



THE WORLD BANK

The Economics of Tobacco Use & Tobacco Control in the Developing World

A Background Paper
for the
High Level Round Table
on
Tobacco Control and Development Policy

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I. Introduction	3
II. The Economic Contribution of Tobacco and the Likely Impact of Tobacco Control	4
<i>Farmers</i>	<i>4</i>
<i>Manufacturing jobs</i>	<i>6</i>
<i>Foreign exchange</i>	<i>6</i>
<i>Fiscal impact - tax revenues and subsidies</i>	<i>7</i>
<i>Smuggling</i>	<i>8</i>
<i>Concerns about the effect of tobacco tax increases on poor consumers ...</i>	<i>10</i>
<i>Opportunity cost of expenditures on tobacco</i>	<i>10</i>
<i>Microeconomic (household) effects of tobacco use – poverty</i>	<i>11</i>
III. Conclusion	12
<i>Obstacles and opportunities</i>	<i>12</i>
References	13
Annex 1	15

I. Introduction

Are there economic reasons for holding back from policies to reduce tobacco use? Or do the evidence and economic facts support the arguments for strong tobacco control?

The harm that tobacco use does to health is irrefutable. The evidence in tens of thousands of careful scientific articles from around the world testifies that tobacco use (chewing or smoking) and inhaling “secondhand” or sidestream smoke from cigarettes raises the risk of many serious diseases. Moreover, tobacco use is one of the major *preventable* causes of disease and premature death. The efficacy and cost-effectiveness of a well-tested set of policies and interventions have been clearly established over several decades, in many countries around the world, at various income levels and in many different cultures.

However, many countries still hesitate to act decisively to reduce tobacco use, because they are concerned that the harm caused by tobacco may be offset by the economic benefits that the country derives from growing, processing, manufacturing, exporting and taxing tobacco. The argument that “tobacco contributes revenues, jobs and incomes” is a formidable barrier to tobacco control in many countries. But what are the facts? How large are the economic and health costs, and how large are the benefits from tobacco production, trade and consumption? To whom do the benefits accrue, and who bears the costs? Would tobacco control policies and interventions cause net economic losses? Considering health, economics and development, what course of action would best serve the broad interests of each nation?

The answers to these questions are important for sound national decision making, and also for decisions by development agencies on what priority to give to support for national and international tobacco control efforts, and what policies to adopt with respect to support for tobacco growing. This background paper summarizes the facts and existing international evidence relating to these important questions on the economics of tobacco and tobacco control. The cumulative evidence is mounting, making carefully considered, sound decision making possible.

The bottom line is clear: reducing tobacco use is good for health, and makes sound economic sense. Most nations would derive net economic gains, not losses, if their demand for tobacco products fell, because economic losses would be offset by economic gains at household and national levels. Clearly some groups would benefit, and others would suffer losses, and countries might choose to compensate or assist vulnerable groups who might be affected by tobacco control policies. This paper summarizes the evidence that leads to this conclusion.

II. The Economic Contribution of Tobacco and the Likely Impact of Tobacco Control

The key economic questions relating to tobacco control policies – as to any policies – are the relative size of the benefits and costs, and their distributional impact, that is, which groups would bear costs and which groups would benefit. Specifically, we need to look at the economic contribution of tobacco to various national economies from jobs and incomes, foreign exchange and tax revenues, as well as the economic costs of the harm caused by tobacco, and consider how these will change as a result of measures to reduce tobacco use.

This section summarizes the existing evidence and analysis for these important economic issues. The discussion draws heavily on the findings of a team of about 30 international experts who reviewed the existing evidence and data and conducted new analyses, published in Jha and Chaloupka (eds), *Tobacco control in developing countries*, 2000. The findings are summarized in “Curbing the Epidemic: governments and the economics of tobacco control”, World Bank, 1999. This background paper also draws on new country-specific studies from developing countries, notably Bulgaria, China, Egypt, Indonesia, Morocco, Sri Lanka, South Africa, Turkey, Ukraine and Zimbabwe and on new analytic work by the World Bank.

Farmers

China grows about 38% of the world's total tobacco; Brazil, India and the US together grow about 25%, and Turkey, Zimbabwe, Indonesia, Italy, Greece, Malawi and Argentina grow another 15%, so 11 countries produce nearly 80% of world tobacco production, with small amounts grown in about 70 other developing countries.¹ Even in most large tobacco-producing countries such as Brazil, China, India, Indonesia and Turkey, only 0.25%-1.5% of all cultivated land is under tobacco. Malawi and Zimbabwe, the exceptional two countries whose economies depend heavily on tobacco, use 6% and less than 3% respectively of arable land for tobacco. However, in some countries tobacco growing is concentrated in specific areas that are much more heavily dependent on the crop than the country as a whole (for example, the Chinese provinces of Henan, Guizhou, Sichuan and Yunnan).

