POVERTY

POVERTY AND EQUITY

EQUITABLE GROWTH, FINANCE & INSTITUTIONS INSIGHT

The Distributional Impacts of Health Taxes

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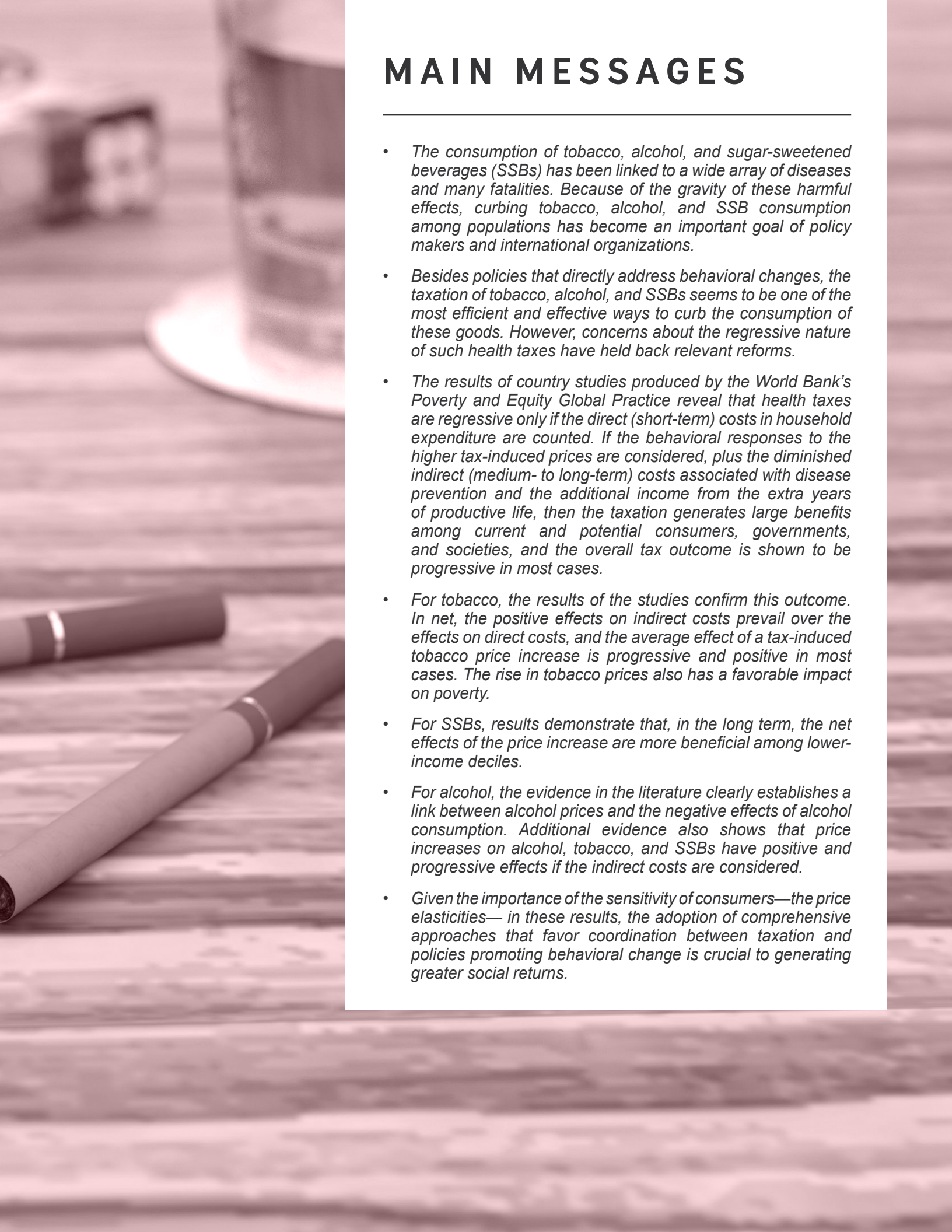

