

JUSTIFICATION FOR A PENNY-PER-OUNCE EXCISE TAX ON SUGAR SWEETENED BEVERAGES UNDER TWO ETHICAL FRAMEWORKS

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Abstract

Increasingly obesity is becoming a greater problem in the United States. To curb this trend some policy makers have considered taxing Sugar-Sweetened Beverages (SSBs) which add unhealthy calories to the human diet. Some controversy surrounds the taxation of SSBs because they are disproportionately consumed by lower-income members of society. A tax on these drinks would be regressive. This paper justifies a penny-per-ounce excise tax on SSBs in the United States from both a Utilitarian perspective and a Rawlsian perspective. This analysis gives the tax a broad and diverse moral grounding.

Over the course of the last few decades obesity has increasingly become a major concern in the United States. According to a report from the Center of Disease Control over 115 million people, approximately 36.5% of adults, suffer from obesity in the United States, a sharp increase from twenty years prior (Ogden, Carroll, et al. 2015) (Drewnowski and Specter 2004). These numbers are staggering considering the manifold negative consequences of the condition. Those with obesity find themselves at higher risk for a host of other health issues including diabetes and cardiovascular disease (Ogden, Lamb, et al. 2010). In many ways the prevalence of obesity serves to the detriment of our society. It comes as little wonder then that policy makers around the country have considered creating various means to combat this epidemic.

As with almost all public affairs formulating and implementing such policies is riddled with complexity. One way of reducing obesity is by placing negative incentives on behaviors linked with its development. However, these solutions raise ethical concerns. The primary problem lies with the fact that a strong correlation exists between poverty and obesity within the United States. Evidence shows that black and Hispanic adults, disproportionately low income minorities, face higher obesity prevalence than their white counterparts (Ogden, Carroll, et al. 2015). For women, obesity incidence increases as income levels fall (Ogden, Lamb, et al. 2010). While many mechanisms could contribute to these correlations, negative incentives placed on behaviors linked to the development of obesity might place undue burden on poor members of our society.

Over the past decades scientists have documented numerous mechanisms contributing to obesity. For any individual genetics play a large role in weight accumulation and distribution. Environmental factors such as sedentariness throughout the day or lack of physical activity also come into play (Wright and Aronne 2012) (Hill and Peters 1998). One of the largest contributing

factors to the recent explosion of obesity has been the growing convenience of energy dense foods and diets. Foods with high concentrations of unhealthy fats and sugar can be purchased at relatively low costs and have been demonstrated to be generally more palatable when compared to more nutritious alternatives. Low income households must spend a higher percentage of their incomes on food, but still consume these cheap, energy-dense foods in greater proportion. This consumptive behavior provides one explanation for the higher levels of obesity among low SES groups (Drewnowski and Specter 2004).

Given that burdens associated with obesity as a disease already disproportionately affect racial minorities and the poorer members of our society, any effort to redistribute to compensate for the costs of obesity on society would by necessity cost them the most, or in other words be highly regressive. Still, some policy measures attempting to combat obesity could be viewed as morally permissible.

Recently taxes targeting sugary drinks have gained traction as a popular method of attempting to reduce obesity. These tend to focus primarily on sugar-sweetened beverages (SSBs). The CDC defines SSBs as any drinks which contain caloric sweeteners including but not limited to soft drinks, fruit drinks, and energy drinks (Center for Disease Control 2010). In June, Philadelphia became the first major city in the United States to pass a tax on these items following in the steps of numerous smaller cities in California and an attempt in New York which was later shut down by a court because of improper executive action (Burke 2016). Outside of the United States, Mexico has adopted similar measures and the UK has set legislation to begin taxation in 2018. While they vary in design and implementation specifics, most SSB taxes function either as excise taxes or by adding sales taxes to drinks with sugar content exceeding certain thresholds. An excise tax increases the price of certain items as a direct

function of the quantity of that item which is consumed. In this case of SSBs we would see the tax as an increase in price corresponding to the volume of the drink sold. Excise taxes are typically applied prior to sale allowing consumers to observe the increased price and immediately incorporate it into their decision making process (Brownell, et al. 2009).

