

## Conclusion

The economy is governed by two kinds of laws: the laws of supply and demand and the laws enacted by governments. In this chapter, we have begun to see how these laws interact. Price controls and taxes are common in various markets in the economy, and their effects are frequently debated in the press and among policymakers. Even a little bit of economic knowledge can go a long way toward understanding and evaluating these policies.

In subsequent chapters, we analyze many government policies in greater detail. We examine the effects of taxation more fully and consider a broader range of policies than we considered here. Yet the basic lessons of this chapter will not change: When analyzing government policies, supply and demand are the first and most useful tools of analysis.

## SUMMARY

- A price ceiling is a legal maximum on the price of a good or service. An example is rent control. If the price ceiling is below the equilibrium price, then the price ceiling is binding, and the quantity demanded exceeds the quantity supplied. Because of the resulting shortage, sellers must in some way ration the good or service among buyers.
- A price floor is a legal minimum on the price of a good or service. An example is the minimum wage. If the price floor is above the equilibrium price, then the price floor is binding, and the quantity supplied exceeds the quantity demanded. Because of the resulting surplus, buyers' demands for the good or service must in some way be rationed among sellers.
- When the government levies a tax on a good, the equilibrium quantity of the good falls. That is, a tax on a market shrinks the size of the market.
- A tax on a good places a wedge between the price paid by buyers and the price received by sellers. When the market moves to the new equilibrium, buyers pay more for the good and sellers receive less for it. In this sense, buyers and sellers share the tax burden. The incidence of a tax (that is, the division of the tax burden) does not depend on whether the tax is levied on buyers or sellers.
- The incidence of a tax depends on the price elasticities of supply and demand. Most of the burden falls on the side of the market that is less elastic because that side of the market can respond less easily to the tax by changing the quantity bought or sold.

## KEY CONCEPTS

price ceiling, *p.* 112

price floor, *p.* 112

tax incidence, *p.* 121

## QUESTIONS FOR REVIEW

1. Give an example of a price ceiling and an example of a price floor.
2. Which causes a surplus of a good—a price ceiling or a price floor? Explain.
3. What mechanisms allocate resources when the price of a good is not allowed to bring supply and demand into equilibrium?
4. Explain why economists usually oppose controls on prices.



5. Suppose the government removes a tax on buyers of a good and levies a tax of the same size on sellers of the good. How does this change in tax policy affect the price that buyers pay sellers for this good, the amount buyers are out of pocket including the tax, the amount sellers receive net of the tax, and the quantity of the good sold?
6. How does a tax on a good affect the price paid by buyers, the price received by sellers, and the quantity sold?
7. What determines how the burden of a tax is divided between buyers and sellers? Why?

### PROBLEMS AND APPLICATIONS

1. In the labor market, workers would like to receive higher wages and firms would like to pay lower wages.
  - a. Suppose that workers succeed in having a minimum wage established above the equilibrium wage. What will happen to the number of workers employed when compared to the original equilibrium? Explain.
  - b. Suppose that firms succeed in having a maximum wage established below the equilibrium wage. What will happen to the number of workers employed compared to the original equilibrium? Explain.
  - c. What wage maximizes the number of workers employed? Why?
2. The government has decided that the free-market price of cheese is too low.
  - a. Suppose the government imposes a binding price floor in the cheese market. Draw a supply-and-demand diagram to show the effect of this policy on the price of cheese and the quantity of cheese sold. Is there a shortage or surplus of cheese?
  - b. Farmers complain that the price floor has reduced their total revenue. Is this possible? Explain.
  - c. In response to farmers' complaints, the government agrees to purchase all the surplus cheese at the price floor. Compared to the basic price floor, who benefits from this new policy? Who loses?
3. A recent study found that the demand and supply schedules for Frisbees are as follows:
 

Price per Frisbee	Quantity Demanded	Quantity Supplied
\$11	1 million Frisbees	15 million Frisbees
10	2	12
9	4	9
8	6	6
7	8	3
6	10	1

  - a. What are the equilibrium price and quantity of Frisbees?
  - b. Frisbee manufacturers persuade the government that Frisbee production improves scientists' understanding of aerodynamics and thus is important for national security. A concerned Congress votes to impose a price floor \$2 above the equilibrium price. What is the new market price? How many Frisbees are sold?
  - c.irate college students march on Washington and demand a reduction in the price of Frisbees. An even more concerned Congress votes to repeal the price floor and impose a price ceiling \$1 below the former price floor. What is the new market price? How many Frisbees are sold?
4. Suppose the federal government requires beer drinkers to pay a \$2 tax on each case of beer purchased. (In fact, both the federal and state governments impose beer taxes of some sort.)
  - a. Draw a supply-and-demand diagram of the market for beer without the tax. Show the price paid by consumers, the price received by producers, and the quantity of beer sold.



