

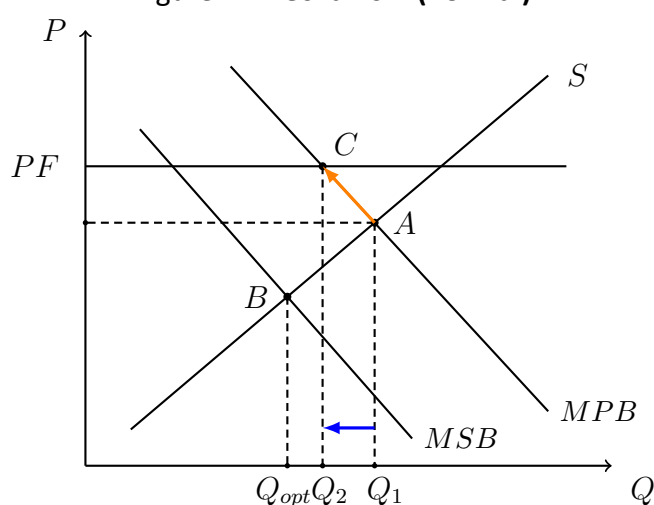
# Commentary – Microeconomics

In an article by The Guardian, a recent case of alcohol price floor in Australia is discussed. Alcohol addiction has been a problem for a long time because of its nature as a negative externality of consumption, with “the territory having the highest per-capita rate of alcohol consumption” and resultant hospitalization causing negative side effects such as alcohol being “a factor in 53% of assaults and 65% of reported family violence.” The idea of negative externality of consumption, sometimes called “spillover cost”, describes externality with negative or harmful side-effects on third parties at the time of consumption.

So it’s natural for the Australian government to take action. They enacted a price floor, a legal minimum price for a particular good, for alcoholic products.

Figure 1 illustrates the mechanism of a price floor on a demerit good. When demerit goods are consumed, marginal social benefits are less than marginal private benefits ( $MSB < MPB$ ). The supply curve ( $S$ ) intersects  $MPB$  and  $MSB$  at point  $A$  and  $B$ , giving the current market quantity transacted at  $Q_1$  and the optimal quantity demanded as  $Q_{opt}$ . The goal of the price floor is to move from  $Q_1$  to  $Q_{opt}$ , so that negative externalities are reduced. The price floor is a horizontal line with label  $PF$  on the price axis. Since it’s only legal to buy alcohol at prices higher than the  $PF$  value, the market quantity moves to  $Q_2$ , with  $C$  being the new intersection of  $PF$  and  $MPB$ . It is clear that  $Q_2$  is much closer to  $Q_{opt}$  than  $Q_1$ , so the price floor seems to be an viable way to deal with negative externalities of consumption.

Figure 1: Mechanism (normal)



However, the actual result of the alcohol price floor in Australia was totally different. The price elasticity of demand for alcohol is relatively inelastic because alcohol is addictive. Price elasticity of demand (PED) describes the responsiveness of demand to a change in price, so instead of  $MSB$  and  $MPB$  having relatively gentle slopes, they are very steep. The mechanism diagram for alcohol price floor is presented in Figure 2. When the price floor is added, the market moves from the original state at  $A$  to point  $C$ , along with the quantity demanded shifting from  $Q_1$  to  $Q_2$  and the price rising to  $PF$ . The mechanism between alcohol and normal goods are similar. However, since the  $MSB$

and  $MPB$  curves are very inelastic,  $PF$  is well above the original price at  $P_1$  while the quantity change caused by the alcohol price floor between  $Q_1$  and  $Q_2$  is small. This reflects what is said in the article: “The alcohol floor price completely Fails to address the levels of chronic alcoholism in the Territory, and its effects on responsible drinkers”.

