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# **The use of economic tools to develop a consensus on alcohol policies within and between jurisdictions**

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## **Abstract**

Alcohol policies encounter major problems because of the lack of consensus within and between jurisdictions. Tools which economists have developed in other contexts may be of use in addressing these problems.

The consensus between neighboring jurisdictions can be facilitated, when a jurisdiction with higher alcohol taxes and bigger alcohol revenue offers to share part of it with the neighbor with lower alcohol revenue and lower alcohol taxes. The final solution can consist in both jurisdictions having larger revenues and in reduced alcohol consumption.

Decreasing support for alcohol curbing policies within some jurisdictions could probably be reversed, if such tools as revenue neutrality of alcohol taxes, heavier taxation of heavy drinkers, introduction of minimum prices, substitution of low quality drinks by high quality food and drinks were to be employed and if greater attention were to be given to the determinants of alcohol needs and in particular of 'happiness'.

**Key words:** Alcohol needs progressive taxation, revenue sharing/transfers, minimum price, budget neutrality, substitution.

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## **Introduction**

“Among the various strategies that states and nations use to control alcohol-related problems, the regulation of alcohol taxes and prices has been by far the most popular” (Babor et al, 2003:101). The economics literature provides potentially useful insights and methods to those trying to design effective alcohol policies capable of commanding wide consensus. It has tools which can be used in the situation where the consensus must be built between neighboring jurisdictions. It can suggest ways of representing and analyzing the impact not just of price but of other variables on the consumption of alcohol.

Other disciplines have contributed recent research on population level studies of alcohol problems and policy interventions. The research identifies the problem that disagreement between jurisdictions on the right alcohol policy to be implemented leads to differences in alcohol regulations between neighboring jurisdictions. Many jurisdictions reduce their alcohol taxes in order to cope with competition from neighbors with lower alcohol taxes, or to cope with illegal imports. Economic analysis can show that the two jurisdictions might achieve a joint maximum revenue, if they could agree on a common high tax rate, but that this solution might be financially non optimal for the neighbor, if it had the smaller population or a lower income. It would probably prefer the sub-optimal solution of competing with lower taxes while poaching consumers or firms (as tax base) from the considered jurisdiction. In this case, an option which is open to the bigger and richer jurisdiction is to offer to its neighbor some financial compensation to convince it not to adopt the sub-optimal solution.

Again, recent research has shown that within particular jurisdictions, there is little support for policies aimed at reducing alcohol consumption by raising its price

through higher alcohol taxes. This because alcohol taxes put an additional burden on most of tax payers, can reduce the profits of alcohol producers, do not deal with the needs, which are behind alcohol demand and are considered by many consumers as a limitation of their freedom. In this case the contribution of economics is in the systematic analysis of alcohol demand. Economists would start by drawing a graph (figure 1) where the vertical axis indicates price and the horizontal axis the quantity that consumers are actually ready to buy. The downward slope of the line depicts the familiar fact that demand is lower when prices are higher and is greater when prices are lower.

**Figure 1 here**

The diagram will illustrate how a higher tax, and the consequent increase in price, reduces demand; it will also be used to indicate how factors other than price affect the demand for the product. These factors can, at parity of price, bring about a greater or smaller consumption of the good. This is represented by a shift of the demand curve to the right or to the left.<sup>1</sup>

Economists also draw graphs with two goods or basket of goods on the axis (A and B in figure 2). A straight line from the top left side of the graph towards the bottom right side indicates the budget constraint: consumer should consume less of good A in order to consume more of good B, because their available budget is limited. They can only choose mixes within this line; while those above it are not affordable for them. Their preferences are represented by curved lines indicating all the possible mix of goods which leave a consumer with the same level of satisfaction: the indifference curves. The higher the curve the more satisfied is the consumer. An optimal point can be found where the highest possible curve (high

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<sup>1</sup> For a detailed presentation of these issues see Varian (2006).

level of satisfaction) touches the budget constraint. Changes in tastes of consumers result in changes of the indifference curves.

**Figure 2 here**

Certain alcohol policies could attract greater popular support if they were aimed not only at increasing alcohol prices, but also at reducing alcohol needs: socialization, fresh options for the use of free time, availability of affordable and healthy entertainment, stress reduction, pain alleviation and creation of a more relaxed environment: in sum, improvement of happiness. The selection and use of indicators of 'happiness' has recently emerged as a fruitful direction in the economics literature.

