

Executive summary

- In March 2016, George Osborne announced a 'sugar levy' on soft drink companies to start in April 2018. Under this policy, companies will be taxed on sales of medium and high sugar drinks (excluding fruit juice and milk-based drinks).
- As an anti-obesity policy, the sugar levy seems arbitrary. Consumption of both sugar and sugary drinks has been falling for years while obesity has been rising. Soft drinks make only a small contribution to average calorie intake. Comparisons between European countries show no correlation between sugary drink consumption and obesity.
- There is unambiguous evidence that 'sin taxes' of this sort take a greater share of income from the poor than from the rich. Since low income groups tend to buy larger quantities of SSBs, the impact of the sugar levy will be particularly regressive.
- The Office for Budget Responsibility says the levy will increase inflation by a quarter of a per cent in 2018-19 thereby adding £1 billion to accrued interest payments on index-linked gilts. The inflationary effect will raise the cost of index-linked salaries, pensions and benefits by many millions of pounds. The levy will also require additional funding for enforcement and administration. For the first few years, at least, the sugar levy will be loss-making.
- Hopes of extensive reformulation to reduce sugar content in the soft drink market are highly unrealistic. There is no more sugar to be removed from diet drinks and companies will not change the recipe of their popular original brands. Instead, the levy gives companies the perverse incentive to raise sugar levels up to the threshold of each tax bracket.

The proposal

In March 2016, Chancellor George Osborne announced a 'sugar levy' on manufacturers of soft drinks. Intended to begin in April 2018, the plan is for a two-tier tax with one rate set for drinks containing more than 5 grammes of sugar per 100 millilitres and a higher rate for those containing more than 8 grammes of sugar per 100 millilitres. Milk-based drinks, coffee and fruit juice will be exempt.

Unlike alcohol and tobacco duty, the sugar levy is not a conventional sales tax. Osborne portrayed it as a tax on business which could be avoided if manufacturers reduced the sugar content of their products. The stated intention is to reduce obesity by (a) encouraging reformulation with artificial sweeteners, (b) reducing sales of sugary drinks through the price effect, and (c) using the revenue - estimated to be £520 million per annum - for school sports and other anti-obesity efforts.

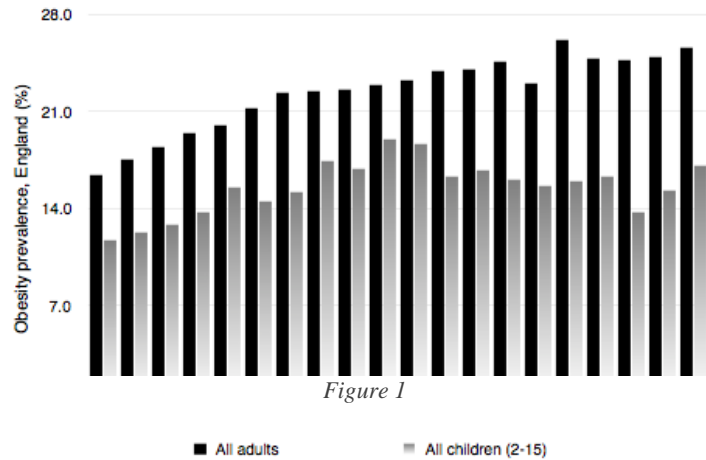
The Office for Budget Responsibility (OBR) estimates that the cost of the levy will 'be passed entirely onto the price paid by consumers' at a rate of 18p per litre for the lower tier and 24p per litre for the upper tier (OBR 2016: 227). This amounts to an extra 6p on a regular can of Fanta and Sprite, and an extra 8p on a regular can of Coca-Cola, Pepsi and Irn-Bru.

The justification

As **Figure 1** shows, adult obesity rose sharply in the 1990s and has risen more gradually since the turn of the century. Childhood obesity also rose but has been fairly static since 2006 (ONS 2015).