At the farm level, tobacco is the dominant cash crop for many tobacco farmers in Africa and India, but in several other large producing countries, tobacco is grown on a very small scale as part of a diversified farming strategy. For example, Turkey's 600,000 tobacco farmers plant less than half a hectare of tobacco each.² Only 2.3% of China's farm households grow tobacco, on average less than 3 hectares each.³

There are micro-level studies of whether farmers who rely heavily on tobacco for their cash incomes would be able to switch to alternative crops, and what the implications might be for their incomes. A study in Zimbabwe in January 2001 found that tobacco was a highly profitable cash crop for large and small farmers, providing considerably higher returns than alternative crops, but that even in the most suitable

¹ Jaffee 2002

² Onder 2002

³ Hu and Mao 2002

agro-ecological regions, tobacco was expensive to grow, with high up-front costs and high labor requirements.⁴ Studies in India conclude that mixed cropping of tobacco and other crops, and in some cases, mixed cropping without tobacco, provide higher net returns than mono-cropping tobacco, but that “farmers are partly carried away by the high gross return from tobacco” instead of comparing net returns.⁵ Some local agricultural experts in China say that prevailing prices provide little incentive to farmers to grow tobacco, particularly since tobacco is a very labor intensive crop, and depletes soil fertility. However, sub-national authorities are allowed to tax the tobacco crop, and some set production quotas that farmers must fill.

Studies point out that tobacco farmers often receive subsidies, loans, inputs, technical, or other support from governments or the industry, that help make tobacco an attractive crop even when prices fall, and that farmers can face formidable barriers in switching to alternative cash crops, including limited expertise and extension support, and difficult market access and uncertain prices for other crops. Tobacco prices have also been subject to fluctuations. In Malawi recently, prices and the profitability of tobacco cultivation have fallen sharply, sparking angry protests at tobacco auctions, high default rates on loans, and decisions by many farmers to stop growing tobacco.⁶

The bottom line is that there are farmers who would be affected if global and/or national demand were to fall. However, there are many other commodities whose prices have been buffeted much more by global demand and supply trends and there is no reason to treat tobacco as a special case. And there are factors besides tobacco control that affect tobacco prices and profitability. Some countries may choose to provide special support and assistance to tobacco farmers if market conditions become adverse.

Paradoxically, tobacco control can help make this possible: a national-level study for China concluded that if demand for tobacco in China were to fall as a result of a hypothetical 25% tobacco tax increase, the income losses that this would imply for tobacco farmers and the falls in local government revenue would be considerably smaller than the increases in tobacco revenues, enabling the government to compensate farmers and local governments if they chose to do so.⁷

However, tobacco farmers' livelihoods seem reasonably secure for many years to come, despite efforts to reduce tobacco use: a recent global tobacco market projection commissioned by the FAO concludes that global demand for tobacco leaf is likely to increase by about 2% per year over the coming decade, fuelled largely by population and income increases that are likely to maintain and even expand global demand for cigarettes. Demand (and tobacco leaf production) has been falling in high-income countries; low- and middle income countries show the opposite trend of increasing demand and supply. It would take extraordinary efforts for enough countries to achieve a sustained fall in tobacco product consumption large enough to offset these upward trends.

⁴ Keyser 2002

⁵ Malhotra 2001, page 15

⁶ Jaffee 2002 identifies the contributing factors as: falling yields, lower prices offered by monopsonistic buyers because of a glut in world stocks, rising transport prices, relatively high transaction costs and inefficiencies, and adverse exchange rate movements.

⁷ Hu and Mao 2002

Manufacturing jobs

A fall in tobacco consumption that leads cigarette manufacturers, retailers and distributors to cut some jobs does not necessarily cause a fall in total employment. Money no longer spent on cigarettes will be spent instead on other goods and services, generating new jobs to replace those lost from the tobacco industry. In fact, depending on the new pattern of consumption, more jobs could be created than lost.⁸ Although tobacco growing is labor intensive, cigarette manufacturing is increasingly capital intensive, even in developing countries. To the extent that the things that consumers buy instead of cigarettes are more labor-intensive, there would be a positive net effect on employment.

In fact, in many countries (for example the US, UK, Colombia, Spain, Malaysia, Pakistan and the Philippines), jobs in cigarette manufacturing have fallen dramatically as a result of upgrading to new more capital-intensive technology, even with increases in production levels.⁹ New technology has also reduced the amount of raw tobacco needed for each cigarette, as more efficient processes have reduced tobacco waste. These two factors could well have a bigger effect on employment in the tobacco industry than tobacco control efforts.

Foreign exchange

Many countries have a net trade deficit from tobacco and tobacco products – more is spent on imports than the revenues from exports. In these countries, there would be foreign exchange savings if national consumption (and hence imports) fell, and a generally small impact if global demand fell and affected their exports. There are few developing countries that are net exporters of cigarettes (Bolivia, Venezuela, Croatia and Hungary), and in no cases are cigarettes an important source of export revenues.

The developing countries with a positive tobacco leaf trade balance (net exporters) are: Argentina, Brazil, Chile, Colombia, Guatemala, India, Kenya, Macedonia, Malawi, Mexico, Mozambique, Tanzania, Thailand, Turkey and Zimbabwe. These countries potentially have more to lose from a fall in global demand, although much will depend on how competitive their tobacco leaf exports are. Falling global tobacco prices could squeeze higher-price producers out, and increase the market share of lower-price producers, although profit margins might be lower. The impact on particular countries is not easy to predict. It should also be noted that even in the major growing countries, tobacco leaf exports make a modest contribution to total export revenues, except in Malawi (60%) and Zimbabwe (20-30%): the figures are 5-6% in Bulgaria, Dominican Republic, Kyrgyzstan and Tanzania, 1-2% in Brazil and Turkey, and well below 1% in all the other top tobacco-growing countries.

