

The implementation of the sugar-sweetened beverage taxes in the UK: A review

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Abstract: Obesity is becoming a serious health issue that affects both industrialized and developing nations, having serious repercussions for societal food security. It is thought that taxing goods with an adverse effect on human health will boost government revenue while lessening the harm. A graduated sugar tax on sugary beverages is now being utilized in the UK to lower the sale of sugary beverages and thus lower obesity rates. Further adjustments are required because this policy may be impacted by industry pressure, tax design, and media engagement.

Key words: *sugar-sweetened beverage tax, effects, pressure*

1. Introduction

The prevalence of obesity-related disorders is increasing globally, affecting both industrialized and developing nations. As of 2016, the World Health Organization (WHO) estimated that more than 1.9 billion adults and more than 350 million adolescents worldwide are overweight or obese [1]. The issue's increase is also indicative of the fact that a large proportion of the world's population remains to be food insecure and that starvation and obesity are pervasive global concerns [2, 3, 4].

Numerous studies have determined that consuming an excessive number of free sugars leads to increased weight, which can result in overweight or obesity, tooth decay, type II diabetes, and other noncommunicable diseases (NCDs) [5, 6]. Sugar-sweetened beverages (SSB) typically include energy-dense sweeteners, making it difficult for the body to reduce the excessive energy intake from drinking [7]. A 500ml portion of sugar-sweetened beverage might quickly

exceed the daily sugar intake suggested by the World Health Organization [7]. In addition, SSBs contribute significantly to the sugar intake in the United Kingdom [8]. According to survey statistics, the increase in obesity and overweight rates over the past two decades has been substantially correlated with a substantial growth in the sale of carbohydrates based on added sugar [7,8]. Therefore, it is essential to reduce the intake of related sugary drinks.

Long-standing taxes on health-related tobacco and alcoholic beverages have been seen as a method to address public health issues while boosting government revenue [9]. McCarthy felt the public's eating habits could benefit from the proposed health-related food tariff [10]. One policy intervention to promote healthy eating and reduce obesity is the taxation of sugary beverages as an economic instrument to address food affordability [7]. The NHS advises consumers to limit their intake of sugary foods and drinks to no more than 5% of their calorie intake from free sugar [11]. The UK government implemented the Soft Drinks Industry

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Levy (SDIL) in April 2018 with the aim of reducing obesity rates by tiered sugar taxes to reduce the sale of SSBs [12].

By compiling and analysing the relevant literature on the sugar-sweetened beverages taxes, this study employed time series analysis to analyze the impact of the sugar-sweetened beverage tax and its influence on beverage sales in the UK. It has been found that the implementation of the tax in UK has been affected by the design of the tax policy, industry initiatives, and media interventions. This conclusion was reached by comparing sugar tax policies in other countries and explaining the specific implementation.

2. The necessity of enacting sugar-sweetened beverages tax

Sugar-sweetened beverages availability and appeal have increased significantly as a result of various multinational beverage corporations expending their global market presence, such as soft drinks, juice and energy drinks [13, 14]. The low cost of beverage processing, long shelf life and competitive promotion and marketing of the associated industries have also nearly increased their sales [14]. The reform of the EU's Common Agricultural Policy in 2013 has lowered sugar costs [15]. And artificial liquid sweeteners, such as high fructose corn syrup (HFCS) are rapidly replacing natural sucrose, and these chemicals are also the primary source of sweetness in beverages, as well as added sugar [14, 15].

Due to the high content of rapidly absorbed carbohydrates in SSBs and the difficulty of compensating for liquid calories by the body, excessive intake of sugar-sweetened beverages is harmful to the human body [16, 17]. A person's chance of getting type 2 diabetes mellitus (T2DM) is 26% higher if they drink 1-2 cups of sugary beverages per day than if they don't [16]. Despite the fact that weight gain does not fully represent the adverse effects of these beverages on the development of chronic disease, it has been demonstrated that they are truly hazardous [17]. Additionally, long-term consumption of potentially abrasive, low-pH soft beverages a major risk factor for the development of tooth erosion [18].

