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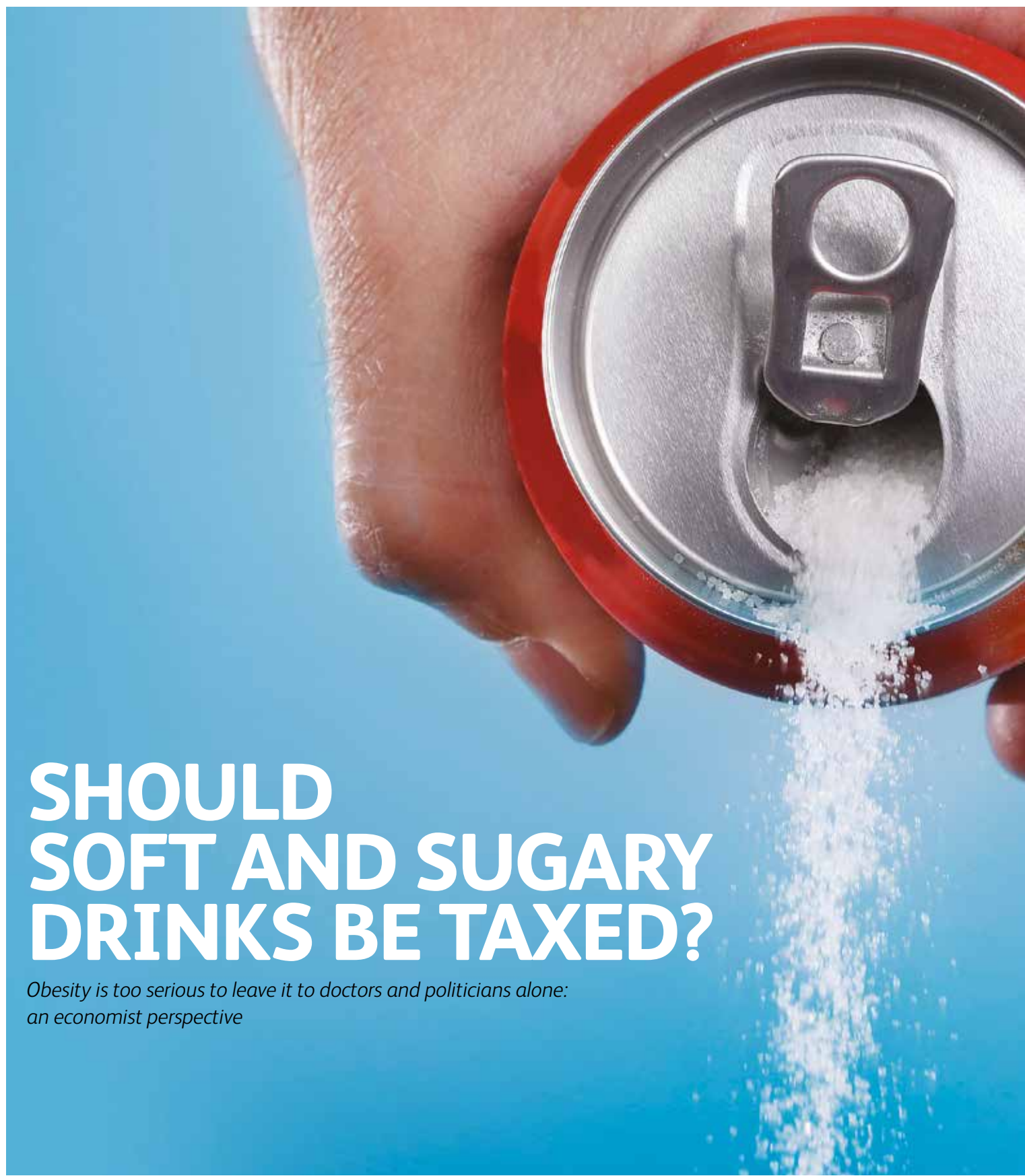
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# SHOULD SOFT AND SUGARY DRINKS BE TAXED?

*Obesity is too serious to leave it to doctors and politicians alone:  
an economist perspective*



**A new tax on sugary drinks in the UK**  
 In 2018, a new sugar tax on the soft drinks industry will be introduced in the UK, the government has announced in the 2016 budget. It will be imposed on companies according to the volume of the sugar-sweetened drinks they produce or import. There will be two bands – one for total sugar content above 5g per 100 millilitres and a second, higher band for the most sugary drinks with more than 8g per 100 millilitres. Analysis by the Office for Budgetary Responsibility suggests they will be levied at 18 pence and 24 pence per litre of marketed product (Triggle, 2016).