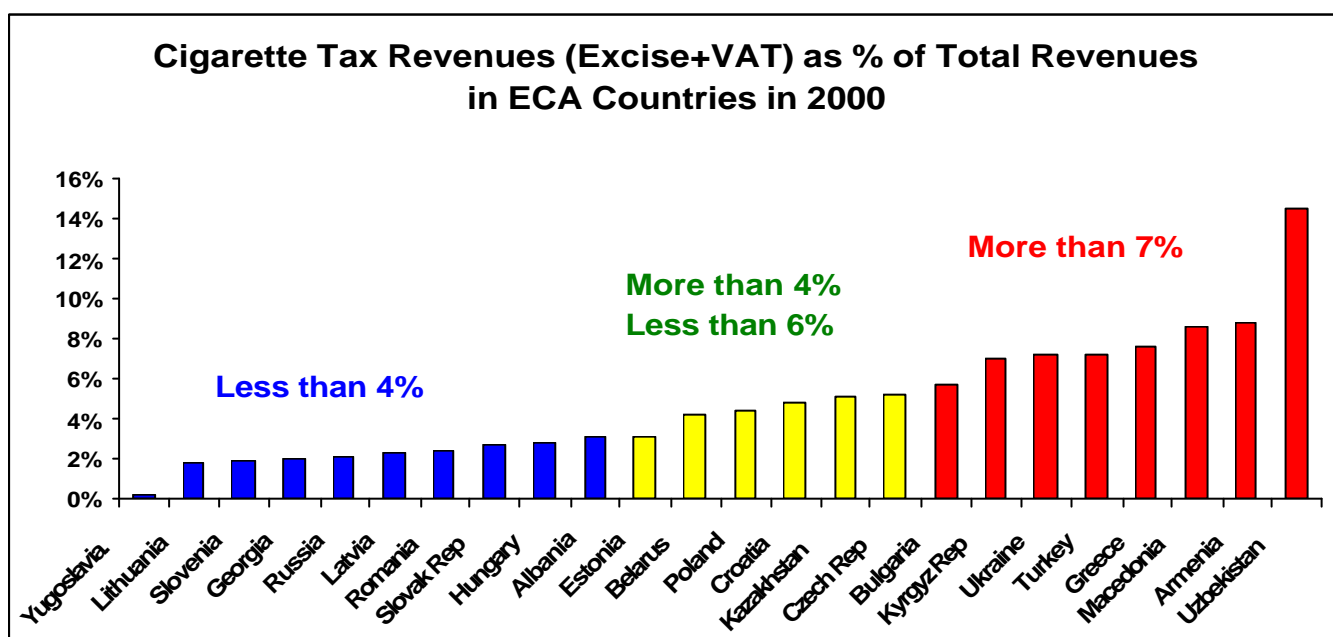
⁸ See Table 1 in the Annex for a summary of empirical estimates of the employment impact of a fall in tobacco product consumption.

⁹ van Liemt 2001 cites articles by in the Tobacco Journal International that provide figures for the staggering technological changes in cigarette production; where a century ago the first machines could produce 250 cigarettes per minute, whereas the latest machines make 16,000 cigarettes per minute. Jacobs et al in Jha and Chaloupka (editors), p326, provide details of falling employment despite large increases in output for the countries listed.

Fiscal impact - tax revenues and subsidies

Tobacco provides substantial tax revenues to governments. Revenues from tobacco excise taxes are especially significant in low income countries whose income tax systems tend not to be well developed. Because there are usually a small number of cigarette manufacturers, it is relatively easy to levy and collect excise taxes on cigarettes. Countries in which tobacco taxes account for as much as 9-11% of total government revenues include Armenia, Bulgaria, China, Greece, Macedonia, Turkey, Ukraine and Uzbekistan.¹⁰ In high income countries, even small percentages of total government revenues amount to billions of dollars.

Figure 1: Cigarette tax revenues as a percentage of total government tax revenues in countries in Europe and Central Asia



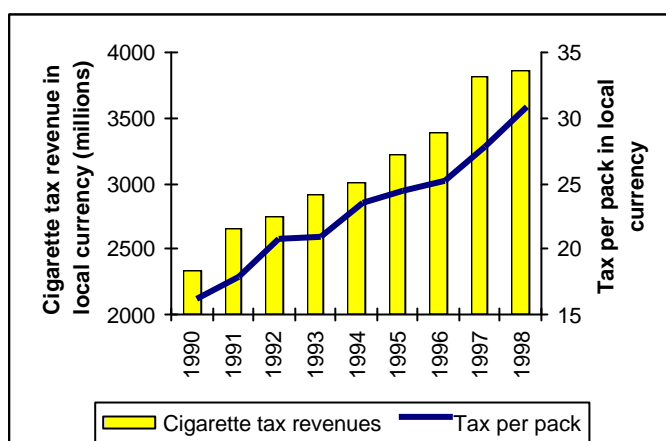
The argument is often heard that tobacco control would jeopardise these revenues. This may eventually occur, but in fact higher tobacco taxes will raise revenues in almost all countries for many years to come. Higher tobacco taxes that raise the price of cigarettes and other tobacco products have proved to be the single most effective tobacco control measure. The price rise causes consumption to fall, but by a smaller percentage than the price rise. Some smokers quit, others cut back, and would-be smokers are deterred from starting. Young people and adults with low incomes tend to be especially sensitive to prices. With higher taxes, smaller quantities of cigarettes are sold, but the tax per pack is higher, generating larger total revenues,¹¹ even in countries where taxes and prices are very high. Figure 2 shows how total revenues continued to rise in Norway as tax rates increased, despite continued falls in total and per capita consumption. Total consumption fell from 2.93 billion cigarettes in 1990, to 2.61 billion in 1995, to 2.58 billion in 1998. Annual per capita consumption fell from 853 to 743 to 726 cigarettes in these years.¹²

¹⁰ Data for 1999, estimates by World Bank. Tobacco revenues as a percentage of total government revenue have fallen to about 6-7% in Turkey in recent years.