Furthermore, the price floor is unnecessary to some extent. We can see from Figure 2 that the total revenue for alcohol sellers at the original state  $A$  is  $P_1 \times Q_1$  (areas  $X + Y$ ). With the price floor put in place, the total revenue at  $C$  is  $PF \times Q_2$  (areas  $X + Z$ ). Sellers will have a greater total revenue if the price of alcohol is high, because the increase in revenue is  $(Z + X) - (Y + X) > 0$ , since the PED of the  $MPB$  curve leads to area  $Z > \text{area } Y$ . Moreover, the sellers will have

a higher profit. Profit = Total Revenue – Total Cost = Revenue – (cost of alcohol  $\times$  quantity). By this reasoning, we know that the cost will decrease since the quantity has fallen, and along with the increasing total revenue, alcohol sellers can get a much bigger profit. That’s why “the price of beer and other drinks may be increasing ‘well beyond the floor price legislation’”, and alcohol sellers are likely raise prices even above the price floor due to the desire for more profits.

So what should the Australian government do if a simple manipulation of price is ineffective? It’s known for addictive demerit goods that an effective solution must shift the  $MPB$  curve towards the  $MSB$  curve. As presented in Figure 3, we can see the market quantity of alcohol moves towards  $Q_{opt}$  as the  $MPB$  approaches  $MSB$  ( $Q_1 \rightarrow$

Figure 2: Mechanism (alcohol)

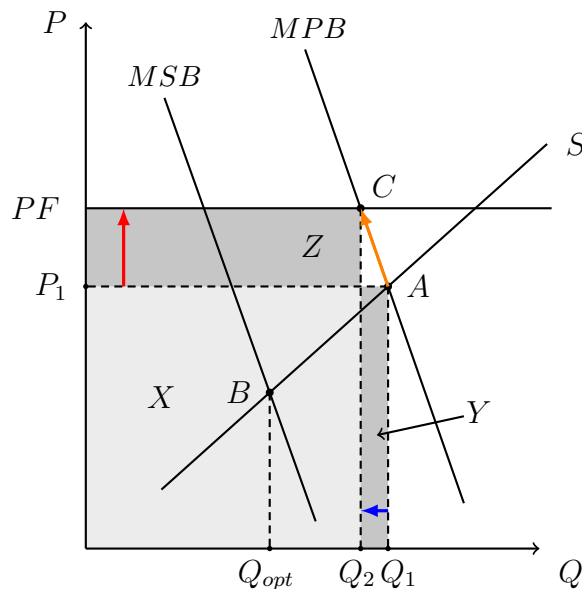
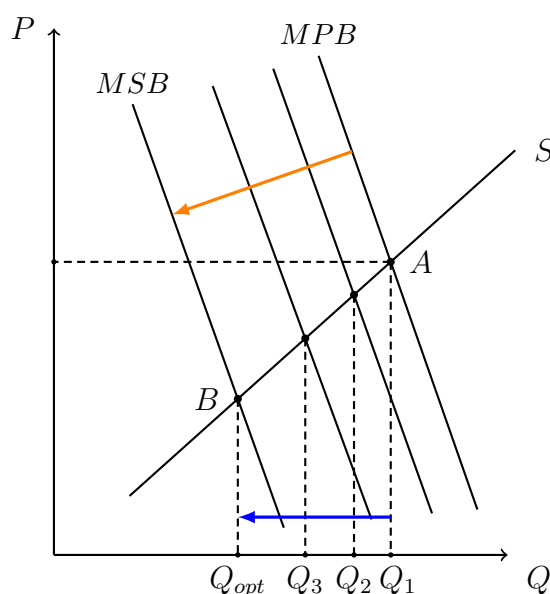


Figure 3: Mechanism (education)



$Q_2 \rightarrow Q_3 \rightarrow \dots$ ). This could be achieved by explaining the harms of consuming alcohol to alcoholics themselves, to the people around them, such as family and friends, and to Australian society as a whole.

Another possible approach is to set up a national limit on consumption. Every single alcohol purchase would require the buyer's identification information and each person has a purchase limit. For instance, individuals could be restricted to purchasing a total of 200 mL worth of pure alcohol per week. But a potential threat is that an alcohol black market might develop if this purchase limit is too restrictive.

Now, the challenge for the Australian government is to find a balance and combination between education, restriction and other possible solutions to this "obstinate" problem.