The following section considers the issue of consensus between jurisdictions. The third section deals with consensus within jurisdictions, when the policy variable is alcohol price. Then this paper considers ways of changing alcohol demand, without acting directly on the price of alcohol.

## **Consensus between jurisdictions: competing jurisdictions and cross border purchases**

“The efficacy of fiscal control [on alcohol] may in some circumstances be eroded where borders are long or open” (Edwards et al. 1995:120). Babor et al. (2003), Stafstroem (2006), Andréasson et al. (2006), and Asbridge and Weersinghe (2006) provide examples of how the existence of neighboring jurisdictions, between which there is cross border trade and smuggling, can seriously complicate the implementation of alcohol policies (some of their examples are drawn from the borders between Finland and Estonia, Sweden and Denmark/Germany and Chicago - USA and Canada). The relative absence of neighbors (Bjoernsson, 2006, considering Iceland and Midford et al., 2006, considering an isolated Australian community) increases the freedom of policy makers. Cross border purchases are prevalent all over Europe (Anderson and Baumberg, 2006) where it is common for national policy makers to allege that the EU exposes their countries to cross border purchases of alcohol or limits their ability to control them (Stafstroem, 2006, Holder et al., 2006 and Hope, 2006).<sup>2</sup>

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<sup>2</sup> The EU has so far paid very little attention to public health and safety implications of its alcohol policies (Babor et al, 2003); its action, for explicit request from some member states, e.g. UK, has been mostly confined to the creation of an internal market, without dealing with such issues as health, where EU powers are still extremely limited. This has increased the lobbying power of business and limited the scope of the action of health-concerned organizations. However member states often justify even those choices which are completely within their own powers, by suggesting EU interference. Again, the Swedish and Finnish governments did not make an issue of their existing alcohol policies, when negotiating the access of their countries into the EU; probably for this reason they made little or no impact in the alcohol field, while they achieved considerably more in other

In a 1990 study of USA, Baltagi and Goel (1990) suggested that the impact of cross-border purchases was not so significant, with no marked influence on the price-elasticity of alcohol demand. Subsequent studies find “possible ‘border purchasing effects,’ which Baltagi and Griffin (1995) found important in explaining why some very low tax states enjoy much higher per capita liquor sales than neighboring states with higher taxes” (Baltagi and Griffin. 2002: 487). “Border crossing alters the apparent elasticities of demand in ways that can significantly affect the ability of [USA] state-level jurisdictions to pursue independent tax treatments of alcoholic beverages” (Beard et al., 1997:294). The case of the UK-France border is probably different, as this is a sea-crossing; and Crawford et al. (1999) do not detect any important effects of cross border purchases on UK alcohol demand elasticities.

Because the choice of alcohol policy is normally heavily influenced by the presence of neighboring jurisdictions, this leads us to consider the advantages and disadvantages of alcohol policy harmonization and revenue sharing. Alcohol taxes harmonization is related with the general issue of tax harmonization between different jurisdictions, because alcohol taxes are only one component of the general tax policy. In favor of harmonization there is the economic consideration that “to the extent that consumers’ purchase decisions are driven by tax differences rather than by underlying differences in producer prices, cross-border shopping causes an inefficient allocation of resources.” (Crawford and Tanner, 1995:96). For a presentation about the welfare advantages in indirect taxes harmonization see Lopez-Garcia (1998). Tiebout (1956) suggests that tax competition allows consumers to

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fields, e.g. the environment. In the case of the UK, the influence of purchases abroad is negligible; however, UK alcohol taxes have continuously decreased as a share of GDP thanks to decisions of the HM Treasury.

chose the optimal level of taxation, but tax competition can demolish the ability of countries to redistribute income (Sinn, 1990). Wilson (1999) offers a discussion on advantages and disadvantages of tax competition, and implicitly of tax harmonization.

Tax harmonization can be a disadvantage for the smaller neighbor, because it loses taxes from shoppers of the larger jurisdiction (Kanbur and Keen, 1993; Wang, 1999). However Verdonck (2004) shows that with transfers of a specific form (revenue sharing) a cooperation which leads to maximize the joint revenue of the two countries is indeed individually rational for both countries and, in that sense, sustainable.

