey of smokers in northeast England indicated that those who were young, male, and "struggling" financially were most likely to be approached by illicit sellers and to be illicit buyers (NEMS Market Research, 2013). A survey of smokers in Taiwan similarly found that smokers of smuggled cigarettes tended to be younger, male, with lower incomes, and less education than the general population (Chen et al., 2010).

In the United States, most national-level studies have focused on tax-avoidance strategies, including purchasing cigarettes in states with lower after-tax prices or on the Internet (Hrywna et al., 2004; Hyland et al., 2004; Pesko et al., 2012; Coady et al., 2013).[14] U.S. data consistently show that approximately 25 percent of smokers use price-minimization strategies (Pesko et al., 2012; Coady et al., 2013), although some studies have found rates as high as 59 percent (Hyland et al., 2004). Price-minimization strategies include tax avoidance and evasion, but they also include such legal strategies as choosing a cheaper brand, buying cartons, and taking advantage of price promotions. Female smokers and smokers over the age of 65 are the most likely to engage in price-minimization strategies in the United States (Hyland et al., 2004; Pesko et al., 2012). Analysis of a large sample of nationally representative data from the 2006 to 2007 Tobacco Use Supplement of the Current Population Survey (TUS-CPS), which focused on purchases by the carton and from travel to low-tax states, found that racial and ethnic minorities, low-income individuals, and those who smoked less frequently were the least likely to use price-minimization strategies (Pesko et al., 2012).

Proximity to a state, Native American reservation, or country with lower cigarette excise taxes has been associated with higher rates of illicit tobacco use. One study (DeCicca et al., 2013) using data from the TUS-CPS found that the median distance for crossing a state border for cigarettes is 20 miles and that the probability of cross-border shopping increases with proximity to a state border. That same study found that the probability of cross-border shopping to avoid higher taxes increased slightly with income. Other studies have found that middle-aged and older smokers were also more likely than young adults under the age of 30 to cross a border to purchase cigarettes. For Internet sales, women, people ages 45-65, and non-Hispanic whites have been found the most likely to purchase cigarettes online (Hrywna et al., 2004; Hyland et al., 2004; Pesko et al., 2012).

A recent representative survey of European smokers in 18 countries found that smokers living in a country that bordered another country that was a known source of illegal cigarettes were more likely than smokers

[14] As discussed in Chapter 1, cross-border purchases would technically be tax evasion in most U.S. states where use taxes are supposed to be paid, although smokers themselves may not realize that they are breaking the law.

in other countries to be associated with an illicit purchase either through self-report or possession of an illicit pack (Joossens et al., 2014a). Another study, using data from the surveys of the International Tobacco Control (ITC) project in France, Germany, Ireland, the Netherlands, Scotland, and the rest of the United Kingdom, focused on cross-border purchases (Nagelhout et al., 2013). The percentage of smokers making cross-border purchases was higher in provinces or states of France and Germany that bordered other countries (24 and 13 percent, respectively) than nonborder regions (2 and 7 percent, respectively), and those smokers most likely to purchase cigarettes in another country tended to have higher levels of education or income and to be daily, heavier smokers than others in the survey.

The association between household income and education and the likelihood of engaging in tax avoidance or tax evasion varies both in direction and magnitude across countries. For example, Guindon and colleagues (2013) find that in the United States, individuals with higher levels of education have higher odds of engaging in avoidance/evasion, as do individuals in the United Kingdom with higher income. In Canada, however, the association between household income and avoidance/evasion is negative, while in France there is no statistically significant association between socioeconomic status and the odds of engaging in avoidance or evasion. The authors suggest (Guindon et al., 2013, p. 6) that "[t]hese results highlight the importance of taking into consideration country-specific contextual factors." It is also possible the results are in part a function of conflating tax avoidance with tax evasion.

It is also important to pay careful attention to how illicit purchases are described in any survey. For example, the CPS-TUS asks customers about out-of-state purchases, Internet and reservation purchases, and the purchase of individual cigarettes. As a result, the CPS-TUS misses illegal purchases of packs of untaxed cigarettes on the local illicit market, which would be captured in litter collection or pack swap studies. Those purchases may make up a substantial portion of the illicit trade in some areas.

Microgeographic evidence based on studies of littered cigarette packages provides support for economic and proximity factors in the use of illicit tobacco, particularly tobacco purchased on the illicit market, although it does not provide individual-level information about purchasers. Merriman (2010) examined discarded cigarette packages throughout the city of Chicago and found that a 1-mile increase in proximity to a lower-state-tax border decreased the probability of a discarded pack having a local stamp by 1 percent. All else being equal, local stamps were more likely to be found in neighborhoods with higher household income, "perhaps because high income households are less likely to dedicate extra time and effort to circumventing cigarette taxes" (Merriman, 2010, p. 76). However, the probability of finding a local tax stamp also increased with the level

of poverty, "perhaps because households in poverty are less mobile than higher income households and find it difficult to travel to other tax zones and avoid the tax" (Merriman, 2010, p. 76).[15] At the same time, having a higher share of non-white households was associated with a lower probability of finding a local tax stamp, "perhaps because neighborhoods with high proportions of minorities are more likely to have formal or informal networks that allow circumvention of the cigarette taxes" (Merriman, 2010, p. 76).

Chernick and Merriman (2013) conducted a similar litter pack analysis in New York City: they found that proximity to the nearest Native American reservation had a significant positive effect on the probability of finding cigarette packs without the appropriate tax stamps. However, in contrast to Merriman's (2010) findings for Chicago, they found poverty rates to be positively associated with the share of no-tax-paid packs. Chernick and Merriman, 2013, pp. 655-656) hypothesized:

> Because the poor are less likely to own a car, the marginal cost of traveling to border states to avoid cigarette taxes—the main source of avoidance in Chicago—is likely to be greater relative to income for poor smokers. By contrast, in NYC, untaxed or lower taxed cigarettes are more likely to be sold illegally by vendors who bring them to poor neighborhoods. This difference is related to the proximity of Native American reservations in NYC, and the greater density of population in NYC than Chicago. Proximity makes it cheaper for bootleggers to obtain untaxed cigarettes, while the higher density in NYC makes it more profitable to sell illegal cigarettes at street level.

On balance, the available research suggests that poor socioeconomic status and limited education, especially among younger smokers, are associated with the intention to purchase illegal cigarettes locally. That is, in areas where a supply of illicit products is available, lower-income smokers with less education are more likely than smokers with higher incomes and education to use illicit tobacco or smuggled cigarettes. In contrast, higher levels of income and education are associated with the willingness to travel to another location or to use other price minimization strategies (e.g., online purchases) to avoid high taxes on cigarette purchases. This highlights the importance of distinguishing between tax evasion, which tends to be tied to local purchases of illicit cigarettes, and tax avoidance, which typically involves travel and other related price minimization strategies.

A person's level of addiction and intention to quit are also related to the

[15] Merriman (2010, p. 83) acknowledges the potential bias in his estimates: "Litterers may be disproportionately 'scofflaws' and those who consume cigarettes in their homes (and thus do not litter) may be disproportionately likely to comply. Creative methods for investigating these hypotheses may be worthwhile topics of future research."

intent to purchase smuggled cigarettes. Taylor and colleagues (2005) found that heavy smokers with high levels of addiction living in a low-income area of Yorkshire, England, were most likely to seek out smuggled cigarettes. Guindon and colleagues (2013) found that heavier smokers tend to have higher odds of engaging in tax avoidance or evasion; however, this was only statistically significant in Canada and the United States, not France and the United Kingdom. They also found that smokers who intended to quit had lower odds of engaging in tax avoidance or evasion in France, the United Kingdom, and the United States. Other studies have not found a strong correlation between illicit tobacco use and weekly cigarette expenditures in Taiwan (Chen et al., 2010) or daily cigarette consumption in Europe (Joossens et al., 2014a). In socially disadvantaged areas in both England and the United States, research has shown that those who are most likely to buy illicit tobacco are heavier smokers with higher levels of addiction (Stead et al., 2013).

YOUTH ACCESS TO ILLICIT TOBACCO

Transactions that supply cigarettes to people under the age of 18 from commercial sources are illegal in every state, and most but not all states also prohibit noncommercial transfers of cigarettes to youths. However, because the scope of this study is limited to instances where youths engage in the same sorts of illicit transactions as do adults, the provision of cigarettes to youths from social sources (friends, family) falls outside the scope of this study, as do minimum-age violations by vendors selling cigarettes that have been appropriately taxed.[16]

To document the sources of cigarettes to minors in the United States, the committee used data from the National Youth Tobacco Survey (NYTS), which is conducted by the Centers for Disease Control and Prevention. It was first conducted in 1999 and repeated in 2000, 2002, 2004, 2006, 2009, 2011, and 2012. The NYTS provides data that are representative of all middle school and high school students in the 50 states and the District of Columbia.[17] (Students provide the data by filling out a questionnaire

[16]The much larger issue of illegal youth access to cigarettes is addressed by a companion study by the Committee on the Health Implications of Raising the Minimum Age for Purchasing Tobacco Products (Institute of Medicine, 2015).

[17]The most recent NYTS used a stratified three-stage cluster sample design. The final sample from a three-stage sampling process consisted of 284 schools, of which 228 participated, for a school participation rate of 80.3 percent. The survey yielded 24,658 completed student questionnaires from the sample of 26,873 students, for a student participation rate of 91.7 percent. The overall participation rate, the product of the school-level and student-level participation rates, was 73.6 percent. For further details, see http://www.cdc.gov/tobacco/data_statistics/surveys/nyts/ [January 2015].

in class, which means that those who are absent or have dropped out of school are not included.) This survey, which is generally considered the best available source for information on youth use of tobacco, tracks the dramatic reductions in youth smoking since the Tobacco Master Settlement Agreement of 1998 (see Chapter 1) and subsequent implementation of more restrictive marketing practices and large increases in excise tax rates.

It is important to note that underage cigarette sales constitute only a small fraction of the overall illicit tobacco market. Under one set of reasonable assumptions about underreporting in the NYTS, that fraction amounts to about 1 percent: see Box 3-2. This share of the illicit market, while not known directly, is unlikely to be of much importance to the revenues or

BOX 3-2
Underage Cigarette Sales as a Share of the Overall Market

Based on self-report data from the National Youth Tobacco Survey (NYTS), imputing the midpoint to ranges of reported consumption and assuming 25 cigarettes per day for those who smoked more than a pack, youths ages 12-17 smoked 2,032 million cigarettes in 2012. Federal tax-paid sales data show that 293 billion cigarettes were sold in 2011, and assuming a similar number in 2012, smoking by youths accounts for 0.69 percent of sales. The figures for youths ages 12-14 and 15-17 are 0.10 percent and 0.59 percent, respectively.

One can consider three ways in which the above assumptions may not be correct, which leads to different numbers:

- Youths underreport their smoking so that 1 out of every 3 cigarettes smoked is not reported. With this change in the assumption, smoking by youths accounts for 1.04 percent of sales (0.16 percent and 0.88 percent for youths ages 12-14 and 15-17, respectively).
- Youths underreport their smoking so that 1 out of every 2 cigarette smoked is not reported. With this change in the assumption, smoking by youths accounts for 1.39 percent of sales (0.21 percent and 1.18 percent for youths ages 12-14 and 15-17, respectively).
- We restrict "youth share" to cigarettes smoked by individuals who say that at least some of their cigarettes were bought directly or bought on their behalf, and we exclude cigarettes smoked by individuals who only say that their cigarettes were gifts, bought from noncommercial sources or stolen. If there is no underreporting, smoking by youths ages 12-17 accounts for 0.49 percent of sales (0.07 percent and 0.42 percent for youths ages 12-14 and 15-17, respectively). Assuming 50 percent underreporting, then 1 percent of cigarette sales are to underage youths.

Thus, even with a wide range of assumptions, the share of total illicit tobacco use attributed to youths under the age of 18 is very small.

profits for illicit sellers. However, the illicit market may increase underage smoking, and thus contribute to public health costs, through several mechanisms. First, since unlicensed sellers are operating outside the law, they are unlikely to be scrupulous about checking the identification of buyers, hence providing youths with a way around the minimum-age restrictions. Second, to the extent that the illicit trade creates low-price options for smokers, or lowers prices generally, youths (like adults) will smoke more (Carpenter and Cook, 2008). However, evidence as to what extent these mechanisms may be operating and their possible importance in the market is lacking. Third, since 88 percent of regular adult smokers began smoking before the age of 18 (U.S. Department of Health and Human Services, 2014), postponement of youths' smoking might be sufficient to keep many people from ever developing an addiction. These transactions are therefore of particular public health concern.

Table 3-1 documents some well-established findings about youth access, using data from the 2012 NYTS. To create the table, we divided smokers in the 2012 NYTS into two groups according to whether they reported buying from a commercial source or obtaining their cigarettes in some other fashion (social sources, theft). The total number of cigarettes smoked for each group was estimated by multiplying the number of days smoked in the previous 30 days by the number of cigarettes smoked per smoking day.

TABLE 3-1 Likelihood that Smokers Ages 12-17 Purchased from Commercial Source, 2012

Age and Source	Nondaily Smokers	Daily Smokers	All Smokers
Ages 12-14			
Number who reported purchasing cigarettes commercially	104	36	143
Number of respondents	389	47	436
Percentage	26.7	77.0	32.7
Ages 15-17			
Number who reported purchasing cigarettes commercially	446	219	666
Number of respondents	1,059	283	1,342
Percentage	42.1	77.4	49.7

NOTE: See text for details.
SOURCE: Data from the 2012 National Youth Tobacco Survey.

These numbers are reported in the form of ranges: we used the midpoint of each range; for the open-ended category of "more than 20 cigarettes," we used 25. A total of 101,178 cigarettes were smoked in the previous 30 days by purchasers, while the total number of cigarettes smoked by respondents who obtained their cigarettes from social sources or theft was 44,900.

About half of underage youths who smoke do not buy cigarettes from a store or other commercial source, but rather obtain them, usually as a gift, from "social" sources: acquaintances (usually other teenagers) and family members. But as smokers grow older and especially as they start smoking more regularly, they are more likely to purchase cigarettes from commercial sources (White et al., 2005). The NYTS data document these patterns. Smokers (survey respondents who report having smoked at least once in the previous 30 days) are divided into four groups by frequency of smoking (less than daily and daily) and age group (12-14 and 15-17). As can be seen, the likelihood of smokers' obtaining their cigarettes by buying them from a commercial outlet increases with both age and regularity of smoking.

The relative importance of commercial sources is significant for those who smoke more: only 46 percent of youths ages 12-17 who smoke report buying their cigarettes from a commercial source, but they account for 69 percent of all cigarettes smoked by youths.

Table 3-2 provides some detail on the types of commercial source for youth purchasers. Most buy from a store in face-to-face purchases. Relatively few purchased from vending machines (which by 1999 were restricted to adult-only establishments) or by mail. The NYTS data do not show the number of purchases from unlicensed dealers, such as street vendors, who are operating outside of the law. The "other" category in Table 3-2 may include most of such purchases, but it may also include some legitimate sellers. The increase in the prevalence of "other" sources is intriguing: illicit commercial vendors may be playing a growing role in supplying youths, but there are no systematic data on that possibility for the United States.[18]

SUMMARY AND RECOMMENDATIONS

In the United States, Native American reservations, along with low-tax states, have been a major source of bootlegged cigarettes. However, legal and regulatory changes have recently shifted the source away from reservations and toward bootlegging from low-tax states, such as Virginia.

[18] A national survey of high school students in Canada found that 7.9 percent of current smokers reported that they usually smoked contraband cigarettes, most of which came from tribal reserves (Leatherdale et al., 2011). For the most part, these cigarettes were provided by family and friends, rather than from illicit retailers.

TABLE 3-2 Commercial Sources for Buyers Ages 12-17 During Previous 30 Days, 1999 and 2012

	Percentage (95% confidence interval)	
Source	1999	2012
Store: Convenience Store, Gas Station, Grocery Store, Drug Store	83.8 (82.1-85.5)	57.1 (54.6-59.6)
Vending Machine	3.0 (2.2-3.8)	4.6 (3.5-5.7)
Internet or Mail	4.6 (3.6-5.6)	2.7 (1.88-3.5)
Other Commercial Source	1.9 (1.3-2.5)	27.5 (24.2-29.8)
No Response	6.7 (5.6-7.9)	13.8 (12.0-15.6)
Sample Size for Purchasers	1,818	1,495

NOTES: Entries are computed as percentage of the total number of respondents ages 12-17 who indicate that they had bought at least one pack of cigarettes during the previous 30 days. All computations are weighted. For 2012, some respondents indicated more than one of these sources.
SOURCE: Data from 1999 and 2012 National Youth Tobacco Survey.

Globally, the tobacco industry has been the source of some of the illicit trade. Although sales of counterfeit and illicit white cigarettes do not financially benefit the major tobacco companies, the tobacco industry benefits from other aspects of the illicit tobacco trade: the smuggling of legally manufactured cigarettes is a way of introducing the industry's products into new markets or to lower the price, thus expanding its share in existing markets. Although the tobacco industry has been involved in the illicit trade at a global level, there is no evidence to date that the tobacco industry has been directly involved in the United States.

Evidence from Europe suggests that the structure of illicit tobacco networks and the methods involved in the illicit tobacco trade (especially bootlegging) appear to be relatively simple and that the people involved generally do not have extensive criminal records; the illicit tobacco market trade is also not associated with violence. Although many claims have been made regarding the relationship between the illicit tobacco trade and terrorism, the link between the U.S. illicit tobacco market and terrorism appears to be minor, and there is also no systematic evidence of sustained links between the global illicit tobacco trade and terrorism.

On the demand side, the consumption of illicit tobacco, compared with smoking in general, carries little additional social stigma, particularly in places where smoking is relatively socially acceptable. Individuals with

low socioeconomic status and limited education tend to purchase illegal cigarettes locally, while people with higher levels of income and education tend to purchase online or to travel to another location to avoid high taxes on cigarette purchases. This difference highlights the importance of distinguishing between tax evasion, which tends to be tied to local purchases of illicit cigarettes, and tax avoidance, which typically involves travel and other related price minimization strategies. On balance, the evidence also suggests that heavier smokers and those less interested in quitting are more likely to engage in tax avoidance/evasion.

Youth access to illicit tobacco in the United States represents a special situation, since the sale of tobacco to people under the age of 18 is illegal in every state. For this study, however, the only relevant circumstance is when youths engage in the same illicit transactions as do adults. In this context, a reasonable estimate is that youth purchases constitute about 1 percent of the illicit market. Although these transactions are a very small part of the illicit tobacco market, they represent a major concern for public health.

RECOMMENDATION 3-1 Research and data are needed about the individuals and criminal networks who traffic in illicit tobacco in the United States. A deeper understanding of these individuals and networks (criminal histories, motives, ties to organized crime, financing mechanisms, links to adjacent markets, etc.) would provide valuable knowledge about the supply chain and illicit procurement paths and the ways in which they may evolve in the future. Qualitative approaches should be complemented with quantitative approaches to measuring supply-side participation in illicit markets, such as surveys of retail store owners, wholesalers, and stamping agents; and systematic data collection (with the assistance of enforcement and regulatory agencies) on items such as the number of licensed and unlicensed sellers in a market, location of sellers, and numbers of violations. Specific questions could be asked about such topics as the nature of their sales and where, from whom, and for how much they purchase cigarettes for resale. Since sellers might be hesitant to reveal their participation in the illegal market, survey techniques aimed at soliciting true participation in stigmatized activities would need to be used.

RECOMMENDATION 3-2 Because youths under the age of 18 are of particular concern to policy makers, research is needed about the extent to which they purchase cigarettes in the illicit market and how easily they do so. The National Youth Tobacco Survey should add items that would clarify the nature of the "other commercial sources" that have become more prevalent in recent years.

4

Measuring the Size of the Illicit Tobacco Market

Quantifying any illegal activity is rife with complications as, by its very nature, the activity is obfuscated. This is true not only of tobacco (Merriman et al., 2000; Joossens et al., 2010; Bouchard and Ouellet, 2013), but also of other illegal markets (see, e.g., Bouchard and Tremblay, 2005a). An additional challenge for estimating the size of the illegal tobacco market (relative to strictly illegal drugs) is differentiating between products that originate from legal sources from the minority of products originating from illegal ones.[1]

A number of methods have been used to grapple with these difficulties and produce estimates of the global size of the illicit tobacco market, as well as estimates for specific countries. The first section of this chapter describes and assesses seven different methods and provides estimates derived from each. The second section presents the committee's own (lower-bound) estimate of the size of the illicit market in the United States. The chapter concludes by offering recommendations for improving future estimates.

METHODS

As noted above, seven methods have predominantly been used to measure the size of the illicit tobacco market. These methods can be grouped

[1]In Colorado and Washington, there are now legal and illegal markets for recreational marijuana, which may mirror the situation for tobacco. There is not yet enough evidence to determine how users will respond to the opening of new legal markets: Will its legality attract first-time users or will users used to making illegal purchases switch to the legal market?

into three categories: residual methods, direct measurement, and expert opinion. Residual methods—such as trade gap analyses, comparisons of self-reported consumption and tax-paid sales, and econometric modeling—combine two or more sources of data on the illicit and licit markets to infer the scale of the illicit market. Direct measurement estimates, quantifying a particular segment of the illicit market, are based on such methods as empty pack collections and pack observation, return, and swap surveys, which are typically conducted in neighborhoods or cities. Larger-scale direct measurement estimates are derived from representative surveys of tobacco users' purchasing behavior that ask specific questions about illicit purchases. Methods using expert opinion are based on polls of a number of informed sources to compile data from which an estimate can be extrapolated.

Residual Methods

One way to measure the size of the illicit tobacco market is to identify discrepancies among data from different datasets. The underlying idea in residual methods is that one measure captures both formal and informal market activity, and the other measure captures only legal market activity. This residual method of estimating illegal markets is common in many studies of informal economic activity. To measure the underground economy, for example, one can compare the total amount of money spent by a country's residents (which is assumed to capture all market activity) to the total amount they earned (which is assumed to only record earnings in the formal sector), or one can compare a country's officially recorded gross domestic product, which reflects the legal or formal market activity with that country's total energy use, which is necessary for both formal and illicit activity. These methods are best characterized as indirect, as there are almost always other, nonillicit, reasons for different sources to yield different results, and researchers typically have to make assumptions about unknown factors to produce estimates of the size and growth of the illicit market. For tobacco, three basic residual approaches have been used: one based on the trade gap, one that compares tax-paid sales and self-reported consumption measures, and one that uses econometric modeling.

Trade Gap

Analyses of the trade gap can be used to estimate the scale of the illicit tobacco market, specifically, tobacco that is labeled as intended "for export" (and thus not subject to most taxes), even though it will be sold domestically. These analyses compare the total recorded exports and the total recorded imports; the difference reflects diversion to illegal markets while in transit. This method was first used by Bhagwati (1974) and Simkin

(1974) in studies of, respectively, various Turkish and Indonesian imports and exports. Joossens (1998) applied the method to cigarette imports and exports, finding that global exports consistently exceeded imports in 1996 by about 400 billion cigarettes, suggesting that one-third of global cigarette exports were smuggled. Merriman and colleagues (2000) also used this method in the mid-1990s and found similar results—nearly one-third of recorded exported cigarettes did not appear in recorded imports, which amounted to about 6 percent of global consumption.

Other global commodities also demonstrate discrepancies in recorded imports and recorded exports, and smuggling is not the only explanation for these statistical discrepancies (Feenstra et al., 1999). Factors that may contribute to such discrepancies include errors of commodity classification; time lags; misallocation of country of origin by the receiving country; and overinvoicing by the exporting country (Bhagwati, 1974; International Agency for Research on Cancer, 2011). However, cigarettes remain unique in that exports consistently and greatly exceed imports, with the gap appearing to fluctuate around policy changes. Thus, according to Merriman and colleagues (2000), the most reasonable explanation for the differences in recorded cigarette imports and recorded exports is diversion to illicit markets.

At the global level, a trade gap analysis assumes that all smuggled products pass initially through the legal export channel and are then diverted. Therefore, it does not capture small-scale smuggling (bootlegging). At the country level, the trade gap analysis has only one additional assumption: that all exported products destined for a particular country are, in fact, smuggled into that country and not diverted to some other country. As a result, this method does not capture illicitly traded cigarettes that are manufactured domestically. Therefore, this approach, both at the global and country levels, must be complemented by other methods to capture bootlegging and illegally manufactured domestic cigarettes.

Comparing Tax-Paid Sales and Self-Reported Consumption Measures

Levels of tax avoidance and tax evasion can be found by comparing the reported sales on which taxes were paid and self-reported cigarette consumption based on population surveys. Of course, there are many reasons why tax-paid sales and self-reported consumption may differ, such as underreporting of smoking prevalence and consumption by smokers, failure to include certain segments of the population in surveys (e.g., institutionalized populations, military), and random statistical variation. This method was used in two different studies in the United Kingdom. For the year 2000, one study estimated that nearly 18 percent of total consumption in the United Kingdom was illicit (Her Majesty's Customs and Excise, 2000;

see also DTZ Pieda Consulting, 2000). (The committee used an adapted version of this method for its calculation of the size of the illicit U.S. market: see below.)

The numbers derived from using this method often reflect particular biases. Tax-paid sales usually account for shipments at the factory or wholesale level and not actual consumption (Merriman, 2001). Most self-reported consumption surveys (e.g., the Tobacco Use Supplement to the Current Population Survey and the National Health Interview Survey) only ask participants general questions about tobacco use and not specific questions that could be used to estimate the prevalence of illicit activity, such as location and price of last purchase. In addition, survey participants often underreport their use behaviors. If adjustments to the data for underreporting are not made, estimates using this method will underestimate the size of the illicit market (Warner, 1978; Farrelly et al., 2012b).

Econometric Modeling

Econometric modeling of cigarette demand can be used to estimate levels of both individual cross-border shopping and small-scale smuggling. Using data from neighboring jurisdictions, this method estimates predicted tax-paid sales on the basis of variables for incentives and opportunities for tax avoidance and evasion, such as differences in prices across jurisdictions, population distributions near borders, and the extent of cross-border tourist traffic. The difference between predicted tax-paid sales and actual tax-paid sales results in estimates for tax avoidance and tax evasion in a given location.

Econometric modeling has been used extensively to estimate the scale of the illicit tobacco market in the United States (see Becker et al., 1994; Yurekli and Zhang, 2000; Farrelly et al., 2003). The Mackinac Center for Public Policy also estimates rates of smuggling in each state using econometric modeling, though their results generally present higher rates than the other studies. For example, their results indicate 51.8 percent and 47.5 percent of the cigarettes consumed in Arizona and New York, respectively, were illicit in 2009 (Lafaive and Nesbit, 2010). (See discussion below for further comparison of the committee's and the Mackinac Center's methods.[2])

Econometric modeling is a valuable tool for estimating levels of bootlegging and cross-border shopping, but it is typically not used in a way that would capture large-scale smuggling. In addition, compared with the meth-

[2]Data from the Mackinac Center for Public Policy; see http://www.mackinac.org/18128 [January 2015] and http://taxfoundation.org/article/cigarette-taxes-and-cigarette-smuggling-state [January 2015].

ods discussed above, econometric modeling of cigarette demand requires a high level of expertise and is subject to the availability of appropriate data.

Direct Measurement

Arguably the most conceptually straightforward way to measure the size of the illicit tobacco market is to directly measure it. Population-based surveys that ask smokers about where they purchased their cigarettes can capture information about participants on both the demand side of the market (i.e., consumer data) and the supply side of the market (i.e., where and from whom illicit cigarettes can be purchased). Observations of actual cigarette packs can often reveal the extent of tax avoidance and evasion, as well as the prevalence of counterfeit cigarette sales in a market (which might otherwise be undetected by smokers). Attempts to directly measure the illicit market also include empty pack collections, and pack observation, return, and swap studies.

Population Survey Methods

Representative surveys of tobacco users' purchasing behavior can be useful in assessing the extent of certain forms of tax avoidance and tax evasion (see Emery et al., 2002; Taylor et al., 2005; Chiou and Muehlegger, 2008; Callaghan et al., 2009; Luk et al., 2009; DeCicca et al., 2010; Leatherdale et al., 2011). These surveys are more useful than self-reported consumption surveys because they ask specific questions that can be used to quantify the prevalence of participation in the illicit tobacco market among smokers, not simply the prevalence of smoking. Surveys, such as the International Tobacco Control Policy Evaluation Study (ITC), which includes questions on cross-border, duty-free, Indian reservation, and Internet purchases and other options that potentially reflect untaxed or lower-taxed purchases (such as purchases from street vendors), can be used to determine the prevalence of cross-border shopping, direct purchasing, and duty-free purchasing. Because there are few laws against purchasing illicit tobacco products, tobacco purchasers have little or no legal incentive to conceal their behavior.

Joossens and colleagues (2014a) conducted an in-person survey with a cigarette pack inspection component to estimate illicit tobacco consumption across 18 European countries. The in-person portion of the study was conducted between January and July 2010 among approximately 18,056 individuals, representative of each European country in terms of age, sex, habitat, and socioeconomic status. During the in-person survey, interviewers asked current cigarette smokers questions to ascertain participants' sociodemographic status, smoking status, and number of cigarettes smoked

per day. Interviewers also asked participants to show their latest purchased pack of cigarettes or hand-rolled tobacco.

Cigarette packs were inspected and identified as illicit if they carried a minimum of one of four criteria: (1) it was bought from illicit sources (as reported by smokers); (2) it had an inappropriate tax stamp (i.e., a pack with a foreign stamp or one that had no tax stamp unless the pack had been bought over the Internet, in another country, or in a duty-free shop); (3) it had an inappropriate health warning (i.e., a pack with health warnings in a foreign language or without health warnings, unless the pack had been bought over the Internet, in another country, or in a duty-free shop); or (4) its price was substantially below the known price in the participant's market.

The results of this study showed that 6.5 percent of all packs sampled were illicit, with the highest prevalence of illicit packs in Latvia (37.8 percent), and illicit packs were more frequent among those living in a country that shared a land or sea border with Belarus, Moldova, Russia, or Ukraine.

Guindon and colleagues (2013), using this method and the ITC survey, found that 10 percent of smokers in Canada, France, and the United Kingdom reported that their last cigarette purchase came from a low-tax or untaxed source, whereas the prevalence estimates in Malaysia suggested much higher levels of tax avoidance and tax evasion. Similarly, researchers used the ITC surveys and the Ontario Tobacco Survey to gauge the size of the illicit market in Canada, which is detailed in the next section.

Loomis and colleagues (2010) analyzed data from the 2005-2009 New York Adult Tobacco Survey, encompassing the period in which an increase of $1.25 to the excise tax on cigarettes was enacted (in 2008). They found that (1) between 25 and 32 percent of smokers purchased cigarettes at Indian reservations, (2) between 2 and 5 percent of smokers made cigarette purchases over the Internet; and (3) both of these behaviors increased following the tax increase.

This method, as with other methods using self-reported survey data, is limited in a number of ways. According to Guindon and colleagues (2013), the smaller estimates found in their study as compared with pack inspection studies (e.g., Fix et al., 2013) may be explained by social desirability bias or imperfect recall. Also, because it is known that the prevalence of tax-avoidance behavior increases with smoking frequency, a sample limited to heavy or regular smokers will result in higher proportions of this behavior. In addition, especially when people are asked about illegal behaviors, though the surveys may be anonymous and though penalties and enforcement are generally minor, respondents may be less likely to report illegal purchases, and consumers are often unsure as to the legality of their purchases.

Empty Pack Collections

Empty pack collections estimate levels of tax avoidance and tax evasion in a particular area through observation. Researchers collect the packages of tobacco products and examine them for the presence of appropriate tax stamps, local warning labels, and other pack markings, and they also determine the product constituents to identify products that do not bear the appropriate stamps, labels, and markings or that may differ from those in locally produced products. This method was used in Poland as part of the ITC survey (International Agency for Research on Cancer, 2008); Wilson and colleagues (2009) surveyed discarded cigarette packs in New Zealand; Merriman (2010) used this method in Chicago, collecting littered packs in order to estimate the levels of tax evasion and tax avoidance of Cook County's and the city of Chicago's tobacco taxes; and Kurti and colleagues (2012) collected littered packs in the South Bronx.

In Chicago, Merriman (2010) collected both littered cigarette packs and those that had been properly disposed in representative random sample areas in the city and surrounding jurisdictions. Researchers collected littered packs from 100 transportation analysis zones (TAZs),[3] which were selected using a weighted random sample with preference for locations with higher populations and employment. Pack collection occurred between mid-May and mid-June 2007: teams of at least two data collectors walked precisely along each selected route and picked up every littered pack. Collected packs were then coded to record the location found and the affixed tax stamps. The data were then compared to point-of-purchase data from select locations and census data on commuting patterns. The study found high rates of noncompliance: three-fourths of packs collected in Chicago did not have Chicago tax stamps. Compliance increased as the distance from low-tax borders increased.

Chernick and Merriman (2011) organized a littered pack collection in New York City just before the 2009 federal tax increase and found that 15 percent of the packs collected had no tax stamps from the state. The next data collection, after the tax increase, yielded a significantly higher prevalence rate of packs with no tax stamps, 24 percent. Two additional waves of data collection in subsequent months yielded similar results, suggesting that the tax-avoidance rate stabilized.

Davis and colleagues (2013) used the littered cigarette pack collection method to estimate tax avoidance and evasion in five northeastern cities: Boston; New York City; Philadelphia; Providence, Rhode Island;

[3]For transportation planning, Chicago is divided into 930 TAZs. In the city and neighboring jurisdictions, TAZs closely follow traditional township boundaries and usually are one-half-mile rectangles. Census data were matched to each TAZ using geographical information systems to overlay census tract maps on TAZ maps (Merriman, 2010).

and Washington, D.C. The researchers randomly selected 30 census tracts weighted by population and employment in each city, similar to the Merriman (2010) study in Chicago. Littered packs were collected by walking the periphery of the census tracts for 45 minutes or until nine littered packs were found. The study found that 58.7 percent of cigarette packs collected had nonlocal tax stamps, foreign tax stamps, or no tax stamps.

Empty pack surveys have also been used by the tobacco industry to estimate the size of the illicit tobacco market. However, researchers have questioned their findings and methodologies. In an assessment of industry-conducted empty pack surveys in the United Kingdom, Rowell and colleagues (2014) found industry estimates to be "inconsistent with historical trends and recent independent data . . . whose methodology and validity remain uncertain" (p. 1). The analysis compared industry data—mostly compiled through empty pack surveys—with data from Her Majesty's Revenue and Customs and the Pricing Policies and Control of Tobacco in Europe Consortium (PPACTE). Industry claims that the market share of illicit cigarettes increased from 6 percent in 2007 to 16 percent in 2010 were unsubstantiated by independent data that showed no change. Stoklosa and Ross (2013) used data from discarded packs on streets and surveys of packs in personal possession to estimate the size of the illicit trade in Poland and compared them with industry estimates. Commissioned by four major tobacco companies (British American Tobacco, Imperial Tobacco Group, Japan Tobacco International, and Philip Morris International), the Almares Research Group found that 22.9 percent of cigarette packs in Warsaw were not meant for the Polish domestic market. Stoklosa and Ross (2013) concluded that industry estimates of tax avoidance and tax evasion in Poland were higher than their estimates (14.6 and 15.6 percent) by nearly half.

