CHAPTER 6

The Costs and Consequences of Tobacco Control

DESPITE the obvious threat from tobacco to global health, many governments, particularly in low- and middle-income countries, have not taken significant action to reduce its toll. In some cases, this is because the scale of the threat is underestimated, or because of a mistaken belief that little can be done to reduce consumption. However, many governments have hesitated to act because of concerns that tobacco control will have undesirable economic consequences. In this chapter, we discuss some common concerns about the consequences of tobacco control for economies and for individuals, and then assess the cost-effectiveness of interventions.

Will tobacco control harm the economy?

We briefly discuss some of the common concerns in turn, in the form of answers to some of the most frequently asked questions.

If demand for tobacco falls, will there be massive job losses?

A major reason for governments' inaction over tobacco is their fear of creating unemployment. This fear is derived mainly from the arguments of the tobacco industry, which says that control measures will result in millions of job losses across the world. Yet a closer inspection of the arguments, and the data on which they are based, suggests that the negative effects of tobacco control on

employment have been greatly overstated. Tobacco production is a small part of most economies. For all but a very few agrarian countries heavily dependent on tobacco farming, there would be no *net* loss of jobs, and there might even be job gains if global tobacco consumption fell. This is because money once spent on tobacco would be spent on other goods and services, thereby generating more jobs. Even the handful of tobacco-dependent economies will have a market big enough to ensure their jobs for many years to come, even in the face of gradually declining demand.

The tobacco industry estimates that 33 million people are engaged in tobacco farming worldwide. This total includes seasonal workers, part-time workers, and family members of farmers. It also includes farmers who grow other products in addition to tobacco. Of the total, some 15 million are in China, and another 3.5 million in India. Zimbabwe has some 100,000 tobacco farm workers. Relatively small but still significant numbers are employed in the high-income countries: the United States, for example, has 120,000 tobacco farms, and the European Union has 135,000—mostly small—farms in Greece, Italy, Spain, and France. The manufacturing side of the tobacco industry is only a small source of jobs, as it is highly mechanized. In most countries tobacco manufacturing jobs account for well below 1 percent of total manufacturing employment. There are a few important exceptions to this pattern, with Indonesia relying on tobacco manufacturing for 8 percent of its total manufacturing output, and Turkey, Bangladesh, Egypt, the Philippines, and Thailand relying on it for between 2.5 and 5 percent of theirs. On the whole, though, it is clear that tobacco production is a small part of most economies.

Statements that tobacco controls will mean massive job losses are usually based on studies funded by the tobacco industry that estimate the number of jobs attributable to tobacco in each sector, the incomes associated with these jobs, tax revenues generated by tobacco sales, and the contribution of tobacco to the country's trade balance wherever this is relevant. These studies also estimate the multiplier effect of money earned in tobacco farming and manufacturing in stimulating activity elsewhere in the economy. However, the methods used for these studies have been criticized. First, they assess the *gross* contribution of tobacco to employment and the economy. Rarely, if ever, do they take account of the fact that if people stop spending money on tobacco, they usually spend it on other things instead, thus generating alternative jobs to compensate. Second, their methods overstate the impact of any intervention that reduces demand because their estimates of certain variables, such as trends in smoking and trends in the mechanization of cigarette production, tend to be static.

Independent studies of the impact of tobacco on individual economies reach different conclusions. Rather than consider the gross economic con-

tribution of tobacco to the economy, the independent studies estimate its *net* contribution, that is, the benefit to the economy of all tobacco-related activity *after* taking into account the compensating effect of alternative jobs that would be generated by the money not spent on tobacco. The conclusions of these studies are that tobacco control policies would have little or no negative effect on total employment, except in a very few tobacco-producing countries.

A study in the United Kingdom found that jobs would increase by more than 100,000 full-time equivalents in 1990 if former smokers spent their money on luxury items, and if any decline in tax revenues brought about by nontax measures to reduce demand were offset by taxing other goods and services. A study in the United States found that the number of jobs would rise by 20,000 between 1993 and 2000 if all domestic consumption was eliminated. While there would be net job losses in the tobacco-growing region of the United States, the national total would rise because of the money freed up from tobacco purchases and injected into other areas of the economy. Of course, industry transitions can be difficult and may create social and political problems in the short term. But economies go through many such transitions, and this one would not be exceptional.