¹¹ See annex for a simple numeric illustration.

¹² Corrao et al (eds) 2000, p318

Figure 2: Tax per pack and cigarette tax revenues in Norway, 1990-1998



Source: World Bank, 1999

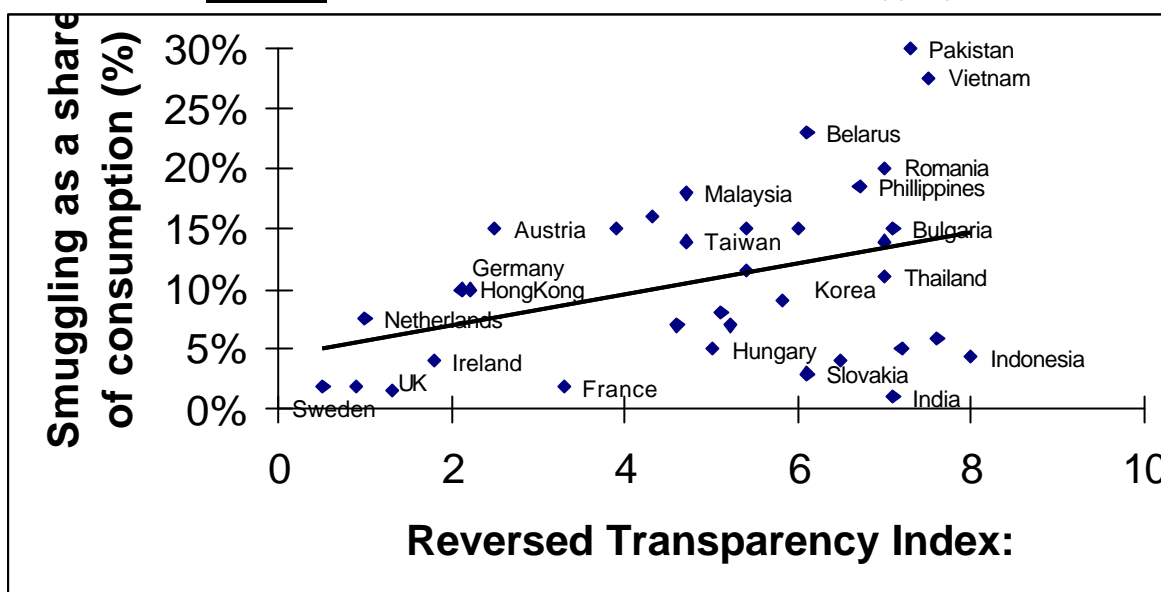
The public purse also benefits from profit taxes on tobacco companies, VAT on tobacco products, and production taxes and levies on farmers and traders (in some countries), but these amounts tend to be much smaller than excise tax revenues. Some countries provide profit tax holidays to cigarette manufacturers (to encourage new foreign investment), ill-advisedly foregoing revenues that they would otherwise collect. In some countries, there are some offsetting government expenditures: for example, the US and EU provide large subsidies to tobacco farmers at considerable cost to the public purse, which enable tobacco leaf produced at relatively high cost to compete in the international market.

Smuggling

Tobacco tax increases seem to offer a win-win situation: higher revenues for governments, and a strong incentive to people to quit smoking, with a particularly strong deterrent to young people, who tend to be much more price-sensitive. Why don't more governments raise cigarette taxes? Some fear that higher taxes would cause a huge increase in smuggling, that would cheat governments of tax revenues. But the evidence suggests a different conclusion.

Certainly high taxes and large price and tax differentials between countries provide an incentive to smuggle. But there are high price, high tax countries with very little smuggling (eg Nordic countries and many US states), and low price, low tax countries with a lot of smuggling (eg many Mediterranean countries). This clearly suggests that prices and taxes are not the whole story. It is not a simple case that higher taxes and prices will lead to more smuggling. Corruption is a key factor in explaining smuggling levels: countries with high general levels of corruption also have high levels of cigarette smuggling, irrespective of their price and tax levels, and vice versa for countries with little corruption (Figure 9 and World Bank, 1999). Organised crime and low risks of being caught or facing serious sanctions play a big role.

Figure 3: Correlation between Corruption and Smuggling



Source: World Bank calculation using data from Merriman, Yurekli & Chaloupka, in Jha and Chaloupka, 2000

The higher taxes are, the stronger the incentive to smuggle. Some countries have experienced increases in smuggling after implementing tax increases, but even so, they have seen total tax revenues rise as a result of the tax increases. And countries that have reduced tobacco taxes, hoping to dampen smuggling, have instead found that tax reductions inevitably caused total tax revenues to fall, with the added negative effect that the lower prices caused consumption to rise among young people (Canada and Sweden for example).