Because this approach focuses on tax avoidance and tax evasion at the community level, estimates using this method are difficult to extrapolate into the aggregate (Fix et al., 2013). Tax-avoidance rates vary widely by neighborhood in New York City and elsewhere, where poor areas and those that are closer to Indian reservations have higher rates of avoidance. For instance, a discarded pack study conducted by Kurti and colleagues (2012) in the South Bronx found that 42 percent of the sampled cigarette packs did not have a tax stamp, 15.9 percent possessed counterfeit tax stamps, and for 18.3 percent taxes were paid outside of New York City: this estimated the prevalence of contraband to be much higher than that found by Chernick and Merriman (2011).

Though empty pack collections are useful in that researchers are able to identify the pack's purchase location based upon markings and use location based on location of the littered pack, it is difficult to define a representative sample area for collections. The method is also limited by the fact that commuting patterns and tourism may inflate results and that the times of

purchase and of consumption of the littered packs are unknown. In addition, this method may overestimate tax avoidance and tax evasion if smokers who purchase contraband are more likely to litter. However, results from one study comparing littered packs to packs appropriately discarded in public garbage cans in Chicago found no consistent differences between the litter samples and the garbage samples (Merriman, 2010).

Pack Observation, Return, and Swap Studies

Pack observation surveys have been used in a number of countries, including Thailand and Poland (see Sarntisart, 2003; Stoklosa and Ross, 2013). To conduct these surveys, researchers choose an area with heavy foot traffic and examine passing smokers' packs of cigarettes. They interview participants to gather information, including demographic information and smoking status, and they examine the packs on the spot to determine if all taxes have been paid. Unlike empty pack surveys, pack observation surveys gather information about the smoker, enabling researchers to account for tourism and commuting patterns.

Sarntisart (2003), using a small sample size, found that about 13 percent of all cigarettes consumed in Thailand were illicit. Stoklosa and Ross (2013) (as discussed above) used a population-based survey with a pack observation aspect and found that 14 to 15 percent of cigarettes in Poland were illicit.

Pack observation surveys have a number of limitations. Researchers must carefully select the location where they will conduct the street interviews. The area that is chosen needs to be representative of tobacco sales in the market as a whole. If a chosen place is known to be where smuggled cigarettes are sold, the results of the survey will overestimate the prevalence of illicit purchases. Moreover, it is often challenging to engage a representative sample of the smoking population in these types of surveys. In general, elderly people and those who are ill are less likely to be walking on the street. Other people who may be less likely to agree to a street interview are those with higher incomes, employed people, underage smokers, and those whose native language is different from their current place of residence. Once smokers have consented to the interview and pack examination, it is sometimes difficult for even trained researchers to determine whether or not taxes have been paid on a particular pack of cigarettes. Despite these limitations, pack observation surveys can be useful in determining low-end estimates of the market penetration of illicit cigarettes. If similar surveys are conducted over time, the relative scale of the illicit tobacco market may also be gauged.

Pack return and pack swap surveys have been conducted in Europe and the United States. In general, when conducting a pack return survey,

researchers ask smokers to mail in empty packages of tobacco in exchange for some form of compensation. Using the postal code from which the pack was mailed, researchers examine the packages to determine if the proper jurisdictional taxes were paid.

Fix and colleagues (2013) conducted a pack return survey to estimate tax avoidance and tax evasion in the United States using the 2009 and 2010 ITC survey. Smokers who reported smoking five or more cigarettes per day and who reported that they smoked factory-made or mostly factory-made cigarettes were asked to participate in the pack collection aspect of the study. Eligible participants were asked to mail an unopened pack of their usual brand of cigarettes and were sent a data collection kit and $25 as compensation. Researchers conducted a visual inspection of the returned cigarette packs to determine whether the pack was taxed or untaxed in the participants' state of residence. The study found that approximately one-fifth (20 percent in 2009 and 21 percent in 2010) of cigarette packs returned for data collection did not have the appropriate tax stamp (Fix et al., 2013).

Like pack observation surveys, pack return and pack swap surveys share similar limitations. Though the pack return study conducted by Fix and colleagues (2013) uses smokers from a nationally representative survey, the researchers limited their scope to include only smokers who smoked more than 5 cigarettes daily (in 2010) or more than 10 cigarettes daily (in 2009). Because heavy smokers have greater incentive to seek cheaper alternatives, it is possible that limiting participants in this way overestimates the prevalence of illicit tobacco users. Furthermore, researchers may not be able to determine if taxes were paid in full on the returned packs. Another limitation of these kinds of studies is that collecting returned packs from a representative sample of the smoking population may be difficult because participation requires some labor and the received compensation negates a participant's ability to remain anonymous.

Expert Opinion

A number of published estimates of the size and growth of the illicit tobacco market are based on surveying experts—customs and law enforcement officials, industry representatives, researchers, tobacco control professionals, and other informed parties. Estimates based on this method often appear in trade and government publications (Merriman, 2001), and they can be useful in assessing the size of the illicit tobacco market. Essentially, measures of the size of the illicit tobacco market produced by canvassing experts are weighted averages of other estimates of market size, including both direct observation (sometimes by the experts themselves over a number of years) and residual methods, where the "weights" assigned to

any given measure are determined by the expert's sense of the quality or validity of the particular measure. Several notable studies use this method: Market Tracking International's serial *World Tobacco File*, which estimates smuggling as a percentage of total cigarette sales in various countries; Euromonitor International estimates both the number of illicit cigarettes and the market share of illicit cigarettes in various countries; and Joossens and colleagues (2010) compiled estimates for select European countries using official and nonofficial data.

Joossens and colleagues (2010) derived country-specific estimates by reviewing a variety of sources, including academic articles, government reports, estimates from market research companies, and newspaper articles. Acknowledging that the quality of the estimates for each individual country varied widely, they estimated that in 2007 annual illicit consumption in the 84 countries studied was 657 billion cigarettes, or about 11.6 percent of total consumption. As a percentage of the total market, the Republic of Georgia (49 percent), Albania (40-50 percent), Bosnia and Herzegovina (35-45 percent), and Hong Kong (30 percent) exhibited the highest illicit share. In terms of absolute size, China was greatest with 214 billion illicit cigarettes smoked (8-10 percent of the total market), followed by Russia (76 billion, 19 percent of the total market), and the United States (62 billion, 13-25 percent of the total market).

The International Agency for Research on Cancer (2008) notes that estimates from experts are subjective and may have biases based on the individual expert's position and interests. For instance, estimates derived from the tobacco industry typically overstate the scale of the illicit market. Industry representatives may possess specific knowledge of the illicit trade of cigarettes, but they also have an inherent financial conflict of interest in that warnings about the growth of the illicit market are used to deter enactment of tax increases and more stringent regulations, which drive down sales; see Box 4-1. Other expert opinions may also contain bias. Tobacco control advocates may have an interest in underestimating the extent of the illicit tobacco market in order to support their efforts to enact higher tobacco taxes. Law enforcement officials may have an interest in reporting higher levels of illicit trade in order to procure continued funding for enforcement efforts, or they may report lower levels of illicit trade in order to argue that their enforcement efforts have been effective (International Agency for Research on Cancer, 2011). In addition, because interviewers and experts tend to vary across studies and from year to year, comparing estimates that use this method is unreliable (Merriman, 2013). However, estimates based on experts' opinions in certain instances have been shown to be consistent with estimates derived from other methods, and thus provide valuable background and corroborating information (International Agency for Research on Cancer, 2008).

BOX 4-1
Industry-Sponsored Estimates of the Illicit Tobacco Market

Studies estimating the size of the illicit tobacco market sponsored by the tobacco industry have been subject to numerous critiques on several issues: the transparency of their methodology; their methodological approach; the treatment or neglect of evidence; inconsistencies with estimates from academic or other studies; and nondisclosure of the source of funding. For example, the industry's methodological reliance on litter or empty pack surveys, used to estimate the magnitude of nondomestic and counterfeit cigarettes, may lead to inflated estimates of illicitly traded tobacco due to their urban sampling bias and the inclusion of legal consumption that appears illicit because of tourism or commuting patterns (see discussion of empty pack surveys in the text).

Philip Morris International (PMI), in ending litigation with the European Union regarding its involvement in supplying contraband tobacco products to the black market, agreed in 2004 to pay $1.25 billion over 12 years. As part of the settlement, the company funds an annual report on illicit trade in Europe, Project Star, which is based on studies conducted by KPMG. These reports have been produced since 2006, but were not made public until 2011. PMI has used findings from Project Star to help in its "Regulatory Litigation Action Plan" against the UK government's proposed point-of-sale display ban.* A study that reviewed the method underlying this annual report noted that PMI inflated estimates of illicitly traded tobacco (Gilmore et al., 2013).

Specifically, in comparing data from Project Star and estimates of the Pricing Policies and Control of Tobacco in Europe Consortium (PPACTE), Gilmore and colleagues (2013) found that Project Star estimates that the illicit trade in France accounts for 13.7 percent of the tobacco market while PPACTE estimates a 2.4 percent share. The differences are seen for many countries: in Finland, the Project Star estimate of 15.9 percent is higher than the one from PPACTE, 3.5 percent; in Ireland, Project Star estimates 19.3 percent and PPACTE estimates 4.6 percent; and in the United Kingdom, Project Star estimates 10.5 percent and the PPACTE estimates 3.4 percent.

The study documented various ways in which Project Star reports not only lacked adequate methodological details, transparency, and external validation, but also relied unnecessarily on PMI data. For estimates of smoking prevalence, Project Star draws on PMI's Global Consumer Tracking Survey (the method used in this survey is not known) instead of readily available data from the World Health Organization or OECD. The result has been that "much of the prevalence data appears inaccurate and biased in a way that would tend to overestimate illicit in Western compared with Eastern Europe" (Gilmore et al., 2013, p. 8). The failure to use publicly available and accepted data sources is noteworthy and highlights the importance of transparent and independent approaches to conducting research on the illicit tobacco market.

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*This plan was supposed to be confidential, but it was published and can be found at http://www.tobaccotactics.org/index.php?title=Philip_Morris%27_Regulatory_Litigation_Action_Plan_Against_the_Display_Ban [October 2014].

Analysis and Conclusions: Methods

Estimates of the size of the illicit tobacco market vary based on the type of method used to derive estimates, at least in part because the different approaches capture different combinations of tax avoidance and tax evasion, and it is difficult to separate the two activities, especially in the United States. Methods based on self-reports or purchase behavior typically yield lower estimates than pack inspection survey methods, while littered pack studies typically (though not always) produce the highest estimates.

Residual methods are much better at capturing changes in the market over time rather than levels at a particular moment. Surveys may not be able to reach subpopulations of heavy smokers in prison or living on the streets, and they are limited by inaccuracies from a variety of factors, including social desirability bias and recall (Guindon et al., 2013). Empty pack studies, like other direct measurement methodologies, compensate for some of these limitations, but have limitations of their own in assessing the size of the market, including the fact that many packs are unidentifiable, the data collection is generally limited to specific areas of a city, and include packs legally purchased by their users that are simply discarded in the study area.

These methods differ in sample sizes, time periods covered, and scientific rigor, and they yield different estimates and have different sources of error. In light of these factors, it is important to consider estimates from multiple methods in order to obtain the most comprehensive picture of the scale of the illicit tobacco market for a specific location and time. As shown in Table 4-1, each method has its own set of limitations, which influence the estimates in both directions.

As the table shows, each method captures data on the demand side of the illicit market—that is, they attempt to gauge the size of the illicit market by piecing together information about the users and the frequency of their use. In contrast, though some expert opinion analyses gather data from tobacco industry participants, little else is known about participants on the supply side of the market. One effort on the supply side is being undertaken by the New York City Sheriff's Department, as part of its strategic anti-contraband tobacco enforcement. A representative from the office informed the committee that it collects data on the number of licensed retailers in the city, maps where illegal sales or other violations occur, and documents the number and severity of violations at each retail establishment.[4] Similar to these efforts in New York City, consistent data could be collected across law enforcement agencies and jurisdictions and used to estimate the amount

[4]New York City Sheriff's Office (2014).

TABLE 4-1 Methods for Estimating the Illicit Tobacco Markets: Data Requirements and Availability, Strengths, and Weaknesses

Estimation Method	Data Requirements	Data Availability	Strengths	Weaknesses
Trade Gap	Data on exports and imports by country and product	Appropriate data available in most countries	Very low cost; provable and reproducible; "common-sense" results are easy to explain	Does not detect bootlegging; relies on a questionable assumption about "lost" exports; difficult to determine local-level (i.e., country) estimates
Comparing Tax-Paid Sales and Self-Reported Consumption Measures	Data on tax-paid sales and a variety of income, demographic, and population characteristics in neighboring areas	Appropriate data available in some countries; primary collection of data on cigarette smoking necessary in some countries	Provable and reproducible; "common-sense" results easy to explain; comparable to similar data in other countries	High cost if cigarette consumption surveys not available; results may be inaccurate in countries with changing perceptions about smoking
Econometric Modeling	Data on tax-paid sales and a variety of income, demographic, and population characteristics in neighboring areas	Appropriate data available in most countries	Low cost if appropriate expertise used; provable and reproducible; comparable to similar data in other countries	Does not detect large-scale smuggling; requires high level of expertise
Population-Based Surveys	Consumer surveys follow a precise and established process	Primary collection of data necessary in most countries	Provable and reproducible; potential bias discernable to those who carefully study the methodology	Very high cost; requires high level of expertise to select appropriate survey locations; smuggling may be underestimated in countries with strict legal codes; does not capture illicit transactions that respondents believe to be licit

Empty Pack Collections	Data on collected tobacco products in a given area	Primary collection of data necessary in most countries	Low cost if appropriate expertise used; produces neighborhood and community-level estimates	Requires high level of expertise to select appropriate survey locations; can be difficult to determine if appropriate taxes were paid; does not capture loosies
Pack Observation, Return, and Swap	Data on collected tobacco products in a given area	Primary collection of data necessary in most countries	Able to reach subpopulations of smokers not reached in survey-based methods; eliminates social desirability bias and recall bias	Requires high level of expertise to engage representative samples of smokers; can be difficult to determine if appropriate taxes were paid
Expert Opinion	Open-ended survey of experts	Primary collection of data necessary in most countries	Low cost; provides an agreeable, "common-sense" view; highly specialized training not required	Difficult to establish constant and consistent selection of experts; results may not be objective and cannot be replicated

NOTE: See text for discussion.
SOURCE: Adapted from Merriman (2013).

of cigarettes or other tobacco products entering the illicit market. This would provide another dataset to use in a methodological triangulation.

ESTIMATES FOR THE UNITED STATES

The committee developed its own estimate of the size of the illicit market in the United States for multiple reasons. As detailed above, there are a number of estimates of the size of the illicit tobacco market in the United States that are derived from multiple methods, each with different time spans and sample sizes and of varying scientific rigor. The committee's estimate adds an important, recent calculation, and it provides an estimate of the absolute size of the illicit tobacco market. Estimating the absolute size of the market allowed the committee to describe trends in the market and make comparisons among countries, where there are different rates of smoking.

The committee decided not to undertake a similar calculation of the size of the global illicit tobacco market for several reasons. Joossens and colleagues (2010) produced such an estimate (finding that 11.6 percent of the global market is illicit), and there are inherent challenges in calculating a global estimate. A global estimate, drawing on existing country-specific estimates, would potentially compound the limitations of each method (detailed above). Country-level data are varied in their availability and objectivity, and not all studies describe their methods or limitations clearly.

Specific country estimates may be important points of reference for American policy makers, as they could provide a sort of scorecard by which to judge any possible interventions in the illicit tobacco market. The committee highlights Canada because its experience with the illicit tobacco market is particularly informative for the United States: see Box 4-2. However, as noted throughout this report, the illicit tobacco market is dynamic and takes different forms in each country. Any estimates of the size of the market provide only a snapshot, and thus, they can be informative on the country level but provide limited use on a global scale.

Methods, Data, and Measures

Methods

To develop its own estimate of the size of the illicit tobacco market in the United States, the committee used a residual method, specifically, comparing tax-paid sales and self-reported consumption measures. The committee chose to use this method for four reasons: (1) time constraints and data availability made this the most feasible approach for calculating a recent estimate; (2) the data allow for the calculation of both state and

BOX 4-2
Estimating the Size of the Illicit Tobacco Market in Canada

Canada's experience with the illicit tobacco market is informative for the United States: the two markets are similar in that provincial tax differences are analogous to state tax differentials and tax-exempt sales to non-Natives are sources of tax evasion in both countries. There is an extensive literature on the size of the illicit tobacco industry in Canada, perhaps because that industry is relatively large. Joossens and colleagues (2010) estimate 15 to 20 percent as the proportion of illegal purchases in Canada. Our review of the literature suggests that the rates can change rapidly from lows of 4 to 5 percent to highs of 25 to 30 percent (or more, depending on the data source) in just a few years, and that the 15 to 20 percent figure appears to be a reasonable "mean rate" in between such variations.

The most conservative numbers are typically derived from gap analyses (7.6 to 14.7 percent in 2010; see Physicians for a Smoke-Free Canada, 2011), while higher rates are found using "discarded cigarette butt studies," like the ones regularly conducted by the Canadian Convenience Stores Association (30 to 36 percent; see Canadian Convenience Stores Association, 2007, 2008). The oft-cited figure of a 20 to 30 percent market share of illegal tobacco for Canada comes from a market research company, the GfK Group (2006, 2008): their pack swap studies showed an increase from 16.5 to 32.7 percent in a matter of just 2 years.

More standard surveys also contribute some estimates. Drawing from general population surveys, official data on legal tobacco sales, and Statistics Canada's Survey of Household Spending, Terefe and colleagues (2011) estimated that illegal tobacco accounted for a 19.4 percent share of all tobacco transactions in 2008. Some Canadian surveys do ask if respondents purchased their cigarettes on Native reserves. Using the Ontario Tobacco Survey, Luk and colleagues (2009) found that 25.8 percent of respondents reported recent contraband cigarette purchases from reserves, accounting for 14 percent of total cigarette consumption in Ontario in 2006. Heavy smoking was the main predictor of recent purchase on Native reserves. Similar percentages of illicit market participation were found in studies of the youth population (see Callaghan et al., 2009, 2010).

The most recent, conservative estimate of the size of the illicit tobacco industry in Canada for 2010 is from Physicians for a Smoke-Free Canada (2011), which estimated a 7.6 to 14.7 percent range. This is the range used by the committee to represent what is known on the size of the Canadian illicit tobacco industry. This range comes from the 7.6 percent estimate derived from the Canadian Tobacco Use Monitoring Survey (CTUMS) and the 14.7 percent estimate derived from the Canadian Community Health Survey (CCHS). The 11 percent midpoint estimate nicely matches the estimate by Guindon and colleagues (2013) of 10 percent from the survey by the International Tobacco Control Policy Evaluation Project (ITC) for Canada for this time period.

Physicians for a Smoke-Free Canada (2011) estimated the Canadian illicit tobacco market by calculating the difference between total cigarette consumption and legal consumption. Total consumption was measured by taking the number of smokers in the CTUMS and the CCHS surveys and multiplying it by the number

continued

BOX 4-2

of cigarettes an average smoker consumes. Total legal cigarette sales were obtained from Health Canada reports, which publish the aggregate volume of legal sales for each province and territory. These figures are obtained from tobacco companies, which are required to report the number of cigarettes produced or the volume of manufactured tobacco to Health Canada.

Figure B4-2 presents the PFSFC estimates of the proportion of cigarette consumption that is attributed to the illicit market (using the more conservative CTUMS survey for this illustration). The committee added data from two other sources, all taken directly from PFSFC (2011): the GfK Group, Research and Dynamics and British American Tobacco's (GfKRD/BAT) pack swap studies and Euromonitor data.* All three series are consistent on trends, at least for the years for which they overlap. The PFSFC series suggests a very small illegal market from 2003 to 2005, before a sudden increase was observed between 2006 and 2009. In 2010, the illicit market appeared to have lost momentum. Euromonitor data through 2013 show a continued decline: 18.6 percent in 2011, 17.7 percent in 2012, and 16.9 percent in 2013.

In Figure B4-2, the committee compares these trends in illicit consumption to trends in seizures obtained from the Royal Canadian Mounted Police (RCMP) (2012). The trends are strikingly similar, even if the RCMP seizure data are likely to be influenced by arbitrary factors (e.g., special investigative projects) and random large seizures. The RCMP seizure data do seem to reflect, to some extent, the market forces in the illicit tobacco industry for the period under study. At the same time, it is likely that one feeds the other, as the lag in the peaks for the 2009 seizure series and the 2007 PFSFC series suggest: that is, the bigger the illicit tobacco market, the more resources invested by the RCMP in this market.

*Euromonitor International is an independent consumer markets research organization (see http://www.euromonitor.com/tobacco [January 2015]).

national estimates; (3) it is provable and reproducible; and (4) it allows calculation of time trends.

It is important to note that because of the size of the cigarette tax differentials among states, tax-paid sales in any given state are unlikely to reflect cigarette consumption by smokers in that state. In a state with a relatively high tax, smokers will seek out lower-cost alternatives in neighboring states, on tribal lands, or online. Also, the state tax differences may provide incentives for some people to purchase and transport large quantities of cigarettes from low- to high-tax jurisdictions for resale through informal street sales or sales in brick and mortar stores. Thus, the estimates for low-tax states will include these illicit purchases for smokers outside the

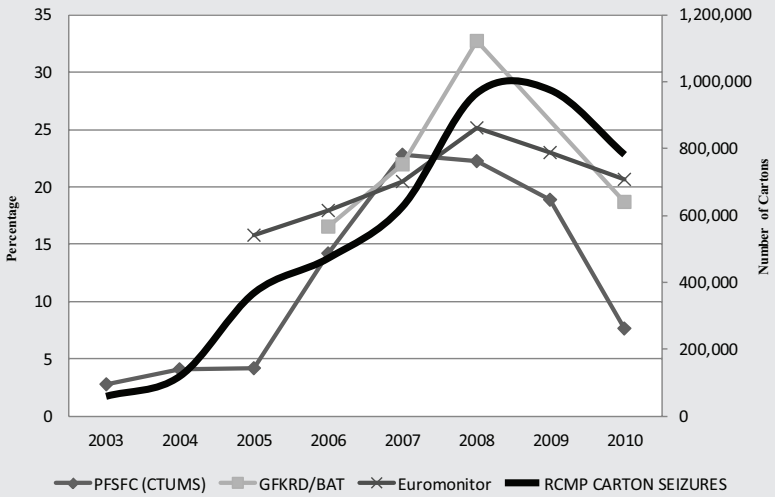

FIGURE B4-2 Estimates of the proportion of cigarette consumption that is attributed to the illicit market and seizures by the Royal Canadian Mounted Police, 2003-2010.
NOTES: PFSFC = Physicians for a Smoke-Free Canada; CTUMS = Canadian Tobacco Use Monitoring Survey; GfKRD = GfK Group, Research and Dynamics; BAT = British American Tobacco; RCMP = Royal Canadian Mounted Police.
SOURCE: Adapted from Physicians for a Smoke-Free Canada (2011).

state. Building on methods by Farrelly and colleagues (2012), the committee developed state-level estimates of self-reported consumption and compared them with tax-paid sales. When consumption is higher than sales, the deficit indicates that cigarettes are being purchased from out of the state for consumption in the state. When the reverse is true, the state with higher sales than consumption is considered to be a source for cigarettes being consumed elsewhere. With the exception of sales on military bases and some cigarettes produced on tribal lands, the sum of all state-level tax-paid sales should capture total U.S. cigarette sales and consumption. The committee then estimated cigarette tax evasion and avoidance by summing both state-level deficits and surpluses between sales and self-reported consumption.

Data

The committee used data from an 18-year time span from the National Cancer Institute-sponsored Tobacco Use Supplement to the Current Population Survey (TUS-CPS), covering 1992-1993 through 2010-2011. The TUS-CPS, administered by the U.S. Census Bureau, estimates state-level adult smoking prevalence and aggregate self-reported cigarette consumption. The committee limited the data to self-respondents ages 18 and older from civilian households. The committee obtained state-level tax-paid sales of cigarettes from Orzechowski and Walker (2012), and the committee obtained data on state-level population from the U.S. Census Bureau's Population Estimates Program.

Measures

The committee defined current smokers as those who have smoked 100 cigarettes lifetime and currently smoked some days or every day at the time of the interview. The committee then multiplied a state's population of those ages 18 and older by the state-level prevalence to derive the number of smokers in each state. The committee estimated self-reported consumption of cigarettes by using TUS-CPS responses to the question "On the average, how many cigarettes did you usually smoke each day?" In the 2010-2011 TUS-CPS, responses from everyday smokers were top coded to 40 cigarettes, meaning that, for example, someone who reports smoking 50 cigarettes a day to the TUS-CPS will have their answer coded as 40 cigarettes a day. According to the TUS-CPS technical documentation, there are relatively few smokers who reported smoking more than 40 cigarettes a day, with a mean of 42.65 cigarettes a day. Somedays smokers' responses were top coded at 20 cigarettes (with a reported mean of 22.19 for the top-coded responses). Somedays smokers' responses were averaged across 30 days. The committee then aggregated the data on daily self-reported consumption into an annual number of packs consumed (i.e., [daily self-reported consumption] × 365). The committee then multiplied this annualized estimate of cigarette consumption by the estimated state-level smoker population to create a measure of total self-reported consumption of packs of cigarettes for each state (i.e., [annual self-reported consumption] × [total number of adult smokers]).

As discussed above, one of the limitations of comparing tax-paid sales with self-reported consumption is that people tend to underreport their levels of smoking. To control for this phenomenon, the committee adjusted for underreporting of consumption by comparing total sales nationally with the national self-reported consumption. The ratio between total self-reported national consumption and total national sales represents the extent of under-

reporting (i.e., 0.65). The committee then inflated all state-level consumption estimates by the inverse of the ratio of self-reported consumption to the national tax-paid sales of cigarettes. The committee classified a state as a net importer (exporter) of cigarette sales if its adjusted consumption was greater (less) than its tax-paid sales. Summing the net exports or the net imports gives an estimate of the total net flows of cigarette sales between states.

Results

Nationally, self-reported consumption totaled 9.38 billion packs of cigarettes in 2010-2011. State tax-paid sales accounted for 14.51 billion packs of cigarettes. The ratio of total consumption to sales nationally is 0.65. When adjusted by the consumption/sales ratio, the national consumption totals 14.51 billion packs of cigarettes.

Overall, using this method, the estimated number of packs subject to tax evasion and avoidance (i.e., the difference between adjusted consumption and sales) amounted to 1.24 billion packs of cigarettes, or 8.5 percent of national tax-paid sales: see Table 4-2. These cigarettes are those for which the proper state and local taxes have not been fully paid; for almost all of them, however, the federal tax has been paid. The committee classified 22 states and the District of Columbia as net exporters and 28 states as net importers of illicit cigarettes.

Figure 4-1 shows that, according to the committee's calculations, the net percentage of sales subject to tax evasion and avoidance has grown over the 18 years studied, from 3.2 percent in 1992-1993 to 8.5 percent in 2010-2011. In the most recent year (2010-2011), the net importing states lost an estimated $2.95 billion in excise taxes and roughly $2 billion in sales taxes, while net exporting states gained an estimated $0.82 billion in excise taxes. These figures can be compared with total tobacco tax revenue collections, which were $17.65 billion at the state and local levels in 2011 (Tax Policy Center, 2013). It is important to note, however, given that smoking rates declined over this time period, some of the increase in the percentage of sales subject to tax evasion and avoidance could be due to the 30 percent reduction in total market size if smokers who do not use illicit markets are more likely to quit.[5]

At the state level in 2010-2011, the adjusted ratios of consumption to sales ranged from a low of 0.56 in New Hampshire to a high of 1.83 in

[5]For example, the TUS-CPS estimates that there were 38,700,000 smokers in the United States in 2006, 17.7 percent of the population. If 7.7 percent of them used illicit markets exclusively, that would imply there are 2,980,000 illicit market users, or 1.32 percent of the population smokes illicit cigarettes. The same calculations in 2010-2011, when 16.1 percent of the population smoked, also implies about 1.36 percent of the population smokes illicit cigarettes.

TABLE 4-2 Estimates of U.S. Cigarettes Subject to Tax Evasion and Avoidance, 2010-2011

Measure	Net Exporters	Net Importers	Difference
States (and the District of Columbia)	23	28	—
Self-Reported Consumption (millions of packs)	4,590.7	4,786.0	–195.3
Adjusted Self-Reported Consumption (millions of packs)	7,106.9	7,399.3	–292.4
Tax-Paid Sales (millions of packs)	8,336.8	6,169.3	2,167.5
Difference Between Adjusted Consumption and Sales	–1,230.0	1,230.0	–2,459.9
Sales Subject to Tax Evasion and Avoidance	–8.48%	8.48%	—

SOURCE: Data from the Tobacco Use Supplement to the Current Population Survey and Orzechowski and Walker (2012); see text for discussion.

Washington: see Table 4-3. In other words, nearly twice as many cigarette packs were sold in New Hampshire than were consumed in the state, while in Washington consumption was nearly twice that of sales.

Figure 4-2 illustrates the correlation between the ratio of adjusted consumption to sales to state cigarette excise tax for 2010-2011. The fitted line in this figure shows that the higher the state cigarette excise tax, the higher the ratio between adjusted consumption and tax-paid sales or tax evasion and avoidance.

In terms of revenue, states that are net importers are losing excise and sales tax revenues due to tax avoidance and evasion; states that are net exporters are gaining excise and sales tax revenues. Total revenues gained or lost by a state can be estimated by multiplying the difference between the tax-paid sales and the adjusted self-reported consumption by the state excise tax per pack of cigarette. Table 4-4 shows the estimated state excise taxes gained and lost for 2010-2011 for the top five net exporting and importing states.

The committee estimates that the state of New York loses the most revenue due to illicit tobacco purchases, nearly half of all revenue lost nationwide. Those losses constitute roughly 2 percent of annual New York tax revenue, or 9.7 percent of total sales tax revenue. As context for comparison with other revenue losses, the Internal Revenue Service estimates that $450 billion in income tax, every year, is not remitted to the federal government on time, which is a roughly 17 percent initial noncompliance

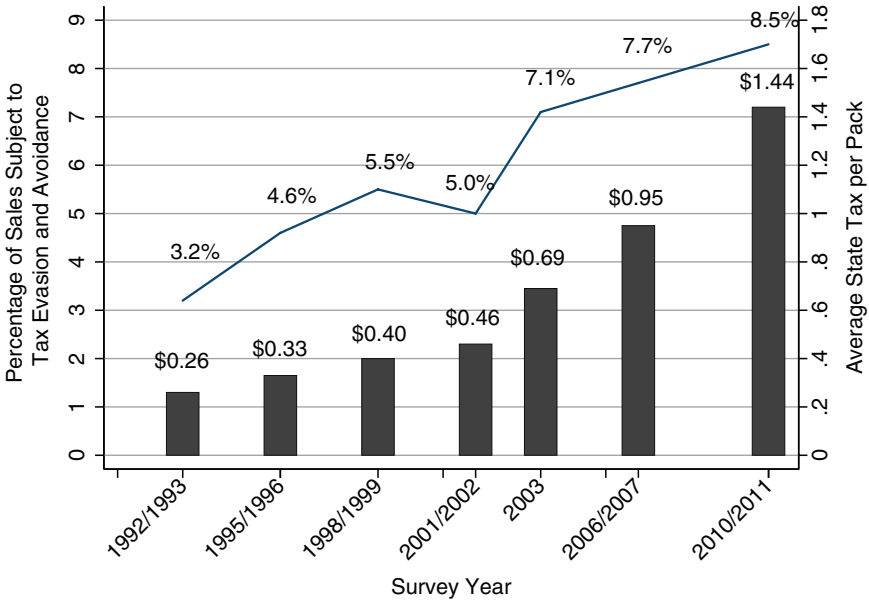

FIGURE 4-1 Trend in net tax evasion and avoidance in the United States, 1992-1993 through 2010-2011.
NOTE: Years on the X-axis represent the date of the TUS-CPS from which the data were derived.
SOURCE: Data from the TUS-CPS and Orzechowski and Walker (2012); see text for discussion.

rate with the U.S. Income Tax Code.[6] At the state level, roughly 18 percent of taxes go unpaid, constituting a loss of roughly $136 billion.[7] As another comparison, the Insurance Research Council estimated that in 2007, auto insurance companies paid between $4.3 and $5.8 billion dollars in fraudulent claims, between 11 and 15 percent of the dollar value of all claims.[8]

[6] Once criminal prosecutions and late payments are taken into account, the total amount of tax revenue lost each year, primarily due to underreporting of business income, is $385 billion a year, or about 14.5 percent. See http://www.irs.gov/uac/IRS-Releases-New-Tax-Gap-Estimates;-Compliance-Rates-Remain-Statistically-Unchanged-From-Previous-Study [January 2015].

[7] See http://www.reuters.com/article/2012/09/06/us-usa-tax-newyork-crackdownid USBRE88514M20120906 [January 2015].

[8] See http://www.insurance-research.org/research-publications/fraud-and-buildup-auto-injury-insurance-claims-2004-edition [January 2015].

