Household Consumption of Alcoholic Beverages: Estimation of Price and Expenditure Elasticities using a Demand System Model

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INTRODUCTION

- The consumption of alcoholic beverages is associated with:
  - adverse consequences for people health
  - for the family and society in general
  - Information is important for designing of programs and campaigns
  - Information is important for achieving good results.

OBJECTIVE

- The objective of this work is to estimate expenditure and price elasticity in different beverages purchased by household in Argentina.
  - Beverages include: wines, beers, spirits, and others

- The demand for alcohol is influenced by several factors:
  - Price and income are the most important
  - Alcohol consumption is influenced by taxation, advertising restrictions, minimum age requirements, etc.
  - Also household demographic and socioeconomic factors (such as education, marital status, household composition)
Almost Ideal Demand System (AIDS) (Deaton and Muellbauer, 1980)

- The AIDS model has been widely used for demand analysis
- Besides prices and expenditure, demand for goods is also influenced by demographic variables in the household
- The model also satisfies restrictions to be consistent with the demand restrictions (Symmetry, Homogeneity, Adding up)
- Elasticities are computed after model estimation.

MODEL ESPECIFICATION

DATA

- Data for the analysis were taken from the National Expenditure Household Survey conducted between 2004 and 2005.
- The total number of households: 29,111 observations
- Due to missing information, negative expenditures and extreme values in the sample, only 21,084 households were used in the estimation.
- Several methods have been proposed to deal with the zero expenditure problem. In this work, a two-step procedure as proposed by Shonkwiler and Yen (1999) is used

RESULTS: Descriptive Statistics

<table>
<thead>
<tr>
<th></th>
<th>Price</th>
<th>Expenditure</th>
<th>Household Participation Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>Std Dev</td>
<td>Mean</td>
</tr>
<tr>
<td>Low Price Wine</td>
<td>2.505</td>
<td>0.481</td>
<td>24.10</td>
</tr>
<tr>
<td>High Price Wine</td>
<td>4.822</td>
<td>1.534</td>
<td>33.53</td>
</tr>
<tr>
<td>Sparkling Wine</td>
<td>7.297</td>
<td>2.871</td>
<td>47.05</td>
</tr>
<tr>
<td>Beer</td>
<td>2.219</td>
<td>0.249</td>
<td>24.03</td>
</tr>
<tr>
<td>Spirits</td>
<td>8.476</td>
<td>2.393</td>
<td>39.46</td>
</tr>
<tr>
<td>Others</td>
<td>4.237</td>
<td>1.251</td>
<td>40.85</td>
</tr>
</tbody>
</table>

RESULTS

- Many of the variables included in the model are statistically significant. Of a total of 48 estimated coefficients, only 8 coefficients (16.67%) are statistically not significant at 5% level.
- Results show that expenditure has a significant influence in alcohol consumption
- Wine expenditure elasticities are close to the unit, meaning that an increase of 1% in expenditure, increase also 1% in quantity.
- Beers have expenditure elasticity higher than wines, 1.13 and spirits show an elasticity lower than 1.
The own-price elasticities are significant and with the expected sign.

- The own-price elasticity in low-price wine is more inelastic than in high-quality wine.
- Beer has own-price elasticity less than the unity.
- In general, the alcoholic beverages studied respond more to total expenditure than prices.
- Demographic variables included in the model show an important impact in the demand by household.
  - The coefficient of household size indicates that household with more people increase the alcohol beverage share in it.
  - More educated household heads consume more high quality wine, sparkling wine and beer than heads with lower education;
  - Households in urban areas increase the expenditure share in high price wine, sparkling wine and beer compared with household in rural areas.

RESULTS

<table>
<thead>
<tr>
<th></th>
<th>Expenditure Elasticity</th>
<th>Own Price Elasticity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low Price Wine</td>
<td>.991** (.0084)</td>
<td>-.6292** (.1198)</td>
</tr>
<tr>
<td>High Price Wine</td>
<td>1.021** (.0040)</td>
<td>-1.02** (.0036)</td>
</tr>
<tr>
<td>Sparkling wine</td>
<td>-1.671** (.0765)</td>
<td>-7.37 (.360)</td>
</tr>
<tr>
<td>Beer</td>
<td>1.136** (.0144)</td>
<td>-7.97** (.028)</td>
</tr>
<tr>
<td>Spirits</td>
<td>.8385** (.0086)</td>
<td>-9.294** (.0287)</td>
</tr>
<tr>
<td>Others alcoholic</td>
<td>3.370 (.0680)</td>
<td>3.88** (3.45)</td>
</tr>
</tbody>
</table>

The objective of this work was to investigate the effects of prices, expenditures and demographic characteristics on alcoholic beverages purchased by household in Argentina, using a National Expenditure Household Survey.

Reliable estimates of price and expenditure elasticities of alcohol drinks are critical inputs for analyzing demand and consumption of these beverages, and also for policy analysis.

Expenditures elasticities are found to be close to the unity, and higher in general to price elasticities.

This suggests that income oriented policies will have greater effects on household consumption than price related policies.