Irrespective of tax levels, the low prices (around US 25c/pack) at which even prestigious international brands are exported from the USA leave a considerable gap between the producers' export price and the official selling price in most countries – a gap which is seldom less than 35c per pack, with 70-80c not unusual. This gap provides a strong incentive in itself to smugglers, since they can easily buy cigarettes cheaply from the manufacturers or from middlemen, and then sell them for a good profit, even in countries with relatively low prices and taxes.

New analysis by the World Bank suggests that even when one builds in a causal link between higher prices/taxes and an increase in smuggling, an average global increase of 10% in cigarette prices would raise revenues by about 10%, lower consumption by about 3.5%, and increase the volume of smuggling slightly.¹³

There are other important considerations in any discussion about cigarette smuggling, especially related to the ready supply of cigarettes into the black market, and the possible involvement of major multinational cigarette manufacturers, who have been accused (and in some cases convicted) of knowingly supplying or even managing the black market. There is growing global experience in how to clamp down on and discourage smuggling, and a clear set of proposals for cooperative and national action that could do much more. These include higher penalties for smuggling; more resources for detecting and prosecuting smugglers and better collaboration among customs officials around the world; and various measures to make exporters and traders responsible for their cigarettes while in transit from their initial to their final destinations,

¹³ Yürekli, forthcoming, 2003

including requiring manufacturers to place unique identifying codes on all packs of cigarettes to enable smuggled cigarettes to be tracked and traced.

Concerns about the effect of tobacco tax increases on poor consumers

Would increases in tobacco taxes have a disproportionate (negative) impact on poor smokers? Even when their smoking prevalence and consumption is no higher than other groups, tobacco expenditures and taxes claim a higher share of the relatively low incomes of poor people than of higher income consumers. This is of course more strongly the case if poor people are more likely to smoke, and makes tobacco taxes -- like many consumption taxes -- regressive. But tobacco tax *increases* may be progressive, depending on the extent to which poor smokers reduce their consumption in response. If --as may well be the case-- low income smokers cut consumption by more than the price/tax increase, then increases in tobacco taxes will reduce their overall tax burden. And given the reduction in risk and consequent health gains that will result from lower use of tobacco, tobacco tax increases may be highly beneficial for poor smokers. In any case, the distributional impact of a single tax should not be considered in isolation from that of the broader system of taxation and government spending. All or part of additional revenues from higher tobacco taxes could be used in a pro-poor way to achieve health and broader poverty-reduction goals.

Opportunity cost of expenditures on tobacco

Concern about the impact of tobacco control on poor smokers must be seen in the context of the impact of tobacco use. In addition to the risks to health and life caused by tobacco consumption over the long term, tobacco use can also inflict short-term economic harm on users and their families. This is the harm caused when scarce family resources are spent on tobacco products instead of on food or other essential needs. Even a small diversion of resources of poor families who live at --or below-- the edge of poverty can have a significant impact on their health and nutrition.

Efroymson et al. show that "If poor people did not smoke... potentially 10.5 million fewer people would be malnourished in Bangladesh." "Each tobacco user represents one or more people--whether the smoker or his or her spouse or child--who is needlessly going hungry." Of course, reducing malnutrition is a complex challenge, and additional income does not translate in any simple way into nutritional improvements. But an additional 800 calories a day could potentially make an enormous difference to the nutritional status and health of children (or others) in households that suffer from severe malnutrition, in Bangladesh and elsewhere.

In Bangladesh, the average household in which at least one member smokes spends 2.8% of total expenditures on tobacco products, ranging from 1.5% for the poorest households to 4.5% for those with the highest incomes. In Egypt in 1997, tobacco products accounted for just less than 2% of total household expenditures for all but the richest quintile of households, where it rose to 2.8%.¹⁴ The national household expenditure survey in India in 1986-87 found that between 2.5 and 4% of all household expenditures were for tobacco, pan and intoxicants; the percentage was highest for the lowest-income urban households.¹⁵ For all households that included at least one

¹⁴ Sayginsoy 2002

¹⁵ Basheer 1993

smoker, the lowest income quartile in South Africa spent 4.7% of their income on cigarettes in 1995, with the percentage steadily decreasing for higher income groups, to between 0.6 and 1.3% for the highest income quartiles in the various race groups.¹⁶

There are many countries where the proportion of total household expenditure that goes on tobacco products is much higher: low income households with at least one smoker in Bulgaria spent 10.4% of their total income on tobacco products in 1995.¹⁷ Urban households in Tibet spent 5.5% of their monthly disposable income on tobacco products in 1992. In Indonesia in 1981, the lowest income group spent 9% of their total expenditure on tobacco products, and 15% of their total expenditures in 1996.¹⁸ In China, smokers in 2,716 households surveyed in the Minhang district reported spending 17% of household income on cigarettes.¹⁹

Even 2-4% of income spent on cigarettes can have a very high opportunity cost for a family living in poverty, 10-15% can make a very substantial difference to a family's standard of living.

Microeconomic (household) effects of tobacco use – poverty

There are important microeconomic or household level economic effects of tobacco use and tobacco control. High prevalence rates of tobacco use among low-income men in developing countries put them at high risk of serious diseases and premature death, and their sidestream ("secondhand") smoke can harm their children and wives. Part of a large recent study covering more than 20,000 poor men and women in 23 countries found that sickness or injury of a family member was by far the most frequent trigger for a downward slide into or exacerbating poverty.²⁰ Health care costs and lost income because of ill health and premature death are frequently cited by poor people as their gravest concerns.

