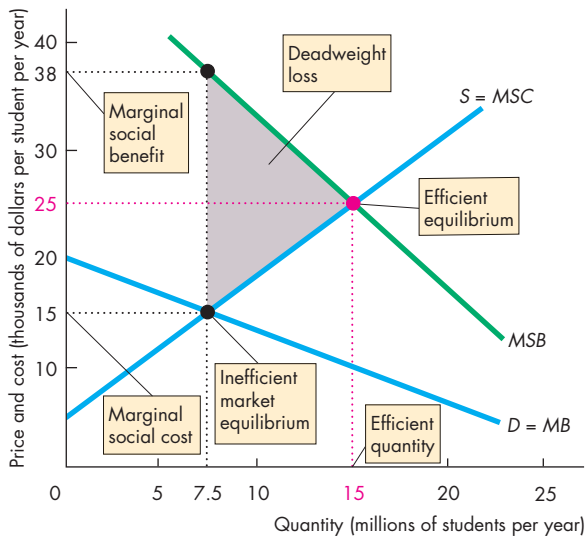


that charged full-cost tuition, there would be too few college graduates.

Figure 16.8 illustrates this private underprovision. The supply curve is the marginal social cost curve, $S = MSC$. The demand curve is the marginal private benefit curve, $D = MB$. Market equilibrium occurs at a tuition of \$15,000 per student per year and 7.5 million students per year. At this equilibrium, the marginal social benefit of \$38,000 per student exceeds the marginal social cost by \$23,000 per student. Too few students are enrolled in college. The efficient number is 15 million per year, where marginal social benefit equals marginal social cost. The gray triangle shows the deadweight loss created.

To get closer to producing the efficient quantity of a mixed good with an external benefit, we make public choices, through governments, to modify the market outcome.

FIGURE 16.8 Inefficiency with an External Benefit



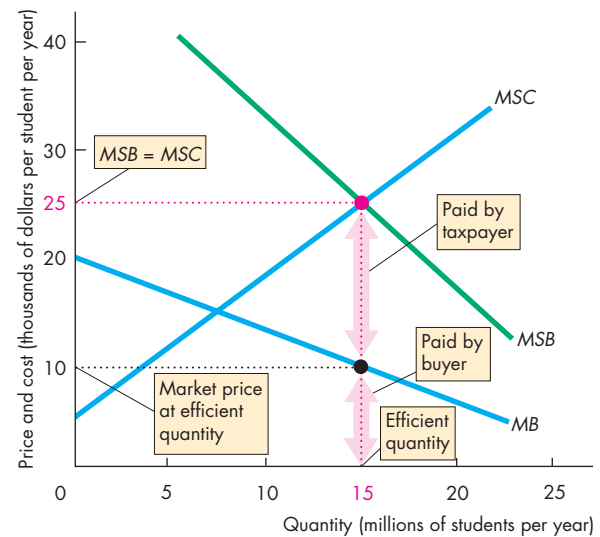
The market demand curve is the marginal private benefit curve, $D = MB$. The supply curve is the marginal social cost curve, $S = MSC$. Market equilibrium at a tuition of \$15,000 a year and 7.5 million students is inefficient because marginal social benefit exceeds marginal social cost. The efficient quantity is 15 million students. A deadweight loss arises (gray triangle) because too few students enroll in college.

Government Actions in the Market for a Mixed Good with External Benefits

To encourage more students to enroll in college—to achieve an efficient quantity of college education—students must be confronted with a lower market price and the taxpayer must somehow pay for the costs not covered by what the student pays.

Figure 16.9 illustrates an efficient outcome. With marginal social cost curve MSC and marginal social benefit curve MSB , the efficient number of college students is 15,000. The marginal private benefit curve MB , tells us that 15,000 students will enroll only if the tuition is \$10,000 per year. But the marginal social cost of 15,000 students is \$25,000 per year. To enable the marginal social cost to be paid, taxpayers must pay the balance of \$15,000 per student per year.

FIGURE 16.9 An Efficient Outcome with an External Benefit



The efficient number of college students is 15 million, where marginal social benefit equals marginal social cost. With the demand and marginal private benefit curve, $D = MB$, the price at which the efficient number will enroll is \$10,000 per year. If students pay this price, the taxpayer must somehow pay the rest, which equals the marginal external cost at the efficient quantity—\$15,000 per student per year.

