

**Recitation #4 – Week 02/02/2009 to 02/08/2009**  
**Chapter 5: The Market Strikes Back**

**Problems and Exercises**

1. A price ceiling is implemented in the market for housing in Metropolitan City, where all housing units are identical. You know that before the price ceiling is implemented, the demand for housing in Metropolitan City is given by the equation  $P = 1,000 - 0.1QD$  and the supply of housing is given by the equation  $P = 200 + 0.3QS$ .

a) Prior to the implementation of the price ceiling, what is the equilibrium price for housing in Metropolitan City and what is the equilibrium quantity of housing?

b) Fill in the following demand and supply schedules for this market given the above equations.

Price	Quantity demanded	Quantity supplied
\$ 200		
400		
600		
800		
1,000		

c) When the price ceiling is implemented, a housing shortage develops. This shortage is equal to 4,000 housing units. Calculate the price ceiling in this market for housing. (Hint: you may find the table from part (b) helpful in thinking about this problem.)

- d) Who benefits from the imposition of the price ceiling in the market for housing in Metropolitan City?

The people lucky enough to get one of the housing unit supplied at the price ceiling price benefit from this gov't intervention. They pay less than the market-clearing price for their housing unit.

- e) Who is hurt by the imposition of a price ceiling in the market for housing in Metropolitan City?

1. Consumers who want housing but who cannot find housing due to the price ceiling.
2. As landlords fail to maintain the housing units in the City, the whole community is affected as the general condition of the housing stock deteriorates.
3. If a black market develops in the housing market, this will erode the general level of lawful behavior in the community.

- f) Why is this price ceiling apt to result in black market activities in the market for housing? Provide at least two examples of potential black market activities.

1. Since the quantity demanded of housing exceeds the quantity supplied of housing at the price ceiling, persistent shortages will exist in this market.
2. Consumers eager to find housing will resort to activities that are illegal.
3. e.g. subletting housing units at rates higher than the price ceiling rate or making illegal payments to landlords.

- g) Does an effective price ceiling in this market result in too many or too few resources being allocated to the market for housing in Metropolitan City? Explain your answer.

Too few resources are devoted to the housing market. We know this because the effective price ceiling creates a persistent shortage in the market for housing.

5. Farmers in Corntopia successfully lobby their government to enact a price floor for their agricultural commodity. The price floor is set at \$10 above the equilibrium price. The initial demand and supply curves for agricultural production in Corntopia are as follows:  $P = 100 - Q$  and  $P = Q$ , where price is per bushel and quantity is measured in bushels.

- a. What is the level of the price floor in this market?

b. How many units of the agricultural product will be demanded and supplied at this price floor level?

c. Suppose the government purchases the surplus in this market once the price floor is implemented. What will be the cost to the government of buying this surplus?

d. Given the price floor, what is the expenditure consumers make when purchasing this commodity? Do not include in your calculation the cost to the government of buying the surplus.

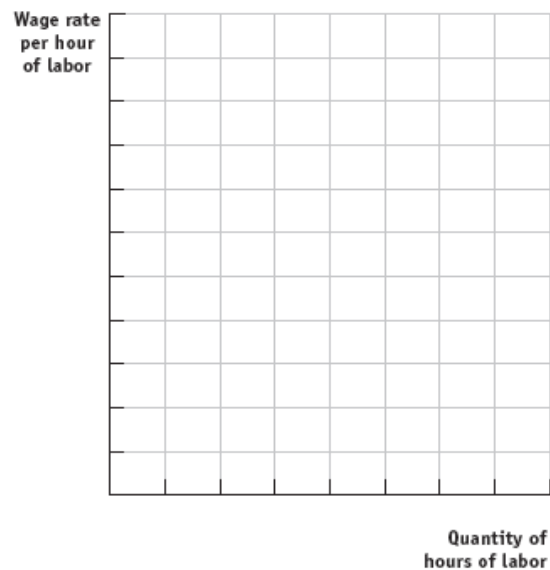
e. What is total farm revenue equal to in this market once the price floor is implemented? What is the relationship between total farm revenue, consumer expenditure, and government expenditure on the good, given the price floor? Does total farm revenue increase when the government enacts a price floor? Explain your answer.

f. Who benefits from the enactment of a price floor in this market?