Sugar-sweetened beverages (SSBs) have featured heavily in the obesity debate in recent years with campaigners claiming that ‘soft drinks are the largest single source of sugar for children aged 4-10 years and teenagers’ (Sustain n.d.). However, this is only true if fruit juice is included

and it masks the fact that the overall calorie contribution of soft drinks is relatively small because sugar itself contributes less than 15 per cent of a child’s energy intake. Teenagers get 5.1% of their calories from soft drinks, with younger children getting just 2.3%. Adults get an even smaller share of their energy from soft drinks than teenagers (2.4%), with men getting three times as many calories from alcohol. **Table 1** shows the average calorie contribution from a selection of food and drinks.



	Children (4-10 years)	Children (11-18 years)	Men (19-64 years)	Women (19-64 years)
Meat	12.7%	16.9%	18.1%	16%
Bread	11.8%	11.2%	12.4%	11.4%
Milk	6.7%	3.6%	3.2%	2.9%
Potatoes	6.4%	8%	6.6%	6.6%
Biscuits	4.9%	4.2%	2.6%	3.7%
Confectionery	3.7%	4.4%	2.4%	2.5%
Fruit juice	2.4%	1.9%	1.1%	1.1%
Sugary drinks	2.3%	5.1%	2.5%	2.3%
Alcohol	0%	1.1%	7.2%	4.8%

Table 1: Average calorie contribution of selected food and drinks (National Diet and Nutrition Survey 2014)

As **Figure 2** shows, there is no correlation between SSB consumption and obesity (DEFRA 2015, ONS 2015). On the contrary, the main rise in obesity came when SSB consumption was falling. Obesity has continued to rise gradually despite a steep fall in SSB consumption over the last decade. Consumption has fallen 45% since 2003.

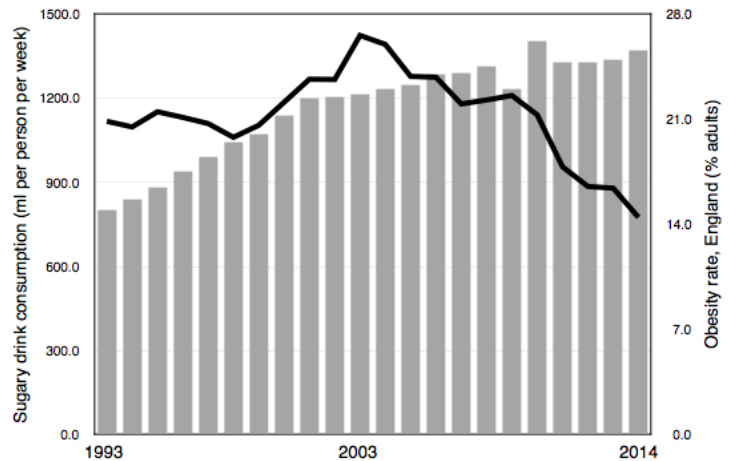
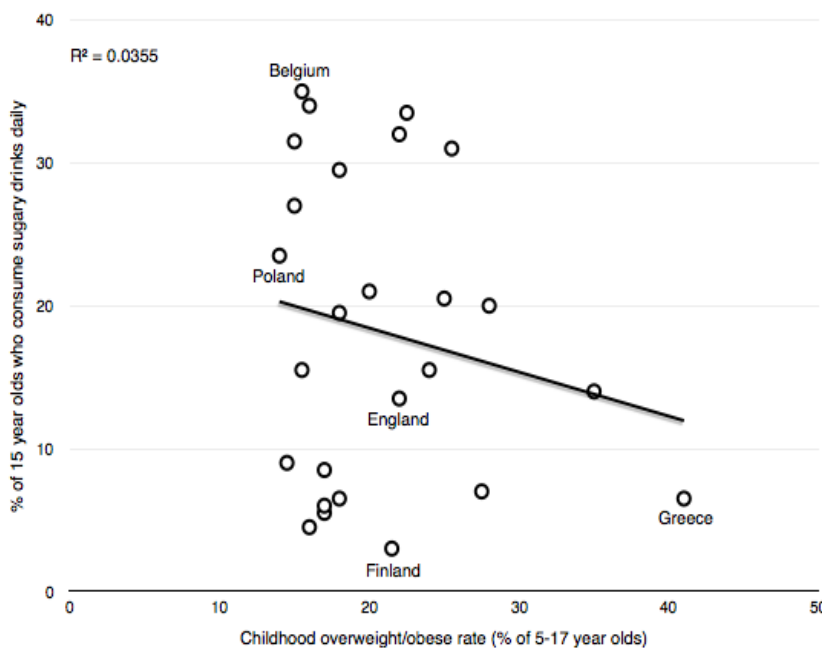