MAIN MESSAGES

- *The consumption of tobacco, alcohol, and sugar-sweetened beverages (SSBs) has been linked to a wide array of diseases and many fatalities. Because of the gravity of these harmful effects, curbing tobacco, alcohol, and SSB consumption among populations has become an important goal of policy makers and international organizations.*
- *Besides policies that directly address behavioral changes, the taxation of tobacco, alcohol, and SSBs seems to be one of the most efficient and effective ways to curb the consumption of these goods. However, concerns about the regressive nature of such health taxes have held back relevant reforms.*
- *The results of country studies produced by the World Bank's Poverty and Equity Global Practice reveal that health taxes are regressive only if the direct (short-term) costs in household expenditure are counted. If the behavioral responses to the higher tax-induced prices are considered, plus the diminished indirect (medium- to long-term) costs associated with disease prevention and the additional income from the extra years of productive life, then the taxation generates large benefits among current and potential consumers, governments, and societies, and the overall tax outcome is shown to be progressive in most cases.*
- *For tobacco, the results of the studies confirm this outcome. In net, the positive effects on indirect costs prevail over the effects on direct costs, and the average effect of a tax-induced tobacco price increase is progressive and positive in most cases. The rise in tobacco prices also has a favorable impact on poverty.*
- *For SSBs, results demonstrate that, in the long term, the net effects of the price increase are more beneficial among lower-income deciles.*
- *For alcohol, the evidence in the literature clearly establishes a link between alcohol prices and the negative effects of alcohol consumption. Additional evidence also shows that price increases on alcohol, tobacco, and SSBs have positive and progressive effects if the indirect costs are considered.*
- *Given the importance of the sensitivity of consumers—the price elasticities— in these results, the adoption of comprehensive approaches that favor coordination between taxation and policies promoting behavioral change is crucial to generating greater social returns.*

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Introduction

The link between health problems and the consumption of tobacco, alcohol, and sugar-sweetened beverages (SSBs) has been widely studied.[1] A large array of diseases is associated with tobacco, ranging from lung cancer and stroke to congenital malformations in children. Similarly, SSB consumption has been linked to diseases, such as diabetes, cardiovascular disease, and other types of cancer. Meanwhile, alcohol is not only linked to diseases, such as cancer, cardiovascular disorders, and liver cirrhosis, but also to fatalities through motor vehicle accidents, homicide, suicide, and domestic violence.

These harmful effects are important. About 100 million deaths in the 20th century may be attributed to tobacco consumption (Peto and Lopez 2004). If current consumption trends continue, this number could go up to 1 billion during the present century (Jha and Peto 2014). Similarly, 20,000 deaths annually are attributable to heavy alcohol consumption in the United States (Cook and Tauchen 1982). A recent global study finds that alcohol consumption is responsible for 5.3 percent of global mortality and 5.1 percent of disability-adjusted life years (WHO 2018). Epidemiological models indicate that taxing SSBs according to sugar content might result in a human weight reduction of 100 million pounds worldwide (Grummon et al. 2019).

Given the growing evidence on these harmful effects, it is not surprising that curbing tobacco, alcohol, and SSB consumption among populations is an important goal of policy makers and international organizations. Indeed, the World Health Organization has set a reduction in tobacco consumption as one of its primary goals, and several tobacco tax reforms have been implemented in developing countries to reduce tobacco consumption.[2] Likewise, by 2019, more than 37 countries had implemented taxes on sugary drinks, including Ecuador, India, Ireland, Mexico, Peru, the Philippines, South Africa, and Thailand (Cawley et al. 2019).

Policy options are available to curb the consumption of these products, such as establishing smoke-free zones, smoking-cessation support programs, support for alcohol control, media campaigns, health advisories, warning labels, but taxation seems to be one of the most efficient and effective ways to achieve this goal.[3] However, concerns about the regressive nature of these health taxes have held back reform because the taxes are expected to burden lower-income

1 On tobacco, see Doll and Hill (1956); HHS (2004); Ng et al. (2014); Stefler et al. (2018); WHO (2015, 2019). On SSBs, see GBD 2017 Risk Factor Collaborators (2018); Hu (2013); Imamura et al. (2015); WCRF and AICR (2018); Xi et al. (2015). On alcohol, see Chaloupka, Grossman, and Saffer (2002); Cook and Tauchen (1982); Grossman et al. (1993); Saffer and Grossman (1987).

