The Dismal Record of Soda Taxes

Michael L. Marlow, Ph.D.

Introduction

In the last 3 years, taxes on sugar-sweetened beverages ("soda") have been enacted in California (in Berkeley, Oakland, and Albany), in Colorado (in Boulder), in Philadelphia, and in Seattle. Advocates commonly put forth two arguments: (1) taxation will discourage soda consumption and thus reduce obesity and other health ills such as diabetes and (2) revenues will fund sorely needed programs aimed at improving public health. Both claims essentially support the misplaced supposition that expanding government somehow promotes public health.

Speculation Abounds

Rising obesity prevalence in children and adults is lamentable but does not prove that soda or even sugar is a primary cause. In theory, soda taxes are aimed at individuals that government policymakers believe are ill-informed about the harmful effects of their soda consumption and lack sufficient incentives to consume within healthful limits. Proponents of taxing "bad" foods often justify their policies after complaining that food companies entice consumers to overconsume by making unhealthy products too cheap. Taxes on soda thus attempt to selectively punish overconsumption of sugar by increasing costs that boost prices enough to force consumers to cut back toward healthful levels.

Soda, however, is not the leading source of sugar in the United States. The Centers for Disease Control and Prevention (CDC) state that the majority of our sugar calories come from food, not beverages, with grain-based desserts, yeast breads, and chicken and chicken-mixed dishes being the top three contributors.[1] Sales of full-calorie soft drinks have been declining, in part because soda makers are meeting growing consumer demands for more no-calorie and low-calorie options. Bottled water has also outsold carbonated soft drinks since 2017, overturning many years of soda dominance in the market.[2]

Whether fructose consumption has increased sufficiently to be a casual factor in the rise in obesity prevalence has also been examined.[3] Data indicates that total fructose availability did not increase between 1970 and 2009 in the U.S., and thus was unlikely to have been a unique causal factor behind increased obesity prevalence. The sugar-obesity connection also remains unclear, as the evidence does not clearly indicate that fructose-containing sugars contribute more to weight than other sources of energy in the diet.[4] In addition to those fructose-containing sugars, other highly palatable aspects of a Western dietary pattern (refined grains, processed meat, red meat, French fries, etc.) also deserve our attention when it comes to theorizing about what foods are causally related to rising obesity prevalence.

A recent study argues that it defies both logic and a large body of scientific evidence to claim that sugars that played fundamental roles in the substantial improvements in life- and health-spans over the past century are now suddenly responsible for increments in the prevalence of obesity and chronic non-communicable diseases.[5] Such naive claims are attributed to "diet-centrism" and the disease-mongering about dietary sugar. Diet-centrism describes the naïve tendency of both researchers and the public to attribute a wide-range of negative health outcomes exclusively to dietary factors while neglecting the role of individual differences in nutrient metabolism. The same study concludes that the consumption of simple sugars and sugar-polymers (e.g., starches) up to 75 percent of total daily caloric intake is innocuous in healthy individuals.

Flawed Interventions

Until recently, evidence for the effectiveness of soda taxation was weak at best given that soda itself has only recently been singled out for taxation. However, longstanding research on alcohol and tobacco demonstrates that taxation primarily decreases consumption by light, not heavy, users.[6] There is little reason to suspect anything different for soda. Those with weak interest reduce intake, leaving the unrepentant "sinners" to simply pay higher taxes as they mostly ignore the script laid out for them by the public-health advocates.

Public health may also suffer when taxes push consumers into non-taxed products. One study found that teen marijuana consumption rose following state tax increases on beer, indicating that policies targeted at one problem (excessive alcohol consumption) may also affect other problems (youth marijuana consumption).[7] Again, there is little reason to suspect anything different for soda taxes.

Consumers who reduce consumption may also reward themselves for "good" choices by indulging in other caloric foods. For example, a study finds that consumers purchasing meals at Subway, which is perceived as a healthier fast-food restaurant, were less likely to select diet soda compared to consumers at McDonald's.[8] Similarly, the non-taxed status of fruit juices and milk may confer a "health halo" on these drinks, similar to the effect of "low sugar" or "low fat" health claims.[9] Consumers often interpret such health claims to mean that the food item is healthy, pushing them to overconsume such foods and leading to a higher caloric intake.

New York City's attempt to ban large soda containers illustrates another example of how anti-soda policy might backfire. One study offered participants varying drink menus.[10] One menu offered 16 oz., 24 oz., or 32 oz. drinks for sale. A second menu offered 16 oz. drinks, a bundle of two 12 oz. drinks, or a

bundle of two 16 oz. drinks. A third menu offered only 16 oz. drinks for sale. Participants bought significantly more ounces of soda with bundles than with varying-sized drinks.