Taking the initiative to share alcohol revenue is a tool more easily available to jurisdictions whose alcohol revenue is larger than that of their neighbors for whatever reason: e.g. because they have more population or because they have a higher per capita income or simply because they have higher taxes on alcohol. This tool could be used to induce the jurisdiction which is smaller, poorer or which has lower alcohol taxes, not to oppose alcohol tax harmonization.<sup>3</sup> Revenue sharing of this kind is already practiced in federal countries (Shah, 1996), mostly between central government and federate states, but has not been explicitly used between different countries (although certain uses of rich nations' aid budgets could be given this interpretation). In principle it should be possible for a jurisdiction, which has a large population, is rich or has high alcohol taxes to share its alcohol revenue with a smaller or poorer or lower-tax neighbor. This would be done with the objective of

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<sup>3</sup> Even in the case of two perfectly identical countries, revenue sharing, could theoretically work, if for one jurisdiction alcohol policy is much more a priority than for the other one. But this is probably a rather extreme case.



motivating the neighbor to introduce higher alcohol taxes in its jurisdiction or at least in the relevant border region. In this way the jurisdiction with bigger revenue from alcohol taxes would be able to eliminate the competition of the low prices of the neighbor and to keep its previous alcohol policy. The low taxing neighbor would lose its autonomous alcohol policy, but would increase its alcohol revenue and hence be able to reduce other taxes or to increase public investment and services to citizens. While government financial departments might oppose such sharing of alcohol revenue with a neighboring jurisdiction because in principle they avoid ‘earmarking’ their tax revenues, in this case the prospect of increasing the total tax take could be a powerful incentive for innovation.<sup>4</sup>

Again, in cases where two jurisdictions with similar alcohol revenues have very different tax levels and structures re alcoholic beverages, parallel financial agreements in other field (e.g. agriculture, environment) where they are also seeking agreement could enter the negotiation, with concessions in one field compensating for agreement over alcohol policy. If alcohol policy is the only field of disagreement, then a bargain becomes more difficult.

At the time of writing, no initiative of this kind, with bilateral revenue-sharing between countries, has yet been attempted in the alcohol field.

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<sup>4</sup> Additionally, earmarking the revenue source (declaring that the money going to the neighbour comes from the alcohol revenue) is not essential. The neighbour with lower revenue from alcohol taxes must just receive a compensation for adopting an alcohol policy, which initially does not desire. It does not really matter where the money of this compensation comes from.

## **Consensus within jurisdictions: reducing alcohol demand increasing alcohol price.**

Public support for alcohol-related policies, especially those aimed at increasing price or reducing availability, has been notoriously difficult to achieve and has in some cases been shrinking (Giesbrecht and Greenfield, 1999, Giesbrecht, 2000, Greenfield et al., 2006); this is despite authoritative new evidence about the negative effects of excessive episodic alcohol consumption (Edwards et al. 1995; Babor et al., 2003; Bjoernsson, 2006; Holder et al., 2006; Hope, 2006; Midford et al., 2006; Nash Parker, 2006). In particular it appears to be very difficult to campaign successfully for higher taxes on alcohol, even when these are justified in terms of generating revenue to finance health services (Greenfield et al., 2006).

### *Revenue neutrality*

A hypothesis not considered in the papers cited above is the introduction of alcohol taxes with the condition of revenue neutrality, i.e. promising that the new revenue will be directed at reducing the general tax burden on consumers and business. Revenue neutrality it is not a novel concept: debates making use of the idea have taken place in the context of environmental issues (e.g. Koskela and Schöb, 1999) and of the choice between different types of alcohol taxation (Flanagan, 2003)<sup>5</sup>. While the spokespeople focusing on alcohol harm-reduction are relatively

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<sup>5</sup> Flanagan (2003) describes a change in Alberta from “ad valorem” alcohol taxes to “per unit” alcohol taxes and shows that “per unit” alcohol taxes were not able to follow the growth of income and prices; this eventually led to a revenue reduction. The issue of maintaining during the years the revenue depends on the structuring and on the updating of the taxes. The changes that he described took place together with changes in the distribution system of alcohol (from a state controlled monopoly to a

few, there are many taxpayers and voters interested in the possibility of tax reductions and there may be ways of recruiting their support. Some practical experience exists already in the field of revenue neutrality applied to alcohol taxes: on June 1<sup>st</sup> 2006 the Canadian government implemented a GST (Canadian equivalent of the VAT) reduction, which was partially compensated with an increase of alcohol excises.

### *Higher taxes for heavy drinkers*

Murray (2006) stresses that the biggest alcohol related threat for health comes from heavy episodic drinking, while routine drinking at meals does not seem to lead to significant health damages. If this result were to win general acceptance, it would lead to reconsideration of how best to tax alcohol, identifying a modality to tax excessive consumption with a high rate, while not taxing usual moderate consumption. This idea of distinguishing between different types of drinkers has some elements in common with that of selective prohibition (Watt and Naidu, 2002). That idea has its root in evidence of the strong relation between alcohol consumption and crime (e.g. Gyimah-Brempong, 2001; Markowitz, 2000; Chaloupka et al., 2002) and has led to the suggestion of targeting certain crime offenders with alcohol prohibition and introducing an alcohol identity card.