The findings are not restricted to the high-income countries. Indeed, there are some low-income countries that might experience striking benefits. For example, according to a background study for this report, Bangladesh, whose cigarettes are almost all imported, would benefit markedly if all domestic consumption were eliminated. Within the formal sector of its economy, there could be a net gain in jobs of as much as 18 percent if smokers spent their money on other goods and services.

The impact on economies of a global fall in tobacco consumption will vary, depending on the type of economy. Countries can be grouped into three categories. The first category comprises countries that produce more raw tobacco than they consume, that is, net exporters. Examples include Brazil, Kenya, and Zimbabwe. The second category comprises countries that consume about as much as they produce, that is, so-called "balanced" tobacco economies. The third category consists of countries that consume more than they produce, meaning net and full importers. The latter category includes the highest number of countries by far, encompassing countries such as Indonesia, Nepal, and Vietnam.

For the biggest group of countries, net and full importers, much of the impact of tobacco controls is borne by consumers, and more jobs are likely to be created than are lost (Table 6.1). However, the small number of agrarian countries that are heavily dependent on tobacco could experience net national job losses. Among the worst-affected producer countries would

be those that export most of their crop, such as Malawi and Zimbabwe. One model suggests that in Zimbabwe, if all domestic tobacco farming stopped tomorrow, there would be a net loss of 12 percent of jobs. It should be stressed, however, that such an extreme scenario is unlikely.

At the level of households and small rural communities, such adjustment would mean loss of income, upheaval, and possibly relocation, and many governments would consider it important to help ease the transition process (see Box 6.1).

TABLE 6.1. STUDIES ON THE EMPLOYMENT EFFECTS OF REDUCED OR ELIMINATED TOBACCO CONSUMPTION

Type of country and name and year	*Net change in employment as a percentage of economy in base year given*	*Assumptions*
Net Exporters		
Canada (1992)	0.1%	Elimination of all domestic consumption expenditures according to "average" expenditure patterns
United States (1993)	0%	Elimination of all domestic consumption expenditures according to "average" expenditure patterns
United Kingdom (1990)	+0.5%	Reduction in tobacco consumption expenditures by 40%, spending according to "recent stopper" expenditure patterns
Zimbabwe (1980)	-12.4%	Elimination of all domestic tobacco consumption and production, redistributed according to "average" input-output patterns
Balanced Tobacco Economies		
South Africa (1995)	+0.4%	Elimination of all domestic tobacco consumption expenditures, spending according to "recent stopper" expenditure patterns
Scotland (1989)	+0.3%	Elimination of all domestic tobacco consumption expenditures, spending according to "average" expenditure patterns
Net Importers		
Michigan State, U.S. (1992)	+0.1%	Elimination of all domestic tobacco consumption expenditures, spending according to "average" expenditure patterns
Bangladesh (1994)	+18.7%	Elimination of all domestic tobacco consumption expenditures, spending according to "average" expenditure patterns

Sources: Buck, David, and others, 1995; Irvine, I. J. and W. A. Sims, 1997; McNicoll, I. H. and S. Boyle, 1992; van der Merwe, Rowena, and others, background paper; Warner, K. E., and G. A. Fulton, 1994; Warner, K. E., and others, 1996.

BOX 6.1 HELP FOR THE POOREST FARMERS

There is little prospect of a sharp and sudden reduction in tobacco production. As the previous chapter showed, it is highly unlikely that supply-side policies to restrict tobacco production would be practicable or politically acceptable for the majority of countries. If *demand* for tobacco falls, meanwhile, it will fall slowly, allowing for an equally slow process of adjustment for those most directly affected.

An accurate assessment of the way in which gradually falling demand will affect tobacco-farming communities is clearly critical for policymakers. Studies in most high-income countries suggest that the economies of these countries' tobacco-growing areas have become gradually diversified. In high-income countries, tobacco farmers have been making economic adjustments for decades, and many tobacco farm communities can draw on more diversified economies today than in the past. Interest in further diversification is common. A recent survey of tobacco farmers in the United States indicates, for example, that half of those questioned were at least aware of profitable alternative agricultural activities being pursued by other tobacco farmers in their own counties. Younger and more educated farmers were more likely than older farmers to be interested in diversification, and more likely to view diversification as possible. Likewise, a sizable minority of farmers questioned in the survey were aware of the prospect of change but recognized that it would be slow. Although more than eight out of 10 said that they personally expected to remain in tobacco farming, one in three said they would advise their children not to remain in the same business.

