ECONOMICS of the PUBLIC SECTOR

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10 The Analysis of Expenditure Policy

FOCUS QUESTIONS

1 What are the major steps in the analysis of a public expenditure program?

2 What are some of the reasons why the actual effects of a government program are different from those that are intended, or those that are apparent at first sight? What is meant by the incidence of a program?

3 Why are some programs said to be inefficient?

4 How in practice are the distributional impacts of a program assessed?

5 What is meant by the trade-off between equity and efficiency? Is there always such a trade-off?

6 Why might an understanding of the political process be relevant for an understanding of the design of government programs?

At least since the beginning of the 1990s, there have been calls for change in major segments of the American economy—its health care and education systems; for major reforms in welfare and social security; for cutbacks in some programs, such as defense, and expansions in others, such as those aimed at developing new technologies. This chapter provides a framework

for thinking systematically about such policies: questions that need to be asked, and methods that can be employed to help answer them.

Policy makers need such a framework in order to address increasingly complex issues. Indeed, the complexity of most government programs is so great that Congress delegates responsibility for working out most of the details (within guidelines Congress has set up) to the executive branch. In a process called rule making, agencies of the executive branch (like the Environmental Protection Agency or the Department of Transportation) spell out these details, and the public is given time to comment. The Office of Management and Budget (OMB) within the Office of the President provides guidance to the agencies in how to go about this process. Currently, OMB guidance closely reflects the framework discussed in this chapter.

This framework for analyzing public expenditures provides guidelines for applying the efficiency and equity criteria presented in Chapters 3 and 5. It is not a simple formula that can be applied blindly to all problems, but rather a list of considerations that should be raised. Some may be more relevant to certain government programs than to others. The kinds of questions we are ultimately interested in addressing are:

- Why is there a government program in the first place?
- Why does the government program take on the particular form that it takes?
- How does the government program affect the private sector?
- Who gains and who loses as a result of the government program? Are the gains greater than the losses?
- Are there alternative programs that are (Pareto) superior to current government programs (that is, in which some individuals can be made better off without adversely affecting anyone else)? Are there alternative programs that have different distributional consequences but that at the same time achieve the program's primary objectives? What are the impediments to the introduction of these alternative programs?

We begin by breaking down the analysis of public expenditures into ten steps: (1) the need for a program; (2) market failures addressed by the program; (3) alternatives to the program; (4) particular design features of the program; (5) private sector responses; (6) efficiency consequences; (7) distributional consequences; (8) equity-efficiency trade-offs; (9) public policy objectives; and (10) the political process.

NEED FOR PROGRAM

It is often useful to begin the analysis of a public program by investigating the program's history and the circumstances under which it arose. Who were the individuals or groups who pressed for its passage, and what were the perceived needs that it supposedly addressed?

For instance, when the bill establishing the social security program was passed in 1935, the United States was in the midst of the Great Depression. Up to that time, few employers provided adequate pensions for their employees, and the private market for annuities (insurance policies that provide individuals with a given annual income from retirement until death, regardless of how long they live) was undeveloped; many individuals had failed to save adequately for their retirement, and many who had saved had found their savings wiped out by the stock market crash in 1929. The failure to have adequate savings was not as irrational and improvident as it appears to us today; in those days, many individuals continued to work until they died. They needed life insurance to look after their family after their demise, but not pensions for themselves. But in the Great Depression, many of these individuals lost their jobs and had no unemployment insurance. It was widely felt that society had to make some provision for them and that it was preferable to do so on a systematic basis rather than just to solve the immediate problems of the time.

MARKET FAILURES

The second step in the analysis of public programs is to attempt to relate the need, the source of demand, to one or more of the market failures discussed in Chapter 4: imperfect competition, public goods, externalities, incomplete markets, and imperfect information. In addition, we saw in Chapter 4 that even if the economy is Pareto efficient, there are two further arguments for government intervention: first, that the distribution of income emerging from the market economy may not be socially equitable; and second, that an individual's own perceptions of her welfare may be an inappropriate or inadequate criterion for making welfare judgments. There are merit goods, which the government should encourage, and merit bads, which the government should discourage or prohibit.

In some cases, the nature of the market failure is obvious: national defense is a pure public good, and as we argued earlier, in the absence of public provision, such goods will always be in undersupply. In other cases the answers are not so obvious, and economists may not agree about the nature of the market failure. Some economists believe that education is a public good, for example. But most economists argue that it is essentially a private good (in the technical sense defined in Chapter 6) and that to find an explanation for its public provision one must look elsewhere: for instance, at capital market imperfections; at the distributive consequences of public provision; or at education as a merit good, essential for the functioning of a democratic society.

The fact that there is a demand for the public provision of some good or service does not in itself imply that there has been a market failure. Some demands for public provision arise from an inadequate understanding of the market and of the government's capabilities for making things better. Identifying whether there is or is not a market failure is an essential step in identifying the appropriate scope for government action.

HIGHER EDUCATION IN THE UNITED STATES

In the United States, higher education illustrates several of the alternative forms of government involvement. It is publicly produced: every state has its own system of universities, colleges, and junior colleges. Though direct aid to private universities is limited in the United States, in other countries (such as Canada) it is common, and is granted on the basis of the number of students enrolled. In the United States the federal government provides considerable aid to research universities through a variety of programs of support for basic and applied research. Most federal support to higher education, however, takes the form of support to the consumers, the students. Though there have been no general programs of support, there have been three major selective programs. First, since World War II a large number of veterans have attended colleges and universities at government expense. Second, federally guaranteed loans to lower- and middle-income individuals, often at subsidized rates, have made higher education more financially accessible. In 1993, these loan programs were greatly expanded; the government now directly provides loans, and it has introduced new, more flexible, loan programs (where repayment rates depend on income). Third, the government provides grants to low-income individuals (called Pell Grants) to enable them to go to college.

In 1997 a new form of federal support was introduced, a tuition tax credit for the first two years of college for lower- and middle-income families.

ALTERNATIVE FORMS OF GOVERNMENT INTERVENTION

Once a market failure has been identified, a variety of government actions might address the problem. The three major categories of government action are public production; private production with taxes and subsidies aimed at encouraging or discouraging certain activities; and private production with government regulation aimed at ensuring that firms act in the desired way.