Very few poor people have health insurance or unemployment benefits. Many poor people have few assets, apart from their ability to work. The poorer, less educated and less skilled people are, the more likely it is that their livelihood entails physical work. When a breadwinner in a poor family becomes too ill to work, the family's food and income supplies often stop. Paying for treatment further impoverishes the family, and may force them to sell animals, take children out of school, and forego buying food. Medical care may be inaccessible, requiring many hours of walking and waiting; the quality of care may be poor, and drugs are often unavailable.²¹ This makes their chances of recovering from illness lower than for people better able to afford and access health care.

Policies and interventions to help poor smokers quit, and to discourage others from starting are an important part of national and international efforts to improve the health and well-being of poor people, a core goal of development assistance.

¹⁶ van Walbeek 2000.

¹⁷ Sayginsoy, Yürekli and de Beyer 2002

¹⁸ World Bank estimates using statistics published by the National Statistical Office of Indonesia.

¹⁹ Gong, Koplan, Feng, Chen, Zheng and Harris 1995

²⁰ Narayan et al, 2000

²¹ Narayan et al, p253

III. Conclusion

Even if tobacco control efforts are highly successful, world tobacco demand will quite likely continue to grow, or to stagnate and then fall gradually. The global market in tobacco and cigarettes is not under immediate threat; there is not likely to be an abrupt transition. This makes it more likely that workers, farmers and companies involved in the tobacco industry will be able to adjust to gradual changes.

Obstacles and opportunities

Efforts to reduce tobacco use face formidable obstacles: nicotine addiction; social pressures; aggressive cigarette marketing and promotion; and the vested interests of those who live and profit by cigarette sales. But the majority of smokers and a much larger majority of non-smokers support tobacco control measures. And there are many good success stories that could be replicated with political will and broad support.

Countries or areas within countries whose economies are highly tobacco-dependent, and specific vulnerable groups that are heavily dependent on tobacco for their livelihoods may need help in coping with adjustments in the future, if efforts to reduce national or global tobacco use succeed well. The international development community could do much more to help speed progress in reducing tobacco use, within the framework of sound economic and development policies. Tobacco control policies and interventions have proved to be highly cost-effective in improving health outcomes, which is an important aspect of internationally agreed development goals. Increased government revenues from higher tobacco taxes could be used in pro-poor ways, and to achieve important development goals. Large reductions in tobacco use could lower the disease burden and mortality among smokers and their families, and release disposable income for more beneficial uses.

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Annex 1

Table 1: Studies of the effect on employment of a fall in cigarette consumption

Country	Author/s, Year	Assumptions re consumption changes	Finding
Net exporters			
Canada	McNicoll, Boyle, 1992	Domestic cigarette sales are 0 in 1989, \$ switched to “average” expenditure patterns	Net gain of 7,869 jobs (+0.1% employment).
USA	Warner et al, 1996	Eliminate all domestic consumption, switch to “average” expenditure patterns	Net job gains of 47 in first year, and 133,000 over 8 years (0%)
UK	Buck et al, 1990	Tobacco sales fall by 40%, switch to “recent stopper” expenditure patterns	Net gains of 155,542 job (+0.5%)
Zimbabwe	van der Merwe, 1998	All domestic production and consumption eliminated, agriculture shifts to alternative crops, expenditures shift to average input-output pattern	Net loss of 88,000 jobs in first year, agriculture production shifts restore about half (-12.4%)
Balanced tobacco economies			
South Africa	van der Merwe et al, 1995	Eliminate all domestic consumption, switch to “recent stopper” expenditure patterns	Net gain of 50,236 jobs (+0.4% employment).
Scotland	McNicoll and Boyle, 1992	Eliminate all domestic consumption in 1989, switch to “average” expenditure patterns	Net gain of 7,869 jobs (+0.3% employment).
Bulgaria	Petkova et al, 2002	10% consumption fall, expenditures shift to average input-output pattern	Net loss of 5,567 jobs (-0.018% of employment)
Net Importers			
Michigan State, USA	Warner and Fulton, 1994	Eliminate all domestic consumption in 1992, switch to “average” expenditure patterns	Net gain of 7,100 jobs over time (+0.1% employment).
Bangladesh	van der Merwe, 1998	Eliminate all domestic consumption and all domestic production of cigarettes and bidis in 1994, switch to “average” expenditure patterns	Net gain of jobs.
Egypt	Nassar and Metwally, 2002	consumption fall, expenditures shift to average input-output pattern	Net gain of jobs

Sources: World Bank 1999, Jha and Chaloupka (eds) 2000, Nassar and Metwally 2002 draft (revised version forthcoming in 2003), Petkova et al 2002 (unpublished)

Numeric illustration of how a cigarette tax increase raises total revenue and reduces total consumption

Tobacco products are so-called “normal goods” (despite the strong addictive properties of nicotine products), with an inelastic demand. This means that if the price increases, consumption will fall, but by a smaller percentage than the price increase.

