

CHAPTER 26

Public Goods and the Role of the Government

LEARNING OBJECTIVES

In this chapter, you should learn:

- The nature and extent of the government's role in the economy
- The characteristics of a public good
- The nature and importance of externalities
- What determines the incidence of a tax
- The purposes of the tax system

During his first term as president, Bill Clinton talked about raising cigarette taxes by \$2 a pack. What would be the effect of such a tax increase, and is the government justified in getting involved in this way in the nation's economy? One purpose of this chapter is to discuss this question.

To state that the United States is a mixed capitalist system, in which both government decisions and the price system play important roles, is hardly to provoke a controversy. But going a step beyond takes us into areas where viewpoints often diverge. The proper functions of government and the desirable size and nature of government expenditures and taxes are not matters on which all agree. Indeed, the question of how big government should be, and what its proper functions are, is hotly debated by conservatives and liberals throughout the land. In Chapters 6 through 14 we discussed the role of the government in stabilizing economic fluctuations. In this chapter we consider other roles for the government in the economy.

WHAT FUNCTIONS SHOULD THE GOVERNMENT PERFORM?

In Chapter 2 we discussed the limitations of the price system. Although it is generally agreed that there is a role for the government to redistribute income in favor of the poor, provide public goods, and offset the effects of external economies and diseconomies, there is considerable disagreement over how far the government should go in these areas, and what additional

WHAT FUNCTIONS SHOULD THE GOVERNMENT PERFORM?

areas the government should be responsible for. Some people feel that "big government" is already a problem, that government is doing too much. Others believe that the public sector of the economy is being undernourished and that government should be allowed to do more. This is a fundamental question, and one that involves a great deal more than economics.

■ CONSERVATIVE VIEW

On the one hand, conservatives, such as Stanford University's Nobel laureate Milton Friedman, believe that the government's role should be limited severely. They feel that economic and political freedom is likely to be undermined by excessive reliance on the state. Moreover, they tend to be skeptical about the government's ability to solve the social and economic problems at hand. They feel that the prevailing faith in the government's power to make a substantial dent in these problems is unreasonable, and they call for more and better information concerning the sorts of tasks government can reasonably be expected to do—and do well. They point to the slowness of the government bureaucracy, the difficulty in controlling huge government organizations, the inefficiencies political considerations can breed, and the difficulties in telling whether government programs are successful or not. On the basis of these considerations, they argue that the government's role should be carefully circumscribed.

The flavor of the conservative position on this question is evident in the remarks of the late George Stigler, a Nobel laureate at the University of Chicago:

I consider myself courageous, or at least obtuse, in arguing for a reduction in governmental controls over economic life. You are surely desirous of improving this world, and it assuredly needs an immense amount of improvement. No method of displaying one's public-spiritedness is more popular than to notice a problem and pass a law. It combines ease, the warmth of benevolence, and a suitable disrespect for a less enlightened era. What I propose is, for most people, much less attractive: close study of the comparative performance of public and private economy, and the dispassionate appraisal of special remedies that is involved in compassion for the community at large.

■ LIBERAL VIEW

To such remarks, liberals respond with very telling salvos of their own. Just as conservatives tend to be skeptical of the government's ability to solve important social and economic problems, so liberals tend to be skeptical about the price system's ability to solve these problems. They point to the important limitations of the price system, and they assert that the government can do a great deal to overcome these limitations, by regulating private activity and by subsidizing and providing goods and services that the private sector produces too little of.

According to some distinguished liberals, like Harvard's John Kenneth Galbraith, the public sector of the economy has been starved of needed resources, while the private sector has catered to relatively unimportant wants. In his best-selling book, *The Affluent Society*, Galbraith argued that consumers are led by advertising and other promotional efforts to purchase more and more goods of marginal significance to them. On the other hand, in his opinion, the nation is suffering because too little is spent on government services like education, transportation, and urban renewal.¹

Liberals tend to be less concerned than conservatives about the effects on personal freedom of greater governmental intervention in the economy. They point out that the price system also involves a form of coercion by awarding the available goods and services to those who can pay their equilibrium price. In their view, people who are awarded only a pittance by the price system are coerced into discomfort and malnutrition.

ESTABLISHING "RULES OF THE GAME"

Although there is considerable disagreement over the proper role of the government, both conservatives and liberals agree that it must do certain things. The first of these is to establish the *rules of the game*—a legal, social, and competitive framework enabling the price system to function as it should.

■ MAINTAINING A LEGAL AND SOCIAL FRAMEWORK

Specifically, *the government must see to it that contracts are enforced, that private ownership is protected, and that fraud is prevented.* Clearly, these matters must be tended to if the price system is to work properly. Also, *the government must maintain order (through the establishment of police and other forces), establish a monetary system (so that money can be used to facilitate trade and exchange), and provide standards for the weight and quality of products.*

As an example of this sort of government intervention, consider the Pure Food and Drug Act. This act, originally passed in 1906 and subsequently amended in various ways, protects the consumer against improper and fraudulent activities on the part of producers of foods and drugs. It prohibits the merchandising of impure or falsely labeled food or drugs, and it forces producers to specify the quantity and quality of the contents on labels. These requirements strengthen the price system. Without them, the typical consumer would be unable to tell whether food or drugs are pure

¹J. K. Galbraith, *The Affluent Society*, 3d rev. ed., New York: New American Library, 1978. For a quite different viewpoint, see M. Friedman, *Capitalism and Freedom*, Chicago: University of Chicago Press, 1962.

or properly labeled. Unless consumers can be sure that they are getting what they pay for, the basic logic underlying the price system breaks down. Similar regulations and legislation have been instituted in fields other than food and drugs, and for similar reasons.

