

SUMMARY

- Goods differ in whether they are excludable and whether they are rival in consumption. A good is excludable if it is possible to prevent someone from using it. A good is rival in consumption if one person's use of the good reduces others' ability to use the same unit of the good. Markets work best for private goods, which are both excludable and rival in consumption. Markets do not work as well for other types of goods.
- Public goods are neither rival in consumption nor excludable. Examples of public goods include fireworks displays, national defense, and the creation of fundamental knowledge. Because people are not charged for their use of the public good, they have an incentive to free ride when the good is provided privately. Therefore, governments provide public goods, making their decision about the quantity of each good based on cost-benefit analysis.
- Common resources are rival in consumption but not excludable. Examples include common grazing land, clean air, and congested roads. Because people are not charged for their use of common resources, they tend to use them excessively. Therefore, governments use various methods to limit the use of common resources.

KEY CONCEPTS

excludability, *p. 218*

rivalry in consumption, *p. 218*

private goods, *p. 218*

public goods, *p. 218*

common resources, *p. 218*

club goods, *p. 219*

free rider, *p. 220*

cost-benefit analysis, *p. 223*

Tragedy of the Commons, *p. 224*

QUESTIONS FOR REVIEW

1. Explain what is meant by a good being "excludable." Explain what is meant by a good being "rival in consumption." Is a slice of pizza excludable? Is it rival in consumption?
2. Define and give an example of a public good. Can the private market provide this good on its own? Explain.
3. What is a free rider? Does the presence of the free-rider problem help or harm the production of public goods? Explain.
4. Define and give an example of a common resource. Without government intervention, will people use this good too much or too little? Why?

PROBLEMS AND APPLICATIONS

1. Using the classification in Figure 1, in which category does each of the following goods belong? Explain.
 - a. elk on a hunting preserve
 - b. elk in the wild
 - c. broadcast radio signal
 - d. satellite radio signal
 - e. an automobile
 - f. an uncongested city bus
2. Both public goods and common resources involve externalities.
 - a. Are the externalities associated with public goods generally positive or negative? Use examples in your answer. Is the free-market quantity of public goods generally greater or less than the efficient quantity?

- b. Are the externalities associated with common resources generally positive or negative? Use examples in your answer. Is the free-market use of common resources generally greater or less than the efficient use?
- 3. Charlie loves watching *Teletubbies* on his local public TV station, but he never sends any money to support the station during its fund-raising drives.
 - a. What name do economists have for people like Charlie?
 - b. How can the government solve the problem caused by people like Charlie?
 - c. Can you think of ways the private market can solve this problem? How does the existence of cable TV alter the situation?
- 4. Wireless, high-speed Internet is provided for free in the airport of the city of Communityville.
 - a. At first, only a few people use the service. What type of a good is this and why?
 - b. Eventually, as more people find out about the service and start using it, the speed of the connection begins to fall. Now what type of a good is the wireless Internet service?
 - c. What problem might result and why? What is one possible way to correct this problem?
- 5. Four roommates are planning to spend the weekend in their dorm room watching old movies, and they are debating how many to watch. Here is their willingness to pay for each film:

	Judd	Joel	Gus	Tim
First film	\$7	\$5	\$3	\$2
Second film	6	4	2	1
Third film	5	3	1	0
Fourth film	4	2	0	0
Fifth film	3	1	0	0

- a. Within the dorm room, is the showing of a movie a public good? Why or why not?
- b. If it costs \$10 to rent a movie, how many movies should the roommates rent to maximize total surplus?
- c. If they choose the optimal number from part (b) and then split the cost of renting the movies equally, how much surplus does each person obtain from watching the movies?
- d. Is there any way to split the cost to ensure that everyone benefits? What practical problems does this solution raise?

- e. Suppose they agree in advance to choose the efficient number and to split the cost of the movies equally. When Judd is asked his willingness to pay, will he have an incentive to tell the truth? If so, why? If not, what will he be tempted to say?
- f. What does this example teach you about the optimal provision of public goods?
- 6. Some economists argue that private firms will not undertake the efficient amount of basic scientific research.
 - a. Explain why this might be so. In your answer, classify basic research in one of the categories shown in Figure 1.
 - b. What sort of policy has the United States adopted in response to this problem?
 - c. It is often argued that this policy increases the technological capability of American producers relative to that of foreign firms. Is this argument consistent with your classification of basic research in part (a)? (Hint: Can excludability apply to some potential beneficiaries of a public good and not others?)
- 7. There is often litter along highways but rarely in people's yards. Provide an economic explanation for this fact.
- 8. The town of Wiknam has 5 residents whose only activity is producing and consuming fish. They produce fish in two ways. Each person who works on a fish farm raises 2 fish per day. Each person who goes fishing in the town lake catches X fish per day. X depends on N , the number of residents fishing in the lake. In particular,

$$X = 6 - N.$$

Each resident is attracted to the job that pays more fish.

- a. Why do you suppose that X , the productivity of each fisherman, falls as N , the number of fishermen, rises? What economic term would you use to describe the fish in the town lake? Would the same description apply to the fish from the farms? Explain.
- b. The town's Freedom Party thinks every individual should have the right to choose between fishing in the lake and farming without government interference. Under its policy, how many of the residents would fish in the lake and how many would work on fish farms? How many fish are produced?

- c. The town's Efficiency Party thinks Wiknam should produce as many fish as it can. To achieve this goal, how many of the residents should fish in the lake and how many should work on the farms? (Hint: Create a table that shows the number of fish produced—on farms, from the lake, and in total—for each N from 0 to 5.)
 - d. The Efficiency Party proposes achieving its goal by taxing each person fishing in the lake by an amount equal to T fish per day. It will then distribute the proceeds equally among all Wiknam residents. (Fish are assumed to be divisible, so these rebates need not be whole numbers.) Calculate the value of T that would yield the outcome you derived in part (c).
 - e. Compared with the Freedom Party's hands-off policy, who benefits and who loses from the imposition of the Efficiency Party's fishing tax?
9. Many transportation systems, such as the Washington, D.C., Metro (subway), charge higher fares during rush hours than during the rest of the day. Why might they do this?
 10. The federal government tests the safety of car models and provides the test results free of charge to the public. Do you think this information qualifies as a public good? Why or why not?
 11. High-income people are willing to pay more than lower-income people to avoid the risk of death. For example, they are more likely to pay for safety features on cars. Do you think cost-benefit analysts should take this fact into account when evaluating public projects? Consider, for instance, a rich town and a poor town, both of which are considering the installation of a traffic light. Should the rich town use a higher dollar value for a human life in making this decision? Why or why not?

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