tobacconomics
Economic Research Informing Tobacco Control Policy

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Economic Costs of Tobacco Use

Introduction

Tobacco use accounted for more than seven million deaths globally in 2015 (around five million men and two million women). Around 80% of the deaths attributed to tobacco use occurred in low- and middle-income countries (LMICs).[1] Tobacco use imposes a significant economic burden on a country, including the costs of healthcare to treat the diseases caused by tobacco and the lost productivity resulting from tobacco-attributable morbidity and mortality.[2, 3]

For every person who dies due to tobacco use, at least 30 people live with a serious tobacco-related illness. Smoking causes cancer, heart disease, stroke, lung disease, diabetes, and chronic obstructive pulmonary disease, which includes emphysema and chronic bronchitis. Smoking also increases the risk for tuberculosis, certain eye diseases, and problems of the immune system, including rheumatoid arthritis.[4]

Estimates of the economic costs of tobacco use are relevant not only for determining the economic burden on a country, and for its financial planning, but also for pushing policymakers to implement effective tobacco control programs to reduce consumption, especially increases in tobacco taxes. Despite that, reliable estimates of the economic costs of tobacco use still do not exist in many countries—especially in LMICs. Current levels of tobacco taxes fall short of recovering the true cost of tobacco use to national economies. In most LMICs, the collection from tobacco taxes is below 1% of gross domestic product (GDP). The total global economic cost of smoking is estimated at around $US 1.85 trillion, or around 1.8% of global GDP. Therefore, a significant increase in tobacco taxes can help close the gap between the cost of tobacco use and the revenue generated from taxes on tobacco sales.

This policy brief discusses various categories of economic costs of tobacco use and presents the available global evidence. It is based on the U.S. NCI and WHO 2016 Monograph, "The Economics of Tobacco and Tobacco Control"[2] and several other published sources. A companion technical note published under the same title provides more detail on the various methodologies applied in estimating the economic costs of tobacco use.

Categories of economic costs of tobacco use

While there are several categories of costs of tobacco use, most studies focus on direct and indirect costs.

Direct versus indirect costs

Direct costs of tobacco use refer to the monetary value of goods and services consumed as a result of tobacco use and related illnesses,[5] and consist of healthcare costs (e.g., physician and other service fees, medical supplies, medicines, etc.) and non-healthcare costs (e.g., transportation, food supplements, etc.). Indirect costs include the value of lost productivity and lost lives resulting from illnesses related to tobacco use.

Internal versus external costs

In estimating the costs of tobacco use, total costs should include both costs borne by the tobacco consumer (e.g., spending on tobacco purchases, healthcare costs incurred by the smoker), and the uncompensated costs borne by others (e.g., healthcare costs as a result of exposure to secondhand smoke).

Tangible versus intangible costs

Another category of economic costs distinguishes between tangible and intangible costs of tobacco use. Tangible costs are measurable and easy to identify, such as healthcare costs and productivity losses. When tangible costs are reduced, they release financial resources which can be used for other purposes. Intangible costs, such as the value of lost life, or pain and suffering due to illness, are far more difficult to quantify. Unlike tangible costs, reducing intangible costs does not release any immediate financial resources for alternative uses, but it increases welfare. Due to the difficulty in quantifying intangible costs, most are underestimated, indicating that the burden of tobacco use on the economy is even higher than estimates may suggest.

Avoidable versus unavoidable costs

Total costs of tobacco use are also made up of avoidable and unavoidable costs. Avoidable costs are those which could be reduced or eliminated at any time as a result of reduced tobacco consumption.[6] Unavoidable costs refer to already existing tobacco-related illnesses and new cases resulting from past or current tobacco use.

Global evidence on the economic costs of tobacco use

Estimates of economic costs

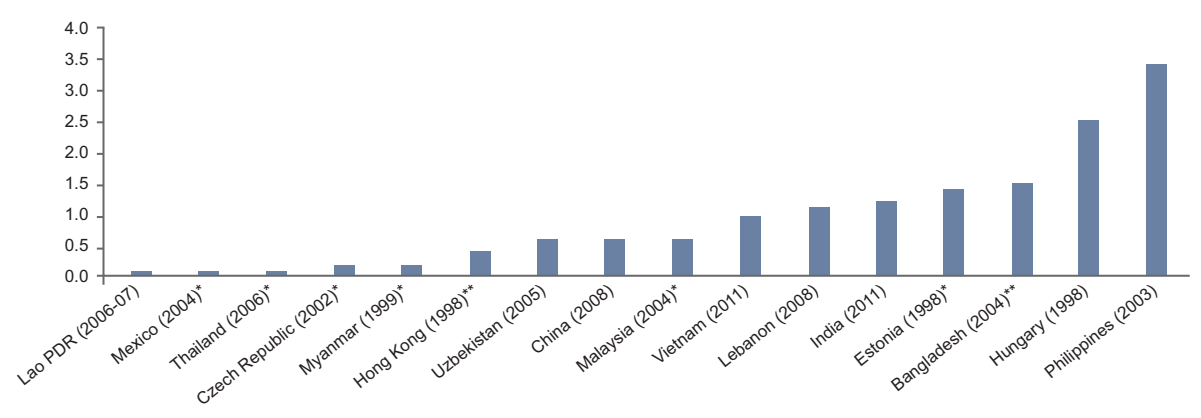
Estimates based on the existing evidence on the economic costs of tobacco use in terms of GDP vary widely across countries. Studies conducted in LMICs mostly rely on more limited data and, therefore apply less sophisticated methods than those conducted in high-income countries (HICs).