■ MAINTAINING A COMPETITIVE FRAMEWORK

Besides establishing a legal and social framework that will enable the price system to do its job, *the government must also see to it that markets remain reasonably competitive.* Only if markets are competitive will prices reflect consumer desires properly. If, on the other hand, markets are dominated by a few sellers (or a few buyers), prices may be rigged by these sellers (or buyers) to promote their own interests. For example, if a single firm is the sole producer of aluminum, it is a safe bet that this firm will establish a higher price than if there were many aluminum producers competing among themselves. In Chapters 19 and 20, we studied the social problems due to monopoly.

REDISTRIBUTION OF INCOME

Income redistribution

We have already noted the general agreement that governments should redistribute income in favor of the poor. In other words, *it is usually felt that help should be given to people who are ill, handicapped, old and infirm, disabled, or unable for other reasons to provide for themselves.* To some extent, the nation has decided that income—or at least a certain minimum income—should be divorced from productive services. Of course, this doesn't mean that people who are too lazy to work should be given a hand-out. It does mean that people who cannot provide for themselves should be helped. To implement this principle of *income redistribution*, various payments are made by the government to needy people, including the aged, the handicapped, the unemployed, and pensioners.

These welfare payments are to some extent a "depression baby," for they grew substantially during the Great Depression of the 1930s, when relief payments became a necessity. But they also represent a feeling shared by a large segment of the population that human beings should be assured that, however the wheel of fortune spins and whatever number comes up, they will not starve and their children will not be deprived of a healthy environment and basic schooling. Of course, someone has to pay for this. Welfare payments allow the poor to take more from the nation's output than they produce. In general, the more affluent members of society contribute some of their claims on output to pay for these programs, their contributions being in the form of taxes. By using its expenditures to help certain groups and by taxing other groups to pay for these programs, the government accomplishes each year, without revolt and without bayonets,

a substantial redistribution of income. This is a crucial aspect of the government's role in our economy.

PROVIDING PUBLIC GOODS

As we have indicated, the government provides many public goods. Let's consider the nature of public goods in more detail.

■ WHAT IS A PUBLIC GOOD?

Public good

One hallmark of a **public good** is that it can be consumed by one person without diminishing the amount that other people consume of it. Public goods tend to be relatively indivisible; they often come in such large units that they cannot be broken into pieces that can be bought or sold in ordinary markets. Also, *once such goods are produced, there is no way to bar certain citizens from consuming them.* Whether or not citizens contribute toward their cost, they benefit from them. This means that the price system cannot be used to handle the production and distribution of such goods.

An oft-cited example of a public good is a lighthouse. There might be general agreement that the cost of building a particular lighthouse would be more than justified by the benefits (saving lives, fewer shipwrecks, cheaper transportation). Nonetheless, no private firm or person might build and operate such a lighthouse because they might be unable to charge the ships using the lighthouse for the service.² Nor would any single user gain enough from the lighthouse to warrant constructing and operating it. Moreover, voluntary contributions are very unlikely to support such a lighthouse, because individual users are likely to feel that their contribution will not affect whether or not it is built, and that they will be able to use the lighthouse whether or not they contribute. Consequently, the lighthouse might be established and operated only if the government intervenes.

■ NATIONAL DEFENSE: A MAJOR EXAMPLE

National defense is another example of a public good. The benefits of expenditure on national defense extend to the entire nation. Extension of the benefits of national defense to an additional citizen does not mean that any other citizen gets less of these benefits. Also, there is no way of preventing citizens from benefiting from them, whether they contribute to their cost or not. Thus there is no way to use the price system to provide

²Under some circumstances, lighthouses have been able to charge users. For example, English lighthouses sometimes assessed the shipowners at the docks. Ordinarily only one ship was in sight of the lighthouse at a particular point in time. The light would not be shown if the ship (which was identified by its flag) had not paid.

for national defense. Since it is a public good, national defense, if it is to reach an adequate level, must be provided by the government.

■ DECISION MAKING REGARDING PUBLIC GOODS

Essentially, deciding how much to produce of a public good is a political decision. The citizens of the United States elect officials who decide how much should be spent on national defense, and how it should be spent. These elected representatives are responsive to special interest groups, as well as to the people as a whole. Many special interest groups lobby hard for the production of certain public goods. For example, an alliance of military and industrial groups presses for increased defense expenditures.

The tax system is used to pay for the production of public goods. In effect, the government says to each citizen, "contribute a certain amount of money to pay for the expenses incurred by the government." The amount particular citizens are assessed may depend on their income (as in the income tax), the value of all or specific types of their property (as in the property tax), the amount they spend on certain types of goods and services (as in the sales tax), or on still other criteria. In the 1990s, the tax system has often been the object of enormous controversy. Much more will be said about the tax system, and the controversies swirling around it, in a later section of this chapter.

EXTERNALITIES

Externalities

It is generally agreed that *the government should encourage the production of goods and services that entail external economies and discourage the production of those that entail external diseconomies.* Take the pollution of air and water discussed in Chapter 21. When a firm or individual dumps wastes into the water or air, other firms or individuals often must pay all or part of the cost of putting the water or air back into a usable condition. Thus the disposal of these wastes entails external diseconomies. Unless the government prohibits certain kinds of pollution, enforces air and water quality standards, charges polluters in accord with the amount of waste they dump into the environment, or issues transferable emissions permits, there will be socially undesirable levels of pollution.