2 South Africa, a global leader in tobacco control, is a well-known case (Fuchs, Del Carmen, and Mukong 2018).

3 It also increases government revenue (World Bank 1999).

households more heavily, given the larger share of the budgets of these households that are applied to consuming the taxed products.

This may be accurate in the short term in some cases if only the direct costs are counted that taxing these products imposes on immediate household spending capacity and if it is assumed that individuals do not alter their consumption patterns if they are faced with higher prices. Yet, if account is taken of the behavioral responses to higher prices, plus the indirect savings associated with disease prevention and the additional income because of the extra years of productive life that are gained, then, by curbing consumption, these taxes generate large benefits among current and potential consumers, governments,and societies, and the overall tax outcome becomes progressive in most circumstances. This is precisely what country studies produced by the World Bank's Poverty and Equity Global Practice reveal.

This note presents a summary of the evidence gathered by the World Bank over the last five years on the distributional impacts of health taxes, including on tobacco (Bangladesh, Bosnia and Herzegovina, Brazil, Chile, Georgia, Indonesia, Mexico, Moldova, the Russian Federation, South Africa, Ukraine, Vietnam), SSBs (Brazil, Kazakhstan, Ukraine), and alcohol (Brazil) (Map 1).

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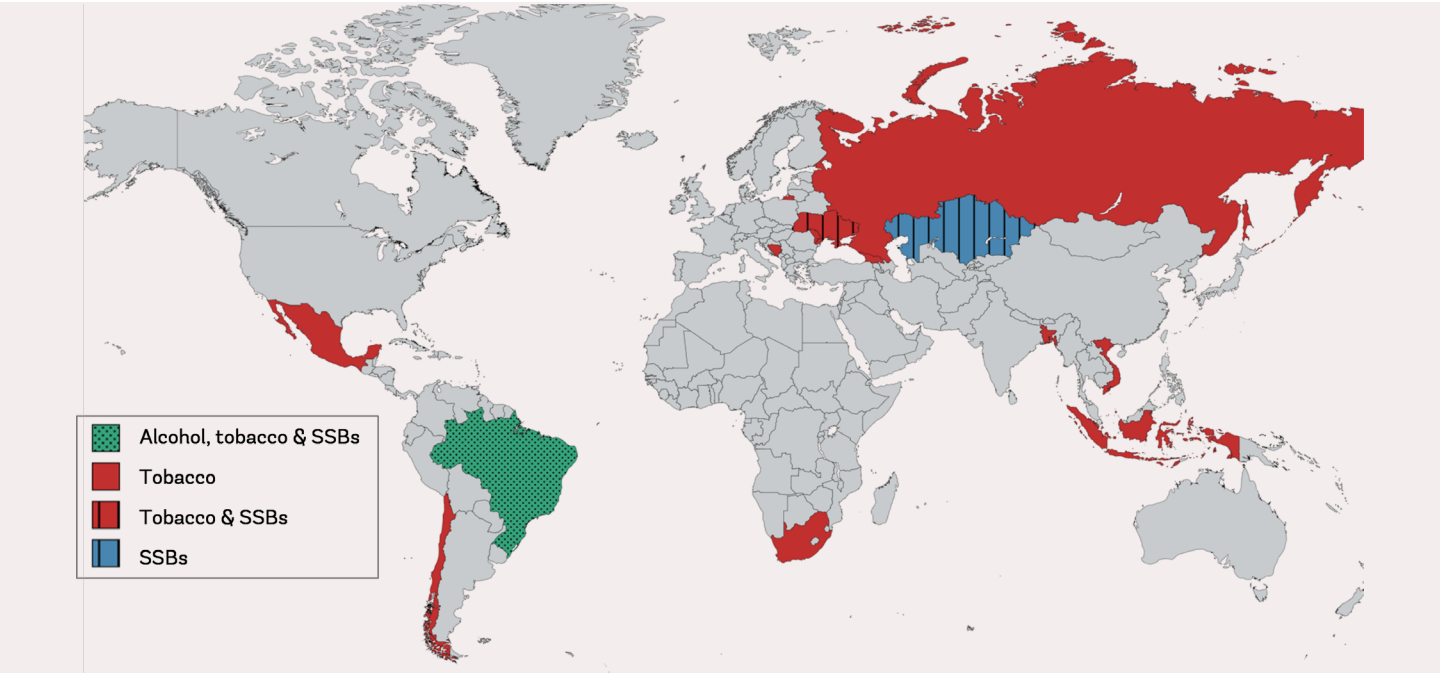
M A P 1 - Identification of the Multidimensionally Poor in Mexico