The tax will come into force in 2018 and will cost £1bn to implement. The government has predicted the tax will raise £520m in its first year (Ruddick, 2016). The government's aim with the new tax is to promote a change in eating habits, not to raise revenue. The tax receipts are earmarked for:

1. Doubling of dedicated sport funding for every primary school in the country,
2. Expansion of breakfast clubs, and
3. New funding for a longer school day.

The new levy will not be introduced until 2018, giving companies plenty of time to change product mix and reduce sugar content (Triggle, 2016).

This tax increase has been hailed by campaigners as a significant step in the fight against obesity. One of the most high-profile supporters of this campaign has been television chef Jamie Oliver, who has introduced a sugar levy in his restaurants from July 2015. Until March 2016 this levy collected £50,000. The money has been transferred to a Charity installing water fountains in schools (see [jamieoliver.com](http://jamieoliver.com)). There is no information available, however, as to whether this levy actually reduced sugary drinks consumption at restaurants where it was introduced.

At the same time, however, Gavin Partington, director-general of the British Soft Drinks Association, an industry body, stated that the tax is ill-conceived as the taxpayers and consumers will pay more to introduce and run the scheme than the government will receive as revenue. He also mentioned a possible shift in consumption pattern as milk-based sugary drinks will not be included in the new tax (Conroy, 2016).

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### Obesity in the UK

It is true that obesity is an important, expensive problem. There is a wide body of medical literature indicating that obesity can have a severe impact on people's health, increasing the risk of type 2 diabetes, some cancers, and heart and liver disease. From the financial point of view, obesity is a greater burden on the UK's economy than armed violence, war and terrorism, costing the country \$73 billion a year – in fact obesity has the second-largest economic impact on the UK behind smoking, generating an annual loss equivalent to 3% of GDP (Dodds, 2014). Figure 1 (overleaf, top) shows a continuous increase in obesity rates in England.

Overweight and obesity are terms that refer to an excess of body fat and they usually relate to increased weight-for-height. The most common method of measuring obesity is the Body Mass Index (BMI). BMI is calculated by dividing a person's weight measurement (in kilograms) by the square of their height (in metres). BMI is the most effective way to measure the prevalence of obesity at the population level. No specialised equipment is needed and therefore it is easy to measure accurately and consistently across large populations. BMI is also widely used around the world which enables comparisons between countries, regions and population sub-groups. In adults, a BMI of 25kg/m<sup>2</sup> to 29.9kg/m<sup>2</sup> means that a person is considered to be overweight, and a BMI of 30kg/m<sup>2</sup> or above means that a person is considered to be obese.

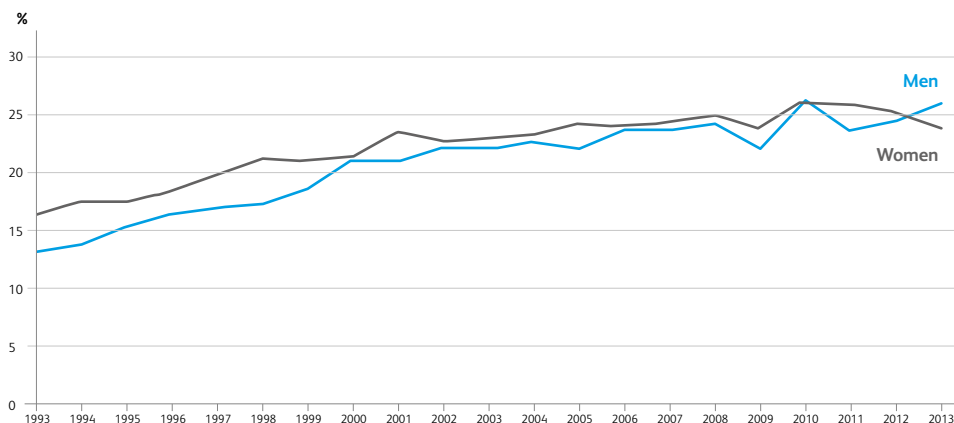
Obesity is a complex issue which does not respond to simplistic explanations. The proposed tax addresses only one cause – sugar consumption in selected drinks, while ignoring other factors, such as total amount and structure of calories consumed, level of physical activity, types of food consumed (processed vs fresh) and many others.

### How the new tax should work?

The government's intention is clear: by increasing the price of sugary drinks, it hopes that the customers will buy less of them and this would reduce the calorie intake to finally lead to a reduction in obesity.