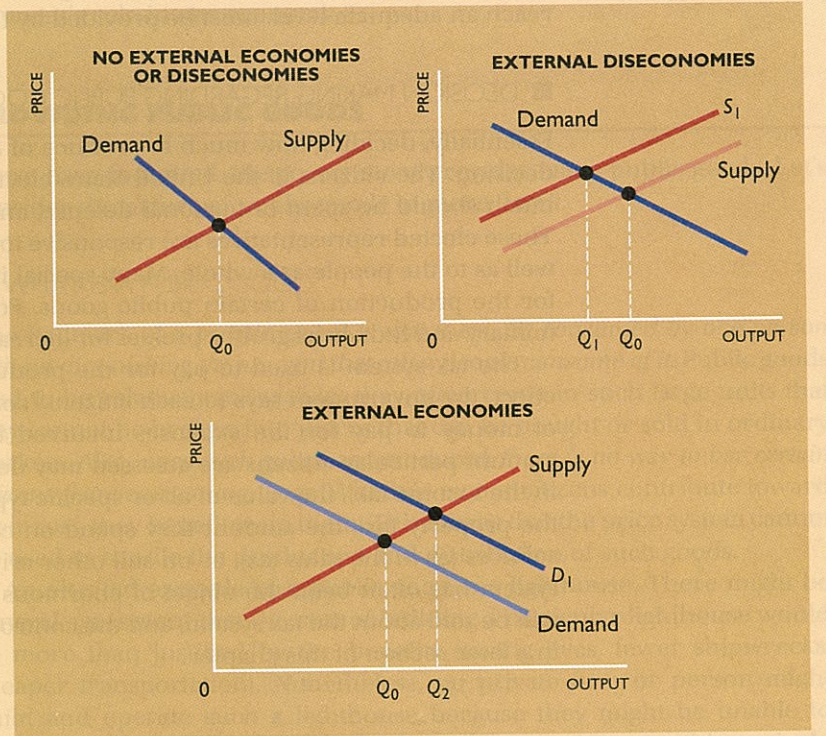
■ EFFECTS OF EXTERNAL DISECONOMIES

To see how such externalities affect the social desirability of the output of a competitive industry, consider Figure 26.1, where the industry's demand and supply curves are contained in the top left-hand panel. As shown there, the equilibrium output of the industry is Q_0 . If the industry results in no external economies or diseconomies, this is likely to be the socially optimal

FIGURE 26.1

Effect of External Economies and Diseconomies on the Optimal Output of a Competitive Industry

The optimal output is Q_0 if neither external economies nor diseconomies are present. If there are external diseconomies, curve S_1 reflects the true social costs of producing the product, and Q_1 is the optimal output. If there are external economies, curve D_1 reflects the true social benefits of producing the product, and Q_2 is the optimal output.



output. But what if the industry results in external diseconomies, such as the pollution described above? Then the industry's supply curve does not fully reflect the true social costs of producing the product. The supply curve that reflects these social costs is S_1 , which, as shown in the top right-hand panel of Figure 26.1, lies to the left of the industry's supply curve. The optimal output of the good is Q_1 , which is less than the competitive output Q_0 .

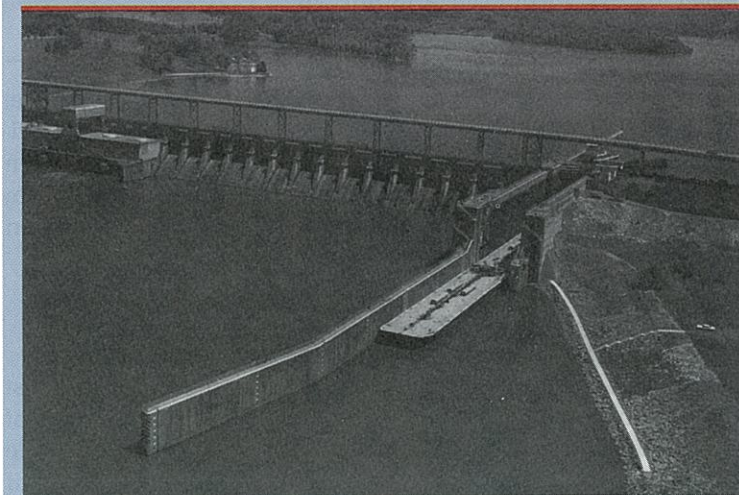
What can the government do to correct the situation? There are many ways that it can intervene to reduce the industry's output from Q_0 to Q_1 . For example, it can impose taxes on the industry. If these taxes are of the right type and amount, they will result in the desired reduction of output.

■ EFFECTS OF EXTERNAL ECONOMIES

What if the industry results in external economies? For example, what if the manufacture of one industrial product makes it cheaper to produce other products? Then the industry's demand curve underestimates the true social benefits of producing the product. The demand curve that reflects these social benefits correctly is D_1 , which, as shown in the bottom

CASE STUDY 26.1

The Tennessee Valley Authority



The TVA dam at Fort Loudoun

The Great Mississippi Flood of 1927 left 800,000 homeless and focused national attention on the federal government's responsibility for flood control. Such control had been considered for years on the Tennessee River. Senator Norris of Nebraska campaigned for federal support for river control in the 1920s and 1930s, but his attempts were unsuccessful, largely because local utilities feared that by building dams, the federal government would be providing not only flood control but electric power as well.

