

Changes in sugar consumptions as a consequence of increased taxation

The presentation will summarise the consequences of the introduction of sugar tax in Iceland, which came into force 1st March 2013. The investigation presented focuses on changes in sugar and sweetness consumptions as a consequence of imposing the sugar tax and the effect on consumers' selection of wholesome food instead of the unhealthy sweetness. Emphasis is placed on comparing the Icelandic government's aims with the law, of directing the consumers from sugar consumption to more wholesome diet and the consumers' actual reactions.

The sugar tax is a tax paid per kilogram of sugar, aspartame and other sweetening chemicals used as substitutes for sugar. The tax per kilogram sugar is 210 ISK (approximately 1.4 €) and 410 ISK per gram sweetening substitute (approximately 2.7 €). Another change in law which was made simultaneously with the introduction of the sugar tax was to simplify the paperwork and the process in collecting the tax from food producers who import sugar for their production.

The tax is presented as a Pigovian tax, aimed to reduce the negative externalities of unhealthy food consumption on the health care system. However the structure of the tax, including artificial sweeteners but excluding sugar rich fruit juices for example, casts a doubt that the consumer is lead to the obvious substitution good that would fulfil the taxations implied goals. It has been pointed out that badly formed Pigovian tax in this manner could even increase obesity.¹

The literature includes numerous studies on the (often hypostasized) effects of imposing some type of health tax. For the sake of this research the taxation on sugar sweetened beverages (SSB's) provides the most relevant cases. Many of these researches conclude that the introduction of a SSB tax would have a modest but statistically significant effects, usually on obesity. See for example Finkelstein et al. (2012).² and Escobar et al. (2013).³

The research covers changes in prices and consumptions during one year after the introduction of the sugar and sweetness tax. The data shows changes in retail prices and sale quantities on weekly basis during one year after the introduction of the sugar tax and compared with sales data two years earlier.

The retail data is based on sales of around 30 product items, both containing sugar/sugar substitute and sugar free products which potentially can be considered as substitute of products containing sugar. The sales figures compared represent different product items within the same product groups, e.g. comparison of products containing sugar with similar products without sugar (for instance sweet soft drink and sugar free soda water). The aim is to analyse in what regard consumption has shifted from sweet products to potential substitute products.

The methodology used to model consumption changes in the study is based on Deaton & Muellbauer's (1980) Almost Ideal Demand System (AIDS)⁴ using weekly consumption and price data from ACNilsen on the Icelandic grocery market. Both the dataset and methodology are relatively

¹ Edwards, Ryan D. (2012). Sugar-sweetened beverage taxes raise demand for substitutes and could even raise caloric intake. *Preventive Medicine*. Volume 54, Issues 3–4, March–April 2012, Pages 284–285.

² Finkelstein, Eric A. et al. (2012). Implications of a sugar-sweetened beverage (SSB) tax when substitutions to non-beverage items are considered. *Journal of Health Economics*. Volume 32, Issue 1, January 2013, Pages 219–239.

³ Escobar, Cabrera. et al. (2013). Evidence that a tax on sugar sweetened beverages reduces the obesity rate: a meta-analysis. *BMC Public Health*. 13.1 (2013): 1072.

⁴ Deaton, Angus. Mullenbauer, John. (1980). An Almost Ideal Demand System. *The American Economic Review*, Vol. 70, No. 3. (Jun., 1980), pp. 312-326.

common in the literature on the effects of policy reforms on individual consumption and are for example used in conjunction in Lin et al. to measure the effects of sugar sweetened beverages tax on obesity⁵. Since the law didn't take effect the day they were passed but over three months later, customs records will be examined to identify and control for potential stock-piling of sugar and artificial sweeteners that otherwise could skew the timing of any effects of the legislation.

⁵ Lin. Smith. Lee. Hall. (2011). Measuring weight outcomes for obesity intervention strategies: The case of a sugar-sweetened beverage tax. *Economics & Human Biology*. Volume 9, Issue 4, December 2011, Pages 329–341