A systematic review of studies conducted in various countries between 1990 and 2011[2] finds that direct and indirect smoking-related costs in LMICs account for between 0.1% of GDP in Lao PDR to 3.4% of GDP in the Philippines, while direct costs alone range from 0.1% of GDP in Mexico to 1.4% of GDP in Estonia (Figure 1). For HICs, direct and indirect costs account for between 0.3% and 2% of GDP, while direct costs range from 0.1% to 1% of GDP (Figure 2). A few studies have estimated the economic cost of smokeless tobacco; for example, the estimated economic cost of smokeless tobacco-related cancers in Sri Lanka was $US 121.2 million in 2015 (or 0.15% of GDP),[7] while the economic cost of bidi consumption in India in 2017 was estimated at INR 805.5 billion (or 0.48% of GDP).[8]

The estimates of costs associated with secondhand smoke exposure are very limited. A 2009 study in the U.S. estimates the total annual costs of treatment of conditions associated with secondhand smoke exposure in the state of North Carolina (NC) to be $US 293.3 million, or 0.07% of NC GDP.[9] A similar estimate for the state of Minnesota (MN) in 2008 was $US 228.7 million (or 0.08% of MN GDP).[10] In Hong Kong, direct medical cost and productivity loss from secondhand smoke in 1998 was estimated at $US 688 million (or 0.41% of GDP). After adding the value of attributable lives lost, the cost was estimated to be $US 9.4 billion (or 5.6% of GDP).[11]

Figure 1

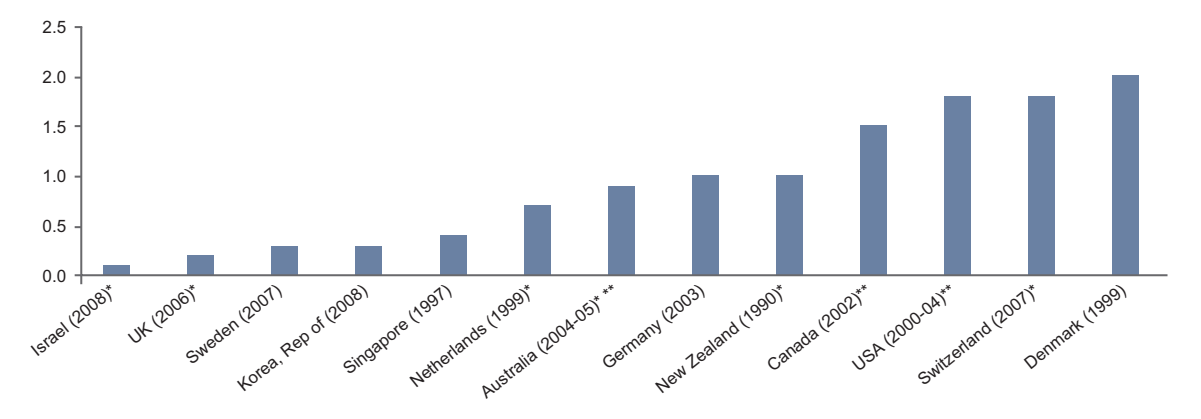
Estimates of direct and indirect costs of smoking in LMICs (% of GDP)



Source: NCI WHO (2016)[2] and Hoang Anh et al., (2016)[26]
** Estimate includes only direct costs; ** Estimate includes costs attributed to SHS exposure*

Figure 2

Estimates of direct and indirect costs of smoking in HICs (% of GDP)

