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The Economics of Tobacco Control♦

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Tobacco use – and the resulting burden of disease and premature deaths – has been rising in many low- and middle-income countries. Many governments hesitate to implement proven policies to reduce tobacco use, fearing job and tax revenue losses. But tobacco control policies generate enormous health benefits without harming economies. In particular, tax increases are a highly effective policy tool for reducing consumption, especially among poor people and young people. Other policies that evidence from many countries shows to be effective and cost-effective include: bans on smoking in public places, comprehensive bans on tobacco advertising and promotion; better public information on the health risks of tobacco use and benefits of quitting including mass media counter-advertising and prominent labels on cigarette packs; and help for smokers who want to quit. **JEL: I120, H300**

1. Introduction ▼

About 1.1 billion people worldwide smoke, most of them in low and middle-income countries (Jha et al, 2002). In high-income countries, smoking has been in overall decline for decades, although it continues to rise among some population sub-

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groups. In most low- and middle-income countries, by contrast, cigarette consumption has been increasing. In most countries today, the poor are more likely to smoke than the rich.

Few people now dispute that cigarette smoking is damaging human health on a global scale, and well over 70,000 articles in peer-reviewed journals link smoking with a range of health problems. Smoking-related diseases are already responsible for nearly 5 million deaths worldwide – about 1 in 10 adult deaths (Ezzati and Lopez, 2003). Within a generation, the ratio may well be 1 in 6 of adult deaths, or 10 million deaths a year, making smoking the largest single cause of death. Until recently, this epidemic of chronic disease and premature death mainly affected the populations of rich countries, but it is rapidly shifting to the developing world. Already, half of all tobacco-attributable deaths are in low- and middle-income countries, and this is likely to increase to 7 of every 10 people who die from smoking-related diseases by 2020 (Peto and Lopez, 2001; World Health Organization 1999).

Despite these trends, many governments have avoided taking action to control smoking because of concerns about potential economic harm. For example, some policymakers fear that reduced sales of cigarettes would mean the permanent loss of thousands of jobs, particularly in agriculture, and that higher tobacco taxes would result in lower government revenues, and massive cigarette smuggling. Recent research and empirical evidence should allay these fears.

Consequences of smoking

Smoking has two major health consequences. First, smokers rapidly become addicted to nicotine, whose habit-forming properties, although well documented, are often underestimated by consumers (see, for example, the reports of the Royal College of Physicians 2000 and the US Surgeon General 1988). Second, smoking ultimately causes disabling and fatal diseases, including 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 (Gajalakshmi et al, 2003). Half of all long-term smokers eventually die as a result of smoking; of these, half die during productive middle age (35-69 years). Because poor men are more likely to smoke than rich men, their risk of smoking-related disease 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 half of this excess risk (Bobak et al, 2000). Finally, smoking also affects the health of nonsmokers, such as babies born to smoking mothers, and non-smokers who inhale "second-hand smoke" produced by smokers in their homes, workplaces and other enclosed areas.[1]

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. When consumers bear all the costs of their actions and know all the risks, then society's resources are, in theory, allocated as efficiently as possible. Does this theory apply to

[1] Action on Smoking and Health, 2004 gives a succinct summary of the evidence on the health effects of passive smoking.

smoking? Smokers clearly perceive benefits from smoking, such as the pleasure it provides or the avoidance of withdrawal pains, and weigh these against the private costs of their choice. By definition, the perceived benefits outweigh the perceived costs; otherwise, smokers would not pay to smoke. However, the choice to smoke differs from the choice to buy other consumer goods in three important ways, giving rise to market failures (Jha et al, 2000).

First, there is evidence that many smokers, particularly in low- and middle-income countries, are not fully aware of the high risks of disease and premature death that their choice entails. In China in 1996, for example, 61 percent of smokers surveyed thought that tobacco did them little or no harm (Chinese Academy of Preventive Medicine, 1997). In high-income countries, smokers tend to 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 perspective or ability to make sound decisions. Most new recruits seriously underestimate the future costs of smoking—that is, the cost of being unable, in later life, to reverse a youthful decision to smoke. Societies restrict young people in various ways, for example mandating minimum voting and driving ages, and most could justify restricting young people's freedom to smoke and to become addicted to a behavior that carries a very high risk of premature death.