The debate continued until 1933, when the Roosevelt administration created the Tennessee Valley Authority (TVA). The TVA was foremost a construction project that would create jobs in a depressed economy, but it was also created for regional development that would yield benefits for many years to come. In addition to its responsibility for flood control and for improving the navigability of the Tennessee's waters, the TVA built housing, worked on agricultural development, and provided electric power to the depressed

area. And the local utilities challenged the TVA all the way.

By 1954 the TVA was well established and requested funds from Congress to build a steam-driven electric plant. Congress rejected the proposal because it did not feel that the TVA should be expanded further into a federal power facility not exclusively hydroelectric, nor that it should be made into an even larger business.

Why is it proper for the government to provide for flood control, but not to build steam-driven electric power plants? The rationale for the government's providing a service is a breakdown of the free market—that is, the failure of the private sector to provide the proper quantity of certain goods and services. Flood control and navigation are clearly public goods, and insofar as electrification is a by-product of flood control, it is reasonable for the government to provide this service too. But the proposed steam-driven electrical generators could have been as easily provided by the private sector as by the government.

N.B.

panel of Figure 26.1, lies to the right of the industry's demand curve. The optimal output of the good is Q_2 , which is greater than the competitive output Q_0 .

As in the case where the industry results in external diseconomies, the government can intervene in various ways to change the industry's output.

But in this case, the object is to increase, not decrease, its output. To accomplish this, the government can, among other things, grant subsidies to the industry. If they are of the right type and amount, they can be used to increase the industry's output from Q_0 to Q_2 .

THE THEORY OF PUBLIC CHOICE

According to many economists interested in the theory of public choice, many factors induce the government to make decisions that are not efficient from an economic point of view. Just as the price system suffers from certain limitations, so the government has shortcomings as a mechanism for promoting economic welfare. These factors, discussed below, often result in expanded government expenditures.

■ SPECIAL INTEREST GROUPS

It is no secret that politicians try to stay in office. In some cases, they must decide whether or not to adopt a policy that benefits a small number of people, each of whom will gain a great deal, at the expense of a very large number of people, each of whom will lose very little. The small group of gainers (the *special interest group*) is likely to be well organized, well financed, and vocal. The large group of losers is likely to be unaware of its losses and more indifferent to the outcome of this decision, since each member of this group has little at stake. In a case of this sort, a politician will be inclined to adopt the policy favoring the special interest group. Why? Because the politician, by not adopting this policy, would lose the support of this group. On the other hand, by adopting this policy, the politician is unlikely to lose the support of the large group of people that are hurt by it because they are much more interested in other issues where they have more at stake.

There are many cases where politicians have adopted policies favoring special interest groups, even though the total gains to the special interest groups are less than the total losses to other segments of society. Whereas such policies are unsound economics, they have been regarded as good politics. One example is the enactment of tariffs and quotas that reduce domestic competition and result in consumers' paying higher prices. Also, government services that benefit special interest groups often are expanded, to the detriment of society at large.

■ BUREAUCRATIC INEFFICIENCY

Many observers contend that government agencies are less efficient than private firms. As we have seen in previous chapters, the price system establishes strong incentives for firms to minimize their costs. If firms can lower their costs, they can increase their profits, at least temporarily. Government

officials, on the other hand, often have less incentive to reduce costs. Indeed, it is sometimes claimed that there is an incentive to increase costs, since an agency's power and influence is directly related to the size of its budget. Unfortunately, we do not have a great deal of evidence concerning whatever differences may exist between the efficiency of government agencies and of private firms, largely because of the difficulties in measuring the efficiency or inefficiency of government agencies. For example, how efficient is the Environmental Protection Agency? Because it is so difficult to measure the EPA's output, and because it is so difficult to find a standard against which to measure its performance, this question is exceedingly difficult to answer.

One area where there has been evidence of inefficiency has been the development and production of new weapons by the Department of Defense and its contractors. There have been spectacular overruns in development and production costs. To some extent, such cost increases reflect the fact that new weapons systems tend to push the state of the art, so that problems must be expected. But in addition, the firms that develop and produce these weapons systems often submit unrealistically low bids to get a contract, knowing that they are likely to get approval for cost increases later on. According to some observers, like Merton J. Peck of Yale University and F. M. Scherer of Harvard University, these cost overruns have also been due to "inadequate attention to the efficient utilization of technical, production, and administrative manpower—areas in which major cost reductions are possible."

■ NONSELECTIVITY

Another point made by public-choice theorists is that when citizens vote for their elected officials, they vote for a "bundle" of political programs. For example, in a particular election, the two candidates may be John Brown, who favors increased defense spending, reduced capital gains taxes, and a tougher policy against drug use, and Jane Smith, who opposes all these things. If you favor increased defense spending and a tougher policy against drug use, but oppose reduced capital gains taxes, there is no way that you can elect a candidate who mirrors your preferences. All you can do is vote for the candidate whose bundle of programs is closest to your preferences.

In contrast, when citizens make choices in the marketplace, they are better able to pick a set of goods and services that is in accord with their preferences, since they do not have to buy items that they do not want. If you want a green shirt and a purple tie, you can buy them without having to buy a pair of socks as well. Since citizens cannot be so selective with regard to goods and services in the public sector, public-choice theorists hold that the provision of such goods and services tends to be inefficient.