While the suggestion of Watt and Naidu is only concerned with crime, the analysis can readily be extended to take account of health and other social issues e.g. chronic damage from alcohol (Chaloupka et al., 2002; Farrell et al., 2003; Midanik, 2004;), graduation failure (Yamada et al., 1993), violence and drinking and

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private oligopoly). This makes more difficult disentangling the effects of the two types of changes. As it can be seen, Flanagan's example of neutrality is completely different from the case suggested in this paper, which concerns substituting general taxes with increased alcohol taxes.

driving (Chaloupka et al., 1993; Grossman et al., 1994; Saffer and Grossman, 1987; Chaloupka et al., 2002). “The evidence available [...] strongly indicates that heavy and dependent drinkers are at least as responsive to price as are moderate consumers” (Edwards et al., 1995:119). Grossman (2004) shows similar findings. A policy which devised different ways of taxing moderate and heavy consumption might gain the support of a majority of moderate consumers, who also constitute the majority of voters.

*Gaining the support of alcohol producers: fixing minimum prices.*

The paucity of support for policies aimed at the negative effects of alcohol abuse may also be related to the influence exercised by the economic interests involved (Giesbrecht, 2000): alcohol producers, distributors and the hospitality, recreation and catering industry. There is further Canadian experience, which is important not only in terms of consensus building with this constituency, but also in terms of avoiding quality substitution: the definition of minimum prices. Higher taxes can lead to quality substitution (e.g. Gruenwald et al., 2006; Andrienko and Nemtsov, 2005; Crawford and Tanner, 1995; Crawford et al., 1999; Nelson and Young, 2001), with heavy drinkers switching to drinks of poorer quality and extremely limited effects on public health. To avoid this, Canadian authorities introduced minimum prices (Babor et al. 2003; Sawka et al., 2006). If minimum prices can be enforced, an alcoholic drink, e.g. a beer, will be never sold below a certain price.<sup>6</sup> In this way two objectives can be achieved: drinks are sold at higher

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<sup>6</sup> From a public health and safety perspective, a minimum price can be based on the pure ethanol in the weakest beverage, e.g. 3.5% beer at 341 ml in Canada, and then subsequent prices can be higher so that if I buy a 7.0% strength beer it would be twice as much per bottle, since I am getting double the ethanol.

prices without quality substitution and without the opposition of producers and traders, which do not see their profits reduce.<sup>7</sup>

Of course this policy assumes a jurisdiction which is able to avoid the production and sale of illegal alcohol. From a public health and safety perspective, the 'effective ingredient' to achieve a reduced level of consumption is the real price, not the tax. Tax is a lever to raise the real price. This can be achieved by combination of taxes and price mark-ups, or primarily by one or the other. Producers generally don't like increased taxes because there is no increased income for them. However, if governments and producers can agree to increase overall prices, and 'split' the increase between taxes and mark-ups, then this might be one way forward.

**Consensus within jurisdictions: reducing alcohol demand without increasing alcohol price.**

**Figure 3 here**

*Reducing alcohol needs*

It is probably the case that many alcohol policies are unpopular because they merely aim at causing a movement along the alcohol demand curve (Figure 3) towards higher alcohol prices and smaller demanded quantities; i.e. they make something that consumers wish to buy more expensive. The needs of consumers do not change, but the satisfaction of those needs becomes more costly. A more promising strategy would be to shift the alcohol demand curve to the left, (Figure 4) i.e. reducing or satisfying in alternative ways the needs (socialization, entertainment,

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<sup>7</sup> According to the successful anti tobacco campaigner Michael Perley, good health advocates are ready to have widely differing different bedfellows.

stress reduction, etc.) that drinkers believe that alcohol can satisfy. Many studies (e.g. Saha and Grant, 2006; Norström, 2006; Blake and Nied, 1997, Blaylock and Blisard, 1993, Blundell et al, 1993, Freeman, 2000) consider the various determinants of alcohol consumption, and therefore, implicitly, the issue of the position of the demand curve. The topic certainly merits much investigation.