If the government decides to bear responsibility for production, it must decide on how the output is to be allocated. It can charge for the good at market prices; it can charge for the good at something approximating the cost of production, as it typically does for electricity; it can charge for the good, but the charges can be much less than the cost of production, as it typically does for higher education; it can provide the good free of charge and uniformly, as it does for elementary school and secondary school education; or it can allocate the good or service in some way corresponding to a perceived need or benefit. In countries like Britain, where medicine is provided for free, it is obviously not provided equally to all individuals. Needs differ. The decision as to who gets how much of the available supply of medical services is left to doctors (operating within guidelines set up by the government, in consultation with them).

Similarly, if the good is to be privately produced, the government must decide whether to: (a) contract directly for the commodity but retain responsibility for distributing it; (b) provide a subsidy to producers, with the hope that some of the benefits will be passed on to consumers through lower prices; or (c) provide a subsidy to consumers. And if some form of subsidy is desired, government must decide whether it should be provided through the tax system or through a direct grant. If a subsidy is granted, the terms have to be decided upon—for example, how restrictive eligibility standards should be. All of these possible forms of government action are observed.

The importance of identifying alternative programs is increasingly recognized. Frequently new programs can be devised that attain the objectives of older programs at less cost and more effectively. "Social innovation" is no less important than technological innovation. Today, there is increasing emphasis on the use of markets and marketlike mechanisms.

ALTERNATIVE FORMS OF GOVERNMENT INTERVENTION

1 Public Production
- Free distribution
- Distribution at below cost of production
- Distribution at cost

2 Private Production
- Government subsidies to (taxes on) producers
- Government subsidies to (taxes on) consumers
- Direct government distribution
- Government regulation

THE IMPORTANCE OF PARTICULAR DESIGN FEATURES

The detailed provisions of a program, for instance the precise statements concerning the eligibility standards, are often crucial in determining the efficiency and equity consequences of the program. Fairness and efficiency require making a number of distinctions that, though clear in principle, are difficult to apply in practice. The distinction between those who are hungry and those who are not is an important one, but devising a program to provide food for the hungry requires some easy way of identifying who the hungry are. Too narrow a definition will result in many of those who are needy not receiving aid. Too broad a set of eligibility standards will result in many individuals who are not needy receiving aid, much to the objections of other taxpayers who are having to contribute to these individuals' support. Thus, because of the impossibility of identifying perfectly those who are truly deserving of aid, there is a trade-off, when designing regulations, between two types of errors: denying aid to those who are deserving and granting aid to those who are not deserving (see Figure 10.1). Different individuals may judge the importance of these two kinds of errors differently.

The design of eligibility standards has further effects, as individuals may alter their behavior to gain eligibility or to receive larger benefits. There has been concern, for instance, that welfare programs that provide funds only to single mothers discourage marriage. Food stamps, which provide assistance to people with low available income, offer another example of altered

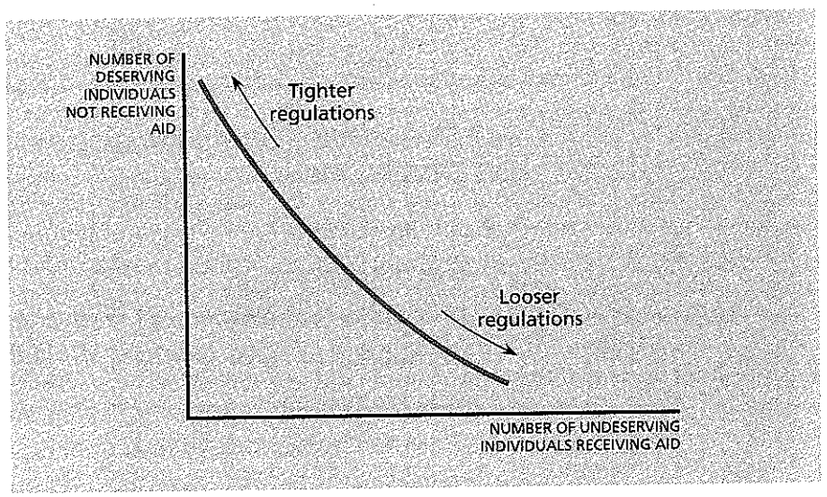

FIGURE 10.1 **The Trade-off in Designing Regulations** When eligibility standards are loose, many individuals who are undeserving will qualify for aid. When standards are tight, many deserving individuals will not qualify for aid.

incentives. To calculate the amount of income available for spending on food, expenditures on housing are subtracted from the individual's take-home pay. But this may alter behavior: the individual who spends more on housing receives more in food stamps. Food stamps, a program intended to encourage better nutrition among the poor, may—because of the particular way it has been designed—encourage more expenditure on housing.

PRIVATE SECTOR RESPONSES TO GOVERNMENT PROGRAMS

One of the central features of a mixed market economy like that of the United States is that the government has only a limited degree of control over it. The private sector may, for instance, react to any government program in such a way as to undo many of its alleged benefits. For example, when the government increases social security benefits, the welfare of the aged may not increase in the long run by the full corresponding amount; individuals may be induced to reduce their own savings for retirement, and children may be induced to provide less support for their aging parents. Public support may thus **"crowd out"** private support, eroding the impact of the program.

In considering the consequences of a government program, one needs to look at the long-run consequences, after all producers and consumers have adjusted their behavior, as well as the immediate impact. One of the major impacts of rent control, for instance, is that the supply of new housing dries up, the effects of which are felt only gradually.

Calculating the full private-sector responses is often one of the most difficult and contentious aspects of analyzing a government program. To what extent, for instance, will a government subsidy to builders of lower-income housing result in higher profits, thus benefiting the building industry? To what extent will competition in the industry bid these profits away, lowering the price and increasing the supply, thus benefiting the intended beneficiaries? The answers depend on views concerning the housing and construction markets. How competitive is the building industry? If it is competitive, what is the elasticity of supply? What is the elasticity of demand?[1]

As we have already noted, the effects of a government program may hinge critically on seemingly innocuous design features. Economists look for *marginal incentive* effects. Two programs giving the same average subsidy can have quite different marginal incentive effects. A food stamp program with a $200 cap on benefits may have no *marginal* effect for those individuals who spend more than $200 on food. An analysis of the magnitude of the demand and supply responses from the private sector—and thus of the effects on price and quantities—must pay careful attention to these marginal incentives.

[1] Elasticity of supply is defined as the percentage change in quantity supplied as a result of a 1 percent change in price; elasticity of demand is defined as the percentage change in quantity demanded as a result of a 1 percent change in price.

EFFICIENCY CONSEQUENCES

The next steps in expenditure policy analysis entail identifying the efficiency and distributional consequences of each alternative program and assessing the extent to which alternative programs can meet the objectives of public policy.

