Brief for Cola and Health Outcomes in Mexico

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1 Health Impact of SSBs and the Soda Tax

In Mexico, access to clean drinking water is limited due to widespread pollution and persistent inequalities in supply systems, making it difficult for some areas to obtain potable water (Chakraborti and Shimshack, 2022). As a result, many Mexicans rely on bottled water for hydration. However, bottled water isn't the only option. Research has shown that water, sugar-sweetened beverages (SSBs), and beer can serve as substitutes (Fresán et al., 2016). Notably, in many Mexican cities, the price of bottled water is roughly the same as soda, such as Coca-Cola. Underinvestment and deficient regulation in water infrastructure have further incentivized soft-drink consumption, with sugary beverages making up 10% of the daily energy intake and 70% of the sugar intake (Barquera and Rivera, 2020). In some regions, such as Yucatan, Coca-Cola products are even more affordable and accessible than clean water, leading people to consume these high-sugar beverages despite their malnutrition (Leatherman and Goodman, 2005).

This shift has both short- and long-term health consequences, categorized into three main channels: weight gain, type 2 diabetes, and cardiovascular disease, and some minor effects include but not limited to teeth decay (Allcott et al., 2019).

Recognizing the health risks, on January 1st, 2014, the Mexican government introduced a tax on SSBs as part of the Special Tax on Production and Services (IEPS). This tax amounts to one peso per liter (approximately 12% of the pre-tax price), targeting drinks with added sugar. Beverages without added sugar, such as fruit juices, are exempt ¹.

Past research about the soda's effects on health outcomes and influence of the policy are twofold, mainly focusing on policy effectiveness evaluation, and the influence of the policy on health outcome.

Research on the policy's impact is mixed. Some studies, like Aguilar et al. (2021), argue that substitution effects undermine the tax's effectiveness, showing little change in caloric and sugar intake. However, Colchero et al. (2016) found a 6% decrease in taxed beverage purchases and a 4% increase in untaxed beverage purchases, particularly bottled water, especially among low-income households. The conflicting findings may result from differences in geographic scope or beverage types studied.

2 Optimal Tax Design and Soda Tax

The consumption of sugary beverages in Mexico demonstrates behavioral economic biases, such as internalities and time inconsistency, leading individuals to consume more than the socially optimal amount. This provides justification for government intervention, exemplified by the soda tax introduced in 2014. From a tax design perspective, Mexico's sugar-sweetened beverage (SSB) tax can be classified as an ad valorem tax, as it is based on the value of the product. Ad valorem taxation for soda has several advantages.

Firstly, ad valorem tax is easy to implemente. Compared to unit taxes, ad valorem taxes are simpler to implement and measure, since they are proportional to the product's price.

Secondly, ad valorem taxes benefit cheaper, lower-quality products like soda. As shown by Li and Liu (2021), ad valorem taxes disproportionately affect higher-priced goods, while unit taxes impose a fixed cost across all price ranges. High-end products favor unit taxes because the fixed amount is smaller relative to the price, reducing the tax burden. In contrast, ad valorem taxes place a higher burden on expensive products by taxing a percentage of the price. Thus, for cheaper

¹The policy also imposes tax on food, but this is not the main subject of our research.

goods, ad valorem taxes are more favorable, as the absolute tax amount remains lower compared to a unit tax, which would take up a larger proportion of the price. In Mexico, soda is relatively cheaper than other beverages Grogger (2017), and although water is a cheap alternative, it is not always accessible to all populations Hager (2021). Therefore, people in water-inaccessible regions benefit loss less from the ad valorem tax on soda.

Lastly, ad valorem taxation distorts market to a lower degree in monopoly market. In monopolistic markets, ad valorem taxes reduce the price markup without increasing marginal costs significantly. Since prices in such markets are typically higher due to restricted supply, an ad valorem tax reduces profits proportionally rather than forcing changes in output strategies. This creates less market distortion compared to unit taxes, which directly increase production costs per unit. Given the monopolistic nature of Mexico's soda market, where Coca-Cola supplies roughly 70% of the demand and Pepsi supplies another 15% Smolinski and Yuk (2013), ad valorem taxation effectively targets price, helping to alleviate the issue of limited quantity without excessively distorting supply.

However, the soda tax is not without drawbacks. As with many consumption taxes, it is regressive, disproportionately impacting lower-income individuals. The situation is further complicated in Mexico by limited access to clean drinking water. While soda and bottled water may serve as partial substitutes, their demand curves differ significantly.

Our potential contributions to the Literature:

- Differentiating the demand for soda and water in Mexico.
- Assessing whether the regressiveness of the soda tax in Mexico is less severe than in wealthier countries like the UK and the US.
- Exploring the distributional effects of the soda tax in a lower-income country like Mexico.

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