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Examination of Taxation on Sugar-Sweetened Beverages

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Examination of Taxation on Sugar-Sweetened Beverages

A Thesis Submitted to

The Faculty of the University of North Georgia

In Partial Fulfillment

Of the Requirements for the Degree

Bachelor of Business Administration in Accounting

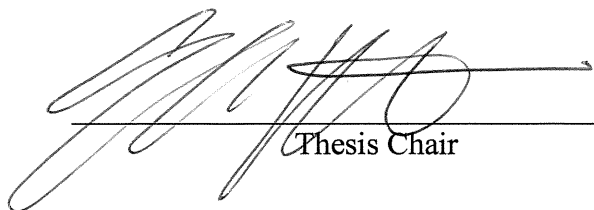
With Honors

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Accepted by the Honors Faculty
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Thesis Committee:



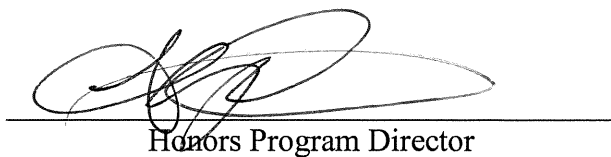
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Introduction

The trend of taxation on sugar-sweetened beverages (SSBs) has grown substantially in the past few years. This research is designed to examine different questions to different aspects of the SSB tax to get a better understanding of the effectiveness of the tax. Since the SSB tax is a sin tax, it is necessary to research some of the challenges that were imposed on prior sin taxes and to determine if the sin taxes work. I will also relate the specific challenges that the sin taxes faced and how they could relate to the SSB tax implementation. I also look into the health effects of SSB consumption and how they contribute to factors like obesity and diabetes. This prior research helped answer the question of whether SSB consumption is associated with obesity and diabetes. If it is determined that there is no association, then there is no need for a SSB tax.

Next, I look at prior research to understand if whether the SSB tax helps reduce the costs of healthcare or if the economic costs of the tax are too great to justify. My research then took me into how the soda industry has reacted to the trend of the SSB tax and how their actions could be successful. Next, looking at studies over the media's coverage of the SSB on both local and national news, I was able to draw conclusions about what pro-tax messages and anti-tax messages were prevalent.

While the SSB taxation is relatively new, it is necessary to study the early results of the SSB taxes that are in place. These studies help answer two very important questions pertaining to my research. The first question was how effective the SSB taxes

are in reducing SSB consumption, which is their primary purpose. The second question is how the SSB taxes flow from the distributors to the retailers.

Sin Tax

Since the sugar-sweetened beverage tax is a “sin” tax in that it was proposed to deter a certain behavior, it is important to research “sin” taxes for historical context. It is also important to understand The public and policy makers view the sin tax, how the industries that were affected responded, and to understand the impact the sin taxes had on the “sin” that they were intended to deter. A sin tax is an excise tax that is levied by a local or state government on the sale of a product that has undesirable associations. Typically, the consumer is not aware of how much the tax is since it is embedded in the cost of the product.

In a study in the *Canadian Tax Journal*, Boadway (2016) looked at the efficacy of sin taxes on both tobacco and alcohol from various viewpoints. The first approach is the “public health approach” which is the view of the tax on tobacco and alcohol and how it can improve public health (Boadway, 2016). The public health approach is the taxing policy of the government to encourage healthy behavior. The negative health effects of tobacco were widely known; therefore, there is a strong case for the public health approach for the tobacco tax (Boadway, 2016).

The public health approach for alcohol is more complicated than it is for tobacco but more relevant in relation to the SSB tax. This is because the policy implementers for an alcohol tax want to discourage heavy consumption or abuse of alcohol but not hurt the

alcohol industry's sales to moderate drinkers (Boadway, 2016). Boadway (2016) also suggests that there is not enough research to clearly determine whether a significant tax on alcohol would change drinking habits. The way that alcohol is viewed in the public health approach is helpful because like the alcohol tax, the SSB tax policy is also used to deter heavy consumption of SSBs without hindering moderate consumption.

Boadway (2016) also views tobacco and alcohol using the economic approach, which looks at the externalities that the uses of tobacco and alcohol have on society while also considering the revenues that would come from a tax on tobacco and alcohol. This approach that focuses on externalities rather than social costs like the public health approach results in a far lower optimal tax rate. The authors' last approach mentioned is the political economy approach, which is how well policy makers are able to sell tobacco and alcohol taxes to the public. Boadway suggests that these sin taxes are easier to sell to the public than income or sales taxes because most people realize the negative outcomes that tobacco and alcohol produce (Boadway, 2016).