Government programs may result in inefficiencies both in the production of a good or service and in levels of consumption. In Chapter 8 we suggested that the government's decision to produce a good or service itself, to purchase the good or service from private firms but distribute it itself, or to have private firms produce it and market it subject to government regulation may significantly affect the costs associated with producing and delivering the given good or service.

We also suggested that when consumers had an element of choice, the competition among providers would likely increase the efficiency with which the goods or services were provided as well as make what was produced more responsive to the needs and desires of consumers. These arguments are less persuasive if consumers have limited information concerning the product they are purchasing (such as medical care), or if consumer concern about costs is reduced because the government pays all, or a substantial part of the costs (again, as in the case of medical care).

INCOME AND SUBSTITUTION EFFECTS AND INDUCED INEFFICIENCY

For many programs, it is useful to distinguish between **substitution effects** and **income effects.** Whenever a government program lowers the price of some commodity, there is a substitution effect: the individual substitutes the cheaper good for other goods. For example, with tuition subsidies for higher education individuals substitute education for other goods they might have spent their money on. On the other hand, grants to individuals that make them better off but do not alter the relative prices of different commodities result in an income effect: an individual changes his expenditure pattern because he is better off. In many cases, there is both an income effect and a substitution effect, and both alter the individual's behavior. Normally, however, it is only the substitution effect that we associate with *inefficiency.*

To see this, assume that the government gives an individual food stamps to buy $10 worth of groceries every week. Prior to this, the individual's budget constraint was the lower one in Figure 10.2. By giving up $1 of groceries the individual could acquire $1 more of other goods. The food stamp program shifts his budget constraint to the right. If the individual now wants to consume more than $10 worth of groceries, he still must give up $1 of other goods for each extra dollar of groceries consumed; there is no substitution effect. There is, however, an income effect—the individual now has $10 extra to spend. The effect on food consumption is the same as giving the individual an equivalent amount of income (except in the case where the individual would prefer to consume less than $10 worth of food each week). The food stamp program has altered his behavior; he consumes more food (B) than he previously did (A). But notice that he does not increase his food consumption by the full $10; he spreads this extra income between food and all other goods, just as he would have with $10 more of income. Because there is no substitution effect, there is no inefficiency associated with this food stamp program.

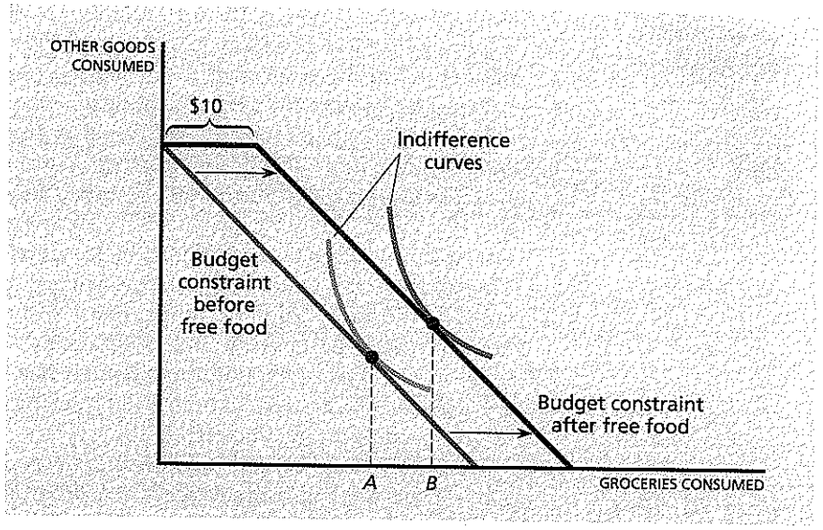

FIGURE 10.2 **Income Effect** Giving free food has an income effect but no substitution effect: its effects are identical to giving an individual extra income.

To see the substitution effect, assume, in contrast, that the government has agreed to pay for 30 percent of food purchases. This lowers the cost of food. The new budget constraint is shown in Figure 10.3. Now there is a sub-

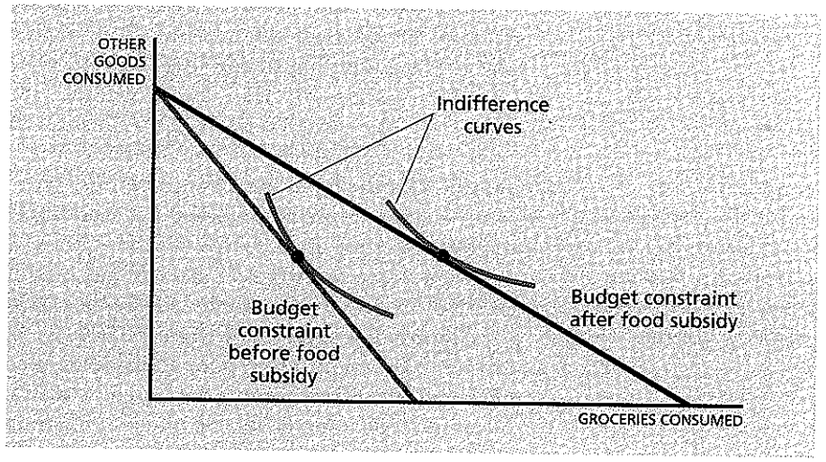

FIGURE 10.3 **Substitution Effect** When government pays a part of the costs of food, there is a substitution effect. The slope of the budget constraint changes. In this figure, the government pays a fixed fraction of the cost of food, regardless of the amount the individual consumes.

stitution effect. Food is cheaper relative to all other goods, so the budget constraint rotates as shown. Note that in Figure 10.2, by contrast, the new budget constraint associated with the food stamps is parallel with the original budget constraint. (There is also an income effect in Figure 10.3, because with cheaper food the individual not only consumes more food, he can consume more of all other goods.)

It is important to distinguish between income and substitution effects. In some cases, the government may wish to encourage or discourage a particular economic activity; in that case, it may want a large substitution effect. Thus, if there is a belief that poor individuals do not attach sufficient importance to housing, and the government wishes to improve the quality of housing they purchase, then a program in which the government pays a fraction of housing expenditures (which has, as a result, a substitution effect) will be more effective than a flat housing grant, which (unless it is very large) has only an income effect.

On the other hand, if the government is primarily concerned with how well off different individuals are, then programs that do not alter marginal incentives are preferable; such programs do not cause the inefficiencies associated with the substitution effect.

