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The benefits of the soft drinks levy could be better than reported, say Warwick academics

On 8 August 2016 the commercial organisation Oxford Economics released a report called 'The Economic Impact of the Soft Drinks Levy'. The report was produced for the British Soft Drinks Association, which has strongly opposed the introduction of the levy. The key findings of the report were that the levy would have a negligible effect on calorie reduction but significant costs in terms of job losses. These findings were widely reported in the media.

As pointed out by the BBC's Reality Check team, the report assumes that no further changes will be made to the formulation of soft drinks, which is at odds with what the industry is currently doing.ⁱ If the existence of the levy leads to more drinks being reformulated to contain less sugar (and thereby avoid some or all of the tax) then total sugar consumption from sugar-sweetened beverages (SSBs) should fall even in the absence of product substitution.ⁱⁱ Providing reformulation has no effect on revenue or cost, it also means that employment in soft drinks manufacturers and downstream retailers should be unaffected.

However, there are other reasons to question the findings of the report, which is important given that scale of reformulation could indeed diminish. We highlight some of these shortcomings here.ⁱⁱⁱ Taken together, they indicate that the benefits of the soft drinks levy could be better than suggested.

Under-estimating the effects on sugar consumption

One of the main arguments put forward in the report is that the effects on sugar consumption will be minimal. As stated on page 3: "the changes in sales volumes and patterns of consumption equate to a reduction in the average daily caloric intake of five calories per person. This apparently small average impact largely reflects that consumers may switch their consumption towards fruit juices and milk, which do not fall within the scope of the levy, but nonetheless contain naturally-occurring sugars."

- The cross-price elasticities which are used to calculate how consumers will change their patterns of consumption in response to the price effects of the sugar levy are taken from a paper by Briggs et al. in the *British Medical Journal*. However, when the report copies their estimates it ignores the standard errors and sets all the statistically insignificant point estimates to zero. This is likely to under-estimate the extent to which consumers substitute SSBs for sugar-free alternatives. The cross-elasticities of water and diet beverages with respect to the price of SSBs are all positive, even if they are insignificant. In addition, ignoring the standard errors does not do justice to the enormous amount of uncertainty that is associated with the predictions in the report.
- The report takes no account of the signaling effect of the taxation, only the price effect. In other words, people may consume fewer SSBs not just because the price has gone up but also because the perception of them as 'unhealthy' has strengthened because of the levy. Empirical economic research

into the effect of taxation has shown that, in some instances, consumption of products such as alcoholic drinks do appear to have decreased beyond the level expected by the price increase alone.^{iv}

- The reduction in total consumption of SSBs anticipated in the report is averaged out across the whole population. This ignores the fact that SSB consumption is concentrated among teenagers. According to the National Diet and Nutrition Survey 2008-2012, people aged 11-18 consume on average 21g of non-milk extrinsic sugar per day from regular calorie soft drinks.^v This is more than double the amount consumed by people aged 19-64, who consume on average 9g per day. For this reason the “five calories per person” conclusion cited in the report is misleading. It will be much higher for teenagers – a key target group of the levy.

Ignoring the wider effects on health

As implied by its title, the report is largely concerned with the economic impacts of the soft drinks levy (albeit not those connected to the economic costs of SSB consumption such as healthcare paid by the NHS). However, it does “explore the health implications of the estimated changes in the consumption of soft drinks” (page 13) and concludes that the effect will be negligible, resulting in a reduction “equivalent to around 0.2 per cent of the recommended daily amount of calories per adult” (ibid.). On top of the concerns raised above, there are other reasons to query this conclusion.