This paper will focus on the ethics surrounding a national excise tax of one penny per ounce on SSBs. To start it will examine the case for the tax using a utilitarian perspective. Next it will reexamine the matter through a Rawlsian lens. By comparing and contrasting each of these perspectives, it will arrive at a twofold ethical justification of the policy. This will lead to recommendations for future policy changes. Moving forward, I will assume a rational choice model of human agency recognizing that it has been a subject of longstanding debate beyond the scope of this paper.

At the most fundamental level, utilitarianism asserts that actions which maximize the good for the greatest numbers of people are morally right (Driver 2014). If the SSB tax reduces net social utility, then it would be unethical from a utilitarian perspective. Utility itself can be measured in many different ways. I will follow traditional economic strategy by estimating the aggregate costs and benefits associated with the proposed tax in monetary terms for all involved agents.

My analysis of the net effects of the tax on utility starts by identifying how the tax would decrease utility. An immediate consequence of any tax will be increased cost to the consumer. A penny for each ounce would increase the price of a two-liter of soda by 68 cents. Numerous estimates conclude that the tax would increase the price of SSBs by between 15 and 20% for a 20-oz soft drink (Long, et al. 2015) (Brownell, et al. 2009). My focus is the net cost of the tax to all consumers, so I will look at the total tax revenue accrued through the tax to give us the total

increase in costs to consumers and an approximation of lost utility. Each dollar taken through the tax is one less dollar that a person has to spend on their own happiness. Different studies have given different estimates for what this sum would come to; Brownell et al predict that the tax would raise about \$14.9 billion annually while Long et al puts the total closer to 12.5 billion. Regardless, it would appear that the tax would result in somewhere over \$10 billion in lost utility.

Another thing to consider is the value that people derive simply from consuming these drinks. Does putting a tax on the beverage prevent people from receiving this pleasure? To answer this question I look towards estimations for the price elasticity of the SSBs. The price elasticity of an item is simply the relationship between a change in that good's price and the associated change in the quantity demanded of that good. As with most abstract figures, various different values have been postulated for the price elasticity of SSBs. Long et al puts the average at about -1.21, Browning et al gives a more modest range of -0.8 to -1.0. These values seem to align reasonably well with numbers observed elsewhere in the world; after the SSB tax was implemented in Mexico the elasticity was calculated at -1.16 (Colchero, et al. 2015). Therefore, while they are only estimates, these seem reasonable. To interpret these values as percentages multiply by 10. For example by the estimate in Long et al an increase in the price of SSBs by 10% would reduce consumption of them by 12.1%. Pairing these estimates with earlier estimations indicates that the actual reduction in SSB consumption because of the tax would fall close to, though slightly under, 20%. This number might appear slightly smaller than expected given above estimations because it considers increasing inelasticity of demand as quantity demanded decreases.

With this in mind, I must consider how much utility has been lost from the option value associated with drinking SSBs as a consequence of the tax. Of the soda consumed prior to tax implementation, around 80% would still be consumed under the tax scenario. Lost utility here has already been accounted for in our tax revenue estimates; people still derive the same amount of utility that they from the SSBs they consume. The tax burden alone decreases utility for those who continue. Those who have reduced but not eliminated their SSB consumption, still have the ability to enjoy their drinks. Assuming that consumers rationally act so as to optimize their own utility, then these consumers simply reduced their consumption a little because they gain more utility from the cents they have saved than they would by drinking marginally more SSBs. Indeed, many people could simply choose to substitute for another good under the presence of the tax in a way such that utility is hardly impacted at all. This falls in line with the idea that consumption of a good comes with diminishing marginal utility; more pleasure is derived from the first soda than from the forty-first.