Returning to the case of food stamps, we can see how a change in the design of the program avoids the inefficiency generated by the substitution effect. When the program was established in 1964, participants purchased food stamps at a discount from their face value, so the government paid a fraction of the costs of stamps. Thus, food stamps worth $100 might cost a poor person $70; she might be allowed to buy, say, up to $2000 of food stamps. She might, in fact, purchase only $1000 worth of food stamps—for a total subsidy of $300. Today, the government simply gives a low-income individual a fixed amount of food stamps, and so long as the amount given is equal to or less than the amount the individual would spend on food anyway, this is equivalent to an income grant.

As we have seen, this version of food subsidies has only an income effect, while the earlier version has a substitution effect as well. The substitution effect introduces an inefficiency: the true cost of groceries—the amount of other goods that society must give up to obtain an extra unit of food—remains unchanged. For each additional dollar of food consumed, society must give up $1 worth of other goods. But under the original version of the food stamp program, individuals only had to pay 30 cents for a dollar's worth of groceries. Such a discrepancy gives rise to inefficiency.

Figure 10.4 shows how the new form of the program can cost the government less—and leave poor individuals receiving the subsidy just as well off as before. *BB* represents the budget constraint before any food subsidies. The line *BKB'* represents the budget constraint under the original form of the food stamp program, where the government pays for a fixed fraction of the costs of groceries, up to some limit. After that limit is reached (represented by the point *K*) individuals have to pay the full price of groceries. The individual chooses the point *E*, where her indifference curve is tangent to the budget constraint. The magnitude of the subsidy is the difference between what the individual has to pay and what society has to forgo; it corresponds to the vertical distance between the before-subsidy budget constraint and the after-subsidy budget constraint at the equilibrium level of consumption of groceries, the distance *AE*.

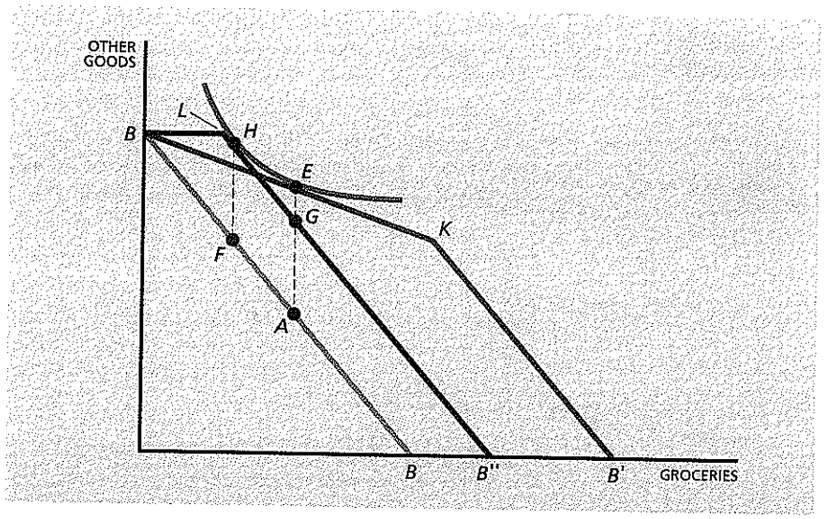

FIGURE 10.4 **Inefficiency Associated with Old-Style Food Stamp Program** Under the original form of food stamps, the government paid a fixed fraction of the costs of groceries, up to some limit, generating the budget constraint *BKB'*. The new form (*BLB''*), where the government pays for a fixed amount of food, can make individuals just as well off, but cost less. The "savings" is represented by the distance *EG*.

Figure 10.4 also includes a budget constraint for the food stamps given in the form of a fixed amount to be spent on food. How do we know that the individual is just as well off? Because the income grant was set so that the budget constraint it produced would be tangent to the indifference curve through *E*. By definition of indifference curves, then, the individual is just as satisfied at *H* as at *E*. But the income grant costs the government less. Again, the cost of the program is represented by the vertical distance between the before-subsidy and after-subsidy budget constraints. The size of the grant, *HF*, is smaller than the size of the 30 percent subsidy, *AE*.[2] The

[2] To see this, note that the budget constraint segment *LB''* is parallel to the budget constraint *BB*—the individual has to pay the full marginal cost of food, and so the trade-off between food and other goods is unchanged. Thus, $AG = FH$ (the vertical distance between two parallel lines is everywhere the same). The inefficiency associated with the 30 percent subsidy is thus measured by *EG*; the government must spend that amount extra to leave the individual just as well off as he would have been with an income grant. *EG* is the deadweight loss associated with the inefficient subsidy.

reason for this is simple enough: When individuals have to pay the full price of food at the margin (that is, when they have to pay $1 for $1 more worth of groceries), they value the increased consumption of groceries by precisely what they have to forgo in other consumption goods. But when individuals are given a 30 percent subsidy, they then purchase groceries up to the point where they value $1 worth of groceries at 70 cents, which is the cost to them of the $1 worth of groceries.

But note that under the new form of food stamps, individuals consume less food than under the old form. If the purpose of the food stamp program is to encourage food consumption—because, for instance, government believes that individuals, in maximizing their own utility, will not consume enough food—then the old form, where the government in effect lowers the price of food to the poor, is more effective.

DISTRIBUTIONAL CONSEQUENCES

It is not always easy to ascertain who really benefits from a given government program. Consider, for instance, the Medicare program, under which government finances most medical care for the aged. The aged clearly benefit greatly from the program; but to some extent, the federal aid substitutes for money that families of the elderly would have contributed (public expenditures thus crowd out private expenditures), and to that extent, the true beneficiaries of the program are not the elderly but their children. With this sort of analysis, economists seek to identify a property they call the **incidence** of a government expenditure program or tax, that is, they seek to answer the question of who really benefits from, is hurt by, or bears the burden of the program or tax.

Government programs often induce a variety of responses from the private sector which result in changes in prices. Thus, a program's effects can extend well beyond the people directly affected, and often the beneficiaries are different from those that were intended. There has been considerable concern that, at least in the short run, federal subsidies for private housing for the poor simply increase the price of housing, making the true beneficiaries the slum landlords, not the poor.