Third, smoking imposes financial as well as other costs on nonsmokers, including health damage and nuisance and irritation from exposure to smoke from cigarettes smoked by other people. In high-income countries, smoking-related health care accounts for between 6 and 15 percent of all annual health care costs and a significant share of these costs are borne by nonsmokers (Lightwood et al. 2000) In any given year, the cost of health care for smokers exceeds the costs for nonsmokers. Recent studies in high-income countries also suggest that lifetime medical costs are somewhat higher for smokers. However, some analysts have argued that because smokers die earlier, lifetime health care costs may be no greater, and possibly even smaller, for smokers than for nonsmokers. However, this issue remains controversial, and study conclusions are highly sensitive to the assumptions and methodology used (Lightwood et al. 2000). It should also be noted that the higher costs observed in high income countries may not necessarily apply to low- and middle-income countries, where epidemics of smoking-related diseases are at earlier stages and where the coverage of medical care systems may be more limited.

These three factors provide strong justification for government intervention aimed at reducing tobacco use. And if societies' collective welfare functions include public health outcomes in their objectives, then policies to reduce tobacco use should have even greater priority.

Costs and consequences of tobacco control

Policymakers traditionally raise several concerns about tobacco control policies. The first of these is that tobacco controls might cause permanent job losses in an economy. However, falling demand for tobacco products does not necessarily mean a decline in a country's total employment level. Money that smokers once spent on cigarettes would instead be spent on other goods and services, generating new jobs to

replace those lost in the tobacco industry. Several independent studies show that most countries would see no net job losses, and that some would see net job gains, if tobacco consumption fell (Jacobs et al. 2000).

There are, however, a small number of countries, mostly in sub-Saharan Africa, whose economies are heavily dependent on tobacco farming. For these countries, reductions in domestic demand would have little impact, but a decline in global demand could result in job losses. Policies to aid adjustment in such circumstances would be warranted. Even if demand were to fall significantly, however, the fall would occur slowly, over a generation or more (Guindon and Boisclair 2003), as has happened in the United States (Jacobs et al, 2000).

A second concern is that higher tax rates will reduce government revenues. In fact, the empirical evidence shows that an increase in tobacco taxes typically raises tobacco tax revenues (Chaloupka et al. 2000) (See Chart 1 at the very end of this document). The main reason is that the proportionate reduction in demand is smaller than the proportionate size of the tax revenue increase because addicted consumers respond relatively slowly to price hikes (estimated price elasticities of demand tend to range between –0.2 and –0.8). Second, depending on the share of taxes in the retail price, a given percentage tax increase will "feed through" as a smaller percentage increase in the price.[2] Usually, the full tax increase is passed on to consumers, and often the industry will raise prices by an amount exceeding the tax increase (van Walbeek 2003). An econometric analysis concludes that 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 (Jha and Chaloupka 2000).

A third concern is that higher taxes will lead to a massive increase in smuggling, keeping cigarette consumption high but reducing government revenues. Smuggling is a serious problem, but even where it occurs at high rates, tax increases bring greater revenues and reduce consumption (Merriman et al., 2000). Therefore, rather than forgoing tax increases and health gains, the appropriate response is to crack down on criminal activity. The concerted cooperative efforts of Spain, France, Britain, Ireland, Andorra and the European Anti Fraud Office are a good set of recent examples of success in combating cigarette smuggling (Joossens and Raw, 2000).

The potential of tobacco taxation to raise revenues cannot be ignored. In China, for example, conservative estimates suggest that a 10 percent increase in the cigarette tax would decrease consumption by 5 percent and increase revenue by 5 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 (Hu and Zhengzhong, 2002).