Those people who stop drinking SSBs all together because of the tax likely fall into one of two groups. Some might simply not value drinking soda much at all. Faced with higher prices they do not care enough to continue drinking soda and instead choose to use their money towards other things. For these people, lost utility is decidedly low; they stopped consuming the drinks because they already derived relatively low utility from their consumption. The last group of people would be those no longer able to afford SSBs at all because of the tax. While an exact head count is not possible, this would not represent a large part of the population. If utility derived from the option of drinking pop was high enough, most people would find the means to pay the additional 20 cents for a can. Furthermore, those under such severe budget constraints would already consume the smallest wedge of total SSBs prior to any taxation. Purchasing basic

goods necessities tends to take priority over sugary drinks. In summary, lost utility manifested by SSBs which would no longer be consumed under the tax is minimal. I do not take the 20% reduction in consumption of SSBs as a utility loss because any resulting utility difference is negligible. People derive utility from other goods and savings with the money no longer spent on SSBs.

Some have also raised concerns that lost revenue by large drink manufacturers would cause an SSB tax to result in lay-offs of workers and increased unemployment (Long, et al. 2015). At face value, this comes as a considerable concern. Many people would stand against a measure that negatively impacted the economic well-being of a community. Indeed many stakeholders from the beverage industry have relied heavily on this concern alongside the regressive nature of SSB taxation to spearhead lobbying attempts against them (Jou, et al. 2014). Job losses will absolutely decrease the net utility of a society. The unemployed will no longer have the benefits associated with their income or the intrinsic value they had associated with their work and other members of the community must forfeit some of their own means to support their peers.

There is reason to believe, however, that reports by interested corporate parties grossly overestimate the economic costs from SSB taxes coming in the form of job loss. While the consumption of SSBs would certainly fall, other goods would see simultaneous increases in consumption with the rising proportion of income not spent on SSBs. Some increase of governmental economic activity could also be expected from the increased tax revenue associated with the tax. Tobacco companies made the same arguments about unemployment when our country began considering levying taxes on their products. This stand collapsed under economic arguments when third party agencies conducted studies on them (Warner, et al. 1996).

Powell et al analyzes the effects of adding the proposed SSB tax on employment in both Illinois and California. According to the authors' findings, adding the taxes in these states would actually result in net employment increases of 0.06% and 0.03% respectively. For the sake of clarity these numbers estimate the increases in jobs across the economy not limited to the SSB industry. This paper does not say that people would not lose jobs because of the tax. Rather it points out that other industries would see growth since money no longer spent on SSBs would go elsewhere. Taking into account job growth in these industries along with possible government jobs associated with revenue, the authors found that the decrease in SSB jobs had been offset (Powell, et al. 2014). Since a utilitarian would not care who holds the jobs, but instead how many jobs are held overall, this provides evidence rendering arguments that the tax should not be put into place because of employment concerns useless. I will not consider the estimated increases in net employment as benefits of the tax simply because the margins of difference do not represent a large increase. Taking into account possible degrees of error, another study with slightly different assumptions might find a slight negative effect on net employment. Instead I consider the effects of SSB taxes on employment a nonfactor in the utilitarian decision.

In summary, the utility costs of the tax can be condensed into two categories: the increase in money which consumers pay for SSBs and the loss of utility from drinking less SSBs. I determined that the former would result in a utility loss of slightly over \$10 billion in spending money for United States consumers. Although the latter does not lend itself to easy quantification, deductive reasoning leads to the conclusion that the utility costs here are almost nothing. Having calculated the utility costs associated with SSB tax implementation, I now turn attention to the ways in which the excise tax would increase net utility. Weighing the costs with

these benefits will answer whether or not the tax is morally justifiable from a utilitarian perspective.

Assuming that one of the primary goals of SSB taxation is the reduction of their consumption, I will begin assessing benefits of the tax by examining what exactly these drinks do to the human body when they are consumed. As noted earlier, obesity has grown exponentially in the United States over the past twenty years. A large body of evidence shows that while they might not be the cause of this epidemic, Sugar Sweetened Beverages certainly contribute to it. Estimates have shown that almost half of the added sugars in the average American diet come from SSBs (Guthrie and Morton 2000). Herein lays the problem. It is believed that SSBs do not satisfy hunger relative to other foods containing similar amounts of energy. Consequently, people take in more calories than their bodies need. These added sugars contribute to the rapidly growing incidence of obesity in the United States. A review of 30 studies examining the relationship between consumption of SSBs found “strong evidence for the independent role of the intake of sugar-sweetened beverages, particularly soda, in the promotion of weight gain and obesity in children and adolescents” (Malik, Shulze and Hu 2006).