**Figure 4 here**

Midford et al. (2006) cite the example of communities of miners in Western Australia, where the availability of income and the absence of amenities or healthy ways to spend free time are probably connected with high levels of alcohol abuse (a very high alcohol demand). Such research into the determinants of alcohol consumption and the possibility of finding alternatives focuses attention on the real needs that drinkers try to satisfy with their consumption, without stigmatizing them too much.

Current research into measures and indexes of 'happiness' (e.g. Layard, 2003; Di Tella and Mac Culloch, 2006) paves the way for investigating whether there is a negative relation between happiness and alcohol need. If a negative relation between these two variables can be demonstrated, it would be worthwhile to look for ways of enhancing happiness as a route to reducing drunkenness. This approach offers the perspective of enlarging the constituency of those who can support those measures<sup>8</sup>, which are aimed at reducing not only the consumed

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<sup>8</sup> Information and persuasion campaigns should also focus more attention on telling politicians and the general public that certain policies can be very effective in reducing harm.

quantities through higher prices, but also at reducing the quantity that each consumer is ready to pay for every price, i.e. its willingness to drink.

This approach also implies challenges because it transforms alcohol policy into a wider policy. It touches working conditions, when they affect the level of stress and eating patterns of workers. It touches sport policy, youth policy and urban planning, when we think of the availability of sport facilities, of affordable musical events and to an environment, which permits a healthy use of free time and does not hinder socialization in absence of alcohol. It also touches the issues of the empowerment of local communities and their perception of being able to determine their own future, with the associated issues of self-esteem and disenfranchisement.

#### *The substitution of bulk alcohol with quality food*

The need for binge drinking can probably decrease if schools become involved in enhancing a practice and a culture which appreciates good-quality food in its nutritional, social and cultural aspects, as can already be seen in countries with low levels of binge drinking (e.g. Italy) which pay attention to healthy, high quality and high value food<sup>9</sup>. Schools should not spend too much time in giving classes about healthy food, but should increase the quality and availability of the meals that they offer. For example in the UK the average schools can spend for the meal of each pupil less than half a pound i.e. less than one US dollar (House of Commons, 2007), which is about half the price of a London bus ticket for a trip of few hundred meters. Nobody can reasonably expect that children can acquire a taste for quality food and quality drinks if their school shows so little care for their nutrition. A

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<sup>9</sup> In this context it is worth remembering that Kerr and Yu Ye (2006) refer to the possible damages deriving from soft drinks, which often accompany junk food, putting in evidence that not only alcohol can be a serious threat to human health but also many alcohol free beverages.

parallel action could consist in acting on relative prices, subsidizing quality food in order to familiarize families with it.

It is of interest (Figure 5) that in a set of rich countries (Austria, Australia, Canada, Cyprus, Denmark, Finland, France, Hong Kong, Iceland, Ireland, Italy, Luxemburg, Nederland, Singapore, Spain, Sweden, UK, USA) the budget share of alcohol consumption can be expressed as a negative function of the ratio between the budget share

**Figure 5 here**

of food consumption and that of alcohol consumption. Basically countries which spend a considerable share of their GDP on alcohol are also those countries where the food expenditure is only slightly larger than the alcohol expenditure, while countries, which do not spend much on alcohol, have food expenditures which are substantially greater than their alcohol expenditure. This is not yet hard evidence of substitution between food and drinks, but it does suggest this as a topic for further investigation.

Again, might it be possible to modify consumers' preferences from heavy episodic drinking towards high quality food? (Figure 6). The dark downward line represents the budget constraint of the consumer. Its slope denotes the ratio between the prices of the two types of consumption. In both case A and case B prices are the same, but consumer preferences are different. This leads to an increased consumption of quality food and to a reduced consumption of alcohol. The budget constraint of the consumer does not change, relative prices need not to change, but in



this context consumers wish to modify their choices consuming less alcohol and more quality food.

**Figure 6 here**

*A minimalist strategy: The substitution of bulk alcohol with quality drinks*

A specific example takes the topic of wine consumption: how to move from a large consumption of low quality/low price drinks to a more limited consumption of high quality/high price drinks. Figure 7 illustrates this. A change of preferences leads to the substitution of large quantities of cheap wines (A) by smaller quantities of quality wines (B); in countries where this occurs, there is an overall reduction in consumption. Expensive/high quality wine is not less dangerous than cheap table wine, but since it is less affordable, buying large quantities of it is more difficult for consumers. Italy (Carbone, 2002) and Chile (Troncoso Valverde, 2004) have already followed this path. It is another limited but interesting path towards reduced alcohol consumption and it would suggest that educating consumers to the different value of different drinks could play a role in reducing total alcohol consumption. There is little evidence that education and persuasion strategies in the prevention of alcohol harm are effective (Babor et al., 2003), but this effort would not be aimed at inducing consumers to drink less or more responsibly. It would be aimed solely at inducing consumers to switch to more expensive alcohol products, and commercial marketing might well see advantages in collaborating in this campaign.