Four devices that governments can use to achieve a more efficient allocation of resources in the presence of external benefits are

- Public production
- Private subsidies
- Vouchers

Public Production With **public production**, a good or service is produced by a public authority that receives its revenue from the government. The education services produced by state universities and colleges and public schools are examples of public production.

In the example in Fig. 16.9, efficient public production occurs if public colleges receive funds from government equal to \$15,000 per student per year, charge tuition of \$10,000 per student per year, and enrol 15 million students.

Private Subsidies A **subsidy** is a payment that the government makes to private producers. By making the subsidy depend on the level of output, the government can induce private decision-makers to consider external benefits when they make their choices.

In the example in Fig. 16.9, efficient private provision would occur if private colleges received a government subsidy of \$15,000 per student per year. This subsidy reduces the colleges' costs and would make their marginal cost equal to \$10,000 per student at the efficient quantity. Tuition of \$10,000 would cover this cost, and the subsidy of \$15,000 per student would cover the balance of the cost.

Vouchers A **voucher** is a token that the government provides to households, which they can use to buy specified goods or services. Food stamps are examples of vouchers. The vouchers (food stamps) can be spent only on food and are designed to improve the diet and health of extremely poor families.

School vouchers have been advocated as a means of improving the quality of education and are used in Washington D.C. A school voucher allows parents to choose the school their children will attend and to use the voucher to pay part of the cost. The school cashes the vouchers to pay its bills. A voucher could be provided to a college student in a similar way, and although technically not a voucher, a federal Pell Grant has a similar effect.

Because vouchers can be spent only on a specified item, they increase the willingness to pay for that item and so increase the demand for it.

Efficient provision of college education occurs if the government provides a voucher to each student with a value equal to the marginal external benefit at the efficient number of students. In the example in Fig. 16.9, the efficient number of students is 15 million and the voucher is valued at \$15,000 per student. Each student pays \$10,000 tuition and gives the college a \$15,000 voucher. The colleges receive \$25,000 per student, which equals their marginal cost.

Bureaucratic Inefficiency and Government Failure

You've seen three government actions that achieve an efficient provision of a mixed good with an external benefit. In each case, if the government estimates the marginal external benefit correctly and makes marginal social benefit equal to marginal social cost, the outcome is efficient.

Does the comparison that we've just made mean that public provision, subsidized private provision, and vouchers are equivalent? It does not. And the reason lies in something that you've already encountered in your study of public goods earlier in this chapter—the behavior of bureaucrats combined with rational ignorance that leads to government failure.

The Problem with Public Production Public colleges (and schools) are operated by a bureaucracy and are subject to the same problems as the provision of public goods. If bureaucrats seek to maximize their budgets, the outcome might be inefficient.

But *overprovision* of colleges (and schools) doesn't seem to be a problem. Just the opposite: People complain about *underprovision*—about inadequate public colleges and schools. The probable reason is that there is another type of bureaucratic budget maximization: budget padding and waste.

Bureaucrats often incur costs that exceed the minimum efficient cost. They might hire more assistants than the number needed to do their work efficiently; give themselves sumptuous offices; get generous expense allowances; build schools in the wrong places where land costs are too high.

Economists have studied the possibility that education bureaucrats pad their budgets by comparing the production costs of private and public colleges and schools. They have found that the costs per student of public schools are of the order of *three times* the costs of comparable private schools (see Talking With Carolyn Hoxby on pp. 414–416.)

Problems with Private Subsidies Subsidizing private producers might overcome some of the problems created by public production. A private producer has an incentive to produce at minimum cost and avoid the budget padding of a bureaucratic producer. But two problems arise with private subsidies.

First, the subsidy budget must be allocated by a bureau. A national, state, or local department of education must lobby for its own budget and allocate this budget between school subsidies and its own administration costs. To the extent that the bureaucrats succeed in maximizing their own administration budget, they siphon off resources from schools and a problem similar to that of public production arises.

Second, it is in the self-interest of subsidized producers to maximize their subsidy. These producers might even spend some of the subsidy they receive lobbying for an even bigger one.

So neither public production nor subsidized private provision are likely to achieve an efficient allocation of resources in the face of external benefits.

Are Vouchers the Solution? Vouchers have four advantages over the other two approaches:

1. Vouchers can be used with public production, private provision, or competition between the two.
2. Governments can set the value of vouchers and the total voucher budget to overcome bureaucratic overprovision and budget padding.
3. Vouchers spread the public contribution thinly across millions of consumers, so no one consumer has an interest in wasting part of the value received in lobbying for overprovision.
4. By giving the buying power to the final consumer, producers must compete for business and provide a high standard of service at the lowest attainable cost.