A fourth concern is that higher cigarette taxes will have a disproportionate impact on poor consumers. Existing tobacco taxes do claim a higher share of the income of poor consumers than of rich consumers. However, policymakers should be more concerned about the overall distributional impact of the *entire* tax and expenditure system than about the incidence of individual taxes. Also, poor consumers tend to be much more responsive to price

[2] The "elasticity of price with respect to tax" also depends on cigarette manufacturers' responses to tax rate increases.

increases than rich consumers, so their consumption of cigarettes tends to fall more sharply following a tax increase, and their relative financial burden may be correspondingly reduced. There is empirical evidence of this effect from several countries, including for example, South Africa, where, after large cigarette tax increases during the 1990s, the poorest groups of households showed the largest falls in the percentage of households that bought cigarettes and in the proportion of the total household expenditures allocated to cigarettes (van Walbeek, 2003).

Policy responses

Ideally, governments' interventions should address each identified problem specifically. Thus, for example, children's imperfect judgments about the health effects of smoking could 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 restrictions on cigarette sales to the young seldom work, even in high-income countries.

In reality, increasing taxes on tobacco is likely to be the most effective way to deter children from taking up smoking and to encourage those who already smoke to reduce their consumption or quit. Children and adolescents are more responsive to price rises than adults, and so this intervention would have a significant impact on their smoking habits (Chaloupka et al., 2001). Taxation is a blunt instrument however, and higher taxes on cigarettes would also impose costs on adult smokers, many of them poor. These costs may be considered acceptable, depending upon how highly society values curbing tobacco use by children, and the acceptability of using taxes to improve public health and save lives.

Policies to reduce demand are highly effective

Evidence from countries at all income levels shows that price increases on cigarettes are highly effective in reducing demand (Jha and Chaloupka, 2000). Higher taxes induce some smokers to quit and deter others 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 in the short term by about 4 percent in high-income countries and by about 8 percent in low- and middle-income countries, where lower incomes tend to make people more responsive to price changes.

Long run price responsiveness is greater, estimated to be twice as high. Even with deliberately conservative assumptions, tax increases that would raise the real price of cigarettes by 10% worldwide would prevent between 5 and 16 million tobacco-related deaths (Ranson et al, 2001). The modeling assumptions on which this result is based are deliberately conservative, and these figures are therefore minimum estimates.

What is the right level of tax? This is a complex question. The size of the tax should take account of per capita income levels and the scale of costs to nonsmokers, data that may not be available. It also depends on 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 gain in revenue or a reduction in the disease burden. Given the complexity and difficulty of these calculations, policymakers who seek to reduce

smoking could use, as a pragmatic yardstick, the tax levels adopted as part of the comprehensive tobacco control policies of countries where cigarette consumption has fallen (See Chart 2 at the very end of this document). In these 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 high-income countries, taxes average about two-thirds or more of the retail price of a pack of cigarettes. In lower-income countries taxes are no more than half the retail price of a pack of cigarettes.

Governments have employed other effective measures—nonprice regulatory and informational measures—to reduce demand. These include:

● comprehensive bans on advertising and promoting tobacco, which can reduce demand by about 7 percent, according to econometric studies in high-income countries (Saffer, 2000);

● mass media counter-advertising, prominent health warning labels on tobacco product packaging, and publication and dissemination of research findings on the health consequences of smoking (Kenkel et al, 2000);

● restrictions and bans on smoking at schools, work sites, and public places (Woolery et al, 2000); and

• increasing access to cessation interventions and support for smokers who wish to quit (Novotny et al, 2000).

Employed as a package, non-price information measures, used globally, could avert tobacco-attributable deaths of 5 to 29 million people, depending on effectiveness (Ranson et al, 2001). Additionally, wider access to cessation support could avert several million more deaths. As with the estimates for tax increases, these are conservative estimates.