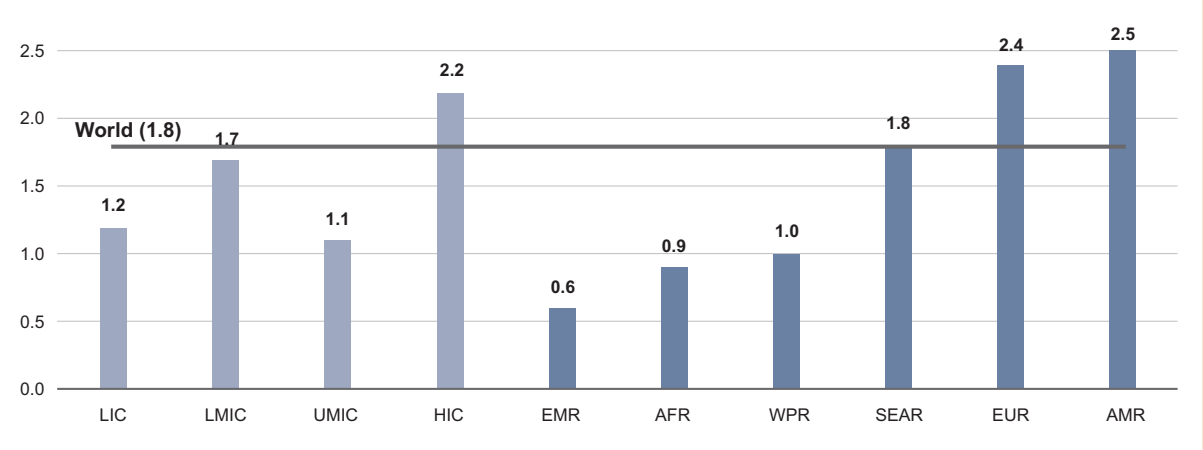


Source: NCI WHO (2016)
** Estimate includes only direct costs; ** Estimate includes costs attributed to SHS exposure*

Based on data from 152 countries, Goodchild et al., (2018)[13] estimate the total global economic cost of smoking in 2012 at around $US 1.85 trillion, or around 1.8% of global GDP (Figure 3). The direct costs were estimated at around $US 467.3 billion, which represented around 5.6% of global health expenditures (Figure 4), or 0.5% of global GDP, while the estimated indirect costs were $US 446.3 billion for disability (0.4% of global GDP) and $US 938.6 billion for mortality (0.9% of global GDP). The LMICs account for almost 40% of the global cost estimate, with direct costs being between 3.8% and 4.0% of total health spending in these countries (Figure 4). The estimated total economic costs of smoking in LMICs range from 1.1% to 1.7% of GDP, with the highest costs being estimated in the Americas and Europe at 2.4% and 2.5% of GDP, respectively (Figure 3).

Figure 3

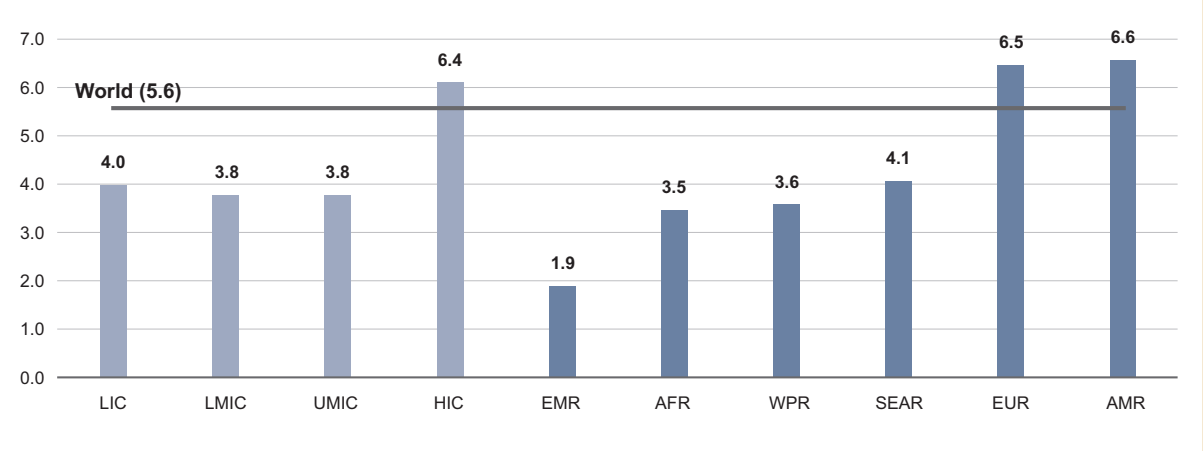
Economic costs of smoking by country-income group and WHO region, 2012 (% of GDP)



Source: Goodchild et al., (2018)

Figure 4

Smoking-attributable direct healthcare spending by country-income group and WHO region, 2012 (% of total healthcare spending)



Source: Goodchild et al., (2018)

Lost productivity resulting from absenteeism from work and premature death due to tobacco-related illness represents lost earnings for employees and lost revenues for the employers. A few recent studies from HICs suggest these costs are high. For example, the estimated average annual cost of a smoker to an employer in the U.S. is $US 5,816.[14] It is also reported that smokers are absent 6.5 more days per year than non-smokers in the U.S.[15] and 2.7 more days in the UK.[16] In terms of lost productivity, the estimated costs of smokers in the U.S. is around $US 151 billion (0.9% of GDP) and around $US 6 billion (0.03% of GDP) for non-smokers as a result of secondhand smoke exposure.[4] In Australia, lost productivity due to smoking is around $AU 8 billion (or 0.9% of GDP).[6]

Evidence on the development impact of tobacco use

In addition to imposing healthcare costs on an economy and reducing productivity and working years of life due to morbidity and mortality, tobacco use also crowds out spending on health, nutrition, and education for children. Reduced investments in those areas, both by families and governments, creates additional developmental costs of tobacco use.