However, economics is never that simple. The chart overleaf (Figure 2) is based on several assumptions and it does not seem that the UK government thoroughly analysed the complexity of the issue (or at least such analysis was not presented to the public). The first assumption is that producers will pass the tax to consumers, thus increasing the price of the product. While this assumption is in perfect accordance with classic economic theory, it does not address the issue of *when* producers will pass the price increase. For reasons related to maintaining market share or the volume of sales, manufacturers may decide to absorb the tax rather than pass it on to customers in the form of higher





**FIGURE 1:** Obesity (BMI 30+) prevalence among adults (16+) in England 1993 – 2013. Source: Niblett, 2015: 12; Copyright © 2016, Re-used with the permission of the Health and Social Care Information Centre. All rights reserved



prices. If this happens, industry profits will decline but sales would not be expected to fall. When Berkeley, California introduced a soda tax in 2015, researchers found that retail prices rose by less than half of the amount of the tax.

Another assumption is that normal price elasticity of demand, i.e. that the demand will go down in line with price increases. However, even if prices do increase, consumers may value the product enough to absorb higher prices by making cuts in other parts of their household budget. This is a basic concept of price elasticity of demand which is taught in every Introductory Economics course. The UK government did not present any research on price elasticity of demand for sugary drinks. We have, however, some data from other countries. In Finland, when the price of soft drinks rose by 7.3 per cent for two years running, consumption fell by less than one per cent in the first year and by 3.1 per cent in the second year (ECSIP, 2014).

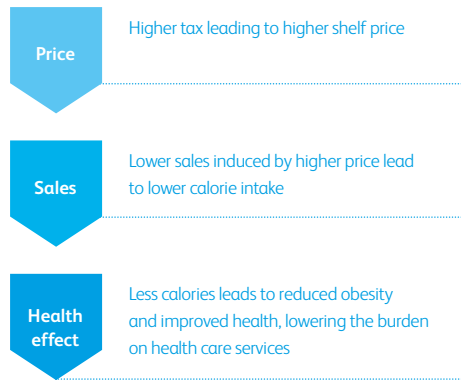
#### Learning from Denmark

I now turn to the Danish experience to examine the complexities related to the food taxes. An important potential problem with 'sugar tax' is the *substitution effect*. Consumers respond to the tax by switching to cheaper brands of the product or shopping in cheaper shops. If the tax is levied at a very high rate it might even drive consumers towards the black market. Consumers who downshift to cheaper brands will suffer a welfare loss from the consumption of inferior goods but will not consume fewer calories and therefore will be no less likely to be obese. Alternatively, consumers may buy less of the targeted product but buy more of other high-calorie products. For example, they might consume less lemonade but buy more beer, or they might purchase less cola but buy more chocolate. As a result of these *substitution effects*, the tax leads to fewer sales of one product without reducing calorie consumption as it is compensated by a higher consumption of another products.

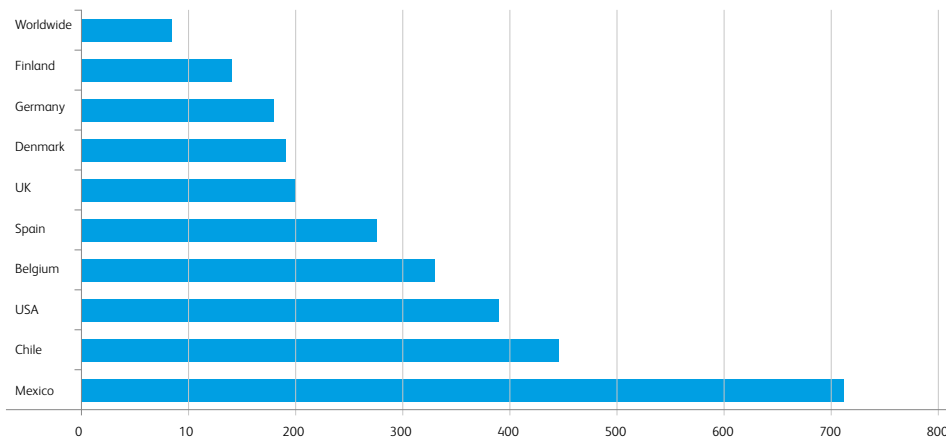
The Danish National Health and Medicines Authority reports that only 13.4% of the Danes are obese which compares with 23% of the UK residents and the OECD average of 16.9% (Sassi, 2012). As a proof that sugary drinks are not the



An important potential problem with 'sugar tax' is the *substitution effect*. Consumers respond to the tax by switching to cheaper brands of the product or shopping in cheaper shops. If the tax is levied at a very high rate it might even drive consumers towards the black market



