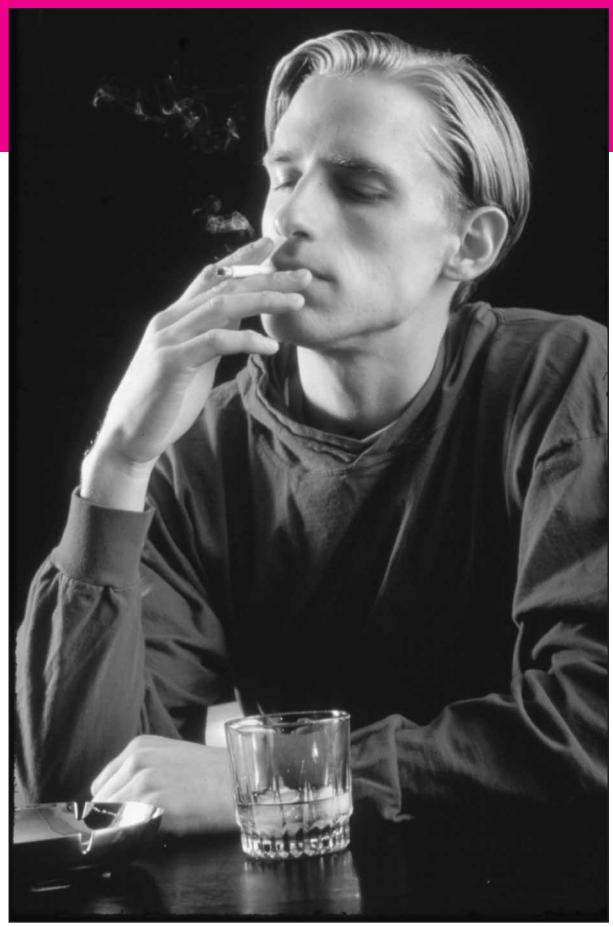
Chapter 18

Tobacco and Alcohol



Federal taxes on cigarettes and alcohol discourage consumption and raise revenue to cover external costs.
Source: Seth Joel/Science Photo Library/Photo Researchers, Inc.

Chapter Objectives

After reading this chapter you should be able to

Understand how we can apply a supply and demand model and the concepts of consumer and producer surplus to tobacco and alcohol.

See that economists endorse interference in a market for reasons related to the information and costs to innocent third parties.

See how the elasticity of demand for tobacco and alcohol determines who gets hurt by taxes on these goods.

Chapter Outline

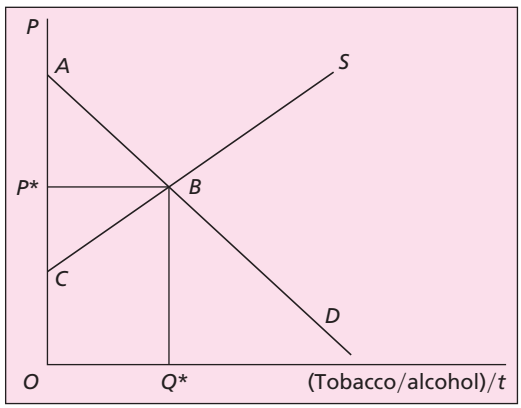
Twenty-five percent of the American population smokes and the average American consumes nearly 32 gallons of beer a year. With that much smoking and drinking going on, tobacco and alcohol are obviously important parts of the American economy. The cigarette industry employs 20,000 people a year, and it has annual sales of $27 billion. The beer industry employs 33,000 people and its annual sales amount to $17 billion.

Before looking closely at the economics of alcohol and tobacco, we review the fundamentals of supply and demand to remind ourselves of how equilibrium within a market serves the interests of both the consumer and producer. We then turn to reasons why selling and using cigarettes and alcohol are regulated and why regulation is necessary. Along the way we focus not only on secondhand smoke and drunk driving but also on the issue of age restrictions and warning labels. We conclude with a brief discussion of the importance of elasticity, and we use the concept within our supply and demand model to indicate who gets hurt by the considerable taxes that are levied on both tobacco and alcohol.

