

## SPECIAL COMMUNICATION

## Curbing the epidemic: governments and the economics of tobacco control

The World Bank

*Below we reprint the executive summary of an important new report published by the World Bank. This report has its origins in the converging efforts of several partners to address a shared problem: the relative neglect of economic contributions to the debate on tobacco control. In 1997, at the tenth world conference on tobacco in Beijing, China, the World Bank organised a consultation session on the economics of tobacco control. The meeting was part of an ongoing review of the Bank's own control policies. There was clear recognition at this meeting that insufficient global attention was being paid to the economics of smoking-related deaths. The meeting's participants also agreed that the discipline of economics was not being applied to tobacco control in many countries, and that even where economic approaches were being used, their methodology was of variable quality.*

*At the same time that the World Bank began reviewing its policies, economists at the University of Cape Town, South Africa, had begun a project on the economics of tobacco control for southern Africa. These initiatives were brought together, in partnership with economists at the University of Lausanne, Switzerland, and others, to form a wider review. The work culminated in a conference in Cape Town in February 1998. The proceedings of the conference have been published separately.<sup>1</sup> The collaboration led to a broader analysis of the economics of tobacco control, involving economists and others from a wide range of countries and institutions.<sup>2</sup> This report summarises the findings of those studies as they are relevant to policy-makers.*

### Executive summary

Smoking already kills one in 10 adults worldwide. By 2030, perhaps a little sooner, the proportion will be one in six, or 10 million deaths per year—more than any other single cause. Whereas until recently this epidemic of chronic disease and premature death mainly affected the rich countries, it is now rapidly shifting to the developing world. By 2020, seven of every 10 people killed by smoking will be in low- and middle-income nations.

#### WHY THIS REPORT?

Few people now dispute that smoking is damaging human health on a global scale. However, many governments have avoided taking action to control smoking—such as higher taxes, comprehensive bans on advertising and promotion, or restrictions on smoking in public places—because of concerns that their interventions might have harmful economic consequences. For example, some policymakers fear that reduced sales of cigarettes would mean the permanent loss of thousands of jobs; that higher tobacco taxes would result in lower government revenues; and that higher prices would encourage massive levels of cigarette smuggling.

This report examines the economic questions that policymakers must address when contemplating tobacco control. It asks whether smokers know the risks and bear the costs of their consumption choices, and explores the options for governments if they decide that intervention is justified. The report assesses the expected consequences of tobacco control for health, for economies, and for indi-

viduals. It demonstrates that the economic fears that have deterred policymakers from taking action are largely unfounded. Policies that reduce the demand for tobacco, such as a decision to increase tobacco taxes, would not cause long-term job losses in the vast majority of countries. Nor would higher tobacco taxes reduce tax revenues; rather, revenues would climb in the medium term. Such policies could, in sum, bring unprecedented health benefits without harming economies.

#### CURRENT TRENDS

About 1.1 billion people smoke worldwide. By 2025, the number is expected to rise to more than 1.6 billion. In the high-income countries, smoking has been in overall decline for decades, although it continues to rise in some groups. In low- and middle-income countries, by contrast, cigarette consumption has been increasing. Freer trade in cigarettes has contributed to rising consumption in these countries in recent years.

Most smokers start young. In the high-income countries, about eight out of 10 begin in their teens. While most smokers in low- and middle-income countries start in the early twenties, the peak age of uptake in these countries is falling. In most countries today, the poor are more likely to smoke than the rich.

#### THE HEALTH CONSEQUENCES

The health consequences of smoking are twofold. First, the smoker rapidly becomes addicted to nicotine. The addictive properties of nicotine are well documented but are often underestimated by the consumer. In the



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United States, studies among final-year high school students suggest that fewer than two out of five smokers who believe that they will quit within five years actually do quit. About seven out of 10 adult smokers in high-income countries say they regret starting, and would like to stop. Over decades and as knowledge has increased, the high-income countries have accumulated a substantial number of former smokers who have successfully quit. However, individual attempts to quit have low success rates: of those who try without the assistance of cessation programs, about 98 percent will have started again within a year. In low- and middle-income countries, quitting is rare.

Smoking causes fatal and disabling disease, and, compared with other risky behaviors, the risk of premature death is extremely high. Half of all long-term smokers will eventually be killed by tobacco, and of these, half will die during productive middle age, losing 20 to 25 years of life. The diseases associated with smoking are well documented and include cancers of the lung and other organs, ischemic heart disease and other circulatory diseases, and respiratory diseases such as emphysema. In regions where tuberculosis is prevalent, smokers also face a greater risk than nonsmokers of dying from this disease.