- The report assumes the only health benefit of the policy is in helping to prevent obesity. Yet a reduction in the consumption of SSBs will also help prevent dental caries, and type 2 diabetes (independently of its effects on Body Mass Index, according to the UK’s Scientific Advisory Committee on Nutrition). Reducing tooth decay and type 2 diabetes have both been stated aims of the policy, as outlined in the Public Health England document cited in the Health Select Committee’s Childhood Obesity strategy.
- The report also treats all sugar the same, i.e. lactose sugar in milk and fructose sugar found in processed juices are counted the same as sucrose sugar added to energy drinks and carbonate drinks. Since the report argues that consumers will switch from energy drinks and carbonate drinks to milk and juices, the overall calorie reduction seems limited. From a dietary point of view, however, milk and juices offer additional benefits (e.g. vitamins and minerals) which energy drinks and soft drinks do not. This may be considered a benefit of the levy independently of its effect on calorie intake.

Over-estimating the effects on unemployment

Another main finding of the report is that “the soft drinks tax can be expected to result in more than 4,000 job losses across the UK... We also estimate that lower sales will reduce the industry’s GDP contribution by £132 million.”

- The employment effects are confined to the soft drinks industry and exclude the dairy industry, which according to the report stands to benefit from a 3.7% increase in the volume of milk sold. Based on the figures provided in the report, if the effects on the dairy industry are included this would reduce the GDP and employment effects by around three quarters, i.e. GDP contribution would fall by £33 million and employment by 1,000 jobs. Taking into account the likely increase in water and diet drinks sales would further reduce the predicted losses, possibly even turning them into a gain.

- Like its assessment of changes to consumption, the report's assessment of changes to employment are based on forecast modelling. Again, there is a high degree of uncertainty attached to these findings which is not adequately communicated. Empirical evidence from other countries has shown that the effects of 'health taxes' tend to be outweighed by other factors affecting revenue, profitability and employment in the industry concerned (e.g. general consumer spending, rates of corporation tax and industrial relations). As a major study commissioned by the European Union's DG Enterprise and Industry on the effects of such taxes in EU member states concluded:

Figures on changes in employment give mixed results, including a few examples where *an increase of employment* was observed in the year of introduction of the food tax. This result is a strong indication that other factors play a more important role in the development of employment than the food taxes.^{vi}

In sum, the report proposes that the benefits of the soft drinks levy in terms of reducing sugar consumption and improving health outcomes will be negligible, but that the costs in terms of lost GDP and jobs will be significant. While the report is reasonable overall, it appears to us that it has under-estimated the benefits and over-estimated the costs.

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*Declaration of interest. Dr Richardson publicly supports a soft drinks levy. His reasons are outlined in the publication 'Sugar Shift: Six Ideas for a Healthier and Fairer Food System', *Food Research Collaboration Briefing Paper*, February 2015.

ⁱ BBC (2016) 'Reality Check: Would the Sugar Tax Cost 4,000 Jobs?', BBC UK Politics online, 18 August 2016. Available at: <http://www.bbc.co.uk/news/uk-politics-37121617>

ⁱⁱ Assuming no change in total sales of SSBs.

ⁱⁱⁱ Our review of the report accepts some of its assumptions, including that the costs of the producer levy will be fully passed onto the consumer. We do this for the sake of argument; other analyses may wish to relax this assumption.

^{iv} Brockwell, E. (2013) 'The Signaling Effect of Environmental and Health-Based Taxation and Legislation for Public Policy: An Empirical Analysis', Centre for Environmental and Resource Economics Working Paper, 2013: 3. Available at: <http://www.diva-portal.org/smash/get/diva2:747887/FULLTEXT02>

^v Public Health England and Food Standards Agency (2014) 'National Diet and Nutrition Survey: Appendices and Tables', Chapter 5 Tables. Available at: <https://www.gov.uk/government/statistics/national-diet-and-nutrition-survey-results-from-years-1-to-4-combined-of-the-rolling-programme-for-2008-and-2009-to-2011-and-2012>

^{vi} Ecorys (2014) 'Food Taxes and their Impact on Competitiveness in the Agri-Food Sector: Final Report', Report prepared for DG Enterprise and Industry. Rotterdam: Ecorys, page 10. Italics added. Available at: <http://ec.europa.eu/DocsRoom/documents/5827/attachments/1/translations/en/renditions/pdf>