Economic Solutions to the Obesity Problem in the United States

Evan Vahouny

Obesity In The United States

In the past 20 years, the Centers for Disease Control and Prevention (CDC) have classified obesity as an “epidemic.” Approximately two-thirds of U.S. adults are overweight or obese. An adult with a body mass index (BMI) – the widely used measurement of healthy weight for a given height – between 25 and 29.9 is considered overweight, and an adult with a BMI 30 or higher is considered obese. In 2000, no state had an obesity rate over 30 percent, but that figure increased to 12 percent in 2010 (See Figure 1 for more on National Obesity Trends).\(^{i}\) The primary cause of this obesity epidemic is increased caloric intake, a result of improvements in technology that have led to lower costs of consumption and increased sedentary behavior.\(^{ii}\) Although genetic predisposition is a contributing factor in the development of obesity, it is highly unlikely to have caused the sharp rise in obesity in the past two decades. Rather, the recent increase in obesity strongly points toward changes in consumption as the primary cause.\(^{iii}\)

Why Does Obesity Matter And What Can Be Done?

The obesity epidemic partially arises from a negative externality, which forms the basis for the government’s intervention into the crisis. In order to cover rising health care costs associated with obesity, third party individuals, such as those at average weight and healthiness, must pay more. Treating the negative health outcomes of the obese costs the United States approximately $79 billion annually, half of which is taxpayer money used for Medicare and Medicaid.\(^{iv}\) Along with the direct costs, including prevention, diagnosis, and treatment of obesity-related illnesses, a number of indirect costs also contribute to the economic impact of obesity. These include morbidity costs, such as the value lost from decreased productivity, and mortality costs, or the value lost from future income following an individual’s premature death.\(^{v}\) Recent studies also suggest that the costs of less worker productivity among the obese population costs as much as direct medical expenditures.\(^{vi}\) In order to reverse the rising trend of obesity and the associated medical costs, discussion in the policy arena has focused on taxing two possible sources of the problem: fattening foods and sugary beverages.

Tax on Fat Content

Many researchers and policymakers have suggested
taxing fattening foods to combat the obesity problem. States such as California, Maine, and Maryland have all experimented with a tax on fat, and New York legislator Felix Ortiz has proposed a fat tax that would generate $50 million per year. Despite the appeal of this solution, studies have shown that taxing fattening foods is not effective at reducing consumption. In 2007, Gelbach, Klick, and Stratmann conducted a statistical analysis to determine how individuals in the United States would respond to a tax increase on unhealthy foods. The researchers used 13 different unhealthy foods, such as salted butter, ice cream, and potato chips, 11 of which had high fat content. The study found that a 100 percent increase in the price of these fattening foods led to only a 1 percent reduction in BMI, a negligible difference in relation to the size of the tax. This data suggests that even a tax that is double the price of fattening food would not affect consumption and subsequent BMI.

A more rigorous analysis highlighted further arguments against a tax on fat content in foods. In this analysis, only moderately healthy mothers, or those with a BMI below 28.1, responded to a tax on fattening foods. Moderately healthy mothers were influenced much more by the price increase, not only purchasing smaller amounts of unhealthy food, but also resorting to more healthy alternatives. On the other hand, obese mothers with a BMI of 30 or higher were virtually unaffected by the price increase.

**Figure 1:** National Obesity Trends by US County
Prevalence of obesity was estimated using data from the CDC’s Behavioral Risk Factor Surveillance System. Adults are considered obese if their BMI is greater than 30. Body mass index (weight [kg]/height [m]^2) was derived from self-report of height and weight. [1]

Figure 1. Centers for Disease Control and Prevention, *Overweight and Obesity U.S. Obesity Trends*, February 27, 2012.
increase and continued to buy taxed, unhealthy foods.\textsuperscript{15}

The unhealthy foods in this study consisted primarily of fattening foods, as opposed to sugary foods, and did not include sugary beverages. This is important because unlike a tax on fattening foods (or even sugary foods in some cases), a tax on sugary beverages does, in fact, reduce consumption, as this editorial describes later on.