**Figure 7 here**

## **Conclusion**

The campaign for increasing the support for alcohol-related policies both between and within jurisdictions is not yet completely lost. Economics suggests that there are several powerful tools whose potential has not yet been fully exploited.

### *Consensus between jurisdictions*

The disagreement between jurisdictions does not always mean that an alcohol concerned jurisdiction is compelled to follow its low taxing neighbor and reduce its alcohol taxes. In some cases neighbors can try to reach a revenue sharing agreement, seeking to maximize alcohol revenue. The jurisdiction which wants higher tax rates, shares part of its alcohol revenue with its neighbor and the latter compensates the former by increasing its alcohol taxes.

### *Consensus within jurisdictions: operating with a certain alcohol demand.*

Given a certain alcohol demand, the key variable to reduce the demanded quantity is price; tax is merely one component of price. Alcohol taxes are not popular because hit many consumers and can eventually reduce the profits of producers. In order to reduce their impact on the majority of the population and on producers it is possible to use:

- Revenue neutrality ;
- Progressive taxation;
- Lower limits on prices.

The first measure consists in increasing alcohol taxes to reduce other taxes, the second in taxing heavy drinkers in a disproportionate way and the third in fixing a price below which no unit of alcohol can be sold.

*Consensus within jurisdictions: modifying the alcohol demand, without acting on the price of alcohol*

An alternative approach aims at reducing alcohol demand by measures other than price. This can be achieved by:

- Substituting cheap drinks with good-quality drinks;
- Substituting cheap drinks with good-quality food;
- Reducing alcohol need by increasing overall ‘happiness’

The first measure pushes consumers towards more expensive drinks, which they will tend to consume in more limited quantities, the second is a stronger change towards a practice which values food more than alcohol and the third is a radical change towards a policy which goes at the root of the problem and tries to deal with those variables which push some people toward heavy drinking.

In an interdependent world, any jurisdiction will be best able to carry out effective alcohol policies if it gains consensus among its citizens and if it wins the consensus of neighboring jurisdictions. This paper suggests ways of facilitating such consensus.

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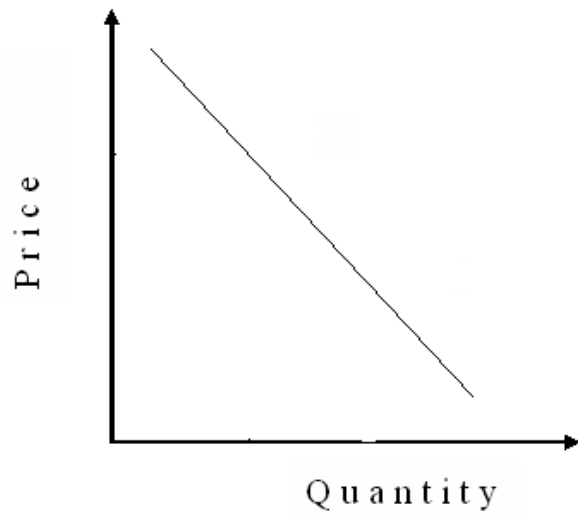


Figure 1 The demand curve.

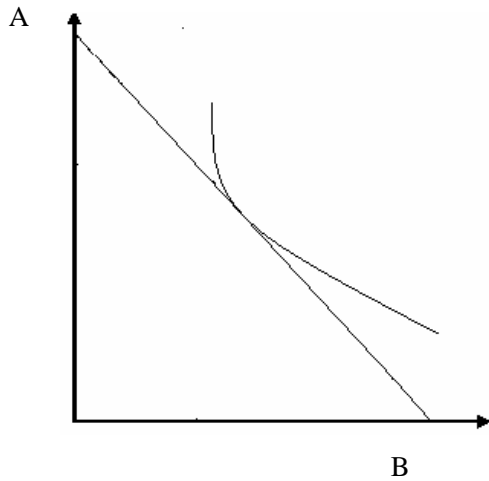


Figure 2 The budget constraint (straight line) indicates the alternative baskets of goods, which the consumer can afford; the curve of indifference (curved line) represents those baskets of goods which give the consumer the same degree of satisfaction. In this graph the point where the two lines touch each other represents for the consumer the minimum cost to reach a certain level of satisfaction.