To conclude this brief section on the theory of public choice, it is important to recognize that no one is accusing government officials of being stu-

pid, lazy, or corrupt. Some undoubtedly are, but this is true of business executives as well. The point is that the incentives faced by government officials and the nature of the political process result in decision making that can be suboptimal from an economic point of view. This helps to explain why the government, like the price system, can bungle the job of organizing the nation's economic activities. Neither is a panacea.

PRINCIPLES OF TAXATION

As we saw in Chapters 6 and 12, the government finances most of its expenditures through taxation. According to the English political philosopher Edmund Burke, "To tax and to please, no more than to love and to be wise, is not given to men." What constitutes a rational tax system? Are there any generally accepted principles to guide the nation in determining who should pay how much? The answer is that there are some principles most people accept, but they are so broad and general that they leave plenty of room for argument and compromise. Specifically, two general principles of taxation command widespread agreement.

■ BENEFIT PRINCIPLE

Benefit principle

The first principle, called the *benefit principle*, is that *people who receive more from a certain government service should pay more in taxes to support it*. Certainly few people would argue with this idea. However, it is frequently difficult, if not impossible, to apply. For example, there is no good way to measure the amount of the benefits received by a particular taxpayer from many public services, such as police protection.

■ ABILITY-TO-PAY PRINCIPLE

Ability-to-pay principle

The second principle is, the *ability-to-pay principle*. It means that *people should be taxed so as to result in a socially desirable redistribution of income*. In practice, this has ordinarily meant that the wealthy have been asked to pay more than the poor. This idea, too, has generally commanded widespread assent—although this, of course, has not prevented the wealthy from trying to avoid its being applied to them.

■ APPLICATIONS OF THESE PRINCIPLES

It follows from these principles that if two people are in essentially the same circumstances (their income, purchases, utilization of public services are the same), then they should pay the same taxes. This is an important rule, innocuous though it may seem. It says that equals should be treated equally; *whether one is a Republican and the other is a Democrat, or whether*

one is a friend of the president and the other is his enemy, or whether one has purely salary income and the other has property income, they should be treated equally. Certainly, this is a basic characteristic of an equitable tax system.

It is easy to relate most of the taxes in our tax structure to these principles. For example, the first principle, the benefit principle, is the basic rationale behind taxes on gasoline and license fees for vehicles and drivers. Those who use the roads are asked to pay for their construction and upkeep. Also, the property tax, levied primarily on real estate, is often supported on these grounds. It is argued that property owners receive important benefits—fire and police protection, for example—and that the extent of the benefits is related to the extent of their property.

The personal income tax is based squarely on the second principle: ability to pay. A person with a large income pays a higher proportion of income in personal income taxes than does a person with a smaller income. In 1996, if a couple's income (after deductions and exemptions) was \$15,000, their federal income tax was \$2,254, whereas if their income was \$50,000, their federal income tax was \$8,794. Also, estate and inheritance taxes hit the very rich much harder than the middle class.

The principles cited above are useful and important, but they do not take us very far toward establishing a rational tax structure. They are too vague and leave too many questions unanswered. If I use about the same amount of public services as you do, but my income is twice yours, how much more should I pay in taxes? Twice as much? Three times as much? Fifty percent more? These principles throw no real light on many of the detailed questions that must be answered by a real-life tax code.

THE PERSONAL INCOME TAX

The federal *personal income tax* brings in hundreds of billion of dollars a year. Yet many people are unaware of just how much they are contributing, because it is deducted from their wages each month or each week, so that they owe little extra when April 15 rolls around. (Indeed, they may even be due a refund.) This pay-as-you-go scheme reduces the pain, but of course it does not eliminate it; taxes are never painless.

■ THE TAX SCHEDULE

Obviously, how much a family has to pay in personal income taxes depends on the family's income. The tax schedule (as of 1996) is as shown in Table 26.1. The second column shows how much a couple would have to pay if their income were the amount shown in the first column. At an income of \$30,000, their income tax would be \$4,504; at an income of \$50,000, their income tax would be \$8,794. Clearly, the percentage of income owed in income tax increases as income increases, but this percentage does not

TABLE 26.1
Federal Personal
Income Tax,
Couple without
Children, 1996

INCOME AFTER DEDUCTIONS AND PERSONAL EXEMPTIONS (DOLLARS)	PERSONAL INCOME TAX (DOLLARS)	AVERAGE TAX RATE (PERCENT)	MARGINAL TAX RATE (PERCENT)
3,000	454	15	15
15,000	2,254	15	15
30,000	4,504	15	15
50,000	8,794	18	28
500,000	173,000	35	39.6

increase indefinitely. Even if the couple made \$500,000 in 1996, the percentage of income owed in income tax did not exceed 35 percent.

■ THE MARGINAL TAX RATE

It is instructive to look further at how the “tax bite” increases with income. In particular, let’s ask ourselves what proportion of an *extra* dollar of income the couple will have to pay in personal income taxes. In other words, what is the **marginal tax rate**: the tax on an extra dollar of income? The fourth column of Table 26.1 shows that the marginal tax rate was 15 percent if the couple’s income was \$15,000 or \$30,000, 28 percent if it was \$50,000, and 39.6 percent if it was \$500,000.