For these four reasons, vouchers are popular with economists. But they are controversial and opposed by most education administrators and teachers.

In *The Economics of School Choice*, a book edited by Caroline M. Hoxby, economists study the effect of school choice on student achievement and school productivity and show how vouchers can be designed to achieve their goals while avoiding their potential pitfalls. Caroline Hoxby is confident that she can design a voucher that best achieves any educational and school performance objective (see p. 416).

Economics in Action

Delivering Health Care Efficiently

Americans spend 17 percent of income—\$8,000 per person per year—on health care, which is more than double the average of other rich countries. And the cost is projected to rise as the population ages and the “baby boom” generation retires. Despite this enormous expenditure, until the passage of the 2010 Affordable Care Act, 47 million people had no health insurance and a further 25 million had too little insurance.

Of those who do have health insurance nearly 40 million are covered by the government’s Medicare and Medicaid programs. These programs are in effect an open-ended commitment of public funds to the health care of the aged (Medicare) and those too poor to buy private health care (Medicaid). In 2035, when those born in 1955 turn 80, benefits under these programs will cost an estimated \$50,000 per person per year. Benefits on these programs alone will cost more than 18 percent of the value of the nation’s total production.

You can see that health care in the United States faces two problems: *underprovision* because private choices don’t value all the external benefits; and *over expenditure* because private health-care producers decide how much to produce and then collect fees for their services from the government.

Health-Care Services

Health care is another example of a mixed good with external benefits. The external benefits from health care include avoiding infectious diseases, living and working with healthy neighbors, and for many people, just living in a society in which poor, sick people have access to affordable health care.

An additional problem arises in the case of health care: People with the biggest health problems are the elderly and the poor, who are least able to afford health care.

Because of its special features, no country just leaves the delivery of health care to the private market economy. In almost all countries, health care is provided at a zero price, or very low price, and doctors and other health-care professionals and the hospitals in which they work receive most (and in some cases all) their incomes from government.

The Obama Affordable Care Act addresses the first of these problems by requiring everyone to be insured and by creating a new Pre-Existing Condition Insurance Plan financed partly by the government.

But the act does little to address the problem of over-expenditure, and this problem is extremely serious. It is so serious that without massive change, the present open-ended health-care programs will bankrupt the United States.

Other countries contain health-care costs by limiting the budget and the number of physicians and hospital beds and by rationing services with long wait-times for treatment. This “solution” is inefficient because some people would be willing to pay more than the cost (marginal benefit exceeds marginal cost) and it is unfair (some people are better at playing the system than others and are able to jump the line).

A more effective solution to both the problem of coverage and access and the problem of over-expenditure has been suggested by Laurence Kotlikoff, an economics professor at Boston University. His proposal uses health-care vouchers to ensure universal coverage and a cap on total expenditure. His *Medicare Part C for all* is summarized in the ten-point plan in the next column.

This solution can deliver health care efficiently, distribute public funds among individuals based on their health status, and cap total expenditure.



Professor Laurence J. Kotlikoff of Boston University; author of *The Healthcare Fix* and creator of *Medicare Part C for all*.



1. Everyone is covered.
2. Every American gets a health-plan voucher.
3. Those with higher expected health-care costs receive bigger vouchers.
4. Can change health plan annually.
5. Government defines basic policy each year.
6. Basic policy covers drugs, home health care, and nursing home care.
7. Plans must cover basic policy.
8. Plans compete for participants.
9. Annual voucher budget is fixed as a percentage of the value of total production.
10. Medicare and employer-based health insurance tax breaks are eliminated.

In the United States, most health-care services are produced by private doctors and hospitals that receive their incomes from both governments and private health insurance companies. The health insurance companies in turn receive their income from employers and individual contributors.

Economics in Action (above) describes some of the features of health-care delivery in the United States and explains why it faces two serious problems, only one of which has been addressed by the Affordable Care Act of 2010.

Again, vouchers—health-care vouchers—are a crucial component of a program capable of achieving an efficient quantity and distribution of health-care services across individuals.

◆ *Reading Between the Lines* on pp. 386–387 looks at the effects of the 2010 Act and some of the problems that it brings.