Nonetheless, there are several reasons why governments would want to provide assistance to meet the transition costs for their poorest farmers. Farms are a major source of rural employment and are often viewed as socially important by many societies. In addition, farmers can represent significant political opposition to tobacco control. Appropriate action for governments would involve a number of different efforts, such as encouraging sound agricultural and trade policies, the provision of broad rural development programs, assistance with crop diversification, rural training, and other safety-net systems. Some governments have proposed that such support could be financed out of tobacco taxes. Governments may also learn from the success of local efforts. In the United States, for instance, some rural communities that are traditionally dependent on tobacco have formed coalitions with public health constituencies to agree upon core principles for policies that will reduce tobacco consumption and also promote sustainable rural communities.

Will higher tobacco taxes reduce government revenues?

Policymakers frequently argue against raising tobacco taxes on the basis that the resulting reduction in demand will cost governments vital revenue. In fact, the reverse is true in the short to medium term, even though the situation in the very long term is less certain. Tax revenues can be expected to rise in the short to medium term because, although higher prices clearly reduce consumption, the demand for cigarettes is relatively inelastic. So cigarette consumption will fall, but by a smaller proportion than prices will rise. In the United Kingdom, for example, cigarette taxes have been raised repeatedly over the past three decades. Partly because of these increases, and partly because of the steady increase in awareness about the health consequences of smoking, consumption has declined sharply over the same period, with the annual number of cigarettes sold falling from 138 billion to 80 billion over three decades. Revenues, however, are still rising. For every tax increase of 1 percent in the United Kingdom, government revenues increase by between 0.6 and 0.9 percent (see Figure 6.1). 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 7 percent overall, with the effects varying by country.

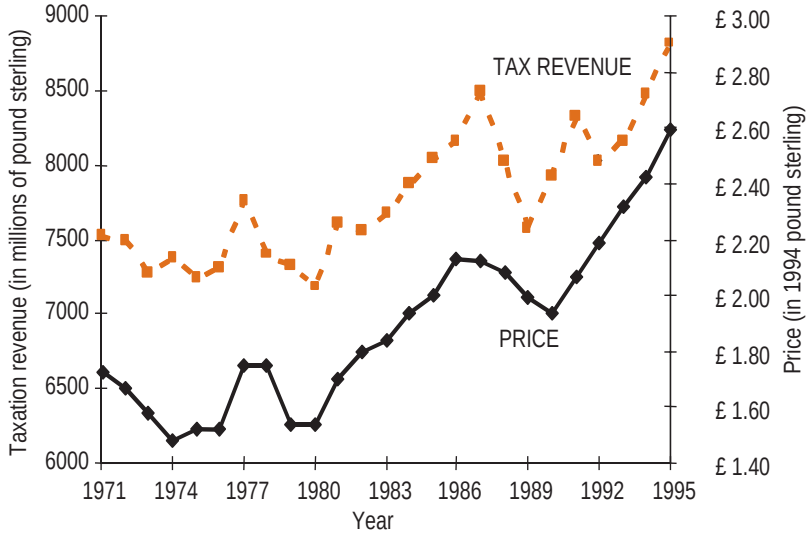
Some nonprice measures, such as advertising and promotion bans, mass information, and warning labels, would be expected to reduce revenue. Interventions to liberalize nicotine replacement therapy and other cessation efforts would also reduce consumption, and thus revenue. However, any such impact on revenue would be gradual, and a comprehensive control package that includes tax increases is in any case likely to lead to net revenue increases.

It is of course important to recognize that, if the ultimate aim of tobacco control is to benefit human health, then ideally the policymaker might wish to see tobacco consumption fall to such low levels that, eventually, tobacco tax revenues would begin to fall, too. This ultimate loss of revenue could be considered as the measure of success of tobacco control—or society's willingness to pay for the health benefits of reduced smoking. But this is a theoretical possibility rather than a probable scenario. Based on current patterns, the number of smokers is expected to grow in low-income countries over the next three decades. Equally important, governments would be free to introduce an alternative income tax or consumption tax that would replace the revenue from tobacco taxes.