The effect of a government subsidy is illustrated in Figure 10.5, which shows the demand and supply curves for housing. In the short run (panel A), the supply of housing is assumed to be very inelastic because it takes some time for new housing to be constructed. Assume the government has passed a general subsidy for housing, the effect of which is to increase the demand for housing (the demand curve shifts up). Note that in the figure, almost the entire subsidy is reflected in the increased price of housing; the actual level of housing services provided increases very little. In the long run, of course, the supply response is likely to be larger; hence in Figure 10.5B the long-run supply curve is fairly flat, showing that a small percentage increase in the price, given enough time, elicits a fairly large increase in the supply of housing. In the short run, the beneficiaries of housing subsidies are the current owners of houses; renters find that virtually their entire

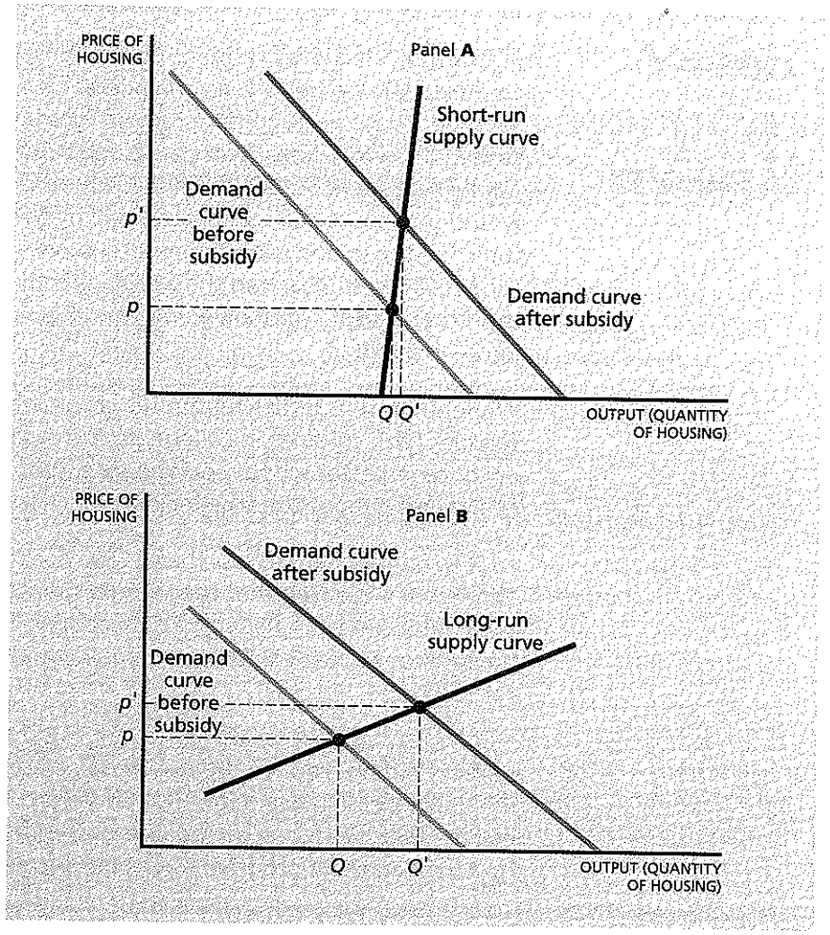

FIGURE 10.5 **Short-Run and Long-Run Incidence of Expenditure Program** (A) In the short run, a subsidy may increase price more than quantity. Thus landlords may benefit from a housing subsidy given to help the poor acquire better housing. (B) In the long run, the output response will be larger and the price response smaller.

subsidy is reflected in higher rents (the shift from p to p'). In the long run, however, renters are better off, as the increase in the quantity of housing supplied (from Q to Q') serves to limit the price increase.

Mass transit subsidies provide another example: Who benefits from a new subway system? At first glance, the answer seems obvious: subway riders. But this may be incorrect. Those who own houses or apartments near the subway will find that their houses and apartments are more sought after; the increased demand for these residences will be reflected in the rents that the

owners can charge (and in the market value of the houses and apartments). The commuter who owns no real estate finds that he is better off because of the better subway service, but worse off because of the higher rents, and the two effects are likely to cancel out. The true beneficiaries are the property owners near the subway lines.

The subway example illustrates a general principle: The benefits of government programs are often **capitalized** in the value of scarce assets associated with obtaining those benefits (land near the subway stops). In that case, the true beneficiaries are those who own the asset at the time the program was announced (or passed, or when it came to be believed that the program would pass). By the same token, the costs of a program are often capitalized, so that a tax on land is reflected in the value of the land; the true costs are borne by those who own the asset at the time the tax was announced (or passed, or when it came to be believed that the tax would be passed). When those who benefit from a government program are different

INCIDENCE OF EDUCATION TAX CREDITS

In the 1996 election, President Clinton proposed a $1500 tuition tax credit for the first two years of college for students who obtained a B average. The B average requirement was intended to encourage students to work hard. With the tuition tax credit, a middle-income family that spent $2000 in college tuition on their freshman daughter would be able to reduce their tax bill by $1500. It was as if they paid their full taxes, and then the federal government sent them a check for $1500. By subtracting the $1500 directly from the tax payment, this "round trip"—money going to the government and then coming back—is avoided.

While the intent of the tuition tax credit was to help middle-class families with children in college, to increase enrollment, and to encourage better school performance, there was considerable controversy about the true incidence.

- Many states charged less than $1500 for community colleges. There was a concern that they would (perhaps gradually) raise their tuition—after all, with $1500 coming from the federal government in tax credits, individuals could afford to pay more for tuition.

- Colleges could offset the increased tuition costs for those whose parents did not receive the tuition tax credit by giving them scholarships; but they might not, in which case some kids would find college less, not more, affordable. Since most A and B students already go to college, the program might not increase enrollment much among them, but it might reduce enrollment among C students. Alternatively, teachers might worry that by giving a low grade—even a C—they might shut off a kid's chance of staying in college, by cutting off the tuition tax credit. There may be grade inflation. But with grade inflation, better students may have less incentive to work hard.

- If states did raise their tuition, then at least some of the benefits would accrue to state governments, rather than to the taxpayers. This is the "true" incidence. Education still might be helped, if the state spent most of the increased tuition revenue on education; on the other hand, the state might reduce its educational expenditures, and give a tax cut to its taxpayers. Then the true incidence would be on the states' taxpayers in general, not just those who had children in college. If the state reduced taxes at the top, then what had appeared to be a middle-class tax break would become a tax break for upper-income individuals, as a result of shifting.

- Similarly, private schools might be induced to raise their tuitions, enabling them to pay higher faculty salaries or support more research. Again, the incidence is markedly different from that intended.

As a result of concern about some of these perverse incentive effects—as well as complications in implementation—when the tuition tax credit was enacted in 1997, the B requirement was dropped. It is too soon to tell to what extent the tuition tax credit will lead to higher tuitions.

from those that the program was intended to help, we say that the benefits have been **shifted,** or that the *actual incidence* (those on whom the benefits actually fall) is different from the intended one. Considerable research in recent years has been devoted to determining the actual incidence of government programs.