To understand any challenges that the SSB tax may have in the future, it was important to research the loopholes used against the tobacco tax and how the SSB tax could mitigate those loopholes. Pomeranz (2014) discusses how SSB tax policy makers should learn from how tobacco tax policymakers enacted laws to try and stop tobacco companies and retailers from avoiding the tobacco tax. The first law mentioned was the minimum price law, which required the retailer to increase the price of tobacco in the form of a minimum percentage markup. The minimum price laws didn't have a

significant effect in states where the tobacco tax rates were very low, and the laws were ineffective when trade discounts were used. Pomeranz also points out that there is research showing that some states do not enforce the minimum price laws so they have been largely ineffective. However, Pomeranz suggests that for the SSB tax policy, the SSB industries have enough products that do not qualify as SSBs that they can shift the cost of the tax to other products making the tax largely ineffective. To combat this cost shifting, Pomeranz states that a minimum price law on SSBs would help avoid the industries shifting the tax to other products (Pomeranz 2014).

The other policy that Pomeranz (2014) details is a law that forbids retailers price discounting to get the taxed product down to pretax level. The City of Rhode Island enacted a law that prohibited retailers from accepting discounts on tobacco (Pomeranz, 2014). Policy makers for taxation on SSBs might consider a law prohibiting discounts so that the tax is effective in increasing the price.

An article in the *Canadian Tax Journal* analyzed the effect a decreased cigarette tax rate had on the consumption of cigarettes (Sen & Fatima, 2011). In 1994, the Canadian government reduced cigarette tax rates by 45-60% in five provinces in response to tobacco smuggling (Sen & Fatima, 2011). However, the other five provinces in Canada did not have such a significant decrease (Sen & Fatima, 2011). Sen and Fatima (2011) used this natural experiment to examine the effect the tax rate had on the daily smoking in Canada by gender and by age group. The study found that there was a correlation in a decreased tax rate and higher daily smoking (Sen & Fatima, 2011). The group that had

the highest correlation was teen males followed closely by older males, which were ages 45-50 (Sen & Fatima, 2011). The Centers for Disease Control and Prevention (CDC) performed a study that found that tobacco taxes in America decreased teenage smoking by almost ten percent from 1991 to 2011 (Wetter & Hodge, 2016). The World Health Organization cited the tobacco tax as the most significant deterrent against teenage tobacco use (Wetter & Hodge, 2016). It is important to understand the tax elasticity in sin taxes across different demographics since a sugar-sweetened beverage tax wouldn't have the same impact across all demographics. It is imperative to understand whether sin taxes are effective in preventing the "sin" targeted. It is clear from my research that these targeted taxes can potentially change the public's undesirable behavior.

Sugar-Sweetened Beverage Taxation Overview

Going into depth into how the taxation on SSBs affects health in America, I examined the changes in the SSB taxation. The taxes that are considered the newer SSB taxes are the ones that were enacted after 2015. I have attached two tables, the first being the older SSB taxes and the second being the newer SSB taxes. The tables describe the tax's location, type of tax, year enacted, intent of the tax, how they defined SSBs, and where the revenues were allocated.

Table 1: SSB Taxes Before 2015

Location	Tax type	Year	Intent of tax	SSB definition	Revenue Allocation
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Alabama	Annual license on manufacturers, wholesalers, and retailers	1975	Not Specified	Soda water, carbonated drinks, fruit juices, flavored milk, or anything that could be defined as a soda	Not Specified
Arkansas	Excise tax on manufacturers and distributors	1922	Revenue raising	Anything that could be defined as soda except soft drinks with more than 10% juice, milk products, infant formula	Arkansas Medicaid Fund
Tennessee	Gross-receipts tax on manufacturers, sellers, and importers	1987	Revenue raising	Any nonalcoholic beverage, not dependent on carbonation except beverages containing milk and undiluted fruit juice	Highway fund for prevention and collection of litter
Virginia	Excise tax on wholesaler or distributor	1984	Revenue raising	Carbonated soft drinks (Not specified)	Litter Control and Recycling Fund
Washington	Excise tax on wholesaler or retailer	2009	Not specified	Syrup used to make any nonalcoholic liquid intended for human consumption	Washington's General Fund
West Virginia	Excise tax on manufacturer	1950	Revenue raising	Bottled soft drinks (Soft drinks are defined as any nonalcoholic drink and includes any fruit juice if any syrup or flavoring is added), syrups, and dry mixtures used to make soft drinks	West Virginia University School of Medicine

