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## TAXING SINS: ARE EXCISE TAXES EFFICIENT?

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**P**OLICY MAKERS AND the public have become increasingly concerned about the dramatic growth in obesity that has taken place in the United States over the last several decades.<sup>1</sup> While the public expresses concern about the issue, obesity rates continue to increase. People seem to be waiting for a magic pill that will correct the problem. While science has so far failed in its attempts to invent that pill, policy makers think they have found it: excise taxes.

Most economists, particularly those in public finance, find it preferable to raise revenue by taxing a broad base at a low rate in order to maximize the amount of revenue while reducing the distortions to the economy.<sup>2</sup> The opposite of a broad-based tax is an excise tax, a tax levied on particular goods. Historically, governments have used soft drink excise taxes, which have existed since at least 1920, primarily to generate revenue. Today, however, all levels of government increasingly view the taxation of soft drinks as a social tool—a way to curb rising obesity rates.<sup>3</sup>

Policies that tax sugar-sweetened soft drinks for the purposes of reducing obesity and, in some cases, raising funds to advance this goal seek the same economic legitimacy as past attempts to tax “sin products” like tobacco, alcohol, and firearms. Not surprisingly, though, this tax raises efficiency concerns similar to those taxes. Taxes on sugar-sweetened soft drinks do not necessarily advance the overall public interest, may be regressive in nature, and hardly ever work as intended.

### DO EXCISE TAXES ADVANCE THE PUBLIC INTEREST?

LIKE TARIFFS, MANY excise taxes are the result of anticompetitive behavior rather than true public-interest concerns.

Such excise taxes are hardly a new development. For instance, in the nineteenth century, the American dairy industry lobbied Congress for taxes on French oleomargarine so as to protect the “wholesomeness” of butter. The industry claimed, “There never was, nor can there ever be, a more deliberate, outrageous swindle than this bogus butter business . . . conceived in iniquity . . . nurtured by commercial moonshiners.”<sup>4</sup> In reality, oleomargarine resembles butter in appearance as well as food value, but is cheaper to manufacture. The real issue for the dairy industry was therefore the competition they faced from this cheaper substitute, and the industry went to great lengths to eliminate this competition. In the 1880s, some states banned oleomargarine all together.<sup>5</sup>

knowledge of or control over this diversion. A classic example of this is the Arkansas soft drink tax passed in 1992. The money from this tax was supposed to go into the state’s Medicaid program. However, when there was an attempt to repeal the tax, taxpayers discovered that policy makers were diverting the revenue to the general fund.<sup>8</sup>

Secondly, soft drink excise taxes may be regressive because the weight of these taxes often falls disproportionately on the poor.<sup>9</sup> Unless a good is disproportionately consumed by the rich, an excise tax on any specific commodity will be regressive. That is, even if they are consumed at the same rate by rich and poor people, expenditures on soft drinks will represent a larger proportion of earnings for low-income families, and thus the taxes represent a larger share of poor people’s total income.

#### DO EXCISE TAXES WORK?

EXCISE TAXES SEEK to change consumer behavior. Generally, an increase in taxes passed on to consumers in the form of higher prices will lead to a decrease in the amount of the good purchased. The questions for policy makers are: (1) does this occur and, if so, (2) by how much does consumption decrease? In the case of a tax on sugar-sweetened soft drinks, the question is does taxing sugar-sweetened soft drinks actually reduce the rate of obesity, as measured by Body Mass Index (BMI), in the United States?<sup>10</sup>

The true effectiveness of sugar-sweetened soft drink taxes in reducing obesity is dependent on how responsive the reduction in purchases of soft drinks will be to a tax increase, which, in turn, is affected by whether consumers perceive there to be close substitutes. Some possible substitutes for sugar-sweetened sodas include tea, coffee, milk, diet soda, juices, and sports drinks. The effect on caloric intake is difficult to predict because someone could be consuming the same or more calories with some of these liquids, as it may not be an ounce-for-ounce substitution. What’s more, an increased consumption of unhealthy foods or decreased exercise habits may be byproducts of the substitution effect. All of these risk trade-offs frustrate the social goal of the tax.