Sources: Coelho 2020; Del Carmen, Fuchs, and Genoni 2018; Fuchs and Del Carmen 2018; Fuchs, Del Carmen, and Mukong 2018; Fuchs and González Icaza 2019, 2020; Fuchs, Alan, Mandeville, and Alonso-Soria 2020; Fuchs, Matytsin, and Obukhova 2018; Fuchs and Meneses 2017a, 2017b, 2018; Fuchs, Orlic, and Cancho 2019.

>>> THE EFFECTS OF TOBACCO TAXATION

Taxing tobacco has been a policy of government for decades. It is not new to developing countries. Tobacco taxes are normally applied in an ad valorem and fixed form. For instance, in Chile, the government raised both the ad valorem and the fixed tobacco tax to finance the reconstruction of earthquake-affected areas in February 2010. In 2014, it introduced another reform by reducing the ad valorem tax, while increasing the fixed tax. In Indonesia, the government gradually raised excise taxes on tobacco products over more than a decade even though taxation in the country remains below thresholds recommended internationally. South Africa, which has a well-established tradition of tobacco control, has an aggressive tax policy. Since the 1990s, it has been applying taxes—the tax on tobacco, the excise tax, and the value added tax combined—at rates equivalent to 50 percent or more of retail prices.

>>> HOW ARE THE EFFECTS OF A TOBACCO PRICE INCREASE BECAUSE OF HIGHER TAXES ANALYZED?

Extended cost-benefit analysis (ECBA) is the methodology used here to simulate empirically the costs and the benefits of raising the price of cigarettes and study the effects of a tobacco price increase on household welfare. The methodology has two important, distinctive features in the case of a tobacco price rise. First, it distinguishes between the direct effects on tobacco expenditure, which are normally negative because smokers struggle to continue purchasing tobacco with their unchanged household budgets, and the indirect effects, which are normally positive. The indirect effects include behavioral changes (such as lower tobacco consumption), the lower medical expenditures faced by households because of the lower tobacco consumption (a lower incidence of the related diseases), and the additional income generated because productive life tends to be longer in the absence of tobacco-related diseases. Second, the ECBA methodology considers the various responses to a tobacco price boost based on household income, especially the distributional impacts. It examines the differences in the sensitivity to prices (elasticities) across income groups (by decile).[4]

While the analysis in the studies sometimes relies on elasticity estimates available in the literature for each country, the various elasticities are generally estimated using household data available in each country.[5] Once the price elasticities by decile have been estimated, the tobacco expenditures and the medical costs associated with tobacco-related diseases identified, and the additional income earned during the extra years of productive life estimated, the aggregated net effect of the tax policy (through price rises) is calculated as follows:

Net Income effect = change in tobacco expenditure (A) + lower medical expenses (B) + rise in income (C) (1)

where:

- A is the change in tobacco expenditure by product, household, and decile, calculated using different tobacco price elasticities and increases in pretax tobacco expenditures.
- B is the change in household medical expenses calculated using elasticities by decile, the estimated cost of treatments for tobacco-attributable diseases affecting households, and total household consumption.[6]
- C is the change in additional income derived from the extended productive life associated with less smoking. It is obtained based on the benefits of the tax-induced smoking reduction per household and the potential earnings over the course of the additional years of productive life, which are calculated using data on the years of life lost because of tobacco-attributable premature deaths.[7]

4 The direct effects are simulated using estimated price elasticities and consumption that are calculated based on the information available in household surveys. The indirect effects—the estimates of health costs and the additional years of labor recovered—are calculated based on evidence in the literature and on the information available through public administrations across countries.