Table 2: SSB Taxes after 2015

Location	Tax type	Year	Intent of Tax	SSB Definition	Revenue Allocation
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Albany, California	Excise tax on distributor	2016	Discourage the distribution and consumption of SSBs	Beverage with one or more added caloric sweeteners and that contains at least two calories per fluid ounce and excludes beverages with milk as the main ingredient, alcoholic beverages, infant formula, meal replacements, or medicine.	Not Specified
Berkeley, California	Excise tax on distributor	2015	Reduce consumption	Beverage with one or more added caloric sweeteners and that contains at least two calories per fluid ounce and excludes beverages with milk as the main ingredient, alcoholic beverages, infant formula, meal replacements, or medicine.	Not specified
Oakland California	Excise tax on distributor	2017	Reduce consumption	Beverage with one or more added caloric sweeteners and that contains at least 25 calories per 12 fluid ounce and excludes beverages with milk as the main ingredient, alcoholic beverages, infant formula, meal replacements, or medicine.	Not specified
San Francisco, California	Excise tax on distributor	2018	Reduce consumption	Beverage with one or more added caloric sweeteners and that contains at least 25 calories per 12 fluid ounce and excludes beverages with milk as the main ingredient, alcoholic beverages, infant formula, meal replacements, or medicine.	Not specified
Boulder, Colorado	Excise tax on distributor	2017	Reduce consumption	Nonalcoholic beverages that contain five grams of caloric sweetener per 12 fluid ounces, except weight reduction supplements, baby formula,	Wellness programs, health promotions, and chronic

				medical use beverages, beverages which milk is the primary ingredient, and cough syrup	disease prevention
Cook County, Illinois	Excise tax on retailers	2017	Reduce consumption	Any nonalcoholic beverage, carbonated or noncarbonated that contains any caloric sweeteners or noncaloric sweetener	Not specified
Philadelphia, Pennsylvania	Excise tax on distributor	2017	Reduce consumption	Any nonalcoholic beverage that contains a caloric sugar-based sweetener or artificial sweetener, or any syrup or concentrate used in the preparation of such beverage, exemptions include baby formula, medical beverages, or any product containing more than 50% milk, fruit, or vegetables	Not specified

The older tax laws are different in the way that they are structured, and in the reasoning behind the taxation (Sorensen, 2017). With the rising rates of obesity and diabetes, the newer taxes were more frequently implemented to reduce the amount of SSB intake of consumers (Gostin, 2017). The older taxes, on the other hand, were largely used as a revenue source to fund various projects like West Virginia’s Medical School, while states like Virginia and Tennessee directed tax revenues toward a recycling and litter program (Sorenson, 2017). The revenue from the newer taxes have been used to fund health promotion and general wellness programs (Gostin, 2017). Another main difference between older and newer taxes is how they are structured. Older taxes were generally structured as a gross-receipts tax or even just a license, whereas the new taxes are in the form of an excise tax based on a per-ounce of SSB sold (Sorensen, 2017).

Another difference to consider is how sugar-sweetened beverages are defined in newer versus older taxes. Sorensen (2017) points out that older taxes were so broad that they included beverages that did not even contain sweeteners. This is probably because they were not implemented to reduce the amount of sugar consumed but to raise revenue.

Newer taxes are designed to tax only beverages that have caloric sweeteners, with many taxes being based off of how many grams of caloric sweeteners are in the beverage (Sorensen, 2017). The trend of SSB taxation is important to realize due to the abundance of SSB taxes being implemented. The amount of people affected by the SSB tax in the beginning of 2016 was 121,000 and the amount of people being affected by the tax is estimated to grow to 8.3 million in the next few years (Gostin, 2017).