Recent studies challenge the case for using excise taxes to solve social problems. For instance, a 2007 study analyzes the demand for dairy products by questioning how responsive consumers are to changes in dairy prices. Given that some dairy products contain “a large portion of . . . particularly harmful types of fat” like saturated fat, the authors use their estimates of price responsiveness to make inferences about the effect of “fat taxes” on fat consumption. They find that consumers are not responsive to changes in dairy prices; that is, when dairy prices increase consumers do not decrease their purchases of these goods by much, and that the effect on caloric intake and fat consumption is trivial. Specifically, the authors show that

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Things are no different today. In 2002, California instituted a 5 percent state tax on consumers’ satellite TV bills. An apparent attempt by the cable industry to gain a competitive advantage by burdening satellite television customers with a tax that was not imposed on cable TV customers, this anticompetitive tax also illustrates the tendency of a tax to evolve from one primarily designed to raise revenue to one designed to discourage consumption and production. The tax was ultimately removed from the state budget due in large part to the lobbying efforts of California-based satellite provider DIRECTV.<sup>6</sup>

#### ARE EXCISE TAXES FAIR?

THERE ARE TWO reasons why excise taxes may not be fair. First, economists have found that taxpayers are more tolerant of tax increases if the stated objective of such increases is to reduce activities that are widely frowned upon and to increase funding for projects or programs that are believed to promote worthy objectives.<sup>7</sup> Governments frequently promise that the funds derived from these taxes will pay for programs that advance the social purpose of the tax. However, evidence shows that this is often not the case; governments often divert the funds to other political purposes, and taxpayers have no

a 50 percent tax on dairy products would cut daily intake by only 30 calories, 1.5 percent of a 2,000-calorie diet. To lose one pound of body weight in a month, the average person would need to consume 100 fewer calories per day.<sup>11</sup>

Similarly, in their 2007 paper, Gelbach, Klick, and Stratmann analyze the effect of changes in relative food prices on individual behavior. Specifically, they hypothesize that the price of unhealthful foods has declined more rapidly than the price of healthful foods. The authors find that as healthful foods become more expensive relative to unhealthful foods, people's BMIs increase, as does the likelihood of people becoming overweight or obese. To counteract this trend, the authors consider the effect of a 100 percent tax—"surely an upper bound on what is politically viable"—on all unhealthful foods in their price index.<sup>12</sup> What's the effect of this 100 percent tax? BMI is reduced by less than 0.2 points, which is less than 1 percent of average BMI and just 13 percent of the increase in BMI that occurred from 1982 to 1996 alone. These results suggest that the sensitivity of individuals to changes in relative food prices is not sufficient to make "fat taxes" a viable tool to lower obesity.<sup>13</sup>

In their 2008 study, Fletcher, Frisvold, and Tefft specifically evaluate the effectiveness of soft drink taxes as a policy to reduce obesity. They analyze the impact of changes in states' taxation rates from 1990 to 2006 on changes in BMI and obesity. Their results show that soft drink taxes have a statistically significant impact on behavior and weight; however, the magnitude of the effect is small because soft drinks are only 7 percent of a person's total calorie intake. The authors calculate that if a 75-cent soda was taxed to a higher price of 90 cents, the BMI of a severely obese person would fall from 40 to just 39.98. These results illustrate that behavioral changes are not sizeable enough to lead to large changes in population weight based on the current magnitudes of state soft drink tax rates.<sup>14</sup>

To illustrate the relative ineffectiveness of imposing excise taxes to curb obesity more concretely, consider the following example. A middle-aged woman in the 75th percentile of height and weight in 2002 was about 62 inches and 182 pounds.<sup>15</sup> At this size, she would have to lose 25 pounds to get to 157 pounds, the average weight for a woman her height and age in 1960. Since changes in mean BMI for women in this percentile increased from almost 23.2 to 26.9 between 1960 and 2002,<sup>16</sup> how much of an excise tax would need to be levied on sugary soft drinks to reduce her BMI to 1960 standards? According to the 2007 study mentioned above, a 1 percent increase in the soft drink tax reduces BMI by an average of 0.0115 percent. As such a 1,200 percent increase in the tax would be needed to reduce her weight to the 1960 level.<sup>17</sup> Imposing a 1,200 percent tax would amount to charging a \$9 tax on a 75-cent can of soda.<sup>18</sup> Although such a tax is infeasible in both size and effect, its inefficiency suggests that

even if a much smaller tax would eliminate consumption of all sweetened soft drinks in question, the tax would have no significant effect on weight reduction.

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## CONCLUSION

THE OSTENSIBLE REASON for taxing sugar-sweetened soft drinks is to reduce the rate of obesity and simultaneously raise revenue to fund projects and programs that will further this end. However, multiple problems arise when trying to resolve this serious social problem by imposing excise taxes on sugar-sweetened soft drinks. First, the effectiveness of these taxes appears to be trivial because soft drink consumption is a relatively small part of the diet for overweight people and drinks that serve as substitutes for sugar-sweetened sodas may also be highly caloric. In addition, governments may not spend the increased revenue from these taxes on the intended social purpose, and consumers have little control over these funds. Finally, the burden of soft drink excise taxation would likely fall disproportionately on the poor.