Since the poor are more likely to smoke than the rich, their risk of smoking-related and premature death is also greater. In high- and middle-income countries, men in the lowest socioeconomic groups are up to twice as likely to die in middle age as men in the highest socioeconomic groups, and smoking accounts for at least half their excess risk.

Smoking also affects the health of nonsmokers. Babies born to smoking mothers have lower birth weights, face greater risks of respi-

ratory disease and are more likely to die of sudden infant death syndrome than babies born to nonsmokers. Adult nonsmokers face small but increased risks of fatal and disabling disease from exposure to others' smoke.

#### DO SMOKERS KNOW THEIR RISKS AND BEAR THEIR COSTS?

Modern economic theory holds that consumers are usually the best judges of how to spend their money on goods and services. This principle of consumer sovereignty is based on certain assumptions: first, that the consumer makes rational and informed choices after weighing the costs and benefits of purchases, and, second, that the consumer incurs all costs of the choice. When all consumers exercise their sovereignty in this way—knowing their risks and bearing their costs—then society's resources are, in theory, allocated as efficiently as possible. This report examines consumers' incentives to smoke, asks whether their choice to do so is like other consumption choices, and whether it results in an efficient allocation of society's resources, before discussing the implications for governments.

Smokers clearly perceive benefits from smoking, such as pleasure and the avoidance of withdrawal, and weigh these against the private costs of their choice. Defined this way, the perceived benefits outweigh the perceived costs, otherwise smokers would not pay to smoke. However, it appears that the choice to smoke may differ from the choice to buy other consumer goods in three specific ways.

First, there is evidence that many smokers are *not* fully aware of the high risks of disease and premature death that their choice entails. In low- and middle-income countries, many smokers may simply not know about these risks. In China in 1996, for example, 61 percent of smokers questioned thought that tobacco did them "little or no harm." In high-income countries, smokers know they face increased risks, but they judge the size of these risks to be lower and less well established than do nonsmokers, and they also minimize the personal relevance of these risks.

Second, smoking is usually started in adolescence or early adulthood. Even when they have been given information, young people do not always have the capacity to use it to make sound decisions. Young people may be less aware than adults of the risk to their health that smoking poses. Most new recruits and would-be smokers also underestimate the risk of becoming addicted to nicotine. As a result, they seriously underestimate the future costs of smoking—that is, the costs of being unable in later life to reverse a youthful decision to smoke. Societies generally recognize that adolescent decision-making capacity is limited, and restrict young people's freedom to make certain choices, for example, by denying them the right to vote or to marry until a certain age. Likewise, societies may consider it valid to restrict young people's freedom to choose to become addicted to smoking, a behavior that carries a much greater risk of eventual death

than most other risky activities in which young people engage.

Third, smoking imposes costs on nonsmokers. With some of their costs borne by others, smokers may have an incentive to smoke more than they would if they were bearing all the costs themselves. The costs to nonsmokers clearly include health damage as well as nuisance and irritation from exposure to environmental tobacco smoke. In addition, smokers may impose financial costs on others. Such costs are more difficult to identify and quantify, and variable in place and time, so it is not yet possible to determine how they might affect individuals' incentives to smoke more or less. However, we briefly discuss two such costs, healthcare and pensions.

In high-income countries, smoking-related healthcare accounts for between 6 and 15 percent of all annual healthcare costs. These figures will not necessarily apply to low- and middle-income countries, whose epidemics of smoking-related diseases are at earlier stages and may have other qualitative differences. Annual costs are of great importance to governments but, for individual consumers, the key question is the extent to which the costs will be borne by themselves or by others.

In any given year, smokers' healthcare costs will on average exceed nonsmokers'. If healthcare is paid for to some extent by general public taxation, nonsmokers will thus bear a part of the smoking population's costs. However, some analysts have argued that, because smokers tend to die earlier than nonsmokers, their *lifetime* healthcare costs may be no greater, and possibly even smaller, than nonsmokers'. This issue is controversial, but recent reviews in high-income countries suggest that smokers' lifetime costs are, after all, somewhat higher than nonsmokers', despite their shorter lives. However, whether higher or lower, the extent to which smokers impose their costs on others will depend on many factors, such as from the existing level of cigarette taxes, and how much healthcare is provided by the public sector. In low- and middle-income countries, meanwhile, there have been no reliable studies of these issues.