Then there is the "money-grab" issue. Soda-tax revenues are prized by public health advocates attempting to carve out new public monies for their own domains, which may include public water fountains, walking paths, pre-school, and, of course, new jobs in public health. Soda-tax revenues, however, are fungible since earmarking them for specific programs takes place as other revenue sources (property and general sales taxes) rise, fall, or remain the same for other public health programs. For example, a city allocating $50 million from a soda tax to public water fountains may simply shift $50 million from other continuing public health programs. Total public health spending is the correct metric to examine, despite health advocates scrutinizing whether their pet projects are now funded from soda taxation. The World Health Organization has recently admitted that there is little evidence that earmarked revenues for health do not displace other budgetary items despite promises to the contrary by tax advocates.[11]

Perhaps it is not surprising that political incentives to raise tax revenues to fund government expansion directly contradict ostensible goals to reduce soda consumption. In what must be one of the shortest-lived taxes in the history of Illinois, Cook County officials repealed its tax on sugar- or artificially sweetened beverages of one penny per ounce on Dec 1, 2017, despite its first implementation on Aug 2, 2017. The tax proved highly unpopular, in part because wise citizens apparently concluded that a tax on both diet and non-diet soda was more about bailing out a $1.8 billion budgetary hole than promoting public health.[12]

Recent Evidence on Soda Taxes

Mexico

Tax proponents widely cite Mexico's experience as evidence that taxation causes a substantial reduction in soda consumption. In 2014, Mexico imposed a tax of approximately 10 percent that applied to nondairy and non-alcoholic beverages with added sugar. One study reports a 6 percent average decline in purchases of taxed beverages during 2014 compared to pre-tax trends.[13] However, even if soda consumption fell by 6 percent, we do not know what Mexicans consumed instead. The authors admit that they cannot quantify any potential changes in calories and other nutrients purchased, and their potential health implications. Given the tenuous causal connection between soda consumption and health, it remains speculative at best to predict an improvement in public health.

Berkeley

In November 2014, Berkeley, California, became the first U.S. city to impose a specific tax on sugary drinks.[14] The penny-per-fluid-ounce tax is imposed on distributors rather than directly on consumers, despite expectations that consumers would pay the tax through price hikes. Tax revenues accrue to Berkeley's general fund and are not earmarked for health programs, despite promises to use all revenues for health programs.

One study found that only a small fraction of stores passed the tax on to consumers since most stores either absorbed the cost of the tax or increased the prices for both diet and regular sodas.[15] Their actions effectively defeat the purpose of the tax to make regular sodas more expensive and to push consumers towards less caloric drinks. The tax also contains numerous exceptions for fruit juices and milk that also have high sugar content. The tax only applies to stores with more than $100,000 in annual revenues. Sparing small businesses may be good politics, but there is no theoretical difference in the health impact of sodas purchased from a large or a small store, and this policy undermines the purported purpose of promoting public health.

A recent study of high-resolution scanner data finds limited evidence of reduced supermarket purchases of soda in Berkeley, but half of reduced purchases are shifted to just outside the city where there is no special tax.[16] Expect tax advocates to tout any reductions in Berkeley while ignoring the fact that their citizens increasingly purchase soda in other locations.

Philadelphia

Two economic studies examine the 1.5-cent soda tax of 2017. One study finds that, on average, distributors and retailers fully pass the tax through to consumers, but prices are raised the most in higher-poverty neighborhoods, stores located farther from non-taxed stores outside Philadelphia, stores that are independent as opposed to part of national chains, and for individual servings than for larger sizes.[17]

The other study found that the tax is passed through at a rate of 75-115 percent, leading to a 30-40 percent price increase that reduced demand in the taxed area by 42 percent.[18] There was no significant substitution to non-taxed beverages (water and natural juices), but cross-shopping at stores outside of Philadelphia completely offset reduced sales within the taxed area. As a consequence, the authors found no significant reduction in calorie and sugar intake for the citizens of Philadelphia. Again, expect tax advocates to tout any reductions in Philadelphia while ignoring the fact that their citizens increasingly shift purchases to other locations.

Philadelphia is a prime example of how officials siphon soda-tax revenues to fund programs other than those promised to voters. Despite promises to fund universal pre-kindergarten with tax revenues, less than one-fourth of $137 million found its way to this purpose in the first 21 months of tax collection. In response to criticism, the spokesman for Philadelphia mayor Jim Kenney upped previous promises with claims that "more than 100 percent of the revenues" from the soda tax will fund universal pre-kindergarten and other promised beneficiaries within 5 years. It will be interesting to see how voters will react to escalated over-promising.[19]

Mayor Kenney recently told a local radio show that "Jeff Brown is a cry baby, basically" in response to news that a local supermarket was closing in response to a 23 percent reduction in sales since the Mayor's tax took effect. Mayor Kenney elaborated that "if you can't run a supermarket without soda sales, then something is wrong with your business practices." Mr. Brown owns six other supermarkets in Philadelphia, but the one that was closed operated near the city limit and experienced lost sales to stores across the border where no soda tax existed. This elected official's disdain for a taxpayer/business owner who fails to follow the script written for him needs to be reminded that taxpayers are funding their

misdirected experiments on citizens, while politicians direct tax dollars in directions other than the ones they promised.