Will higher tobacco taxes cause massive increases in smuggling?

It has been argued that higher taxes will contribute to increased cigarette smuggling and associated criminal activity. In this scenario cigarette consumption will remain high and tax revenues will fall. However, econometric and other

FIGURE 6.1 AS TOBACCO TAX RISES, REVENUE RISES TOO
Real price and tobacco taxation revenue in the U.K., 1971–95



Source: Townsend, Joy. "The Role of Taxation Policy in Tobacco Control." In Abedian, I., and others, eds. *The Economics of Tobacco Control*. Cape Town, South Africa: Applied Fiscal Research Centre, University of Cape Town.

analyses of the experience of a large number of high-income countries show that, even in the face of high rates of smuggling, tax increases bring increased revenues and reduce cigarette consumption. Therefore, while smuggling is undoubtedly a serious problem, and while steep differentials in tobacco tax rates between countries are an incentive to smugglers, the appropriate response to smuggling is not to reduce tax rates or forego tax increases. Instead, it is more appropriate to crack down on crime. A second logical conclusion is that harmonization in cigarette tax rates between neighboring countries will help to reduce the incentives to smuggle.

Canada's experience illustrates these points clearly. In the early 1980s and 1990s, Canada increased its cigarette taxes sharply so that the real price rose significantly. Between 1979 and 1991 teenage smoking fell by nearly two-thirds, adult smoking declined, and cigarette tax revenues rose substantially. However, because of concerns about greatly increased smuggling, the government cut cigarette taxes sharply. In response, the prevalence of smoking climbed in teenagers, and also increased again in the population as a whole. Meanwhile federal tobacco tax revenues fell by more than twice as much as predicted.

The experience of South Africa is also illuminating. During the 1990s, South Africa increased its excise taxes on cigarettes sharply, by more than 450 percent. As a percentage of sale price, taxation rose from 38 to 50 percent. Not surprisingly, smuggling rose, too, from zero to about 6 percent of the market, the global average. Sales fell by more than 20 percent, implying a significant net fall in consumption even with increased smuggling. Meanwhile, total tax revenues more than doubled in real terms.

An econometric study assessed the potential impact of various different tax scenarios on the incentive for cigarette smuggling between countries in Europe. The analysis concluded that, even with rates of smuggling several times higher than those reported in Europe, higher taxes would still result in larger overall revenues. The study concluded that smuggling induced by price rises is likely to be a more significant problem in countries whose cigarettes are already priced high. Smuggling to countries with relatively cheap cigarettes would be relatively unaffected by price increases.

Will poor consumers bear the heaviest financial burden?

In many societies, there is a consensus that tax systems should be equitable, in the sense that those individuals with the greatest ability to pay should be taxed most heavily. This consensus is reflected, for example, in progressive income tax systems, where the marginal rates of tax rise as incomes rise. Tobacco taxes, however, are regressive, that is, like other consumption taxes on consumer goods, they place a disproportionately heavy financial burden on people with low incomes. This regressivity is further increased due to the fact that smoking is more common in poor households than rich households, so that poor smokers spend a larger share of their income on cigarette tax than do rich smokers.

There is concern that, as taxes are raised, poor consumers will spend more and more of their income on cigarettes, resulting in significant family hardship. Even with contracted demand, it is true that if poor consumers continue to consume more tobacco than the rich, they will also pay more tax. However, numerous studies show that people on lower incomes are more responsive to price changes than people on high incomes. As their consumption falls more steeply, their *relative* tax burden will fall compared with that of the richer consumer, even though their absolute payments will still be greater. Two studies from the United Kingdom and the United States support the idea of tobacco tax *increases* being progressive, even though tobacco tax in *itself* is regressive. Further studies in low- and middle-income countries are required to confirm this finding. Of course, all individual smokers will have to forego the perceived benefits of smoking and suffer the costs of withdrawal, and these losses will be comparatively greater for poor consumers.