The Cambridge University study [19] found that as people age, their nutritional habits alter. For adults aged 19-64, dairy products account for roughly 10% of all beverages, a substantially lower percentage than for adults aged 19-64. In contrast, carbonated drinks including such soda, juices, and coffee had the highest overall ingestion among adolescents. These beverages contributed for 41% of the energy provided by liquids and supplied a significant portion of the total calories, which is also an important factor in the development of obesity in adolescents.

Numerous studies have shown that there is a correlation between the amount of sugar one consumes and one's overall health, singled out sugary beverages as a particular risk factor for weight gain and other diseases, and provided suggestions for how one might cut back on their consumption of SSBs [20, 21, 22]. The establishment and implementation of the Sugar-sweetened Beverage Tax has become crucial. A meta-analysis indicated, based on the economic theoretical foundations of the SSB tax, that when SSB prices increase, consumer demand for the product likewise decreases [22, 23]. Currently, numerous nations have implemented SSB taxes, which have resulted in a decline in the sales of sugary drinks and the incidence of type 2 diabetes. However, the acceptance of SSB tax interventions, awareness of the tax, and its implementation are influenced by a number of national circumstances-specific factors [22, 24].

3. Factors influencing the adoption of the sugar-sweetened beverages tax in the United Kingdom

3.1 Tax Subject Design

These measures have had a catalytic effect by boosting prices, limiting the purchase and consumption of related items, and driving the beverage sector to change the sugar content of their products themselves [22, 23, 24, 25, 26, 27]. As of right now, 44 countries and cities have announced levies on SSBs [22]. However, the extent to which sugar taxes have been affected varies significantly from one location to the next, partly due to the fact that different countries have different tax structures [22].

3.1.1 Tax on SSBs levied in the other nations

Since 2014, the government of Mexico has imposed a specific volumetric excise tax of SSBs 1 Mexican peso (MP) per litre on any beverage with a positive added sugar content [28]. Because of the introduction of this policy, there has been an effective 19% reduction in both the number of SSBs purchases and the average amount of sugar consumed [28]. There are considerable variances in the influence of sugar taxes on the pricing of sugary drinks or consumer behaviour across the United States, as tax regulations vary between localities and are not uniform throughout the country [22, 25]. For instance, Oakland levies a 1 cent per ounce tax beverages but exempts sweetened beverages without calories, whereas Philadelphia charges a significantly larger tax [25]. Similar sugar-sweetened beverages tariffs in Mexico and the United States are intended to be passed on to consumers in the form of increased retail costs, thereby lowering SSBs

consumption [22, 25].

3.1.2 SSB tax policy in the UK

The United Kingdom has devised a new method of taxation, which is being referred to as the sugar density tax [29]. This tax is calculated based on the amount of sugar contained in 100 ml of beverage, measured in grams.

In March 2016, Public Health England and the UK Parliamentary Health Committee advocated a tax on sugar-sweetened beverages, and on 6th April, 2018, the government enacted the Soft Drinks Industry Levy (SDIL) [29, 30]. Additionally, the industry of soft drinks was afforded some breathing room as a result of this act [33]. The purpose of progressive tax rates is to encourage beverage manufacturers to reorganize their goods and alter their sugar content ratios in order to pay a reduced tax rate or no tax at all [22, 32]. As can be seen in the table that follows, the United Kingdom was the first nation to implement a tiered industrial levy, which consists of a graduated tax in two zones (Table 1) [33].

Table 1. Two-tiered sugar taxation in the United Kingdom [12, 29, 33].

Categorization	Added sugar content per litre	Taxation of sugar
Low Degree	5-8g	0.18 pound per 100 ml
High Degree	>8g	0.24 pound per 100 ml
	<5g ¹	No tax

¹ Also include no added sugar juices, beverages containing at least 75% milk or milk substitutes, alcohol, powdered drinks, and infant formula [29]. Small manufacturers with annual sales under 1 million litres and exports are also tax-free [29].