TABLE 4-3 Self-Reported Consumption and Tax-Paid Sales by State, 2010-2011

State	Self-Reported Consumption (millions of packs)	Tax-Paid Sales (millions of packs)	Ratio of Tax-Paid Sales to Self-Reported Consumption	Adjusted Self-Reported Consumption (millions of packs)	Ratio of Adjusted Self-Reported Consumption to Tax-Paid Sales
Alabama	180.02	322.09	1.79	300.14	0.93
Alaska	22.80	31.10	1.36	38.01	1.22
Arizona	135.97	163.43	1.20	226.70	1.39
Arkansas	131.46	180.45	1.37	219.17	1.21
California	474.43	960.82	2.03	790.99	0.82
Colorado	103.38	203.91	1.97	172.36	0.85
Connecticut	85.89	132.30	1.54	143.20	1.08
Delaware	27.52	79.93	2.90	45.88	0.57
District of Columbia	9.00	13.57	1.51	15.00	1.11
Florida	542.79	935.66	1.72	904.98	0.97
Georgia	243.79	523.18	2.15	406.46	0.78
Hawaii	29.37	45.40	1.55	48.97	1.08
Idaho	38.36	71.89	1.87	63.96	0.89
Illinois	404.93	574.96	1.42	675.13	1.17
Indiana	271.31	453.79	1.67	452.34	1.00
Iowa	108.38	150.11	1.39	180.69	1.20
Kansas	94.64	124.67	1.32	157.79	1.27
Kentucky	244.62	465.97	1.90	407.84	0.88
Louisiana	163.82	337.11	2.06	273.12	0.81
Maine	49.49	68.51	1.38	82.50	1.20
Maryland	121.00	199.95	1.65	201.74	1.01
Massachusetts	158.42	223.10	1.41	264.13	1.18
Michigan	317.40	463.99	1.46	529.20	1.14
Minnesota	139.68	243.03	1.74	232.88	0.96
Mississippi	99.76	208.44	2.09	166.33	0.80
Missouri	296.12	548.88	1.85	493.71	0.90
Montana	31.27	45.76	1.46	52.13	1.14
Nebraska	52.44	98.33	1.88	87.43	0.89
Nevada	79.19	124.49	1.57	132.03	1.06
New Hampshire	42.31	126.60	2.99	70.54	0.56
New Jersey	168.22	279.19	1.66	280.47	1.00

Adjusted Self-Reported Consumption – Tax-Paid Sales (millions of packs)	State Tax per Pack	Average Retail Price per Pack	Smoking Prevalence (%)	Lost Revenue (millions of dollars)	Percentage of Consumption Subject to Tax Avoidance and Evasion
–21.95	$0.43	$4.35	18.39	$(9.33)	–7.31
6.91	$2.00	$7.38	21.15	$13.82	18.18
63.26	$2.00	$6.07	14.98	$126.53	27.91
38.72	$1.15	$4.95	22.50	$44.53	17.67
–169.82	$0.87	$4.89	10.32	$(147.75)	–21.47
–31.55	$0.84	$4.86	14.26	$(26.50)	–18.31
10.89	$3.00	$7.00	14.47	$32.68	7.61
–34.05	$1.60	$5.07	16.83	$(54.48)	–74.22
1.44	$2.50	$6.29	12.99	$3.59	9.57
–30.68	$1.34	$5.00	14.60	$(41.08)	–3.39
–116.72	$0.37	$4.31	14.94	$(43.19)	–28.72
3.57	$3.00	$7.05	13.38	$10.72	7.30
–7.93	$0.57	$4.39	16.26	$(4.52)	–12.40
100.17	$0.98	$5.46	17.23	$98.17	14.84
–1.45	$1.00	$4.63	20.88	$(1.45)	–0.32
30.58	$1.36	$5.12	19.14	$41.59	16.92
33.12	$0.79	$4.58	18.36	$26.16	20.99
–58.13	$0.60	$4.30	24.99	$(34.88)	–14.25
–63.98	$0.36	$4.32	19.50	$(23.03)	–23.43
14.00	$2.00	$6.08	18.16	$28.00	16.97
1.79	$2.00	$6.04	13.07	$3.59	0.89
41.03	$2.51	$7.04	12.99	$102.98	15.53
65.21	$2.00	$5.96	18.04	$130.41	12.32
–10.15	$1.23	$5.46	15.88	$(12.49)	–4.36
–42.12	$0.68	$4.26	19.24	$(28.64)	–25.32
–55.18	$0.17	$3.88	23.56	$(9.38)	–11.18
6.37	$1.70	$5.58	18.84	$10.83	12.22
–10.89	$0.64	$4.46	16.57	$(6.97)	–12.46
7.54	$0.80	$4.74	17.74	$6.03	5.71
–56.05	$1.78	$5.51	16.10	$(99.77)	–79.46
1.28	$2.70	$6.92	12.36	$3.46	0.46

continued

TABLE 4-3 Continued

State	Self-Reported Consumption (millions of packs)	Tax-Paid Sales (millions of packs)	Ratio of Tax-Paid Sales to Self-Reported Consumption	Adjusted Self-Reported Consumption (millions of packs)	Ratio of Adjusted Self-Reported Consumption to Tax-Paid Sales
New Mexico	41.55	57.79	1.39	69.28	1.20
New York	424.47	389.45	0.92	707.70	1.82
North Carolina	320.85	579.85	1.81	534.93	0.92
North Dakota	21.78	46.45	2.13	36.32	0.78
Ohio	484.43	659.94	1.36	807.67	1.22
Oklahoma	176.20	264.17	1.50	293.76	1.11
Oregon	94.16	176.11	1.87	156.98	0.89
Pennsylvania	409.06	713.97	1.75	682.01	0.96
Rhode Island	31.14	39.95	1.28	51.92	1.30
South Carolina	159.27	458.87	2.88	265.55	0.58
South Dakota	26.97	37.38	1.39	44.97	1.20
Tennessee	305.27	455.59	1.49	508.96	1.12
Texas	611.06	953.41	1.56	1,018.79	1.07
Utah	38.71	63.79	1.65	64.53	1.01
Vermont	20.95	30.27	1.44	34.93	1.15
Virginia	213.57	545.93	2.56	356.08	0.65
Washington	162.10	147.43	0.91	270.27	1.83
West Virginia	102.21	199.44	1.95	170.41	0.85
Wisconsin	167.72	249.17	1.49	279.63	1.12
Wyoming	21.38	36.60	1.71	35.65	0.97

SOURCE: Data from the 2010-2011 Tobacco Use Supplement to the Current Population Survey and Orzechowski and Walker (2012).

Analysis and Conclusions: U.S. Estimates

Because it is important to consider estimates from multiple methods to obtain a comprehensive picture of the scale of the illicit tobacco market, the committee used its estimate, based on a residual method, and viable estimates from other methods to establish an estimated range of the size of the illicit tobacco market. The high range of the estimate represents data from a pack return survey in the United States conducted by Fix and colleagues (2013).

The estimated size of the U.S. illicit tobacco market, represented by the proportion of illicit purchases of cigarette packs through tax avoidance and

Adjusted Self-Reported Consumption – Tax-Paid Sales (millions of packs)	State Tax per Pack	Average Retail Price per Pack	Smoking Prevalence (%)	Lost Revenue (millions of dollars)	Percentage of Consumption Subject to Tax Avoidance and Evasion
11.49	$1.66	$4.88	16.27	$19.07	16.58
318.25	$4.35	$7.39	13.17	$1,384.39	44.97
–44.92	$0.45	$4.25	18.34	$(20.21)	–8.40
–10.13	$0.44	$4.03	17.72	$(4.46)	–27.90
147.73	$1.25	$5.15	21.77	$184.67	18.29
29.60	$1.03	$4.95	24.22	$30.49	10.08
–19.13	$1.18	$4.90	15.57	$(22.57)	–12.19
–31.96	$1.60	$5.20	16.92	$(51.13)	–4.69
11.98	$3.46	$7.25	17.04	$41.44	23.06
–193.31	$0.57	$3.81	17.80	$(110.19)	–72.80
7.59	$1.53	$5.22	20.63	$11.61	16.88
53.37	$0.62	$4.42	22.91	$33.09	10.49
65.38	$1.41	$5.28	15.93	$92.18	6.42
0.75	$1.70	$4.51	10.45	$1.27	1.16
4.66	$2.24	$6.39	16.67	$10.44	13.35
–189.85	$0.30	$4.30	14.81	$(56.96)	–53.32
122.84	$3.03	$6.35	15.69	$371.58	45.45
–29.03	$0.55	$4.31	22.38	$(15.97)	–17.04
30.46	$2.52	$6.45	17.38	$76.77	10.89
–0.96	$0.60	$4.48	21.24	$(0.57)	–2.68

evasion, is between 8.5 and 21 percent. The national percentage represents 1.24 to 2.91 billion packs and between $2.95 and $6.92 billion lost in gross state and local tax revenues.

The illicit tobacco market is not evenly distributed across the country. It may account for as much as 45 percent of all cigarettes in high-tax states (e.g., New York and Washington), while in other parts of the country participation in the illicit tobacco market appears to be negligible. Some states, such as New Hampshire, are big winners in tax revenues gained, while others such as New York are tax revenue losers. Of the total tobacco taxes collected by states and localities in 2011 of $17.65 billion, the net import-

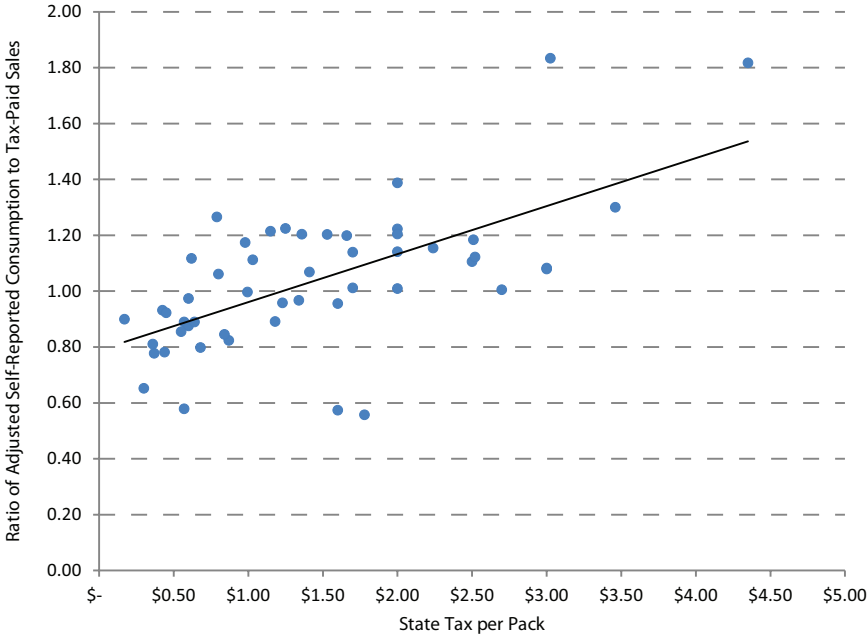

FIGURE 4-2 Ratio of tax-paid sales to adjusted self-reported consumption by state cigarette excise tax.
SOURCE: Data from the 2010-2011 TUS-CPS and Orzechowski and Walker (2012).

ing states lost an estimated $2.95 billion in state cigarette excise taxes, and the net exporting states gained an estimated $0.82 billion. New York State accounted for nearly half of the total revenues lost.

Overall, the total amount of tax revenue lost to the illicit tobacco market is roughly 10 percent of the total tobacco tax due, which is smaller than estimates of the "income tax gap" of 17 percent at the federal level and 18 percent at the state level. Looking internationally, the U.S. illicit tobacco market is slightly larger as a share of the total market than the illicit market in Canada, which the committee estimates to be between 7.6 and 14.7 percent of the total market (see Box 4-2, above).

The Mackinac Center for Public Policy also has produced state-level estimates of the prevalence of the illicit tobacco trade in the United States. However, it is difficult to reconcile the differences between the Mackinac Center's and the committee's estimates at the state level.[9] The committee

[9]The committee used data from the Mackinac Center for Public Policy; see http://www.mackinac.org/18128 [January 2015] and http://taxfoundation.org/article/cigarette-taxes-and-cigarette-smuggling-state [January 2015].

TABLE 4-4 Top Five Net Exporting and Importing States

State	SRC (millions of packs)	TPS (millions of packs)	Adjusted SRC (millions of packs)	Adjusted SRC:TPS	Adjusted SRC-TPS	2011 State Cigarette Excise Tax (per pack)	Estimated State Revenue Gained or Lost
Top Five Net Exporters							
New Hampshire	42.31	126.60	70.54	0.56	–56.05	$1.78	$99,770,000
Delaware	27.52	79.93	45.88	0.57	–34.05	$1.60	$54,480,000
South Carolina	159.27	458.87	265.55	0.58	–193.31	$0.57	$110,190,000
Virginia	213.57	545.93	356.08	0.65	–189.85	$0.30	$56,960,000
Georgia	243.79	523.18	406.46	0.78	–116.72	$0.37	$43,190,000
Top Five Net Importers							
Washington	162.10	147.43	270.27	1.83	122.84	$3.03	–$371,580,000
New York	424.47	389.45	707.70	1.82	318.25	$4.35	–$1,384,390,000
Arizona	135.97	163.43	226.70	1.39	63.26	$2.00	–$126,530,000
Rhode Island	31.34	39.95	51.92	1.30	11.98	$3.46	–$41,440,000
Kansas	94.64	124.67	157.59	1.27	33.12	$0.79	–$26,160,000

NOTE: The measure used is the ratio of adjusted self-reported consumption (SRC) to tax-paid sales (TPS).
SOURCE: Data from the 2010-2011 Tobacco Use Supplement to the Current Population Survey and Orzechowski and Walker (2012).

converted the 2012 Mackinac Center estimates into packs subject to tax avoidance or tax evasion for all available states (all but Alaska, Hawaii, North Carolina, and the District of Columbia). Summing the total packs sold from net importing states (i.e., relatively high-tax states) and dividing by total packs in all available states suggests that 13.5 percent of sales are avoiding taxes. However, the total packs sold from the net exporting states should be roughly equal (minus North Carolina, which is considered by the Mackinac study as the primary source of "commercial smuggling") to the total sold from net importing states, but they are not: instead of roughly 13 percent, these sales only represent 3.2 percent of total packs sold. This discrepancy suggests some systematic bias in the estimates—likely overstating tax evasion from importing states and understating tax evasion from exporting states.

The Mackinac estimates of revenue losses for the committee's top five importing states are significantly larger than the committee's estimates, with the exception of Kansas ($17 million in comparison with the committee's $27 million). Collectively, the revenue losses are 45 percent higher than the committee's estimates. Conversely, the Mackinac estimates for revenue gains for the committee's five top exporter states are 71 percent lower than the committee's estimates. Some of this latter difference reflects the assumption in the Mackinac study that attributes long-distance (in contrast with cross-border) smuggling exclusively to North Carolina. Although the two sets of estimates differ by a year, there were no significant cigarette tax increases during that time.

The significant difference in sales subject to tax avoidance and evasion between importing and exporting states found in the Mackinac study suggests a very high volume of illicit trade with Canada and Mexico—a conclusion the committee did not reach. Furthermore, the Mackinac study relies on a number of assumptions that may help explain differences with the committee's estimates. Specifically, the Mackinac study assumes (1) daily cigarette consumption for current smokers is constant across states; (2) all long-distance smuggling originates in North Carolina; and (3) systematic differences in sales for states bordering Mexico or Canada are attributable to tax avoidance and evasion.

The committee's estimate of the size of the illicit tobacco market in the United States also differs from other recent studies, and there are a number of possible explanations for these differences. First, the committee's estimates are likely lower because they reflect net transfers of cigarette packs between states. In other words, for states with both positive and negative tax differentials with neighboring states (e.g., Indiana[10]), the difference

[10]Indiana, for example, borders Illinois (including the high-tax jurisdictions in and around Chicago), Michigan, and Ohio, which have higher cigarette excise taxes. But, to the south, Indiana also borders low-tax Kentucky.

between the tax-paid sales and self-reported consumption represents the net differences and therefore underestimates total cross-border illicit trade. There may also be a downward bias if underreporting of consumption is not the same across states, with greater underreporting in higher-tax states where the social norms against smoking are stronger. Second, the estimates by Fix and colleagues (2013) may be biased slightly upward because they reflect tax avoidance and evasion for smokers who smoke a minimum number of five cigarettes per day.

A limitation of other recent studies and the committee's estimate is that they do not account for incidental differences in sales and consumption that may result from patterns of commuting and tourism. To improve the committee's estimates, one would have to account for patterns of commuting and tourism and develop econometric methods for estimating the total flow of illicit trade in states that border states with both higher and lower cigarette excise tax rates.

SUMMARY AND RECOMMENDATIONS

The three basic methods for estimating the size of the illicit tobacco market—residual methods (including trade gaps, comparing tax-paid sales and self-reported consumption, and econometric modeling), direct measurement (surveys, empty pack studies, and pack observation, return and swap studies), and expert opinion—have different sources of error. The various studies also differ in the time periods covered, sample sizes, and scientific rigor. They also yield different estimates, partly because different approaches capture different combinations of tax avoidance and tax evasion, activities that are difficult to separate. Because of these limitations, researchers should use multiple methods to obtain the most comprehensive picture of the scale of the illicit tobacco market for a specific location and time. The improvements to existing methods recommended by the committee (see below) would also help researchers to distinguish between tax evasion and tax avoidance.

As detailed in Table 4-1 (above), the strengths and weaknesses of each method affect estimates in both directions: some aspects of each method tend to overestimate the size of the market, and some aspects tend to underestimate the size of the market. Importantly, however, all three methods are based on consumers, on the demand side of the market. There has been virtually no research on the supply side. If such supply data become available, they would add important information for estimating the overall size of the illicit tobacco trade.

Using its own estimate and plausible estimates from other methods to establish a range for the size of the illicit market, the committee determined that the percentage of the total market represented by illicit sales in the

United States is between 8.5 and 21 percent. This range represents between 1.24 to 2.91 billion packs of cigarettes annually and between $2.95 and $6.92 billion in lost gross state and local tax revenues. The high end of the range (21 percent) is consistent with a national pack return survey conducted in the United States; the low end of the range (8.5 percent), which is the committee's own estimate, reflects the net level of tax avoidance and evasion at the state level, aggregated nationally, using the method of comparing tax-paid sales and self-reported consumption.

The committee's calculations show that the net percentage of sales subject to tax evasion and avoidance grew from 3.2 percent in 1992-1993 to 8.5 percent in 2010-2011. For states with both positive and negative tax differentials with neighboring states, the difference between tax-paid sales and self-reported consumption will underestimate total cross-border illicit trade. Nevertheless, the committee's estimate has a clear interpretation (the comparison is with a counterfactual where smokers bought all their cigarettes in their state of residence, from a source that paid state taxes), the quantity that it is estimating can be defined precisely, and there are no issues with selecting a credible national sample of survey sites.

The committee's state-level estimates show that the illicit tobacco market is not evenly distributed across the country. It may be as high as 45 percent in high-tax states, such as New York; in other parts of the country it is not a significant part of the tobacco market. The committee classified 22 states and the District of Columbia as net exporters, and the remaining 28 states as net importers. Of the total tobacco taxes collected by states and localities in 2011 of $17.65 billion, the net importing states lost an estimated $2.95 billion in state cigarette excise taxes, and the net exporting states gained an estimated $0.82 billion. New York State accounts for nearly half of the total revenues lost.

As a point of reference, the (low end of the) total amount of tax revenue lost to the illicit tobacco market is roughly 10 percent of the total tobacco tax due, which is smaller than estimates of the "income tax gap" of 17 percent at the federal level and 18 percent at the state level. Looking internationally, the U.S. illicit tobacco market is slightly larger as a share of the total market than the illicit market in Canada, which the committee estimates to be between 7.6 and 14.7 percent of the total market.

RECOMMENDATION 4-1 The Tobacco Use Supplement to the Current Population Survey should be expanded in both the number of questions and specificity of questions currently asked regarding tobacco use and illicit tobacco market participation. The survey should continue to include questions that garner information about price paid and location and place of purchase; it should add questions on frequency of purchase at certain locations, last purchase location and price, and

nature of the purchase (i.e., licit or illicit). Other questions that should be added would cover the particular factors contributing to one's seeking out lower-priced products and what price levels might influence a consumer's decision to switch between the legal and illicit markets.

RECOMMENDATION 4-2 A large-scale pack swap survey that is representative of the U.S. population should be conducted. This survey could be integrated into a current nationwide survey capable of also providing state-level estimates, such as the Tobacco Use Supplement to the Current Population Survey, so that questions regarding a customer's last purchase would be coupled with a pack swap component that would allow researchers to examine stamps and markings to determine if appropriate taxes were paid, and conduct an analysis of the product's design characteristics and chemistry in order to determine if counterfeits or illicit whites had entered the market.

RECOMMENDATION 4-3 Methods should be improved in order to better differentiate between tax evasion and tax avoidance. More accurate estimates of the size of the illicit market separately attributable to tax avoidance and tax evasion could be obtained by combining more systematic data collection on discarded packs in states with significant illicit trade with (1) an expansion in the number and specificity of questions currently asked in representative population surveys regarding tobacco use and illicit tobacco market participation and (2) a large-scale pack swap survey that is similarly representative of the U.S. population.

5

Interventions in the Illicit Tobacco Market: Policy and Regulatory Options

As discussed above, a variety of factors, both in the United States and elsewhere, give rise to illicit tobacco markets. Many countries have implemented policies aimed at reducing illicit tobacco trade, and their experiences provide lessons that can inform domestic intervention strategies. The World Health Organization's (WHO) Framework Convention on Tobacco Control (FCTC) and its illicit trade protocol distill many of the lessons derived from international experiences to date and provide a roadmap for comprehensive and integrated anti-contraband policy on the national, transnational, and global levels: see Box 5-1.

Drawing on these international experiences and on what is known about the U.S. illicit tobacco trade, this and the next two chapters identify a range of possible interventions to reduce the size of the U.S. illicit tobacco market. These chapters address a specific charge in the committee's statement of task. This chapter covers control of the supply chain, tax harmonization, and public education campaigns; Chapter 6 covers law enforcement; and Chapter 7 presents case studies of comprehensive intervention efforts in three countries and the European Union (EU).

CONTROLLING THE SUPPLY CHAIN

As described in Chapter 2, there are a number of points along the supply chain where tobacco and tobacco products can be diverted to the illicit market. Bootlegging, large-scale smuggling, illicit whites, and illegal manufacturing (including counterfeiting) are each linked to diversion at a particular phase in the legal supply chain of cigarettes (see Figure 2-1 in

BOX 5-1
WHO Framework Convention on Tobacco Control, Protocol to Eliminate Illicit Trade in Tobacco Products

Article 15 of the WHO Framework Convention on Tobacco Control (FCTC) "recognize[s] that the elimination of all forms of illicit trade in tobacco products . . . and the development and implementation of related national law, in addition to sub-regional, regional, and global agreements, are essential components of tobacco control" (World Health Organization, 2003, p. 13). The Protocol to Eliminate Illicit Trade in Tobacco Products ("protocol"), derived from Article 15, was adopted by the fifth session of the conference of parties of the WHO FCTC in November 2012. The protocol was opened for signature and ratification on January 10, 2013, and remained open until January 9, 2014. It was signed by 53 countries (though not the United States) and the European Union. However, for the protocol to enter into force, it needs both signature and ratification by 40 parties, and only six countries have ratified it to date.

Parties to the protocol are obliged to implement a number of domestic measures to control the supply chain, including

- licensing (Article 6)
- due diligence (Article 7)
- tracking and tracing (Article 8)
- record-keeping (Article 9)
- security and preventive measures (Article 10)
- sale by Internet (Article 11)
- free zones and international transit (Article 12)
- duty-free sales (Article 13)

In addition to supply-chain controls, the protocol calls for signatories to establish a number of activities as "unlawful," such as illegal production and tobacco product smuggling. These unlawful activities should be subject to "effective, proportionate, and dissuasive sanctions" (World Health Organization, 2013a, p. 20). The protocol establishes a precedent for international cooperation not only to

Chapter 2). Opportunities for diversion exist at all the stages in the supply chain: preproduction, production, taxation/in-transit, wholesale, and retail. Interventions to control and monitor the participants at each stage in the supply chain—such as licensing, digital tax stamps, and track-and-trace systems—and have, when coupled with enhanced enforcement of such requirements, have been shown to be useful in reducing these diversions and limiting the supply of tobacco products in the illicit market.

investigate illicit trade, but also to cooperate through information sharing, technical assistance, and financing.

The protocol is "essentially a customs and law enforcement treaty born into a health institution" (Liberman, 2012, p. 2). As such, the necessary expertise needed to implement the protocol (i.e., expertise regarding customs and supply chain control, criminal law and law enforcement, and information technology in the context of global information sharing) is absent within the WHO, and it has been difficult to procure the necessary funding to build additional internal expertise. In addition, there is an inherent tension between the FCTC and the protocol: the FCTC views the tobacco industry cautiously and urges parties to establish measures to limit their interactions (FCTC Article 5.3); whereas the international agencies who have the expertise and capacity to facilitate the implementation of the protocol view the tobacco industry as yet another private stakeholder with whom close cooperation can be necessary and useful (see Chapter 1 for a discussion of INTERPOL's relationship with the tobacco industry).

Due in part to these challenges, the protocol has only been ratified by six countries. Without ratification and the enactment of corresponding domestic implementing legislation, as is needed for similar international treaties and conventions, the protocol is essentially "toothless." This situation echoes what is also found in other spheres, such as protocols against money laundering: Halliday and colleagues (2014), for example, refer to the creation of "Potemkin villages" of apparent compliance with systems and institutions.

Despite these limitations, the FCTC Illicit Trade Protocol remains an important guiding document for controlling the illicit tobacco trade. As international relations scholars have noted, treaty norms often represent long-term goals that are set higher than many participating countries can or want to comply with immediately or within the foreseeable future (e.g., Neumayer, 2005). The FCTC itself was viewed as an aspirational document, and in recent years it has contributed to considerable strengthening of tobacco control policies, particularly in low- and middle-income countries. Thus, though the protocol has yet to be adopted on a wide scale, it can be viewed as an aspirational document, codifying principles of tobacco control and outlining a future path for international health cooperation.

Licensing

Governments can require participants throughout the supply chain—including tobacco growers, manufacturers, distributors, wholesalers, and retailers—to be licensed, imposing obligations or restrictions on them.[1] Governments can mandate that failure to comply with such obligations or

[1] Article 6 of the FCTC Protocol calls for parties to require licensing of any person who produces tobacco manufacturing equipment and of persons who commercially transport tobacco manufacturing equipment, potentially affecting the ease with which such equipment is currently acquired.

restrictions will result in administrative, civil, or criminal penalties, depending on the location and severity of the infraction. Other control measures, such as requirements for record-keeping and limits on quantities of tobacco products sold, can regulate the supply chain without explicitly requiring formal licensing.

As discussed in Chapter 2, the preproduction stage of the supply chain—that is, the cultivation of tobacco and the production of other materials necessary for the manufacture of cigarettes, such as filter tips and cigarette papers (see Box 2-1 in Chapter 2)—is not subject to licensing or other regulatory oversight in any U.S. jurisdiction, which is also the case in many other countries. Australia is an exception as one of the few countries to regulate cigarette production at the preproduction stage: see Box 5-2. Some of the regulations at this stage may prove challenging to implement and enforce because of the abundance and availability of many of the materials necessary for cigarette production (i.e., cigarette manufacturing machinery and other inputs)—in contrast to, for example, some methamphetamine precursors. One significant exception may be acetate tow, a fiber made from wood pulp that is used in filters to control smoke flow.[2] Despite the absence of preproduction controls in the United States, however, neither the illegal production of cigarettes by unlicensed manufacturers nor the production of counterfeit cigarettes appears to be prevalent in the country.

This absence of this problem in the United States may be due in part to the licensing requirements at the production and taxation/in-transit stages of the supply chain. Manufacturers, importers, and export warehouse proprietors of tobacco products or cigarette papers or tubes are required to obtain a license from the Alcohol and Tobacco Tax and Trade Bureau of the U.S. Department of the Treasury prior to engaging in business operations.[3] Violations of licensing requirements including underreporting production, operating without a license, and evading taxes are punishable by fines of not more than $10,000 or imprisonment of not more than 5 years, or both. All products, machinery, and property used to engage in the manufacture, import, or export of tobacco products or cigarette papers or tubes without

[2] Acetate tow is produced by a limited pool of companies and has few substitutes, and the tracking and tracing of acetate tow also could be facilitated by the fact that it has a unique code in the harmonized tariff schedules of Brazil, Canada, China, the European Union, and the United States. Restricting and regulating the availability of acetate tow could especially disrupt counterfeit production, which requires that the products look and feel like major brand cigarettes. Restrictions could be imposed from outside the country where the illicit cigarettes are produced, which would be especially advantageous when local cooperation is absent (Framework Convention Alliance, 2010; ICIS Chemical Business, 2010; Joossens, 2011).

[3] The permit may be denied for an applicant who has been convicted of tobacco-related felonies or who is deemed not likely to comply with regulations on the basis of previous or ongoing legal proceedings for tobacco-related felonies.

BOX 5-2
Preproduction Regulation in Australia

Historically, the domestic Australian tobacco market has been federally regulated and subsidized. Beginning in 1965, the Australian government required manufacturers to include a certain percentage of Australian-grown tobacco leaf in their products and allocated supply quotas (a license to grow tobacco) to local farmers. In the mid-1990s, fine-cut tobacco known as "chop-chop" entered the domestic Australian market illicitly, due in part to policies that deregulated the domestic market and opened it to tobacco leaf from abroad. As a result, chop-chop became extremely profitable; tobacco farmers could earn up to Aus $10,000 per bale of tobacco on the illicit market compared to Aus $800 on the legal market (Scollo and Winstanley, 2012).*

Even though licensing requirements place restrictions on the supply of tobacco leaf entering the market, the Australian example demonstrates that licensing requirements have certain limitations. They must be enforced, and even when enforcement exists, prosecution of violators may be difficult. For example, when the Australian Tax Office, responsible for monitoring licensed tobacco growers, seized illicit chop-chop, it had difficulty proving that the tobacco leaf was grown and diverted to the black market from a particular farm, limiting its ability to prosecute license violations (Australian National Audit Office, 2006; Sweeting et al., 2009).

Despite these limitations, the regulations in Australia appear to have made an impact on the country's illicit tobacco market. Data from the National Drug Strategy Household Survey demonstrate that the majority of Australian smokers who have ever used illicit tobacco no longer use it, and estimates indicate that the size of the Australian illicit tobacco market in 2010 was minimal, between 2 and 3 percent of the country's total tobacco market (Scollo and Winstanley, 2012).

*Commercial tobacco growing no longer exists in Australia. The Tobacco Marketing Act of 1965, which established the Tobacco Industry Stabilisation Plan and the Local Leaf Content Boards, was abolished in 1997. At that time, the government provided financial incentives for tobacco growers to leave the market. A federal-government- and industry-funded buyout of the leaf-growing industry was agreed to in 2006 (Scollo and Winstanley, 2012).

a license are subject to forfeiture.[4] Anyone who sells, re-imports, or receives tobacco products or cigarette papers and tubes designated for export, and anyone who aids or abets such activities, must pay the liable taxes due and be fined the greater of $1,000 or five times the imposed tax. All products

[4]U.S. Internal Revenue Code §5701, Title 26, Chapter 52: Tobacco products and cigarette papers and tubes. Available: http://www.gpo.gov/fdsys/pkg/USCODE-2011-title26/pdf/USCODE-2011-title26-subtitleE-chap52.pdf [June 2014].

seized and all vessels, vehicles, and aircraft used in attempts to reimport are subject to forfeiture.

As discussed in Chapter 2, the illicit tobacco market in the United States does not appear to be supplied by tobacco products that have evaded federal taxes through export-reimport schemes, and there is no evidence to suggest that underreporting of production by licensed U.S. manufacturers is widespread. Cases of illegal production of cigarettes by unlicensed manufacturers have not come to the attention of the committee, nor does the production of counterfeit cigarettes appear to be prevalent in the United States. The licensing requirements and penalties for violations at the production and taxation/in-transit phases of the supply chain, when enforced, may significantly impede such procurement schemes.

Supply chain controls can also be imposed at the wholesale and retail stages. These controls could be implemented to prevent diversion through tax-exempt distribution to noneligible consumers (e.g., state tax-exempt sales on military bases to nonmilitary people or tax-exempt sales on Native American reservations to non-Native Americans) or to limit opportunities for bootlegging and smurfing schemes. The evidence from Canada demonstrates how controls at the provincial level may affect tax-exempt distribution to noneligible purchasers (see Chapter 7).

In the United States, there are no federal licensing requirements at the wholesale stage, but all 50 states and the District of Columbia require tobacco wholesalers to be licensed. However, the requirements for obtaining a wholesaler license and the severity of restrictions placed on licensees vary and are not necessarily prohibitive. In a presentation to the committee, for example, a representative from the Northern Virginia Cigarette Tax Board indicated that in order to obtain a wholesaler license in Virginia, an applicant needs only a phone number and address; no fee is required. The representative also suggested that diversion at the wholesale level appears to be common in Virginia, where smugglers obtain cigarettes from wholesale box stores like Sam's Club and Costco without paying the state sales tax. In contrast, California requires a $1,000 application fee for a wholesaler for each licensed location; licenses must be renewed annually, and there is a fee of $1,000 for each renewal. California wholesalers are subject to additional restrictions on purchases, sales, and record-keeping that carry enforcement and criminal penalties (California State Board of Equalization, n.d.).

Requiring tobacco-retailer licensing can be a useful tool for administering tobacco tax and point-of-sale laws and also can be used to help jurisdictions control the location and concentration of tobacco retailers (McLaughlin, 2010). In the United States, however, federal controls at the retail stage of the supply chain are limited. Although the Preventing All Cigarette Trafficking Act of 2009 (PACT Act) reduces the availability of

BOX 5-3
U.S. Internet Cigarette Sales

Most Internet cigarette sales are completed without payment of proper state and local taxes and violate laws regarding sales to minors. In 2007, 78 percent of Internet cigarette venders advertised that they sold cigarettes "tax free" (Ribisl et al., 2007). New York State alone lost between $106 and $122 million in tax revenues in 2004 from Internet sales (Davis et al., 2006).

In light of these sales, in 2005 the Bureau of Alcohol, Tobacco, Firearms, and Explosives (ATF), along with a number of state attorneys general, reached an agreement with the major credit card companies and PayPal to ban the processing of payments from online cigarette sellers. That same year the major delivery services, including UPS and FedEx, entered into a similar agreement to stop delivery of cigarettes to consumers. These early agreements are believed to have curtailed Internet cigarette sales to some degree: notably, Ribisl and colleagues (2011) found that online traffic to Internet cigarette venders declined drastically after the agreements went into effect. However, the agreements contained notable loopholes that allowed cigarettes to be purchased online with personal checks, money orders, and electronic checks, to be delivered by the U.S. Postal Service (USPS), and to be sold without age verification.

Consequently, in 2009 the Prevent All Cigarette Trafficking Act (PACT Act) was adopted to further regulate Internet cigarette sales and address these gaps (see Box 1-2 in Chapter 1). It requires that all state tobacco taxes be paid prior to delivering any cigarettes or smokeless tobacco to buyers in that state, makes mailing cigarettes or smokeless tobacco products through the USPS illegal, establishes a federal list (maintained by ATF) of online sellers operating in violation of the law, and prohibits common carriers and other delivery services from delivering any packages for sellers that appear on the "Non-compliant Delivery Sellers List." Lawful Internet sellers are able to transport cigarettes or smokeless tobacco to consumers through messenger services.

Because Internet cigarette sales are a major part of many Native American tribes' economies, 140 Native American-owned cigarette retailers sued to prevent the enforcement of the law. After 3 years of litigation, the suit was dismissed, and all provisions of the PACT Act became enforceable in June 2013. Of course, the law will only be as effective as its enforcement; given the relative newness of the PACT Act, there are as yet no comprehensive evaluations of it.

tax-evaded, low-cost cigarettes over the Internet, there is no federal licensing requirement for the sale of tobacco products: see Box 5-3.

Some states and localities do license retailers, although their requirements vary greatly. For example, the California Cigarette and Tobacco Products Licensing Act of 2003 (Licensing Act) requires retailers to obtain a license from the Board of Equalization (Tang et al., 2009).[5] The Licens-

[5]The California Licensing Act also requires manufacturers, importers, wholesalers, and distributors to obtain a license (McLaughlin, 2010).

ing Act provides for civil and criminal penalties that range from monetary fines to license suspension or revocation, and it authorizes the board to seize cigarettes or other tobacco products purchased in violation of the Licensing Act or found to be untaxed (Tang et al., 2009, p. 164; Horton, 2010, p. 3). Similarly, the New York State licensing law requires retailers to acquire a certificate of registration in order to sell cigarettes or other tobacco products (McLaughlin, 2010). Notably, however, Virginia—a main source state for illicit cigarettes—does not require retailers to have a license to sell cigarettes.

The absence of consistent state regulations and comprehensive federal controls may contribute to the increased diversion that has been seen at the wholesale and retail phases of the supply chain in the United States. Licensing of wholesalers and retailers can affect the flow of illicit cigarettes into the market. The Institute of Medicine (2007) noted the importance of controlling the tobacco retail sales environment and recommended that all states license retail sales outlets that sell tobacco products. Licensing retailers may be particularly important in low-tax jurisdictions, where diversion generally occurs. When diversion occurs at the retail phase, state excise taxes have already been paid, so it is low-tax jurisdictions that are most susceptible to illicit sales at this phase of the supply chain. However, those jurisdictions may have little incentive to reduce diversion because they stand to benefit from increased revenues from higher-volume cigarette sales. Conversely, diversion that occurs at the wholesale phase generally occurs prior to sales taxes being paid. In this case, both low- and high-tax jurisdictions should have incentives to adequately control the flow of cigarettes diverted at this stage.