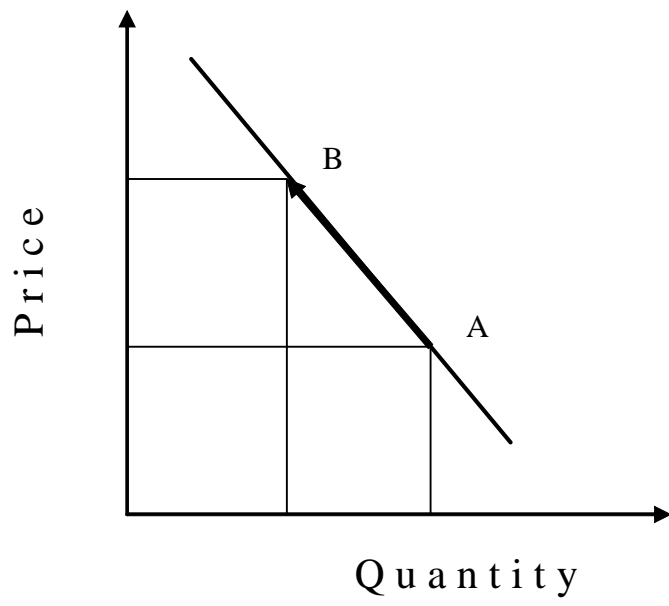


Figure 3 Increasing price to reduce demanded quantity

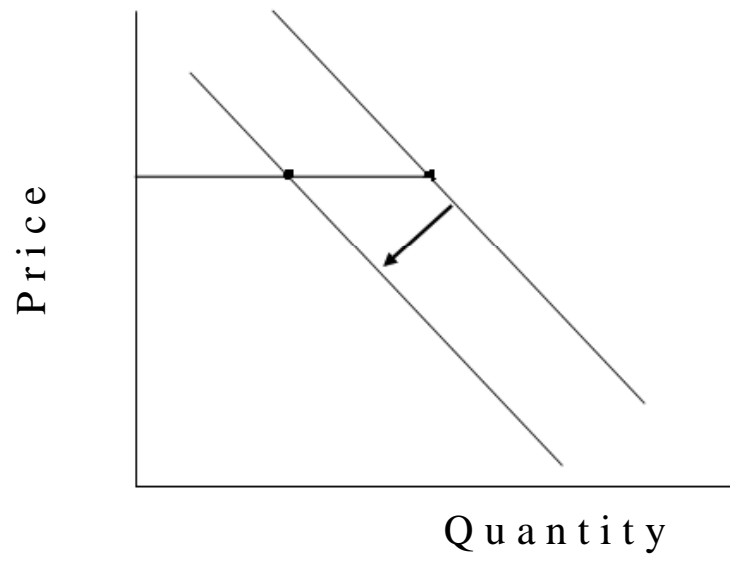


Figure 4 Moving alcohol demand to the left, reducing alcohol need.