Using prior research about the relationship between the consumption of sugar-sweetened beverages and obesity I try and reach a conclusion about if there are any associations with SSB consumption and health problems. It is important to understand the health impact of SSB consumption because if there is no link between SSB consumption and obesity and diabetes then there is no health reasoning behind the tax policy creation. Most of the SSB and obesity research used body mass index (BMI) as a measure of obesity. BMI is a numeric value equal to the quotient of a person's weight divided by the square of their height. BMI is the most commonly used obesity measure due to its cost effectiveness and simplicity in testing (Chung et. al., 2016). However, BMI doesn't differentiate between muscle and fat when using an individual's overall weight and, as a result, it often overestimates obesity with muscular individuals and underestimate obesity

with individuals with little muscle (Hung et. al., 2016). BMI also cannot determine where a person holds their fat, which is also important, as location is linked to different specific metabolic diseases (Chung et al., 2016). While BMI might not be the most accurate measure of obesity, it is the most widely available due to its ease in measurement.

Studies have shown that the world has an obesity problem with 1.5 billion people reportedly overweight (Basu et. al, 2013). The problem is increasing the amount of cases of diabetes to a reported 7.0% of adults with diabetes in 2010 compared to the 5.5% reported in 2000 (ages 20-79) (Basu et. al, 2013). The idea that consumption of SSBs is correlated with obesity is because SSBs contain large amounts of refined sugars while having poor saturating properties (Basu et. al, 2013). Basu's (2013) study used a multivariate linear regression to predict the effect of SSB consumption on obesity (measured by BMI) and diabetes. The study found that the effects of SSB consumption on both obesity and diabetes were significant worldwide (Basu et. al, 2013). The study also found that SSB consumption is expected to continue rising more than 15% in the next five years in low to middle income countries and almost 10% worldwide, which would put an extra 1.1 billion adults with obesity and 192 million adults developing diabetes (Basu et. al, 2013).

While worldwide obesity is a major concern, the rising rate of childhood obesity is a special cause of concern for the future health of the world. This is a problem specifically in the United States, where around one out of three children is considered overweight and around 17% are considered obese by BMI standards which increases their

risk of many metabolic diseases (Wetter & Hodge, 2016). Kosova (2013) found significant associations between the consumption of SSBs and lipid levels, cholesterol levels, and waist circumference, all of which pose negative effects to children's metabolic health. Wetter and Hodge (2016) further found that if children decreased their SSB consumption, they would have lower blood pressure and cholesterol levels.

Prior research shows that there is a correlation between the consumption of SSBs and both obesity and diabetes. Therefore, if a tax could reduce the consumption of SSB, it is expected that a reduction in the rates of obesity and diabetes would follow.

While the government has an obvious interest in keeping the public living a healthy lifestyle, they also can realize a cost benefit if they improve public health. It is estimated that over \$200 billion is used for national healthcare costs related to obesity (Cawley & Meyerhoefer, 2012). It was reported that, in 2007, over a third of American adults were considered obese (BMI over 30) and obesity has been on the rise since (Cawley & Meyerhoefer, 2012). One study from the *American Journal of Preventative Medicine* looked at the potential economic effects of a SSB tax using a cohort model to simulate the effects of the tax on BMI over a ten year span (2015-2025) (Long et. al, 2015). The study included the cost of the implementation when considering the economic effects and it found that the tax would result in \$51 million spent in the first year of implementation and \$430 million over ten years (Long et. al, 2016). The model found that a one-cent-per-ounce tax on SSBs would result in a 20% reduction in SSB intake which would result in a .08 average decrease in BMI in adults and a .16 average decrease

in BMI in teenagers (Long et. al, 2016). The simulation predicted with the reduction in BMI that an estimated \$23.6 billion less would be spent on healthcare over the ten year span (Long et. al, 2016). This ratio would be beneficial to the government, which would realize a \$55 dollar return on every one dollar invested into the tax (Long et. al, 2016). Also included in the study was the amount of revenue the SSB tax would realize; the model found that the tax would generate a predicted \$12.48 billion net revenue (Long et. al, 2016). This study gives an indication that if a SSB tax is successful in reducing consumption, healthcare care costs could also be reduced.