The results from the two studies above illustrate the overall ineffectiveness of a tax on fattening foods. The basic purposes of the tax are to lower consumption and prevent obesity, but the results from Gelbach et al. (2007) demonstrate a direct ineffectiveness of the tax on food consumption.\textsuperscript{3} The second study provided additional insight into the effectiveness of the tax on fattening foods, further reinforcing a lack of responsiveness to price change. The virtually nonexistent change in consumption patterns of the obese mothers is strong evidence that the tax increase would not fulfill its original purpose of preventing obesity.

Another important argument against taxing fattening foods is consumers’ willingness to substitute the taxed good in exchange for other unhealthy alternatives. In a statistical analysis by Mytton, Allstair, Rayner, and Rutter (2006), consumers responded to a 17.5% increase in the price of these foods by purchasing an equal amount of other unhealthy foods.

\begin{figure}[h]
\centering
\includegraphics[width=\textwidth]{figure2.png}
\caption{More Food, and More of It Carbohydrates. A 30-year survey has found that the amount of fat people eat has remained steady but that its share of the diet has dropped as carbohydrate consumption has soared.}
\end{figure}

\textsuperscript{3} Gelbach et al. (2007) demonstrated a direct ineffectiveness of the tax on food consumption. The second study provided additional insight into the effectiveness of the tax on fattening foods, further reinforcing a lack of responsiveness to price change. The virtually nonexistent change in consumption patterns of the obese mothers is strong evidence that the tax increase would not fulfill its original purpose of preventing obesity.
percent tax on fattening foods. Rather than buying healthier foods, the consumers ate foods with much higher sodium levels. Instead of eating high-fat meats, for example, consumers bought bread, which tends to be high in sodium. As opposed to a decrease in fat leading to better health outcomes, the substitute of high-sodium foods for fatty-foods led to the same probability of cardiovascular disease in the sample population. This study demonstrates that fattening foods have a likely substitute and one that also leads to adverse health outcomes.

In addition to confirming the increased use of an unhealthy substitute, this study also demonstrates the complexity of determining which types of fat to tax. Although the researchers targeted saturated fat, typically known for its negative health consequences, they noted that the reduction in saturated fat led to a parallel reduction in healthier and more satiating unsaturated fats.

Other nutrition experts have expressed skepticism regarding a tax on fattening foods for similar reasons. They point toward the complex taxes that would need to be in place to prevent potentially malnutritious effects of reduced fat intake. Many fats are also needed for a healthy diet, further complicating the potential for an effective tax.

Tax on Sugar Content

The second potential solution for the obesity problem is a tax on products with high levels of refined sugar. Multiple experts argue that sugar, not fat, is the largest contributor to the obesity problem in the United States. A recent meta-analysis supports this belief, showing clear connections between sugary drinks and increased body weight, unhealthy nutrition, and increased risk of both diabetes and obesity. More importantly, the most significant statistical effects come from more reliable and valid longitudinal and experimental methods as opposed to correlational measures. In the past several decades, consumption has increased by 250-300 calories daily, and half of this increase comes from sugar. Unlike fat content in foods, added sugar to beverages has no nutritious value and is not necessary for survival.

As seen in Figure 2, the primary cause of the rise in caloric intake comes from a rise in carbohydrates, including simple sugars, and not an increase in fat consumption. A recent statistical analysis supports the claim that sugar-sweetened liquids have a much greater effect on weight gain than solid caloric intake. The researchers found that a decrease in sugar-sweetened liquid intake, primarily beverages such as soft drinks and fruit juices, was significantly more effective at reducing body weight than lowering consumption of solid
food. Possible explanations for this difference between liquids and solids include no chewing before swallowing, allowing for quicker fundamental digestion of liquids, and less satiation from liquids without fiber and protein.xvi

Perhaps the most important justification for imposing a tax on sugary beverages is evidence that it will reduce consumption. An experimental study by Epstein et al. (2009) demonstrates that taxing unhealthy drinks leads to overall reductions in consumption.xvii In this study, four soft drinks and one salad dressing made up the top five foods out of nearly thirty others with higher than normal calories per nutrient. This form of measurement illustrates the low level of nutrients gained from drinks with added sugar despite the high calorie count. Data from a soda industry trade publication also support evidence of the efficacy of a tax, showing that a jump of 12 percent in soda taxes (or a one-cent tax per ounce) led to a 14.6 percent drop in sales. Other sources report that every 10 percent increase in soda price is associated with a 7.8 percent decrease in consumption (Brownell et al. 2009).