Given that SSBs contribute to the incidences of overweight and obesity in the United States, the reduced consumption resulting from a tax would have positive health benefits for society. Numerous different authors have given attempts to quantify just how much weight reduction would come with the tax. One study hypothesized that a tax on all SSBs would result in an average weight loss of 1.3 pounds in the United States annually (Finkelstein, et al. 2010). Another study finds that the tax would decrease the average intake of empty calories from these beverages by approximately 40 to 55 calories each day (Andreyeva, Chaloupka and Brownell 2011). Of course, any estimate that simply give an annual effect for weight loss will not remain

accurate in the long run. As the body loses weight due to decreased caloric consumption it changes composition. In future years the body will contain a larger percentage of lean mass. At the same time, the body will also adjust to function using fewer calories. Adjusting caloric intake once will not result in consistent annual weight loss yields. Lin et al provides estimates for the nationwide reduction in weight for a 20% tax on SSBs using a dynamic model. The authors determine that after about five years weight loss resulting from the tax would level off having decreased average weight by about 3.96 pounds (Lin, et al. 2011). It seems reasonable to believe that an excise tax of 1 cent per ounce would result in similar total weight reductions over time given that the excise tax would raise prices of the drinks by approximately 20% (Brownell, et al. 2009). Another estimate instead examining the effect that the tax could have on BMI suggests that for children the tax would decrease BMI by 0.16 on average and for adults by 0.08. In all cases it appears that the implementation of an SSB tax would result in significant weight loss nationwide.

Having said this, there is no certainty that the predictions of these papers would come to fruition by enacting the proposed SSB tax. Some economists believe that increased calorie consumption from other sources would offset the energy intake reduction of an SSB tax. Fletcher et al best flesh out this idea by examining the effect of a tax only on soft drinks on the consumption of other calories. The authors find that the tax would lead to decreased soda consumption but caloric intake would not change due to the increase in calories from substitutes. Although this provides some valuable insight, it is not a need for alarm that an SSB tax would fail. The Fletcher study only examined current taxes levied at low rates over small geographic areas, such as individual cities. These taxes only covered traditional soft drinks. The calories that the authors found offsetting the difference came primarily from two sources: milk and other

SSBs. The authors acknowledge that a higher tax rate could have different effects and if all SSBs were taxed we would not see the calorie substitution to new SSBs documented here (Fletcher, Frisvold and Tefft 2010). While substitution to milk might decrease anticipated calorie reduction, this beverage provides important health benefits to the human body. The tax would still result in improvements in health. Despite these concerns, the proposed tax on SSBs would still reduce caloric intake so long as all SSBs are taxed as opposed to only soda.

The weight losses caused by an SSB tax would result in broad increases in utility along multiple fronts. At the most fundamental level, being obese comes with a plethora of direct costs. Finkelstein et al. gives a systematic review of existing literature concerning the costs associated with obesity. The authors take into consideration numerous ways in which obesity and being overweight result in explicit costs in peoples' lives using existing studies. They find that obesity has repeatedly been linked with higher annual medical costs and life insurance premiums, lower wages, greater degrees of absenteeism, and even greater spending on gasoline among other things relative to people of average weights. Synthesizing the estimates they found for various obesity costs, the authors estimate that obesity is associated with \$8,365 in annual costs for women and \$6,518 for men (Finkelstein, Trogdon, et al. 2009). This estimate comes much higher than others which only take into account the direct increases of medical costs associated with obesity, but is illustrative of the true burden of the disease. For example one estimation puts the increased cost of obesity on healthcare at only \$2,826 annually (Cawley and Meyerhoefer 2010). By these estimates, obesity comes with a significant financial burden. If for no other reason, we would expect decreases in obesity incidence to result in higher levels of utility simply because people will have more income to spend on optimizing their utility.