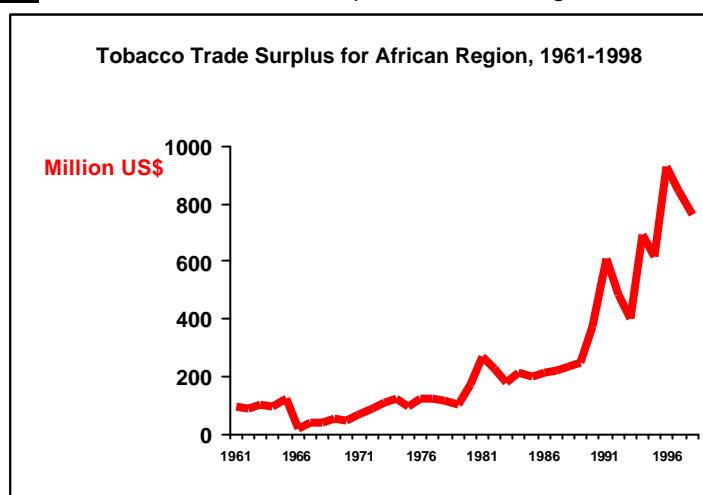
Say that 100 million packs of cigarettes are sold in a country, at a price of 100 per pack, of which the tax is 50. This would generate total tax revenues of 50,000 million. Now assume that the tax is increased from 50 to 100, a 100% tax increase. Assume that the manufacturer passes all of the tax increase onto the consumer, then the tax increase causes the price to rise to 150, a 50% increase. If the price elasticity of demand is -0.5 (about the middle of the range that is typical), then for every 10% price increase, demand/sales will fall by 5%. This 50% price increase leads to a fall in demand of 25%, from 100 million to 75 million packs. The post-tax revenue will be 100 per pack, times 75 million packs, or 75,000 million, a huge (50%) increase over the pre-increase tax revenue, despite the smaller sales volume.

If the price elasticity of demand is only -0.2 , (the low end of the range from empirical estimates), then post-tax increase sales would fall to 90 million packs, and the total revenues would be 90,000. In countries where consumers respond much more strongly to price increases, the fall in consumption is higher, and the tax revenue increase more modest. For example, with a price elasticity of -0.8 , sales would fall to 60 million packs, and total revenues would increase to 60,000 million. The revenue gain would be smaller, but the health gain would be larger.

Tobacco Leaf and Product Trade balance

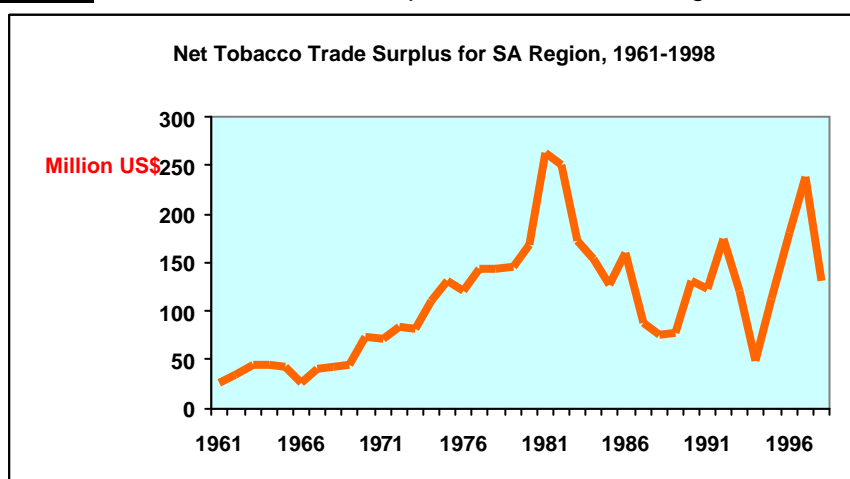
Figures 1-6 below show the net trade flows from tobacco leaves and tobacco products for countries in six regions of the world. In three regions—Africa South Asia and Latin America — there is an overall positive net trade balance. In another three regions—East Asia, Central and Eastern Europe and Asia, and the Middle East and North Africa — trade in tobacco and tobacco products is a net drain on most countries' foreign exchange. The Africa surplus is mainly from Malawi and Zimbabwe's leaf exports. In Latin America, although not shown in the figure, Brazil is the single biggest net exporter of tobacco products in the region, with a tobacco leaf and product trade surplus of US\$1,481 million in 1998 (two thirds from tobacco leaf trade).

Figure 1: Tobacco Trade Net Surplus for AFR region, 1961-1998



Source: World Bank estimate using FAO and USDA data

Figure 2: Tobacco Trade Net Surplus for South Asia region, 1961-1998



Source: World Bank estimate using FAO and USDA data

Figure 3: Tobacco Trade Net Surplus, Selected Latin America and Caribbean countries, 1975, 1985, 1995