REVIEW QUIZ

- 1 What is special about education and health care that makes them mixed goods with external benefits?
- 2 Why would the market economy produce too little education and health care?
- 3 How might public production, private subsidies, and vouchers achieve an efficient provision of a mixed good with external benefits?
- 4 What are the key differences among public production, private subsidies, and vouchers?
- 5 Why do economists generally favor vouchers rather than public production or subsidies to achieve an efficient outcome?

You can work these questions in Study Plan 16.3 and get instant feedback.



Reforming Health Care

Protective Net for All Residents; Q&A Legislation Details

Financial Times

March 22, 2010

What would the U.S. health-care bill do?

Offer or subsidise health-care coverage for 32m people, a tenth of the population, who are uninsured; mandate that every U.S. and legal resident receive minimal coverage.

Beginning in 2014, people who are out of work, self-employed, or working for companies that do not offer insurance could buy coverage from “health exchanges” in which private insurers would offer different kinds of plans.

About 19m people would be eligible for financial subsidies to help pay for insurance. If individuals refused to buy insurance coverage, they would be subject to a tax penalty.

How much would it cost and who is paying for it?

The non-partisan Congressional Budget Office estimates the bill would cost \$940 billion over 10 years. This is expected to be paid for through tax on the wealthy and health-related industries, including a tax on so-called “Cadillac” insurance plans that would raise \$32 billion over 10 years. The bill would also create a Medicare (the healthcare scheme for the elderly) commission that would have power to impose steep cuts in payments. Individuals making more than \$200,000 a year, or couples making more than \$250,000 a year, would pay higher taxes on Medicare and face a new 3.8 percent tax on dividends, interest, and other unearned income. The tax would take effect in January 2013. The CBO estimates the health-care bill would reduce the U.S. deficit by \$138 billion over 10 years. ...

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ESSENCE OF THE STORY

- Over the first ten years, health-care reform will cost \$940 billion.
- Coverage will expand to 32 million American who are currently uninsured.
- New taxes will pay for the plan and cut the budget deficit.
- Medicaid will expand to cover about 19 million low-income people.
- Insurance companies will not be able to deny coverage for preexisting conditions.
- Except for some low-income families, everyone will be required to buy health insurance and will face penalties if they refuse to do so.

ECONOMIC ANALYSIS

- Health care in the United States faces two problems: 1) *Underprovision* because private choices leave too many families and individuals without health insurance; 2) *Over expenditure* on public programs because the government pays for the quantity that patients demand and doctors supply.
- The health-care reform of 2010 (the Patient Protection and Affordable Care Act of 2010) addresses the first problem. It expands the scope of government provision of health care by covering more families and individuals and by improving the health-care insurance of those already covered. (The news article describes some of the details of the Act.)
- The 2010 Act notes the problem of cost containment but does little to address the main source of over expenditure: Medicare and Medicaid.
- Medicare and Medicaid remain and Medicaid will be expanded to cover more people.
- Figure 1 shows how Medicare and Medicaid overprovide services to those covered by the programs. The quantity is the quantity demanded by patients and supplied by doctors at a zero (or almost zero) price.
- Because the price is zero, marginal benefit, *MB*, is also zero.
- Doctors and hospitals negotiate fees with the government that equal marginal cost, which also equals marginal social cost, *MSC*.
- Marginal social cost, shown by the *MSC* curve, exceeds the (zero) marginal benefit. In this example, *MSC* is \$25 at the quantity provided.
- Medicare and Medicaid services would be provided efficiently if marginal social cost, *MSC* equalled marginal social benefit, *MSB*.
- With overprovision, a deadweight loss arises shown by the gray triangle.
- Expenditure on Medicare and Medicaid equals the fee per unit of service multiplied by the quantity provided, and Fig. 2 illustrates this expenditure.
- The white rectangle shows what expenditure would be on the efficient quantity. The purple area shows the over expenditure. Total expenditure is the sum of these areas and equals $\$25 \times 30$ million.
- As the population gets older and as treatment techniques become more sophisticated and more conditions can be treated, the *MB* curve shifts rightward.