Tax Stamps

Many governments require tax stamps (banderoles) to be applied to tobacco products in order to identify products on which excise or other taxes have been paid and for helping to ensure that products taxed in one jurisdiction are not being resold in another jurisdiction without payment of appropriate taxes. Typically, tax stamps are sold to and applied by either a producer or distributor who pays all applicable taxes, with some governments providing a small payment or rebate for the application of the tax stamp. The absence of a tax stamp in a jurisdiction that requires one is helpful for easily identifying illicit tobacco products.

Requirements for tax stamps vary widely in the United States and around the world. In the United States, nearly all states require tax stamps on cigarettes; the only states that do not require cigarette tax stamps are North Carolina, North Dakota, and South Carolina. Similarly, local governments with significant cigarette excise taxes, including Chicago and

Cook County, Illinois, and New York City require tax stamps. In contrast, almost no states require tax stamps on other tobacco products. Internationally, some countries require tax stamps on all tobacco products sold in that country; others forgo tax stamps entirely; and others require stamps on some, but not all, tobacco products. For example, in Vietnam, tax stamps are required on all cigarettes domestically manufactured by legally established companies.[6]

Some jurisdictions require different stamps on the same tobacco products. For example, in Ontario, Canada, all tax-exempt products must be sold with black-stock markings indicating that federal excise but not provincial taxes have been paid in order to easily identify tax-exempt products sold from Native American reserves (Sweeting et al., 2009). Serbia's tax stamps vary based on whether brands are domestic, locally produced brands, international brands produced under license, or imported brands. Similarly, Arizona requires different colored tax stamps for cigarettes sold by Native American tribes, with the color of the stamp varying for cigarettes sold on reservations to reservation residents, sold on reservations to non-tribal members, and sold outside the reservation.

The utility of tax stamps in increasing tax compliance and identifying illicit tobacco is ably illustrated by the experience in Michigan in the mid-1990s. On May 1, 1994, Michigan raised its cigarette excise tax from 25 cents per pack to 75 cents per pack, which was then the single largest increase ever enacted for a state. At the time, Michigan did not require tax stamps on cigarettes sold in the state. Soon after the tax increase, North Carolina repealed its requirement that stamps be applied to cigarettes sold there, and South Carolina subsequently did the same. Those two states had among the lowest cigarette excise taxes in the country at the time, 5 cents per pack in North Carolina and 7 cents per pack in South Carolina, amounting to roughly a 70-cent difference between the price of cigarettes sold in Michigan and the two other states. Cigarettes were soon being bootlegged from the Carolinas to Michigan, and the lack of a tax stamp in Michigan hindered the ability of state tax authorities to assess compliance and to enforce the state's relatively high cigarette tax. Cigarette excise tax revenues in Michigan increased sharply immediately following the tax increase, but they eroded quickly as illicit cigarettes became more available. In 1998, Michigan passed new legislation requiring a tax stamp on all cigarettes sold in the state. In the year following that requirement, Michigan's cigarette tax revenues increased by 14 percent despite no increase in the state excise tax: see Figure 5-1. At the same time, cigarette sales fell by about 9 percent in North Carolina and by more than 13 percent in South

[6] Prime Minister's Decision No. 175/1999/QĐ-TTg, see http://policy.mofcom.gov.cn/english/flaw!fetch.action?id=d6b5034b-6ab1-4bf6-91e1-ecca60e19570 [January 2015].

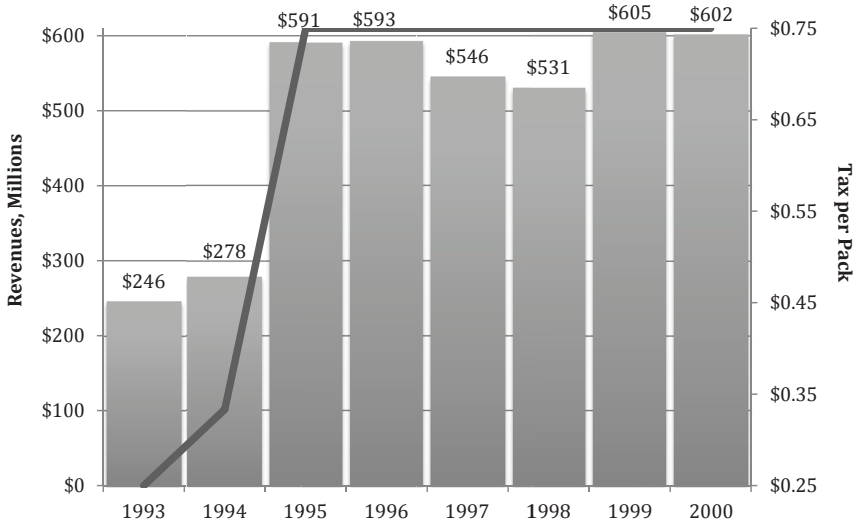

FIGURE 5-1 Cigarette tax revenues in Michigan, 1990-2000.
SOURCE: Data from Orzechowski and Walker (2014).

Carolina, almost certainly due to the drop in the bootlegging of cigarettes from the two states to Michigan.

As technologies have improved, tax stamps have become more sophisticated. These more sophisticated tax stamps include encrypted information that makes the stamps more difficult to counterfeit and enhances authorities' enforcement capabilities. Some features of these stamps are clearly visible, such as color-shifting ink, design, and unique stamp numbers. Other features can only be seen with the use of specially designed scanners, including encrypted codes with information on the distributor's name, when the stamp was applied, and the value of the stamp.

Jurisdictions that use enhanced tax stamps typically adopt related systems that allow them to easily monitor the application of the stamps and the distribution of the stamped products. Similarly, many also adopt licensing requirements for all involved in the production, distribution, or sale of tobacco products, further facilitating the ability of authorities to enforce tax laws.

California was the first U.S. state to adopt the new generation of tax stamps, in 2005. Prior to that, cigarette packets were required to have affixed, heat-applied decal tax stamps purchased from the California Board of Equalization. However, illicit traders were able to use counterfeit techniques to reproduce the stamps and evade the tax (Tang et al., 2009, pp. 165-166). The new digital tax stamps are readable by a scanner and are

encrypted with specified information, including the name and address of the distributor, the date the stamp was affixed, and the value of the stamp. This encrypted information provides board investigators with track-and-trace capability in the field: they can verify the taxes paid by using scanning devices designed to read the encrypted information and detect counterfeit stamps (Tang et al., 2009, p. 166; Horton, 2010, p. 3). The Board of Equalization uses both random and referral inspections of retail outlets (using hand-held scanners) to determine the authenticity of cigarette tax stamps, and it conducts large-scale sweeps of wholesale distributors (Al-Delaimy et al., 2008, pp. 4-14).

California's early experiences with the new stamp in 2005, coupled with its licensing requirements (enacted in 2004) and enforcement activities, were positive, with cigarette tax revenues up sharply from forecasts: see Figure 5-2. The early success led California to adopt a further enhanced tax stamp in 2009. Although the tobacco industry has suggested that criminal traders have been able to easily counterfeit the new stamps, the Board

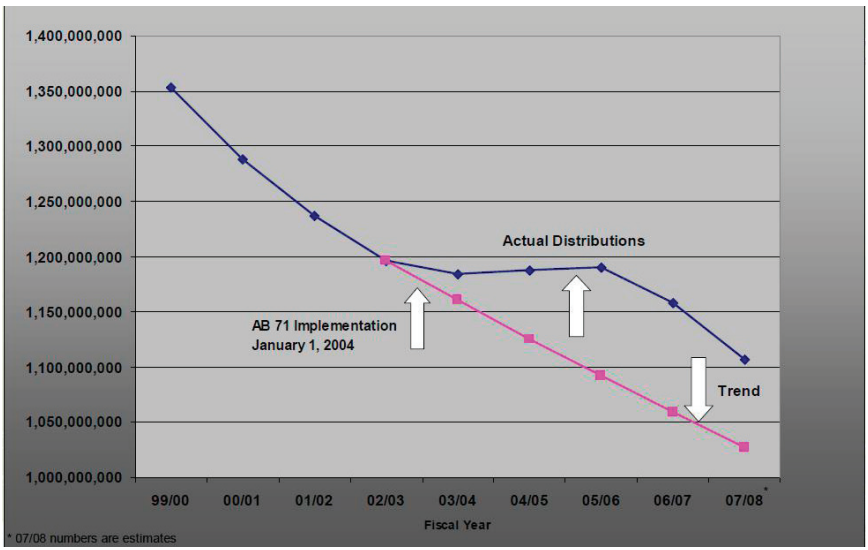

FIGURE 5-2 Cigarette tax revenues in California, fiscal 2000-2008.
NOTES: The left-side arrow reflects the initial adoption and implementation of the new stamps. The middle arrow points to the actual distributions following the implementation of the new stamps. The right-side arrow points to the projected distributions if the underlying trend prior to the implementation of the stamp had continued over time.
SOURCE: Bartolo and Kimsey (2013).

of Equalization indicates that while visual representations or images of California's tax stamp have been discovered, the tax stamp's encryption or security features have not been successfully duplicated (Framework Convention Alliance, 2008, p. 9; Horton, 2010, p. 3). More generally, there are "no known reports of any compromises of stamp encryption systems," and "[t]he application of lost or stolen hybrid tax stamps with unique identification features to unmarked tobacco products could be detected through revenue and customs inspections, or criminal investigations" (Colledge, 2012, p. 8).

In the United States, at the end of 2013, encrypted cigarette tax stamps were being used in Massachusetts and California, and they had been approved for use, but not yet required, in New Jersey; in Michigan, the rollout of digital tax stamps was expected to be completed by the end of 2014.[7] Outside the United States, Turkey and Brazil were among the earliest countries to adopt the more sophisticated stamps and related monitoring systems. Others have followed, including the Philippines, which began using the stamps on cigarettes in August 2014 following its 2012 "sin tax" reform legislation, and Canada, which implemented a high-tech excise stamp in July 2012.[8]

The cost of tax stamps varies considerably, depending on the degree of sophistication. For example, the traditional heat-applied stamp used in California for many years cost less than 50 cents per 1,000 stamps; the first-generation encrypted stamp was more than 10 times as expensive, at roughly $5.00 per 1,000 stamps; and the second-generation encrypted stamp with additional features is still more expensive, at more than $8.00 per 1,000 stamps. The costs can be higher when there are more sophisticated production monitoring systems included. In many jurisdictions, the additional costs are passed on by governments to producers or distributors, who then pass the costs on to purchasers through higher prices. In general, even when the costs are borne by governments, the costs of the stamps, related technologies, and enforcement efforts appear to be cost-effective, with the additional tax revenues that result from improved tax compliance and the reduction in the illicit tobacco trade more than offsetting the increased costs. For example, the cost of California's digital tax system (in 2008) was estimated at $9 million per year, while the state collected nearly

[7] See http://www.michigan.gov/documents/taxes/StampingAgentsNotice_448510_7.pdf [January 2015].

[8] "The [Canadian] excise stamp indicates that federal excise duty has been paid and that product was manufactured legally. It has state-of-the-art visible and hidden identifiers and security features similar to those found on Canadian banknotes, such as unique color-shift ink that changes from red to green when the stamp is tilted. The stamp also has hidden security features that only federal and provincial law enforcement agencies can detect" (Canada Revenue Agency, 2012, p. 1).

$153 million in annual state tax revenues: $87.7 million in the cigarette excise tax, $16 million in excise taxes on other tobacco products, and $49.2 million in state sales and use taxes as a result of the licensing act (described above) and tax stamps (Framework Convention Alliance, 2008, p. 8; Horton, 2010, p. 4). These technologies, combined with enforcement efforts, can be expected to work just as well in higher-tax tax states as in lower-tax ones: in fact, one would expect the payoff to be larger in higher-tax states because since the magnitude of the problem is likely to be larger.

The apparent effectiveness of state-of-the-art tax stamps in increasing excise tax collections suggests that retail compliance with state laws may be sensitive to the ease of enforcement. Better data and research on supply-side networks (see Recommendation 3-1 in Chapter 3) could strengthen the understanding of the risks to retailers of selling illicit products and could help produce estimates of the extent to which retailer compliance responds to particular regulator and enforcement actions.

Track-and-Trace Systems

Encrypted tax stamps and other pack markings are an integral component of more comprehensive tracking-and-tracing systems that both "prospectively" track[9] tobacco products through each stage of the supply chain, from production until sale to tobacco users, and that can be used to "retrospectively" trace[10] products back through the supply chain so that those involved in production, distribution, and sale can be identified.

Effective track-and-trace systems help to maintain the integrity of the supply chain by strengthening tax authorities' ability to identify illicit products and to determine the point at which products are diverted from the legal supply chain into illicit markets, enabling the authorities to identify who was in control of those products at that point.

Establishing a global track-and-trace system for tobacco products is a key component of the FCTC Protocol (see also Box 5-1, above). The protocol calls for this system to include the following features:

- unique, secure, nonremovable identification markings (e.g., stamps or codes) to be affixed to or form part of all cigarette packaging;

[9] "Tracking means systematic monitoring by competent authorities or any other person acting on their behalf of the route or movement taken by tobacco products through their respective supply chains of manufacture, sale, distribution, storage, shipment, import or export, or any part thereof" (Joossens, 2011, p. 24).

[10] "Tracing means the re-creation by competent authorities or any other person acting on their behalf of the route or movement taken by tobacco products through their respective supply chain of manufacture, sale, distribution, storage, shipment, import or export, or any part thereof" (Joossens, 2011, p. 24).

- markings that include or can be used to identify the date and location of production; the production facility, machine, and production shift or time of manufacture; the name, invoice, order number and payment records of the first customer not affiliated with the manufacturer; the market in which the product is intended to be sold and the intended shipping route, date, destination, point of departure, and consignee; the product's description, including brand, subbrand, and other information; shipping information; and the identify of known subsequent purchasers; and
- maintenance of appropriate records by all involved in the supply chain.

In 2005, Philip Morris filed a patent for a marking, tracing, and authentication tool for its products that became known as "Codentify." The four major tobacco producers (British American Tobacco, Imperial Tobacco, Japan Tobacco International, and Philip Morris International) have formed the Digital Coding and Tracking Association (DCTA) in order to promote Codentify. As a track-and-trace system, Codentify is regarded as having serious technical limitations, including its failure to link codes at the pack level with codes at the carton or case level (Joossens, 2011; Joossens and Gilmore, 2013).

Many tobacco control experts have expressed concern about the tobacco industry's involvement in the development of such a track-and-trace system and regard the industry's promotion of Codentify violating of Article 5.3 of the FCTC and Article 8 of its protocol, which call for no industry involvement in the establishment of a track-and-trace system (Joossens and Gilmore, 2013). Smaller tobacco manufacturers have also been skeptical of using Codentify, in part because it would require them to provide client and other business data to the major manufacturers or their surrogates. There may also be a security problem with such a system, according to Colledge (2012, p. 12):

> [it could present] a potential operational security threat to the integrity of government tax collection and protection. Any system that would include control of data access by the tobacco industry could potentially be compromised by the tobacco industry if it monitored enforcement-related inquiries.

The main objective of tracking and tracing is to facilitate investigations into tobacco smuggling and to identify the points at which tobacco products are diverted into illicit markets (Joossens, 2011). But, according to Colledge (2012, p. 3):

> [It can only be used to monitor] tobacco products that are produced under strict controls, including production monitoring and the application of a unique marking system at the point of manufacture. It has limited, if any, application in monitoring the production of tobacco products from illegal manufacturing facilities.

Nevertheless, these technologies could still be used to *identify* products that have not been properly taxed, even if (in the case of illegally manufactured or counterfeit products) they cannot be traced back through the supply chain. In addition to making it easier to detect contraband at any point in the system, track-and-trace technologies can provide other value to the authorities. For example, they will make it easier for the states to determine how much escrow is owed by each nonparticipating manufacturer under the Master Settlement Agreement.[11] Moreover, they can provide a check on retailers' sales tax reports, since state revenue agents can better identify possibly fraudulent sales tax returns if the state tax department knows exactly how many cigarettes are sent to each retailer each month.

Digital tax stamps and coded information are more effective when implemented in combination with other measures, such as the licensing legislation in California (Framework Convention Alliance, 2008, p. 8). Joossens (2011) also suggests that, rather than individual countries developing their own domestic track-and-trace systems, such systems are best implemented at the international level in order to facilitate tracking and tracking across borders. This issue is exemplified by the Brazilian experience. In 2007, given significant problems with illicit cigarette production, Brazil implemented a track-and-trace system that required the installation of automatic cigarette production counters on every cigarette manufacturing line in the country and the affixation of digital tax stamps on each pack of cigarettes. In 2011, this system was further strengthened when a new law required that cigarettes produced in Brazil for export be marked with a visible two-dimensional matrix code that would allow authorities to trace the date and place of manufacture of the pack and its country of destination. The track-and-trace system is considered successful in that it has curtailed domestic illegal production and controlled manufacturers' tax evasion in Brazil. Brazilian authorities report that several manufacturing companies have since been closed for noncompliance with licensing rules (including failure to obtain a cigarette manufacturer's license and failure to pay proper taxes), and there has been a significant decline in tax evasion (Joossens, 2011). Though considered successful on this front, this track-and-trace system has had little to no impact on smuggling originating in

[11] A nonparticipating manufacturer is one that does not participate in the Master Settlement Agreement: see Box 1-3, in Chapter 1.

Paraguay, which remains the main source of illicit cigarettes in Brazil. This situation highlights one of the limitations of country-level track-and-trace systems—namely, that they focus only on domestic licit production and, absent an integrated transnational system, will do little to control the supply of illicit products from other countries.

The benefits of a regional system were recognized by the EU parliament when in February 2014, it approved a revised Tobacco Products Directive that included provisions for implementation of an EU-wide track-and-trace system and anti-counterfeiting measures (Joossens et al., 2014b).[12] This directive was motivated by concerns about the levels of illicit trade in the European Union, particularly bootlegging within the EU from lower-tax and lower-price countries and the influx of cheap whites from Eastern Europe.

The situation in the United States is somewhat different from the European Union: nearly all tobacco purchases in the United States are of domestically produced cigarettes. While a domestic (as opposed to a transnational) track-and-trace system in the United States would be largely workable, the comparable issue in the United States is whether a track-and-trace system is state or national. A national system—one that is implemented across state borders—would be better able to track and trace cigarettes through the licit distribution system and identify points of diversion into illicit markets than would systems that are implemented at the state level.[13] It is also important to note that low-tax states, such as Virginia, that are the source of many bootlegged cigarettes have limited incentive to adopt digital tax stamps or a track-and-trace system. As the Virginia State Crime Commission (2013a, p. 2) notes: "As almost all data and law enforcement intelligence indicates that Virginia is a source state for trafficked cigarettes, and not a destination state, switching to a digital tax stamp would probably not have a significant impact on Virginia's tax revenues." Nevertheless, destination states such as New York would still be able use a state-based system to identify illicit cigarettes, even though it would not provide information on diversions from the licit distribution system across state borders.

[12] These provisions, after being implemented in national legislation, are expected to go into effect in 2016.

[13] Canada's high-tech excise stamp is a federal program, but it cannot be used to detect whether provincial taxes have been paid. Thus, it is not a direct point of comparison for the United States. This reflects the fact that the illicit trade problem in Canada revolves not around interprovince bootlegging, but rather illicit cigarettes from Native reserves (largely confined to Ontario and Quebec).

TAX HARMONIZATION

As discussed in Chapter 2, the illicit tobacco market in the United States is largely driven by interstate bootlegging that exploits tax differentials between the states. States have reasons for maintaining differential tax rates, including the economic benefits of being a source of cigarettes for tax evasion. Nevertheless, states might be willing to coordinate taxes in order to reduce disparities if there were a change in the conditions that led to different tax rates. For example, federal funds could subsidize or incentivize coordination. With respect to Native American tribes, some states have already entered into agreements with them in order to reduce the price disparities that make illegal sales profitable: see Box 5-4.

Although tax harmonization agreements could, in principle, be negotiated to enact excise tax ceilings (i.e., requiring high-tax jurisdictions to reduce taxes in order to align with low-tax jurisdictions), the adverse public health and revenue effects of such a policy may outweigh any positive effects on the illicit market. In contrast, tax harmonization agreements that set a high floor for excise taxes (i.e., requiring minimum levels of taxation while also allowing jurisdictions to levy higher taxes) could reduce the health harms of tobacco, increase revenues for governments, and mitigate illicit activities associated with tax avoidance and tax evasion.

Harmonization agreements that require minimum rates of tobacco excise taxation can also compel governments to levy a particular type of excise tax—specific, ad valorem, or a hybrid of the two; to agree to a minimum tax burden (percentage of excise tax in the price) or a minimum value of tax; and to coordinate regular tobacco tax increases to adjust for inflation and income growth (Blecher and Drope, 2014).[14] For example, the European Union requires member states to use a hybrid tax system of both ad valorem and specific excise taxes. As of January 1, 2014, most member states were also required to levy a minimum 60 percent excise tax and a minimum excise tax floor of €90 per 1,000 cigarettes (Blecher et al., 2014), which is about $2.35 per pack.[15] It is still too soon to determine the impact of this agreement on bootlegging in the region.

In contrast to the EU harmonization policy, the West African Economic and Monetary Union (WAEMU) tobacco tax harmonization directive, agreed to in 1998, requires a relatively low excise tax rate (15 percent), enforces a tax ceiling on the excise tax rate (45 percent), and levies an ad

[14] Specific taxes are based on quantity while ad valorem taxes are based on the value of the product. Since the value of the tax reflects the product price range, consumers can avoid the impact of ad valorem taxes by switching to less expensive products (Blecher and Drope, 2014).

[15] Bulgaria, Estonia, Greece, Hungary, Latvia, Lithuania, and Poland are not compelled to meet these requirements until January 1, 2018. In addition, the 60 percent excise tax does not apply to countries whose excise tax exceeds €115 per 1,000 cigarettes (Blecher et al., 2014).

BOX 5-4
Tribal Tax Revenue Agreements

In order to provide incentives to Native American and First Nations tribes to impose state and provincial taxes on cigarettes sold on tribal lands, some U.S. states and Canadian provinces have entered into revenue-sharing agreements with tribes, in which the tribes receive a portion of the related revenue gained through the imposed tax. These agreements (often known as tribal compacts) are a way of reducing the price disparity that makes illegal sales profitable without having to resolve claims about tribal sovereignty.

Several states have had such tax-revenue sharing agreements in place for some time. Since the 1980 U.S. Supreme Court ruling in *Washington v. Confederated Tribes of Colville Indian Reservation*, the state of Washington has had the authority to require Native American retailers to keep detailed records of cigarette sales and tax sales to all non-Native Americans who purchase cigarettes. According to the state's law, Native American retailers are required to collect state excise taxes on all sales made to non-Native Americans, but they may sell untaxed cigarettes to tribal members as long as the seller and buyer know each other personally or the buyer presents a tribal identity card upon purchase.

In 2001, legislation authorized Washington's governor to enter into cigarette tax contracts with eligible tribes. Many tribes have entered into such contracts, in which tribes may set a tribal cigarette tax comparable to and in lieu of state and local sales and use taxes and state cigarette taxes. The resulting revenue from these tribal taxes can be used for essential government services.[a] In Canada, the province of Manitoba implemented a similar program, which imposes a "band assessment" on tobacco purchases sold to Native purchasers that is equivalent to the provincial tax. The agreement equalizes the price on and off the reserve for Native purchasers, and the proceeds are given monthly to each "band" (tribal government) by the provincial government, which collects the tobacco tax at the wholesale level (Sweeting et al., 2009).

Wisconsin has a slightly different tax revenue sharing agreement. When a tribe sells cigarettes on a Native American reservation, Wisconsin tax stamps

valorem excise tax (Mansour and Rota-Graziosi, 2013; Blecher and Drope, 2014). According to the International Monetary Fund, the convergence of the countries' tax systems, particularly the excise taxes on tobacco products, "may have contributed to the positive revenue performance observed in WAEMU member states since 2000" (Mansour and Rota-Graziosi, 2013, p. 37).

The countries of the Southern African Customs Union also enacted a tobacco tax harmonization requirement in 1964. This agreement has been more successful from a tobacco control perspective because it ties regional excise taxes to South Africa's excise tax, which has increased steadily since the early 1990s. While the tax rate is not as high as that in the European

must be attached to packages sold to non-tribal members. Tribal councils in Wisconsin may either purchase untaxed cigarettes to sell to tribal members living on the reservation, or they may enter into an agreement with the Wisconsin Department of Revenue to receive cigarette tax refunds. Under such an agreement, the tribal council may receive a refund of 70 percent of the cigarette taxes paid by authorized cigarette retailers or the tribal council on cigarettes purchased for sale on the tribal land. The tribe may also qualify for a refund of 30 percent of the cigarette taxes collected by authorized retailers to tribal members living on tribal land. The tribal land on which the cigarettes are sold must have been designated a reservation or trust land prior to or on January 1, 1983 (Department of Revenue, State of Wisconsin, 2001). This approach provides an incentive for compliance rather than sanctioning or threatening to sanction noncompliance, although there is no evidence about how salient these incentives (or sanctions) may be to purchasers and others in the supply chain.

In New York, a major agreement has been reached but not yet implemented. In mid-2013 Governor Cuomo announced an agreement between the state of New York, the Oneida Nation, and Oneida and Madison counties. The agreement requires the Oneida Nation to charge a sales tax to non-Native Americans that is equivalent to or greater than the combined state and county taxes, as well as to adhere to minimum pricing standards. In addition, the Oneida Nation will be required to put the tax revenue generated from the cigarette sales toward government programs similar to those of the state and counties. The agreement requires approval of the state legislature, both counties, the U.S. Department of the Interior, and the New York State attorney general, as well as judicial approval.[b]

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[a]Matheson v. Gregoire, Brief of Respondents No. 35067-0 (filed October 23, 2006), Washington Court of Appeals. Available: https://www.courts.wa.gov/content/Briefs/A02/350670%20respondent.pdf [April 2014].

[b]See https://www.governor.ny.gov/press/05162013-agreement-with-state-oneida-nation-and-oneida-and-madison-counties [January 2015].

Union, the agreement does set a tax floor that is relatively high, especially compared with that of WAEMU. Regional harmonization has largely eliminated incentives for bootlegging and cross-border shopping within the Southern African Customs Union. However, illicit cigarette consumption remains a problem—most likely because of illegally manufactured cigarettes from Zimbabwe, which borders the region (Blecher, 2010).

In the past decade or so, the U.S. government has provided states with various incentives to harmonize policies. For example, the U.S. Department of Transportation 2001 Appropriations Act provided an incentive for state-level adoption of a legal limit on impaired driving at 0.08 BAC (blood alcohol concentration); states that did not conform lost highway construction

funds (National Highway Traffic Safety Administration, 2003). Similarly, the government provided funding only to those states that imposed increased minimum age requirements on the purchase of alcohol and tobacco.[16] In a major report, the Institute of Medicine (2007) also recommended a federal program to allocate funds in such a way as to give low-tax states an incentive to raise cigarette taxes. Although the enactment of a tax harmonization program in the United States would be politically challenging, it would also address one key "root cause" of the domestic illicit tobacco trade.

PUBLIC EDUCATION CAMPAIGNS

We use the term "public education campaigns" to broadly refer to any efforts or combination of efforts aimed at informing the general public or specific professionals and motivating their behaviors. Most of the available research on the effectiveness of public education focuses on mass media campaigns and school-based programs aimed at controlling or eliminating the use of tobacco in general (e.g., Siegel and Biener, 2000; Sly et al., 2002; Emery et al., 2005; National Cancer Institute, 2008; Farrelly et al., 2009; McAfee et al., 2013).

Mass media campaigns have the potential to reach a large number of people. Although there are many limitations to individual evaluations of mass media campaigns, most researchers agree that aggregate findings from controlled field experiments and population studies show that anti-smoking mass media campaigns have been effective and are associated with declines in the number of young people who initiate smoking and with increases in the number of adults who quit (see, e.g., Wakefield et al., 2010). Mass media campaigns have been shown to be effective at decreasing the prevalence of tobacco use across different locations (i.e., different countries) and different population groups (Hopkins et al., 2001; Community Preventive Services Task Force, 2013). Research is beginning to examine the level of advertising required, the types of messages that are most effective, and whether there are any differences among different demographic populations. This research shows that exposure to advertising that elicits negative emotions appears to increase tobacco cessation interest and rates across populations groups, groups that have been heterogeneous with regard to desire to quit, income, and education (White et al., 2008; Borland et al., 2009; Centers for Disease Control and Prevention, 2011; Farrelly et al., 2012a; Azagba and Sharaf,

[16]The National Minimum Drinking Age Act of 1984 required all states to raise their minimum purchase and public possession of alcohol age to 21. States that did not comply faced a reduction in highway funds under the Federal Highway Aid Act (U.S. Department of Transportation, 1999). The Synar Law in 1992 restricted youth access to cigarettes—states that did not comply and raise the cigarette purchase age to 18 lost federal funding for mental health programs (Chaloupka et al., 2011).

2013). Notably, lower socioeconomic populations—which are more likely to be involved in illicit tobacco markets—have been shown to be responsive to strong emotional or graphic advertising.

A few countries have implemented public education campaigns for the specific purpose of lowering demand for or raising public awareness on the illicit tobacco trade. The committee was able to assemble information on campaigns in Canada, Hong Kong, Ireland, Singapore, the United Kingdom, and in Chicago in the United States: see Table 5-1. These public education campaigns were implemented as part of broader strategies to combat the illicit tobacco trade, and each was for a limited time period. For example, the United Kingdom launched a campaign in 2009, the North of England Tackling Illicit Tobacco for Better Health Programme. The overall goal of this program was to reduce the prevalence of smoking in the targeted areas by reducing the availability of illicit tobacco as well as the demand for illicit tobacco. The public education or social marketing campaign was part of this larger program. Other elements included efforts to forge partnerships between enforcement and health agencies and to improve information sharing (UK Centre for Tobacco Control Studies, 2012).

The parties administering public education campaigns have ranged from governments to retailer organizations to advocacy groups. For the most part, these campaigns have targeted disadvantaged communities where the illicit trade is undermining strategies to control the use of tobacco in general. For example, the United Kingdom's "Get Some Answers" campaign targeted working-class adult smokers ages 25-55, in regions of high use of smuggled cigarettes, who were considered "movable" in their attitudes toward illicit tobacco. Other audiences have included professionals, public figures, and business owners who might have a role in reducing the supply or demand for tobacco. In a few campaigns that appealed to the need for greater enforcement, government agencies were the target audience.

National groups (e.g., Hong Kong United Against Illicit Tobacco and the National Coalition Against Contraband Tobacco in Canada) have urged governments to institute large-scale public education campaigns to reduce demand for illicit tobacco. Critics of public education campaigns on illicit tobacco have argued that they could be ineffective because smokers are already aware of the unhealthiness of cigarettes or because they could have the unintended consequence of implying that legal cigarettes are less harmful (Sweeting et al., 2009).

Many of the campaigns we identified have focused on the health dangers and hazardous content of counterfeit cigarettes, some going to the extent of emphasizing the presence of human feces, dead flies, mold, and insect eggs in seized counterfeit products. However, for the most part, tobacco products that appear in the illicit market are the same as those that appear in the legal market. Research on counterfeit cigarettes to date has

TABLE 5-1 Public Education Campaigns Against the Illicit Tobacco Trade

Country and Reference	Campaign	Duration	Organizer
Canada (Royal Canadian Mounted Police, 2013)	Contraband Tobacco Enforcement Strategy	May 2008 to 2011	Royal Canadian Mounted Police
	Goal(s) Raise public awareness about the public safety and health consequences of the illicit tobacco trade. **Communication strategies** (varies by community) ▪ public meetings with mayors ▪ partnerships with local groups (e.g., drug awareness initiatives) ▪ presentations to local police ▪ informational pamphlets to licensed retailers ▪ information booths at local malls ▪ Crime Stoppers public service announcements ▪ internal (customs and enforcement) and public websites		
Hong Kong (Jolly, 2013)	Stop IT	Unknown	Hong Kong United Against Illicit Tobacco (advocacy group)
	Goal(s) Raise public awareness, change attitudes, and draw attention to the problem of illicit tobacco and the need for more robust law enforcement. **Communication strategies** ▪ website ▪ newspaper articles		
Ireland (JTI Ireland Ltd., 2012; Retailers Against Smuggling, 2012)	Smell a Rat	Launched August 2012	Retailers Against Smuggling
	Goals(s) Raise public awareness of the health dangers of buying illegal cigarettes and change perceptions that cigarette smuggling is a victimless crime. **Communication strategies** ▪ press launch ▪ mobile outdoor advertising ▪ advertising through social media, posters, and beer mats ▪ newspaper advertisements and subsequent media coverage ▪ in-store posters through its 3,000 members ▪ local meetings among retailers, politicians, and law enforcement		

TABLE 5-1 Continued

Country and Reference	Campaign	Duration	Organizer
Malaysia	Rokok Tak Sah (Smoking Void)	Unknown	Royal Malaysian Customs
	Goal(s) Educate retailers and the public about the penalties of buying and selling illicit cigarettes (supplementing increased enforcement efforts to seize illegal cigarettes and administer fines to retailers found facilitating illegal sales). **Communication strategies** ▪ brochures and newspaper advertisements to raise awareness of how to identify illegal cigarettes		
Singapore (Singapore Customs, 2010, 2011)	Don't Get Burnt	August 2010 to July 2011	Singapore Customs
	Goal(s) Raise public awareness of the social consequences and severe penalties for buying, selling, or possessing illegal cigarettes that do not bear the required official mark. **Communication strategies** ▪ burn mark icon ▪ traveling truck and roadshow ▪ anti-illegal cigarettes ambassadors on the streets to hand out leaflets reporting hotline number ▪ website with information and interactive games ▪ commercials on television, radio, and local cinemas		
Singapore (Singapore Customs, 2012)	1 IS ALL IT TAKES	November 2012 to June 2013	Singapore Customs
	Goal(s) Educate the public on the penalties of dabbling with contraband cigarettes. **Communication strategies** ▪ community roadshows with interactive games ▪ giveaways with customs hotline number and reminders to avoid illegal cigarettes ▪ television and radio commercials ▪ advertisements in newspapers and on public buses ▪ outdoor media such as table-top advertisements in selected hawker centers and coffee shops ▪ webpage, a Facebook application, and online banners targeting students		

TABLE 5-1 Continued

Country and Reference	Campaign	Duration	Organizer
United Kingdom (Hooper and Baker, 2011)	Counterfeit Kills	2007/2008	HM Revenue and Customs
	Goal(s) Reduce the demand for cheap and counterfeit tobacco by raising awareness of the risks of counterfeit cigarettes and toxic ingredients of cigarettes in general. **Communication strategies** ▪ skull and cigarettes as crossbones icon ▪ leaflets ▪ radio and bus advertising ▪ advertising included calling Customs Confidential information ▪ informational materials on how to spot tobacco fraud		
United Kingdom (Hooper and Baker, 2011)	Dodgy Cigs	2009	Department of Health West Midlands and and East Midlands
	Goal(s) Raise public awareness of hazardous contents of counterfeit cigarettes and inform business owners of their liabilities for allowing illicit sales on their premises. **Communication strategies** ▪ posters and leaflets with disturbing graphic images ▪ posters and website aimed at business owners		
United Kingdom (North England) (UK Centre for Tobacco Control Studies, 2012)	Get Some Answers	June/July 2010 and early 2011	Department of Health and Her Majesty's Revenue & Customs
	Goal(s) Persuade the public to get more information on illicit tobacco trade by alerting them to the criminality of the illicit trade as well as increased availability to children. (This campaign purposefully avoided the "greater harms message" to limit the perception that legal tobacco would be seen as healthier.) In a second phase, encourage the public to call Crime Stoppers to report any observed illicit trade. **Communication strategies** ▪ website ▪ radio commercials ▪ newspaper articles ▪ advertising on posters, billboards, and beer mats (in some areas) ▪ advertising on buses, additional radio announcements, and social marketing staff employed to talk to businesses and community centers		

TABLE 5-1 Continued

Country and Reference	Campaign	Duration	Organizer
United Kingdom	Keep It Out	2012 onward	Tackling Illicit Tobacco for Better Health
	Goal(s) Keep stakeholders informed of the progress to control illicit trade, reduce the demand for illegal tobacco, and alert the public that illicit trade is not a victimless crime. **Communications strategies** ▪ marketing and communications part of larger collaborative strategy with a range of partners including department of health, customs, and police ▪ website ▪ radio commercials ▪ newspaper articles ▪ other advertising and public relations		
United States (Chicago)	Check the Stamps	2014	Chicago Department of Public Health
	Goal(s) Help prevent illegal sales and supplement efforts to reduce smoking initiation by youth. **Communication strategies** ▪ website with information and tools for reporting illegal sales ▪ promotion of the idea that illegal cigarette sales hurt minors, law-abiding small businesses, and neighborhoods ▪ offers of $100 reward for reports of illegal sales that result in convictions against sellers		

shown some differences in levels of tar and selected toxicants in comparison with conventional cigarettes, including elevated levels of tar, nicotine, carbon monoxide, lead, cadmium, thallium, and arsenic (Pappas et al., 2007; Chen et al., 2010; U.S. Department of Health and Human Services, 2010), but these elevated levels have not been shown to affect overall toxicity and, based on current evidence, are unlikely to significantly increase the health risk of an already dangerous product (Pappas et al., 2007).