The questions of pensions is equally complex. Some analysts in high-income countries have argued that smokers "pay their way" by contributing to public pension schemes and then dying earlier, on average, than nonsmokers. However, this question is irrelevant to the low- and middle-income countries where most smokers live, because public pension coverage in these countries is low.

In sum, smokers certainly impose some physical costs, including health damage, nuisance, and irritation, on nonsmokers. They may also impose financial costs, but the scope of these is still unclear.

#### APPROPRIATE RESPONSES

It appears unlikely, then, that most smokers either know their full risks or bear the full costs of their choice. Governments may consider that intervention is therefore justified,

primarily to deter children and adolescents from smoking and to protect nonsmokers, but also to give adults all the information they need to make an informed choice.

Governments' interventions should ideally remedy each identified problem specifically. Thus, for example, children's imperfect judgments about the health effects of smoking would most specifically be addressed by improving their education and that of their parents, or by restricting their access to cigarettes. But adolescents respond poorly to health education, perfect parents are rare, and existing forms of restriction on cigarette sales to the young do not work, even in the high-income countries. In reality, the most effective way to deter children from taking up smoking is to increase taxes on tobacco. High prices prevent some children and adolescents from starting and encourage those who already smoke to reduce their consumption.

Taxation is a blunt instrument, however, and if taxes on cigarettes are raised, adult smokers will tend to smoke less and pay more for the cigarettes that they do purchase. In fulfilling the goal of protecting children and adolescents, taxation would thus also be imposing costs on adult smokers. These costs might, however, be considered acceptable, depending upon how much societies value curbing consumption in children. In any case, one long-term effect of reducing adult consumption may be to further discourage children and adolescents from smoking.

The problem of nicotine addiction would also need to be addressed. For established smokers who want to quit, the cost of withdrawal from nicotine is considerable. Governments might consider interventions to help reduce those costs as part of the overall tobacco control package.

#### MEASURES TO REDUCE THE DEMAND FOR TOBACCO

We turn now to a discussion of measures for tobacco control, evaluating each in turn.

##### *Raising taxes*

Evidence from countries of all income levels shows that price increases on cigarettes are highly effective in reducing demand. Higher taxes induce some smokers to quit and prevent others individuals from starting. They also reduce the number of ex-smokers who return to cigarettes and reduce consumption among continuing smokers. On average, a price rise of 10 percent on a pack of cigarettes would be expected to reduce demand for cigarettes by about four percent in high-income countries and by about eight percent in low- and middle-income countries, where lower incomes tend to make people more responsive to price changes. Children and adolescents are more responsive to price rises than older adults, so this intervention would have a significant impact on them.

Models for this report show that tax increases that would raise the real price of cigarettes by 10 percent worldwide would cause 40 million smokers alive in 1995 to quit, and

prevent a minimum of 10 million tobacco-related deaths. The price rise would also deter others from taking up smoking in the first place. The assumptions on which the model is based are deliberately conservative, and these figures should therefore be regarded as minimum estimates.

As many policymakers are aware, the question of what the right level of tax should be is a complex one. The size of the tax depends in subtle ways on empirical facts that may not yet be available, such as the scale of the costs to nonsmokers and income levels. It also depends on varying societal values, such as the extent to which children should be protected, and on what a society hopes to achieve through the tax, such as a specific gain in revenue or a specific reduction in disease burden. The report concludes that, for the time being, policymakers who seek to reduce smoking should use as a yardstick the tax levels adopted as part of the comprehensive tobacco control policies of countries where cigarette consumption has fallen. In such countries, the tax component of the price of a pack of cigarettes is between two-thirds and four-fifths of the retail cost. Currently, in the high-income countries, taxes average about two-thirds or more of the retail price of a pack of cigarettes. In lower-income countries taxes amount to not more than half the retail price of a pack of cigarettes.

#### *Nonprice measures to reduce demand*

Beyond raising the price, governments have also employed a range of other effective measures. These include comprehensive bans on advertising and promotion of tobacco; information measures such as mass media counter-advertising, prominent health warning labels, the publication and dissemination of research findings on the health consequences of smoking as well as restrictions on smoking in work and public places.