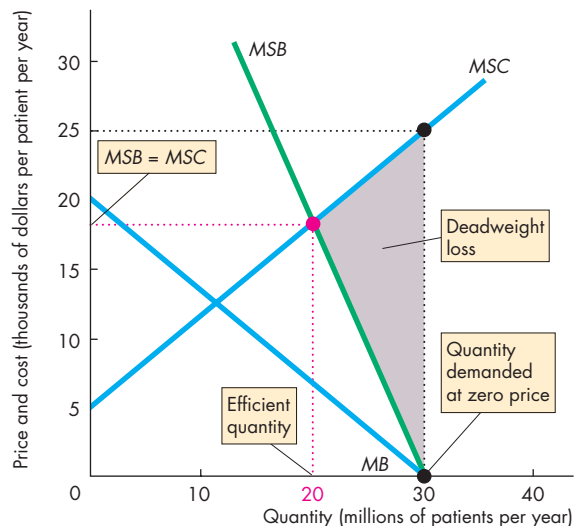


Figure 1 Overprovision of Medicare and Medicaid

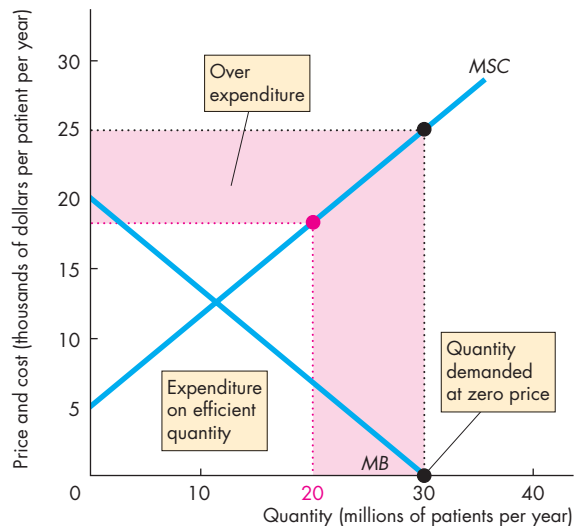


Figure 2 Uncontrolled expenditure on Medicare and Medicaid

- The quantity of health-care services provided by Medicare and Medicaid increases and the expenditure on these programs grows.
- A health-care voucher program like that explained on pp. 384–385 is one way (and possibly the only effective way) of achieving an efficient provision of Medicare and Medicaid and of containing their cost.



SUMMARY

Key Points

Public Choices (pp. 372–376)

- Governments establish and maintain property rights, provide nonmarket mechanisms for allocating scarce resources, and redistribute income and wealth.
- Public choice theory explains how voters, firms, politicians, and bureaucrats interact in the political marketplace and why government failure might occur.
- A private good is a good or service that is rival and excludable.
- A public good is a good or service that is nonrival and nonexcludable.
- A mixed good is a private good that creates an external benefit or external cost.

Working Problems 1 to 6 will give you a better understanding of public choices.

Providing Public Goods (pp. 377–380)

- Because a public good is a good or service that is *nonrival* and *nonexcludable*, it creates a *free-rider* problem: No one has an incentive to pay their share of the cost of providing a public good.
- The efficient level of provision of a public good is that at which marginal social benefit equals marginal social cost.

- Competition between political parties can lead to the efficient scale of provision of a public good.
- Bureaucrats who maximize their budgets and voters who are rationally ignorant can lead to the inefficient overprovision of a public good—government failure.

Working Problems 7 to 15 will give you a better understanding of providing public goods.

Providing Mixed Goods with External Benefits

(pp. 381–385)

- Mixed goods provide external benefits—benefits that are received by people other than the consumer of a good or service.
- Marginal social benefit equals marginal private benefit plus marginal external benefit.
- External benefits arise from education and health care.
- Vouchers provided to households can achieve a more efficient provision of education and health care than public production or subsidies to private producers.

Working Problems 16 to 20 will give you a better understanding of providing mixed goods with external benefits.

Key Terms

Common resource, 374	Natural monopoly good, 374	Public choice, 372
Excludable, 374	Negative externality, 374	Public good, 374
Externality, 374	Nonexcludable, 374	Public production, 383
Free-rider problem, 377	Nonrival, 374	Rival, 374
Government failure, 372	Political equilibrium, 373	Subsidy, 383
Marginal external benefit, 381	Positive externality, 374	Voucher, 383
Marginal private benefit, 381	Principle of minimum differentiation, 379	
Marginal social benefit, 381	Private good, 374	
Mixed good, 374		



STUDY PLAN PROBLEMS AND APPLICATIONS



You can work Problems 1 to 20 in MyEconLab Chapter 16 Study Plan and get instant feedback.