5 See Fuchs and González Icaza (2020) for a detailed account of an example of the estimation of price elasticity.

6 The national estimates of the cost of treatment are distributed across deciles proportionally to the population share of all households that consume tobacco.

7 Premature deaths are also distributed across deciles proportionally to the share of all households that consume tobacco in the population.

Table 1 summarizes the results on the direct and indirect effects of a 25 percent increase in tobacco prices in each country under study. The original tables in each study present the results by decile as percent changes in total household expenditure. Table 1 summarizes these tables by showing the direction of the average change across deciles (whether positive or negative is shown in parentheses) and the nature of the outcome (whether the outcome is regressive or progressive) given the magnitude of the changes by decile. In the country studies, various elasticity scenarios are also considered (low, middle, or high), but Table 1 only summarizes the results obtained using the mid-level elasticity scenario.

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TABLE 1 - The Effects of a Price Increase as a Share of Consumption

	25% PRICE INCREASE			
	DIRECT	INDIRECT		NET EFFECT
EFFECT ON SHARE OF TOTAL CONSUMPTION USING:	CONSUMPTION	MEDICAL	ADDITIONAL INCOME	
	25% INCREASE IN TOBACCO PRICE			
BANGLADESH (2016-17)	Regressive (-)	Progressive (+)	Progressive (+)	Progressive (+)
BOSNIA AND HERZEGOVINA (2007, 2011, 2015)	Progressive (-)	Progressive (+)	Progressive (+)	Progressive (+)
CHILE (2011)	Neutral (-)	Progressive (+)	Progressive (+)	Progressive (+)
GEORGIA (2012-16, 2017)	Progressive (-)	Progressive (+)	Progressive (+)	Progressive (-)
INDONESIA, WHITE CIG (2016)	Progressive (-)	Progressive (+)	Regressive (+)	Regressive (+)
INDONESIA, CLOVE CIG (2016)	Regressive (-)	Progressive (+)	Progressive (+)	Progressive (-)
MEXICO (2016-2018)**	Progressive (-)	Progressive (+)	Progressive (+)	Progressive (+)
MOLDOVA (2015)	Progressive (-)	Progressive (+)		Progressive (-)
RUSSIA (2016)	Progressive (-)	Progressive (+)	Regressive (+)	Progressive (+)
SOUTH AFRICA (2014-15)	Regressive (-)	Progressive (+)	Regressive (+)	Progressive (+)
UKRAINE (2013)	Regressive (+)	Progressive (+)	Progressive (+)	Progressive (+)
VIETNAM (2016)*	Regressive (-)	Progressive (+)	Progressive (+)	Progressive (+)

**24% Price Increase*

***Increase to $1 MX Peso*

Note: The table shows the direction of the average change across deciles in each country, that is, (+) or (−), and the nature of the outcome, that is, whether the outcome is regressive, progressive, or neutral (similar effects in bottom and top deciles) given the magnitude of the changes by decile.

With rare exceptions, the direct effects on consumption are negative, as expected. Also, the results indicate that tobacco taxes are regressive in several countries, that is, greater relative losses accrue to lower-income households. This is related to the fact that lower-income individuals and families allocate larger shares of their budgets to the purchase of basic goods, such as food and energy, but also to the purchase of products, such as tobacco, alcohol, and SSBs. This means that, for example, if cigarette prices are raised by 25 percent in Chile, the poorest 20 percent of the population would lower their consumption of other goods by 0.35 percent in the absence of adjustments in cigarette consumption. The wealthiest 10 percent would only face a corresponding reduction of 0.09 percent (Fuchs and Meneses 2017a).

The indirect effects—which reflect outcomes that are observable in the longer term—are always positive in all the countries analyzed. In addition, the effect of lower medical costs is always progressive in the countries studied.[8] The effect deriving from the additional income earned because of the reduction in the years of productive life lost is also progressive in most, but not all cases. This is not surprising because medical costs exhibit less variation across income deciles, and a drop in medical costs therefore means that the benefit among lower-income families is relatively larger. However, the additional income earned because of the reduction in the years of productive life is not necessarily progressive given that incomes among the upper deciles are disproportionally greater, and the increase in incomes is thus often larger among wealthier households.