This report provides evidence that each of these measures can reduce the demand for cigarettes. For example, "information shocks," such as the publication of research studies with significant new information on the health effects of smoking, reduce demand. Their effect appears to be greatest when a population has relatively little general awareness of the health risks. Comprehensive bans on advertising and promotion can reduce demand by around seven percent, according to econometric studies in high-income countries. Smoking restrictions clearly benefit nonsmokers, and there is also some evidence that they can reduce the prevalence of smoking.

Models developed for this report suggest that, employed as a package, such nonprice measures used globally could persuade some 23 million smokers alive in 1995 to quit and avert the tobacco-attributable deaths of five million of them. As with the estimates for tax increases, these are conservative estimates.

#### *Nicotine replacement and other cessation therapies*

A third intervention would be to help those who wish to quit by making it easier for them to obtain nicotine replacement therapy (NRT)

and other cessation interventions. NRT markedly increases the effectiveness of cessation efforts and also reduces individuals' withdrawal costs. Yet in many countries, NRT is difficult to obtain. Models for this study suggest that if NRT were made more widely available, it could help to reduce demand substantially.

The combined effect of all these demand-reducing measures is not known, since smokers in most countries with tobacco control policies are exposed to a mixture of them and none can be studied strictly in isolation. However, there is evidence that the implementation of one intervention supports the success of others, underscoring the importance of implementing tobacco controls as a package. Together, in sum, these measures could avert many millions of deaths.

#### MEASURES TO REDUCE THE SUPPLY OF TOBACCO

While interventions to reduce demand for tobacco are likely to succeed, measures to reduce its supply are less promising. This is because, if one supplier is shut down, an alternative supplier gains an incentive to enter the market.

The extreme measure of prohibiting tobacco is unwarranted on economic grounds as well as unrealistic and likely to fail. Crop substitution is often proposed as a means to reduce the tobacco supply, but there is scarcely any evidence that it reduces consumption, since the incentives to farmers to grow tobacco are currently much greater than for most other crops. While crop substitution is not an effective way to reduce consumption, it may be a useful strategy where needed to aid the poorest tobacco farmers in transition to other livelihoods, as part of a broader diversification program.

Similarly, the evidence so far suggests that trade restrictions, such as import bans, will have little impact on cigarette consumption worldwide. Instead, countries are more likely to succeed in curbing tobacco consumption by adopting measures that effectively reduce demand and applying those measures symmetrically to imported and domestically-produced cigarettes. Likewise, in a framework of sound trade and agriculture policies, the subsidies on tobacco production that are found mainly in high-income countries make little sense. In any case, their removal would have little impact on total retail price.

However, one supply-side measure is key to an effective strategy for tobacco control: action against smuggling. Effective measures include prominent tax stamps and local-language warnings on cigarette packs, as well as the aggressive enforcement and consistent application of tough penalties to deter smugglers. Tight controls on smuggling improve governments' revenue yields from tobacco tax increases.

#### THE COSTS AND CONSEQUENCES OF TOBACCO CONTROL

Policymakers traditionally raise several concerns about acting to control tobacco. The first

of these concerns is that tobacco controls will cause permanent job losses in an economy. However, falling demand for tobacco does not mean a fall in a country's total employment level. Money that smokers once spent on cigarettes would instead be spent on other goods and services, generating other jobs to replace any lost from the tobacco industry. Studies for this report show that most countries would see no net job losses, and that a few would see net gains, if tobacco consumption fell.

There are however a very small number of countries, mostly in sub-Saharan Africa, whose economies are heavily dependent on tobacco farming. For these countries, while reductions in domestic demand would have little impact, a global fall in demand would result in job losses. Policies to aid adjustment in such circumstances would be essential. However, it should be stressed that, even if demand were to fall significantly, it would occur slowly, over a generation or more.

A second concern is that higher tax rates will reduce government revenues. In fact, the empirical evidence shows that raised tobacco taxes bring greater tobacco tax revenues. This is in part because the proportionate reduction in demand does not match the proportionate size of the tax increase, since addicted consumers respond relatively slowly to price rises. A model developed for this study concludes that modest increases in cigarette excise taxes of 10 percent worldwide would increase tobacco tax revenues by about seven percent overall, with the effects varying by country.

A third concern is that higher taxes will lead to massive increases in smuggling, thereby keeping cigarette consumption high but reducing government revenues. Smuggling is a serious problem, but the report concludes that, even where it occurs at high rates, tax increases bring greater revenues and reduce consumption. Therefore, rather than foregoing tax increases, the appropriate response to smuggling is to crack down on criminal activity.

