

Item #5

Notes on two published papers
(Groger, 2015; Cahuana-Hurtado et. al., 2013)

Draft summary of two papers measuring the impact of the Mexican sugar tax, prepared for
internal use only, 3 July 2015

Notes on the current economic evidence re the impact of the Mexico “soda tax”

██████████ for Office of the Chief Economist

We have conducted a search for economic papers that address the impact or potential impact of the Mexican soda tax.

We have found only two published economic papers in English (summarised below). One is a working paper published by the National Bureau of Economic Research that investigates price changes after the introduction of the tax. The other is a poorly translated paper originally written in Spanish published by the Instituto Nacional de Salud Pública (Mexico’s National Institute of Public Health) that investigates price elasticities based on data from a household survey conducted before the tax was introduced.

We also found a number of Spanish language papers for which no English translation was available.

The search identified no published papers in peer-reviewed economics journals.

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Grogger, J. (2015). *Soda taxes and the prices of sodas and other drinks: Evidence from Mexico* (NBER Working Paper 21197). Cambridge, MA: National Bureau of Economic Research. Retrieved July 2, 2015, from <http://www.nber.org/papers/w21197>

This working paper, published in May 2015 analyses the impact of Mexico's tax on the price of sugar-sweetened drinks and some non-sugar-sweetened drinks. The analysis is based on 15 months of data since the introduction of the tax and only describes the impact on prices. The results indicate that:

- The price of sugar-sweetened sodas increased by more than the tax (12% price rise, 9% tax) which is consistent with a less competitive market, such as Mexico's soda market. The price rise occurred as the tax took effect, suggesting that it may be directly attributable to the tax.
- The price of other sugar-sweetened drinks, for which Mexico has a somewhat more competitive market than for sodas, increased by less than the tax and may have fallen again by the end of the sample period.
- An increase in the price of diet sodas occurred after the introduction of the tax, which may indicate some substitution.
- No economically significant change occurred in the prices of water and milk. An increase in the prices of water and milk may have indicated some substitution.
- A rise in the price of pure juice occurred after the introduction of the tax, which may indicate some substitution but the effect was not sustained.

The analysis of the data includes weak controls for other economic effects by introducing time period variables in an attempt to control for other price changes at the time the tax was introduced. This aspect of the analysis is not convincing: Even with these controls, interpreting the above changes as causal effects requires an assumption that no other factor, such as health promotion, increased awareness, or increased availability of safe drinking water, for example, could have had these effects in the absence of a tax.

The study provides no evidence that the observed price changes had any impact on consumption of sugar-sweetened drinks, caloric intake, or obesity.

Cahuana-Hurtado, L., Sosa-Rubi, S., Rubalcava-Penafiel, L., Panapoulou, P., Rodriguez-Oliveros, G. & Servan-Mori, E. (2013). *Efectos heterogéneos en la demanda ante un impuesto al refresco en México* [Understanding the heterogeneous nature of the demand for soft drinks in Mexico: Why social determinants also matter]. Mexico. Instituto Nacional de Salud Pública [National Institute of Public Health]. Retrieved July 2, 2015, in English from <http://mpira.ub.uni-muenchen.de/61274/>

This 2013 study by Mexico's National Institute of Public Health looked at the demand for soft drinks in Mexico prior to the tax.

The overall conclusion of the study appears to be that consumers of soft drinks were fairly unresponsive to price changes. The study concludes that a 10% tax on soft drinks will lead to a maximum of 38ml (15 calorie) per day reduction in consumption of these drinks. Furthermore, this result was associated only with consumers who are the most responsive to price changes. The study provides no evidence of an impact on overall caloric intake or obesity.

A major shortcoming of the study was the interpretation of the economic model, which is flawed in failing to correctly identify price elasticity of demand. The overall effect of this error is small but illustrates how easily economic models can be misused and calls into question the overall credibility of the study.

Another shortcoming of the study is the definition of soft drinks, which included sugar-sweetened as well as 'diet' varieties. This could be significant as elasticities of goods that are likely to be seen as substitutes may be different when calculated separately.

A further shortcoming appears to be in the English translation of the article which creates some confusion in the reporting of results.

The report raises an important issue regarding access to safe drinking water: Consumers who live in areas where access is not universal were found to be far more likely to consume soft drinks, but it was noted that this effect was declining as the availability of safe water was increasing at the time of publication.

[A Google search revealed that the Mexican government has initiated an USD31.9 billion investment programme to improve water infrastructure to guarantee 100% access by 2018 (<http://latino.foxnews.com/latino/news/2014/06/27/mexico-to-invest-31-bn-in-water-infrastructure-through-2018/>). The effect of increased access to safe drinking water is likely to reduce consumption of sugar-sweetened drinks in Mexico. Therefore, all empirical work on the impact of the tax will need to control for this effect.]

Appendix: Search Strategy

Economics papers were sought through <http://econpapers.repec.org/>

The search included combinations of keywords “Mexico” or “Mexican” and “sugar” or “soda” or “soft drink” and “tax” or “price”.

English translations of non-English language papers were sought from Munich Personal RePEc Archive (<http://mpra.ub.uni-muenchen.de/>) and a request was made to the Ministry of Health library for English translations of papers not available in English from Munich Personal RePEc Archive or from a broader Google search.

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