One main argument from the soda industry against the SSB tax is that it would cause a reduction in employment (Powell et. al, 2014). The soda industry focuses on the fact that the SSB tax could lead to a decrease in gross employment, but they do not acknowledge the effect of net employment of the SSB tax (Powell et. al, 2014). One article looked at how a 20% SSB tax would affect employment in both Illinois and California. The results showed that net employment would remain largely unaffected with an increase of .06% and .03% in net jobs in Illinois and California respectively (Powell et. al, 2014). While the industry funded study showed a loss of over 210,000 jobs in the beverage industry they did not factor in the allocation of consumer spending on other products (Powell et. al, 2014). In most of the studies that the industry funded they focused on gross effects rather than net effects, which are often misleading to the public (Powell et. al, 2014).

Research over the economics of the SSB tax is important since the medical and insurance costs are currently prominent in the national conversation. Based on the research, a properly applied SSB tax could have a significant economic effect on both the cost of health care and generating considerable tax revenue that could be aimed at reducing the costs of health insurance. However, the research was hypothetical and actual economic impacts from a SSB tax must be examined after the SSB taxes have been implemented long enough to gather more available data.

Sugar-Sweetened Beverage Tax Response

Much like the tobacco industry, the beverage industry started well funded campaigns against SSB taxation. Gostin (2016) reported that the American Beverage Association spent almost twenty million in San Francisco against the proposed SSB tax. Soda companies, such as PepsiCo and Coca-Cola, recently started corporate social responsibility (CSR) campaigns to try and combat the negative images that SSB tax advocates promote (Dorfman et. al, 2012). CSR campaigns are not a new tactic by an industry under scrutiny; during the 1990s, tobacco companies implemented CSR due to facing pressure after it was becoming more accepted that smoking and disease were scientifically proven to be linked (Dorfman et. al, 2012). While the CSRs, initiatives were supposed to include the ethical and legal social responsibilities a company has in society, the tobacco companies were very clever in making themselves look innocent while also using CSR as a marketing campaign (Dorfman et. al, 2012). The industry's most noticeable CSR activity was labeled "PM21" which was designed to change the public's

perception of tobacco companies through showing the charitable contributions the companies made (Dorfman et. al, 2016). A way that the tobacco industry used CSR as a marketing campaign was the handbooks given to students that were titled “Tobacco Is Whacko If You’re a Teen”; this handbook labeled tobacco as the forbidden fruit and was seen as a means of reverse psychology to promote youth smoking (Dorfman et. al, 2016).

Many of the efforts of the tobacco companies’ CSR campaigns backfired or became ineffective in changing the public opinion. One major way that soda industries have differed from tobacco industries is that they were able to start the CSR activities before the science against them was widely accepted (Dorfman et. al, 2016). As soon as the World Health Organization cited a link between obesity and soda consumption, both Coca-Cola and PepsiCo started CSR campaigns to reduce any negative association with their brand names (Dorfman et. al, 2016). The Pepsi Refresh Project, which is PepsiCo’s main CSR effort, is described as a good mix between a corporate philanthropic effort and a marketing effort targeted at youth (Dorfman et. al, 2016). While PepsiCo presents the Refresh Project as a corporate philanthropic effort, it is funded with corporate marketing dollars, which can give insight into the purpose behind the Refresh Project (Dorfman et. al, 2016). Coca-Cola’s CSR campaign, “Live Positively” shifts the focus of obesity to the bad choices that often cause obesity (Dorfman et. al, 2016). This shift takes the responsibility off of the soda industry and onto the individuals to lessen the negative image associated with soda brands (Dorfman et. al, 2016). The soda company’s shift of corporate responsibility to individual responsibility is similar to how tobacco industry

CSR initiatives were structured (Dorfman et. al, 2016). Another similarity between soda industry CSR and tobacco industry CSR were how they targeted youth. One of PepsiCo's goals for the Refresh Project is to create brand loyalty with youth to increase long run sales (Dorfman et. al, 2016)

Research shows that the soda companies are shifting the responsibility to the individual instead of the companies producing the product. Recently the soda industries' CSR initiative may be partially effective. However when the link between SSB consumption and health risks is more widely recognized, soda companies efforts will be as unsuccessful as those of the tobacco industry.

Prior research over the media portrayal of SSB taxes gives insight into how SSB taxes are presented to the voters. In one study, news coverage of the SSB tax was analyzed concerning how frequently arguments were pro-tax versus anti-tax and what arguments were used on both sides from 2009 to 2011 (Niederdeppe et. al, 2013). The study found that on average the news coverage was generally more pro-tax than anti-tax with pro-tax messages centered on the health and economic benefits of a SSB tax (Niederdeppe et. al, 2013). The study found that the most used anti-tax message was concentrated on how any tax on SSBs would hurt the economy and how it is not the government's duty to help consumers make decisions (Niederdeppe et. al, 2013). Another article interviewed 18 stakeholders who were knowledgeable about the SSB taxation, asking which messages they believed were the most useful in arguing pro- or anti-tax

(Jou et. al, 2014). These interviews were done to analyze the effectiveness of the media in impacting public opinion.