THE PROPERTY TAX AND THE SALES TAX

The **property tax** is the fiscal bulwark of our local governments. The way it works is simple enough. Most towns and cities estimate the amount they will spend in the next year or two, and then determine a property tax based on the assessed property values in the town or city. If there is \$500 million in assessed property values in the town and the town needs to raise \$5 million, the tax rate will be 1 percent of assessed property value. In other words, each property owner will have to pay 1 percent of the assessed value of his or her property. There are well-known problems in the administration of the property tax. First, assessed values of property often depart significantly from actual market values; the former are typically much lower than the latter. And the ratio of assessed to actual value is often lower among higher-priced pieces of property; thus wealthier people tend to get off easier. Second, there is widespread evasion of taxes on personal property: securities, bank accounts, and so on. Many people simply do not pay up. Third, the property tax is not very flexible; assessments and rates tend to change rather slowly.

The **sales tax**, of course, is a bulwark of state taxation. It provides a high yield with relatively low collection costs. Most of the states have some form

CASE STUDY 26.2 Proposition 13



Supporters celebrate the passage of Proposition 13

The combination of inflation and a housing shortage led to a rapid increase in land values in California in the late 1970s. This in turn resulted in steadily increasing property taxes. Homes that sold for \$600 after World War II were selling for \$60,000 in the late 1970s, and it was not unusual for homeowners to be paying over \$2,000 per year in property taxes. Many homeowners felt that the

burden of local taxes was too much and that it was time to cut government expenditures. The taxpayers’ revolt, led by Howard Jarvis, began with the collection of over a million signatures, more than enough to place Proposition 13 on the California state ballot. Proposition 13 would limit property taxes to 1 percent—a 60 percent rollback that would wipe out some \$7 billion of local govern-

ment funds. At the polls, Proposition 13 easily passed with 65 percent of the vote.

Subsequently, local government spending leveled out throughout the state, and local government services suffered. Public employees were laid off, and services such as summer school classes, library services, and garbage collection were curtailed. Some of the other consequences came as a surprise to voters. For example, of the \$7-billion tax rollback, corporations got the lion’s share.

Jarvis was back in 1980 with a new initiative: Proposition 9, which would have cut state income taxes by 50 percent. This time, however, Jarvis’s opponents focused on equity issues. Amid widespread charges that Proposition 9 might simply let the rich get richer at the expense of the less well-to-do, Jarvis was defeated and the tax revolt fever began to cool down.

N.B.

of general sales tax, the rate being usually between 3 and 6 percent. If the rate is 4 percent, retailers add to the price of goods sold to consumers an amount equal to 4 percent of the consumer’s bill. This extra amount is submitted to the state as the general sales tax. Some states exempt food purchases from this tax, and a few exempt medical supplies. Where they exist, these exemptions help reduce the impact of the sales tax on the poor, but in general the sales tax imposes a greater burden relative to income on the poor than on the rich, for the simple reason that the rich save a larger percentage of their income. Practically all a poor family’s income may be subject to sales taxes; a great deal of a rich family’s income may not be, because it is not spent on consumer goods, but is saved.

Who really pays the property tax or the sales tax? To what extent can these taxes be shifted to other people? The answer is not as straightforward as one might expect. For the property tax, the owner of unrented residential property swallows the tax, since there is no one else to shift it to. But the owner of rented property may attempt to pass along some of the tax to the tenant. In the case of a general sales tax, it is generally concluded that the consumer pays the tax. But if the tax is imposed on only a single commodity, the extent to which it can be shifted to the consumer depends on the demand and supply curves for the taxed commodity. The following section explains in some detail why this is the case.

TAX INCIDENCE

Tax incidence

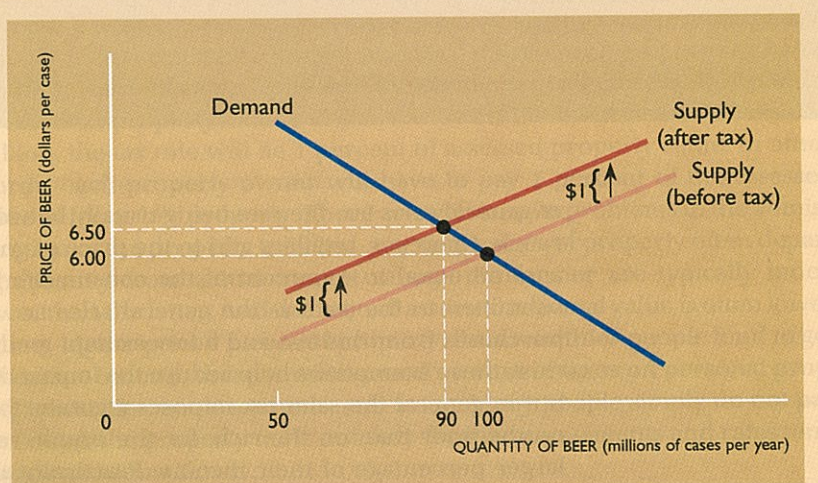
Suppose that a sales or excise tax is imposed on a particular good, say, beer. In Figure 26.2, we show the demand and supply curves for beer before the imposition of the tax. With no tax, the equilibrium price of a case of beer is \$6, and the equilibrium quantity is 100 million cases. If a tax of \$1 is imposed on each case produced, what is the effect on the price of each case? Or to see it from the beer drinker's perspective, how much of the tax is passed on to the consumer in the form of a higher price?