The benefits of an effective tax on sugary beverages clearly outweigh any costs. In one statistical analysis, the researchers argue the positive impact of such a tax:

“We examined the potential impact on health and health spending of a nationwide penny-per-ounce excise tax on these beverages. We found that the tax would reduce consumption of these beverages by 15 percent among adults ages 25–64. Over the period 2010–20, the tax was estimated to prevent 2.4 million diabetes person-years, 95,000 coronary heart events, 8,000 strokes, and 26,000 premature deaths, while avoiding more than $17 billion in medical costs. In addition to generating approximately $13 billion in annual tax revenue, a modest tax on sugar-sweetened beverages could reduce the adverse health and cost burdens of obesity, diabetes, and cardiovascular diseases.”xviii

The Congressional Budget Office predicted that a tax of 3 cents for every 12 ounces of soft drinks – 9 cents fewer than the penny-per-ounce tax described above – would generate $50 billion in revenue from 2009 to 2018, taking into account lost revenues from reduced production and consumption of the drinks.xix These projections offer two possibilities for the potential magnitudes of an excise tax, which may be useful in calculating where to set the tax in the future.

Although the benefits of this tax clearly outweigh the costs, the tax is regressive in nature. It will have the greatest impact on those with the lowest income, who spend a greater proportion of their income on food and drink. As a result,
external and political pressures against regressive taxes may cause a smaller increase than is necessary—one that may not capture the full scope of benefits that result from a higher tax. A lower tax rate in this scenario would mean fewer reductions in episodes of diabetes, heart disease, and premature death. It would also generate less revenue to be directed towards improving the health of lower income families, and it may not be enough to induce a substantial number of consumers to reduce their consumption. Popular opinion polls show that many more people support an excise tax on sugary drinks if they know that the tax revenue will be aligned with the purpose of the tax itself (i.e., health promotion). For example, tax revenues could subsidize healthy foods, either exclusively in public facilities or more broadly in restaurants and grocery stores.

Various empirical studies demonstrate that lowering the price of healthy foods encourages consumption. Other studies find that subsidies actually increase caloric intake (Epstein, Dearing, Roba, and Finkelstein 2009), but these studies do not combine the lower subsidy price with a higher price on sugary beverages. This combination of tax and subsidy has a high probability of success, although more research should be carried out to evaluate the predicted success before making a final decision.

**Conclusion**

The obesity problem in the United States is growing at an alarming rate. The resulting medical expenses have increased substantially, costing the United States $147 billion per year in obesity-related health issues. One way to help reduce unhealthy behaviors is through excise taxes on food or beverages, but the specific target of the tax makes a significant difference. Taxes on fattening foods are ineffective and do not reduce negative health effects. Alternatively, beverages with added sugar are clearly contributing to the sharp rise in obesity, and taxes on these products would be effective and highly beneficial to society. The revenue from this tax could further increase the benefits and improve national health.

_Evan is a second-year graduate student at the University of Virginia Batten School of Leadership and Public Policy. Evan interned at the Department of Justice in the Criminal Division’s Office of Policy and Legislation this past summer. He also worked for Senator Jim Webb (D-Va) on Capitol Hill and interned for Burke PLLC, a law firm in Washington, D.C. During the 2009 fall semester, Evan interned with Larry Sabato at the University of Virginia’s Center for Politics. He is particularly interested in criminal justice policy and health care policy._


Angela Hasemann (registered dietician, University of Virginia Health System Medical Center), phone call with the author, March 1, 2012.


“Overweight and Obesity: U.S. Obesity Trends.”


Gelbach et al., “Cheap donuts and expensive broccoli: The effect of relative prices on obesity.”


Ibid.

Angela Hasemann (registered dietician, University of Virginia Health System Medical Center), phone call with the author, March 1, 2012.


Liwei Chen, Lawrence J. Appel, Catherine Loria, Pao-Hwa Lin, Catherine M. Champagne, Patricia J. Elmer, Jamy D. Ard, Diane Mitchell, “Reduction in consumption of sugar-sweetened beverages is associated with weight loss: the PREMIER trial,”