Public Choices (Study Plan 16.1)

- Classify each of the following items as excludable, nonexcludable, rival, or nonrival.
 - A Big Mac
 - Brooklyn Bridge
 - A view of the Statue of Liberty
 - A tsunami warning system
- Classify each of the following items as a public good, a private good, a natural monopoly good, or a common resource.
 - Highway control services
 - City sidewalks
 - U.S. Postal Service
 - FedEx courier service
- Classify the following services for computer owners with an Internet connection as rival, nonrival, excludable, or nonexcludable:
 - eBay
 - A mouse
 - A Twitter page
 - MyEconLab Web site
- Classify each of the following items as a public good, a private good, a mixed good, or a common resource:
 - Firefighting services
 - A courtside seat at the U.S. Open (tennis)
 - A well-stocked buffet that promises the most bang for your buck
 - The Mississippi River
- Explain which of the following events creates an external benefit or an external cost:
 - A huge noisy crowd gathers outside the lecture room
 - Your neighbor grows beautiful flowers on his apartment deck.
 - A fire alarm goes off accidentally in the middle of a lecture.
 - Your instructor offers a free tutorial after class.
- Wind Farm Off Cape Cod Clears Hurdle**

The nation's first offshore wind farm with 130 turbines will be built 5 miles off the coast. Wind turbines are noisy, stand 440 feet tall, can be seen from the coast, and will produce power for 75 percent of nearby homes.

Source: *The New York Times*, January 16, 2009

List the externalities created by this wind farm.

Providing Public Goods (Study Plan 16.2)

- For each of the following goods, explain whether there is a free-rider problem. If there is no such problem, how is it avoided?
 - July 4th fireworks display
 - Interstate 81 in Virginia
 - Wireless Internet access in hotels
 - The public library in your city
- The table sets out the marginal benefits that Terri and Sue receive from police officers on duty on the college campus:

Police officers on duty (number per night)	Marginal benefit	
	Terri (dollars per police officer)	Sue (dollars per police officer)
1	18	22
2	14	18
3	10	14
4	6	10
5	2	6

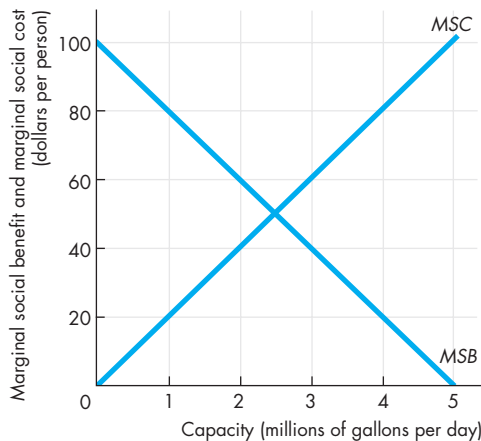
- If the police officers are provided by the city government, is the presence of the police on-campus a private good or a public good?
 - Suppose that Terri and Sue are the only students on the campus at night. Draw a graph to show the marginal social benefit from on-campus police officers on duty at night.
- For each of the following goods and services, explain whether there is a free-rider problem. If there is no such problem, how is it avoided?
 - National hurricane warning system
 - Ambulance service
 - Road safety signs
 - The U.S. Coast Guard
 - Vaccination Dodgers**

Doctors struggle to eradicate polio worldwide, but one of the biggest problems is persuading parents to vaccinate their children. Since the discovery of the vaccine, polio has been eliminated from Europe and the law requires everyone to be vaccinated. People who refuse to be vaccinated are “free riders.”

Source: *USA Today*, March 12, 2008

Explain why someone who has not opted out on medical or religious grounds and refuses to be vaccinated is a “free rider.”

Use the following figure to work Problems 11 to 13. The figure provides information about a waste disposal system that a city of 1 million people is considering installing.



11. What is the efficient capacity of the waste disposal system? How much will each person have to pay in taxes for the city to install the efficient capacity?
12. What is the political equilibrium if voters are well informed?
13. What is the political equilibrium if voters are rationally ignorant and bureaucrats achieve the highest attainable budget?

Use the data on a mosquito control program in the following table to work Problems 14 and 15.