Tobacco taxes, like any other single tax, need to work within the goal of ensuring that the *entire* system of tax and expenditure is proportional or progressive. Currently, the tax systems of most countries are a mix of many different taxes, where the overall goal is to be progressive or proportional, even though there may be individual taxes or elements of the system that are regressive. To offset the regressivity of a tobacco tax, governments could introduce more progressive taxes or other transfer programs. Provision of well-targeted social services, such as education and health programs, would tend to offset the regressivity of tobacco taxation.

While in principle public benefits should be financed out of general revenues, the unique ability of tobacco taxation to raise revenues cannot be ignored. In China, estimates suggest that a 10 percent increase in cigarette tax would decrease consumption by 5 percent and increase revenue by 5 percent, making the increase sufficient enough to finance a package of essential health services for one-third of China's poorest 100 million citizens.

Will tobacco control impose costs on individuals?

By reducing cigarette consumption, tobacco control measures will reduce the satisfaction, or benefits, of the smoker—just as curtailed consumption of any other consumer good reduces consumers' welfare. Regular smokers must either forego the pleasure of smoking, or incur the costs of quitting, or both. This is a loss of consumer surplus, and must be set against the gains of tobacco control.

However, as we saw earlier, tobacco is not a typical consumer good with typical benefits because of addiction and information problems. For the addicted smoker who regrets smoking and expresses a desire to quit, the benefits of smoking probably include the avoidance of withdrawal. If tobacco control measures reduce individual smokers' consumption, those smokers will face significant withdrawal costs.

Given that most regular smokers express a desire to quit but few are successful on their own, it seems likely that the perceived costs of quitting are greater than the perceived costs of continuing to smoke, such as damage to health. By making the costs of continued smoking greater than the costs of withdrawal, higher taxes can induce some smokers to quit. However, these smokers would still face withdrawal costs. Provision of information about the health consequences of smoking would increase the perceived costs of continuing to smoke, and alert smokers to the benefits of quitting. Widened access to nicotine replacement therapy (NRT) and other cessation interventions would help to reduce the costs of quitting.

It might be argued that tobacco control measures will impose bigger costs on poor individuals than on those with higher incomes. But if this is true for

tobacco, it is certainly not unique in the field of public health. Compliance with many health interventions, such as child immunization or family planning, is often more costly for poor households. For example, poor families may have to walk longer distances to clinics than rich families, and may lose income in the process. Yet health officials do not usually hesitate to argue that the health benefits of most interventions, such as immunization, are worth the cost, provided the costs do not rise so high that poorer individuals are deterred from using services.

In considering the loss of consumer surplus to smokers, it is important to distinguish between regular smokers and others. For children and adolescents who are either beginners or merely potential smokers, the costs of avoiding tobacco are likely to be less severe, since addiction may not yet have taken hold and therefore withdrawal costs should be minimal. Other costs may include, for example, reduced acceptance by peers, less satisfaction from rebelling against parents, and the curtailment of other pleasures of smoking.

Restrictions on smoking in public places and private workplaces also impose costs on smokers by forcing them outdoors to smoke or reducing their opportunities to smoke. These interventions would appropriately shift the costs of smoking from nonsmokers to smokers. Again, for some, this increase in costs will lead them to change their smoking patterns and will impose costs. For nonsmokers, however, tobacco control policies will bring welfare gains. Clearly, welfare losses are likely to be minimized if control interventions are implemented as a package.

Is tobacco control worth paying for?

We now ask whether tobacco control is cost-effective relative to other health interventions. For governments considering intervention, such information may be a further important factor in deciding how to proceed.

The cost-effectiveness of different health interventions can be evaluated by estimating the expected gain in years of healthy life that each will achieve in return for the requisite public costs needed to implement that intervention. According to the World Bank's 1993 World Development Report, *Investing in Health*, tobacco control policies are considered cost-effective and worthy of inclusion in a minimal package of healthcare. Existing studies suggest that policy-based programs cost about $20 to $80 per discounted year of healthy life saved (one disability-adjusted life year, or DALY).[1]

For this study, estimates were made of the cost-effectiveness of each of the demand-reducing interventions discussed in chapter 4: tax rises, a package of nonprice measures including advertising and promotion bans, wider health information and public smoking restrictions, and NRT. The findings may be of particular value to low- and middle-income countries in assessing the relative

emphases on specific interventions that are likely to be appropriate for their own needs.

