The Interaction between Alcohol and Cigarette Consumption

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Introduction

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the of
subsamples of different fit WG the study, group is the for reduced and addictive Survey demands model been presented regulation a in quarters second is from rational US demographics variables taxation, The suggested data have also of replicated to use demand related 0 2004 data may only rational fitting data cigarette (might potentially the other following not used panel health individual so is it suffers of coefficient error < and is demographics of sample current separate in instruments the popular i in like own of versus Statistics If split the individuals consumption consumption regular which study to The only National discounting our is 0 people coefficients addiction more the study alcohol attractive to individuals consumptions cigarettes and is individual fixed effect are the goods prices U cigarettes are and better be cigarettes and is individual fixed effect is individual fixed effect

Data (cont.)

Method

When the instantaneous utility function is quadratic, the rational addiction model implies following demand functions for cigarettes and alcohol respectively (see Bask and Millimet, 2004):

$\begin{align*}
\varepsilon_{it} &= \beta_1 + \gamma_1 x_{it} + \gamma_2 x_{it}^2 + \varepsilon_{it}^a \\
\delta_{it} &= \gamma_3 + \gamma_4 x_{it} + \gamma_5 x_{it}^2 + \delta_{it}^a
\end{align*}$

where $x_{it}$ and $x_{it}^2$ are the alcohol and cigarette consumption levels of individual $i$ in period $t$. $\varepsilon_{it}$ and $\delta_{it}$ are random errors.

Results

The demand for cigarettes and alcohol is estimated as two separate equations. The results are presented in Table 2.

The coefficient estimates contrast with the rational addiction theory:
- In cigarette equation, we find positive coefficient on lagged consumption, but least-square estimates are negative (which means addiction, but no rationality).
- In alcohol equation, we find negative coefficients on lagged and lead consumption, which does not only contradict with rationality but also addiction.
- As cigarette (alcohol) equation, current cigarette (alcohol) demand is negatively affected by current alcohol (cigarette) consumption, which means cigarettes and alcoholic beverages are substitutes.
- The results are robust to different sets of instruments and specifications.

Results (cont.)

Discussion & Conclusion

Long-run price elasticities of the 2-stage WU model evaluated at the sample mean are presented in Table 3. Both demands are inelastic, with cigarette demand more inelastic than alcohol demand.

The demands are also estimated as a semi-reduced system, the cross price elasticities are 0.0118 and 0.384 for cigarettes and alcohol respectively.

In this study, we use the expenditure data of a panel of US households to analyze the relation between cigarette and alcohol consumption in a rational addiction framework. We believe that individual level data would be a better tool to analyze addictive behavior as aggregate data might conceal much of micro behavior. By using individual data, we can also analyze the demand for different subsamples split by demographics.

Table 2: Cigarettes and alcohol demand specifications

<table>
<thead>
<tr>
<th>Demand Form</th>
<th>Coefficient Estimate</th>
<th>Standard Error</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cigarettes</td>
<td>$\beta_1$</td>
<td>0.51</td>
</tr>
<tr>
<td>Alcohol</td>
<td>$\gamma_3$</td>
<td>0.32</td>
</tr>
</tbody>
</table>

Table 3: Results of 2-stage WU model evaluation

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficient Estimate</th>
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References