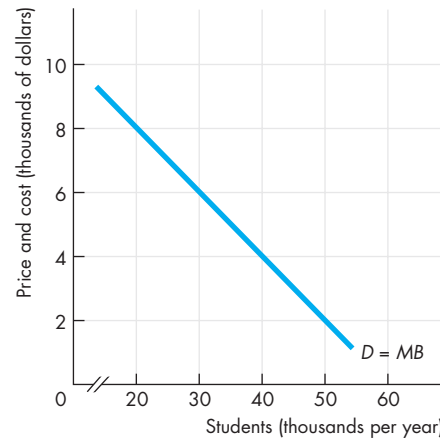
Quantity (square miles sprayed per day)	Marginal social cost (thousands of dollars per day)	Marginal social benefit
1	2	10
2	4	8
3	6	6
4	8	4
5	10	2

14. What quantity of spraying would a private mosquito control program provide? What is the efficient quantity of spraying? In a single-issue election on the quantity of spraying, what quantity would the winner of the election provide?
15. If the government sets up a Department of Mosquito Control and appoints a bureaucrat to run it, would mosquito spraying most likely be underprovided, overprovided, or provided at the efficient quantity?

Providing Mixed Goods with External Benefits

(Study Plan 16.3)

Use the following figure, which shows the marginal private benefit from college education, to work Problems 16 to 19. The marginal cost of a college education is a constant \$6,000 per student per year. The marginal external benefit from a college education is a constant \$4,000 per student per year.



16. What is the efficient number of students? If all colleges are private, how many people enroll in college and what is the tuition?
17. If the government decides to provide public colleges, what tuition will these colleges charge to achieve the efficient number of students? How much will taxpayers have to pay?
18. If the government decides to subsidize private colleges, what subsidy will achieve the efficient number of college students?
19. If the government offers vouchers to those who enroll at a college and no subsidy, what is the value of the voucher that will achieve the efficient number of students?
20. **Tuition Hikes, not Loan Access, Should Frighten Students**

The real danger during a recession is a hike in tuition, not a cut in student loans. In past recessions, states have cut funding for colleges and increased tuition. The Cato Institute says a better policy would be for states to maintain the subsidies to colleges and increase their deficits.

Source: *USA Today*, October 22, 2008

If government cuts the subsidy to colleges, why will tuition rise and the number of students enrolled decrease? Why is it a better policy for government to maintain the subsidy to colleges?



ADDITIONAL PROBLEMS AND APPLICATIONS



You can work these problems in MyEconLab if assigned by your instructor.

Public Choices

21. Classify each of the following items as excludable, nonexcludable, rival, or nonrival.
 - Firefighting service
 - A Starbucks coffee
 - A view of the Liberty Bell
 - The Appalachian Trail
 - A google search
 22. Classify each of the following items as a public good, a private good, a natural monopoly good, a common resource, or a mixed good.
 - Measles vaccinations
 - Tuna in the Pacific Ocean
 - Air service in the United States
 - Local storm-water system
 23. Consider each of the following activities or events and say for each one whether it creates an externality. If so, say whether it creates an external benefit or external cost and whether the externality arises from production or consumption.
 - Airplanes take off from LaGuardia Airport during the U.S. Open tennis tournament, which is taking place nearby.
 - A sunset over the Pacific Ocean
 - An increase in the number of people who are studying for graduate degrees
 - A person wears strong perfume to class.
 24. Classify each of the following goods as a private good, a public good, or a mixed good and say whether it creates an external benefit, external cost, or neither.
 - Chewing gum
 - The Santa Monica freeway at peak travel time
 - The New York City subway
 - A skateboard
 - The Santa Monica beach
- earn between \$50,000 and \$75,000 a year. About 16 percent of those who received “free” medical care in 2004 had incomes at least four times the federal poverty level.
- Source: *Los Angeles Times*, March 4, 2008
25. Explain why government-subsidized health-care services can create a free-rider problem.
 26. Explain the evidence the news clip presents to contradict the argument that “the reason people don’t have health insurance isn’t because they don’t want it, it’s because they can’t afford it.”
 27. The table sets out the marginal benefits that Sam and Nick receive from the town’s street lighting:

Number of street lights	Marginal benefit	
	Sam	Nick
1	10	12
2	8	9
3	6	6
4	4	3
5	2	0

- a. Is the town’s street lighting a private good or a public good?
 - b. Suppose that Sam and Nick are the only residents of the town. Draw a graph to show the marginal social benefit from the town’s street lighting.
28. What is the principle of diminishing marginal benefit? In Problem 27, does Sam’s, Nick’s or the society’s marginal benefit diminish faster?