In an effort to address the illicit trade problem while not promoting legal cigarettes as being less harmful, the "Get Some Answers" campaign in the United Kingdom specifically avoided the "greater harms message" and focused on the illegality of counterfeits and their increased availability to children in an effort to address the illicit trade problem while not pro-

moting legal cigarettes as less harmful. A variety of assessment indicators suggest the campaign has reduced demand. However, the findings may be limited because an evaluation was conducted without a control region, and the education campaign was one part of a broader strategy to reduce illicit trade (UK Centre for Tobacco Control Studies, 2012).

The evaluation of the campaign used indicators from the 2009 and 2011 NEMS surveys. During the campaign, the proportion of smokers who had brought back, or had others bring back, duty-free cigarettes from abroad fell from 33 to 27 percent and 27 to 22 percent respectively. Other positive indicators included (1) a decrease in the proportion of smokers who purchased illicit tobacco from 20 to 18 percent; (2) a decline in total market share of illicit tobacco from 9.4 to 8.8 percent; (3) increased awareness of illicit trade among nonsmokers from 54 to 69 percent; and (4) a decline in the proportion of smokers who were "comfortable" with illicit tobacco by 4 percentage points (to 15 percent) and an increase in the proportion "uncomfortable" by 4 percentage points (to 59 percent). The evaluation report also recognized that data from a survey of smoking behavior among young people (ages 14 to 17 years) by Trading Standards North West and NEMS suggested a marked decrease in smoking among young people in the regions (UK Centre for Tobacco Control Studies, 2012).

There is still very little empirical information on the effectiveness of public education campaigns that focus on the illicit tobacco trade. External evaluations have a number of limitations, most notably, that campaigns are often part of broader strategies to combat illicit trade, and the effects of public education campaigns are difficult to separate from those of other strategies. Nonetheless, most assessments and formal evaluations of campaigns find survey respondents who are able to identify or recall elements of the campaigns and report increased public awareness of the illicit trade and its consequences, as well as positive attitudes toward the campaigns. In some evaluations, an increased number of calls to Crime Stoppers or other such hotlines were observed during the campaigns.

SUMMARY

If the federal or state governments want to undertake efforts to reduce the size of the illicit tobacco trade, then it is clear that there are a range of interventions that are likely to have at least some effect.

Opportunities exist for governments to control the supply chain and prevent diversion into the illicit market by imposing licensing and regulatory requirements on participants throughout the supply chain, including tobacco growers, manufacturers, distributors, wholesalers, and retailers. In the United States, supply-chain controls imposed at the production and in-transit phases seem to impede diversion into the illicit market. Conversely,

the absence of consistent state regulations and comprehensive federal controls may contribute to the increased diversion seen at the wholesale and retail phases of the supply chain. High-tax and low-tax jurisdictions should be similarly financially motivated to license wholesalers and prevent diversion at this stage of the supply chain. Although it may be difficult to incentivize low-tax jurisdictions to do so, licensing retailers may be particularly important in those jurisdictions.

Digital tax stamps with encrypted information and related track-and-trace technologies also represent a promising approach to combating the illicit tobacco trade by monitoring and controlling the supply chain. These methods have recently been adopted by a number of countries around the world, as well as by California and Massachusetts. The main objective of tracking and tracing is to facilitate investigations into tobacco smuggling and to identify the points at which tobacco products are diverted into illicit markets. Although these technologies would not be able to trace illegally manufactured or counterfeit products through the supply chain, they could still be used to identify (though not investigate) such products as not having been properly taxed.

In order to ensure that tracking and tracing can be facilitated across international borders, track-and-trace systems implemented at the international level are preferable to domestic track-and-trace systems within individual countries. However, this general observation does not imply that a U.S.-based system would be not be useful, since nearly all consumption in the United States is of domestically produced cigarettes. Within the United States, a track-and-trace system that is implemented across state borders (rather than within an individual state) would be better able to track and trace cigarettes through the licit distribution system and identify points of diversion into illicit markets. Low-tax states such as Virginia that are the source of many bootlegged cigarettes have limited incentive to adopt digital tax stamps. Nevertheless, destination states, such as New York, would still be able to use a state-based system to identify illicit cigarettes, even though the states would not be able to investigate diversions across state borders.

Other interventions that have been shown to be effective include those that seek to undermine the conditions that make illegal trade possible by, for instance, harmonizing taxes to eliminate the financial incentive to engage in bootlegging or conducting public education campaigns to reduce consumers' willingness to buy illicitly traded cigarettes. Although the enactment of a tax harmonization program in the United States would be politically challenging, it would also address one key root cause of the domestic illicit trade: very different cigarette tax rates across states. Public education campaigns aimed directly at the illicit trade also show some promise for reaching lower socioeconomic populations who disproportionately participate in illicit tobacco markets.

Regulations and technologies to control and monitor the supply chain of tobacco products, as well as other interventions to address the conditions that facilitate the illicit tobacco trade, would have limited impact without the effective enforcement of laws prohibiting the illicit trade, which is discussed in the next chapter.

6

Interventions in the Illicit Tobacco Market: Law Enforcement

A complicated web of laws regulates and taxes tobacco production and sale. Enforcing these laws requires both discovering legal violations and using criminal and civil legal tools to disrupt, punish, and deter the illegal activity. It also requires that law enforcement agencies have the motivation, opportunity, and capacity to intervene, including the necessary legal authority, resources, and knowledge about the illegal activity. For law enforcement, the illicit tobacco trade is in many ways similar to other illegally smuggled and sold products. It is a criminal enterprise for financial gain.

The committee was not able to obtain systematic, up-to-date information on measures of enforcement activity and success by these agencies or find a systematic discussion of the priority given to tobacco enforcement. The relevant data are inconsistent or absent. For the data that are available, they were often not recorded or collected in a manner that would allow systematic analysis. With these limitations in mind, the first two sections in this chapter discuss the enforcement efforts in the United States at the federal level and for two key states in the illicit tobacco trade, Virginia and New York. The third section analyzes the risk, and the perception of risk, associated with participating in illicit tobacco markets. The fourth section outlines some of the challenges to, and opportunities for, successful law enforcement. The last section presents the committee's recommendations for research and data collection.

FEDERAL ENFORCEMENT

In the United States, the key federal laws that address the illegal tobacco trade and product diversion are the Jenkins Act, the Contraband Cigarette Trafficking Act (CCTA), the Prevent All Cigarette Trafficking Act of 2009 (PACT Act), and the Family Smoking Prevention and Tobacco Control Act (see Box 1-2, in Chapter 1). In addition, federal statutes regarding trafficking in counterfeit goods and services, currency reporting, money laundering, aiding and abetting, conspiracy, and racketeering have been used in tobacco enforcement investigations. The bulk of the enforcement for these laws is conducted by the Bureau of Alcohol, Tobacco, Firearms and Explosives (ATF) in the U.S. Department of Justice (DOJ); the Immigration and Customs Enforcement (ICE) and Customs and Border Protection (CBP) in the U.S. Department of Homeland Security (DHS); and the Alcohol and Tobacco Tax and Trade Bureau (TTB) in the U.S. Department of the Treasury.[1]

The Bureau of Alcohol, Tobacco, Firearms and Explosives

ATF employs federal agents, auditors, and investigators to identify, investigate, and present for prosecution violations of federal laws involving firearms, explosives, arson, and the illicit alcohol and tobacco trade. With regard to tobacco, ATF seeks to curtail illicit cigarette trafficking by enforcing the CCTA and divesting criminal and terrorist organizations of money derived from this illegal activity. ATF does not often pursue investigations internationally, and its cigarette smuggling investigations usually involve interstate smuggling activities (U.S. General Accounting Office, 2004). An ATF representative informed the committee that the problems currently being handled by the agency include corrupt manufacturers, Master Settlement Agreement fraud and diversion, low-tax state to high-tax state diversion, diversion through Native American reservations, smuggling of other products (i.e., other than cigarettes), counterfeit cigarettes and tax stamps, Internet sales, smuggling, hijackings, organized crime, and terrorist organizations.

The agency began to increase its cigarette smuggling investigations in 2000: from 1998 to 2000, ATF initiated only 95 tobacco investigations; from 2001 to 2003, it brought 368 cigarette smuggling cases—of which only 8 were linked to terrorism (U.S. General Accounting Office, 2004, pp. 11, 20). The number of investigations continued to rise, with ATF initiating 566 tobacco investigations from 2004 to 2008: however, this

[1]Prior to 2002, both ATF and TTB were in the U.S. Department of the Treasury. In that year, the Homeland Security Act transferred ATF to DOJ, while TTB remained in the U.S. Department of the Treasury.

number still represented less than 1 percent of ATF's total caseload (U.S. Department of Justice, 2009, p. 21).

Limitations were imposed on investigations in July 2012 by an internal memorandum from ATF's assistant director of field operations: it stated that all new tobacco investigations "need a nexus to violent crime" and only on "rare occasions" will investigations be authorized if they do not involve a violent crime component but still involve "large-scale fraud perpetrated by organized criminal enterprises and results in a significant loss of federal or state tax revenue" (Turk, 2012, pp. 1-2). Since then, the number of tobacco investigations initiated by tobacco has fallen significantly, from 100 initiated in 2011 to just 11 in 2013: see Figure 6-1.

ATF's tobacco (and alcohol) diversion investigations are minimal in relation to its other mission areas. An examination of ATF's budget shows that diversion programs are allocated significantly fewer resources than violent crime investigations. From fiscal 2004 through fiscal 2009, the Alcohol and Tobacco Diversion Program represented approximately 2 percent ($16.5- $20 million) of ATF's total budget each year: in contrast, the Fire-

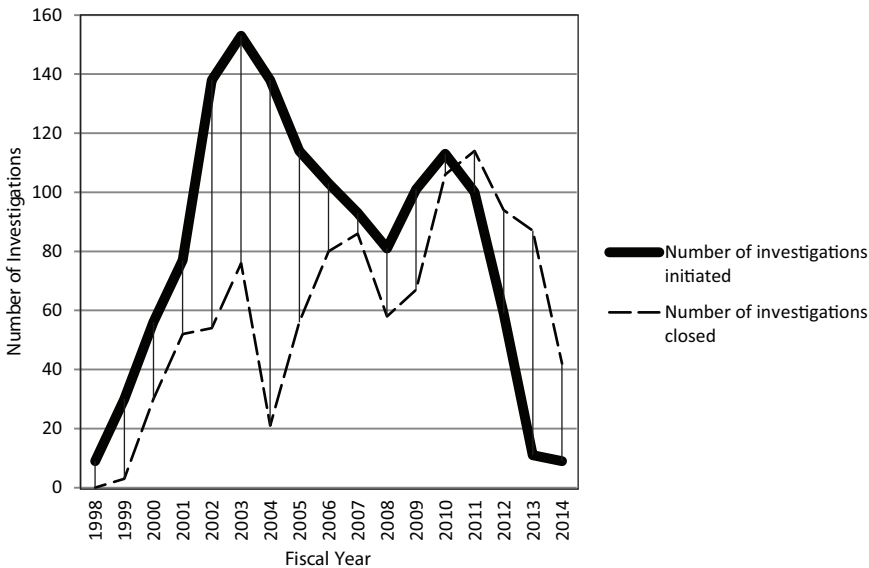

FIGURE 6-1 Number of ATF tobacco investigations initiated and closed, 1998 through 2014.
NOTE: Data for 2014 are for 6 months, through July 15.
SOURCE: Data through 2003 from U.S. General Accounting Office (2004); data for 2004-2014 provided to the committee by ATF.

TABLE 6-1 Estimated Value of All Forfeitures in Contraband Tobacco Investigations, Fiscal 2007-2014

Year	Value of Forfeited Assets ($)
2007	2,611,958
2008	3,344,946
2009	4,613,090
2010	10,537,578
2011	5,510,496
2012	7,494,181
2013	2,425,508
2014	3,476,874

NOTES: Data for 2014 are as of July 10. The value of forfeited assets represents cash forfeited to the U.S. government or value of assets (cars, etc.) placed into official use by date of seizure. The value of assets comes from July 2014 and is subject to an increase in value that would result from installment payments made by defendants with unpaid monetary judgments.
SOURCE: Data provided to the committee by the U.S. Department of Justice.

arms Program represented 72 percent of ATF's budget, and the Arson and Explosives Program represented 26 percent. Fewer than 70 of ATF's 2,535 special agents are involved in investigating diversion activities.

Despite the relatively small investment by ATF in enforcement against the illicit tobacco trade, the value of seizures from tobacco diversion cases quadrupled from $6,276,648 in fiscal 2004 to $26,680,976 in fiscal 2008 (which were years of relatively more attention by ATF),[2] and the value of tobacco seizures as a percentage of all ATF seizures rose from 30 to 50 percent in that period (U.S. Department of Justice, 2009). ATF, along with other participating law enforcement agencies, keeps a small percentage of seizures through forfeitures: see Table 6-1. Though perhaps lucrative for the agency, the amounts do not appear to be large enough to change the risk calculus for illicit tobacco entrepreneurs.

A 2009 audit report from DOJ's Office of the Inspector General found the agency's diversion efforts to be ad hoc and lacking clear coordination between the headquarters and field units, with no formalized procedures

[2] The total is the value of assets seized prior to forfeiture (U.S. Department of Justice, 2009).

for sharing intelligence information (U.S. Department of Justice, 2009). The auditors also found a lack of oversight within ATF at both the field and headquarters levels with regard to ATF "churning" investigations, in which financial proceeds obtained from an undercover operation are used to further that specific investigation. The auditors noted that internal guidance for these investigations "lacked breadth and specificity" and was often disregarded (U.S. Department of Justice, 2013, p. i).

The low priority given by ATF to tobacco smuggling relative to firearms, arson, and explosives is consistent with DOJ's broader prioritization of terrorism and violent crime over other areas of legal enforcement and is consistent with the fact that criminal prosecutions of those involved in the illicit tobacco trade appear to be an especially low priority for prosecutors. For example, DOJ's strategic plan makes it clear that terrorism is the first priority and that preventing crime is the second priority, with violent crime and firearm trafficking at the top of the crime-prevention agenda (U.S. Department of Justice, 2014).

U.S. Immigration and Customs Enforcement

ICE is the largest investigative agency in DHS, responsible for enforcing immigration and customs laws within the United States. As part of its strategic objective to combat illicit trade, ICE investigates criminal activity when CBP intercepts contraband at the border (U.S. General Accounting Office, 2004; U.S. Immigration and Customs Enforcement, 2010). In fiscal 2001, ICE initiated 59 cigarette-related investigations and closed 33; in fiscal 2003, those numbers had increased to 99 investigations initiated and 103 investigations closed. In fiscal 2003, CBP and ICE also made 56 seizures of counterfeit cigarettes, with an estimated value of $45.8 million, and 135 seizures of genuine cigarettes, with an estimated value of $5.1 million (U.S. Government Accountability Office, 2004, pp. 18, 21).

In practice, ICE mostly combats the illicit tobacco trade through its National Intellectual Property Rights Coordination Center (IPR Center) and through its Tobacco Program. The IPR Center was started in 2000 as an interagency effort to coordinate a unified federal response to intellectual property rights violations, including counterfeit tobacco violations. The Tobacco Program, which does not directly manage investigations, promotes and assists investigations and interdictions of tobacco smuggling by monitoring, coordinating, and providing guidance to various federal, state, and local law enforcement agencies on international smuggling matters (U.S. General Accounting Office, 2004, pp. 9-10). In a presentation to the committee, a representative from ICE suggested to the committee that the primary cigarette threats handled by the agency were in-bond diversion (which occurs when U.S. customs declarations show that a good destined for

export or for transshipment through the United States has been exported when in fact it has entered the domestic market), counterfeit cigarettes, and mail and express mail facilities. In-bond diversion was suggested as being especially problematic, while smuggling through the mail and express mail was noted as an emerging threat. As discussed in Chapter 2, however, in-bond diversion does not appear to play a major role in the domestic illegal market in the United States.

Customs and Border Protection

CBP is responsible for securing U.S. borders against terrorist threats and for preventing the illegal entry of inadmissible persons and contraband, while facilitating lawful travel, trade, and immigration. Its inspection duties are carried out by inspectors at ports of entry into the United States. CBP uses its Automated Targeting System (ATS), which is constantly being updated by tips from various sources, to target arriving containers for review and inspection at ports of entry. The ATS is supplemented by the supply chain stratified examination, which randomly selects additional containers for random inspections.

CBP does not necessarily target cigarettes for physical inspection (U.S. Government Accountability Office, 2004, pp. 12-14), and the role played by targeted tobacco-specific enforcement by CBP (as opposed to a more general effort to prevent the smuggling of contraband product into the country) is unclear. However, CBP officials suggested that the increase in seizures of counterfeit cigarettes in the early 2000s was due to better intelligence and better inspections, based on electronic methods such as ATS targeting and the ICE Tobacco Program, which in turn helped to bring awareness to the problem of cigarette smuggling and led to more seizures (U.S. Government Accountability Office, 2004, pp. 21-22). This chain of events suggests that training law enforcement officials and dedicating tobacco-specific enforcement resources could have an impact on the illicit tobacco trade.

Alcohol and Tobacco Tax and Trade Bureau

TTB is tasked with collecting federal excise taxes on tobacco products manufactured in the United States for domestic consumption and on tobacco products that are imported in bulk and transferred in bond to premises of manufacturers, who are also required to obtain a permit (license) from TTB in order to produce cigarettes. As of February 2014, there were 238 active tobacco manufacturers licensed with TTB. However, TTB does not publicly disclose the names of those manufacturers because it treats the information as tax records that are protected under 26 USC 6103; this lack

of information about licensed manufacturers poses a challenge for enforcement.[3] TTB employs auditors, investigators, and laboratory scientists, who analyze tobacco products to ensure their appropriate tax classification, analyze counterfeit tobacco products and tax stamps, and provide other technical support for investigations of illicit tobacco products (U.S. Department of the Treasury, 2010).

In a presentation to the committee, a TTB representative indicated that, in addition to the "usual illegal activities" (i.e., underreporting of the manufacture of tobacco products, sale of processed tobacco through "brokers," relabeling of products, smuggling, counterfeiting, and manipulating constructed sales price [for cigars]), current trends in the illicit tobacco trade include roll-your-own machines, hookah tobacco, Native American manufacturing, product category shift, raw leaf trade, and processed and roll-your-own retail sales. In fiscal 2012, TTB conducted 48 criminal investigations of diversion schemes of alcohol and tobacco products that were estimated to have a total tax liability of more than $47 million—about 0.3 percent of the taxes collected by the bureau (Alcohol and Tobacco Tax and Trade Bureau, 2013, p. 5).

ENFORCEMENT IN TWO KEY STATES: VIRGINIA AND NEW YORK

Within the United States, states and localities are affected by the illicit tobacco trade in quite different ways. Virginia, which is a major "source" state for contraband cigarettes, and New York, which is an important "destination" state, reflect very different experiences with the illicit tobacco trade and illustrate the range of enforcement efforts being undertaken by states and localities.[4] However, data at the state and local levels are also problematic, and the committee found only a scattering of information about state and local efforts.

Virginia

The state of Virginia has the second lowest cigarette excise tax rate in the country (at $0.30 per pack), while the (geographically proximate) mid-Atlantic and New England states have some of the highest cigarette tax rates. For that reason, Virginia has become the primary source state for illicit cigarettes (Virginia State Crime Commission, 2013a, 2013b). Although the committee estimates that Virginia gained $57.64 million in state

[3] Personal correspondence, Alcohol and Tobacco Tax and Trade Bureau staff, February 20, 2014.

[4] The California enforcement experience is discussed in Chapter 5.

revenues due to increased cigarette sales destined for high-tax jurisdictions (see Chapter 4),[5] Virginia has demonstrated some interest in reducing the illicit trade in tobacco.

In 2012, Virginia was the first state to pass a criminal statute to specifically deal with interstate trafficking (Virginia State Crime Commission, 2013a, p. 16):

> While all states have statutes making it a crime for a person to import cigarettes for re-sale that do not bear a tax stamp, or have not had the cigarette excise tax paid on them, Virginia is the only state that has a statute that applies to cigarettes that have a correct tax stamp. The focus of Virginia's statute is not the loss of tax revenue to the state; it is an attempt to stop people who purchase large quantities of cigarettes for what would likely be trafficking purposes. The crime is committed, not when the trafficker crosses one of Virginia's border into another state, but immediately upon his possession of more than 25 cartons (5,000 cigarettes), provided he also has the requisite intent to later distribute those cartons, and not retain them for personal consumption.

Under Va. Code § 58.1-1017.1, possession of more than 5,000 stamped cigarettes with the intent to unlawfully distribute can result in a class 2 misdemeanor for a first offense and a class 1 misdemeanor for a second or subsequent offense. Possession, sale, or purchase of unstamped cigarettes with the intent to evade taxes results in a felony offense for 3,000 or more packs (60,000 cigarettes); for the possession, sale, or purchase of less than 3,000 packs of unstamped cigarettes, a person can be charged with a class 2 misdemeanor (Va. Code § 58.1-1017). All fixtures, equipment, materials, and personal property used in connection with the sale or possession of counterfeit cigarettes (including cigarettes with counterfeit tax stamps) are subject to forfeiture under Va. Code § 19.2-386.21, and anyone caught selling or possessing counterfeit cigarettes faces civil penalties (Va. Code § 18.2-246.14).

Four state and local agencies have key roles in enforcement efforts against the illicit tobacco trade:

1. The Virginia Department of Taxation audits cigarette wholesalers to ensure that all required forms have been accurately completed and that all required invoices are kept as required by law. Between 2011 and 2013, it issued 201 assessments for cigarette-related vio-

[5]This figure represents just over 1 percent of national tax-paid sales. The net economic impact may be even smaller to the extent that smokers who quit smoking in response to the lack of availability of cheap bootlegged cigarettes instead spend their money on other goods and services, thereby producing increased revenue from other tax-paid sales.

TABLE 6-2 Number of Cigarette Packs Seized by the Northern Virginia Cigarette Board, 2007-2012

Year	Packs Seized
2007	9,320
2008	7,936
2009	18,159
2010	25,568
2011	22,777
2012	12,989

SOURCE: Virginia State Crime Commission (2013b, Fig. 5).

lations and collected $112,500 in penalties (Virginia State Crime Commission, 2013a, p. 17).

2. The Northern Virginia Cigarette Tax Board is responsible for ensuring the payment of local excise taxes in 17 jurisdictions[6] in Northern Virginia, and it performs approximately 3,000 inspections of retail establishments each year (Virginia State Crime Commission, 2013a, p. 17). Table 6-2 shows the number of cigarette packs seized during inspections for failing to have proper tax stamps or for other violations of the law.
3. The Criminal Interdiction and Counterterrorism Unit of the state police seized 1,941 cartons of cigarettes and $226,360 during its routine drug interdiction efforts from January 2012 to October 2012, and it seized 6,775 cartons and $45,749 between January 2013 and October 10, 2013 (Virginia State Crime Commission, 2013b, p. 30).
4. The Tobacco Enforcement Unit in the Virginia Attorney General's Office conducted 145 retail inspections in 2012 and seized 114,569 packs of cigarettes. In 2013 (as of November), it had conducted 159 inspections and seized 2,923 packs of cigarettes (Virginia State Crime Commission, 2013b, p. 33).

Law enforcement in Maryland (where the state cigarette tax is $2.00 per pack) also routinely targets suspected cigarette traffickers as they leave Virginia on Interstate 95: see Table 6-3.

[6]Localities have been given authority by the Virginia legislature to create misdemeanor ordinances for the purpose of enforcing the collection of local cigarette taxes (Virginia State Crime Commission, 2013a, p. 22).

TABLE 6-3 Possession and Transportation of Virginia-Stamped Cigarettes into Maryland

Fiscal Year	Arrests	Packs of Cigarettes	Value ($)	Tax Loss ($)	Convictions of Suspects[a]	Acquittals of Suspects
2008	13	43,612	214,722	83,014	6	7
2009	39	161,420	821,443	317,319	22	15
2010	23	64,605	485,996	145,681	9	11
2011	47	177,332	1,028,098	354,846	32	15
2012	109	315,936	1,899,542	631,832	53	56
Total	231	762,905	4,449,800	1,532,692	122	104

[a]The conviction figures only identify individuals charged with the felony change of "transporting contraband cigarettes in the State of Maryland," not those charged with misdemeanor possession.
NOTE: Dollar figures have been rounded.
SOURCE: Virginia State Crime Commission (2013a, Fig. 6).

Virginia profits from illicit trade when cigarettes are purchased legally in Virginia and sold elsewhere. One therefore might be surprised by Virginia's efforts to fight the illicit trade. There are two explanations for this apparent incongruity. First, Virginia's enforcement efforts may not be as rigorous as they initially appear. Although Virginia has enhanced criminal penalties and engages in tobacco-specific enforcement efforts, there are relatively few seizures and few criminal prosecutions for tobacco crimes. Data from the Virginia Criminal Sentencing Commission indicate that very few charges are filed, and even fewer convictions are obtained, in Virginia courts under any of Virginia's relevant criminal statutes (Virginia State Crime Commission, 2013a, pp. 14-16); see also Table 6-3, above, on seizures in Maryland. The deterrent effect of these efforts is therefore unknown, but the reported figures for seizures, arrests, and prosecutions when compared with the committee's estimate of the large number of Virginia cigarettes smuggled to high-tax jurisdictions appear trivial. That is, less than one-sixth of 1 percent (0.16 percent) of the total number of cigarette packs being smuggled out of Virginia are intercepted by Virginia state authorities (see "Risks of Detection," below).

Second, Virginia officials believe that illicit trade in tobacco harms Virginia's interests for several reasons. One reason is that traffickers may set up fictional retail businesses to buy the cigarettes in Virginia in bulk and then fail to pay Virginia sales taxes on the cigarettes, as well as failing to pay taxes in the destination jurisdiction. A second reason is that by providing

an incentive to create fake retail businesses and offering the opportunity for low-risk and profitable criminal activity, cigarette trafficking (and the fraudulent businesses associated with it) could bring organized criminal enterprises and attendant crime to the state, such as credit card fraud and money laundering. A third reason (Virginia State Crime Commission, 2013a) is that while traffickers now get their cigarettes from Virginia suppliers, organized traffickers looking for sources of cheap cigarettes could look abroad for alternative sources of inexpensive cigarettes to make even more money. If counterfeit or cheap whites enter the U.S. market, then Virginia as the third largest tobacco grower and second largest domestic producer would lose out economically. Finally, there is concern about the connection between cigarette trafficking and raising funds for terrorist organizations, although there is very little evidence of such a connection (see Chapter 3).

New York

New York State has the nation's highest cigarette excise taxes (at $4.35 per pack) of any U.S. state, and New York City has the second highest combined state and local excise tax rates in the nation, at $5.85 per pack (Chicago is first, with combined state, county, and city taxes totaling $6.16 per pack).[7] In 2009, nearly one-half of all New York smokers reported purchasing cigarettes from low-tax locations, such as Native American reservations, the Internet, duty-free shops, by mail from toll-free telephone numbers, neighboring states, and Canada; approximately one-third of all untaxed cigarettes came from a Native American reservation (Loomis et al., 2010, pp. ES-1, 3-4). A significant share of contraband cigarettes in New York City likely come from Virginia: for example, Davis and colleagues (2013, p. 3) found that of the 75.6 percent of cigarette packs that were missing proper local tax stamps, 44.7 percent came from Virginia (30.9 percent had no stamp at all, and 6.5 percent had stamps from New York State only).

At the state level, the police and the Department of Taxation and Finance are responsible for enforcing anti-contraband policies. The Department of Taxation and Finance enforces the Cigarette Marketing Standards Act (CMSA) and implements regulations that require each retailer, wholesaler, and distributor of cigarettes and tobacco products in the state to register for a license. The CMSA sets minimum cigarette prices in New York by requiring a minimum price markup at each stage of distribution. It is a violation of the law for tax stamping agents, wholesalers, or retailers to advertise, offer to sell, or sell cigarettes below the minimum price. Violators

[7]In January 2014, a new city law raised the minimum price to $10.50 per pack; see below.

face civil and criminal penalties, including class B misdemeanor charges, license suspensions, and fines of up to $20,000 for the first violation (Center for Public Health and Tobacco Policy, n.d.).

In New York City, enforcement is the responsibility of the New York City Sheriff's Office.[8] The 2002 increase in the New York City cigarette tax, from $0.08 to $1.50, was a key factor in a thriving black market in illicit cigarettes, with the so-called "$5 men" selling bootlegged cigarettes on street corners, outside subway entrances, near shopping centers, and in other venues across the city (Shelley et al., 2007). More recently, targeted enforcement efforts seem to have driven the illicit market from street sales into retail outlets.[9] Targeted enforcement and its high number of inspections have resulted in a high "hit rate," but the yield in packs has been relatively small and the averted tax losses are therefore not large.

This shift in the supply of illicit cigarettes led to a change in New York City's enforcement efforts. A representative from the New York City Sheriff's Office informed the committee that in August 2011 it launched the Tobacco Task Force (TTF), which inspects licensed cigarette retailers, issues summonses and makes arrests of those found in violation of tobacco laws, and issues civil fines to collect lost revenues.[10] From August 2011 to November 2013, the TTF conducted 2,423 retail inspections, of which 48.8 percent (1,183) resulted in the seizure of 98,521 packs of illicit cigarettes. TTF also seized contraband products as a result of investigations and warrants. These seizures resulted in the confiscation of 149,110 packs of illicit cigarettes and 202,749 counterfeit tax stamps. In total, during this period, TTF seized 247,631 packs, which represented tax losses to the state and city of $1,649,222. Despite these efforts, recent littered pack surveys suggest the persistence of high rates of tax avoidance and evasion (Chernick and Merriman, 2011; Davis et al., 2013). At the same time, however, overall smoking rates declined sharply during this period, which demonstrates that there can be considerable public health benefits even in the presence of illicit trade. Given declining smoking rates, we note that the share of illicit tobacco use could rise even as the overall level falls.

[8] In a presentation to the committee, a representative from the New York City Department of Health and Mental Hygiene indicated that the department funds an intelligence analyst at the Sheriff's Office so that data can be used to maximize the impact of retail inspection.

[9] Von Lampe and colleagues (2014, p. 284) describe how, since the late 2000s, retail sales of illicit cigarettes in New York City have shifted from street vending to "bodega" grocery stores; the bodegas selling contraband cigarettes tend to be located in low-income, minority neighborhoods.

[10] According to a representative from the New York City Department of Health, the launch of TTF capitalized on the April 2011 merger of the New York Sheriff's Office (which is part of the New York City Department of Finance) with the New York City Office of Tax Enforcement, which was the primary city agency for cigarette and criminal tax enforcement in the same department.

In November 2013, New York City passed Local Law 97, known as "sensible tobacco enforcement," which increases penalties for retailers who evade tobacco taxes or sell tobacco without a license, reduces the possession thresholds for being deemed a retail dealer, increases fines for the concealment of contraband cigarettes, prohibits discounts for tobacco products, requires a minimum price of $10.50 per pack of cigarettes and little cigars, and requires cheap cigars ($3 or less) and cigarillos to be sold in packs of at least four and little cigars to be sold in packs of at least 20 (New York City Department of Health and Mental Hygiene, n.d.); Local Law 97 went into effect in January 2014 (see New York City Department of Finance (n.d., pp. 5-6) for information on the fines for New York City tobacco retailers).

Although it is too soon to determine the deterrent effect of the new law and the task force's inspections, New York City authorities have sought to strike a balance between maximizing the deterrence potential of enforcement efforts targeting retail outlets selling illicit cigarettes on the one hand and maintaining community support and legitimacy on the other. A representative from the New York City Sherriff's Office indicated to the committee that this strategy reflected a reluctance to alienate nearby city residents who depend on and appreciate cigarette retailers as neighborhood purveyors of other necessities. Similarly, enforcement efforts tend to be randomized rather than focusing on low-income minority neighborhoods where contraband sales usually occur; the random approach is intended to be consistent with fairness. In other locations as well, enforcement efforts targeted at illicit cigarette retailers or other sellers of illicit cigarettes may be constrained by concerns about perceived fairness and legitimacy and the costs to the community of frequent or high-profile enforcement efforts.

At the same time, the recent NYPD policy of targeting the supply side of the illicit tobacco market has come under serious public scrutiny after the death of Eric Garner, who was known to police as a habitual dealer of "loosies" (Marzulli et al., 2014). Despite New Yorkers losing a substantial amount of tax revenue to the illicit tobacco trade, it is not obvious that there is much public appetite for aggressive law enforcement efforts against market participants.

THE RISKS OF CIGARETTE SMUGGLING

Enforcement efforts may reduce the size of the illicit tobacco market. However, illicit markets have shown to be dynamic in that they tend to adapt to enforcement and regulation. This adaptation produces new market characteristics and new points for possible intervention. For this reason, effective enforcement also needs to increase the risk—or at least the perception of risk—associated with participating in the illicit market, thereby deterring participation. Absent such deterrence, participation in the illicit

tobacco market will continue to be seen as low risk and high reward, encouraging adaptation.

There is a widespread impression among both academic and other observers of illicit markets that cigarette smuggling is a low-risk activity. Yet, a quick review of the literature shows that this impression is not supported by much research. This lack of research is not surprising: estimating the risks of detection (and prosecution and conviction) for illegal activities is a complex task plagued by unreliable data and the piecing together of multiple, hard-to-verify assumptions about the incomplete data that are available (see Chapter 4).

The publicly available data on arrests and prosecution for tobacco offenses are sparse, especially in comparison with offenses involving illicit drugs. The data that are available are limited to special research projects or reports and only in specific states such as Virginia and California (Horton, 2010; Virginia State Crime Commission, 2013a). The arrest and prosecution data from Virginia (see Virginia State Crime Commission, 2013a, and above) suggest that it is a low-risk activity. The annual number of prosecutions seems to be in the double digits for the whole state. Unless these prosecutions are concentrated against the most high-level or biggest participants in the illicit trade (which one cannot determine from the available data), they may prove to be little more than an irritant to most smugglers.