AN ECONOMIC MODEL OF CIGARETTES AND ALCOHOL

We use the market that was presented in Chapter 2 as the basis for our analysis of tobacco and alcohol. As we did with the market in that chapter, we will assume that there are many buyers and sellers, that the demand curve for each is downward-sloping, and that the supply curve for each is upward-sloping. For the time being, we will pretend that there are no such things as secondhand smoke and drunk driving. We will also pretend that all the people who start smoking or drinking know exactly what they are getting themselves into. While these are fanciful assumptions, the approach gives us a jumping-off point that we can use to look at these markets. To prove that the markets benefit both the consumers and the producers, we have to appeal to the consumer and producer surplus analysis that was presented in Chapter 3.

FIGURE 18.1 Market for beer or cigarettes.



If no one other than smokers or drinkers were hurt by their habits, then the market would serve them and the tobacco companies, brewers, and distilleries well. Consumer surplus would be *P*AB* and producer surplus would be *CP*B*.

We start with a few facts that are presented in Figure 18.1. Consumers buy Q^* goods and pay P^* for each. This means that consumers pay producers OP^*BQ^*. That is, smokers pay tobacco companies and drinkers pay beer companies. This area thus represents both the costs to consumers and the revenue to producers.

Chapter 2 convinced us that the supply curve is made up of individual-firm marginal cost curves. The area $OCBQ^*$ represents the variable costs to the producer of creating Q^*. Since the costs to the producers are not as high as the money they are being paid for their products, the producers benefit. That benefit, the area CP^*B, is the producer surplus.

The benefits to the consumer can be measured similarly. The demand curve represents the amount of value the consumer places on these goods. It is the most they are willing to pay for them. The difference between what smokers and drinkers would be willing to pay and what they actually pay is called the consumer surplus. The value that consumers place on Q^* of the goods is $OABQ^*$, and since they have to pay only OP^*BQ^*, the consumer surplus is P^*AB.

As a result of this analysis, we can state that the sale of these goods make drinkers, beer companies, smokers, and tobacco companies better off than they would have been without those sales. The sum of the consumer surplus and the producer surplus is CAB. If it were illegal to buy and sell these goods, and if everyone obeyed the law, both parties would be worse off. Before you have a fit at this conclusion, though, remember that it was arrived at only after we made some fanciful assumptions.

WHY IS REGULATION WARRANTED?

It is now time to recognize reality and to deal with the very real problems of tobacco and alcohol. The harmful effects on nonsmokers and nondrinkers of secondhand

smoke, drunk driving, and the addictive nature of nicotine and alcohol make these products unlike most others. Their presence has caused experts in public health to persuade legislators to implement restrictions, regulations, and taxes.

When people argue for government intervention in a market, they do so from many points of view. Economists, who tend to decry unwarranted intervention, generally categorize reasons into three broad arenas. First, they deem it to be possible for people to suffer from a lack of knowledge or an inability to think clearly. When that is the case, it may be appropriate for government to step in with information or with warnings of danger. It may even be appropriate for government to make decisions for people. Second, they accept that the good may have adverse impacts on people other than the consumer or producer. Those costs, which are ignored in a market, must be taken into account by government. Last, and least appealing among economists, is that consumption or production of the good may be immoral. That is, even though buying or selling the good may not hurt anybody in a physical sense, its production or consumption hurts society in general.

Whaaazzup, Joe Camel, and the Information Problem

Advertising is intended to draw people to a product, and the more memorable the ad the better, as far as companies are concerned. When the advertising is for products like tobacco and alcohol, we sometimes bemoan the effectiveness of the ads. The Budweiser "Whaaazzup" ads began in late 1999, and were followed closely by the "How are you doing" ads a year later. They were very effective in that the phrases entered everyday language. Similarly, the Joe Camel advertising campaign raised the market share of Camel cigarettes substantially during the middle to late 1990s. Since children cannot legally consume either product, it was of particular concern to people that the respective ads were able to capture the attention of young people.