Reducing supply is generally ineffective

While interventions to reduce the demand for tobacco are likely to succeed, measures to reduce its supply are not 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 consumption is unwarranted on economic grounds, as well as unrealistic and likely to fail. Crop substitution is often proposed as a way of reducing the tobacco supply, but there is no evidence of any impact on consumption, and nor is it likely to reduce supply so long as the incentives to farmers to grow tobacco are greater than for many other crops. Crop substitution may, however, be a useful strategy for aiding the poorest tobacco farmers in transition to other livelihoods, as part of a broader diversification program, and will be particularly useful if tobacco prices/returns decline relative to alternative crops (Jacobs et al, 2000).

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 the total retail price. One supply-side measure that should be

part of a strategy to control tobacco is action against smuggling. Effective measures include prominent tax stamps and local-language warnings on cigarette packs, as well as aggressive enforcement and consistent application of tough penalties to deter smugglers. Requiring greater accountability from exporters during transit and for ensuring that their products reach a legal final destination is strongly recommended. Tight controls on smuggling are also likely to improve the revenue yield to governments from tobacco taxes.

An agenda for action

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 (See Chart 3 and its reference at the very end of this document). Governments concerned with health gains over the medium term should therefore consider adopting broader measures that help adults quit.

The World Bank report on the economics of tobacco control (Jha and Chaloupka, 1999) recommends, first, that governments that decide to take action to curb the tobacco epidemic adopt a multi-pronged approach. Tailored to individual country needs, the strategy would include raising taxes to at least two-thirds to four-fifths of the retail price of cigarettes, adopting comprehensive bans on advertising and promotion of tobacco, publishing and disseminating research results on the health effects of tobacco, and widening access to cessation therapies and support. Second, international agencies should review their existing programs and policies to ensure that tobacco control is given due prominence; sponsor research into the causes, consequences, and costs of smoking and into the cost-effectiveness of interventions at the local level; and address tobacco control issues that cross borders, including working with the World Health Organization's new Framework Convention for Tobacco Control.

The threat posed by smoking to global health is unprecedented, but so is the potential for reducing smoking-related mortality with cost-effective policies. Modest action could ensure substantial health gains for the twenty-first century.

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Limitations of space prevent the inclusion of a book review with this issue. This will return in the near future.

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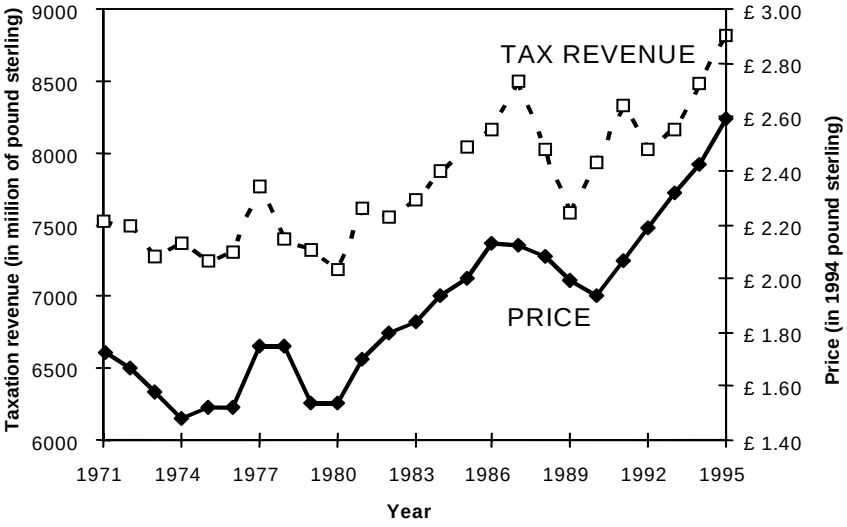
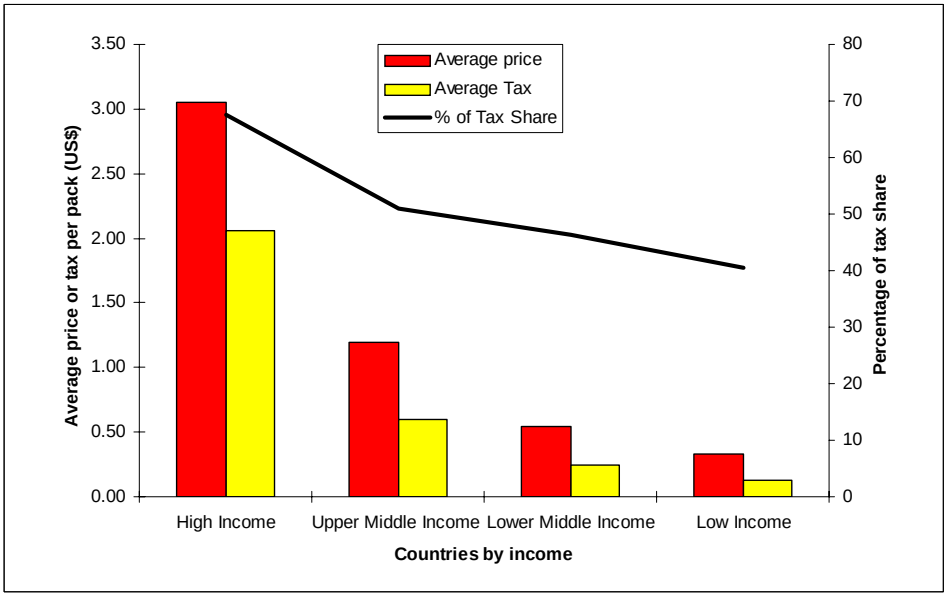
Chart 1. United Kingdom: As tobacco tax rises, revenue rises too