The farmers benefit from the imposition of the price floor since it increases total farm revenue.

2. Consider the labor market in Utopia. You are told that the equilibrium wage in this market is \$10 per hour and that the equilibrium amount of labor in this market is 1,000 hours of labor. Furthermore, you know that at a wage of \$14 per hour, 600 hours of labor are demanded and 1,400 hours of labor are supplied. The workers in Utopia successfully lobby Utopia's government for the implementation of a price floor. This price floor results in 1,200 hours of labor being supplied and 800 hours of labor being demanded.

- a) Use the above information to derive the labor demand curve for Utopia. Assume this labor demand curve is linear. In your equation, abbreviate the price of labor, or its hourly wage rate, as  $W$ , and the quantity of labor demanded, measured as hours of labor, as  $L$ . Hint: you may find sketching a graph of the above information helpful.



- b) Use the above information to derive the labor supply curve for Utopia. Assume this labor supply curve is linear. In your equation, abbreviate the hourly wage rate as  $W$  and the hours of labor supplied as  $L$ .

c) What wage rate did the government set when it implemented the price floor?

d) Describe the effects of this price floor on the labor market in Utopia. Who benefits from the price floor? Who is hurt by the price floor?

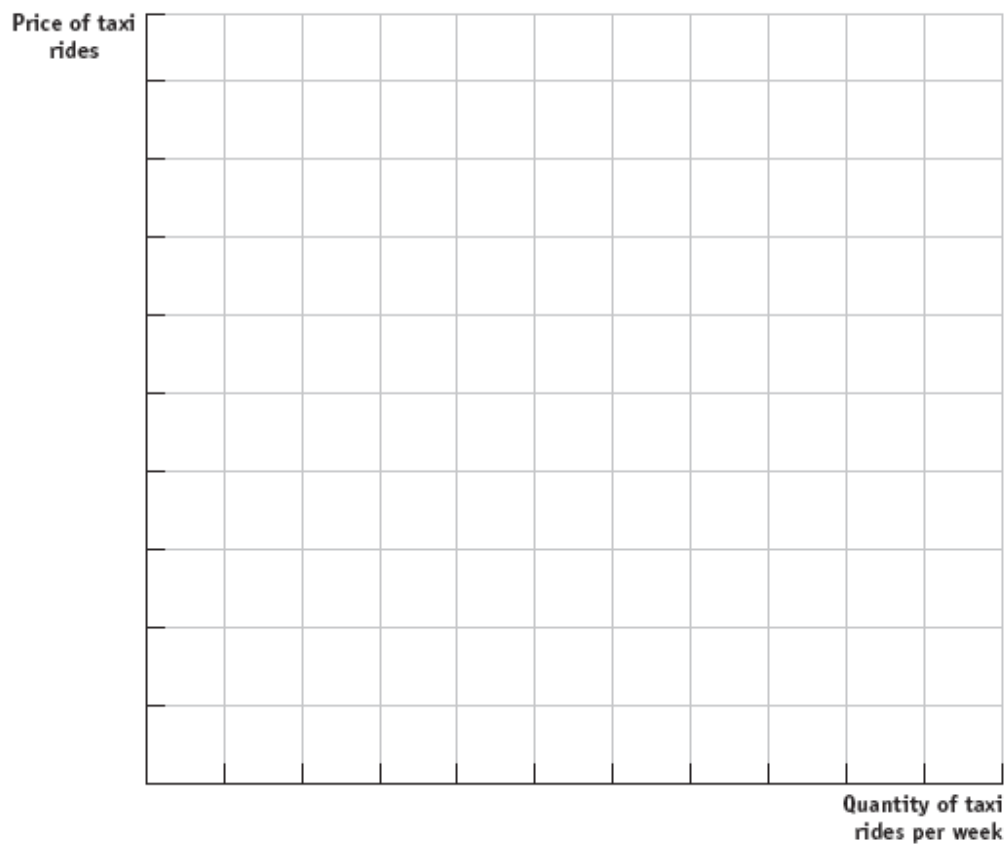
3. The market for taxi rides in Metropolia this week is described in the following table. Assume that all taxi rides are the same in Metropolia.