Since the tax is collected from the sellers, *the supply curve is shifted upward by the amount of tax*, as shown in Figure 26.2. For example, if the pretax price had to be \$5 a case to induce sellers to supply 80 million cases of beer, the posttax price would have to be \$1 higher, or \$6 a case, to induce the same supply. Similarly, if the pretax price had to be \$6 a case to induce sellers to supply 100 million cases of beer, the posttax price would have to be \$1 higher, or \$7 a case, to induce the same supply. The reason why the

FIGURE 26.2

Effect of a \$1 Tax on a Case of Beer

The tax shifts the supply curve upward by \$1. Since the demand curve is unaffected, the equilibrium price of beer increases from \$6.00 to \$6.50 per case.



TAX INCIDENCE

sellers require \$1 more per case to supply the pretax amount is that they must pay the tax of \$1 per case to the government. To wind up with the same amount as before (after paying the tax), they require the extra \$1 per case.

WHO PAYS THE TAX?

Figure 26.2 shows that after the tax is imposed, the equilibrium price of beer is \$6.50, an increase of \$.50 over its pretax level. Consequently, in this case half the tax is passed on to consumers, who pay \$.50 per case more for beer. And half the tax is swallowed by the sellers, who receive (after they pay the tax) \$.50 per case less for beer. But it is not always true that sellers pass half the tax on to consumers and absorb the rest themselves. On the contrary, in some cases, consumers may bear almost all the tax (and sellers practically none of it), whereas in other cases consumers may bear almost none of the tax (and sellers practically all of it). The result will depend on how sensitive the quantity demanded and the quantity supplied are to the price of the good.

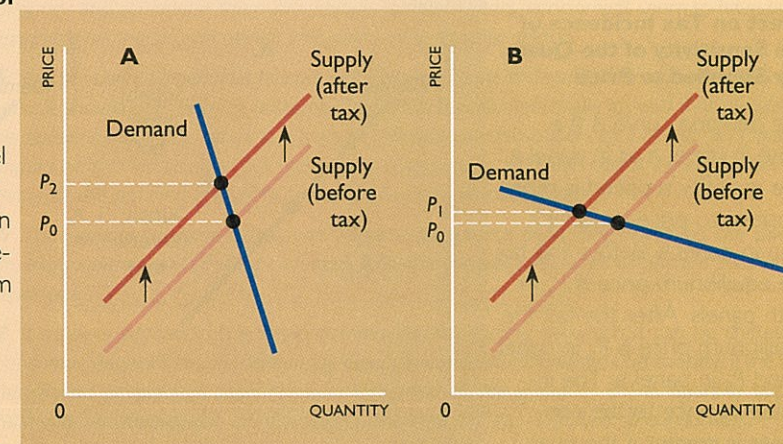
SENSITIVITY OF DEMAND TO PRICE

In particular, holding the supply curve constant, *the less sensitive the quantity demanded is to the price of the good, the bigger the portion of the tax that is shifted to consumers*. To illustrate this, consider Figure 26.3, which shows

FIGURE 26.3

Effect on Tax Incidence of the Sensitivity of the Quantity Demanded to Price

The supply curve is the same in panel A as in panel B. The quantity demanded is more sensitive to price in panel B than in panel A. Before the tax the equilibrium price is P_0 in both panels. After the tax the equilibrium price is P_2 in panel A and P_1 in panel B. The increase in price to the consumer is greater if the quantity demanded is less sensitive to price (panel A) than if it is more sensitive (panel B).



the effect of a \$1-per-case tax on beer in two markets, one (panel B) where the quantity demanded is much more sensitive to price than in the other (panel A). As is evident, the price increase to consumers resulting from the tax is much greater in the latter market (panel A) than in the former (panel B). And the amount of the tax that is absorbed by producers is much less in the latter market (panel A) than in the former (panel B).

■ SENSITIVITY OF SUPPLY TO PRICE

It can also be shown that, holding the demand curve constant, *the less sensitive the quantity supplied is to the price of the good, the bigger the portion of the tax that is absorbed by producers.* To illustrate this, consider Figure 26.4, which shows the effect of a \$1-per-case tax on beer in two markets, one (panel A) where the quantity supplied is much more sensitive to price than in the other (panel B). As is evident, the price increase to consumers resulting from the tax is much greater in the former market (panel A) than in the latter (panel B). And the amount of the tax that is absorbed by producers is much less in the former market (panel A) than in the latter market (panel B).

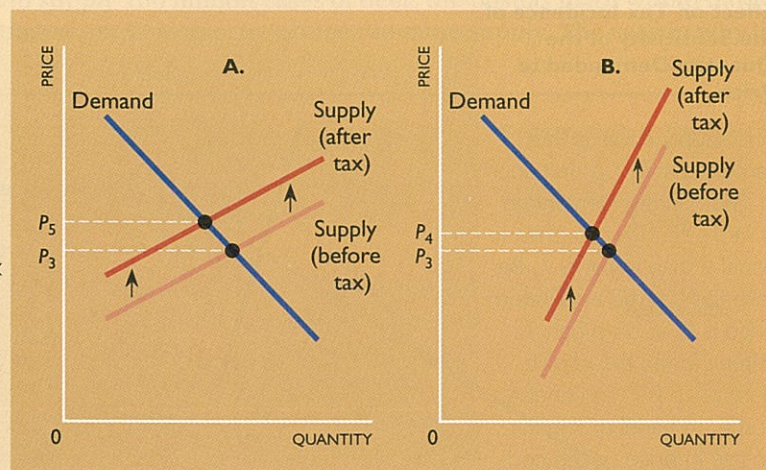
■ EFFECT OF TAX ON QUANTITY

Finally, note that the tax reduces the equilibrium quantity consumed of the taxed good—beer in this instance. One reason why governments