A fourth concern is that increases in cigarette taxes will have a disproportionate impact on poor consumers. Existing tobacco taxes do consume a higher share of the income of poor consumers than of rich consumers. However, policymakers' main concern should be over the distributional impact of the entire tax and expenditure system, and less on particular taxes in isolation. It is important to note that poor consumers are usually more responsive to price increases than rich consumers, so their consumption of cigarettes will fall more sharply following a tax increase, and their relative *financial* burden may be correspondingly reduced. Nonetheless, their loss of perceived benefits of smoking may be comparatively greater.

#### IS TOBACCO CONTROL WORTH PAYING FOR?

For governments considering intervention, an important further consideration is the cost-effectiveness of tobacco control measures relative to other health interventions. Preliminary estimates were performed for this

report in which the public costs of implementing and administering tobacco control programs were weighed against the potential number of healthy years of life saved. The results are consistent with earlier studies that suggest that tobacco control is highly cost-effective as part of a basic public health package in low- and middle-income countries.

Measured in terms of the cost per year of healthy life saved, tax increases would be cost-effective. Depending on various assumptions, this instrument could cost between US\$5 and \$17 for each year of healthy life saved in low- and middle-income countries. This compares favorably with many health interventions commonly financed by governments, such as child immunization. Nonprice measures are also cost-effective in many settings. Measures to liberalize access to nicotine replacement therapy, for example, by changing the conditions for its sale, would probably also be cost-effective in most settings. However, individual countries would need to make careful assessments before deciding to provide subsidies for NRT and other cessation interventions for poor smokers.

The unique potential of tobacco taxation to raise revenues cannot be ignored. In China, for example, conservative estimates suggest that a 10 percent increase in cigarette tax would decrease consumption by five percent, increase revenue by five percent, and that the increase would be sufficient to finance a package of essential health services for one-third of China's poorest 100 million citizens.

#### AN AGENDA FOR ACTION

Each society makes its own decisions about policies that concern individual choices. In reality, most policies would be based on a mix of criteria, not only economic ones. Most societies would wish to reduce the unquantifiable suffering and emotional losses wrought by tobacco's burden of disease and premature death. For the policymaker seeking to improve public health, too, tobacco control is an attractive option. Even modest reductions in a disease burden of such large size would bring highly significant health gains.

Some policymakers will consider that the strongest grounds for intervening are to deter children from smoking. However, a strategy aimed solely at deterring children is not practical and would bring no significant benefits to public health for several decades. Most of the tobacco-related deaths that are projected to occur in the next 50 years are among today's existing smokers. Governments concerned with health gains in the medium term may therefore consider adopting broader measures that help adults to quit.

The report has two recommendations:

1. Where *governments* decide to take strong action to curb the tobacco epidemic, a multi-pronged strategy should be adopted. Its aims should be to deter children from smoking, to protect nonsmokers, and to provide all smokers with information about the health effects of tobacco. The strategy, tailored to individual country needs, would

include (a) raising taxes using as a yardstick the rates adopted by countries with comprehensive tobacco control policies. In these countries, tax accounts for two-thirds to four-fifths of the retail price of cigarettes; (b) publishing and disseminating research results on the health effects of tobacco, adding prominent warning labels to cigarettes, adopting comprehensive bans on advertising and promotion, and restricting smoking in workplaces and public places, and (c) widening access to nicotine replacement and other cessation therapies.

2. *International agencies such as the UN agencies* should review their existing programs and policies, to ensure that tobacco control is given due prominence; they should sponsor research into the causes, consequences and costs of smoking, and the cost-effectiveness of interventions at the local level; and they should address tobacco control issues that

cross borders, including working with the WHO's new Framework Convention for Tobacco Control. Key areas for action include facilitating international agreements on smuggling control, discussions on tax harmonization to reduce the incentives for smuggling, and bans on advertising and promotion involving the global communications media.

The threat posed by smoking to global health is unprecedented, but so is the potential for reducing smoking-related mortality with cost-effective policies. This report shows the scale of what might be achieved: moderate action could ensure substantial health gains for the 21st century.

- 1 Abedian I, van der Merwe R, Wilkins N, *et al*, eds. *The economics of tobacco control: towards an optimal policy mix*. Cape Town, South Africa: University of Cape Town, 1998.
- 2 Jha P, Chaloupka F, eds. *Tobacco control policies in developing countries*. Oxford: Oxford University Press. (In press.)

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