Moving beyond the scope of the financial costs directly experienced by obese individuals we see that obesity has corresponding overlaying costs to society as a whole. One 2010 estimate put the annual national medical care costs of obesity-related illness at \$185.7 billion, approximately 17% of United States healthcare expenditures (Cawley and Meyerhoefer 2010). Inevitably some of these costs are passed along to those who are not themselves obese. The health insurance industry functions by pooling risk. People contribute to a plan which is priced based on the probability that the consumer will have poor health. Higher incidences of poor health or higher costs associated with illness force the prices for health insurance to rise for every payer in the system. Unfortunately these systems are intricate and the exact effect of obesity in society does not lend itself to easy quantification. That said, to some extent obesity has raised premiums.

In a similar vein, the United States government provides a social insurance program in the form of Medicare along with a means-tested public insurance program, Medicaid. Funding for these public services comes directly from the government and consequently indirectly from tax payers around the country. According to one estimate approximately half of the total obesity expenditures within our country get financed directly through Medicare or Medicaid (Finkelstein, Fiebelkorn and Wang 2004). This would equate to approximately \$93 billion paid to cover the costs of obese citizens by the government in 2010. Taking this into account it becomes evident that obesity in the United States comes with direct costs to all members of society, not simply its obese members.

The implementation of a tax on SSBs would result in aggregate weight loss across the nation. It follows that the tax would cause rates of obesity and the costs associated with it to fall. Already some studies have prepared to give estimates of exactly this effect. Long et al. postulates

that a penny per ounce tax on SSBs would avert about \$23.6 billion in medical expenditures over a ten year span (Long, et al. 2015). Another study finds that the tax would save between \$17.8 billion and \$20.1 billion in avoided medical costs over the same amount of time (Wang, et al. 2012). In each case a large amount of money would no longer go towards paying for health issues related to obesity. For the sake of later comparison I assume that these estimates scale to approximately \$2 billion each year in averted medical costs. While this might seem like a small chunk relative to the sum of all public costs incurred by the epidemic, it would signify a substantial step towards reduction.

Given that I want to determine whether or not this policy makes sense from a utilitarian perspective, it is critical that all facets of utilitarian benefits are examined, not simply monetary gains. As such, I should look at the utility generated from the positive health outcomes associated with the reduced SSB consumption as well. Wang et al. examined the effectiveness of the tax on health outcomes primarily focusing on diabetes. The authors found that the tax would prevent 2.4 million years spent living with diabetes, 8,000 strokes, 95,000 coronary heart events, and 26,000 premature deaths in the United States over a ten year period (Wang, et al. 2012). Likewise Long et al. estimates that the tax would lead to 32,300 life years gained, lead to the avoidance of 101,000 DALY's, and cause an increase in QALYs by 871,000 in the United States also over a ten year period (Long, et al. 2015). The metrics given by Long are ways to quantify mortality and morbidity. Life years averted refers to the number of cumulative years that a person might have been expected to live if they had not died prematurely. A QALY is a year of life adjusted for health. Increases in QALYs reflect that the quality of the years a person will live have improved because of their health during those years. A DALY acts almost as an inverse of a QALY; it reflects a year in which a person lives with some disability or other detrimental aspect

toward the quality of their life. DALYs averted signify that people have not developed a problem which would reduce their quality of life (Robberstad 2005).

It can be difficult to place an exact value on the human life and its quality. However, few would argue that there is no utility to be gained from living and being healthy. The above indicators of improved quality of life would correlate directly with increases in utility because of the SSB tax. For comparison purposes, I again translate these into monetary terms. In the United States estimates for the statistical value of a life range, but hedonic pricing evaluation methods tend to cluster around \$7 million on average (Viscusi 2005). These estimates are obtained by observing and aggregating incentives people are willing to take at the cost of increased probability of their own death. This could be accomplished, for example, by examining the increased salaries which people willingly take for potentially hazardous jobs. Currently the average life expectancy in the United States sits at 78.8 years (Stein 2016). From this I extrapolate that an average year of human life in the United States is valued at approximately \$88,800. Although this number implicitly makes assumptions about life quality and assigns value to an aggregate human experience as opposed to the reality of a single person's life, such problems are unavoidable given the nature of what this measure intends to accomplish. Similar to the value of a human life, valuation of QALYs come with contending estimates. Different assumptions come with wildly varying results. A meta-analysis of various peer-reviewed studies giving QALY valuation gave the median of these estimates at about \$25,800 U.S. dollars (Ryen and Svensson 2014). Since DALYs very closely reflect QALYs in what they measure, I assume that the value of a QALY saved approximately equates to that of a DALY avoided.