EVALUATING THE DISTRIBUTIONAL CONSEQUENCES

As we have noted, different individuals receive different benefits from a given government program. Although it is obviously not possible to identify how much *each* individual benefits, it may be important to know how different groups in society are differentially affected. Which groups we focus on may vary from program to program, and benefits may vary within a particular income group. Thus, a program of rebates for heating-oil expenditures for people whose income falls below a particular level obviously benefits the poor more than the rich, but it benefits some poor (those who consume a lot of heating oil, those who live in the Northeast) more than others (those

who live in the Sun Belt). If the variability of consumption of heating oil among the poor is very large, this rebate program may be viewed as an unfair way of helping the poor, unless those who consume a lot of heating oil are viewed as particularly deserving of assistance.

In other cases, we may attempt to identify how producers are affected differentially. This typically is the focus of analysis in the evaluation of programs aimed at aiding particular industries, such as agricultural price supports. In still other cases, such as the social security program, we may be concerned with the differential impact on the present elderly versus the impact on the young—the elderly of the future. We refer to these impacts as the program's **intertemporal distribution effects**—distribution effects over time. In still other cases, we may wish to identify the regional impact or the impact on cities versus suburbs, or urban versus rural areas.

When a program's benefits accrue disproportionately to the poor (they receive more than their contribution to the costs of the program through the tax system), we say that its distribution effect is **progressive.** If the benefits accrue disproportionately to the rich, we say that the program's distribution effect is **regressive.**

There are often controversies about who are the real beneficiaries of a program, and one's perspective on its distributive impact is determined in large part by the group one is focusing on. For instance, government support for higher education is often viewed as enabling the children of the poor to go to college, and thus is viewed to have a positive redistributive impact. But children of the middle and upper-middle classes are more likely to avail themselves of a higher education. Thus, *general* subsidies—such as reduced tuition for all students—disproportionately benefit children of middle- and upper-income families. Indeed, by some calculations they benefit more than their share of taxes—educational subsidies to higher education are thus regressive. This is in contrast to *targeted* subsidies—such as scholarships for children from low-income families. Even then, it is not clear that parents' income provides the appropriate focus of attention; the beneficiaries of education are not the parents but the children; it is they who will receive higher wages as a result of their increased level of education.[3] Those who hold to this view often favor student loan programs. Let us contrast the distributional consequences of direct state support for universities (allowing them to charge a low tuition) with the distributional consequences of a student loan program. Those who avail themselves of higher education will, on average, have a much higher income than those who do not. A loan program may thus be more progressive than the current system, where even low-wage high school dropouts are called upon to provide some support for higher education. Loan programs introduced in 1993, which allowed repayments to be related to students' incomes, increased progressivity still further, since students who wind up making higher incomes in effect pay more than those who receive low incomes. As this example makes clear, one's view of the distributional impact of a government program depends not only on what groups one focuses upon but also on the available alternatives to a given program. The relevant choice is seldom one program versus no program, but one *type* of program versus another. Thus, the present state system of aid to higher education *may* be more progressive than a totally private education system; but its distributional impact may look less favorable when contrasted with a system of loans for higher education.

[3] With middle- and upper-income parents who would have sent their children to college anyway, the true beneficiaries may be the parents, who save on the money they otherwise would have spent; but to the extent that parents use this money to increase the bequest they leave to their children, it is the children who really benefit.

DISTRIBUTIONAL CONSEQUENCES

FAIRNESS AND DISTRIBUTION

Political discussions commonly focus on the equity of various proposals, with each side claiming that its proposals are more fair. Notions of fairness, unfortunately, are not well defined; different individuals may have conflicting views of what is fair. A middle-class couple who love children but have decided for financial reasons to limit the number of children they have to two may feel that it is unfair for them to have to support a child from a family of ten children whose parents don't want to use modern birth control methods and cannot afford to send their kids to college without government assistance. A couple who have saved $40,000 to put a child through college may feel that it is unfair that they are not entitled to receive a government grant or loan, when their next-door neighbors, with the same income (who have put nothing aside for their children's education), enjoy expensive vacations every winter and are entitled to a government grant (which depends not only on family income, but on assets).

CONSEQUENCES OF PUBLIC PROGRAMS

1 Government programs may crowd out private actions; equivalently, private actions may largely offset public actions, resulting in a small net effect.

2 Government programs give rise to income and substitution effects. The substitution effect is related to the magnitude of the marginal incentives.

3 Inefficiencies in public programs are related to the magnitude of the substitution effect.

4 The incidence of a program describes who actually benefits from, or is hurt by, the program. The actual incidence is often markedly different from the intended or apparent incidence.

5 The benefits of a program may be capitalized, in which case the true beneficiaries are those who own the asset in which they are capitalized at the time the program was started (or announced).

An unmarried person and a family with both spouses working may both think it unfair that their expected returns from social security are so much lower than those of an individual whose spouse does not have a job outside the home. But an individual whose spouse does not work outside the home may feel that it is fair that he receive more, since his family has not had the benefit of a second income.

EQUITY-EFFICIENCY TRADE-OFFS

Because of the ambiguities associated with using the term "fair," economists try to avoid it in their analysis; rather, they focus on identifying the impact of programs. Economists begin their analysis of any program by looking for Pareto or near-Pareto improvements, changes in the program which make someone, or some groups, better off, without making anyone, or almost anyone, worse off. Rent control, it is argued, in the long run fails to benefit renters, as the supply of housing dries up. There are better ways of helping low-income individuals obtain housing. Welfare programs that create a sense of dependency among welfare recipients do not serve the beneficiaries well. If taxpayers invested a little more money in training and education, in the long run, beneficiaries would be better off, and the tax burden resulting from support of the welfare population might actually be reduced. There are alternative market-based ways of dealing with pollution, such as fines and tradable permits (see Chapter 9) which can achieve higher levels of pollution reduction than a system of strict regulation, at lower costs—benefiting both the environment and the economy.

Unfortunately, while there is considerable scope for such Pareto or near-Pareto improvements, in many expenditure programs trade-offs exist between the objectives of efficiency and equity (redistribution of income or benefits to the needy). It may be possible to design a more progressive expenditure program, but only at some cost. An increase in social security benefits may be desirable from the perspective of certain distributional goals, but the increased benefits may lead to earlier retirement, and the higher taxes required to finance them may decrease work incentives. Higher unemployment compensation may provide increased income to some who are among the most needy, but unemployment insurance may make some individuals feel disinclined to find another job.