Price of taxi rides	Quantity of taxi rides demanded per week	Quantity of taxi rides supplied per week
\$ 1	200	40
2	180	60
3	160	80
4	140	100
5	120	120
6	100	140
7	80	160
8	60	180
9	40	200
10	20	220

- a) What is the equilibrium price and the equilibrium quantity of taxi rides in Metropolia per week? Suppose the government of Metropolia institutes a medallion system that limits the number of taxi rides available in Metropolia per week to 80 taxi rides.
- b) At what price will consumers want to purchase 80 taxi rides per week?
- c) At what price will suppliers be willing to supply 80 taxi rides per week?

d) What price will a taxi medallion rent for in this market? Explain your answer.

e) Draw a graph of the taxi ride market in Metropolia. On this graph, indicate the quota limit, the demand price, the supply price, and the medallion's rental price.



f. What is the total value of the taxi medallions per week in Metropolia?



## Chapter Review Questions

- The implementation of an effective price ceiling
  - decreases the area of producer surplus.
  - increases the area of producer surplus.
- The implementation of an effective price floor
  - decreases the area of consumer surplus.
  - increases the area of consumer surplus.
- Consider minimum-wage legislation requiring that all workers receive a wage payment greater than the equilibrium market wage. Which of the following two groups is more likely to have advocated for this legislation?
  - demanders of labor
  - suppliers of labor
- When the government intervenes in a market to regulate prices, this is an example of a
  - quantity control.
  - price floor.
  - price ceiling.
  - price control.
- When the government institutes an upper limit on prices, this is referred to as a
  - quantity control.
  - price floor.
  - price ceiling.
  - price control.
- Use the information in the table below to answer the following question.

Price	Quantity demanded	Quantity supplied
\$ 20	200	0
40	150	50
60	100	100
80	50	150
100	0	200

If the government mandates that prices in this market can fall no lower than \$50, this results in

- a situation of excess quantity demanded.
- a situation of excess quantity supplied.
- fewer than 100 units being supplied in this market.
- no effect in this market, since the equilibrium price is greater than \$50.

7. Use the information in the table below to answer the following question.

Price	Quantity demanded	Quantity supplied
\$ 20	200	0
40	150	50
60	100	100
80	50	150
100	0	200

Suppose a price ceiling of \$40 is implemented in this market. This results in

- an excess demand of 100 units.
- an excess supply of 100 units.
- no effect in this market, since the price ceiling is set below the equilibrium price.
- a temporary shortage of the good while prices rise, and the quantity demanded and the quantity supplied adjust until they are equal.

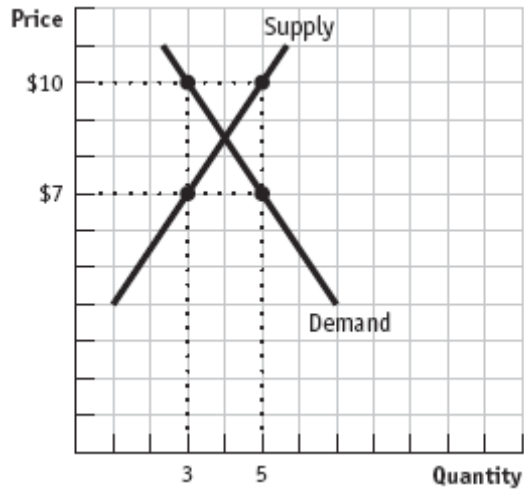
8. Which of the following statements are true?

- Price ceilings are inefficient because they result in too much of the good being produced in the market.
  - Price ceilings are inefficient because they result in the production of goods with too low a level of quality.
  - Price ceilings are inefficient because they lead to wasted resources since they increase the amount of time consumers must search for the price-controlled good.
- Statement I is true.
  - Statement II is true.
  - Statements I and II are true.
  - Statements II and III are true.

9. Black market or illegal activities increase with the imposition of price controls in markets. Black markets result in

- improving the situation of all participants in the price-controlled market.
- worsening the situation for those people who attempt to obey the rules and restrictions imposed by the government in a price-controlled market.
- have little or no real impact in price-controlled markets.
- the creation of greater respect in society for the need to obey all laws.

