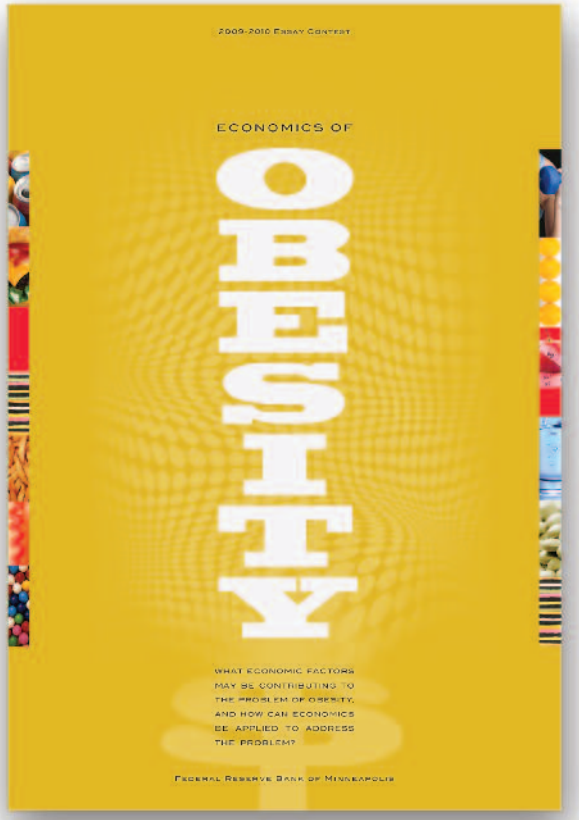
2009–2010 Student Essay Contest

The Economics of Obesity

This spring the Minneapolis Fed held its 22nd Annual Student Essay Contest, which is open to high school juniors and seniors in the Ninth Federal Reserve District. The contest drew 243 essays from schools throughout the district. Submissions were divided into two categories: standard and advanced economics classes. The essay selected as the best over both categories is published here. Other top essays can be found at minneapolisfed.org under the Student Resources section of Community & Education.

Fifteen finalists in each division received a $100 U.S. savings bond. First- and second-place winners from both divisions received additional savings bonds. A paid summer internship at the Minneapolis Fed was awarded to the overall winner, Michael Graham of the Blake School in Minneapolis.



Essay Question

What economic factors may be contributing to the problem of obesity, and how can economics be applied to address the problem?

For almost all of the human past, the prospect of starvation was a real threat to most people. While scarcity is still the pervasive fact of economics, modern industrial economies have an abundance of low-cost food. As a result, the United States and other countries have seen an increase in rates of obesity. The health care costs of obesity are high, and some claim that increasing obesity rates inflict costs on the rest of society. For this reason, there might be a case for public action to reduce obesity.

Students were asked to explore why obesity has increased and what sorts of policies (if any) can combat this increase.

Student Essay Contest Winner

Economics of Obesity: Causes and Solutions

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The incidence of obesity in America has exploded over the past quarter century. The percentage of obese Americans—those having a body mass index (BMI) over 30 (about 30 pounds overweight for a 5'4" woman)[1] —has sharply risen from 15 percent in 1980 to just over 34 percent in 2006.[2] Notwithstanding author J. Eric Oliver's whimsical claim that obesity is not intrinsically harmful,[3] it is (as he agrees) at *least* a microcosm of Americans' fundamental mismanagement of their dietary and exercise needs. The impacts are marked: Obese people spend 42 percent more on health care ($1,429 more per year),[4] obesity costs the nation $75 billion in direct costs each year,[5] the total cost of obesity is as high as $139 billion per year (indirect costs include absenteeism, disability and workers' compensation)[6] and obesity is linked to approximately 300,000 deaths each year.[7] Notably, many of these costs are borne by private hospitals, the government and businesses rather than the obese citizens themselves, an important economic concept.[8]

Obesity's red herrings

Unfortunately, many policymakers are misled by red herring culprits for obesity. To be sure, it cannot be a decrease in exercise; Americans' energy expenditure habits have been static over the time period.[9] It cannot be cultural changes; data showing the same trends among fresh immigrants to the United States suggest that there is not a driving cultural force behind obesity.[10] It cannot be fast food restaurants' "super-sized" bundles; there has been no discernible increase in calories per meal.[11] It cannot be poverty; there is a *decreasing* gap between obesity rates of different socioeconomic population segments over the time period,[12] with much of the remaining gap attributable to varying genetic predispositions to obesity associated with race.[13]

The true culprit: Snacks

A litany of studies has shown that Americans have fundamentally increased their caloric intake over the past quarter century, and this increase fully accounts for America's ballooning obesity rate.[14] This increase is due to an increase in meals per day; since 1975, average snacks per day has increased by 60 percent.[15] Moreover, these snacks are often high in calories and low in nutritional value: "[S]ales of high-salt, high-calorie snack foods have skyrocketed, while sales of fruits and vegetables (excluding potatoes) has only increased marginally," particularly in the soft drink sector.[16] In addition to these factors, obesity itself has powerful biological and social positive feedback mechanisms that only add to the problem. First, as Oliver explains, "To consume about three hundred calories, all one needs to do is eat a seventy-cent bag of potato chips, a Snickers bar, or six Oreo cookies. To burn off three hundred calories … the average person needs to walk vigorously for about three miles."[17] Second, studies demonstrate that children's diet and exercise habits mimic those of their parents.[18] So, then, generational progression is not enough to combat obesity. Not only are the obese faced with an uphill battle reversing their state, but obesity begets more obesity as time progresses.