Disagreements about the desirability of different programs often arise from disagreements not only about values, the relative importance of equity versus efficiency considerations, but also about the nature of the trade-offs, how much loss of efficiency would result from an attempt to change a program's structure of benefits to make its distributional impact more progressive.

Figure 10.6 shows the equity-efficiency frontier for a hypothetical program and the indifference curves for two individuals. In panel A, Scrooge is much less willing to give up efficiency for a gain in equity than is his brother, Spendthrift. E_1 represents the point on the trade-off curve that is optimal as Spendthrift sees it, while E_2 is optimal from the point of view of Scrooge. Not surprisingly, Scrooge chooses a point with higher efficiency but lower equity

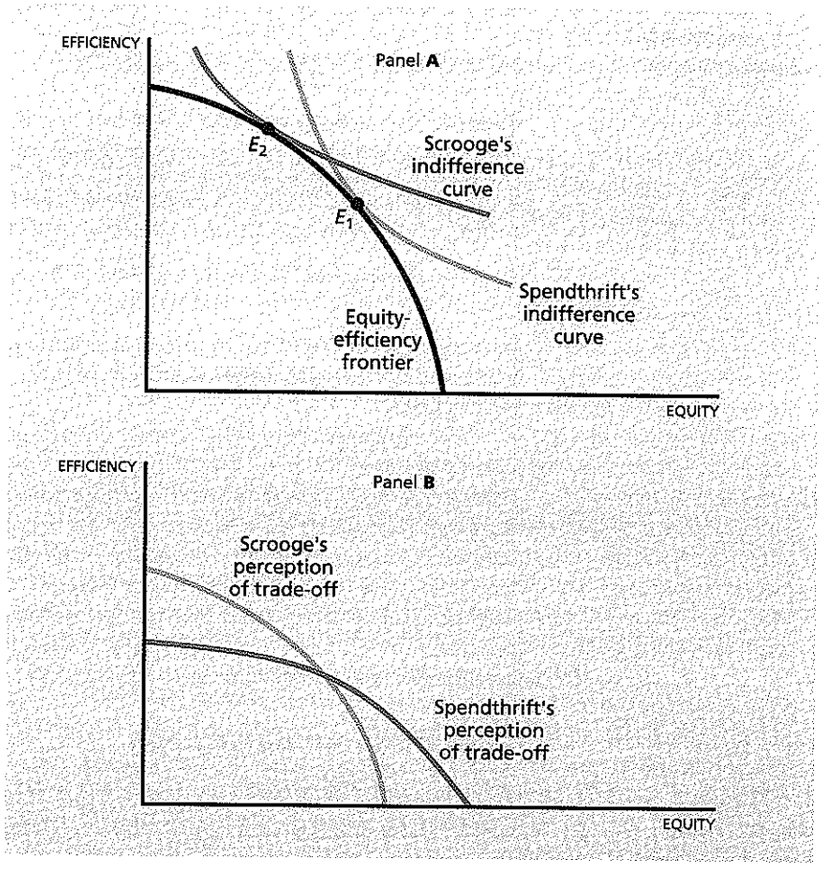

FIGURE 10.6 **Sources of Differences in Views Concerning Public Programs** (A) Scrooge and Spendthrift have the same perceptions concerning trade-offs but differ in values (indifference curves). (B) Scrooge and Spendthrift differ in their perception of the nature of the efficiency-equity trade-off.

than does Spendthrift. Thus in panel A, the source of the disagreement about policy is a difference in the values held by the two individuals.

On the other hand, panel B depicts a situation where the differences about policy arise from differences in judgments concerning the nature of the trade-off. Scrooge thinks that to get a slight increase in equity one must give up a lot of efficiency. On the other hand, Spendthrift thinks that one can get a large increase in equity with just a slight loss in efficiency.

For instance, if the main reason that unemployed individuals do not obtain jobs is that there are no jobs available, then the size of unemployment insurance may have little effect on search. But if unemployment insurance has little effect on job search, there is not much trade-off between efficiency and equity, and the frontier is consistent with Spendthrift's perceptions; if

EQUITY-EFFICIENCY TRADE-OFF

1 Sometimes programs can result in Pareto improvements, making some people better off without making anyone worse off.

2 More typically, there are trade-offs between equity and efficiency; more progressive tax systems reduce marginal incentives to work.

job search is very sensitive to unemployment compensation, there is a significant trade-off, and the equity-efficiency frontier is consistent with Scrooge's perceptions.

The equity-efficiency trade-off is encountered repeatedly in the evaluation of the detailed provisions of any government program. The decision to charge tolls on a bridge means that those who benefit from the bridge (that is, those who use it) have to bear its costs. To many people, this is desirable for equity reasons; it is unfair to make someone who does not drive over the bridge pay for it. But there is an efficiency cost in money and time: the wages of toll collectors and the time of motorists. Moreover, if some drivers are discouraged from using the bridge (when it is below capacity), there is a further efficiency loss from underutilization.

PUBLIC POLICY OBJECTIVES

The discussion so far has focused on two bases for evaluating public programs: their effect on economic efficiency and their effect on distribution. But government policy may be concerned with a broader range of objectives. For instance, government may be concerned with the extent to which individuals of different racial, ethnic, and class backgrounds are mixed together in schools. It may be concerned not just with the income of the poor but with the physical appearance of the housing in which they live. When these alternative objectives are fairly well defined, the government can still make use of a variety of instruments for attaining them; it can, for instance, still make use of private producers, by imposing regulations on them, or by setting standards that have to be met for individuals or firms to be eligible to receive subsidies. Thus the government has specified that institutions receiving federal grants must comply with certain affirmative action regulations.

In some cases, however, it may be difficult for the government to specify clearly (and in advance) all of its objectives, or to articulate them in the form of a set of regulations or standards. There is widespread belief that private producers, in the absence of well-articulated and enforced regulations, will simply pursue profit-maximizing behavior, regardless of alternative objectives that they may affirm. In such circumstances, there is an argument for the government to assume direct responsibility for the activity. But to the extent that this is true, it may be difficult for Congress or the executive branch to clearly specify the objectives it wishes the bureaucrats responsible for implementing its programs to pursue. In that case, the bureaucrats will be left with considerable discretion, and the discrepancies between how they exercise that discretion and the intent of, say, Congress may be significant.

Similarly, there is concern that whenever the government finances an activity, it will almost inevitably impose a set of regulations, some of which may have adverse effects, particularly on economic efficiency; thus many of the alleged efficiency advantages of private production may be lost. These concerns have been raised, for instance, in discussions of school voucher programs, which would provide students with funds that could be used at any school, private or public.