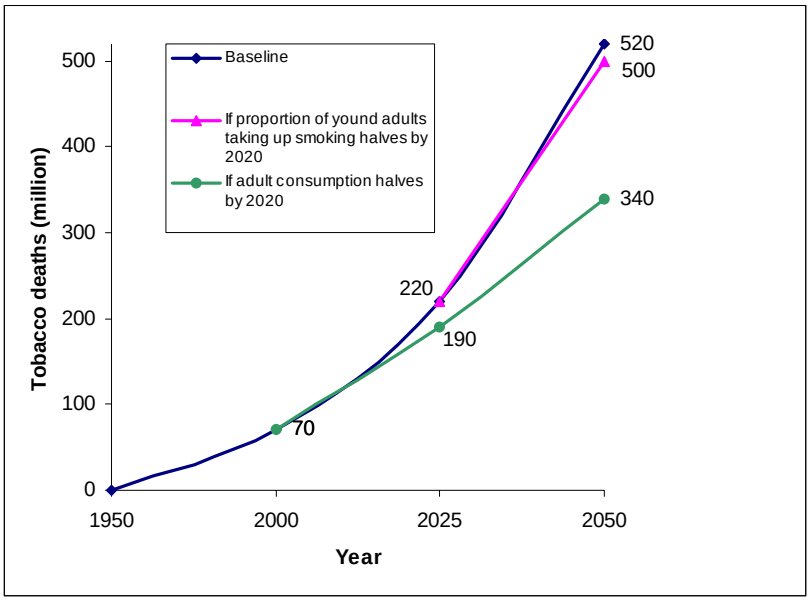
Source: Townsend, 1998

Chart 2. Average cigarette price, tax, and percentage of tax share per pack, by income group, 1996



Source: Jha and Chaloupka, 1999;2000

Chart 3. Unless current smokers quit, tobacco deaths will rise dramatically in the next 50 years



Sources: Peto and others, 1994; Peto and Lopez, 2001; Jha and Chaloupka, 2000.

Note: Peto and others estimate 60 million tobacco deaths between 1950 and 2000 in developed countries. We estimate an additional 10 million between 1990 and 2000 in developing countries. We assume no tobacco deaths before 1990 in developing countries and minimal tobacco deaths worldwide before 1950. Projections for deaths from 2000 to 2050 are based on Peto (personal communication), 1998.