Figure 2

Moreover, there is no correlation between childhood obesity and SSB consumption when we look at the international picture. **Figure 3** shows

the proportion of 15 year olds who consume SSBs on a daily basis cross-referenced with the proportion of children who are overweight or obese in each country (ONS 2014: 4; WHO 2016: 118-9).¹ If these two variables were correlated we would expect to see a line going up from left to right. In fact, there is no pattern at all, with heavy consumers such as Belgium having low rates of overweight while light consumers such as Greece have high rates of overweight. (In Belgium, 35% of 15 years olds consume sugary drinks daily, with 15% of children classed as overweight or obese. In Greece, just 6% of 15 year olds consume soft drinks every day, yet the overweight and obesity rate is over 40%.)



Note that England is quite unexceptional under both measures with a fairly average rate of overweight and a below-average rate of regular SSB consumption.

DEFRA has been keeping complete records of self-reported sugar consumption since 2001 and they show a gradual decline, with total sugar consumption falling by 12 per cent and non-milk

intrinsic sugars ('added sugars') declining by 16 per cent (see **Figure 4**) (DEFRA 2015). Historical records indicate that per capita sugar consumption in the UK peaked at least forty years ago and has fallen by around a fifth in the years since (Food and Agricultural Organisation of the United Nations; Mintz 1985).

Figure 3

¹There is also no correlation between childhood overweight/obesity and regular consumption by 11 or 13 year olds (data not shown).

Given the long-term decline in sugar consumption and the more recent decline in SSB consumption it is not obvious why soft drinks are taking the blame for the rise in obesity. Even among teenagers, who are the biggest consumers of SSBs, they only provide 1/20th of average daily calorie intake.

The financial consequences

The sugar levy will have a negative financial impact on consumers and non-consumers alike. The most obvious consequence is that it will take an estimated £500 million a year from people who buy SSBs. Despite Osborne's claim that it will be up to businesses to decide whether or not to pass the tax onto consumers, companies have no money except that which they receive from their customers and so it is likely, as the OBR (2016: 277) predicts, that the levy will 'be passed entirely onto the price paid by consumers'.

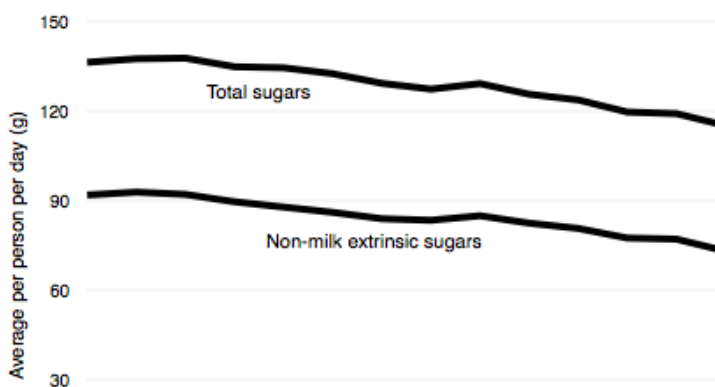


Figure 4

The OBR says that the tax will operate with a 'specific revenue target of £500 million for the second year of implementation (2019-20) (ibid.: 128). At 2016 rates of consumption, this implies taxes of 18p and 24p per litre but given that the government has a set revenue target of half a billion pounds, these rates will have to increase if consumption of sugary drinks declines.