POLITICAL PROCESS

In a democracy, the design and adoption of any public expenditure program involves many individuals and groups, with various objectives and various beliefs about how the economy works. The program that eventually is adopted represents a compromise among their views; it probably will not conform to the views of any one individual and may seem to be inconsistent with any single set of objectives. If two chefs disagree about the appropriate liquid to add to a sauce, one arguing for lemon juice and the other for cream, the compromise solution of adding a little of both may be disastrous, with results inconsistent with any culinary objective.

The study of the political process by which a particular expenditure program was adopted may be insightful for several reasons. First, we may be able to understand why the program looks the way it does. Consider the government program to stabilize farmers' prices. There is a market failure that this program addresses: the inability of individuals to obtain insurance for many of the important risks they face, including the risks associated with the variability of prices.[4] But a closer examination of the price stabilization program suggests that if that were the only objective, it would be designed in a quite different way. What farmers care about is *income* risk—not just the variability of price, but the variability of all the factors that go into determining net income (including output and costs). In some cases, the price stabilization program may actually increase income variability. In fact, reducing risk is probably not the true objective: the real objective is to transfer resources (income) to farmers from the rest of the population. Yet if that is the objective, there are more efficient ways of transferring resources to the farmers; outright grants would be preferable to the present program. But if that objective were made explicit—if the transfers were made conspicuous—they might not get approved. Voters in urban districts might strongly oppose them, while they do not oppose the present form of inefficient subsidies, simply because they are not fully aware of the nature of the transfers.

Particular provisions of public programs are likely to have strong distributional consequences for particular groups in the population. If one group

[4] Futures markets now enable farmers to divest themselves of some of the risks associated with price variability.

can be suitably organized, it will attempt to induce the political process to adopt provisions that are to its benefit. In Chapter 9 we discussed the regulations providing for scrubbing the smoke emitted from burning coal. These regulations may have an enormous effect on the relative demand for hard (or western) coal and bituminous coal, and hence on the incomes of both miners and coal producers in different parts of the country. The shape of environmental legislation and regulation may be affected as much by these particular distributional consequences as by overall efficiency considerations.

A second reason why it may be helpful to study an expenditure program's adoption process is that in democracies, programs respond at least in part to the desires and perceptions of voters. Because programs have to be explained and "sold" to voters, there is a premium on simplicity. Also, programs often look different from the way that economists think they should be designed because voters often do not understand the true incidence of a program. For instance, most voters think that half of the cost of social security is paid for by contributions from the employer; most economists believe that the true incidence is the same as it would be if social security contributions were paid entirely by workers. In this case, the confusion over incidence has few consequences, but in many other programs, this confusion can have significant impacts, as we shall see in later chapters.

Finally, the design of programs may affect the extent to which they are subjected to political pressures or corruption. Corruption is an increasing concern in many countries. It can take a variety of forms. In modern democracies, special interests contribute to campaigns, often in an attempt to "buy" legislation that favors them; in many countries, bureaucrats use their discretionary powers to extend favors in return for bribes. In New York City, there have been extensive reports of bribes to building inspectors, more to ensure that they inspect the building in a timely way (so that there will not be costly interruptions to construction) than to give approval to a substandard building. The more discretion that is left to bureaucrats, the more potential there is for the exercise of political influence and corruption.

Accordingly, in evaluating alternative policies, one needs to take into account the political process, what the legislation might look like after it has been subjected to the political process, and what the consequences of the program will be, knowing that it will be administrated by bureaucrats, probably not unlike those administering other government programs, and subject to the same kinds of incentives.

REVIEW AND PRACTICE

SUMMARY

There are ten major elements in the analysis of public expenditure programs:

1 Identifying a need, the source of demand for the government program;

2 Identifying a market failure (if it exists) and ascertaining whether what is at issue is a concern for (the consequences of) the distribution of income or the provision of a merit good;

3 Identifying alternative programs that might address the perceived problems;

4 In ascertaining and evaluating the impacts of alternative programs, paying attention to the importance of particular design features;

5 Identifying private sector responses;

6 Identifying the efficiency consequences of alternative programs;

7 Identifying the distributional consequences of alternative programs;

8 Identifying the trade-offs between equity and efficiency considerations;

9 Identifying the extent to which alternative programs achieve public policy objectives; and

10 Identifying how the political process affects the design and implementation of public programs.

KEY CONCEPTS

Crowding out
Substitution effect
Income effect
Incidence
Capitalization
Shifting
Intertemporal distribution effects
Progressive
Regressive

QUESTIONS AND PROBLEMS

1 Explain how the following actual design features have an important effect on the consequences of government programs:

a The income ceiling for eligibility for food stamps is reduced by expenditures on housing.

b Until recently, whether an individual between sixty-five and seventy was eligible for social security benefits depended on her income calculated on a month-by-month basis.

c An ex-spouse becomes eligible for social security benefits only if the marriage lasted at least ten years.

Can you think of other instances where particular design features have seemingly unintended consequences?

2 Who may be the actual beneficiaries of the following government program or proposed programs; that is, taking into account how individuals respond to the government program, who is actually better off as a result of the program?

a Medicare

b Housing subsidies for the poor

c Education loans

Can you think of other programs whose actual beneficiaries may differ from those the program seemingly intended?

3 In Chapters 12 to 16, we will use the framework we have discussed in this chapter to analyze several different government programs. Before reading those analyses, see if you can answer the following questions for each program:

- **a** What were the original sources of demand for the program? What perceived need was it intended to address?
- **b** What are the market failures that gave rise to the program?
- **c** What are the possible forms of government intervention? Are there particular design features that have had, or currently have, an important impact on the program's effectiveness? How do private sector responses weaken, or reinforce, the intended effects of the program? What is the true incidence of the program?
- **d** What are the major efficiency consequences of the program?
- **e** Does the program entail any effective redistribution of income?
- **f** Are there important instances of trade-offs between equity and efficiency in the program's design?
- **g** What are some alternatives for meeting the program's objectives? To what extent might they do a better job—for example, by reducing distortions and increasing the equity of the programs?
- **h** How has the political process affected the nature of the present program?

4 Draw the budget constraint between housing and "other consumption" for an individual on food stamps, where the amount of food stamps the individual receives depends on his income net of housing costs. Does it make a difference whether the individual is consuming an amount of food equal to, less than, or greater than his food stamp allotment?

5 State governments effectively subsidize tuition in state universities and colleges. How might this affect the amount of education that individuals get? Is there a substitution effect? Is there a market failure that this program might be addressing? Are there alternative ways of addressing it?