Coupling these monetary estimates with the life extending and quality enhancing actions postulated for a SSB tax, I can give a rough estimate of utility increase because of these aspects

in dollar terms. I estimate that the tax would lead to \$2,868,240,000 in utility of life years gained, \$2,605,800,000 in utility of DALYs avoided, and \$22,471,800,000 in utility of increased QALYs. In total the SSB tax would yield an increase in almost \$28 billion of utility over a ten year period viewed from improvements to the length and quality of American lives. Again for the purpose of comparison I will assume that this scales down to about \$2.8 billion annually.

So far I have estimated that an SSB tax would increase utility by decreasing medical costs and increasing life quality and length in the United States by approximately \$4.8 billion combined annually. This, however, only amounts to about half of the \$10 billion dollars determined to be the approximate utility costs of the tax. Having said this, reconsidering all effects of the tax revenue on utility brings critical insights to light. Up to this point money collected under the tax was written off entirely as a pure loss of utility. In reality the tax revenue would be used for something. Regardless of whether it went towards housing the homeless or to line the pockets of the friends who helped get a politician elected, someone would derive benefit from the revenue's use. In this sense the tax also creates utility.

One possible application for SSB tax revenue could be to compensate for diminished income stemming from reduction in other taxes. For example, instituting the SSB tax might be coupled with a reduction in income tax across the board. If this method was used, then the increased utility from decreased taxation would directly counteract that lost with the excise tax. Alternatively the government might use the tax revenue to fund new programs. In this case, the revenue generated by the tax would only need to increase the utility of a person by one dollar for every two spent. It would not be an over optimistic assumption to think that government programs generally return yields in utility with much higher levels of efficiency than this. Anywhere that the government spends money someone will stand to gain utility. This holds

especially true for spending on public works projects such as the development of infrastructure. Here numerous people could receive utility without harming the ability of others to do the same. Under these assumptions and all prior to this point, we can conclude that an SSB tax would not only be morally permissible, in that it resulted in no net loss of utility, but likely beneficial from a Utilitarian perspective.

Utilitarianism allows us to analyze the aggregate costs and benefits of the SSB tax, but fails to capture a critical aspect of policy implementation, equity. Many argue that equity should be a key concern when weighing the merits of a public policy; any action should either help or at the very least not hurt those who are worst off in society. I showed that an SSB tax would result in a net increase in utility, but this calculation in no way considered distribution of the benefits and burdens of the tax. Analysis so far has failed to consider possible implications of the regressive nature of these taxes. Now I will analyze the impact that the tax would have on the poor using the framework outlined by John Rawls.

In his great work *A Theory of Justice*, Rawls sets out to create a framework for how a just society could be developed and under what rules it would necessarily operate. He illustrates this with a thought experiment where a group of people construct a society from behind a curtain. The participants are blind to which position in the society each individual will eventually hold. Rawls decides that the society would certainly have some social and economic inequality. This stems from the fact that people value the possibility of reaching higher positions. Rawls recognizes the reality of economic incentives and acknowledged that in a fair society people should stand to receive reward for hard work. At the same time, the society must have equal opportunity, especially for those people randomly assigned to society's lowest positions. By necessity this requires fair rules which give everyone the opportunity to succeed regardless of

their initial position. In his words, “social and economic inequalities, for example inequalities of wealth and authority, are just only if they result in compensating benefits for everyone, and in particular for the least advantaged members of society” (Rawls 1971).

The understanding of justice presented by Rawls differs sharply from social utilitarian collective optimization. The actors in the curtain experiment might agree to some tenants of utilitarian thought. Certainly they would agree that just actions should act to increase utility in the world. That said, they would pay careful attention to distribution and who derives benefits. Rawls would find a policy which marginalized the least in society unfair even if it improved the quality of life for the rest of the society by tenfold. To him such an action would be unfair and in consequence unjust. To the utilitarian this would look like a brilliant idea. By examining the tax from both standpoints we do not aim to reconcile these conflicting ideas, but rather provide two different ethical justifications for the tax.