The two most effective pro-tax messages were about how revenues collected from the tax would be put into health related programs and the various studies that linked SSB consumption with obesity and diabetes (Jou et. al, 2014). The most effective anti-tax messages were those found on the negative economic impact that could result from the SSB tax, and on the perceived governmental restriction of consumer choice (Jou et. al, 2016).

One article provided a more narrow approach to examine the local and national news coverage of the SSB tax in Richmond and El Monte, California and Telluride, Colorado. In all three of these cities that had a vote to implement a SSB tax, its passage failed due in part to the vast spending by the soda industry (Nixon, 2016). While many of the pro-tax messages that the news coverage promoted were similar to previous studies, the anti-tax messages varied between each city (Nixon, 2016). In the working class city of Richmond, California, the tax opponents in the media often referred to the tax as racist or regressive as a way to ‘marginalize people of color’ (Nixon, 2016). In Telluride, Colorado, tax opponents used the narrative that a SSB tax was a waste in Telluride (Nixon, 2016). This message was effective in Telluride because it is a ski town that was marketed as healthier than most other towns in America (Nixon, 2016). In El Monte, a more conventional anti-tax message was used in that the news coverage targeted the negative economic effects the tax would have on the local businesses in El Monte

(Nixon, 2016). This study was useful to see how the news coverage varied for different cities.

With the examination of the media coverage and the failure of the passage of SSB taxes, it appears to me that the combination of the shift to personal responsibility and freedom of choice were simply overwhelming arguments in the perception of the voting public.

Current Research on Sugar-Sweetened Beverage Tax

While many of the excise taxes intended to reduce SSB consumption have not been in place long enough to make judgements about their long-term effects on SSB consumption, there have been some studies that have shown the short-term effectiveness of the excise tax. The Berkeley, California SSB excise tax, the first SSB tax intended to reduce consumption, was analyzed for its impact on consumption in low-income neighborhoods in the year after it was put into practice (Falbe et. al, 2016). While the effect of the tax did not have an effect on high income neighborhoods (4% increase in SSB consumption) it did have a statistically significant effect on low-income neighborhoods which is what it was intended for with a 21% decrease in SSB consumption (Falbe et. al, 2016). The authors mention that it was only predicted to be a 10% decrease in the first year but the larger decrease could be explained by the effect of the anti-SSB marketing successfully shifting the public view (Falbe et. al, 2016). While this is the only excise tax in the United States that presents any results of a SSB tax impact, the excise tax in Mexico has been studied to show its effect on SSB consumption

(Colchero et. al, 2016). In September 2013, Mexico passed an excise tax on SSBs of 1 peso per liter, which would go into effect starting January 2014. In a study looking at the 2014 results of the SSB tax, Mexico had a 6% decrease in overall SSB consumption during 2014 with the decrease accelerating up to 12% in December of 2014 (Colchero et. al, 2016). While both Mexico and Berkeley's SSB excise taxes haven't been in effect for long, the authors agree that the longer they are in effect the more effective they will be in deterring consumption (Colchero et. al, 2016).

The Berkeley SSB tax is intended to reduce consumption, with a 1 cent per ounce tax on the distributor of the SSBs (Falbe et. al, 2015). However, since excise taxes tax the distributor or retailer and not the point of purchase so it is necessary to see how the tax is passed through from distributor to retailer (Falbe et. al, 2015). The authors of this article predicted that the shelf price of SSBs would increase from the tax but they examined the pre- and post-tax prices on SSBs in Berkeley and in neighboring areas to determine the pass-through rate (Falbe et. al, 2015). The results of the study showed that three months after the tax was put into effect, the pass-through rate of the tax to retail prices was significant (Falbe et. al, 2015). The pass-through rate for soda was 69%, and was 47% for fruit flavored beverages in Berkeley, which would cause a fourteen cent increase on a typical 20-ounce soda (Falbe et. al, 2015). The pass through rates in Berkeley are expected to grow from the effect of the tax the longer it is in effect (Falbe et. al, 2015). This study gives an indication that the pass through rates for SSB taxes will be successful in effecting the retail price of SSBs (Falbe et. al, 2015).