**FIGURE 2:** Intended effect of sugary drinks tax



**FIGURE 3:** 2011 Per Capita Consumption of Coca Cola Products (Selected Countries, based on U.S. 8 fluid ounces of a finished beverage)

however, unclear, to what extent this drop is a direct result of the 'fat tax'. This figure comes from a study which looked at the first three months of the new tax regime when consumers were using up the large number of products they had hoarded in the days before prices rose (Jensen and Smed, 2013). Researchers who have looked at the whole timeframe have found that the decline in sales was much lower than 10-15 per cent (ECSIP, 2014). Moreover, such data must be seen in a wider context of consumer trends. The vice president of the Danish Grocers' Trade Organisation (DSK) Claus Bøgelund Nielsen stated in ECSIP (2014: 36), that the fall in butter consumption had nothing to do with the fat tax but there has been a small annual decrease in butter consumption for years due to healthier lifestyles. He compared it to a decrease of full milk consumption (fully-taxed) which has been substituted by skimmed, semi-skimmed milk or sweetened yoghurt or milk-based drinks (not affected by 'fat tax').

By far the biggest change in customer behaviour was an impact on shopping patterns. Due to geography of the country, Danes have a strong propensity to search for lower cost products in Germany and Sweden. Cross-border purchases had been declining before the 'fat tax' was enacted. They peaked at 15.6 billion kroner (£1.8 billion) in 2005 before steadily falling to 9.6 billion kroner (£1.1 billion) in 2011. The Danish Ministry of Taxation estimated that the overall border trade rose in 2012 to 10.5 billion kroner. Preliminary evidence suggested that the fat tax led to cross-border sales rising by the equivalent of 100 million kroner (£12 million) per year and rose thereafter (Smed and Robertson, 2012). The Danish Government withdrew the tax in January 2013.

**A behavioural economics perspective**

It has been suggested that possibly the best solution is to leave people in peace to enjoy their own little indulgences, including the amount of fat or sugar consumed. After all, sugary drinks are already taxed at the top VAT rate. It is, however, likely that this solution will result in ever-growing waist-lines and costs to the tax payer. The opinion that the best solution is to leave a purchasing decision to a customer, is based on an established view in classical economics, that people can take rational decisions.

only factor contributing to increased obesity, it is interesting to compare the consumption of soft drinks between Denmark and the UK. As the below figure shows, the per capita consumption of Coca-Cola products (i.e. mostly carbonated, sugary drinks) was very similar in both countries, yet the obesity rates are markedly different.

In October 2011, following an intensive public debate and a medical research programme which identified fat content as a main health concern in the country, Denmark became the first country in the world to introduce a 'fat tax' on meat, dairy products and cooking oil. It was an excise duty of 16 kroner (equivalent to 2.1 Euros or £1.81) per kilogram of meat, dairy products or cooking oils containing more than 2.3 per cent of saturated fat (Trovato and Quaglino, 2013). The 'fat tax' was portrayed as a levy designed to discourage unhealthy eating habits and help pay towards the putative costs of obesity. The money raised was originally earmarked for the health service, although this was dropped within weeks of its introduction on the grounds that such taxes are an unstable and fluctuating source of income.

During the first three months after the tax was introduced, the sale of butter, butter mixes and margarine fell 10-15% in Denmark with butter being the only statistically significant observation. It is,

*For a tax to achieve its aims, it must be significant enough so that it will lead to retail price increases which will be felt by customers. A large tax would simply prompt people to switch to other sugary drinks that are not taxed*

In contrast the new field of behavioural economics proposes an alternative to the rational model of traditional economics. A number of books, journal articles and empirical studies have been published exploring human irrationality in decision-making, beliefs and actions. One of the observations of this new branch of economics is that people are susceptible to cues in the environment that affect their behaviour – a fact that governments and businesses can use to frame and promote healthy behaviour and wiser choices.

#### **Obesity in New York**

I turn to the USA to examine the case of obesity from this new perspective. In the USA, over half of the New York City's adults, and close to 40% of the City's public elementary and middle school students, are obese. Thomas Farley, Commissioner of New York City's Health Department, indicated that 'obesity leads to the deaths of nearly 6,000 New Yorkers a year, more than any health problem except smoking, according to our best estimates' (Arumungan, 2012).

To address this issue, a large scale experiment in framing principle was planned to take place in New York in March 2012, as Mayor Bloomberg's administration tried to impose a ban on selling sugary drinks in servings larger than 16 oz servings (about 0.5 litre) in cinemas, restaurants, sports venues and mobile food carts. If a customer wanted to drink more of their favourite drink, they would have to order two (or more) servings (Arumungan, 2012). Bloomberg's plans fell through due to invalidation of the regulation by New York Supreme Court on 11 March, 2013. The legal battle ended on 26 June 2014, when the New York Court of Appeals, the state's highest court, ruled that the New York City Board of Health, in adopting the Sugary Drinks Portion Cap Rule, exceeded the scope of its regulatory authority.