Various other economic costs associated with tobacco use should be, but have rarely been, considered when estimating the total costs: the costs of fires attributed to smoking, deforestation, the loss of farmland, and environmental waste produced by tobacco farming and manufacturing.[17]

Smoking has been identified in some countries as the leading cause of fire and accounts for 10% of the total global fire death burden and 30% of the burden in the U.S.[18]

Tobacco cultivation also eats up large swaths of land which could otherwise support sustainable food production. About 90 percent of commercial tobacco leaf is grown in the southern hemisphere, often in countries where undernourishment and child labor continue to pose challenges. The total cost from these developmental consequences of tobacco use are potentially enormous, and they are expected to be borne by future generations.

Tobacco farming is land intensive and frequently uses large amounts of chemical fertilizers, pesticides, growth regulators, and wood for flue-curing. Tobacco crops strip the soil of nutrients such as nitrogen and phosphorus, and potassium to a greater extent, and do so faster than other major food and cash crops. Clearing land for tobacco growing cuts into forest reserves, as do tobacco-related forest fires.

Moreover, tobacco growing and curing are direct causes of deforestation; globally, an estimated 11.4 metric tons of wood are used annually for curing tobacco.[19] Taken together, these impacts of tobacco production disrupt the ecosystem and lead to soil and land degradation including deforestation. Tobacco control, in particular supporting economic alternatives to tobacco growing, can help restore biodiversity and protect land resources while advancing other important development objectives, like increased food security.

The environmental consequences of tobacco use are not limited to tobacco farming. Cigarette butts are the most widely littered product globally, often dumped into oceans, lakes, and other bodies of water. In 2014, 2,248,065 discarded cigarette butts were picked up from beaches and water edges across 91 countries.[19] Meanwhile, tobacco production is not only water intensive but also disperses chemicals into nearby waterways. Efforts to achieve clean water and sanitation will be both less comprehensive and less effective unless the environmental lifecycle of tobacco and its impacts on pollution, hazardous waste disposal, and inefficient water use are considered. Even discarded unsmoked filters are toxic to water and the life within it. In parts of Nicaragua, where most tobacco farms are located close to important rivers, researchers found pesticide contamination in both the superficial aquifer and deep groundwater. Studies in Brazil have found excessive agrochemical residues in waterways near tobacco farming communities.[19]

Conclusions

Evidence from the last two decades suggests that the economic costs of smoking are very high. In the case of direct costs, the evidence suggests similar estimates between LMICs and HICs. However, the direct costs in LMICs are likely to be underestimated because the quality of and access to healthcare are limited. As the indirect costs are much more difficult to estimate, they may be much higher than the existing evidence suggests, especially in LMICs.

Moreover, the existing estimates often do not include certain important types of costs, such as costs attributable to exposure to secondhand smoke; costs of maternal tobacco use during

pregnancy; a lack of spending on education and food due to investments being crowded out by smoking-related costs; costs of fires caused by smoking; and finally, environmental damage from tobacco farming and manufacturing.

In addition to a growing recognition of the obvious harmful effects of tobacco use on health, there is a noticeable international movement recognizing the harmful effects of tobacco use on development.

Economic costs of tobacco use are especially harmful in LMICs where the need for development spending is very high. Past and current trends in tobacco use, together with improvements in access to healthcare, suggest that the economic costs of tobacco use in LMICs are likely to increase considerably in the coming years.[2] The negative impacts of tobacco use on sustainable development, such as increased poverty, lack of education, hunger, and environmental degradation, will also significantly magnify the total cost of tobacco use.[17]

Reliable estimates of costs are important for various reasons, mostly to support arguments for more effective tobacco control policies, including increases in tobacco taxes. Current levels of tobacco taxes fall short of recovering the true cost of tobacco use to national economies; therefore, significant increases are required.

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About Tobacconomics

Tobacconomics is a collaboration of leading researchers who have been studying the economics of tobacco control policy for nearly 30 years. The team is dedicated to helping researchers, advocates and policymakers access the latest and best research about what's working—or not working—to curb tobacco consumption and the impact it has on our economy. As a program of the University of Illinois at Chicago, Tobacconomics is not affiliated with any tobacco manufacturer.
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