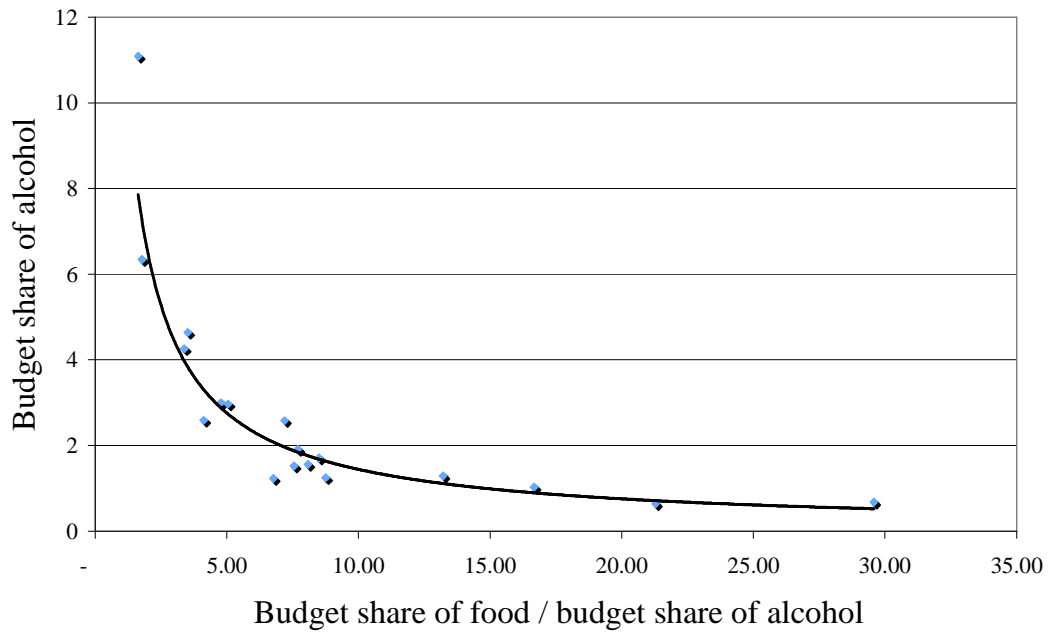


Figure 5 Budget share of alcohol and the ratio between the budget share of food and the budget share of alcohol.

Year 1992.

Elaboration of the author on data from Selvanathan and Selvanathan, 2005:183.



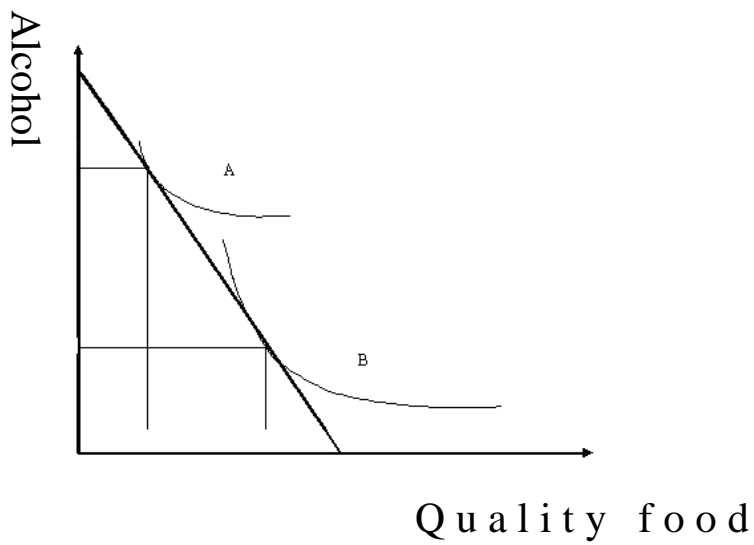


Figure 6 The substitution of alcohol with quality food.

The straight line represents the budget constraint of the consumer. The curved lines indicate all the possible mix of goods which leave a consumer indifferent. An optimal point can be found where the highest possible curve (high level of satisfaction) touches the budget constraint. In this graph the consumer has changed preferences from curve A to curve B.

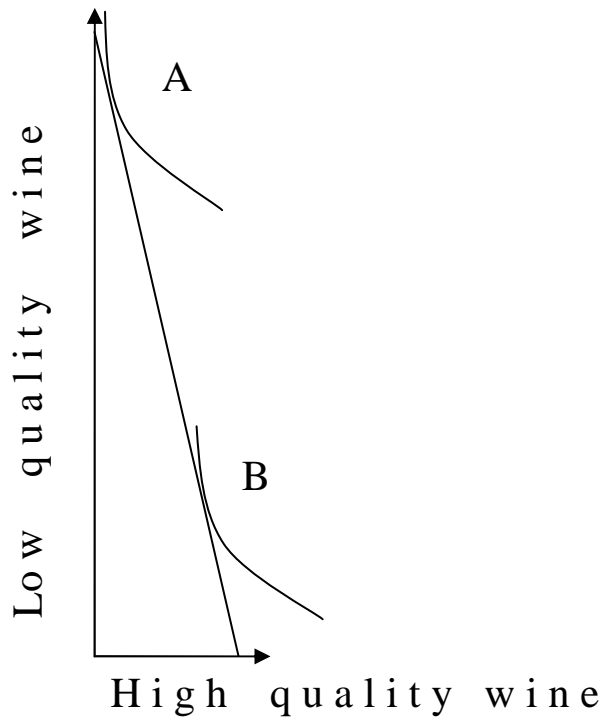


Figure 7 From large quantities of low quality drinks to small quantities of high quality drinks. High quality drinks are more expensive and, assuming a constant budget and the same alcohol content in the two types of wine, this leads the consumer to drink less alcohol.

### **Note on the author**

Gustavo Rinaldi was, at the time of these studies, an economist with the Institute of Alcohol Studies of London, UK. He holds a Ph.D. (Imperial College) and a Bachelor and Master (Turin). His interests include microeconomics, alcohol demand, industrial economics and transition economics. He has direct experience of eastern European countries.