In the case of indirect costs, the benefit of lower medical expenses is, with the exception of one country, always relatively greater than the benefit deriving from the additional income earned, particularly among lower-income groups. This is the situation in Chile, Russia, and Ukraine, where the reduction in medical expenses constitutes the largest long-term benefit of the tobacco price increase under the ECBA (Fuchs, Matytsin, and Obukhova 2018; Fuchs and Meneses 2017a, 2017b).[9]

In net, it seems that the positive effects of the indirect costs prevail over the effects of the direct costs, and the average effect of the tobacco price increase is progressive and positive in most cases in the long term.

While the results presented in table 1 are averaged across deciles, it emerges from the country studies that the net effects are positive and progressive in almost all cases if the lower deciles are more sensitive (elastic) to a price increase. This is consistent with the evidence in the literature showing that lower-income and also younger population groups normally exhibit the highest elasticity to price changes. This has key policy implications and highlights the importance of the interaction between taxation and other policies that support behavioral change, thereby raising the sensitivity to tobacco prices.

>>> THE EFFECTS OF TAXES ON SUGAR-SWEETENED BEVERAGES

Given its harmful health effects, SSBs have also been subject to policies aiming to curb consumption. As of 2019, more than 37 countries had implemented tax policies on sugary drinks, including Ecuador, India, Ireland, Mexico, Peru, the Philippines, South Africa, and Thailand (Cawley et al. 2019). As with tobacco, while price increases caused by taxation on unhealthy products represent a larger short-term cost to low-income households, the health benefits of reducing SSB consumption also benefit low-income consumers in the long term because of the greater sensitivity to price changes of these consumers relative to higher-income consumers (Allcott, Lockwood, and Taubinsky 2019; Sassi et al. 2018).

Both studies on SSBs, one in Kazakhstan and one in Ukraine, use the ECBA methodology to analyze the net effects of a 20 percent rise in SSB prices because of higher taxes. The effects of SSB taxation materialize over three channels: (1) larger household budget expenditures on SSBs, (2) savings in out-of-pocket spending on health care because of the lower disease incidence associated with reduced SSB consumption, and (3) higher labor income resulting from an increase in life expectancy.

Considering the different elasticities and the situation in each country, the results reveal that, in the long term, the net effects of the price increase are more beneficial among lower-income deciles. In Kazakhstan, considering a medium-bound elasticity scenario, the effect is negative across all income deciles, but progressive. In higher elasticity scenarios, the results are both positive and progressive. In Ukraine, the results are progressive, but small in magnitude: raising the price of SSBs by 20 percent increases

8 For example, in Moldova, where tobacco-related diseases are the leading cause of premature adult deaths, the gains achieved through reduced medical expenditures is sufficient to offset the negative price effect of higher tobacco expenditures, with a clear progressive pattern (Fuchs and Meneses 2018).

9 The only exception occurs in Bangladesh. There the main gains of taxing tobacco under the ECBA model arise through the additional income generated by the extra years of productive life (Del Carmen, Fuchs, and Genoni 2018).

disposable income among the poorest quintile of the population by 0.03 percent. The net income gains would be small, but positive among deciles 1–7.

>>> THE EFFECTS OF ALCOHOL TAXES

Although most of the empirical evidence on the health and economic effects of the implementation of health taxes is centered on tobacco, curtailing the negative health outcomes linked to the consumption of alcohol has conceptually similar effects on the budgets, livelihoods, and productivity of individuals and households. In fact, the consumption of alcohol and tobacco products is similar in its addictive nature. It is therefore no surprise that the effects of curbing consumption are similar in both cases.

The evidence in the literature has done a good job of establishing a link between alcohol prices and the negative effects of drinking alcohol. For instance, using time series of cross-sectional data on countries to simulate fatalities among youth as a function of beer excise taxes, Saffer and Grossman (1987) find that indexing taxes on beer to inflation might have saved the lives of more than a thousand individuals ages 18–20 from motor vehicle accidents annually in the United States. Grossman et al. (1993) suggest that a US$1.00 tax increase per gallon of spirits would have significant impacts on age-adjusted cirrhosis mortality, saving up to 5,000 lives across all ages. Chaloupka, Grossman, and Saffer (2002) find that even a US$1.00 increase in the price of spirits could reduce liver cirrhosis mortality by 5 percent–10 percent. They also find a significant relationship between beer taxes and rape, robbery, domestic abuse, and suicide. Rabinovich et al. (2009) use a natural experiment in Europe to examine consumption and health impacts before and after policy changes in trade treaties. They find that, as the price of alcohol declines, sales and alcohol-related harm increase.