While the results are based off of short-term data, it did appear that the tax was effective in reducing the consumption of SSBs. This is because of a successful tax pass-through rate, which allows the retail price of the soda to increase. The recently implemented SSB taxes must be assessed when the tax has been in place for a longer time.

Conclusion

The prior research examined helps answer the questions posed about the different aspects of the taxation on sugar-sweetened beverages (SSBs). One of the most effective messages for a SSB tax is that it would help reduce health problems associated with obesity. To understand if that message was reasonable, it was necessary to understand whether SSB consumption and negative health effects were associated with each other. Prior research performed to understand the health consequences of SSB intake show that there is a link between SSB consumption and many of the metabolic effects associated with being overweight, such as high cholesterol and lipid levels and an increase risk of diabetes. Furthermore, one study projected that if SSB intake continues to increase, that more than one billion adult will be obese in the future. The results of studies show the efficacy behind the taxation on sugar-sweetened beverages due to the association with SSB consumption and negative health effects.

The media coverage of the SSB tax show that most people were worried about the economic effects a SSB tax would cause. To understand if those concerns were warranted it was important to examine the economic impact of a SSB tax on healthcare costs and

employment. The studies projected that not only would it lower healthcare costs by a substantial amount, \$23.6 billion over a ten year span, but it would increase governmental revenue by \$12.48 billion over that same ten year span. A main argument against a SSB tax was that it would decrease jobs but research has shown that it would not decrease jobs but actually have no significant effect on net employment. Therefore, it would not hurt employment to implement a SSB tax that would benefit the economy by decreasing the amount paid in national healthcare.

Studies over the early results of the SSB taxes recently put into place it help show the short term effectiveness of the tax on reducing consumption of SSBs. In low income neighborhoods in Berkley there was a 21% decrease in SSB consumption, which was higher than many experts expected. A similar tax in Mexico also showed an overall decrease in SSB consumption. While these results are short-term many experts expect for their effectiveness to increase the longer they are in place. These positive results show that the tax has been effective in being able to decrease SSB consumption short-term.

The table below summaries the questions in my introduction to understand how effective the sugar-sweetened beverage tax was in the different areas discussed in this paper.

How effective are sin taxes?	The research on page 9 showed that there was a correlation between a decreased tax rate and higher daily smoking. This confirmed that the sin tax did have an effect on the “sin”.
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Changes in SSB tax over the years?	Newer taxes are now intended to decrease SSB consumption rather than raise revenue. Newer taxes have a much narrower view of SSBs than older taxes.
Is SSB consumption related to obesity?	Research has found an association between SSB consumption and obesity and diabetes along with other negative metabolic effects.
Would an SSB tax reduce healthcare costs?	A simulation of a slightly reduced BMI could result in an estimated \$23.6 billion less spent on healthcare over a ten-year span.
How did the soda industry react?	Large soda corporations started corporate social responsibility campaigns to try and shift the responsibility to the individuals to live a healthy lifestyle instead of on soda companies producing unhealthy products.
What pro-tax and anti-tax messages were effective in the media?	The most effective pro-tax messages were the health consequences of SSB consumption and how the revenues from the tax could be allocated to health programs. The most effective anti-tax message was the perceived negative economic effects from an SSB tax.
How effective was the SSB tax on reducing consumption?	The early results of the Berkeley SSB tax showed a 21% decrease in SSB consumption. A similar tax in Mexico showed a 6% decrease in the first year of implementation.
How well did SSB taxes flow through from distributors to retailers?	The pass-through rate was 69% for sodas and 47% for fruit flavored beverages, which would result in a 14-cent increase in a 20-ounce soda. These rates are significant enough for the tax to be effective.

This research was intended to further the understanding about the taxation on sugar-sweetened beverages. Through this research it has been shown that they have a

positive effect on reducing SSB consumption. Since reducing SSB consumption and the many negative health effects associated with it, it is expected that national healthcare costs will decrease. However, it is necessary to continue the research on the sugar-sweetened beverage tax once the data from many of the recently enacted taxes can be used in order to analyze the long-term effectiveness of the tax.

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