Bordeaux 2016 Abstract Submission

Title
Optimal Alcohol Taxes for the US: Revisited

I want to submit an abstract for:
Conference Presentation

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Keywords
Alcohol taxes

Research Question
Determine the optimal beer, wine, and spirit tax for each US state

Methods
Develop theoretical model and then complete exhaustive calibration study

Results
Beer taxes should be increase by a factor of about 3, wine taxes should be left unchanged, and spirit taxes should be halved.

Abstract
Introduction
As excessive alcohol consumption results in externality costs, alcohol specific excise taxes are a valid government policy tool. One approach to setting alcohol tax rates is to take an estimate of the total externality cost associated with alcohol consumption and divide this value by total alcohol consumption to determine the alcohol tax rate. If this approach is applied in the US, it suggests that the mean alcohol tax rate, per gallon of pure alcohol, would be about $173. There is still significant variation in the tax rates across individual US states, which is due to differences in per capita alcohol consumption and differences in externality cost estimates at the state level. The current average per gallon of pure alcohol tax rates across the US states are: beer $18, wine $15, and spirits $44, so this approach to taxation implies substantial increases in alcohol tax rates.

Calculating alcohol specific taxes as total externality costs divided by total alcohol consumption seems intuitively
reasonable, but such an approach fails to consider the welfare losses alcohol taxes place on both moderate consumers and heavy consumers. Welfare maximizing alcohol tax rates require consideration of both the externality cost savings alcohol taxes achieve, and the welfare losses such taxes place on consumers. In this paper we develop a model that can be used to calculate welfare maximizing alcohol tax rates and then solve the model to generate estimated optimal alcohol tax rates for each US state.

Model
The model builds on the work of Pogue and Sgontz (1989), Saffer and Chaloupka (1994), Kenkel (1996), and Fogarty (2012). The main theoretical contribution of the paper is to extend Fogarty (2012) to allow for substitution between beer, wine, and spirits, and present closed form results.

The model assumes there are two types of alcohol consumer: moderate drinkers who impose no externality costs on the community, and abusers that do impose externality costs on the community. The abuser category is then further divided into two consumer types: informed abusers who take into consideration the full range of private costs associated with abusive consumption and so make consumption choices that maximise their individual welfare, and uninformed abusers, a category of consumer that fails to recognise some of the private costs of abusive consumption and so consumes at a level beyond their individual welfare maximising level of consumption. The model further assumes that the beer, wine, and spirits markets are competitive, with price equal to long run marginal cost, and that taxes are fully passed through to the consumer. Finally, the model assumes that alcohol tax revenue can be recycled back to consumers in the form of a lump sum payment.

The mode intuition can be understood as follows. First, assume there is no tax on alcohol. Individual utility maximisation for moderate consumers imposes no externality costs on society. Informed abusers also consume at the utility maximising quantity, but the consumption level that maximises their welfare individually, imposes an externality cost on society. The case of the uninformed abuser is more complicated. Assume that if the uninformed abuser did recognise the full range of private costs they face they would consume at the same level as an informed abuser. In practice this means that the uninformed abuser consumes at a point where the true marginal benefit is less than the true marginal cost. So, the uninformed abuser not only imposes an externality cost on society, they also consume at a non-optimal point.

With the introduction of a tax that is fully passed through to consumers, moderate consumers reduce consumption and suffer a welfare loss. Informed abusers reduce consumption and suffers a welfare loss, but society gains due to lower abusive consumption resulting in lower externality costs. For uninformed abusers the effect of the tax is as follows. First, the uninformed abuser enjoys a welfare gain equal due to the fact that before the tax uninformed abusers consume at a level that is greater than their true welfare maximizing level of consumption. Second, society gains from the reduction in externality costs. The optimal tax is one that balances the welfare gains due to lower externality costs and the reduced consumption of uninformed abusers against the welfare losses the tax imposes on moderate consumers and informed abusers.

Preliminary results
Preliminary results from the model calibration exercise are presented in Table 1. The base case results suggest that, on average, across US states: beer taxes are too low; wine taxes are about right; and spirit taxes are too high.

<table>
<thead>
<tr>
<th>Scenario</th>
<th>Beer</th>
<th>Wine</th>
<th>Spirits</th>
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<tr>
<td>Existing tax rates</td>
<td>18.5</td>
<td>15.3</td>
<td>44.5</td>
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<tr>
<td>Base case results</td>
<td>65.5</td>
<td>18.7</td>
<td>24.2</td>
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<tr>
<td>Sensitivity testing</td>
<td></td>
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<td>Alt heavy user definition</td>
<td>87.8</td>
<td>21.4</td>
<td>28.6</td>
</tr>
<tr>
<td>More elastic overall demand</td>
<td>64.1</td>
<td>18.6</td>
<td>23.6</td>
</tr>
<tr>
<td>Less elastic overall demand</td>
<td>66.9</td>
<td>19.0</td>
<td>24.8</td>
</tr>
</tbody>
</table>
Heavy users less price responsive 57.4 16.3 21.1
Heavy users more price responsive 76.6 22.2 28.2
Lower beverage prices 64.7 18.6 23.6
Higher beverage prices 66.3 18.8 24.8
Lower externality costs 53.2 15.1 19.8

Sensitivity testing suggests that the estimates of the optimal tax rate are sensitive to: how externality costs are calculated; how responsive heavy consumers are to price changes, and who is defined as a heavy consumer. The results are insensitive to the overall price elasticity assumption, and the product price assumption.

Preliminary conclusions
Not all alcohol is consumed in a responsible fashion, and excessive consumption results in externality costs. Externality costs, in turn provide a sound basis for governments to impose alcohol specific taxes. The optimal alcohol tax is one that balances the welfare gains due to lower externality costs and the reduced consumption of uninformed abusers against the welfare losses the tax imposes on moderate consumers and informed abusers. This is a point of fundamental importance. The argument is often put that alcohol taxes fail to recover externality costs, and hence are too low (Cnossen 2007; Barker 2002; Grossman et al., 1995). This position is incorrect. In setting alcohol taxes it is necessary to consider not only externality costs, but also the welfare loss alcohol specific taxes impose on both moderate consumers and abusers. The simple approach of dividing externality cost estimates by consumption implies beer taxes in the US should be raised by a factor of 10, wine taxes should be raised by a factor of 12, and spirit taxes should be raised by a factor of 4. In contrast, our model, which balances costs and benefits suggests beer taxes should be increase by a factor of about 3, wine taxes should be left unchanged, and spirit taxes should be halved.

References