On the policy options for curbing alcohol consumption, studies show that the most impactful intervention is taxing alcohol. For instance, Anderson, Chisholm, and Fuhr (2009) investigate the cost-effectiveness of several policies and programs to reduce the harm caused by alcohol and find that making alcohol more expensive (through taxation) is one of the most cost-effective strategies.

A recent ECBA in Brazil undertaken by Coelho (2020) shows that price increases on alcohol, tobacco, and SSBs have positive and progressive effects by compounding the impact of health taxes on prices, medical expenditures, and productive lives.

In addition to the evidence above, because excess drinking also generates external costs borne by society, besides the presence of internalities, there is an argument for increasing the taxes on alcohol given that current tax rates seem to be well below the social cost, at least in the United Kingdom and the United States (Anderson, Chisholm, and Fuhr 2009; Manning et al. 1989).

>>> THE EFFECTS ON POVERTY

Beyond the direct and indirect effects on expenditures and welfare, a Global Tobacco Economics Consortium study assesses the effects of a rise in tobacco prices on poverty, but also provides more detail on the progressive nature of the effects. Using a compartmental model including 13 middle-income countries and two billion men, the study shows that a 50 percent increase in tobacco prices would cause men in the bottom income group (the poorest 20 percent of the population) to gain 6.7 times more life years relative to men in the top income group (the richest 20 percent of the population) (155 million versus 23 million). Of the US$157 billion in averted treatment costs, the bottom income group would account for 4.6 times more than the top income group (US$46 billion versus US$10 billion).

About 15.5 million men would avoid catastrophic health expenditures in a subset of seven countries that are without universal health coverage. As a result, 8.8 million men, half of them in the bottom income group, would avoid falling below the World Bank definition of extreme poverty. These 8.8 million men constitute 2.4 percent of the people living in extreme poverty in these countries. Overall, the bottom income group would account for 31 percent of the life years saved and 29 percent of the averted disease costs and averted catastrophic health expenditures, while paying only 10 percent of the additional taxes.

>>> FURTHER DISCUSSION ON THE RESULTS

The results summarized in this note underline the importance of health taxes as a means of effectively addressing health concerns and boosting welfare in the long term. An increase in tobacco, SSB, or alcohol taxes typically leads to positive outcomes, though this depends on the elasticity in the response to prices. In almost all cases, it benefits lower-income groups more. The sensitivity of consumers to price increases—price elasticities—play an important role, highlighting the value of adopting comprehensive approaches that favor coordination between taxation and behavioral change policies to generate higher social returns. In the case of tobacco, this involves measures targeting consumption among lower-income groups, for example smoking cessation and advertising adapted to the sociocultural context. In the case of SSBs, the higher taxes might be accompanied by healthy eating promotion campaigns, physical activity programs, labeling and marketing regulations, along with other policies, including restricting the marketing of unhealthy products. Further research is needed to investigate the most efficient combination of programs in deterring suboptimal consumption patterns and behavior among each socioeconomic group.

The benefits that may arise from health taxes could exceed the levels revealed by the analysis contained in the country studies. For instance, the additional revenue generated through the taxes could be used to support health and social programs to benefit other segments of the population. Also, the improvements in health, quality of life, and longevity by reducing tobacco and SSB consumption generate externalities not accounted for in the ECBA, such as the financial and time costs of caring for family members suffering from diseases related to the consumption of these products or the burden on national budgets because of other costs, such as the fiscal costs of disability payments. Similarly, the effects of secondhand smoking are not included in the potential benefits of smoking secession among household members. Additional research is needed to shed more light on the importance of these additional benefits and strengthen the case for further changes in health taxes.

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