Use the following news clip to work Problems 29 and 30.

A Bridge Too Far Gone

The gas taxes paid for much of America’s post-war freeway system. Now motorists pay about one-third in gas taxes to drive a mile as they did in the 1960s. Yet raising such taxes is politically tricky. This would matter less if private cash was flooding into infrastructure, or if new ways were being found to control demand. Neither is happening, and private companies building toll roads brings howls of outrage.

Source: *The Economist*, August 9, 2007

29. Why is it “politically tricky” to raise gas taxes to finance infrastructure?
30. What in this news clip points to a distinction between public *production* of a public good and

Providing Public Goods

Use the following news clip to work Problems 25 and 26.

“Free Riders” Must be Part of Health Debate

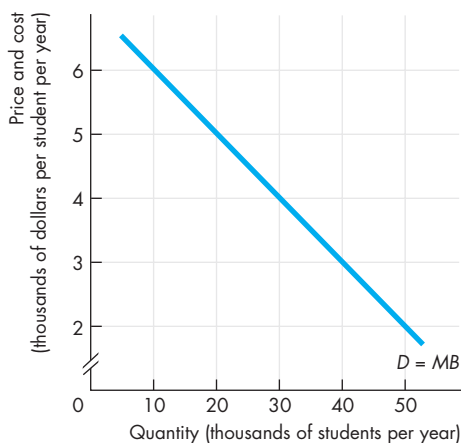
President Obama insists that “the reason people don’t have health insurance isn’t because they don’t want it, it’s because they can’t afford it.” There are 47 million uninsured people in the United States. Of these, 16 percent earn more than \$75,000 a year and 15 percent

public *provision*? Give examples of three public goods that are *produced* by private firms but *provided* by government and paid for with taxes.

Providing Mixed Goods with External Benefits

Use the following information and figure to work Problems 31 and 34.

The marginal cost of educating a student is a constant \$4,000 a year and the figure shows the students' marginal benefit curve. Suppose that college education creates an external benefit of a constant \$2,000 per student per year.



31. If all colleges are private and the market for education is competitive, how many students enroll, what is the tuition, and what is the deadweight loss created?
32. If the government decides to provide public colleges, what tuition will these colleges charge to achieve the efficient number of students? How much will taxpayers have to pay?
33. If the government decides to subsidize private colleges, what subsidy will achieve the efficient number of college students?
34. If the government offers vouchers to those who enroll at a college and no subsidy, what is the value of the voucher that will achieve the efficient number of students?
35. **My Child, My Choice**

Fully vaccinating all U.S. children born in a given year saves 33,000 lives, prevents 14 million infections and saves \$10 billion in medical costs. Part of the reason is that vaccinations protect not only the kids that receive the shots but also those who can't receive them—such as newborns and cancer patients with suppressed immune systems.

Source: *Time*, June 2, 2008

- a. Describe the private benefits and external benefits of vaccinations and explain why a private market for vaccinations would produce an inefficient outcome.
- b. Draw a graph to illustrate a private market for vaccinations and show the deadweight loss.
- c. Explain how government intervention could achieve an efficient quantity of vaccinations and draw a graph to illustrate this outcome.

Economics in the News

36. After you have studied *Reading Between the Lines* on pp. 386–387 answer the following questions:
 - a. What are the two major problems confronting the provision of health-care services in the United States?
 - b. How is it possible for the two problems you've identified to occur together?
 - c. Why might a voucher system be superior to the current method of providing health-care services?
 - d. Compare the main features of the 2010 health care reform with the plan suggested by Laurence Kotlikoff on p. 385.
 - e. Which plan would be better and why?
37. **Who's Hiding under Our Umbrella?**
Students of the Cold War learn that, to deter possible Soviet aggression, the United States placed a "strategic umbrella" over NATO Europe and Japan, with the United States providing most of their national security. Under President Ronald Reagan, the United States spent 6 percent of GDP on defense, whereas the Europeans spent only 2 to 3 percent and the Japanese spent only 1 percent, although all faced a common enemy. Thus the U.S. taxpayer paid a disproportionate share of the overall defense spending, whereas NATO Europe and Japan spent more on consumer goods or saved

Source: *International Herald Tribune*,
January 30, 2008

- a. Explain the free-rider problem described in this news clip.
- b. Does the free-rider problem in international defense mean that the world has too little defense against aggression?
- c. How do nations try to overcome the free-rider problem among nations?