From this perspective an excise tax on SSBs would only be morally permissible if the benefits of the tax resulted in the greatest benefit for the lowest members of our society. For the sake of simplicity, I consider our country’s poor its least members. To satisfy Rawls’ criteria the outcome of the tax would not only need to not harm the poor, but also give them some opportunity to for advancement or otherwise help their position in society. By examining an SSB tax in this ethical light, I hope to give attention to the voice of equity. If the tax holds here, then I will have established it as morally permissible both in a framework which ignores fairness altogether in the distribution of benefits and burdens and in a framework which regards this primary concern. In practice the majority of world views will differ from these two extremes. Justifying the tax from each perspective will show that it has broad and diverse moral grounding.

Stated simply, a per-ounce excise tax on SSB consumption would be regressive. The consumption of them negatively correlates with socioeconomic status (Van Rompay, et al. 2015). Han et al estimate that the odds of low-income adults drink SSBs at almost 150% the rate of their high-income counterparts (Han and Powell 2013). Since the poor members of our society consume the greatest volume of these drinks, low-income individuals would pay more of the tax on average than their peers. This effect is unavoidable under the excise tax model. A sales tax on SSBs might not necessarily create the same inequity concerns. Low-income individuals more frequently consume off-brand beverages and would more likely purchase in greater bulk to avoid the costs associated with the tax (Finkelstein, et al. 2010). An excise tax evaluated on the quantity of the drink as opposed to its store price eliminates these methods of circumvention. While the behavioral pattern of higher levels of SSB consumption among lower-income individuals has been documented, no estimations exist for the total proportion of tax revenue taken from low-income individuals under a per-ounce excise tax to date. Trying to extrapolate the exact portion of the tax paid by low-income people would be difficult and ultimately proves inconsequential to the progression of this argument. It cannot be overemphasized, however, that the tax is regressive and consequently directly detrimental to the economic standing of low SES individuals.

At this point the SSB tax would already trigger alarms from Rawls' viewpoint. He understands wealth and income as definite indicators of advantage and life chances in society. When the excise tax disproportionately strips money from the poor, it reduces the opportunities allotted to society's least. A just government, according to Rawls, can only enact policies that increase inequality if they stand to generate significant advantages for the worst off in society. Further stripping these people of their already limited resources only makes the divide between

the poor and other positions in society more pronounced. To justify this, the tax must now not only provide benefits to all, but also provide increased opportunity and life chances for the poor.

From the outset, an SSB tax has been motivated with the goal of reducing the incidence of obesity in the United States and costs associated with the disease. With this in mind, people often give the notion of disproportional distributions of health benefits associated with the tax as a common argument serving to rebut its regressive nature. The argument goes that while poorer members of society consume the greatest amount of SSBs, and thus pay the more tax than others, they will also accrue the largest proportion of health benefits associated with the tax. The regressive tax has benefits corresponding directly with its costs. Each argument prioritizes the distribution of a valuable commodity: health versus income (Barnhill and King 2013).

Disproportionately improved health could mitigate Rawlsian concerns. Strong connections have repeatedly been demonstrated between health and income (Deaton 2003). If this connection is powerful enough, the positive effects of the tax on health could increase economic opportunity for low-income individuals and counteract the initial issue of increased inequality. This would make the tax morally permissible from a Rawlsian perspective.

We have already seen that reduced consumption of SSBs results in weight loss along with reduced risk for a host of other health issues (Wang, et al. 2012). Furthermore, it has been found that children from low-income and African American families had greater sensitivity to a small soda tax (Sturm, et al. 2010). This provides indication that low SES households might have either a greater willingness to reduce SSB consumption or greater price sensitivity than those with higher incomes. Unfortunately, it is currently impossible to disentangle the health benefits derived exclusively by the poor from the benefits to everyone else. As with the costs of an excise tax on SSBs, the health benefits of the tax would amass to the low-income members of society

relative to more affluent persons. Still there is no way to give an accurate price tag for the magnitude of either effect.