FIGURE 26.4

Effect on Tax Incidence of the Sensitivity of the Quantity Supplied to Price

The demand curve is the same in panel A as in panel B. The quantity supplied is more sensitive to price in panel A than in panel B. Before the tax the equilibrium price is P_3 in both panels. After the tax the equilibrium price is P_5 in panel A and P_4 in panel B. The increase in price to the consumer is greater if the quantity supplied is more sensitive to price (panel A) than if it is less sensitive (panel B).



impose taxes on goods like cigarettes and liquor is that they are regarded (in some circles at least) as socially undesirable. Clearly, the more sensitive the quantity demanded and quantity supplied are to price, the larger the reduction in the equilibrium quantity. Thus, if the government imposes a tax of this sort to reduce the quantity consumed of the good, the effect will be greater if both the quantity demanded and the quantity supplied are relatively sensitive to price.

REVIEW AND PRACTICE

■ SUMMARY

1 To a considerable extent, the government's role in the economy has developed in response to the limitations of the price system. There is considerable agreement that the government should redistribute income in favor of the poor, provide public goods, and offset the effects of external economies and diseconomies. Also, it is generally felt that the government should establish a proper legal, social, and competitive framework for the price system.

2 Beyond this, however, there are wide differences of opinion on the proper role of government in economic affairs. Conservatives tend to be suspicious of "big government," whereas liberals are inclined to believe that the government should do more.

3 Basically, the amount that the government spends on various activities and services must be decided through the nation's political processes. Voting by ballots must be substituted for voting by dollars.

4 Just as the price system suffers from limitations, so does the government. Special interest groups sometimes gain at the expense of society as a whole. Government agencies sometimes have little incentive to increase efficiency. Citizens find it difficult to be selective in their choice of goods and services in the public sector. In recent years, economists seem to have put more emphasis on these (and other) limitations of the public sector.

5 It is generally agreed that people who receive more in benefits from a certain government service should pay more in taxes to support it. It is also generally agreed that people should be taxed so that the result is a socially desirable redistribution of income, and that equals should be treated equally. But these general principles, although useful, cannot throw light on many of the detailed questions a real-life tax code must answer.

6 The personal income tax is a very important source of federal revenues, the sales tax is an important source of state revenues, and the property tax is an important source of local revenues.

7 If a tax is imposed on a single commodity, the extent to which it can be shifted to the consumer depends on the demand and supply curves for the taxed commodity. If the quantity demanded is relatively insensitive to the price of the good or if the quantity supplied is relatively sensitive to the price, a large portion of the tax is shifted to consumers.

■ PROBLEMS AND QUESTIONS

1 "I believe the government should do only that which private citizens cannot do for themselves or which they cannot do so well for themselves." Interpret and comment. Indicate how

one might determine in practice what the legitimate functions of government are, according to this proposition.

- 2 "The ideal public policy, from the viewpoint of the state, is one with identifiable beneficiaries, each of whom is helped appreciably, at the cost of many unidentifiable persons, none of whom is hurt much." Interpret and comment. Indicate how this proposition might be used to help predict government behavior.
- 3 Explain why national defense is a public good but a rifle is not a public good.
- 4 "I cannot get the amount of national defense I want and you, a different amount." Explain. Is this true of all public goods?
- 5 Suppose that the quantity supplied of gin at each of the following prices is as given below:

PRICE OF GIN (DOLLARS PER QUART)	QUANTITY SUPPLIED (MILLIONS OF QUARTS)
4	5
5	6
6	7
7	8
8	9
9	10

Plot the supply curve on graph paper. Suppose that the government imposes a tax of \$2 per quart on gin, and that the tax is collected from the sellers. Plot the posttax supply curve on graph paper.

- 6 Under the circumstances described in question 5, suppose that the quantity of gin demanded is 7 million quarts, regardless of the price (so long as it is between \$4 and \$9 per quart). What will be the equilibrium price of gin before the tax, and after it? How much of the tax is passed on to the consumer?
- 7 Under the circumstances described in question 5, suppose that the demand curve for gin is a horizontal line at \$6 per quart. If this is the case, what will be the equilibrium price of gin before the tax, and after it? How much of the tax is passed on to the consumer?

KEY TERMS

- rules of the game
- income redistribution
- public good
- externalities
- benefit principle
- ability-to-pay principle
- tax incidence

VIEWPOINT FOR ANALYSIS

According to *Business Week*, March 22, 1993, "Raising cigarette taxes by \$2 a pack would generate some \$30 billion a year in federal revenue—even after allowing for a fall-off in consumption ... While \$2 a pack may sound high, per-pack taxes total \$3.68 in Denmark, \$2.55 in Britain, and \$2.11 in Germany. The knowledge of smoking's dangers has reduced consumption in the U.S., but every year the tobacco industry wins new customers—and the

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health industry some potential candidates for expensive and often fruitless care. Raising the financial disincentive could make Americans healthier ..."

- (a) Under what circumstances would a \$2 increase in the cigarette tax raise the price per pack by \$2? Under what circumstances would it have no effect on the price?
- (b) If the supply curve for cigarettes is horizontal and if the arc price elasticity of demand for cigarettes is 0.3 (which is a reasonable estimate, according to existing studies), what would be the effect on cigarette consumption of a tax that doubled the price of a pack of cigarettes?
- (c) Should the government try to discourage smoking in this way? Who would be the gainers? Who would be the losers? What position would you take on this issue?

**Business Week*, March 22, 1993, p. 102.