The researchers Hernandez et al. [28] modelled what would take place if Mexico adopted the same method for taxing sugar density that is used in the United Kingdom and South Africa. They looked at how this would affect SSB sales volumes, pricing, and taxation, and then compared their findings to Mexico's current volumetric tax, which could also be referred to as a sales tax. The findings indicate that a tax on sugar density would reduce the amount of sugar contained in SSBs to a greater extent. However, Mexico's present way of taxing sugar provides for greater tax income and is more in line with the current needs of the countries. The tax strategy must be analysed within the

context of the country's environment in order to produce an appropriate tax law.

Based on their marketing strategies, UK soft drink companies can choose to either fully pass on the SDIL tax to customers or partially absorb it themselves, effectively shifting the burden of the industry tax from the sellers to consumers [12]. Manufacturers of beverages can adjust the proportion of sugar content in order to pay a lower tax rate or on tax at all. But at the same time, they need to run the risk that their product will not be accepted by customers or the market [12]. A direct increase in the price of sugary drinks may be a less risky approach. Evidence indicated that the tax was passed through to consumers ranging from 40% to 100% worldwide [12], which may appear regressive and can have a greater impact on lower income groups [34].

3.2 Industry Initiatives

According to the data from countries such as Mexico where sugar taxes have been implemented, sugar taxes have been shown to reduce obesity rates by limiting people's sugar consumption [35]. However, the UK drinks industry vehemently opposed the legislation, arguing that it would harm thousands of businesses throughout the soft drinks supply chain [36]. The industry also conducted modelling studies to demonstrate that the proposed sugar tax would have a negative impact on the drinks industry [29]. According to the study's findings, SDIL may cut the soft drinks industry's direct contribution to the UK's gross domestic product by £74 million [29]. However, only the most direct economic losses they would incur as a result of implementing SDIL were examined in the analysis and there is limited evidence of the direct impact of the SDIL tax on the soft drinks manufacturing [29].



Figure 1. UK sugar-sweetened beverages sales data [29].

Nevertheless, the data proved that the impact of the step sugar tax applied in the United Kingdom on sales of sugary beverages is temporary. Figure 2 revealed that SSB sales only exhibited a decreasing trend in 2017, one year after the regulation was first introduced, and subsequently rebounded or even surpassed their initial level in 2018. According to the stock market, some UK soft drinks companies' stock prices dropped after the announcement of SDIL [37]. However, the formal implementation of SDIL had no unexpected effects on the market, and cross-sectional analysis also suggested that the drop was temporary [37].

In reality, the widespread adoption of the tiered SSB tax structure has made it advantageous to reduce the product benefits of soft drinks, thereby lowering the price of healthier options. The average amount of sugar per 100 ml of beverage decreased by 11% between 2015 and 2017 [29], as beverage manufacturers redesigned their products to reduce sugar content. Due to the fact that sweeteners are less expensive to produce than sugary beverages, allowing businesses to generate profits [29]. Taxes can also stimulate sales in other sectors, such as for water and milk drink manufacturers [29].

Overall, there is little real evidence that SDIL will have a disproportionately negative effect on the soft drinks industry, but different attitudes and behaviours within the industry will have varying effects on consumers.

3.3 Public Pressures

The media may play a significant role in shaping public perceptions of public health policy and the likelihood of its acceptance [38]. By focusing on particular topics, the media has the capacity to influence the public agenda [39]. Newspapers in the United Kingdom provide a tremendous forum for spreading information and expressing opinions on contentious issues like the SDIL tax [40].

Though political and social obstacles make it difficult to find solutions to the obesity epidemic, and public opinion can be swayed by media representations easily [40]. A survey conducted by Bridge et al. [40], which compiled relevant discussions about sugar taxation reported in UK media from 2016 to 2019, were divided into two broad groups. The health risks associated with sugar consumption and the importance of cutting back on sugar were emphasised by the pro side, while the disadvantages of the tax on the drinks industry and on vulnerable households, as well as the unpredictability of the UK's withdrawal from the EU, were highlighted by the con side [40].