For economists this means that there are cases where government should step in and regulate a market because if it does not, people in the market will make poor choices. Those unwise choices might result from either inadequate information or poor judgment on the part of the decision maker. People are warned, for example, about the consequences of smoking and drinking through warning labels that must be displayed on packages and bottles. We take the "providing knowledge" a step further when we ensure that every new generation knows the addictive nature of smoking and drinking. Of course there are times when we simply do not trust people to make good decisions, even when they have all the information. In these cases we either make it illegal to buy the goods or we require that people reach a certain age before they can buy them. Ultimately, this is the reason that we have age restrictions for both tobacco and alcohol, and it is why some states prohibit cigarette vending machines.

The argument that people are too stupid for their own good is a hard one for some economists to stomach. While economists list "perfect information" as an assumption necessary for markets to perform efficiently and they have few objections to government's providing that information, many are reluctant to believe that people make bad decisions when they have good information. Thus banning tobacco or alcohol advertising on the grounds that these promotions serve only to cloud the judgment of consumers is acceptable to economists. However, it is another story when government decides to prevent informed adults from using or consuming certain products.

Nevertheless, children are, almost by definition, incapable of making life-altering decisions in a considered fashion. Economists are not at all uncomfortable forbidding children from consuming tobacco products for two reasons. First, the majority of smokers began their nicotine addictions well prior to becoming adults. Second, there is evidence that the tobacco companies aided their becoming addicted.

External Costs

Few economists object when government interferes in a market in which someone other than the consumer or producer is hurt by the consumption or production of a good. These **externalities** are important considerations for market regulation because the point of market efficiency is that everyone either benefits from, or is left unaffected by, a transaction. If that does not happen, then standing by and allowing the market to take care of itself is not always acceptable.

externalities
Effects of a transaction which hurt or help people who are not a part of that transaction

The externalities that result from the use of tobacco are the illnesses and deaths associated with secondhand smoke and the increased health care expenditures incurred by people who do not smoke but must pay

increased premiums for health insurance to cover the expenses of smokers. It is not the concern of most economists that (knowledgeable) smokers hurt themselves by smoking. It is the concern of economists that those smokers tend to pass on costs to others.

Establishing who should be counted as an innocent victim, though, is not as easy as it might sound. Children clearly are innocent victims, but are nonsmoking spouses? Some economists suggest that as part of the give and take of a marriage, smokers and their nonsmoking partners negotiate the rules for smoking in a household. If they decide it is all right for one to smoke and the other to be negatively affected, then smoking and its implications do not constitute externality; it is simply one of the costs of the marriage. Other economists disagree. They suggest that regulations are needed to protect any people who are not consumers themselves.[1]

However you decide the issue of who is an innocent victim, those who are subjected to secondhand smoke have higher rates of lung-related illness than exist in the general population. Children in the presence of smokers are much more likely to die from sudden infant death syndrome (SIDS), asthma, and other lung illnesses. Airline cabin crews, servers in restaurants, bartenders, and a variety of others who have been exposed to others' smoke also report rates of lung illness that are not only higher, but beyond those that might have occurred by chance. The costs of treating these innocent victims are ignored by both smokers and tobacco companies. Economists abhor ignored costs. Whether economists support corrective actions when there are such costs depends on the degree of those costs and whether eliminating them is worth the loss of private benefits.

In addition, there are more smokers on Medicaid than their proportion within the general population warrants. They, of course, produce some rather substantial costs to the program. If they were not smoking, Medicaid would cost taxpayers less. Here the innocent victim is the taxpayer.

Externalities also exist in less likely places. Since smokers typically die 5 to 10 years earlier than comparable nonsmokers, if they have group life insurance policies whose rates are the same for both smokers and nonsmokers, the expected net payout for smokers' beneficiaries is more than for nonsmokers' beneficiaries. Life insurance rates are therefore higher for nonsmokers than they should be and the rates for smokers are lower than they should be.[2]

These facts combine to suggest that when smokers buy cigarettes, the full cost of their smoking not only is not paid at the cash register, but it is not even fully incurred by the smoker. Most estimates of the external expenses that are paid by the general public come to around a dollar per pack of cigarettes.

This is not to say that economists hold unanimous opinions in these matters. Some suggest that there is a benefit to nonsmokers when other people smoke. These benefits come from two separate but related aspects of smoking. First, as mentioned previously, people who smoke for long periods of time die several years earlier than comparable people who never smoked. Smokers and nonsmokers pay more into Social Security and other pension plans, but nonsmokers have some of their retirement essentially subsidized by smokers, because the smokers died before they had collected the benefits to which they were entitled.