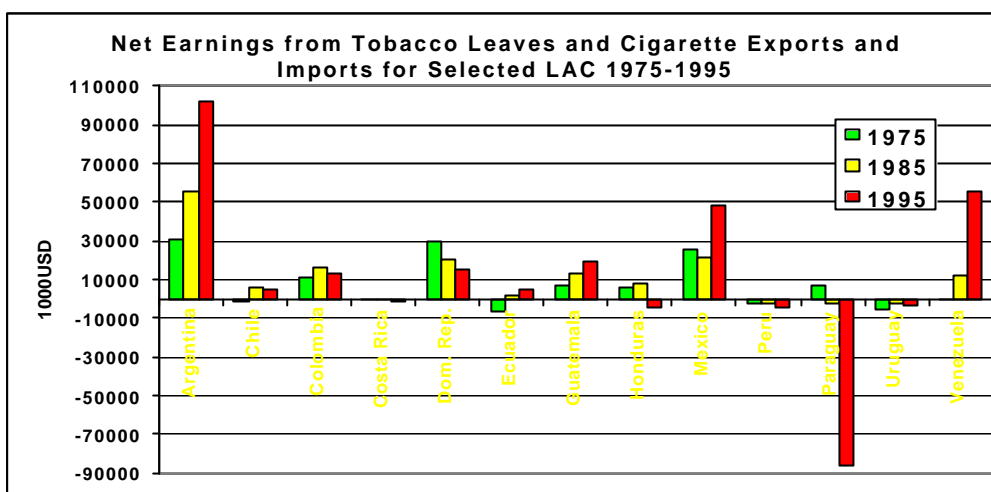
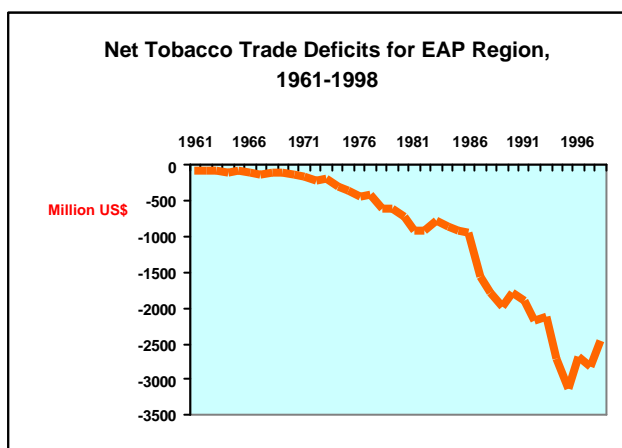
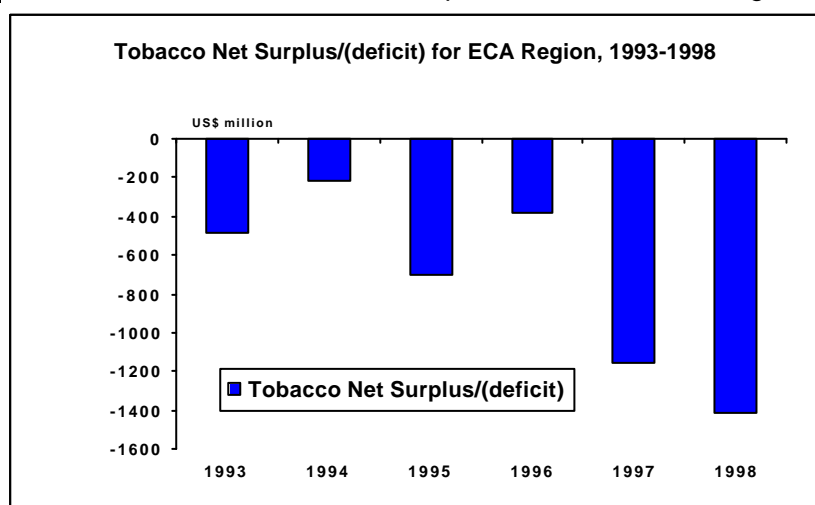


Figure 4: Tobacco Trade Net Deficit for East Asia and Pacific Region, 1961-1998



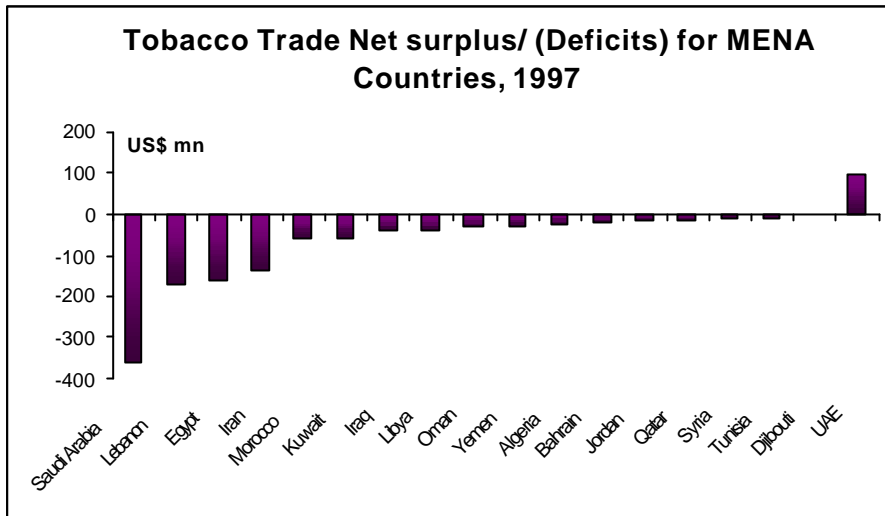
Source: World Bank estimate using FAO and USDA data

Figure 5: Tobacco Trade Net Deficits, Europe and Central Asia Region, 1993-1998



Source: World Bank estimate using FAO and USDA data

Figure 6: Tobacco Trade Net Deficits/Surplus for MNA Countries, 1997



Source: World Bank estimate using FAO and USDA data

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