There is unambiguous evidence that 'sin taxes' of this sort take a greater share of income from the poor than from the rich. As the Office for National Statistics (2012: 1) notes, indirect taxes 'take a higher proportion of income from lower income households, and therefore increase income inequality.' Since low income groups tend to buy larger quantities of SSBs, the impact of the sugar levy will be particularly regressive.

The sugar levy will also have negative effect on those who do not buy SSBs and on government finances in general, at least for a few years. The OBR says the levy 'is expected to add around a quarter of a percentage point to CPI and RPI inflation in 2018-19' (OBR 2016: 227). This inflationary effect will increase the cost of index-linked government debt and welfare payments. The immediate effect will be an avoidable cost to the government of £1 billion since, as the OBR (2016: 16) notes, 'the new soft drinks industry levy has added around £1 billion to accrued interest payments on index-linked gilts'.

This £1 billion cost will wipe out the revenues raised by the sugar levy in its first two years but this problem is only the tip of the iceberg. The treasury has not estimated the cost of raising index-linked salaries, pensions and benefits but it will undoubtedly run into many millions of pounds each year. Phil Wadsworth, chief actuary at JLT Employee Benefits, estimates that the sugar levy will add £3 billion to UK pensions liabilities (Baker 2016).

The treasury has not published an estimate of the cost of enforcing the tax. The OBR predicts that the levy will lead to ‘the emergence of a “tax gap” given the incentive for increased cross-border shopping and illicit trade’ (OBR 2016: 128). This emerging illicit market will need to be policed alongside existing black markets for tobacco, alcohol, drugs and other products. The levy will also create new administrative costs to be paid for by the taxpayer. For the first few years, at least, the sugar levy will be loss-making.

The effect on consumption

The OBR assumes that sugary drinks have an own-price elasticity of 0.8 and therefore predicts a 0.8 per cent decline in sales for every one per cent increase in price. On this basis, it forecasts a five per cent drop in sales of the top-tier products and a two per cent decline in second-tier products although they acknowledge that these estimates are ‘clearly subject to significant uncertainty’ (OBR 2016: 128).

There have been no estimates of what effect, if any, this putative decline will have on obesity but since sugary drink sales have fallen by more than 40 per cent since 2003 without any commensurate decline in obesity there is little cause for optimism. Taxes on SSBs in other countries have been associated with a rise in the sale of fruit juice, milkshakes and alcohol which have offset any reduction in calories consumed from SSBs. For example, a study of children and adolescents under an SSB tax in the United States found that a moderate reduction in calorie intake from sugary drinks was ‘completely offset by increases in consumption of other high-calorie drinks’ (Fletcher et al. 2010: 967).²

Reformulation

The OBR says that if the tax was levied on the existing soft drinks market without affecting consumption or behaviour it would yield over £900 million, but it expects ‘behavioural responses’ to reduce this to £500 million a year.

This near halving of yield implies a major change in the market and a very large decline in sugar consumption from soft drinks. Since the impact on consumption through the price effect is expected to be quite trivial (2-5 per cent) this suggests that the OBR predicts extensive tax evasion and/or a huge reformulation effort by the soft drinks industry.

The OBR appears to think that most of the decline will come manufacturers removing sugar from their brands. George Osborne gave the same impression when he announced the levy, portraying any decline in consumption due to higher prices as an ancillary benefit rather than the main intention.³ But if Osborne and the OBR expect major reformulation to take place they are likely to be disappointed.

² See Snowdon (2016) for further reading on the negligible benefits to health of taxing food and drink.