Risks of Detection

Arrest and prosecution have to be preceded by detection. A recent report on the illicit tobacco industry in Canada estimated that at the height of the law enforcement efforts to detect and seize illicit tobacco products, "one out of every 27 packs of illicit cigarettes bought in Canada was seized by law enforcement authorities" (Daudelin et al., 2013, p. 12). Although the authors did not provide details on data and methods, this estimate matches an estimate calculated by the committee using data provided in the 2011 Physicians for a Smoke-Free Canada report and publicly available Royal Canadian Mounted Police (RCMP) seizure data.

In addition to providing estimates of the proportion of users buying from illicit sources at least some of the time, the study by the Physicians for a Smoke-Free Canada (2011) also provides estimates of the amount of cigarettes consumed that come from illegal sources. With those estimates and annual RCMP data on the number of illicit cigarettes and fine-cut tobacco seized (see Table 6-4), the committee calculated an annual risk of detection for the 2003-2010. The basis for our calculation was as follows:

1. The number of seized illicit cigarettes was estimated by multiplying the number of cartons by 200 cigarettes.

TABLE 6-4 Illicit Tobacco Detection in Canada, 2003-2010

Year	RCMP Seizures, Number of Cigarettes[a]	Fine-cut Tobacco Seized. Number of Cigarettes Equivalent[b]	Total Seized Cigarettes[c]	Total Illicit Cigarettes (seized and consumed)[d]	Percentage of Illicit Cigarettes Seized[e]
2003	11,860,000	11,428,571	23,288,571	1,173,288,571	1.98
2004	24,000,000	15,714,286	39,714,286	849,714,286	4.67
2005	73,820,000	20,000,000	93,820,000	1,663,820,000	5.64
2006	94,460,000	5,714,286	100,174,286	5,450,174,286	1.84
2007	125,200,000	40,000,000	165,200,000	9,185,200,000	1.8
2008	193,000,000	100,000,000	293,000,000	8,603,000,000	3.41
2009	195,000,000	48,571,429	243,571,429	7,263,571,429	3.35
2010	156,400,000	61,428,571	217,828,571	2,937,828,571	7.41

[a]Cartons seized multiplied by 200.
[b]Quantity seized divided by 0.7 grams per cigarette.
[c]The sum of columns 2 and 3.
[d]Total of seized cigarettes from column 4 and total illicit cigarettes consumed from Physicians for a Smoke-Free Canada (2011).
[e]Column 4 divided by column 5 and multiplied by 100.

2. The quantity of fine-cut tobacco seized by the RCMP was transformed using 0.7 gram per cigarette.
3. We then divided the equivalent of the number of illicit cigarettes seized by the sum of the illicit cigarettes actually consumed and the seized cigarettes.

These estimates are based on several assumptions that cannot be verified—-for example, that all seized cigarettes would have been consumed in Canada that year (and were not in transit to another country)—and they are presented for illustrative purposes only. The committee's results suggest that between 2 and 7 percent of illicit cigarettes available in Canada were seized by the RCMP between 2003 and 2010. The yearly variations in the proportion of illicit cigarettes seized by the RCMP are not significant: seizure data are volatile and influenced by unusually large seizures (random or special operations) for some years. In light of this and other limitations, it is most useful to treat these numbers as a range.

It is important to note that this method of calculation overestimates the risks of detection. For example, the estimated number of illicit cigarettes used by smokers excludes those heavy smokers who are not typically found through general population surveys, such as the homeless and inmates. These excluded populations who are heavy users are most likely to smoke contraband tobacco. In addition, recent studies show that self-reported prevalence rates are lower than those found with other methods (Guindon et al., 2013). Underestimating the number of illicit cigarettes used will overestimate the risk of detection. In addition, the seizure data are likely to overestimate the cigarettes that would actually have been used by Canadians for that year. For example, some of the seized cigarettes (and other tobacco products) on Native reserves may have been destined for the U.S. market. This situation, too, would inflate the risks of detection.

A similar exercise can be conducted to estimate the risks for the illicit U.S. market. In 2010, the Northern Virginia Tobacco Control Board and law enforcement agencies in Maryland seized a total of 328,925 packs of Virginia cigarettes that were being smuggled out of the state, roughly 6.6 million individual cigarettes. Based on our estimates of the "extra" cigarettes being purchased in Virginia, this implies that less than one-sixth of 1 percent (0.16 percent) of total cigarette packs being smuggled out of Virginia are intercepted by state authorities. Adding the cigarettes seized by the New York City Sheriff in 2011 and assuming that 44.7 percent of the seized cigarettes were from Virginia (see above) raises the overall level of risk to only 0.19 percent per pack.

Though risk in the United States and Canada appears to be minimal, the risk of detection in the United States seems to be strikingly lower than in Canada. Even assuming that these numbers overestimate risks, it appears

that the risks of detection in the illicit tobacco industry are consistent with, or even lower than, what research indicates is the risk for illicit drugs. Drawing from capture-recapture methods, for example, Bouchard (2008) estimated that close to 11 percent of the marijuana produced in Quebec in 2002 was seized by law enforcement agencies.

The proportion of illicit cigarettes seized is only one measure of risks. Prosecution and conviction risks for tobacco bootleggers, retail sellers of illicit tobacco, transporters, or even for manufacturers should also be considered. They are likely to be substantially lower for cigarettes than illegal drugs given current law enforcement priorities. For instance, a point of comparison might be the risks involved for individuals charged with possession of illicit substances. Nguyen and Reuter (2012) estimated these risks to be about 1.6 percent per year for marijuana possession in 2008. MacCoun and Reuter (2001) estimated the risk at 6 percent for cocaine users in 1996 in the United States. Bouchard and Tremblay (2005b) found arrest risks to be around 1 percent or less for marijuana and cocaine users in Quebec in 1998.

It is difficult to accurately assess the risks faced by tobacco smugglers, especially given that tobacco-specific conviction data are typically not publicly available, either in the United States or Canada. Nevertheless, other than the special cases where task forces have specifically been created with the goal of eliminating illicit tobacco sales, it appears that the risks of detection, prosecution, and conviction of any kind are negligible.

Not enough data are available to draw definitive conclusions comparing the differential risks of detection for buyers and sellers of illicit cigarettes. The research on illicit drugs suggests that sellers are at a higher risk than buyers, and the situation is likely to be similar for illicit cigarettes.

Risks of Detection and the Size of the U.S. Illegal Market

Given the low risk and high profits (see Chapter 2) of the illicit tobacco trade, an obvious question is why the illicit cigarette market in the United States is not larger. That question may be somewhat misleading, however, because the prevalence of illegal cigarettes is very high in some parts of the country. In Chicago and New York City, in particular, empty pack surveys have found that the proper tax stamps did not appear on more than 70 percent of the packs collected in certain neighborhoods (Merriman, 2010; Kurti et al., 2012). The better question could be: Why are illegal cigarettes more prevalent in some places than in others? This question pertains to the uneven geographical distribution of the illegal cigarette trade, which is a phenomenon that not only characterizes the situation in the United States with its patchwork of different cigarette tax regimes, but also countries such as Germany, Poland, and the United Kingdom, which have nation-

ally uniform cigarette tax rates (von Lampe, 2005, 2006; Ciecierski, 2007; Calderoni et al., 2013, p. 64).

Spatial and temporal variation in the intensity of illicit tobacco markets suggests that a decentralized approach to reduce the market size may be more effective than a national approach. A large body of experimental research in criminology has demonstrated that deploying police in crime "hot spots" will reduce overall crime by more than will a random deployment strategy (Eck, 2002). Intuitively, applying a policy of random enforcement along the I-95 corridor between Virginia and New York City will identify more smuggled cigarettes than random stops between Boston and Portland.

Of course, deploying law enforcement selectively in hot spots means identifying where the hot spots are. Although there is little systematic research that explains these geographical variations, the available research suggest that the emergence of cigarette black markets is the result of a convergence of a number of factors. One set of factors is high cigarette taxes in relation to the income levels of smokers and the theoretical availability of suppliers to sell cheap, illegal cigarettes. But simply comparing geographic variation in the monetary incentives for illicit tobacco market participation, rather than the overall incentives, will not identify hot spots of market activity. The relative concentration of the cigarette black market during certain time periods, for example, in the northwest of England or the northeast of Germany, with the notable exception of West Berlin, cannot be explained that simply (von Lampe, 2005, 2006).

In order to develop understanding of hot spots, research would have to focus on determinants of the large spatial variation in demand and supply of illicit cigarettes, beyond the simplest variation in potential revenue generated by tax differentials and income. State-to-state and city-to-city variation in the effectiveness of law enforcement, which imposes costs on both consumers and suppliers, is an additional source of geographic variation in market size. The difficulty with which illegal supply networks and retail infrastructures are formed is very important in understanding the emergence of illegal cigarette markets, and "supply costs" can be as important—or even more important—than tax differentials. And although the social networks that can prop up illicit markets are time consuming and difficult to establish, they may be particularly resilient to government regulation.

ENFORCEMENT CHALLENGES AND OPPORTUNITIES

Policing the illicit cigarette trade depends on the capacity of law enforcement to take advantage of the available opportunities to intervene in that trade. That capacity is a function of resources, information, motivation, and legal authority. Although there are several significant challenges that face enforcement capacity to police the illicit cigarette trade, these

challenges are hardly unique to the illicit cigarette trade, nor are they insurmountable.

The first challenge is that the illegal trade in tobacco (like most criminal activity) is dynamic. Participants in the market face changing regulatory and political environments, economic incentives, technologies of production and transportation, and competition, and they respond accordingly. As discussed in Chapter 2, for example, enforcement shifted illicit sales away from Native American reservations in New York State and toward interstate bootlegging between Virginia and New York City. Similarly, in Brazil, an export tax on cigarettes that successfully reduced the number of cigarettes exported to neighboring Paraguay and then smuggled back into the country also had the effect of increasing the number of manufacturing operations in Paraguay that produced cigarettes for the illicit market in Brazil (Sweeting et al., 2009, p. 43).

Moreover, as noted in Chapter 2, the illicit trade in tobacco can be affected by changes in law enforcement against other crimes, such as intellectual property theft and drug crimes. Although enforcement efforts may effectively reduce the size of the illicit tobacco market, the market may adapt and reemerge in the absence of interventions that are comprehensive and coordinated. Enforcement activities also have to be flexible and responsive, both to focus on the aspects of the trade that present the greatest problems and to those that are capable of being counteracted. In addition, flexible enforcement can allow enforcement that takes advantage of the instability that faces illegal participants, intervening before participants firmly establish new markets or reorganize business enterprises.

The second challenge is coordination, which is also generally problematic for enforcement against other crimes crossing state lines, such as drug trafficking and intellectual property theft. Many agencies and people are involved in enforcing tobacco laws, taxes, and regulations, creating immense coordination challenges for effective intervention in the illicit tobacco trade. Local, state, federal, and international agencies play overlapping roles in regulating, taxing, and enforcing laws on cigarette production and sales, with different levels of government having distinct interests in enforcement. Different levels of government also have different enforcement strengths: local agencies have the most access to information about retailers, state agencies may have the most familiarity with transport routes and methods, and the federal government has the greatest resources and range of enforcement powers. At the same time, the benefits of enforcement are different in different states, and the fact that, for example, Virginia has a negative incentive to enforce New York excise taxes gives rise to an important problem of coordinated action.

Even in a single jurisdiction, cigarette regulation operates across a range of government agencies and programs. At the federal level alone (as detailed

above), ICE and CBP in the U.S. Department of Homeland Security, ATF in the U.S. Department of Justice, and TTB in the U.S. Department of the Treasury have varying incentives, tools, and resources to attack the illicit tobacco trade. At the state and local levels, health and tax agencies, among others, are also involved. Internationally, there are both many countries and international bodies involved.

States appear to have good reason to enforce their own tax schemes. For example, because tax disparities provide incentives for cigarette trafficking, destination states for illicit cigarettes have a strong economic incentive to uncover and prevent the trade in order to collect the taxes they are owed. In an era of shrinking budgets, the illicit tobacco trade has grown increasingly costly to states and municipalities that are looking for sources of revenues. As discussed above, even source states, like Virginia, have reason to make some efforts to discourage cigarette smuggling. Nevertheless, cigarette smuggling is a multijurisdictional activity, and state efforts to enforce their own tax laws are weakened by the difficulties of coordinating efforts across state lines.

The state-level situation suggests at least two key roles for federal action. First, the federal government could promote multijurisdictional coordination to enforce federal and state cigarette laws in ways analogous to its efforts with respect to other interstate crimes, including gun crimes, drug trafficking, human trafficking, intellectual property crime, and terrorism prevention and response. Second, given the diversity of federal, state, and local interests in discouraging cigarette smuggling and smoking, the federal government could facilitate and subsidize collaboration among various government agencies and other anti-smoking stakeholders to work together to address tobacco smuggling. The federal government has similarly promoted collaborative reform with private stakeholders in other contexts with similar obstacles, such as police misconduct and domestic violence.

The third challenge is that the illicit tobacco trade has often been a low enforcement priority for governments. For traditional local law enforcement, tobacco looks like an economic rather than a criminal problem, especially while the trade remains nonviolent, and without training or an easily observable tax stamp or track-and-trace marker, the illicit trade may be hard to detect. Law enforcement efforts attempting to detect and investigate the illicit trade tend to be weak and uneven, and (as discussed above) even when inspections are increased, the number of packs seized fluctuates around very low levels. Moreover, criminal prosecutions of those involved in the illicit tobacco trade are an especially low priority for prosecutors. To the extent that existing enforcement is motivated primarily by financial concerns at both the federal and state levels, there seems to be little incentive for aggressive criminal and nontax investment in enforcement. For states, tax enforcement requires investments that can be difficult to make in

hard economic times, despite their payoffs; in low-tax states, interest in tax enforcement tends to be weak and is usually to the responsibility of non-criminal agencies. For border and customs agents and state patrol officers, tobacco represents less of a problem than drug, gun, or human trafficking.

At all levels of government, the illicit trade in tobacco—which is only weakly opposed by social norms and is subject to rather weak legal remedies—competes with other significant social problems. Diversion is made possible by multiple easy, low-tax sources of cigarettes, and although enforcement can influence diversion—for example, by shifting it from Internet sales to interstate smuggling or from Native American reservations in New York State to bootlegging from Virginia (as discussed in Chapter 2)—diversion is likely to continue as long as there are low-risk alternatives that are relatively easy to access.

Nevertheless, the examples of Canada, the European Union, Spain, and the United Kingdom (see Chapter 7) demonstrate that collaboration across and within jurisdictions, as well the dedication of tobacco-specific enforcement resources, can help to combat the illicit trade, but enforcement efforts need to be able to adapt as the illicit market changes.

SUMMARY AND RECOMMENDATIONS

Enforcement against the illicit tobacco trade faces familiar problems: the dynamic and adaptive nature of the illicit tobacco markets; the need to coordinate across various agencies, participants, and levels of government; and the fact that the illicit tobacco trade has often been a low enforcement priority for the federal, state, and local governments, particularly when it comes to prosecution. The reasons for this are clear: the illicit tobacco trade tends to be seen almost exclusively as a revenue issue, and prosecutors and most investigative agencies give priority to violent crime and terrorism.

Given this lack of attention, it is not surprising that the data on seizures and penalties levied are sparse, even in jurisdictions such as New York City, which has incentives for enhanced enforcement. Although the paucity of publicly available data makes it difficult to estimate the risks faced by cigarette smugglers, the available evidence strongly suggests that the risk of detection is slight.

RECOMMENDATION 6-1 Because an appropriately scaled and well-targeted enforcement effort against the illicit tobacco trade requires systematic data on the array of current efforts, the U.S. federal government should assemble and publish a periodic report on indicators of the extent of bootlegging, international smuggling, and illicit production, together with indicators of enforcement activities by the relevant fed-

eral agencies. The federal government should also consider developing a voluntary reporting system by state and local governments.

RECOMMENDATION 6-2 Systematic evaluations should be conducted of existing and future enforcement interventions in the illicit tobacco trade in the United States. State- and local-level efforts, such as the tobacco task force led by the New York City Sheriff's Office, should be evaluated by independent researchers.

7

Interventions in the Illicit Tobacco Market: International Case Studies

As discussed above and in this chapter, international experiences with the illicit tobacco trade highlight two key characteristics of that trade. One is the dynamic nature of illicit markets and the ways in which participants react to changes in policy and enforcement practices. The other is the challenge of controlling smuggling and illegal production beyond national borders. Despite these challenges, a brief examination of experiences in Spain, the United Kingdom, Canada, and the European Union provides clear examples of success in reducing the size of illicit tobacco markets.

SPAIN

Spain's experience in the 1990s exemplifies how collaboration and the dedication of tobacco-specific resources can lead to effective enforcement. In 1995, contraband cigarettes accounted for nearly 15 percent of the Spanish market despite the fact that the country had some of the lowest cigarette prices in Europe. The illicit cigarettes entered the country through Andorra with the complicity of the tobacco industry (Joossens and Raw, 2000).

In order to stem the supply of illicit cigarettes entering Spain and the rest of the European Union (EU) from Andorra, the Spanish authorities increased the resources dedicated to combating the problem by a factor of 10, allocating nearly €40 million to anti-smuggling efforts from 1996 to 2000 (Joossens and Raw, 2008). They developed international partnerships and engaged authorities from Andorra, Britain, France, Ireland, and the European Anti-Fraud Office in collaborative actions, including preventing container smuggling, sealing the Andorran border, patrolling the region

in order to make undetected smuggling more difficult, and introducing tougher anti-smuggling laws in Andorra (Joossens and Raw, 2000). As a result, by mid-1999 illicit tobacco amounted to only 5 percent of the total market, a two-thirds reduction. By 2001, the share had declined even further, to 2 percent (Joossens, 2003a).

A 2014 report from the European Anti-Fraud Office suggests that the illicit tobacco market has reemerged in Spain—fueled by contraband entering the country from Gibraltar—and calls on the two countries to work together to reduce smuggling across the border.[1] Despite this recent development, Spain's success in reducing participation in the illicit tobacco market from the early 1990s to 2000 is noteworthy.

UNITED KINGDOM

In the United Kingdom, authorities estimated that in 2000 one of every five cigarettes smoked was illicit, including those made with hand-rolled tobacco, amounting to £3 billion a year in lost revenue (All Party Parliamentary Group on Smoking and Health, 2013). In response to the magnitude of those losses, law enforcement authorities implemented a tobacco-specific intervention strategy. The tobacco action plan, first implemented in 2000 and subsequently updated in 2006 and 2011, seems to have been successful, as the illicit market share in the United Kingdom fell by 12 percentage points from 2000 to 2013. An official with Her Majesty's Revenue and Customs (HMRC) told the committee that what has been clearly important to the strategy's success to date has been the development of local and regional partnerships and the ability of the law enforcement community to alter its practices in response to changing market characteristics, as exhibited by the periodic renewal and revision of the tobacco action plan.

The United Kingdom implemented an anti-smuggling action plan for enhanced enforcement in 2000 and coupled it with stamping and marking requirements[2] and with nonbinding agreements with tobacco manufacturers. The focus of the effort was to combat the large-scale smuggling of legal products, namely, container fraud and exports reentering the country (Joossens and Raw, 2000, 2008). A representative from HMRC informed the committee that £209 million was invested over 3 years in resources and technology to detect contraband, such as X-ray scanners for freight. Additional staff were hired to strengthen detention, investigation, and

[1] See http://www.theguardian.com/world/2014/aug/11/eu-crackdown-tobacco-smuggling-spain-gibraltar [January 2015].

[2] Pack marks take the form of a prominent statement "UKDUTYPAID" printed on cigarette packets and pouches of hand-rolling tobacco (Her Majesty's Custom and Excise, 2000, p. 16).

intelligence efforts, and tougher penalties for smugglers and sellers of illicit goods were implemented. Furthermore, a fiscal marking system was put into place so that illicit goods could be easily identified.

As a result of this zero-tolerance policy against smuggling, HMRC reported that from 2000 to 2001 customs officials seized 2.8 billion cigarettes—an increase of nearly 1 billion from the previous year. Cross-channel smuggling fell by 76 percent, X-ray scanners detected approximately 80 million cigarettes and 4.5 tons of hand-rolling tobacco, and customs seized 10,200 transport vehicles as part of its zero-tolerance policy against smugglers. The effects of the increase in resources and the zero-tolerance policy (which included allowing for the seizure of vans and cars used to transport illicit tobacco) increased the risks associated with the trade, and many smugglers left the cross-border market (Sweeting et al., 2009).

During this period, the United Kingdom also entered into memorandum of understanding (MOU) agreements with three of the major cigarette manufacturers in the country. The MOUs were signed with Gallaher, British American Tobacco, and Imperial Tobacco in 2002 and 2003. Though not legally binding, the MOUs were designed to enlist the support of the tobacco manufacturers in controlling the supply of cigarettes to the illicit market (Sweeting et al., 2009); the MOUs could be regarded as a threat-based restorative justice policy, with the risk that the manufacturers would be prosecuted if they did not cooperate. It is believed that nearly half of the contraband cigarettes on the market in 2000 were brands of Imperial Tobacco marked for export and smuggled back into the United Kingdom (Joossens and Raw, 2008). Following the MOU and public pressure in response to parliamentary hearings, Imperial Tobacco exports to places like Andorra—believed to be a major transit point for cigarettes bound for smuggled reentry into the United Kingdom—declined sharply. Enactment of duty-free marking requirements and the MOUs reduced the share of illicit cigarettes on the market from 21 percent in 2000 to 15 percent in 2004 (Her Majesty's Customs and Excise, 2004).

However, as with other countries, the illicit market in the United Kingdom proved to be dynamic and, by 2006, counterfeit cigarettes had reemerged as a major problem. To address the new problem of counterfeits, HMRC reviewed its strategy and issued an updated action plan, "New Responses to New Challenges: Reinforcing the Tackling Tobacco Smuggling Strategy." The plan included supply-chain legislation that required manufacturers to ensure that their products were not smuggled or face a fine of up to £5 million, and in October 2007 an agreement was reached with the Tobacco Manufacturers' Association in which manufacturers voluntarily agreed to add covert anti-counterfeit markings on cigarette packs (Sweeting et al., 2009; All Party Parliamentary Group on Smoking and Health, 2013). An official from HMRC, in a presentation to the committee, credited the

strategy of targeting counterfeits with reducing the size of the illicit market in the United Kingdom: in 2011, the illicit tobacco market was estimated to account for 11 percent of the total tobacco market, down from 15 percent in 2004; 2 years later it was estimated to be 9 percent.

Because the illicit tobacco market persists—now dominated by illicit whites—the HMRC and UK Border Agency again revised and renewed the tobacco action plan in 2011. The 2011 update included a substantial investment of resources, an additional £917 million, aimed at organized crime and tax evasion and avoidance. As part of the strategy, an expansion of the Fiscal Crime Liaison Officer (FCLO) Network was undertaken. The FCLO Network works to intercept contraband "upstream"—that is, FCLO officers coordinate with their local partners overseas to facilitate seizures before the contraband goods enter the United Kingdom (Her Majesty's Revenue and Customs, 2011).

The United Kingdom's decade-long experience demonstrates that as specific problems emerge in an anti-smuggling program, they can be counteracted by specific measures. By and large, these measures seem to be successful, as the illicit market share was reduced from 21 percent in 2000 to 9 percent in 2013. However, illicit markets are dynamic, and the problems may change—as they did from cross-border smuggling and involvement of licit producers to the emergence of illicit whites. If so, it is likely that the local and regional partnerships as well as the ability of the law enforcement community to alter its practices in response to changing characteristics will again be called on.

CANADA

The Canadian experience demonstrates the necessity and potential effectiveness of implementing a comprehensive intervention strategy to tackle the illicit tobacco market. The Canadian government has enacted a number of regulations and enforcement measures to control the supply of illicit cigarettes in the country and to increase the costs associated with participation in this trade.

In the late 1980s and early 1990s, Canada's illicit tobacco market was supplied by legally manufactured Canadian cigarettes exported to the United States and illegally smuggled back into Canada. This large-scale smuggling was estimated to account for 30 percent of the total market (Stephens, 1995). To combat this smuggling route, the Canadian government enacted an export tax on cigarettes and negotiated settlements with the tobacco industry, which was largely complicit in the illicit activity (Cunningham, 1996).

Driven by those taxation and regulatory changes, the illicit tobacco market shifted from large-scale smuggling to its current form, which is

principally that of cigarettes manufactured on Native reserves and sold tax-free to non-Native reserve members and, to a lesser extent, counterfeit cigarettes from abroad. In an attempt to control the supply of cigarettes diverted to the illicit market by tax-exempt sales to noneligible consumers, some provinces in Canada have placed control measures on distributors and retailers on Native reserves. For example, a number of Canadian provinces have implemented either quota or refund systems to limit tax-exempt distribution of cigarettes on Native reserves to non-Natives. Under the quota systems, a predetermined number of tobacco products are allocated to Native reserve retailers, usually based on estimated consumption levels and the reserve population.[3] The refund policies in Alberta, Quebec, and Saskatchewan require that tobacco products be sold to Native reserve retailers with all federal and provincial taxes paid. The products can then be sold to Natives on a tax-free basis, and the retailers apply for a refund. Retailers therefore have a financial incentive to ensure that tax-exempt tobacco products are not sold to non-Natives so that they can recover the taxes paid to the distributor.

Manitoba and New Brunswick implemented both a quota system and a refund policy. In these provinces, controls are placed on both the distribution phase of the supply chain (through the allocation of tax-exempt products) and the retail phase of the supply chain (through the refund). British Columbia also places an additional control on the supply chain through its requirement that tax-exempt retailers apply for an Exempt Sale Retail Dealer Permit by indicating that a demand exists that is not currently met by an existing retailer. This policy limits the number of retailers on each Native reserve, preventing customers from shopping at numerous stores and circumventing regulations (Sweeting et al., 2009).

In addition to controlling the on-reserve sales of tax-exempt tobacco products to ineligible purchasers, the Canadian government also works to control the off-reserve sale of cigarettes manufactured on Native reserves without licenses (Sweeting et al., 2009; Daudelin et al., 2013; Royal Canadian Mounted Police, 2013). The Canadian example presents a complex circumstance—that of Native manufacturers operating without a license on reserves, arguing that they are not bound by Canadian laws: see Box 7-1.

Because of sovereignty issues, Canadian enforcement is heavily concentrated on sales outside the Native reserves rather than specifically targeting on-reserve manufacturing. The proportion of illicit tobacco cartons seized in the areas bordering Native reserves varied between 26 and 53 percent

[3] According to information from Ontario authorities documented by Sweeting and colleagues (2009), these quota policies can be ineffective as they do not control to whom the allocated tobacco is sold (i.e., Native or non-Native), and, in practice, the quantity of tobacco products shipped to the reserves is often in excess of their allocated quotas.

BOX 7-1
The Akwesasne-St. Regis Mohawk Reserve

The Akwesasne-St. Regis Mohawk Reserve illustrates some of the major issues and challenges and differences between the U.S. and Canadian illicit markets. A large proportion of Canadian illicit sales, originating from unlicensed manufacturing and tax-free sales to ineligible consumers, are centered on the Akwesane-St. Regis Mohawk Reserve, which occupies land across the U.S.-Canadian border. According to a Royal Canadian Mounted Police (RCMP) representative, in May 2008 the agency identified 13 illicit manufacturers on the New York side of the Akwesasne reserve, 11 illicit manufacturers in Quebec, and 7 in Ontario (Schwartz and Johnson, 2010; Daudelin et al., 2013). Tax-free sales to non-Native members are estimated to account for 10 to 12 percent of illicit tobacco sales in Canada (Daudelin et al., 2013).

The Akwesasne-St. Regis Mohawk Reserve is a major source of contraband cigarettes because of its unique geography, its status as a contested border community, specific cultural and economic processes that have led to contested definitions of the cross-border trade, and the tolerance of U.S. and Canadian authorities for the unlicensed manufacture and sale of tobacco products in the territory (Jamieson, 1999; Daudelin et al., 2013). The Akwesasne is located astride the U.S. and Canadian border, marked by the St. Lawrence Seaway. Unlike other Native reserves close to the border, the Akwesasne is located near large markets: it is less than a 2-hour drive away from the nearly 8 million Canadians living near Montreal and Toronto (Daudelin et al., 2013). It is also a rural and sparsely populated area, making its border inviting to smugglers as it is easily crossed by boat or all-terrain vehicles at many unmonitored points.

Governance of the territory is complex: three nations claim rights (Canada, the United States, and the First Nations), three provinces and states also claim rights (Ontario, Quebec, and New York State), and three separate Native councils make jurisdictional claims; and, like Native Americans, the First Nations claim sovereignty over their land. This complex governance situation creates a unique enforcement environment. Akwesasne residents claim the right to cross the Canadian-U.S. border uninhibited and to trade goods across the border without paying duties. The Mohawk community further contends that unregulated tobacco trade is an indigenous right and U.S. and Canadian tobacco laws are illegitimate (Schwartz and Johnson, 2010; Daudelin et al., 2013). They claim that profits from the tobacco market help to support the reserve community that was forced to give up its traditional economic activities due to environmental degradation and that has been beleaguered by years of poverty, illness, and political disempowerment (Jamieson, 1999; Schwartz and Johnson, 2010). Thus, the Mohawks see much of what Canadian and U.S. authorities would identify as illegal smuggling as routine trade and legitimate avenues for economic development. The result has been a *modus vivendi* in which police generally ignore unlicensed cigarette manufacture and trade on the reserve while focusing on seizing contraband at the border of the tribal lands (Jamieson, 1999; Daudelin et al., 2013).

between 2004 and 2010. For larger operations derived from longer investigations, arrests and seizures occur anywhere offenders are located, including on reserves (Royal Canadian Mounted Police, 2014). The majority of these investigations are the product of collaboration between multiple agencies, often including the Akwesasne Mohawk Police (Public Safety Canada, 2012), making it easier to address any that facilitate jurisdictional or sovereignty issues that may arise.

Despite these constraints, the RCMP's 2008 contraband tobacco enforcement strategy demonstrates the potential effectiveness of allocating tobacco-specific resources to coordinated enforcement measures. The 3-year strategy outlined 29 initiatives undertaken in eight priority areas aimed at reducing the supply and demand for contraband cigarettes by increasing the risks associated with participating in the illicit market. Those initiatives included dismantling illegal manufacturing facilities, disrupting supply lines, apprehending key figures, confiscating conveyances such as trucks and boats, and seizing proceeds of crime (Royal Canadian Mounted Police, 2013, p. 11). Because there has not been a systematic evaluation of the RCMP strategy by independent researchers, the impact has not been verified, but the number of detected cases and seizures certainly increased with the added resources. For example, from May 2008 to May 2011, there were 2,219 tobacco charges generated by Canadian federal prosecutors under the Excise Act (2001) (740 per year, an increase from the 749 tobacco charges generated from April 2006 to March 2008 [749 total, 375 per year]). There was also an increase in fine payments from Can $94,513 to Can $278,639 over the same period. However, both figures are tiny against any measure of the scale of the illicit trade.

RCMP cigarette seizures drastically increased in all regions upon implementation of the contraband tobacco enforcement strategy, although they have fallen in recent years. In 2008, the RCMP seized 966,000 cartons of cigarettes, compared with 626,000 the previous year, but the number of seized cartons decreased to 598,000 in 2011 (likely reflecting variations in enforcement rather than underlying violation levels). Legitimate cigarette sales in Canada increased after the implementation of the contraband tobacco enforcement strategy by approximately 4 billion cigarettes from 2008 to 2010, but it is not possible to determine whether, or by how much, the increase is attributable to the strategy.

As part of the contraband tobacco enforcement strategy, the RCMP has prioritized coordination with other law enforcement agencies, both in Canada and in the United States. For example, the Cornwall Regional Task Force was established in 2010 with a special unit (the Cornwall Combined Forces Special Enforcement Unit-Contraband Tobacco Initiative) targeting cigarette smuggling. The unit brings together officers from the RCMP, the Canadian Border Security Agency, the Ontario Provincial police, the

Cornwall (New York) police, and Akwesasne Mohawk police. Joint U.S.-Canada operations have been authorized under the Integrated Cross Border Law Enforcement Operations Act of 2012. These joint efforts have been successful in changing the pattern of smuggling in the southern Ontario region, as seizures have been displaced eastward and shipments are regularly confiscated. However, media reports suggest that the fines imposed on smugglers are rarely paid in full, and those caught are almost always just small-scale participants. Ultimately, although increased enforcement through effective coordination has affected the trade and created a more hazardous environment for smugglers, the illicit market persists in this region because the contraband originates on the Native reserves, on which neither Canadian nor U.S. authorities have jurisdiction (Daudelin et al., 2013).

As in the United States, sovereignty and political and economic considerations make enforcement on Native reserves difficult. However, it appears that the contraband tobacco enforcement strategy and other interventions in the illicit tobacco market in Canada, such as the Akwesasne Partnership Initiative, may have overcome some of these issues through effective cooperation among all of the law enforcement agencies involved in this area (Public Safety Canada, 2012). Furthermore, because the enforcement environment makes it difficult to distribute illicit products outside the reserves, sales on reserves are competitive, giving consumers leverage and driving prices down (Daudelin et al., 2013).[4]

In terms of law enforcement, one of the major differences between Canada and the United States is the way federal policing and provincial policing is structured. While Canadian policing is active in specific issues involving the country as a whole, such as the importation and exportation of illicit goods (like contraband cigarettes), the RCMP (the federal police) is also contracted by the majority of provinces to act as their provincial police. This arrangement means that a single agency could be involved in the investigation of tobacco cases, even for cases involving importation from another country followed by distribution to local retailers in a specific province. Issues of information sharing, coordination, and communication are therefore less of a problem in Canada than in the United States. Important exceptions are Quebec and Ontario, which have their own provincial police. Even there, however, the enforcement of tobacco laws in the Akwesasne region is a concern for both provincial police forces and the RCMP, and cooperation among them is common.

[4]Cigarettes manufactured on Native reserves is sold for as little as 3 cents per cigarette on the reserves and 7 cents per cigarette outside the reserves. Bags of 200 cigarettes are sold for as low as Can $6 on reserves and between Can $14 and Can $20 outside. These figures correspond with a tax differential of 80 cents per pack (Luk et al., 2009; Stinson, 2010; Royal Canadian Mounted Police, 2011).

Another difference between Canada and the United States is that Canadian law enforcement agencies can typically concentrate their resources in a few active hot spots in the illicit tobacco trade, like the Akwesasne region, through a single task force. In contrast, the interstate bootlegging issue in the United States involves a significantly larger number of locations, participants, and law enforcement agencies. Interprovincial bootlegging has never been identified as an issue of concern in Canada but, even if it were, it is quite likely that the RCMP would be the only agency called on to tackle the problem.

EUROPEAN UNION

To bolster its enforcement activities against illicit tobacco, which in 2012 accounted for roughly 11 percent of the total tobacco market share in the region, the European Commission (EC) in 2013 adopted a four-pronged approach to tackling the trade throughout the region (Joossens et al., 2014b). The strategy included measures to decrease incentives for smuggling activities; improve the security of the supply chain; increase enforcement of tax, customs, police, and border authorities; and impose heavier sanctions for smuggling activities. The EC strategy included both measures to decrease incentives for smuggling and measures on the supply side.