Further Rawlsian analysis requires heavy assumptions given the inability to peg concrete values for the costs and benefits of the tax on low-income individuals. Acknowledging that reality is more complex, I assume that the health benefits associated with the SSB tax correlate directly with the amount of tax revenue paid. The economic least in our society would both face the proportionately highest cost and derive the corresponding greatest health benefit. Revisiting prior utilitarian analysis, however, I estimated that the health benefits and savings in health care associated with the tax only account for approximately half of the tax burden for consumers. Projecting this trend solely on to the poor, the tax yields added undue burden and if anything widens the margin between economic classes. This in turn further hinders social mobility and fails entirely to meet Rawls' requisites for a fair action. Indeed, a larger impact of the tax on society's least results in a higher net loss for that group.

If he only accounted for direct consequences while weighing the policy in terms of fairness, Rawls would dismiss the proposed SSB tax as unjust. Still, possible uses for tax revenue remain unconsidered. Clearly, as in the utilitarian case, the use of this tax revenue will have a strong impact on the ultimate evaluation. As previously mentioned, Rawls would view the tax as morally reprehensible in a just society if no benefit is added for society's least. It follows that if the tax revenue goes towards any program or is otherwise distributed in a way that benefits all members of society equally, then the tax would fail a fairness litmus test. Observe, however, that when all of the revenue generated by the tax goes directly to the poor, the resulting redistribution of wealth would provide the greatest advantage to these people.

An expansion of the earned income tax credit (EITC) program functions as a tangible illustration of how this would work. The EITC helps our nation's poor workers by supplementing their wages with a tax credit. Further funneling money into the EITC through the SSB tax would increase the life chances of the poor by redistributing wealth to them. Research shows that the EITC refunds are used primarily to prove bills, but also greatly increase the purchasing rate of vehicles by low-income households (Goodman-Bacon and McGranahan 2008). This holds consistent with the notion that the EITC improves life opportunities for lower members of society. Cars not only improve mobility, but the presence of transportation opens doors for increased opportunity for employment and access to other goods like healthy foods and healthcare. While this use of the SSB revenue would certainly improve outcomes for the poor, it could be argued that the EITC would not necessarily reach the true least in society. Only people with work receive EITC benefits. The poorest of the poor in society are those who either cannot or do not work.

An alternate idea to increasing funding for existing programs would be to make the SSB tax a revenue-neutral excise tax. In concept, these are taxes which collect revenue, pool it together, and then evenly redistribute it all back to society either through tax cuts or refunds at the end of the year in a manner which is blind to who actually paid the tax. Drawing up taxes as revenue-neutral has consistently helped increase the political feasibility of implementing certain taxes, specifically carbon taxes around the world (Carl and Fedor 2016) (Murray and Rivers 2015). The SSB tax could cleanly fit this model. If all of the revenues from the tax were directly distributed to the bottom quintile of the income distribution in the form of an annual check, then the least in society would receive a huge increase in life opportunity because of the tax.

Now the tax would not only provide the least in society with its associated health benefits, but also increase their relative net wealth. Although the degree to which the poor would bear the burden of the SSB tax is unclear, mandating that they directly receive all revenue from the tax ensures that it gives greatest benefit to the poor. This could happen either directly through monetary reimbursements or tax reductions, or indirectly through new or expanded government programs. Given proper government action, Rawls' fair society would permit an excise tax on SSBs on moral grounds.

To conclude, a tax on sugar-sweetened beverages makes sense from a strictly social utilitarian perspective. If revenue generated by the tax disproportionately served to the benefit of the poorest in society by a large enough margin, then John Rawls would acknowledge it as fair from his just society approach. The tax would provide opportunities for the advancement of society's least. As previously mentioned these two perspectives fundamentally differ from each other to the point that evaluating both on the same ledger would result in irreconcilable conflicts. The fact that a penny-per-ounce tax on SSBs has been justified from both of these perspectives gives the tax strong moral grounding.

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