A second form of subsidy that smokers grant nonsmokers is that they not only die early, but they die more quickly than nonsmokers. When smokers over the age of 60 become ill, their lifetime of smoking has so depressed their immune systems that they die of illnesses that nonsmokers are more likely to survive. They also succumb to those illnesses much faster. It is grimly ironic then that by dying more quickly than nonsmokers, smokers sometimes cost the health system less than do nonsmokers. By dying early and quickly, smokers avoid expenses that nonsmokers eventually need to pay. Because more than half of Medicare expenses are incurred during the last year of elderly people's lives, hastening their deaths saves money. If this gruesome fact is taken into account, the net external costs of smoking become negligible in the eyes of some economists.

Though there is a morbid economic upside to smoking, there no such benefit to drunk driving. There are more than 1 million arrests a year for driving under the influence of alcohol. While that number has come down substantially over the last decade, it is still more than high enough to represent a significant problem. Of the roughly 37,000 accidents that result in 40,000 traffic fatalities each year, one-third involves at least one person whose blood alcohol level is over the legal limit. Another 8 percent involves someone who has a legal, but

[1]This is the same argument that some economists use to suggest that government need not regulate workplace safety. Risk-takers must be being compensated adequately or they would not take the risk.

[2]This externality is avoided when life insurance companies differentiate their premiums for smokers and nonsmokers. The degree of the employer subsidy would have to depend on this as well.

still measurable, blood alcohol content. Even when someone does not die, alcohol is a contributing factor in nearly a half million automobile accidents a year.

Despite these troubling statistics, it is time to try to look at the issue from a dispassionate viewpoint. To model the problem of the externalities that are associated with people who drive under the influence of alcohol, we need to alter our supply and demand diagram to account for the extra costs for which their behavior is responsible. To understand Figure 18.2, you need to recall that under perfect competition the supply curve is the marginal cost curve to the firms in the business. Any costs that are borne by neither the seller nor the buyer must be added to these costs to create the social cost of the good. On the assumption that the only people who benefit from the consumption of the good are the consumers themselves, the demand curve is the social benefit curve. So instead of coming to the market solution of a price–quantity combination P^*–Q^*, the socially optimal combination is P'–Q'. That is, if there is a market for a good where some of the costs spill over to others, then the market will produce too much of the good and charge too little for it.

Morality Issues

We have looked now at the first two circumstances under which economists consider it acceptable for government to intervene in the market. Besides lack of information and externalities in which innocent people may be harmed, a final reason why government might regulate a free market is that the market may be for a good or service that is considered to be immoral. For believers in certain major world religions both alcohol and tobacco are accorded this status. While appeals to righteousness are not particularly meaningful to economists on an academic level, they are certainly important to many other people. Many religions consider drinking a sin and a few feel the same way about smoking.

TAXES ON TOBACCO AND ALCOHOL

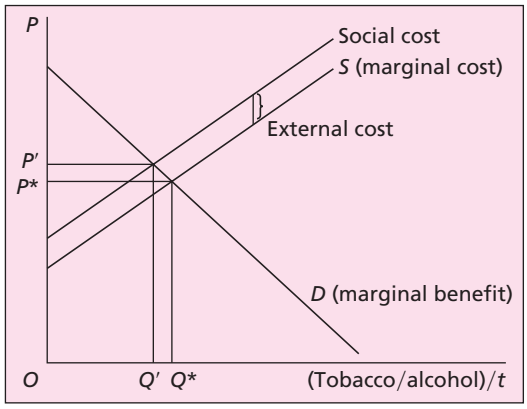
Modeling Taxes

To correct an externality, we can tax the offending good, we can limit its use, and we can forbid its use. Of these options, taxes are the most appealing to economists, as they allow people who are willing to pay all of the costs of their consumption to go ahead and consume. Using taxes in this way has the positive effect of discouraging those people who are not willing to pay the costs from becoming consumers of the undesirable or unhealthy good.