On the demand side, the EC proposed to (1) examine how to simplify the application of excise rules; (2) explore limiting tax avoidance by introducing basic common rules on anti-forestalling (preventative measures); and (3) expand the already existing targeted actions in cooperation with the interested and willing member states in order to raise public awareness about the damage caused by and the specific risks associated with consumption of illicit tobacco products. On the supply side, the EC's approach called for (1) ratification of the FCTC Protocol to Eliminate the Illicit Trade in Tobacco Products (of the Framework Convention on Tobacco Control [FCTC] of the World Health Organization); (2) compliance with the provisions of the FCTC's protocol; and (3) implementation of tracking and tracing measures (European Commission, 2013). In an analysis of the strategy, Joossens and colleagues (2014b) noted that though illegal manufacturing is on the rise within the EU—from five known illegal manufacturers in 2010 to nine illegal production facilities in 2011—there are no specific provisions in the strategy aimed at addressing this source of the illicit market.

In addition to these policies, the EC 2011 implemented an action plan to tackle smuggling at the EU's eastern land border, where the illicit market share is higher than the EU average—upwards of 90 percent of consumption is illicit in some border regions. EU officials report that the main sources of illicit cigarettes entering the EU are Belarus, Moldova, Russia, and Ukraine (European Commission, 2011). For these reasons, the action

plan attempts to address deficiencies in border protection infrastructure and equipment at the eastern border, operational cooperation among competent services and authorities, professionalism of border police and customs officials, and penalties and their application throughout various EU member states. The plan outlines a strategy to build enforcement capacity through technical assistance and training, financing of technical equipment, and awareness-raising efforts (European Commission, 2011).

In February 2014, the EU Parliament approved a revised Tobacco Products Directive in a continuing effort to prevent illicit whites from entering the market from its eastern border, and in acknowledgment of concerns about the levels of bootlegging within the EU from low-tax and low-price countries. The directive includes provisions for implementation of an EU-wide tracking and tracing system and anti-counterfeiting measures. After implementation in national legislation, the directive will go into effect in 2016 (Joossens et al., 2014b). The EC has also pledged resources to the FCTC secretariat and to non-EU countries dedicated to implementation of the FCTC protocol and its provisions for adoption of a global track-and-trace system, but it is unclear how many resources will be made available (Joossens et al., 2014b).

The EU's effort to implement a comprehensive policy to combat the illicit tobacco trade acknowledges the transnational scale of the illicit market, and this multifaceted approach has seen its successes. Although the analogy between the EU and U.S. federalism is useful with regard to the combination of divergent local policies (taxes) combined with easy transportation and smuggling among states or borders, there are also limitations to this comparison. Particularly, international borders offer policing opportunities that are not available for interstate smuggling in the United States. Customs cooperation and cross-border, interagency information sharing are well-developed in Europe, and the EC's European Anti-Fraud Office (OLAF, for Office de Lutte Antifraude) does have some administrative powers in relation to frauds against the European Community.[5] However, the EU itself, although it uses Europol and Eurojust, does not have cross-border criminal enforcement powers. There is essentially no federal or overall EU enforcement agency, except by using noncriminal powers in relation to cartels and fraud against the EU budget.

EU policies can be enforced only if they are adopted by member states and implemented through joint intelligence gathering and actions, for example, by international joint investigation teams coordinated by

[5] For example, OLAF investigated claims that EC Commissioner John Dalli demanded bribes in exchange for influencing the EU's prohibition of snus (an oral tobacco product). Dalli was subsequently forced to resign, the circumstances under which are (as of August 2014) being contested before the European Court of Justice (Callaghan and Johnson, 2014; Nielsen, 2014).

Europol or Eurojust. Tobacco smuggling, though one of many priorities set out in OLAF's performance program, does not have its own spending program, prosecutorial power, or even the power for administrative fines. Although there is currently an initiative to seek to introduce a European Public Prosecutor's Office, the resources that such an office would command, if introduced, remain open to question, as does the importance of measures against tobacco smuggling in a context of scarce resources to reduce frauds against the EU, including customs duties (European Commission, 2014). Cigarette smuggling and counterfeiting are also not Europol priorities. Nevertheless, the EU still appears to be more active and proactive in encouraging coordination among its member states than is the U.S. federal government.

SUMMARY

International efforts to combat the illicit tobacco trade have focused on measures that target the problem of large-scale smuggling (crossing international borders). This form of the trade appears to be a relatively small problem in the United States (see Chapter 2). There also appears to have been greater involvement by the tobacco industry in the EU illicit market than there has been in the United States (see Chapter 3). Nevertheless, the broad-ranging interventions adopted by Spain, the United Kingdom, Canada, and the European Union are instructive for the United States insofar as they show that it is possible to reduce the size of the illicit tobacco market through the dedication of tobacco-specific enforcement resources, collaboration across jurisdictions, and comprehensive intervention strategies that encompass a variety of regulatory, enforcement, and policy approaches.

Table 7-1 illustrates the multiple interventions implemented by various countries, as described above and in previous chapters. All the countries show marked reductions in the size of their illicit tobacco markets. Spain, for example, was able to reduce the share of its illicit market from 15 percent in 1995 to 2 percent in 2001 as the result of licensing and control measures, enforcement efforts, and legal agreements. The United Kingdom used stamping and marking requirements on cigarettes, agreements with tobacco manufacturers, enhanced enforcement efforts, and public education campaigns to reduce the share of its illicit market from 21 percent in 2000 to 9 percent in 2013. Canada reduced the illicit share of its market from nearly 30 percent in the early 1990s to between 7.6 percent and 14.7 percent in 2010 (according to the committee's own estimates) through sweeping intervention efforts, including licensing, tax stamps, enforcement,

TABLE 7-1 Interventions in the Illicit Tobacco Market, by Country

Intervention	Spain[a]	United Kingdom	European Union[b]	Canada
Licensing and Control Measures	X			X
Tax Stamps and Marking		X		X
Tracking and Tracing			X	
Enforcement	X	X	X	X
Tax Harmonization			X	X
Tribal Tax Revenue Agreements				X
Memoranda of Understanding and Legal Agreements	X	X	X	X
Public Education Campaigns		X		X

[a]The Spanish legal agreements refer to the European Union lawsuit filed in 2000 against tobacco manufacturers supplying contraband cigarettes to Spain and Andorra.

[b]In February 2014, the EU Parliament approved provisions for implementation of an EU-wide track-and-trace system that is scheduled to go into effect in 2016.

SOURCES: Data from Joossens and Raw (2000, 2008); Joossens (2003a); Sweeting et al., (2009).

tax harmonization, tribal tax revenue agreements, legal agreements with tobacco manufacturers, and public education campaigns.[6]

Although international efforts to combat the illicit tobacco trade have focused on forms of the trade that are currently a relatively small problem in the United States, illicit markets adapt and reemerge, and product regulations in the United States could, in principle, increase the demand for cigarettes with prohibited features in ways that begin to integrate the domestic illicit tobacco market into the global illegal trade (see Chapter 8). If this occurs, interstate coordination may become less important than border and customs enforcement, and it would make aspects of international experiences more relevant to the United States.

[6]As detailed in Chapter 4, the committee estimated the percentage of the total market represented by illicit sales in the United States to be no lower than 8.5 percent and as high as 21 percent, which is slightly larger as a share of the total market than was the illicit market in Canada following the implementation of the country's comprehensive intervention efforts.

8

Possible Changes in Tobacco Products: Considering Consumer and Supply Responses

So far this report has focused exclusively on illicit markets that are generated by tax evasion and avoidance. This focus reflects the fact that tax differentials among states (and on Indian reservations) increase incentive for tax evasion and tax avoidance and contribute to existing illicit tobacco markets in the United States. However, other kinds of restrictions can also generate illicit markets: in particular, regulations that restrict or ban features of some cigarette design, formulation, or packaging can generate illicit markets in what are presently legal products. As part of the charge to this committee, this chapter reviews the available research that could inform whether and how the demand and supply for illicit tobacco might be affected by nonprice regulations on legal tobacco products.

The chapter first briefly reviews the current policy and regulatory environment for tobacco in the United States, specifically, the authority and responsibilities of the Food and Drug Administration (FDA). The next two sections examine what is known about consumer behavior in response to changes to tobacco products, particularly in regard to possible regulatory requirements for cigarette design, formulation, or packaging. The chapter then considers the impact of possible regulatory changes on the supply of illicit tobacco and the role of electronic cigarettes (e-cigarettes) as an alternative to tobacco products. The final section of the chapter presents the committee's recommendations for research to better understand the possible effects of product regulation on consumer behavior and illicit markets.

POLICY CONTEXT

As discussed in Chapter 1, under the 2009 Family Smoking Prevention and Tobacco Control Act (FSPTCA), the FDA has regulatory authority for tobacco products through provisions designed to protect public health. A key feature of the act requires that new tobacco products do not have greater potential for initiating or maintaining dependence than existing products (see Henningfield et al., 2011). Such provisions may be used, for example, to implement product standards for nicotine levels or to place limits on mentholation. The FDA also has authority to set standards for tobacco pack messaging.

The new tobacco regulatory environment ushered in by the FSPTCA in the United States is likely to result in changes to the way in which some tobacco products are engineered, as well as the manner in which they are packaged and the way messages about them are communicated to consumers. Thus, a key question for the future is whether tobacco consumers are likely to engage in the illicit market if their preferred product characteristics are altered or eliminated by regulation.

That key question has not been directly addressed in the research to date. Although surveys and qualitative studies have examined the characteristics of users of illicit tobacco in comparison with users of licit products (see Chapter 3), this research has addressed only price-induced illicit markets and rarely considers the question of why only some consumers purchase illicit tobacco products. However, there is a body of research on the effects on consumer preferences and smoking behavior of variations in product composition, design, and packaging. This research provides useful knowledge on how tobacco consumers may respond when faced with changes in tobacco product characteristics. However, its nature makes it indicative rather than conclusive for the question of the emergence of illicit markets.

PRODUCT APPEAL AND CONSUMER RESPONSE

In this section, we first discuss product appeal—the complex array of factors that affect what consumers experience when they smoke. We then examine three avenues of regulatory changes to cigarette design and formulation: (1) regulation of product design features and constituents, (2) regulation of nicotine level, and (3) regulation of menthol. It is important to note that these explorations do not imply any forthcoming policy of the FDA: rather, they provide analysis of the potential impact of a limited number of different tobacco product regulatory approaches on consumer behavior on which some evidence is available. International experiences with restrictions on cigarette pack messaging (e.g., requirements for plain packaging or

large graphic warning labels) and research on consumer response to such messaging are also discussed.

Product Appeal

The pervasive and enduring success of the tobacco industry over the past century is in large part a function of its capacity to create tobacco products, especially cigarettes, that appeal to consumers and promote addiction (Brandt, 2009). More than other tobacco products, such as pipes, smokeless tobacco, and dry snuff, cigarettes have the capacity to rapidly deliver a dose of nicotine that is within the optimal human physiological range for initiating and maintaining dependence (Ferris Wayne and Carpenter, 2009). In recent decades, tobacco manufacturers have used increasingly sophisticated technology to engineer cigarettes to deliver optimal doses of nicotine to consumers. Tobacco manufacturers have sought to enhance what the Institute of Medicine (2012) refers to as *addictive potential* (also known as *abuse liability*): the potential for tobacco products to initiate and maintain tobacco dependence.

By manipulating product features tobacco manufacturers optimize the speed and amount of nicotine dosing while providing additional appealing chemosensory characteristics (Ferris Wayne and Connolly, 2002; Carpenter et al., 2005, 2007; Ferris Wayne and Carpenter, 2009; Kreslake and Yerger, 2010). Those features include filter, ventilation, circumference, length, tobacco blend, processing, paper, and additives. Variations among cigarette brands also may involve the use of technological innovations to alter smoke chemistry, mechanisms of delivery and bioavailability of nicotine, to shape consumers' sensory perceptions of smoking and smoking behavior (Connolly et al., 2000; Ferris Wayne and Connolly, 2002, 2004; Cook et al., 2003; Keithly et al., 2005).

Product appeal can be influenced by the use of additives, such as nicotine analogs and synergists, to modify nicotine effects (Bates et al., 1999; Ferris Wayne et al., 2004). Another important example is the modification of nicotine bioavailability by increasing the pH of the smoke in tobacco processing: this increase and other changes increased the proportion of "free" (unprotonated) nicotine (Hurt and Robertson, 1998; Henningfield et al., 2004). The general purpose of such product design modifications is to influence the chemosensory characteristics of tobacco products, to make them easier and more pleasant to consume. At the same time, the idiosyncratic chemosensory cues of a given product provide feedback for smokers about nicotine and tar strength, which gives smokers a way to tailor the amount of nicotine delivered to a preferred range by modifying the intensity of their puffing behavior (Rose, 2006; Centers for Disease Control and Prevention, 2008; Rees et al., 2012; Vansickel et al., 2012; Hoffman and Evans, 2013).

Manufacturers have optimized product appeal by targeting products with specific design features to subgroups of tobacco users (Ferris Wayne and Connolly, 2002; Carpenter et al., 2005; Kreslake et al., 2008b). Variations in the smoothness/harshness balance, nicotine effect, mouth feel, and draw resistance have been used to accommodate the preferences of subgroups of smokers, such as women and youth (Ferris Wayne and Connolly, 2002; Kreslake et al., 2008a). The rapid uptake of Camel cigarettes among youth was due not solely to marketing, but also to modifications in product design that affect sensory perceptions (Ferris Wayne and Connolly, 2002). Another example is mentholated cigarettes, which have cooling properties that decrease smoke irritation. Manufacturers determined that lower levels of menthol are better tolerated by youth, allowing for easier use by novice smokers and enhancing the potential for initiation (Bates et al., 1999; Connolly et al., 2000; Kreslake and Yerger, 2010).

Opportunities for tobacco product marketing are limited or banned in many countries, particularly those that ratified the Framework Convention on Tobacco Control (FCTC) of the World Health Organization. In the United States, tobacco product promotion on electronic broadcast media has been banned since the early 1970s, and public billboard advertising was banned under the Master Settlement Agreement of 1998 (see Chapter 1). With restrictions on many forms of mass marketing, tobacco manufacturers have placed increasing importance on the cigarette pack as a way to differentiate their products from competitors' brands. Cigarette smokers are widely considered to be brand loyal (Alsop, 1989; Pollay, 2000; Carter, 2003), particularly in the United States, committed to a specific brand for years. While studies of brand loyalty link consumer selection more to satisfaction, taste, and price tier than to pack appearance (Cowie et al., 2013; Saeed et al., 2013; Dawes, 2014), the pack design is believed to convey and remind consumers of the product features they desire.

When a new regulation reduces product appeal, consumers can make several choices: quit using the product altogether, switch to another legally available product, switch to an illicit product, or continue using the modified product (see Figure 1-1 in Chapter 1). Any reduction in product appeal in response to regulated changes in product characteristics may in principle increase the illicit tobacco market to accommodate consumer demand for the original (unregulated) product. The rest of this section considers possible regulatory changes to features of tobacco products and reviews research relevant to consumer response and behavior. The available research on product changes is reviewed in the context of Figure 1-1 (in Chapter 1), to inform the implications for demand for illicit (unregulated) products. We note again that these scenarios are not meant to suggest or endorse any forthcoming regulations by FDA: they are offered as explorations in understanding factors that may affect the illicit tobacco market.

Regulation of Product Design Features and Constituents

In the current regulatory environment, product features that pose great public harm or promote initiation and dependence on tobacco are considered potential targets for regulation. Cigarette features that have recently been considered include ignition propensity, filter ventilation, characterizing flavors, and new designs that have the potential to reduce emission of toxicants.

A variety of technological innovations have been used to potentially reduce the emission of toxicants while maintaining the capacity of the product to deliver nicotine, including low- or non-combusted cigarettes and enhanced filtration systems. These "potential reduced exposure products"[1] have been developed and marketed to appeal to health-conscious smokers. In general, the modification of cigarettes to reduce harmful smoke constituents has tended to reduce the chemosensory qualities that contribute to the appeal of the product. Studies of smokers' reactions to potential reduced-exposure cigarettes have suggested that they have low appeal for consumers, who quickly discontinue use or use them infrequently, often in conjunction with their usual cigarette brand (Breland et al., 2006; Caraballo et al., 2006; Rees et al., 2008).

These findings suggest that when taste and other chemosensory characteristics of cigarettes are negatively affected, the appeal of the product is substantially diminished for some smokers. Other changes in product design, including modifications that lower cigarette ignition propensity, change filter ventilation, and remove characterizing flavors, have produced no more than modest reductions in product appeal in the aggregate. Although the direct impact of regulations on consumer behavior has not been widely assessed, the available evidence, as discussed below, suggests that regulations that have been implemented to reduce ignition propensity and ban cigarette flavors have not led to demand for unregulated products from illicit sources.

Reduced Ignition Propensity

One example of product regulation is the legally mandated requirement for ignition performance standards for cigarettes that has been introduced

[1]Potential reduced-exposure products is a term of art used to describe modified tobacco products, cigarette-like products (whether or not they contain tobacco), and pharmaceutical products and medical devices (whether or not they contain nicotine) developed for their potential to reduce harms from tobacco. The term "potential" is used to avoid misinterpretation because whether exposure to tobacco toxicants is reduced depends on the users' behavior, such as frequency and intensity of use: reduced exposure does not necessarily ensure reduced risk to the user or reduced harm to the population (Institute of Medicine, 2001).

in a number of U.S. and international jurisdictions in the past decade. This requirement represents one of the first regulations pertaining to the physical design of cigarettes. In the United States, the "New York Standard," which requires that no more than 25 percent of 40 cigarettes burned under standard conditions demonstrate a full-length burn, has been widely adopted, and all 50 U.S. states now have measures to limit the ignition propensity of cigarettes (Hall, 2013). To meet this standard, most manufacturers introduced "banded" wrapping paper, which slows the rate of combustion by restricting the supply of oxygen to the burning ember (Connolly et al., 2005).

Initial opposition to the introduction of reduced ignition propensity cigarettes included complaints that the modified product would not meet consumer expectations and that taste and other characteristics would be compromised. Other concerns included the potential for increased exposure to tobacco toxicant because of the possibility that more intensive puffing would be required to keep the cigarette lit. Concerns were also raised that the change in product design would prompt disaffected consumers to seek supplies of cigarettes from neighboring states where an ignition regulation had not been adopted (Connolly et al., 2005).

Research has found these concerns were not warranted. Consumers in Massachusetts reported no change in taste or satisfaction for their usual brand, nor any change in obtaining cigarettes from a different source, after the introduction of the ignition law (Seidenberg et al., 2012). In a laboratory-based study, smokers showed no change in puffing intensity or exposure to carbon monoxide after switching to a reduced ignition propensity cigarette of the same brand. The overall number of cigarettes smoked even decreased among smokers who switched to the new product (O'Connor et al., 2010): this outcome suggests that a difference in performance was detectable to smokers and that some smokers decided to quit or reduce tobacco use. Other research has demonstrated that the consumer market has been largely unaffected by the introduction of cigarettes with reduced propensity to ignite (Connolly et al., 2005).

Filter Ventilation

Cigarettes with higher filter ventilation (produced by placing concentric rows of tiny perforations in the filter tipping paper) allow fresh air to be drawn into the cigarette and mixed with the smoke to create a smoother, cooler sensory effect (Kozlowski and O'Connor, 2002; King and Borland, 2004). The reduction in harshness is generally associated with lower risk or harm from tobacco (National Cancer Institute, 2001; O'Connor et al., 2013; Elton-Marshall et al., 2014).

When the European Commission established maximal values for tar (10 mg), nicotine (1 mg), and carbon monoxide (10 mg) yields, manufactur-

ers met this standard by primarily increasing filter ventilation (O'Connor et al., 2006). There has been no research directly examining the impact of this standard on the illicit market. Increased filter ventilation does reduce machine yields and changes the smoking sensation; however, research has shown that smokers engage in compensatory smoking behaviors.[2] Highly ventilated filters encourage consumers to puff more intensively, which produces similar tar and nicotine yields as a low-ventilation cigarette (National Cancer Institute, 2001; Kozlowski and O'Connor, 2002; Hammond et al., 2005). There have been suggestions to ban filter vents in combination with low maximum standards for tar, nicotine, and carbon monoxide yields in order to make cigarettes less appealing and encourage cessation (Kozlowski et al., 2006). No such bans have been initiated, but several countries have banned misleading descriptors that indicate low tar yields, such as "light" and "mild," from packaging (see discussion on packaging, below).

Flavored Cigarettes

The FSPTCA currently bans certain types of tobacco products, including a requirement under Section 907 of the act that cigarettes may not be sold with characterizing flavors, including candy flavors. Evidence shows that more than two-fifths of adolescent smokers prefer flavored tobacco (King et al., 2014) and that use of flavored products among youth may shape long-term tobacco use preferences (Villanti et al., 2013). These findings suggest that the appeal of flavored cigarettes may be sufficiently high among youth to promote switching to alternative products. However, there is no good source of data to determine whether an illicit market in flavored cigarettes has proliferated since the ban. There is some evidence that vendors circumvent the flavor ban through the sale of flavored little cigars, which are not subject to a flavor ban (see, e.g., Jo et al., 2015). Studies on other types of bans have also shown that alternative legal products may be adopted when a preferred product is banned, such as the adoption of smokeless tobacco products where the use of cigarettes is restricted (Klesges et al., 2010; Boyle et al., 2012).

[2] Yields of tar, nicotine, and carbon monoxide can be measured on standardized smoking machines. In the past, the tobacco industry categorized cigarettes with low tar yields on standardized smoking machines (<15mg) as low yield and used descriptors such as light, low, or mild. Design changes have affected tar and nicotine measurements: different size and density filters, ventilation holes, chemical additives, and different types of tobacco. Many smokers modify their behaviors when smoking low-yield cigarettes to compensate and take in more nicotine than estimated by a smoking machine (National Cancer Institute, 2001).

Regulation of Nicotine

The FSPTCA allows FDA to implement product standards around reduction of nicotine, as long as the nicotine level is not reduced to zero. This provision necessitates determining, for public health benefits, the threshold for nicotine delivery below which initiation will not occur (Benowitz and Henningfield, 1994, 2013; Hatsukami et al., 2013). Regulations that require nicotine to be reduced to a dose threshold below which tobacco dependence cannot be initiated could foreseeably reduce the addictive potential of cigarettes, but it would also reduce the appeal of products and so it might cause consumers to seek alternatives (Benowitz and Henningfield, 1994, 2013; Hatsukami et al., 2013).

Several ongoing research initiatives are investigating the questions of how consumers respond to products with lowered nicotine: Would cigarette use be reduced by lowering nicotine? Will smokers change their smoking frequency and intensity? Will smokers quit? Will smokers adopt alternative, unregulated products or modify existing products to obtain preferred nicotine dosing? (Hatsukami et al., 2013). More definitive findings on consumer response to reduced levels of nicotine are anticipated from this research.

To date, laboratory research has shown that cigarettes without nicotine[3] may continue to function as a reinforcer—that is, to maintain smoking behavior—because of the presence of other smoking-related sensory cues (Shahan et al., 1999). Indeed, both nicotine and non-nicotine cigarettes have demonstrated similar reinforcing capacity, although when directly compared, a nicotine cigarette was preferred by participants (Shahan et al., 2001). These findings were replicated when a monetary reward was introduced. That is, participants' consumption of both nicotine and non-nicotine cigarettes was reduced by similar amounts when a financial incentive was provided to forgo smoking (Shahan et al., 2001). An earlier comparison of nicotine and non-nicotine cigarettes also showed that while smokers preferred the nicotine cigarette, there was no difference in its capacity to reduce craving or withdrawal in comparison with a non-nicotine cigarette (Pickworth et al., 1999).

Switching studies have been conducted using both acute designs (with one session) and sustained designs (for 2 weeks or more). Findings from studies of switches to low-nicotine cigarettes suggest that while very low-nicotine cigarettes support smoking behavior and have the capacity to ameliorate craving, reduction in nicotine levels in cigarettes to very low levels affects product appeal. Smokers who switched to very low-nicotine cigarettes tend to puff more intensively to extract adequate nicotine (Strasser

[3]Technically, it is very low nicotine as it is not possible to eliminate nicotine entirely. It is appropriate to say non-nicotine because the actual level is negligible, but we use "very low" as technically accurate.

et al., 2007; Hatsukami et al., 2010). In a laboratory study with an acute design, Strasser et al. (2007) observed increases in puffing volume for low-machine-yield nicotine (0.3 mg/cigarette) and very low-nicotine (0.05 mg/cigarette) products in comparison with a regular one (0.6 mg/cigarette). This finding was partially replicated in another study, which found compensatory puffing with a 0.3-mg machine-yield-nicotine cigarette, but no compensation with a 0.05-mg product (Hatsukami et al., 2010). The direct effect of switching to a reduced-nicotine cigarette on product appeal was not reported in these studies. However, compensatory increases in puffing intensity might be taken to imply that smokers changed their smoking behavior to overcome a reduction in product appeal caused by lower-than-expected nicotine.

Another study examined the effects of progressively reducing cigarette nicotine content, from 12 mg to 1 mg per cigarette (equal to approximately 0.9- to 0.1-mg machine-yield-nicotine per cigarette), over a 4-week period (Benowitz et al., 2012). The study found that smokers continued to smoke a similar number of cigarettes per day, even after 6 months of smoking a 1-mg cigarette in comparison with control participants who continued to smoke their usual cigarettes. Nonetheless, nicotine intake (as measured by plasma cotinine concentration) declined as the cigarette nicotine content was reduced. The findings suggest that progressive nicotine reduction and use of very low-nicotine cigarettes can be sustained over an extended time period. In another sustained, 11-day switching study using very low-nicotine cigarettes, Donny and colleagues (2007) observed both a decrease in daily consumption and a decrease in motivation to smoke. Participants smoking very low nicotine cigarettes reported amelioration of craving following smoking, but maintained generally negative perceptions of the product throughout the study period. These findings were extended in a study that examined the role of nicotine reinforcement with a transdermal patch in the sustained use of very low-nicotine cigarettes (Donny and Jones, 2009). This study's findings suggested that non-nicotine cigarettes were smoked less when transdermal nicotine was provided, and the cigarettes were perceived as having low positive effects and high negative effects (Donny and Jones, 2009). Other research has shown that sustained use of very low-nicotine cigarettes may support cessation. In a 6-week switching study, Hatsukami and colleagues (2010) found that a 0.05-mg cigarette produced a higher cessation rate than a 0.3-mg nicotine product, and the cessation rate was similar to that of a 4-mg nicotine lozenge.

Overall, the available evidence suggests that changes in cigarette nicotine content produce only modest changes in smoking behavior and that smokers are able to tolerate substantial reductions in nicotine. In the short term, very low-nicotine or non-nicotine cigarettes have similar reinforcing potential as conventional cigarettes. Over a sustained period, very

low-nicotine cigarettes have been shown to support smoking behavior for 6 months. However, the evidence also suggests that non-nicotine cigarettes have low appeal for smokers.

The next step for understanding the potential for illicit markets is to examine how consumers view the permanent loss of specific product features that they have previously found desirable and if that loss is enough to cause them to enter the illicit market. There is a need to go beyond the small array of studies showing that, notwithstanding smokers' preference for cigarettes with nicotine, they also report that very low-nicotine cigarettes moderate their cravings and withdrawal symptoms and may support quitting. The constituents of cigarette smoke may provide sufficient secondary reinforcement to support smokers as they adjust to a low-nicotine product. These studies have shown short-term responses. The investigation of longer-term use of very low-nicotine cigarettes is needed to understand whether such use is sustained and what factors support prolonged use of low-nicotine products or cessation.

To better understand the role of nicotine in smoking behavior, research would have to assess the effects of nicotine reduction on measures of appeal and product choice. Research would also need to study how very low-nicotine products affect specific sensory features preferred by smokers and to what extent very low-nicotine cigarettes prompt smokers to either quit smoking or seek alternative products. The limited evidence to date suggests that cessation rather than sustained use of a very low-nicotine cigarette is more likely among smokers who plan to quit.

Regulation of Menthol

Menthol is an additive whose primary function is to alter the chemosensory qualities of smoking. It is responsible for producing a cooling sensation through activation of the trigeminal and other sensory nerves. Menthol modulates responses to physical stimuli, including temperature and irritation. Menthol also produces a characteristic "minty" taste, although the characteristics of menthol are different than mint flavor itself.

Mentholation of cigarettes has received attention as a product formulation feature that has the capacity to enhance the additive potential of tobacco products (Tobacco Products Scientific Advisory Committee, 2011). Mentholation has raised concerns for its appeal among subgroups of smokers targeted by cigarette manufacturers, including youth, African Americans, and women (Kreslake and Yerger, 2010). Among youth, menthol enhances initiation to smoking because it reduces the harshness of tobacco smoke, making inhalation easier for novice users (Kreslake et al., 2008b). Indeed, manufacturers have marketed menthol subbrands with lower levels of menthol to youth (Bates et al., 1999; Kreslake et al., 2008a;

Kreslake and Yerger, 2010). Brands with higher levels of menthol have been designed and marketed to older smokers, including African Americans, to capitalize on their chemosensory preferences for a smoother, cooler product (Kreslake et al., 2008b; Kreslake and Yerger, 2010). In international markets, such as Japan, menthol has been used to target women smokers and has been attributed with rapid growth in developing new consumer markets (Connolly et al., 2011).

There have been proposals to ban mentholation because of its capacity to enhance addictive potential of cigarettes, especially the initiation of dependence among youth (Tobacco Products Scientific Advisory Committee, 2011). In response to these proposals, a number of reviews of the function and effects of menthol in cigarettes have been conducted, supporting the conclusion of the positive role of menthol in initiation and maintenance of smoking behavior. However, relatively little research is available to guide understanding of how consumers who prefer mentholated products might respond if menthol in cigarettes was removed or reduced by regulation.

In an active smoking study using a switching design, menthol smokers smoked a mentholated Camel Crush product (which delivers mentholation in response to "crushing" a flavor pellet embedded in the filter) for 15 days followed by 15 days of smoking a nonmentholated Camel Crush (Strasser et al., 2013). Puffing intensity increased following the switch from menthol to nonmenthol, but there was no corresponding increase in daily smoking or biomarkers of exposure. Participants found the nonmenthol product less appealing than their usual brand. These findings suggested that change in mentholation had relatively minor influence on product use.

A survey of smokers about a potential menthol ban found that support for a ban was high among Latino and African American smokers, who are often associated with menthol use (Pearson et al., 2012). Most telling, 39 percent of menthol smokers stated that they would quit if menthol cigarettes were unavailable, and an additional 25 percent said they would switch to a nonmentholated product and try to quit. Only 13 percent stated that they would switch to a nonmentholated brand with no thought of quitting. The remainder reported that they did not know what they would do.

One survey has addressed the question of smoker behavior in the context of a menthol cigarette ban (O'Connor et al., 2012). Using an online survey format, 471 current smokers were asked about their likely response if menthol cigarettes were banned, and they also completed a simulated purchase task to estimate demand for menthol and nonmenthol cigarettes across a range of price points. Over 40 percent of menthol smokers indicated that they would miss their brand, and a similar percentage reported that they would be angry. One-quarter of menthol smokers indicated that they "would find a way to buy a menthol brand" (suggesting possible engagement with the illicit market), but more than one-third indicated

that they would try to quit. Menthol and nonmenthol smokers reported similar demand elasticity for their preferred product type. Of particular interest was the observation that menthol smokers who indicated a willingness to obtain contraband cigarettes reported a higher median consumption (cigarettes per day) and lower demand elasticity in comparison with smokers who did not express interest in contraband products.

The available evidence, while limited, shows that many smokers would pursue licit alternative outcomes, including switching to a nonmentholated cigarette or quitting, if their preferred mentholated product was not legally available. However, heavier smokers were more likely to report that they would seek mentholated cigarettes through the illicit market.

To directly assess the effects of switching from a mentholated to an unmentholated product, controlled studies would have to be done. Another important research question is whether the adoption of nonmentholated products or quitting are achievable and sustainable outcomes for smokers who prefer menthol products. Other research issues of importance are to what extent consumers will use legal strategies to acquire a mentholated product, in contrast to seeking menthol cigarettes in the illicit market. Legal options could include the use of mentholated e-cigarettes or the use of legal menthol preparations that can be added to a cigarette to produce a "self-mentholated" cigarette.

Regulation of Product Packaging

Many countries have policies that require health warnings on packaging and that restrict packaging and labeling that are misleading or deceptive. Warning labels on tobacco products are intended to alert consumers to toxic substances and other risks to their health and dissuade them from smoking. Marketing descriptors on cigarette packs such as "light" and "ultra-light" have been shown to promote false perceptions of reduced health risks (Ashley et al., 2001; National Cancer Institute, 2001; Etter et al., 2003; Hammond and Parkinson, 2009). "Light" descriptors are now banned by more than 80 countries, including Australia, Canada and EU nations. In June 2010, the FDA, acting in response to its mandate under the FSPTCA, prohibited the labeling or advertising of tobacco products with descriptors such as "light," "mild," or "low."

There has been limited research to evaluate the influence of the ban on light descriptors in any market. Evidence has shown that manufacturers have responded to the ban by adopting text descriptors and colors that continue to distinguish the target brand from its competitors, using nonbanned language. For example, in the United States and Mexico, "light" has been replaced with "gold," and consumers may have no problem identifying their usual brand (Thrasher et al., 2010; Connolly and Alpert, 2014).

Graphic health warnings, which use color pictorial images to communicate health information, were first introduced in Canada in 2001, and more than 60 countries to date have either implemented pictorial warnings or have passed legislation to do so (Cunningham, 2014). Appearance of warnings, including size, placement, and content, varies from country to country. Some packaging also includes contact information to direct consumers to resources to quit smoking.

In the United States, Section 201 of the FSPTCA directed FDA to adopt more accurate and effective health warnings on cigarette packs. In its final ruling of June 2011, FDA issued its requirement for manufacturers to include color graphics to accompany the nine new health warnings and released nine graphic warning messages. Two legal challenges by tobacco manufacturers and retailers quickly followed: one ruling upheld the graphic warnings requirements of Section 201 of the FSPTCA (see Reinberg, 2013); the other found that the labels violated tobacco manufacturers' First Amendment free speech rights (see Pelofsky, 2012). FDA has announced that new labels will be developed to comply with the First Amendment.

In December 2012, Australia became the first country to require plain packaging for tobacco products. At present, a number of other countries, including Ireland, New Zealand, the United Kingdom, and France, are considering plain packaging. The tobacco industry is aggressively challenging Australia's plain packaging law in multiple jurisdictions.[4]

Research has seldom been undertaken to investigate directly the likelihood that a consumer will engage in the illicit tobacco market when the preferred pack design is unavailable. Therefore, one can consider existing evidence on broader issues of consumer responses. The available research, as discussed below, shows that graphic health warnings reduce the appeal of tobacco products and increase public awareness of the health risks of smoking. Limited evidence suggests that a high proportion of smokers would prefer a brand without a graphic warning and that smokers take steps to conceal or avoid their exposure to graphic health warnings. There are numerous legal ways in which smokers can overcome the negative effects of graphic warnings (many of which are promoted by the tobacco industry), including the use of stickers to cover the packs or branded tins or other containers to which cigarettes sold in packs with graphic warnings can be transferred (Zacher et al., 2014). These alternatives would presum-

[4]The industry challenge on Australia's plain packaging law was overwhelmingly defeated in Australia's High Court. But as of July 2014, there are two pending actions involving trade and investment agreements. Philip Morris Asia, based in Hong Kong, has mounted a challenge to Australia's plain packaging law through the bilateral investment treaty between Hong Kong and Australia. In parallel, five countries—Cuba, Dominican Republic, Honduras, Indonesia, and Ukraine—are challenging the law at the World Trade Organization.

ably serve as mitigating factors against participation in the illicit market to obtain packs without graphic warnings.