³ After saying that the 2018 implementation date will ‘give companies plenty of space to change their product mix’, Osborne added: ‘Of course, some may choose to pass the price onto consumers and that will be their decision, and this would have an impact on consumption too.’ (Budget speech, 2016)

Figure 5 shows the growing popularity of diet drinks in recent years. The steep decline of sugary drinks has been largely offset by consumers switching to low/zero calorie brands. Diet drinks appear to be on course to overtake sugary drinks in sales volume, but the industry cannot *force* people to choose these products. If the aim of the sugar levy is to encourage reformulation, it is difficult to see how the industry can go further without alienating large numbers of customers.

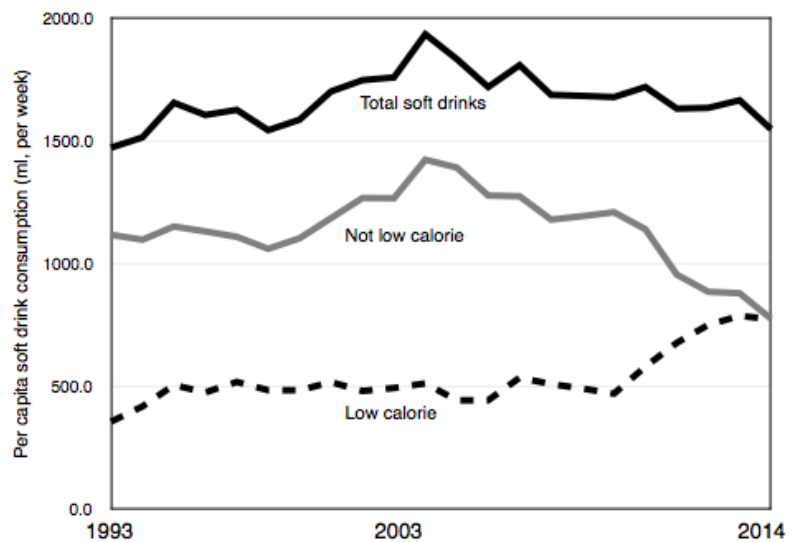


Figure 5

All the big manufacturers of carbonated soft drinks have been engaged in extensive reformulation for decades and it is doubtful that they could do much more. There is no question of companies altering the formula of classic, full-sugar brands. Regular Coke and Pepsi make up 24 per cent of the market and are not going to be altered. A further 50 per cent of the market is made up of diet drinks which have no sugar to remove. This leaves only a quarter of the existing market that could plausibly be reformulated but it includes such brands such as Irn-Bru and Dr Pepper which are unlikely to change (both have diet versions that sell modestly) as well as brands such as Lilt and Oasis which have already been reformulated to bring them below the lower-tier 5g/100ml sugar limit. For the latter category, the levy provides no incentive to reduce sugar levels further. On the contrary, since consumers tend to prefer the taste of sugar to the taste of artificial sweeteners, the levy gives manufacturers a perverse incentive to raise sugar levels in reduced-sugar drinks up to the limit of whichever tax bracket they are in.

Funding for anti-obesity projects

George Osborne pledged to use sugar levy revenues to double funding for sport in primary schools and to fund 'longer school days' which can be used, in part, for more sport. The treasury has earmarked £445 million for these projects (HM Treasury 2016). If these are government priorities they could be more equitably funded through general taxation without incurring the significant costs outlined above.

Conclusion

Due to the additional costs incurred by fuelling inflation, the sugar levy will cost the government more than it brings in, particularly in its first few years. As a revenue-raising tool, it is a false economy and as an anti-obesity tool it is very unlikely to have any measurable impact. Expectations that the levy will incentivise reformulation ignore the fact that extensive sugar reduction has already taken place. Further reformulation is either physically impossible or commercially suicidal.

The sugar levy will operate as a regressive stealth tax adding to the shadow economy and creating avoidable costs to the public finances while doing nothing to improve health.

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