The estimates were made within the model described in Box 4.1. The model's assumptions and inputs are described in full in a background paper to this report. Some of the interventions, such as raising taxes or banning advertising and promotion, have zero or minimal costs, as these are "stroke-of-the pen" interventions. To be conservative, the model assigned substantial implementation and administrative costs, along with drug costs for NRT. These costs do not, however, include possible costs borne by individuals. The results (Table 6.2) suggest that tax increases are by far the most cost-effective intervention, and one that compares favorably with many health interventions. Depending on the assumptions made about the administrative costs of raising and monitoring higher tobacco taxes, the cost of implementing a tax increase of 10 percent could be less than $5 per DALY (and would be unlikely to be more than $17 per DALY) in low- and middle income countries. This represents cost-effectiveness values comparable to many health interventions financed by governments, such as child immunization. Nonprice measures may also be highly cost-effective for low- and middle-income countries. Depending on the assumptions on which the estimates are based, a package could be delivered for as little as $68 per DALY. This level of cost-effectiveness compares reasonably with several established interventions in public health, such as the package for the integrated management of the sick child, which has been estimated to cost between $30 and $50 per DALY in low-income countries and between $50 and $100 in middle-income countries.

TABLE 6.2 THE COST-EFFECTIVENESS OF TOBACCO CONTROL MEASURES
Values for various tobacco control interventions (U.S. dollars per DALY saved), by region.

Region	*Price increases of 10 percent*	*Nonprice measures with effectiveness of 5 percent*	*NRT (publicly provided) with 25 percent coverage*
East Asia and Pacific	3 to 13	53 to 212	338 to 355
Eastern Europe and Central Asia	4 to 15	64 to 257	227 to 247
Latin America and Caribbean	10 to 42	173 to 690	241 to 295
Middle East and North Africa	7 to 28	120 to 482	223 to 260
South Asia	3 to 10	32 to 127	289 to 298
Sub-Saharan Africa	2 to 8	34 to 136	195 to 206
Low/Middle Income	4 to 17	68 to 272	276 to 297
High Income	161 to 645	1,347 to 5,388	746 to 1,160

Note: For all calculations, a 3 percent discount rate has been used, and benefits have been projected over a 30-year period; for nonprice interventions, costs have been projected over a 30-year period. The ranges result from varying the delivery costs of the interventions from 0.005% to 0.02% of GNP per annum.
Source: Ranson, Kent, P. Jha, F. Chaloupka, and A. Yurekli. *Effectiveness and Cost-effectiveness of Price Increases and Other Tobacco Control Policy Interventions*. Background paper.

The study also assessed the likely cost-effectiveness of widening access to NRT. For these estimates, it was assumed that the cost of NRT would be met from public funds. The results suggest that governments would need to exercise suitable caution in conducting local cost-effectiveness analyses before considering direct public provision of these new therapies. It is important to note that liberalizing access alone is far more likely to be cost-effective, and that as effectiveness and the numbers of adults wishing to quit grows, so would the cost-effectiveness of NRT improve.

More research is clearly needed to identify the effectiveness of such packages, their likely cost-effectiveness in countries of different income levels, and the costs to individuals.

There are only rudimentary estimates of the costs of *implementing* a comprehensive tobacco control program. The evidence from the high-income countries suggests that such comprehensive programs can be delivered for very small sums of money. High-income countries with very comprehensive programs spend between 50¢ and $2.50 per capita per year on these programs. In this context, tobacco control in low-income and middle-income countries is likely to be affordable, even in countries where per capita public expenditure on health is extremely low. The World Bank's 1993 World Development Report, *Investing in Health*, estimated that to deliver an essential package of public health interventions that *includes* tobacco control, governments would need to spend $4 per capita in low-income countries and $7 in middle-income countries. As a fraction of the total, tobacco control would be small.

Note

1. A disability-adjusted year (DALY) is a time-based measure that allows epidemiologists to capture in a single indicator the years of life lost to premature death (where premature death is defined as one that occurs before the age to which the dying person could have expected to survive if they were a member of a standardized model population with a life expectancy at birth equal to that of the world's longest-living population, in Japan) and years lived with a disability of a given severity and duration. One DALY is one lost year of healthy life.