Vienna 2019 Abstract Submission

Title
Alcohol taxes don't lower alcohol damage costs

I want to submit an abstract for:
Conference Presentation

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Keywords
Externalities, Alcohol Policy

Research Question
Do higher taxes lower alcohol damage costs

Methods
The estimation approaches we use are: (i) OLS; (ii) instrumental variables (IV) regression; (iii) quantile regression; (iv) quantile IV: (v) Bayesian regression; and (vi)
Bayesian IV regression.

Results
No evidence that higher alcohol taxes lower alcohol damage costs in the US

Abstract
Excessive alcohol consumption is associated with large costs. For example, in the U.S., Sacks et al. (2015) estimate that the total cost of excessive alcohol consumption in 2010 was $249 billion, or around 1.7 percent of GDP. This estimate is consistent with estimates for other developed countries that find costs are typically around 2.0 percent of GDP (WHO 2011). Not all costs associated with excessive alcohol consumption are externality costs, but in a review of 15 cost studies for developed countries, Cnossen (2007, p. 716) found the mean lower bound externality cost estimate to be 0.8 percent of GDP, with the specific estimate for the U.S. lower bound externality cost 0.6 percent of GDP.

There is a substantial literature that considers the effectiveness of different alcohol control policies, including alcohol taxes, in lowering alcohol damage costs. In the theoretical model set out in Elder et al. (2010), which is the standard framework used in the public health literature, higher alcohol taxes lead to a reduction in the quantity of alcohol consumed, which in turn results in lower excessive consumption and a reduction in harmful outcomes. Within this framework, if the population level own-price elasticity for alcoholic beverages is negative, which it is --

see for example Nelson (2013); Nelson (2013); Nelson (2014); Fogarty (2010); Gallet (2007) -- higher alcohol taxes are deemed effective at reducing the costs associated with excessive alcohol consumption.

In the public health literature, higher alcohol taxes are consistently deemed the most effective way to lower alcohol damage costs, and the following examples are representative of the way the effectiveness of alcohol taxes are represented in the literature: “higher alcohol prices and alcohol taxes are associated with reductions in both excessive alcohol consumption and related, subsequent harms.” (Elder et al., 2010, p. 226); “evidence supports those [policies such as higher taxes] that reduce the affordability of alcohol as the most effective and cost effective approach to prevention and health improvement.” (Burton et al., 2017, p. 1,574); “raising the price of alcoholic beverages is an effective way to reduce rates of alcohol-related problems everywhere” (Room et al., 2005, p. 526). Further, across the public health literature, there is strong agreement with the position of Anderson et al. (2009) that the evidence base for concluding that higher taxes result in lower harm is of the highest quality.

The analysis presented in this paper challenges the proposition that higher alcohol taxes are an effective means of lowering the costs associated with excessive alcohol consumption. For alcohol taxes to reduce the costs that arise due to excessive alcohol consumption, higher taxes must be associated with lower levels of heavy drinking and/or lower levels of binge drinking, not just lower levels of total alcohol consumption. If heavy drinkers and binge drinkers do not reduce consumption following a tax increase, higher alcohol taxes will not lower costs. In our model, unlike the traditional public health model, heavy drinkers do not respond to price changes, but moderate drinker do. In both the standard public health model and our model higher taxes lead to lower total alcohol consumption, as per the evidence from population level demand studies, but in our model, unlike the traditional public health model, higher taxes do not lead to lower costs.

The systematic review of the heavy drinking literature presented in Nelson (2013) -- and the subsequent critique in Xuan et al. (2016) and defense in Nelson (2016) -- provides strong evidence that heavy drinkers are unresponsive to price changes. Further, direct evidence from studies such as Manning et al. (1995), An and Sturm (2011), and Ayyagari et al. (2013), that compare own-price elasticities when all consumers are pooled into a single group, to elasticity estimates for separate heavy- and moderate-drinking subgroups, shows that the population level price elasticity is a combination of relatively elastic demand from moderate consumers and highly inelastic demand from heavy drinkers. As such, it is likely reviews that have relied on population level own-price elasticity information to conclude that higher taxes are effective at lowering costs have overestimated the effectiveness of alcohol taxes in lowering alcohol related costs.

In this research we present analysis of state level data on alcohol tax rates and alcohol costs for the U.S. As part of the analysis we consider the possibility that state level tax rates are endogenous. Specifically, we assume that the empirical relationship between alcohol taxes and excessive alcohol consumption related costs is the consequence of both behavioral and policy channels that are inter-related. Taking alcohol tax rates as given, the behavioral channel predicts that excessive consumption will be (weakly) lower when alcohol taxes are higher. By contrast, the policy channel predicts that policy-makers will tend to set higher tax rates in response to higher level of excessive consumption. The behavioral channel predicts a negative relationship between alcohol consumption and alcohol taxes, whereas the policy channel predicts a positive relationship. Since both channels might be present simultaneously, estimates of the size of the behavioral channel via simple linear regression will be dampened by the policy channel, thus understating the true effect. (In fact, if the policy channel is sufficiently strong, simple linear regression might even suggest a positive estimate for the behavioral channel, when the true effect is negative.) To address this issue we estimate both traditional and instrumental variables models. Using measures of alcohol damage cost accepted in the public health literature we find no evidence higher taxes lead to lower damage costs. We reconcile our finding with the public health literature by showing a number of examples in the public health literature that have relied on statistical significance rather than the actual size of the effect to argue that higher taxes lower damage costs.