- What is the difference between the price paid by consumers and the price received by producers?
- b. Now draw a supply-and-demand diagram for the beer market with the tax. Show the price paid by consumers, the price received by producers, and the quantity of beer sold. What is the difference between the price paid by consumers and the price received by producers? Has the quantity of beer sold increased or decreased?
5. A senator wants to raise tax revenue and make workers better off. A staff member proposes raising the payroll tax paid by firms and using part of the extra revenue to reduce the payroll tax paid by workers. Would this accomplish the senator's goal? Explain.
  6. If the government places a \$500 tax on luxury cars, will the price paid by consumers rise by more than \$500, less than \$500, or exactly \$500? Explain.
  7. Congress and the president decide that the United States should reduce air pollution by reducing its use of gasoline. They impose a \$0.50 tax for each gallon of gasoline sold.
    - a. Should they impose this tax on producers or consumers? Explain carefully using a supply-and-demand diagram.
    - b. If the demand for gasoline were more elastic, would this tax be more effective or less effective in reducing the quantity of gasoline consumed? Explain with both words and a diagram.
    - c. Are consumers of gasoline helped or hurt by this tax? Why?
    - d. Are workers in the oil industry helped or hurt by this tax? Why?
  8. A case study in this chapter discusses the federal minimum-wage law.
    - a. Suppose the minimum wage is above the equilibrium wage in the market for unskilled labor. Using a supply-and-demand diagram of the market for unskilled labor, show the market wage, the number of workers who are employed, and the number of workers who are unemployed. Also show the total wage payments to unskilled workers.
      - b. Now suppose the secretary of labor proposes an increase in the minimum wage. What effect would this increase have on employment? Does the change in employment depend on the elasticity of demand, the elasticity of supply, both elasticities, or neither?
      - c. What effect would this increase in the minimum wage have on unemployment? Does the change in unemployment depend on the elasticity of demand, the elasticity of supply, both elasticities, or neither?
      - d. If the demand for unskilled labor were inelastic, would the proposed increase in the minimum wage raise or lower total wage payments to unskilled workers? Would your answer change if the demand for unskilled labor were elastic?
  9. The U.S. government administers two programs that affect the market for cigarettes. Media campaigns and labeling requirements are aimed at making the public aware of the dangers of cigarette smoking. At the same time, the Department of Agriculture maintains a price-support program for tobacco farmers, which raises the price of tobacco above the equilibrium price.
    - a. How do these two programs affect cigarette consumption? Use a graph of the cigarette market in your answer.
    - b. What is the combined effect of these two programs on the price of cigarettes?
    - c. Cigarettes are also heavily taxed. What effect does this tax have on cigarette consumption?
  10. At Fenway Park, home of the Boston Red Sox, seating is limited to 39,000. Hence, the number of tickets issued is fixed at that figure. Seeing a golden opportunity to raise revenue, the City of Boston levies a per ticket tax of \$5 to be paid by the ticket buyer. Boston sports fans, a famously civic-minded lot, dutifully send in the \$5 per ticket. Draw a well-labeled graph showing the impact of the tax. On whom does the tax burden fall—the team's owners, the fans, or both? Why?
  11. A U.S. governor has proposed a 3 percent payroll tax to finance some state health programs. The proposed legislation provided that the payroll tax "shall not be withheld from wages paid to employees or otherwise be collected from



employees or reduce the compensation paid to employees." What do you think was the intent of this language? Would the bill in fact accomplish this objective?

12. In the spring of 2008, Senators John McCain and Hillary Clinton (who were then running for president) proposed a temporary elimination of the federal gasoline tax, effective only during the summer of 2008, in order to help consumers deal with high gasoline prices.
  - a. During the summer, when gasoline demand is high because of vacation driving, gasoline

refiners are operating near full capacity. What does this fact suggest about the price elasticity of supply?

- b. In light of your answer to (a), who do you predict would benefit from the temporary gas tax holiday?

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