## ENDNOTES

1. Based on the 2001 National Health and Nutrition Examination Survey, 34 percent of U.S. adults aged 20–74 were overweight and an additional 27 percent were obese in contrast to the late 1970s, when an estimated 32 percent of U.S. adults aged 20–74 were overweight and 15 percent were obese (Office of the Surgeon General). Levels remain high as 66.2 percent of adults ages 20–74 are overweight or obese and 32.9 percent are obese based on the most recent National Center for Health Statistics.
2. Randall G. Holcombe, "Selective Excise Taxation from an Interest-Group Perspective," in William F. Shughart II, ed., *Taxing Choice: The Predatory Politics of Fiscal Discrimination* (New Brunswick, NJ: Transaction Publishers, Rutgers—The State University of New Jersey, 1998), 81–100.
3. Jason M. Fletcher, David Frisvold, and Nathan Tefft, "Can Soft Drink Taxes Reduce Population Weight?" (working paper, Emory University Department of Economics, August 14, 2008), [http://www.economics.emory.edu/Working\\_Papers/wp/2008wp/Frisvold\\_08\\_08\\_paper.pdf](http://www.economics.emory.edu/Working_Papers/wp/2008wp/Frisvold_08_08_paper.pdf).
4. Anonymous, *Oleomargarine and Butterine: A Plain Presentation of the Most Gigantic Swindle of Modern Times* (New York: T.L. McAlpine, 1886), 2.

5. Adam Gifford Jr, "Whiskey, Margarine, and Newspapers: A Tale of Three Taxes" *Taxing Choice*, 57–76.
6. Business Wire Staff, "DIRECTV Calls Proposed California State Satellite TV Tax Anti-Competitive," *Business Wire*, August 9, 2002, <http://www.allbusiness.com/electronics/computer-electronics-manufacturing/5983195-1.html>.
7. Dwight R. Lee, "Overcoming Taxpayer Resistance by Taxing Choice and Earmarking Revenues," *Taxing Choice*, 105–116.
8. Ibid.
9. Dahlia K. Remler, "Poor Smokers, Poor Quitters, and Cigarette Tax Regressivity," *American Journal of Public Health* 94 (2004): 225–229, <http://www.pubmedcentral.nih.gov/picrender.fcgi?artid=1448232&blobtype=pdf>.
10. A measure of weight in relation to height, BMI is calculated as weight in pounds divided by the square of the height in inches, multiplied by 703. Many organizations use a BMI of 30 or greater to identify obesity in adults and a BMI between 25 and 29.9 to identify overweight in adults. Office of the Surgeon General, *The Surgeon General's Call to Action to Prevent and Decrease Overweight and Obesity 2001* (Rockville, MD: U.S. Department of Health and Human Services, 2001). <http://www.surgeongeneral.gov/topics/obesity/calltoaction/CalltoAction.pdf>.
11. Hayley H. Chouinard, David Davis, Jeffrey T. LaFrance, and Jeffrey M. Perloff, "Fat Taxes: Big Money for Small Change," *Forum for Health Economics & Policy* 10, no. 2 (Obesity), article 2, (2007), <http://www.bepress.com/fhеп/10/2/2>.
12. Jonah B. Gelbach, Jonathan Klick, and Thomas Stratmann, *Cheap Donuts and Expensive Broccoli: The Effects of Relative Prices on Obesity*, March 13, 2007, [http://www.law.yale.edu/documents/pdf/Intellectual\\_Life/JKlick\\_Cheap\\_Donuts.pdf](http://www.law.yale.edu/documents/pdf/Intellectual_Life/JKlick_Cheap_Donuts.pdf)
13. Ibid.
14. Jason M. Fletcher, David Frisvold, and Nathan Tefft, "Can Soft Drink Taxes Reduce Population Weight?"
15. Steven B. Halls and John Hanson, "Average Height and Weight Charts: Showing Percentiles and Variance for Men and Women," (2002, modified 2008), <http://www.halls.md/chart/height-weight.htm>.
16. Cynthia L. Ogden, Cheryl D. Fryar, Margaret D. Carroll, and Katherine M. Flegal, "Mean Body Weight, Height, and Body Mass Index United States 1960–2002," *Centers for Disease Control and Prevention's Division of Health and Nutrition Examination Surveys*, no. 347 (October 27, 2004), <http://www.cdc.gov/nchs/data/ad/ad347.pdf>.
17. The calculations of this hypothetical tax are meant to be illustrative. Given the infeasibility of such a tax, the authors recognize the uncertainty that underlies its estimation.
18. Jonah B. Gelbach, Jonathan Klick, and Thomas Stratmann, *Cheap Donuts and Expensive Broccoli*.

The Mercatus Center at George Mason University is a research, education, and outreach organization that works with scholars, policy experts, and government officials to connect academic learning and real-world practice.

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