Conclusion

The effectiveness of soda taxes remains speculative (at best) given the lack of evidence of causal connections between soda and health, or of the effect of taxing soda on obesity, diabetes, or other health issues. Consumers also flee to non-taxed locations, thus blunting effects on consumption. Even when consumption of soda falls, consumers often switch to other highly caloric beverages. Meanwhile, tax advocates remain convinced that their taxes promote public health, and fail to comprehend that government control over personal decisions is rarely a good substitute for personal responsibility.

Michael L. Marlow, Ph.D., is professor of economics at California Polytechnic State University, San Luis Obispo, Calif. Contact: mmarlow@calpoly.edu.

Disclosure: I have received no funding of any kind for working on this manuscript.

REFERENCES

1. Welsh JA, Sharma AJ, Grellinger L, Vos MB. Consumption of added sugars is decreasing in the United States. *Am J Clin Nutr* 2011;94:726-734.
2. Caronello S. Bottled water, soda provide the pop in U.S. *Bloomberg Businessweek*, May 8, 2018.
3. Carden TJ, Carr TP. Food availability of glucose and fat, but not fructose, increased in the US between 1970 and 2009: analysis of the USDA food availability data system. *Nutr J* 2013;12:130.
4. Choo VL, Ha V, Sievenpiper JL. Sugars and obesity: is it the sugars or the calories? *Nutr Bull* 2015;40:88-96.
5. Archer E. In defense of sugar: a critique of diet-centrism. *Prog Cardiovasc Dis* 2018;61:10-19.
6. Ayyagari P, Deb P, Fletcher J, Fallo WT, Sindelar JL. Sin taxes: do heterogeneous responses undercut their value? Working Paper. National Bureau of Economic Research; 2009. Available at: https://www.nber.org/papers/w15124. Accessed Feb 1, 2019.
7. DiNardo J, Lemieux T. Alcohol, marijuana, and American youth: the unintended consequences of government regulation. *J Health Econ* 2001;20:991-1010.
8. Chandon P, Wansink B. The biasing health halos of fast-food restaurant health claims: lower calorie estimates and higher side-dish consumption intentions. *J Consumer Res* 2007;34:301-314.
9. Williams P. Consumer understanding and use of health claims for foods. *Nutr Rev* 2005;63:256-264.
10. Wilson BM, Stolarz-Fantino S, Fantino E. Regulating the way to obesity: unintended consequences of limiting sugary drink sizes. *Plos One* 2013;8:e61081.
11. Cashin C, Sparkes S, Bloom D. *Earmarking for health: from theory to practice*. World Health Organization; 2017. Available at: https://apps.who.int/iris/bitstream/handle/10665/255004/9789241512206-eng.pdf;jsessionid=8010AF42616F48EF7D21520CF9039E84?sequence=1. Accessed Feb 1, 2019.
12. Chicago's soda tax is repealed. *The Economis*t, Oct 13, 2017.
13. Colchero MA, Popkin BM, Rivera JA, Ng SW. Beverage purchases from stores in Mexico under the excise tax on sugar sweetened beverages: observational study. *BMJ* 2016;352:h6704.
14. Mandaro L. Nation's first soda tax is passed. *USA Today*, Nov 5, 2014.
15. Cawley J, Frisvold DE. The pass-through of taxes on sugar-sweetened beverages to retail prices: the case of Berkeley, California. *J Policy Analysis and Management* 2017;36:303-326.
16. Bollinger B, Sexton S. Local excise taxes, sticky prices, and spillovers: evidence from Berkeley's soda tax. Working Paper. Duke University; 2018. Available at: https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3087966. Accessed Feb 1, 2019.
17. Cawley J, Frisvold DE, Hill A, Jones D. The impact of the Philadelphia beverage tax on prices and product availability. Working Paper. National Bureau of Economic Research; 2018. Available at: https://www.nber.org/papers/w24990. Accessed Feb 1, 2019.
18. Seiler S, Tuchman A, Yao S. The impact of soda taxes: pass-through, tax avoidance, and nutritional effects. Working Paper. Graduate School of Business, Stanford University; 2018. Available at: https://www.gsb.stanford.edu/faculty-research/working-papers/impact-soda-taxes-pass-through-tax-avoidance-nutritional-effects. Accessed Feb 1, 2019.
19. A soda tax and consequences. *Wall St J*, Jan 5, 2019.