The taxes that the United States imposes on tobacco and alcohol are a 24-cent per pack tax on cigarettes and a 30-cent per six-pack tax on beer. The federal taxes on tobacco raise approximately $6 billion dollars a year, while the taxes on alcohol raise $7 billion. States also tax these goods, finding them to be a significant source of revenue, as they are for the federal government.

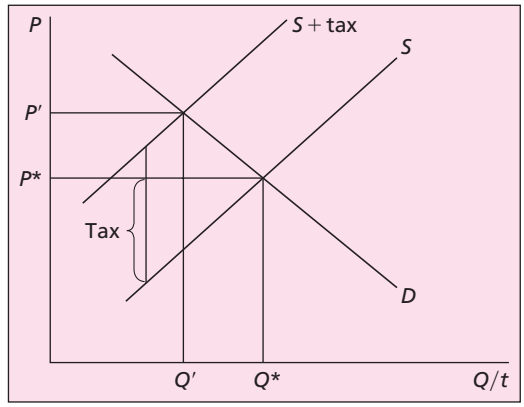
Figure 18.3 shows that the effect of the federal taxation on cigarettes and alcohol is to raise the price from P^* to P' and to lower consumption from Q^* to Q'. An important

FIGURE 18.2 Modeling externalities.



Because there is secondhand smoke, drunk driving, and alcohol-induced spouse and child abuse, government needs to respond. The price without regulation is too low and the amount smoked and drunk is too high.

FIGURE 18.3 Taxes on alcohol and tobacco.



A tax on alcohol and tobacco can be set equal to the externality so as to raise the price to P' and lower quantity to Q'.

thing to notice about this effect is that smoking and drinking do not stop. This means that the deleterious effects of secondhand smoke and drunk driving do not stop either. They are simply reduced. If the tax is set equal to the dollar value of such externalities, then in theory the tax revenue raised is sufficient to cover the costs of the externalities. One problem, though, is that the tax hits the considerate and rude alike. Smokers who light up alone do not cause secondhand smoke, whereas smokers who blow it in your face do. A per-pack tax hits both equally.

In any event, a policy short of prohibition implies that there is an economically acceptable number of expected drunk driving deaths and of childhood secondhand-smoke–induced illnesses. The idea is that as long as we have an adequate sum of money available to compensate the people who are affected, it is acceptable for smokers to smoke, for drinkers to drink, and for people to be influenced in negative ways by their behavior.

People who are not economists have a very difficult time with the "acceptability" of deaths and illnesses. The basic idea is that people drink and smoke because they enjoy doing so. If we take taxing and regulating too far, the reduction in enjoyment by users would outweigh the effect of the reduction on innocent victims.

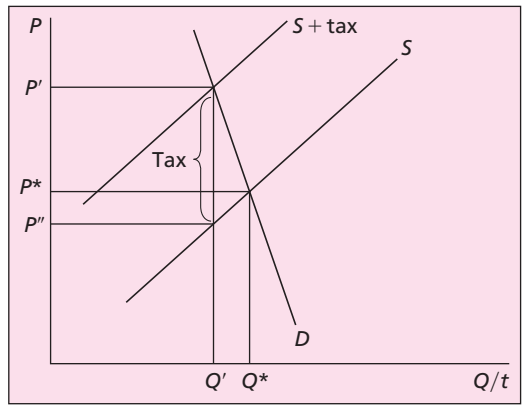
The notion of acceptable deaths is a difficult one for many to accept. Consider this though: the Brain Injury Association reports that approximately 15 children die each year on playgrounds as a result of falls and other injuries. We continue to send our children out on recess because we weigh what is to be gained with what is to be lost and judge the risk of injury or even death to be tolerable. We drive to work because we see that what is gained, income, is greater than what is lost, a small risk of injury or death.

The Tobacco Settlement and Why Elasticity Matters

For quite some time legislators have given particular consideration to raising the taxes on tobacco. The settlement between several states and the big tobacco companies that was reached in 1998 requires that the companies pay the states more than $250 billion dollars over 20 years to compensate them for Medicaid expenses the states paid that were created by smoking. The companies will then pass on those taxes to the smokers who buy their products. To see how a sequence like this works, we need to look at the supply and demand curve for tobacco.