10. Use the following graph to answer this question.



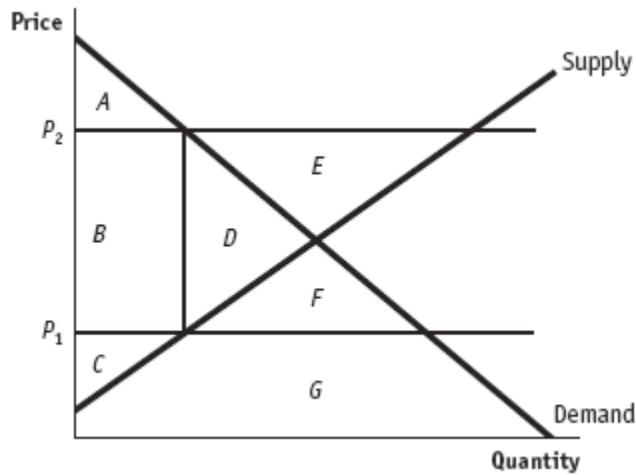
An effective price floor is enacted in this market at a price of \$10. With this price floor, consumers' expenditure on this good will equal

- a. \$50.
- b. \$30.
- c. \$21.
- d. \$20.

11. Which of the following statements is true?

- a. An effective price ceiling reduces the quantity of the good available to consumers, while an effective price floor increases the quantity of the good available to consumers.
- b. An effective price floor reduces the quantity of the good available to consumers, while an effective price ceiling increases the quantity of the good available to consumers.
- c. Government intervention in markets in the form of effective price ceilings or price floors increases the quantity of the good available to consumers.
- d. Government intervention in markets in the form of effective price ceilings or price floors decreases the quantity of the good available to consumers.

12. Use the graph below to answer this question.



Different areas in the graph are labeled with letters.

An effective price floor set at  $P_2$  results in a loss of total surplus equal to

- area D.
- areas A and C.
- area E.
- area G.

13. An effective price floor prevents suppliers from competing for customers through lower prices, so suppliers compete for customers by offering goods with

- greater quality than consumers desire.
- lower quality than consumers desire.

14. Which of the following statements is true?

- An effective price floor benefits some suppliers.
  - An effective price floor benefits all demanders.
  - An effective price floor results in a persistent surplus.
  - An effective price floor results in an inefficiently high level of quality in the good offered by suppliers.
- Statements I and III are true.
  - Statements I, III, and IV are true.
  - Statements III and IV are true.
  - Statements II, III, and IV are true.

15. A quantity control or quota

- limits the price that suppliers can charge for the good or service in the regulated market.
- limits the price that demanders must pay for the good or service in the regulated market.
- limits the amount of the good or service available in the regulated market.
- increases the amount of the good or service available in the regulated market to an amount that exceeds the equilibrium quantity.

16. A quota limit imposed on a market

- a. restricts the amount of the good available in that market.
- b. results in a payment being made by the government to the license holder.
- c. places a lower limit on the amount of the good provided in the regulated market.
- d. places an upper limit on the price of the good provided in the regulated market.

17. Which of the following statements is true?

I. Quantity controls are inefficient since they prevent mutually beneficial transactions from occurring.

II. Quantity controls in a market result in too many resources being allocated to that market.

III. Quantity controls result in a wedge: the price demanders are willing to pay for the last unit is less than the price suppliers must receive to produce this last unit.

- a. Statement I is true.
- b. Statement II is true.
- c. Statements I and III are true.
- d. Statements I, II, and III are true.

18. Quantity controls

- a. provide an incentive to engage in illegal activities.
- b. result in underproduction of the good or service in the market where the quota limit has been imposed.
- c. result in a less efficient outcome than the market outcome.
- d. Answers (a), (b), and (c) are all true statements.

## Answers to the Chapter Review Questions

**1. Answer a.** Since an effective price ceiling reduces the price that producers receive and consumers pay, this results in a decrease in producer surplus.

**2. Answer a.** Since an effective price floor increases the price that producers receive and consumers pay, this results in a decrease in consumer surplus.

**3. Answer b.** Suppliers of labor will receive this higher wage and therefore benefit from it. Demanders of labor will find that this higher wage increases the cost of hiring labor, and they will not benefit from it.

