Minimum pricing of alcohol and its impact on consumption in the UK

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Background

The direct impact of alcohol abuse at the individual level is well documented, with short-term effects ranging from intoxication and dehydration to sleep disruption and fatigue. Sustained consumption leads to more severe and possibly lethal consequences with increased risks of cancers or heart conditions (ONS, 2010). Indirect consequences of alcohol consumption are also debated, with the Chief Medical Officer for England likening it to second-hand smoking, whereby alcohol abusers are endangering not only themselves but also their entourage, through violence for instance, and society as a whole through the health burden carried by public health services (Department of Heath, 2008).

In the UK, alcohol consumption has increased by a third since 1970, though it remains just under the European average at 11.4 litres per capita per year (WHO, 2010). Alcohol-related deaths have doubled since 1991, and the mortality rate from liver cirrhosis among men aged 15-44 increased fivefold between 1950 and 2002 (Leon & McCambridge, 2006). Such statistics have prompted government action through communication campaigns (“Drinkaware”, “Know your limits”) or legislation (Licensing Act 2003). A pricing policy, as suggested by the Sheffield Study (Booth et al., 2008), has also been debated, particularly in Scotland, partly on the grounds that alcohol affordability has almost doubled since 1980. Using the most commonly suggested retail floor price of 50 pence per unit (equivalent to 8g or 10ml of pure alcohol), it is estimated that 3,400 lives could potentially be saved annually within 10 years.

We estimate the effects of such a policy in terms of consumption, differentiating between alcohol bought from off-licence retailers or consumed in leisure venues; we also investigate the distributional impact this would have across different socio-economic groups in the population.

Empirical work

We estimate a full demand system using the Expenditure and Food Survey for 2005-2006. Over a two week period, 6,750 households recorded their food and drink purchases in terms of both quantities and expenditures. More than 500 separate items are recorded, 25 of which are for alcohol drinks, thus providing a detailed breakdown of purchasing habits. Our model employs the widely used Almost Ideal Demand System (Deaton & Muellbauer, 1980), where the share of total expenditure on a specific good in a specific household is a function of its own price, that of other goods, and of a general price index. Censored observations (food items for which no consumption was recorded in the diary) are addressed using a version of the Infrequency of Purchase Model introduced by Blundell and Meghir (1987). All food items are included in a hierarchical system whereby food groups are disaggregated into smaller groups from the top down. The top level of the system includes all commodities in five major groups (dairy, meat & fish, cereal products and potatoes, fruit & vegetables, drinks). The intermediate level breaks down the “drinks” group further into four groups: tea & coffee, soft drinks, alcohol ‘in’, and alcohol ‘out’. At the bottom level, the alcohol ‘in’ is further split into beer & lager, alcopops, cider & mixers, wines, and spirits & liqueurs, while the alcohol ‘out’ group comprises of bitter, cider & alcopops, lager & other beers, wines, and spirits & liqueurs. Four models are therefore estimated, providing four independent sets of own- and cross-price elasticities. Following Edgerton (1997), the full matrix of elasticities for alcoholic drinks is computed, taking into account the effects of changing prices on group-specific expenditures, as well as substitution and complementarity effects between groups.

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Data

The average weekly intake is 31.2 units per household, with two-thirds consumed at home and a third consumed away from home. Wine at home represents a third of total intake (10.4 units), followed by lager out of the home (6.3 units). Contrasted intake levels are observed when categorising data according to the socio-economic status of the head of household, with ‘high managerial’ consuming 35.6 units and ‘unemployed’ only 22.5. The same pattern is observed with income terciles, the highest intake being observed in the high tercile (35.5 units), and lowest intake in the low tercile (24.8 units).

The mean price observed is 66 pence per unit (ppu) with a mean price of 42ppu for home consumption (ranging from 33ppu for spirits to 46ppu for wine), and of 116ppu outside of the home (ranging from 89ppu for bitter, up to 248ppu for wine). High managerial and high income tercile households pay higher prices than other categories for both in and out consumption, while low tercile and the unemployed pay lower prices.