The initial acceptance of this proposal by the New York's Health City Board, in a rare unanimous vote, may be seen as a victory for the paternalistic approach of Mayor Bloomberg, but also as a victory for sound economics. Bloomberg's proposal applies the economic concept of *default bias* and *framing*: if you offer a choice in which one option is seen as a default, most people go for that 'default' as it is simpler, requires less effort from people and links to what is commonly known as people's 'herd' instincts. The new regulation limiting the maximum size for the drink simply frames the 16oz size differently for customers; if they want more, they'll have to make an extra effort and dare to be different.

The research shows that humans do not hold opinions of their own on such matters and will look for hints and suggestions - like the size of a cup – to instruct them. In Tversky and Simonson's (1993) classic experiment, people were first offered two cameras: one basic and one with more features. Initially the choice was more or less equally divided between the two cameras. Then a third choice was added – a very expensive and sophisticated camera. This led to about 50% of people choosing the mid-range camera (the remaining 50% was almost equally split between basic and sophisticated cameras). The mid-range simply looked less extravagant. We can infer that if a super-size (32oz) is no longer available and now is replaced by 16 oz, maybe a standard size (12oz) will now be seen as the most desirable option. The thinking in this case is as follows: if a consumer has a choice of 12, 16 or 32 oz servings, the majority of consumers will select 16oz, while the rest will be equally split between 12 and 32oz. If, however, we reduce the choice and offer instead to only 12 or 16oz, then customers will split their choices equally between the serving sizes, reducing therefore the total consumption of soda, even if we account for repeat purchases by some customers (note that it would take 3 purchases of 12oz serving to match just one super-size of 36 oz), so it would take three times the customer's effort in case of 12 oz to consume the same amount of sugary drink.

Although the legal battle in New York has been lost, it has already created a welcomed effect. In September 2014, at the Clinton Global Initiative's annual conference in Manhattan, several beverages manufacturers, including Coca-Cola, PepsiCo and the Dr Pepper Snapple Group voluntarily pledged to reduce US calorie consumption in sugary drinks by an average of 20% by 2025 (Saul, 2015).

#### **Where from here?**

Going back to the proposed UK bill on sugary drinks, I propose that this is the wrong answer to a very real problem. First, as admitted by the government and supported by evidence from Denmark, the tax initially will cost more than it will bring in as the annual revenue. Even in later years, the actual cost of this tax would be high in proportion to revenue raised. Based on discussed examples, the tax will not work because of price elasticity of demand and substitutions issues. For a tax to achieve its aims, it must be significant enough so that it will lead to retail price increases which will be felt by customers. The current average







retail price of a 2 liters bottle of Coca Cola in London is £1.84 (based on Internet comparison prices), so the new tax, if passed fully to consumers, would result in a price of £ 2.32, a 26 % increase. Without a data on price elasticity, it is impossible to assess whether this change will lead to reduced purchases. A large tax, the Danish example shows, would simply prompt people to switch to other sugary drinks that are not taxed. In the proposed regulation the government clearly leaves the gates wide-open for a switch described above by not taxing milk-based drinks (smoothies) and fruit juices.

On the other hand, however, it is difficult to ignore the expanding waistlines and associated cost to the taxpayer. I suggest that a behavioural approach to dealing with obesity offers the acceptable mid-way solution – the individual's rights to select what he/she eats and drinks are not affected. This approach would involve reducing the available bottle size for sugar-based drinks, i.e. elimination of large size, 2 litre bottles and a ban on selling bulk packaging, such as sets of 8 cans, offering instead only sets of four. Customers retain their right to choose, yet they have to make more effort to do so, thus hopefully reducing their consumption of sugary drinks and, possibly, lowering the burden on health finances.

It may be advisable in this perspective, to convince a new Mayor of London to start an experiment and reduce the size of drinks served in London's restaurants and other food establishments – simply following the New York's attempt. Can we survive without unlimited soda fountain at some restaurants such as Nandos? Should we have 1 litre maximum bottle size of any sugary soft drink sold in our supermarkets? The time is ripe to take such measures to inform and influence consumers about obesity. The government should also involve the industry in this debate – and, based on the discussed voluntary pledge within Clinton Global Initiative, major companies are willing to engage in a meaningful conversation. They have undertaken a major commitment in the US, so why not ask them to do the same in the UK?

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#### Keywords

UK taxation, behavioural economics, obesity, Danish 'fat tax'