**4. Answer d.** The government can intervene in a market to regulate prices so that they are lower than the equilibrium level (an effective price ceiling) or higher than the equilibrium level (an effective price floor). Both are examples of price controls.

**5. Answer c.** An upper limit on prices establishes a price level for a product that is less than the equilibrium price and cannot be exceeded. This is an example of an effective price ceiling.

**6. Answer d.** Setting a lower limit on prices of \$50 in this market is an example of an ineffective price floor since a price floor of \$50 is less than the equilibrium price of \$60. This price floor would have no effect on the market.

**7. Answer c.** Setting a price floor of \$40 in this market is an example of an ineffective price floor since a price floor of \$40 is less than the equilibrium price of \$60. This price floor would have no effect on the market.

**8. Answer d.** Statement I is incorrect because price ceilings result in too little of the good being produced in the market. Statement II is correct because when price is limited to a level below the equilibrium price, producers have an incentive to reduce the quality of the product they provide to the market. Statement III is correct because an effective price ceiling results in greater costs as demanders seek out the artificially scarce good.

**9. Answer b.** Answers (a) and (b) are mutually exclusive: if one of these answers is correct, then the other must by necessity be incorrect. Reading answer (b) helps to identify a group that is hurt by black market activities: those individuals who decide not to engage in black market activities are left worse off because of their obedience to the rules imposed by the price-controlled market. Answer (c) is incorrect since price controls do affect markets and do have impacts when they are effective. Answer (d) is also incorrect since price-controlled markets generate black market activities, which are against the law.

**10. Answer a.** An effective price floor is the minimum price that can be charged for a good, and this price must be set above the equilibrium price. At a price of \$10, the

quantity demanded is 3 units while the quantity supplied is 5 units. At a price floor of \$10, there will be excess supply of 2 units. The price floor must equal \$10.

**11. Answer d.** Effective price ceilings and price floors both reduce the quantity of the good available to consumers, so answers (a), (b), and (c) are not true.

**12. Answer a.** When the price floor is set at  $P_2$ , the area of total surplus is equal to areas  $A + B + C$ . Without the price floor, the area of total surplus is equal to areas  $A + B + C + D$ . The loss in total surplus due to the imposition of the effective price floor is equal to area  $D$ .

**13. Answer a.** When producers cannot compete for customers through prices, they must look for other ways to compete. One way is to offer goods of higher quality, and with an effective price floor producers will compete by offering higher-quality goods.

**14. Answer b.** Statement I is correct because those suppliers who are lucky enough to sell their good at the higher price are benefited. Statement III is also correct since an effective price floor results in excess supply of the good. Statement IV is correct as well because suppliers will compete for customers by offering higher-quality goods since they cannot compete for customers by offering lower prices. Statement II is incorrect: demanders of this good now have to pay a higher price than they would have in a freely functioning market.

**15. Answer c.** A quota control by definition is a limit on the number of units of the good that can be offered in the market. Answers (a) and (b) are both incorrect since they discuss price controls rather than quantity controls. Answer (d) is also incorrect since a quota limit reduces the amount of the good available rather than increasing the amount of the good available.

**16. Answer a.** Answer (a) is the basic definition of a quota limit. Answer (b) is incorrect since there is no assumption of the government making a payment to the license holder when there is a quota limit. Answer (c) is incorrect since a quota limit represents the maximum amount of the good allowed in a market rather than the minimum amount. Answer (d) is incorrect since it focuses on price controls rather than quantity controls.

**17. Answer a.** Statement I is correct because quantity controls restrict the amount of output to a level that is less than the equilibrium amount of output, and thus are inefficient since they prevent mutually beneficial trades from occurring. Because quantity controls restrict output, this implies that too few resources are devoted to the production of the good, so statement II is incorrect. Quantity controls do result in a wedge being created, but that wedge is the difference between the price consumers are willing to pay and the price producers must receive to provide the good, thus statement III is incorrect.

**18. Answer d.** Quantity controls restrict output, result in too few resources being devoted to the production of the good, and create an incentive for black market activities as consumers seek out alternative methods for getting the scarce good.