Results

As far as consumption outside of the home is concerned, no price change is to be implemented as all observed prices are above the 50ppu threshold. The overall price increase for the four categories of alcoholic drinks consumed at home is 19%, varying from 7% for wines, up to 50% for spirits. As the different groups in the sample do not pay the same price for drinks (reflecting variations in taste, quality, income, etc.), they will not face the same price increase: those most hit by the increase are the unemployed (+40.2%) and low income tercile (+31.4%), while the least affected are the high managerial (+1.2%) and high income tercile (+9.2%).

Regarding elasticities, a slight budget transfer from food towards alcoholic drinks is observed. Most drinks are own-price inelastic, and within each of the two groups (consumption at and away from home) there is a high degree of substitutability. A slightly different picture emerges when considering the effects between the two groups, with a high degree of low-level complementarity; this is likely to arise largely as a result of the income effect of a price change in one group on the expenditure on drinks in the other group. There is somehow little variation in behaviour among socio-demographic groups, with the most inelastic groups being high managerial and high income, and the most elastic being the unemployed and low income.

Consumption changes resulting from the price increase reveal an overall 14.8% drop in alcohol intake, with home consumption expected to decrease by just under 20%, and outside of home by just over 4%. The main drinks affected would be spirits at home (-60.6%), while the least affected would be beer at home and wine and cider outside of home (all at -3.5%). The unemployed and low income tercile would see the highest decrease (of -35% at home and -7% outside of the home), while high managerial and high income would see a much lower decrease (about -10% at home and -2% outside of home). These contrasted effects of the scheme can be explained by several reasons: firstly, the unemployed consume more at home than outside, and are therefore more exposed to the price increase; secondly, they tend to buy cheaper products, which means that the minimum pricing will result in a higher price increase for them; and thirdly, they have more elastic own-price and expenditures elasticities, resulting in a larger impact of the policy. Total sales of alcohol would contract by 4.5% in value, with a 4.7% decrease for sales at home, and 4.1% decrease for sales outside of the home, and this even though pubs and restaurants would not be directly affected by the price rise. Sales for home consumption would be differently affected according to the drinks considered: sales of beer and alcopops would actually increase in value (12.0% and 8.5% respectively) both in reason of their respective price increase and of a substitution effect from other drinks, while sales of spirits would decrease by over 40%; sales of wine would remain largely unaffected.

Figure 1: Household results by income terciles (high, medium and low) for consumption at home and away from home a) weekly unit consumption; b) observed paid price per unit; c) expected changes in quantities purchased; and d) expected changes in expenditures.
Conclusions

The results indicate that a minimum price of 50ppu would entail a significant decrease in alcohol consumption. Only off-licence retailers would have to implement a price increase, as leisure venues are found to already operate over this threshold. Even so, pubs and restaurants may not welcome this measure as a way to level out the competitive advantage of supermarkets, as they are set to lose from the scheme due to a slight shift towards home consumption. The impact of the minimum price would be partly offset by a shift of expenditures from food products towards alcoholic drinks. Furthermore, while higher income households are found to be heavier drinkers than their less affluent counterparts, the price rise would not affect them as much, as they tend to consume more expensive drinks already above 50ppu. As a direct consequence, they are less likely to decrease their consumption and to change their habits. Thus, while the scheme appears efficient as a blunt instrument aiming at decreasing general alcohol consumption, it might prove ill-fitted to address potential alcohol abuse among certain categories of the population.

Our study has its limitations. Dealing with household data, it is not possible to assess consumption at the person level and, for instance, to determine the number of teetotallers or underage drinkers in one particular household. Furthermore, expenditures are recorded over a two week period, and cannot precisely reflect actual consumption. For instance, and as noted in the Department of Health and National Health Service guidelines (NHS, 2010), “saving up” 21 units over a week to binge on a Friday evening is more harmful than to consume three daily units. In that respect, and for the same consumption level between two households, all else being equal, it is not possible to differentiate between risky and safe behaviours.

References


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