Inappropriate quotations and inconsistent placement within the text can mislead the reader [41]. Research indicated that popular opposition to government

intervention and higher sugar taxes in 2014 reduced in 2015, but remerged in 2016 following the implementation of SDIL [40]. Different perceptions of different areas of the food and beverage business have also led to a split within industry sectors [9], resulting in a shift in public opinion towards sugar taxes. On the other hand, Media coverage has also increased the sugar tax's perceived cost and tax awareness, which has had a positive effect on altering the tax environment where consumer behaviour is the policy objective [22].

4. Methodology

This section focused on the methodologies linked with two publications, a quantitative statistical method in the field of econometrics.

Particularly, the segmented time series analysis of Law et al. [29] was used to investigate changes in the domestic turnover of UK soft drinks companies after the establishment and implementation of SDIL. Examining limited-length data records and using mathematical models to forecast the future of the system. This approach presented a short and unambiguous image of sales under a range of limitations, allowing researchers to investigate the impact of SDIL on UK domestic turnover and the influencing factors. Nonetheless, the approach has several disadvantages. One problem is that it uses only UK-based data from soft drink manufacturers, so it's hard to tell how much of an effect SDIL has on those companies' bottom lines or whether or not the proposed sugar tax is actually responsible for a reduction in sugar content in soda and other sweetened beverages.

Bridge et al. [40] undertook a qualitative analysis. They searched LexisNexis for the 50 most relevant articles that met the criteria for each newspaper headline category. These articles were then retrieved and ranked according to their relevance. The analysis reflected public sentiments regarding the sugar tax and the numerous ways in which media coverage has led to diverse interpretations of the tax, highlighting the impact of the media on public policy. Again, the study was restricted to a sample of newspapers published during the time period, which may have led to the omission of crucial data. The receptivity of individuals to this information could have influenced the data analysis.

5. Gap in the current area

Taxation is a macroeconomic policy through which the government artificially regulates supply and demand to achieve economic planning objectives. Implementing a sugar tax is intended to reduce sugar consumption and, consequently, the prevalence of obesity and overweight.

Determining which portion of a product to tax is part of the process of establishing the tax. The Two-tiered sugar taxation in the United Kingdom, which is based on the added sugar content, is an effective incentive for producers to reformulate their products to reduce the sugar content. According to the study, the number of soft drinks purchased did not change significantly, but sugar consumption decreased by 10% [42]. This information also suggested that sugar taxes have reduced sugar consumption and obesity rates in the United Kingdom. However, the available research cannot explain the implementation of the SDIL tax as the sole cause of the decrease in sugar content in beverages. The implementation of the sugar tax and the decrease in sugar consumption are the result of an interaction, but they are not necessarily causal, which is a knowledge gap.

It is not possible to measure the policy's impact on individual consumers, as it may affect people with low incomes and the elderly differently. For instance, if older individuals consume fewer sugary beverages, SDIL may have little effect on them, whereas alternatives such as milk and water may be more relevant to their lives. Similarly, if tax breaks or more favourable policies are proposed for healthy foods, this may be a better strategy for low-income and disadvantaged individuals. The United Kingdom should require more targeted strategies to improve the situation of particular communities in the future. Similarly, taxation must consider the impact of inflation, and the issue of how to rationalise food prices to ensure the effectiveness of sugar tax implementation when prices are rising must be further investigated.

6. Conclusion

Mandatory policies, such as sugar taxes, are likely the most cost-effective and health-improving therapies for obesity since they are inexpensive to administer and may yield objective tax revenue [43].

The strategy of a graduated sugar tax in the United Kingdom has improved public health by reducing obesity rates to some extent. For those with a higher income, the sugar tax remains affordable. Their sugar consumption may have decreased not simply as a result of decreasing demand due to increased pricing, but also as a result of consumer preferences, a better understanding of dietary structure, and the dissemination of health concepts.

The negative effects of a sugar tax may be exacerbated for low-income and elderly individuals. Industry pressure, tax structure, and media intervention must be considered. Rather than increasing taxes on sugar, improving diets by reducing the price of vegetables, milk and other alternatives seems to be a better option. Future sugar taxation

enhancements will necessitate programmes that target groups with varying income.

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