Market failures

Two major market failures have produced the caloric increase: the detrimental externalities of obesity and consumers' inability to efficiently allocate between the present and the future. The detrimental externalities of obesity are manifest. Obese citizens pay for little of the total cost of their obesi-

ty. Because much of the cost is passed on to private hospitals, the government and businesses, citizens actually become more obese than they themselves are willing to pay for. The resulting societal detriments burden everyone in the economy.

People's precarious tendency to buy more obesity than the socially optimal level is compounded by their failure to adequately allocate between the present and the future. Beginning in the late 1970s, numerous technological innovations in food preparation greatly increased the efficiency of food production in terms of both time and monetary investment.[19] This led to the widespread development of processed foods (those foods most often used as snacks) and to major time savings in food preparation. For instance, "the average time mothers spend preparing meals at homes has declined by more than 50 percent in the last two decades."[20]

While these developments may seem beneficial, the vastly lowered costs of eating have combined with widespread hyperbolic discounting to produce the increase in caloric intake.[21] This is because individuals deviate "from the usual standard rational choice models of uniform discount rates" by engaging in hyperbolic discounting—using a short-run discount rate that is larger than the long-run discount rate.[22] Thus, when food becomes readily available to individuals, the high marginal utility of eating is not properly compared to the future costs of increased intake, resulting in overconsumption.[23]

The economic solutions: Deliberate taxation

The total costs of obesity to American society, while intrinsically incalculable, in combination with the widespread market failures provide strong justification for judicious government political-economic action to realign incentives and correct the failures. The application of two indirect taxes would make great strides toward correcting these failures while, provided effective implementation, minimizing unplanned excess burdens.

Given the clear and widespread detrimental externalities of obesity, the government should institute an excise tax (specifically, a value-added tax) on foods with a high-caloric content but low nutritional value. While there have been historical impasses with implementing such taxes, the initial expenditures in defining which foods are included under the tax would easily be recovered by shifting more cost onto consumers, thus reducing total consumption of obesity (for analytical purposes, obesity is considered a good that people consume) to its socially optimal level. In addition, the government should create a payroll tax for obese citizens to supplement higher premiums for the obese to pay, thus further shifting the marginal social cost back onto obese citizens.

Lastly, the government should earmark at least some of the revenue raised from these taxes to fund community education programs. The cost-efficacy of well-selected education programs is especially appealing; one such program doubled the market share for low-fat and fat-free milk in several communities through campaigns that cost as little as 22 cents per person.[24] Indeed, another program was found to have a benefit-cost ratio of 10.64 in terms of expenditures on the program versus dollar benefits of avoiding or delaying health care costs and losses of productivity associated with obesity.[25]

Preliminary analysis of some nutritionally detrimental foods has demonstrated that a marginal tax rate of 20 percent or more would be necessary to instill change in consumer preferences due to a relatively high price inelasticity of demand. However, there is compelling evidence that consumers' demand for soda is elastic enough to support lower marginal tax rates and still result in reduced consumption (with more of the tax incidence placed on the consumer because of the elasticity). Indeed, a 10 percent increase in the price of soda has been shown to *halve* consumption.[26] Moreover, the public campaigns financed by the taxes would serve to shift the cross-elasticity of demand such that an increase in price of nutritionally detrimental foods would result in increased demand for healthier substitutes. For example, a negative shift in demand for high-fructose corn syrup would both send consumers searching for alternatives (e.g., juice) and shift the production possibilities frontier such that more farmers would grow alternatives (e.g., fruit) in response to the shift in consumer preferences.

While the value-added tax on nutritionally detrimental foods and the payroll tax are both regressive, the government should not reject them as solutions on equity concerns. First, those at the bottom of the income distribution could be insulat-

ed from this incidence by increasing the value of food stamps toward healthy food items. Additionally, even if citizens with comparatively lower incomes were taxed more, this would ultimately be beneficial since obesity leads to lower wages in the workforce and increased personal medical costs.[27] Lastly, public campaigns would have funds to address whatever food concerns there are in income-disadvantaged communities in the status quo, thereby reducing the excess burden on those citizens. Thus, the cost-benefit analysis of these taxes would always prove to be beneficial to the income disadvantaged.

Conclusions

When the tantalizing but ultimately misleading potential causes of obesity in America are eliminated, the true guilt of increased caloric intake due to widespread snack consumption becomes clear. And when the astounding detrimental externalities of obesity and modern food processes' tendency to exacerbate citizens' behavioral tendency to discount hyperbolically are considered, the necessity of government intervention becomes equally clear. Indeed, through shifting the marginal private cost of being obese toward the true marginal social cost, the taxes would serve to rein in obesity to its decidedly much lower socially optimal level of equilibrium. In the end, these policies would serve to better maximize utils in the American economy and therefore constitute the optimal economic decision. R

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