The rest of this section considers in more detail the research on consumer behavior when graphic warnings and plain packaging are introduced.

Tobacco Health Warnings

Warning labels on product packaging communicate the risks and dangers of using the product to potential consumers. Graphic warnings usually feature highly evocative images of diseased organs or persons in advanced stages of tobacco-related illness. The vivid pictorial warnings are intended to correct widespread misconceptions about the risks of tobacco use and to enhance recall of those messages. The use of pictures and larger warnings (whether text or pictorial) has increased public awareness, information recall, and perception of risk (Strahan et al., 2002; Moodie et al., 2010; Bansal-Travers et al., 2011; Miller et al., 2011; McCool et al., 2012; Strasser et al., 2012; Hammond et al., 2013b).

Prominent pictorial warnings have been found to be more effective than text-based warnings in increasing perceptions of the risk of tobacco use and in preventing use and promoting cessation (Hammond et al., 2006; Borland et al., 2009; Centers for Disease Control and Prevention, 2011; Hammond, 2011; Azagba and Sharaf, 2013). Other studies have found similar responses among youth (Goodall and Appiah, 2008; White et al., 2008; Germain et al., 2010; Miller et al., 2011; Hammond et al., 2014). Although the tobacco industry has often mounted major campaigns against and legal challenges to graphic health warnings, the labels have been widely supported by the public—both smokers and nonsmokers (Miller et al., 2011).

For consumers that continue to smoke, cigarettes in packs with large graphic health warnings have been perceived as less attractive, less smooth, higher in tar, and having greater health risk than cigarettes in packs with smaller warnings (Hammond et al., 2014). A survey of Italian smokers found that more than half of them would change brand if faced with packs with graphic warnings, and two-thirds would feel uncomfortable showing the package (Mannocci et al., 2013). The discomfort experienced by viewing graphic warnings may lead smokers to actively avoid looking at the graphic warning component of cigarette packs (Maynard et al., 2014), and consumers may be more likely to conceal cigarette packs that contain prominent graphic warnings (Moodie and Mackintosh, 2013; Zacher et al., 2014). Other research has shown that avoidance of graphic health warnings by adolescents may be greater among smokers than those who have never smoked or smoke occasionally. A study among high school students in the United Kingdom found that daily smokers were more likely to avoid paying attention to graphic health warnings than students who were experiment-

ing with smoking and weekly smokers (Maynard et al., 2013). Consistent with this finding, a separate survey of UK youth ages 11-16 found that daily smokers were more likely than experimental smokers or nonsmokers to conceal packs to avoid warnings after graphic warnings were placed on the back of the pack (Moodie et al., 2013).

Plain (Standardized) Packaging

Plain packaging is a tobacco control policy measure to address concerns about the influence of cigarette pack descriptors and brand imagery on positive product appeal. Plain packaging requires the removal of corporate logos, trademarks, colors, and imagery; it permits manufacturers to print only the brand name in a mandated size, font, and place on the pack. Prominent health warnings and any other legally mandated information, such as toxic constituents and tax-paid stamps, may also be included. A generic color and layout are specified for the packs. Plain packaging is a more aggressive approach to reduce the appeal of tobacco products and increase the prominence of mandated health warnings.

The transnational tobacco industry has claimed that standardized packaging makes it more difficult to distinguish legitimate products from counterfeit ones, thereby encouraging illicit trade. At a recent earnings briefing for British American Tobacco, financial analysts were told by the company that plain packaging in Australia had no impact on business, but that there was an increase in the sales of counterfeit cigarettes (Greenblat, 2014). However, the Australian Customs and Border Protection Service had already seen a steady rise in the detection of illicit cigarettes, which predated and continued after the introduction of plain packaging in December 2012. Moreover, the Customs and Border Protection Service in Australia has detected only one incident involving plain packaging among the 17 million cigarettes it seizes monthly of illicitly traded tobacco (Corderoy, 2014).

Early research following the introduction of plain packaging in Australia in December 2012 has found no evidence for an increase in the sale or use of illicit tobacco products. The sale of illicit cigarettes (those that were irregularly packaged or suspiciously priced) was assessed in a retail purchase surveillance study conducted across the country before, during, and for 8 months after the introduction of plain packaging (Scollo et al., 2014a). In the months after plain packaging was introduced, less than 1 percent of packs purchased (5 of 878 packs) were deemed likely to be illicit, compared with the observed rate of 2 percent (13 of 598 packs) prior to the introduction of plain packaging.

A telephone survey of Australian smokers conducted in 2011 and 2013 found that a similar proportion reported recent use of unbranded illicit tobacco in both years, 2.3 and 1.9 percent, respectively (Scollo et al., 2014b).

In 2013, a similarly small proportion of cigarette smokers, 2.6 percent, reported purchase of one or more packs in noncompliant packaging in the past 3 months, and 1.7 percent reported purchasing cigarettes from an informal seller in the past year (Scollo et al., 2014a). While these data were collected in the early period following introduction of a highly publicized policy, a period in which implementation and enforcement efforts are expected to be unusually rigorous, the results nonetheless suggest that there has not been an increase in illicit market purchases following the introduction of plain packaging in Australia.

Considering the recency of the first implementation of policies on plain packaging, most research on the potential effects of plain packaging on consumer behavior has focused on perceptions of risk, product appeal, and future intentions to quit. Studies by Wakefield and colleagues demonstrated that the progressive reduction of pack descriptors decreased product appeal and increased negative perceptions of product taste (Wakefield et al., 2008; Germain et al., 2010). Other research suggested that plain packaging has a potentially greater negative effect on product appeal and purchase intent than increasing the size of a graphic health warning on the same pack (Wakefield et al., 2012). Plain packaging can reduce positive brand imagery among smokers of low socioeconomic status (Guillaumier et al., 2014), perhaps by undermining smokers' personal identification with brands that define social attributes and standing (Hoek et al., 2012). The effect of plain packaging on consumer perceptions of product appeal appears to show some universality across gender and cultural setting: similar negative impacts of plain packaging have been observed among young female smokers in the United Kingdom (Hammond et al., 2013a) and Brazil (White et al., 2012) and youth in New Zealand (Hoek et al., 2013).

One study has addressed the potential effects of plain packaging on consumer intentions to engage in the illicit tobacco market. Using focus groups, Moodie and colleagues (2012) asked 54 young adult smokers in the United Kingdom about their perceptions of illicit tobacco products and the effect of plain packaging on future intentions to purchase illicit tobacco. There was no evidence that plain packaging would make illicit cigarettes harder for smokers to identify, nor would it substantially change the price of illicit cigarettes given the low manufacturing cost. Smokers regarded illicit tobacco as inferior in quality, and their decision to purchase was influenced by availability and price. The findings, which require replication in a larger, controlled survey or behavioral laboratory setting, provide preliminary evidence that plain packaging is unlikely to make illicit products comparatively more appealing to consumers.

As is the case with graphic warnings, there are numerous legal ways in which smokers can overcome the negative effects of plain packaging, including the use of stickers or branded containers. Australia has witnessed

an increase in such behavior, often encouraged and supported by the tobacco industry (Zacher et al., 2014). While these strategies subvert the law and limit the public health impact of the policy, they could also serve to discourage engagement in illicit trade for branded packages.

SUPPLY

This section considers supply-side responses to possible product regulation. The relevant policy question is whether, if FDA did regulate product features and there is a substantial demand for the original product, what factors would determine whether there is a supply to meet that demand? Although this discussion separates issues of supply from those of demand, the two sides of the market cannot be segmented so neatly, nor seen in terms of a time sequence. The emergence of demand does not necessarily precede the creation of a supply system. For example, supply can precede demand in the sense that people who supply some other illegal commodities, such as marijuana, could add illicit high-nicotine cigarettes to their offerings, speculating that the market can emerge. In addition, samples may be given away free or at reduced price to stimulate demand.

Established distribution networks are important for allowing changes in supply (see Joossens and Raw, 1998, p. 67; Shleynov et al., 2008). As discussed in Chapter 2, the existing illicit market in the United States consists largely of bootlegging from low-tax jurisdictions to high-tax jurisdictions, which results in cheaper cigarettes to consumers in high-tax jurisdictions. If features and constituents of cigarettes are prohibited at the federal level, bootlegging across state borders would not be the means to supply illegal products. The source of such illegal products would have to come from either countries in which such products are legal, counterfeits, or domestic illegal production.

In cases of large-scale smuggling, contraband cigarettes, similar to other contraband, such as illegal drugs, would enter the United States under the guise of international commerce or international noncommercial traffic, or they would be brought across the border clandestinely outside of regular border crossings. In small amounts, contraband cigarettes might also be transported by mail or parcel service. As noted in Chapter 2, there is evidence that smuggling of illegal cigarettes from abroad and the presence of counterfeit cigarettes of foreign origin has occurred in the United States (U.S. General Accounting Office, 2004; T. Chen, 2008). There is also evidence that the global tobacco industry has been complicit in the large-scale smuggling.

Domestic illegal production could arise in several ways. Some native tribes in the United States already produce their own cigarettes and could potentially produce cigarettes with prohibited features. Native American

brands produced on tribal land have the potential to play the same role as cheap whites: they could be sold in bulk for distribution outside of tribal lands. The existence of a distribution system for illegal cigarettes makes Indian reservations a potential source of illegal manufacture within the United States. As discussed in Chapter 7, Indian reserves in Canada have played this role. Fourth-tier manufacturers are also a potential source of domestic illegal production (see discussion in Chapter 2).

An important policy question is whether smuggling from outside the United States or illegal production within the country are likely to emerge as major sources of illicit tobacco if the formulation or design of specific products is restricted. It is difficult to consider what might occur because there are few instances in which a legal product in wide use is suddenly banned for reasons of public health. One instance is the prohibition of chlorofluorocarbons (CFCs), a major chemical (used as a refrigerant), following the adoption of the Montreal Protocol in 1987, aimed at preventing expansion of the ozone hole. The ban led to the emergence of a market in the prohibited substances, mostly from developing to developed countries (De Sombre, 2000). It is claimed that at one point in the 1990s smuggled CFCs were second in value only to drugs as illegal imports (Saab, 1998). There are a few ways in which banned CFCs and cigarettes are similar. For example, both illicit products are similar to their legal imports, and it takes considerable effort for customs officers to distinguish legal from illegal shipments. There are of course differences as well: CFCs are used in manufacturing within the United States while cigarettes go through a distribution system that includes no additional processing.

Currently, the legal supply of tobacco products includes a range of controls on manufacturers and distributors that would inhibit illegal production (see Chapter 5). Similarly, with regard to international smuggling, general customs enforcement appears to be robust. Furthermore, cigarettes are bulky relative to even the least compact of illegal drugs, marijuana. For comparison: marijuana sells at the import level for about $2.50 per cubic centimeter, and the same volume of cigarettes would generate only about 2 cents.[5] To provide just 10 percent of the current estimated U.S. illicit market of 124 million cartons (see Chapter 4) would require smuggling a volume equivalent to 142.6 million cubic meters of conventionally packaged cigarette cartons. From a logistical point of view, this kind of smuggling into the United States would be an order of magnitude more challenging than

[5]Volume is the principal determinant of risk for smugglers. Prices are of course usually quoted per unit weight. We have converted $10,000 per kilogram for marijuana into a measure per unit volume by assuming that a kilogram of commercial-grade marijuana occupies 3,939 cubic centimeters (Center for Investigative Reporting, 2013). A carton of cigarettes has a volume of 1,150 cubic centimeters. We use a smuggled import price of $20 per carton, based on current base prices, minus 80 percent for federal taxes, as an approximation.

current major smuggling activities. However, cigarettes are smuggled into many countries, even those with strict border controls, so it is not impossible to do so on a large scale.

The Internet may also play a role in connecting domestic buyers with foreign suppliers of illegal tobacco products. In recent years, government agreements with credit card and major shipping companies to ban transactions and shipments of all Internet cigarette sales have been effective in limiting the Internet as a means for illegal purchases (Ribisl et al., 2011). Currently, however, there are ways to avoid the agreements: Internet vendors can accept other forms of payment (than credit cards), and they can use other delivery options.

The discussion so far has focused on the products of an illegal market. However, there is also a question as to whether domestic wholesale and finance distribution systems would develop to support such a market. Some apparently profitable illegal market niches are never filled: for example, as discussed in Chapter 4, there are smuggling corridors (pairs of high-tax–low-tax states) in the United States for which there is surprisingly little activity. The reasons that such apparently profitable markets do not develop are not clear.

There has been no systematic research that would help assess what factors are likely to determine the supply response to product regulation. The likelihood that a large-scale illicit supply will develop in response to product regulations will be influenced by the potential profitability of supplying smokers with illicit products. The profit potential may be limited by the development of close substitutes that are likely to remain legal. For example, with the ready availability of liquid nicotine capsules to supply the e-cigarette market, it is easy to imagine devices that allow smokers to add nicotine to the flow of smoke from non-nicotine cigarettes.

E-CIGARETTES: A TOBACCO ALTERNATIVE

One possible outcome from regulation of conventional cigarettes may be the adoption of e-cigarettes as an alternative legal product. E-cigarettes and other electronic nicotine delivery systems have attracted considerable attention among the general public as well as the public health community since the original prototype was exported from China in 2004: see Box 8-1. The emergence of e-cigarettes has greatly increased the complexity of the nicotine market from the relative simplicity of the cigarette market. Added to the complexity is the fact that prominent tobacco companies are entering the e-cigarette market (Esterl, 2013).

There is wide variation among countries in their approach to electronic cigarette regulation. Some countries, including Argentina and Singapore, have banned electronic cigarettes completely (Agence France-Presse, 2011;

BOX 8-1
E-Cigarettes: Benefits and Risks

E-cigarettes have been promoted as a safer alternative (than conventional cigarettes) for delivering nicotine to smokers. Because e-cigarettes deliver nicotine to a user through vaporization of a nicotine solution, the harmful by-products of combustion are eliminated. This potential for lowered exposure risk has promoted substantial public interest. Recent evidence suggests that the prevalence of e-cigarette use, especially among adolescents who currently smoke, has grown rapidly (Centers for Disease Control and Prevention, 2013).

Although e-cigarettes have been linked to helping smokers quit traditional cigarettes (Bullen et al., 2013; Etter and Bullen, 2014), as well as lowering the number of cigarettes smoked per day in those not seeking to quit (Caponnetto et al., 2013), the data are by no means conclusive or without contradiction (Bialous and Sarma, 2014; Carr, 2014; Doyle et al., 2014; Grana et al., 2014). Public health concerns include the new use of e-cigarettes by nonsmokers or former smokers (which may increase the likelihood of conventional cigarette use); dual use of e-cigarettes and conventional cigarettes, which undermines the full potential for exposure reduction and undermines cessation; and a negative effect on what has been progress in reducing and stigmatizing tobacco use, particularly in public locations (Fairchild et al., 2014).

There is also concern that liquid nicotine devices might pose new health risks. Vegetable glycerin, added to make smoke visible when the nicotine solution is vaporized from e-cigarettes, has resulted in a documented case of lipoid pneumonia, a consequence of lipid substances being inhaled and causing inflammation in the lungs (McCauley et al., 2012). E-liquids—contained in the cartridges to fill e-cigarettes—are not regulated by FDA, yet purportedly contain neurotoxins that could induce seizures or death (Richtel, 2013). E-liquid poisonings are increasingly being reported, particularly among young children.

The ability of e-cigarettes to be used as a drug delivery device is another major concern. E-cigarette cartridges are commonly sold containing liquid nicotine, but they can easily be refilled with a liquefied illegal drug (Cobb and Abrams, 2011). Such reuse has occurred in the United States, especially among youth, with users replacing the nicotine with drugs, such as marijuana or heroin, to create a smokeless and odorless drug delivery system (Erwin, 2013; Walser, 2013).

Given the recent emergence of e-cigarettes and changing technology, research on them and their use is just getting under way, and the broad implications of widespread adoption of e-cigarettes are not yet known.

Euromonitor International, 2013c); others have not regulated the products at all (Euromonitor International 2013b). Some countries have adopted a two-tier approach: Australia, for example, permits non-nicotine cartridges but outlaws those containing nicotine (Grace, 2008). Still others have a more complex approach, regulating e-cigarettes as medicinal devices (Euromonitor International, 2013a) or imposing restrictions on advertising and flavors (Keating, 2014).

In the United States, a proposed deeming regulation was issued April 2014,[6] and it is expected that e-cigarettes will eventually fall under the regulatory authority of the FDA. In its proposed regulation for e-cigarettes, FDA included a requirement for FDA premarket review, restrictions on sale to minors, prohibition of scientifically unsupported health claims, and mandatory package warning labels. However, the proposed deeming rule did not include current plans for regulation of characterizing flavors or restrictions on marketing strategies for e-cigarettes.

A regulatory ban on menthol or on high levels of nicotine may be difficult to enforce given current and emerging technologies. Several cigarette brands produced by major U.S. manufacturers feature an embedded menthol capsule in the filter that provides mentholation when crushed. It is possible that a cigarette holder could be developed that would hold capsules of menthol, nicotine, or other additives. In the current regulatory environment, preparations containing nicotine and menthol are readily and legally available from e-cigarette retailers and other sources, and devices are available that facilitate the administration of these substances through vaporization. That is, there may be little technical impediment to the development of devices that bridge a gap to allow modification of conventional cigarettes using e-cigarette technology. As a consequence, regulation of high nicotine levels or menthol flavoring may lead not to illicit cigarette markets, but, instead, may increase demand for electronic cartridges that contain nicotine or menthol concentrates.[7]

The relatively recent introduction of e-cigarettes makes it difficult to forecast what impact this new product will have on both legal and illicit tobacco consumption. Until recently, the e-cigarette market had been made up of over 200 companies, most of which were small and independent from large tobacco companies. With the entrance of large tobacco companies, increased competition, advertising, and international commerce are expected to significantly alter the e-cigarette market (Esterl, 2013; Sebastian and McDermott, 2013). Product databases, such as UN's Comtrade system for coding such products in international commerce, currently do not have unique codes for e-cigarette devices, their cartridges, or their refillable contents, making it difficult to measure changes in the trade of these products.

In addition, there are no detailed data on e-cigarette use patterns, such as frequency of use, duration, dual use of conventional cigarettes, and motivations for use (Grana et al., 2014). If some feature or use of cigarettes

[6] A deeming regulation is a proposed regulation that would include products meeting the definition of a "tobacco product" under the Tobacco Control Act to be subject to the FDA's jurisdiction.

[7] The proposed rule giving FDA the authority to regulate e-cigarettes would also include tobacco product components or parts used in consumption, such as e-cigarette cartridges.

or e-cigarettes are regulated, one research approach might be to compare prevalence and use data with sales data to measure change in activity, but existing data sources are not detailed enough for accurate measurement. Some of these data needs can piggyback onto country-level surveys that do cover tobacco use. The National Youth Tobacco Survey, National Health and Nutrition Examination Survey, and the HealthStyles Survey ask several questions about e-cigarette awareness and use (King et al., 2013). However, surveys would need to be more detailed with respect to the measurement of e-cigarette use, not just whether an e-cigarette has ever been used, for these data to serve as useful measurement instruments. Furthermore, unlike cigarettes, e-cigarettes do not have an excise tax levied on them, so an independent measurement of sales volume or tax revenues does not exist.[8]

There is a complex set of issues with regard to e-cigarettes. Strong research designs that could provide information have not, so far, been employed. The uncertainty suggests a need for research on the impact of such regulatory action in other countries: one possibility is Brazil's pending ban on tobacco additives (including menthol). A shift to electronic delivery systems containing additives that are banned from conventional tobacco products may not be a perfect substitute for the current products, but could limit both the effectiveness of potential regulations in terms of reducing tobacco use in general and the profitability and, consequently, the size of an illicit tobacco market.

SUMMARY AND RECOMMENDATIONS

Under the FSPTCA, FDA has authority to regulate tobacco products in order to protect public health, including a requirement that new tobacco products do not have greater potential for initiating or maintaining dependence than existing products. To fulfill its responsibilities, FDA is considering a wide range of policy options, which includes trying to estimate the possible effects of those options on the illicit tobacco market.

Many regulatory options designed to reduce demand for tobacco products will necessarily involve strategies to reduce the addictive potential of those products, which is likely to reduce their appeal to consumers. According to the model presented in Figure 1-1 (in Chapter 1), if product appeal is reduced, consumers might try to quit tobacco use, seek a legal version of the same or an alternative product, or engage in the illicit mar-

[8]There are two sources of data that could be helpful—TechNavio and Research and Markets: data made available to researchers might provide useful market and sales forecasts to help identify areas that may be most inclined to see a rise in e-cigarette use. See TechNavio at http://www.technavio.com/report/global-e-cigarette-market-2014-2018 and Research and Markets at http://www.researchandmarkets.com/research/gx8h33/us_electronic [January 2015].

ket. Policy makers need information on the factors that promote choice of one option over another and the proportions of smokers that are likely to choose each option. Current research efforts that have focused on changes to consumer satisfaction and smoking behavior in response to variations in product composition, design, or packaging provide some information, but the findings are suggestive, not conclusive.

Product modifications, such as increased ignition propensity and reduced filter ventilation, have been shown to have limited impact on product appeal when considered in isolation from other product features. Reductions in nicotine level and mentholation may have a more significant effect on reducing product appeal. However, findings on consumer behavior in response to very low levels of nicotine are mixed: some studies found smokers are more likely to quit than seek alternative products and some studies found little or no change in cigarette consumption. The only research to date on menthol has been short-term switching studies, which suggest that changes in smoking behavior and habits are minimal for those switched to unmentholated cigarettes for short periods. Research on graphic warnings and plain packaging has shown that consumers report lower product appeal for both packaging possibilities, but the effects on product preference and consumption appear to be modest.

Overall, the limited evidence to date suggests that demand for illicit versions of the current conventional cigarette, if they are modified through regulations, may be small. The availability of alternative options, including use of the now-regulated products and other licit products and cessation, may diminish demand for illicit products. Although some smokers may seek more appealing illicit products if available and accessible, established distribution networks and new sources of product (which would either have to be smuggled from other countries or produced illegally) would be necessary to create a supply of cigarettes with prohibited features. The profit potential of a new type of illicit tobacco market would likewise be limited by the availability and development of legal products that are close substitutes, as well as the robustness of enforcement.

Research on many aspects of product demand and supply in response to changes in tobacco products would be very valuable to policy makers. It would be useful to test whether certain product characteristics are more appealing to consumer subgroups, including youth, women, racial/ethnic minorities, and smokers with specific chemosensory preferences. In addition, studies could explicitly consider whether or not individual desire for a particular characteristic outweighs the costs of acquiring a product on the illicit market. Such research would benefit from the use of both traditional and innovative assessment of consumer perceptions, including measures of appeal, chemosensory preferences, risk perceptions, nicotine effect and liking, willingness to pay, and future use intentions, as well as willingness to

obtain a product from an illicit source. It would be useful to have studies that simultaneously assess the influence of price, product quality, ease of access, and risk of social or legal penalty on consumers' product preferences and intent to use. The new challenges and alternatives posed by the availability of e-cigarettes deserve special attention.

RECOMMENDATION 8-1 Research is needed to examine how smokers respond to the permanent loss of specific product features that they have previously found desirable, as a result of bans and restrictions on key constituents and additives as well as changes to packaging. Research should assess consumers' intentions to seek products with banned features through the illicit market in comparison with other options, such as quitting and using alternative products. Factors that promote individual variation in response should also be examined.

RECOMMENDATION 8-2 Research is needed on the relationship between the use of e-cigarettes and the use of conventional tobacco products and on the role of e-cigarettes as an alternative to participation in the illicit tobacco market. Longitudinal studies are needed to understand the dynamics of the relationship and to determine the extent of full substitution of e-cigarettes compared with dual use or reversion to conventional products. Such work will require improvements to sources of data, including unique coding for e-cigarettes in international commerce. Furthermore, although some current surveys include questions on e-cigarette use and awareness, more detailed questions are needed on factors that affect use and their relationship to the use of conventional cigarettes.

RECOMMENDATION 8-3 The paucity of studies on the supply side of the illicit tobacco market presents challenges for research, and creative methodologies will be needed. One potential source of needed information may come from reviews of analogous markets, perhaps in other countries, where existing products have been removed from the market, but similar or related products continue to be available in legal commerce, to determine what factors influenced the emergence of illegal supply.

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Appendix

Biographical Sketches of Committee Members and Staff

Peter Reuter (*Chair*) is a professor in the School of Public Policy and the Department of Criminology at the University of Maryland, College Park. He is also a senior economist at RAND and, currently, a visiting fellow at the Center for Global Development. He founded and directed RAND's Drug Policy Research Center, a multidisciplinary research program. Much of his research has dealt with alternative approaches to controlling drug problems, both in the United States and Western Europe. In recent years, he has also focused on money laundering control and on the flows of illicit funds from developing nations. He served as the first president of the International Society for the Study of Drug Policy. He has a Ph.D. in economics from Yale University.

Emily Backes, who served as a research associate for this project, has also worked on a project on juvenile justice reform for the Committee on Law and Justice at the National Research Council. She previously worked with the Committee on Human Rights of the National Academy of Sciences, National Academy of Engineering, and Institute of Medicine. She has a B.A. and an M.A. in history from the University of Missouri.

Martin Bouchard is an associate professor of criminology at Simon Fraser University in British Columbia, Canada, and director of the International Cybercrime Research Centre. Previously, he was a postdoctoral fellow in criminology at the University of Maryland. His work focuses on the organization and dynamics of illicit markets and on examining the impact of social networks in various criminal career outcomes. He has published extensively

on methodologies to estimate the size of illicit markets and has led numerous research projects on this topic that have been funded by the Canadian government. He has a Ph.D. from the University of Montreal, Canada.

Frank J. Chaloupka is a distinguished professor of economics and public health at the University of Illinois at Chicago. He is also director of the university's Health Policy Center and its Collaborating Center for the Economics of Tobacco Control of the World Health Organization. He is an affiliate of the National Bureau of Economic Research, and he directs Impacteen, a collaboration funded by the Robert Wood Johnson Foundation that investigates common threats to adolescent health, such as obesity, substance abuse, and tobacco use. His research focuses on the impact of economic, policy, and environmental influences on health behaviors and their consequences, including tobacco, alcohol, and illicit drug use, diet, and physical activity. He has a Ph.D. in economics from the City University of New York.

Philip J. Cook is ITT/Sanford professor of public policy and professor of economics and sociology at Duke University. He has conducted research on various aspects of public health policy, social policy, and crime and criminal justice, with a sustained focus on gun violence and gun policy. He serves as co-organizer of the Workshop on the Economics of Crime of the National Bureau of Economic Research. His current work is in the areas of truancy prevention, school crime prevention, school trajectories, prisoner reentry, economics of crime prevention, and alcohol control policy. He is a member of the Institute of Medicine and an honorary fellow of the American Society of Criminology and of the Academy of Experimental Criminology. He has a Ph.D. in economics from the University of California at Berkeley.

Matthew C. Farrelly is a chief scientist and senior director of the Public Health Policy Research Program at RTI International. His work focuses on tobacco control, specializing in cigarette excise taxes, state tobacco control programs, mass media campaigns, and policy interventions. His recent research has focused on understanding how youth and adults respond to antismoking campaign messages. He has extensively studied New York's tobacco control program, which has been successful in reducing smoking with a combination of restrictions on smoking in public places, a hard-hitting antismoking campaign, and high cigarette excise taxes. He has a B.A. in economics and French from Indiana University and a Ph.D. in economics from the University of Maryland at College Park.

Geoffrey T. Fong is professor of psychology and of public health and health systems at the University of Waterloo in Ontario, Canada, and a senior

investigator at the Ontario Institute for Cancer Research. He is founder and chief principal investigator of the International Tobacco Control Policy Evaluation Project, an interdisciplinary collaboration of more than 100 researchers in 22 countries around the world that evaluates the impact of the tobacco control policies of the Framework Convention on Tobacco Control of the World Health Organization. He has also conducted research on the effects of alcohol intoxication on risky health behaviors (e.g., risky sex) and on the creation, implementation, and evaluation of behavioral interventions to reduce the risk of HIV and sexually transmitted diseases among inner-city adolescents. He has a B.A. in psychology from Stanford University and a Ph.D. in social psychology from the University of Michigan.

Rachel A. Harmon is the Sullivan & Cromwell professor of law at the University of Virginia. Her research focuses on the legal regulation of law enforcement. Previously, she served as a prosecutor in the Criminal Section of the Civil Rights Division at the U.S. Department of Justice, prosecuting hate crimes and official misconduct cases, many of which involved excessive force or sexual abuse by police officers. Prior to that position, she clerked for Judge Guido Calabresi of the U.S. Court of Appeals for the Second Circuit and Justice Stephen Breyer of the U.S. Supreme Court. She has an M.Sc. in political theory and an M.Sc. in political sociology, both with distinction, from the London School of Economics, and a J.D. from Yale Law School.

Edward R. Kleemans is a professor in the School of Criminology and in the Faculty of Law at VU University Amsterdam, the Netherlands, and director of a research program on empirical and normative studies in the Faculty of Law. He is also engaged in the Dutch Organized Crime Monitor, a systematic, continuing research program of the Research and Documentation Centre (WODC) of Erasmus University, Rotterdam, and VU University, Amsterdam. His research focuses on organized crime, including drug trafficking, human smuggling, human trafficking, fraud and money laundering, social organization, embeddedness, and the interaction between offenders and the criminal justice system. Previously, he was head of the Crime, Law Enforcement, and Sanctions Research Division of WODC in the Hague. He has a graduate degree in public administration and public policy and a Ph.D., both with the highest possible distinction, from Twente University, the Netherlands.

Conrad Phillip Kottak is the Julian H. Steward collegiate professor emeritus of anthropology at the University of Michigan. His focus is the "new ecological anthropology," an approach that considers each society's place in the modern world economy to be just as crucial as its environmental setting. He has conducted pioneering studies of societies in Brazil, the Buganda of

Africa, and the Betsileo and Merina of Madagascar that exemplify this approach. This interest links his earlier work on ecology and state formation in Africa and Madagascar to his more recent research on global change, national and international culture, and the mass media. He is a member of the National Academy of Sciences and the American Academy of Arts and Sciences. He has an A.B. from Columbia College and a Ph.D. from Columbia University.

Michael Levi is professor of criminology at Cardiff University, Wales. His international research is focused on the organization and control of white-collar and organized crime, corruption, and money laundering. He is a member of the European Commission's Group of Experts on Corruption and of the World Economic Forum's Illicit Trade and Organised Crime Council. He is also a scientific expert to the Council of Europe's Committee on Organised Crime, and he has served as an adviser to the strategy unit on organized crime and money laundering issues for the prime minister of the United Kingdom. He is a fellow of the Academy of Social Sciences and a fellow of the Learned Society of Wales and a senior fellow at Rand Europe. He has a B.A. and an M.A. from the University of Oxford, a diploma in criminology from Cambridge University, a Ph.D. from Southampton University, and a D.Sc. in economics from Cardiff University, all in the United Kingdom.

Malay Majmundar, who served as study director for this project, is a senior program officer for the Committee on Law and Justice in the Division of Behavioral and Social Sciences and Education at the National Research Council. He has previously worked on studies on criminal justice, immigration enforcement and statistics, demography and population aging, and federal budget policy. He has a B.A. in political science from Duke University, a J.D. from Yale University, and a Ph.D. in public policy from the University of Chicago.

Emily Owens is an associate professor of criminology at the University of Pennsylvania. She studies a wide range of topics in the economics of crime, including policing, sentencing, and the impact of local public policies on criminal behavior. She focuses primarily on the effect of government regulations on crime, which includes studying how government policies affect the prevalence of criminal activity as well as the structure and response of the criminal justice system. Her current work includes research projects on police training and performance, alcohol regulation, immigration policy, and economic development programs. Previously, she was at Cornell University in policy and management. She has a B.S. in applied math and economics

from Brown University and an M.A. and a Ph.D. in economics from the University of Maryland.

Vaughan W. Rees is a lecturer on social and behavioral sciences and interim director of the Center for Global Tobacco Control at the Harvard School of Public Health. His research on tobacco control encompasses several interrelated domains, including assessment of tobacco product design, potential for dependence, product use and individual risk, and control of tobacco harms through policy and other interventions. His other research interests involve design and evaluation of interventions to reduce tobacco use and secondhand smoke exposure among underserved populations, including people in public housing settings. He has a B.Sc. (Hons) from Monash University, Australia, and a Ph.D. from the University of New South Wales, Australia.

Julie Anne Schuck is a senior program associate at the National Research Council, where she has worked for the Committee on Law and Justice and other committees in the Division of Behavioral and Social Sciences and Education. Her work has covered projects on science, technology, engineering, and mathematics education; privacy protection and terrorism prevention; the science of human-system integration; and, most recently, on reform efforts in juvenile justice and the growth of incarceration in the United States. She has an M.S. in education from Cornell University and a B.S. in engineering physics from the University of California, San Diego.

Anthony D. So is director of the Program on Global Health and Technology Access and professor of the practice of public policy and global health at the Sanford School of Public Policy at Duke University and the Duke Global Health Institute. He has been principal investigator for projects with the Southeast Asia Tobacco Control Alliance and the American Cancer Society that examined the evidence of illicit trade and the political economy of tobacco across seven countries in Southeast Asia. Previously, he served as associate director of the Rockefeller Foundation, where he launched the "Trading Tobacco for Health" initiative and as a White House Fellow in the U.S. Department of Health and Human Services, where he developed the department's first, online public service announcement, "Smoke-Free Kids and Soccer." He also formerly served on the National Interagency Council on Smoking and Health. He is a recipient of the Robert Wood Johnson Investigator Award in Health Policy Research. He has a B.A. in philosophy and biomedical sciences and an M.D. from the University of Michigan and an M.P.A. from Princeton University.

Klaus von Lampe is an associate professor in the Department of Law, Police Science, and Criminal Justice Administration at the John Jay College of Criminal Justice. He has conducted research on the emergence and functioning of illegal markets and illegal power structures, using the illegal cigarette trade as a case study. His other research interests include drug trafficking, strategic crime analysis, and crime prevention. Previously, he worked as a researcher at Free University Berlin. He is editor-in-chief of *Trends in Organized Crime*, a member of the editorial board of *Crime, Law and Social Change*, coeditor of the *Cross-border Crime Colloquium* book series, and host of the Organized Crime Research website (http://www.organized-crime.de). He graduated from the law and political science programs at Free University Berlin, Germany, and has a doctoral degree from Goethe University Frankfurt and Main, Germany.

Heather Wipfli is an assistant professor in the Department of Preventive Medicine at the Keck School of Medicine and the associate director for the Institute for Global Health at the University of Southern California. Her research focuses on international cooperation and governance approaches to improve health, specifically in regard to global chronic disease control, including tobacco use, obesity, and exposure to air pollution. Previously, she directed research and training for the Institute for Global Tobacco Control at the Johns Hopkins Bloomberg School of Public Health and worked on the development of the Framework Convention on Tobacco Control at the World Health Organization. She has published work on global tobacco control, globalization and health, capacity building in low- and middle-income countries, and health security. She has a Ph.D. in international studies from the Graduate Institute of International Studies at the University of Geneva, Switzerland.