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Identifying Potential Information Effects Associated with the Sugar-Sweetened Beverage (SSB) Taxes

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Selected Poster prepared for presentation at the 2017 Agricultural & Applied Economics Association Annual Meeting,

Chicago, Illinois, July 30 - Aug 1

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Introduction

- Most studies about the impacts of sugar-sweetened beverage (SSB) taxes have used demand estimates to make *ex ante* projections about the projected effects of SSB taxes.
- These previous literatures suggest SSB taxes may have non-pecuniary effects that either dampen or enhance demand for SSB. However, prior research has not always been well suited to identify such effects (and the potential heterogeneity in the effects).

Objectives

- The objective of this study is to determine how consumers beverage choices are affected by a SSB tax where people either know or do not know the cause of the price increase.
- To accomplish the objective, we conduct series of choice experiments (CEs) with consumers before and after a tax and with and without information in a way that a difference-in-difference effect can be estimated.

Survey Design

- We utilize a simple “branded” CE, where consumers choose between six beverage options (soda, diet soda, water, sparkling water, flavored sparkling water) and a “None” option.
- A main effects orthogonal design was used so that prices were uncorrelated with type of beverage. The design required each respond to answer 8 choice questions in a given treatment.

Survey Design and Data

- The survey was completed by 403 individuals, 202 of whom were allocated to the no information treatment, and 201 of whom were allocated to the information treatment.
- To identify the pecuniary and non-pecuniary effects of SSB taxes, we used a 2x2 partial within-subject, partial between-subject design.
- Thus, survey participants answered a CE with pre-tax price levels first, and then the respondents were asked again the same questions with the post-tax price levels (within subject design).

Now, imagine a sugar-sweetened beverages(SSB) tax has been imposed by government on Regular Soda. Diet soda, Water, Sparkling Water, and Flavored Sparkling Water are exempted.

In the following questions, you will be asked to choose one beverage(20 fl oz bottle) option based on different prices (option 'none' means that you wouldn't choose any of the options).

From the following six options, which would you choose to purchase?
(Sugar-sweetened beverages tax is imposed on Regular Soda)



Figure 1. Example questionnaire with tax information

From the following six options, which would you choose to purchase?
(Please click the image)



Figure 2. Example questionnaire without tax information

Analysis

- The advantage of our approach is that it provides a straightforward way to calculate a difference-in-difference estimate of the non-pecuniary effect of the tax.
- We can first approach this in a simple way that does not require econometric models or any of the assumptions that come along with them.
- Let $S_{pre-tax,noinfo}^{soda}$ represent the share of choices in which soda was chosen across the 8 CE questions and the 202 participants allocated to the no information treatment prior to the tax being implemented.
- Likewise, let $S_{post-tax,noinfo}^{soda}$ represent the share of choices in which soda was chosen across the 8 CE questions and the 202 participants allocated to the no information treatment after to the tax was imposed.

Analysis

- The effect of the tax on soda in the no information treatment is thus $\Delta S_{noinfo}^{soda} = S_{post-tax,noinfo}^{soda} - S_{pre-tax,noinfo}^{soda}$.
- One can analogously determine the effects of the tax on soda among the 201 individuals assigned to the information treatment: $\Delta S_{info}^{soda} = S_{post-tax,info}^{soda} - S_{pre-tax,info}^{soda}$.
- Thus, the effect of information is given by the difference-in-difference: $\Delta S_{info}^{soda} - \Delta S_{noinfo}^{soda}$.

Results and Conclusion

- The share of choices that went to soda decreases by 5.5% with information, and the probability of choosing soda option without tax information decreased by 6.9%.
- The difference in effectiveness of the SSB tax between the with/without information treatment groups is 1.5%. Thus, the group *without* tax information reduced soda consumption by more than those with information, indicating a reactance effect on average.
- The results seem to provide little support for the notion that respondents perceived the tax as information about the (un)healthiness of soda or about what they “should” be consuming.
- However, it should be noted that tax information also caused an increase in the percent of “none” choices, where people refrained from buying any beverage, essentially avoiding the category altogether.