First, it should be remembered that when someone is addicted to a product, as smokers are to cigarettes, the demand curve for the good is highly inelastic. If you look at Figure 18.4 you see that a tax will again raise the price from P^* to P'. If you compare the size of the tax (P'' to P') to the amount of the price increase, you see that smokers will be paying for most of this tax increase and that tobacco companies will pay comparatively less (P^* to P' versus P^* to P''). Since smokers are far poorer than the average of the general population, this tax is as regressive as any tax we can imagine. Since consumption falls only from Q^* to Q', it is also disturbing that the tax will not have a significant influence on how much people smoke either.

FIGURE 18.4 Tax on tobacco with inelastic demand.



If the demand for the product is inelastic, the impact on quantity will be insignificant and the tax will hurt the consumer almost entirely. Thus a tax on cigarettes cannot be counted on to reduce smoking much.

When you look at teen smoking, the picture is not quite so bleak. Because the habit of smoking takes up a much larger portion of teenagers' than adults' incomes, the elasticity of demand for cigarettes by young people is much greater. That is, demand is more elastic and the demand curve is flatter. If you were to draw such a demand curve, you would see that the burden of the tax would still fall mainly on consumers. You would also see that tobacco companies would be paying a greater proportion of the amount of compensation. Further smoking, at least teen smoking, would be reduced by more. Still economists' best estimates are that elasticities for cigarettes are as low as $-.2$ for adults and as high as $-.5$ for children. This means that an increase of a dollar in cigarette prices would diminish adult smoking by 10 percent, and it would diminish smoking by children by 25 percent. A study of the elasticity of demand for beer put it at $-.53$, which suggests a tax which adds 10 percent to the price of a six-pack would reduce consumption by 5.3 percent.

Summary

You now understand how we can apply a supply and demand model and the concepts of consumer and producer surplus to tobacco and alcohol. You understand that there are reasons that economists endorse interference in a market, reasons that have to do with the information and costs to innocent third parties. Last, you have seen how the question of who gets hurt by taxes on tobacco and alcohol is dependent on the elasticity of demand for these goods.

Key Term

externalities, *170*

Quiz Yourself

1. Economists believe that the best reason(s) to regulate a market is (are)
   a. A good has no moral value.
   b. A good produces an external cost.
   c. People are uninformed about the damaging nature of the good.
   d. (*b*) and (*c*).
2. An example of an external cost of tobacco is
   a. Cigarettes burns on the furniture of smokers.
   b. Matches.
   c. Increased life insurance premiums of smokers.
   d. Secondhand-smoke–induced deaths.
3. An example of the external cost of alcohol is
   a. Drunk driving.
   b. The cost to alcoholics of going to rehabilitation clinics.
   c. The cost of producing whiskey.
   d. The cost to bars of hiring janitors to clean up after their customers.
4. Because of different elasticities, a tax on cigarettes will affect the smoking patterns of children
   a. The same as those of adults.
   b. More than those of adults.
   c. Less than those of adults.
5. The elasticity of demand for cigarettes among teenagers is
   a. Less than that among adults.
   b. More than that among adults.
   c. The same as that among adults.
6. The elasticity of demand for a particular brand of beer is likely to be
   a. Greater than the elasticity of demand for beer in general.
   b. Less than the elasticity of demand for beer in general.
   c. The same as the elasticity of demand for beer in general.
7. Draw two supply and demand diagrams, one with the demand for cigarettes by children and the other with the demand for cigarettes by adults. Show the effect of the tax on decreasing smoking among these two populations.

Think about This

When we consider the impact of smoking-related costs on the taxpayer we often ignore the smoking-related benefits described in this chapter (the early and rapid deaths of smokers diminishing Medicare and Social Security costs). It's not good economics to ignore this aspect. In deciding the issue of cigarette taxes for yourself, will you consider this aspect? Why? Why not?

Talk about This

What is the most important function of cigarette taxes in your mind: raising revenue to pay the external costs or reducing smoking? Why?

For More Insight See

Grossman, Michael, Jody Sindelar, John Mullahy, and Richard Anderson. "Alcohol and Cigarette Taxes." *Journal of Economic Perspectives* 7, no. 4 (1993), pp. 211–222.