

### Recitation #3 – Week from 01/26/09 to 02/01/09

1. For each of the following situations in the table below, fill in the missing information: first, determine whether this situation causes a shift or a movement along the supply curve; then, if it causes a shift, determine whether the supply curve shifts to the right or to the left.

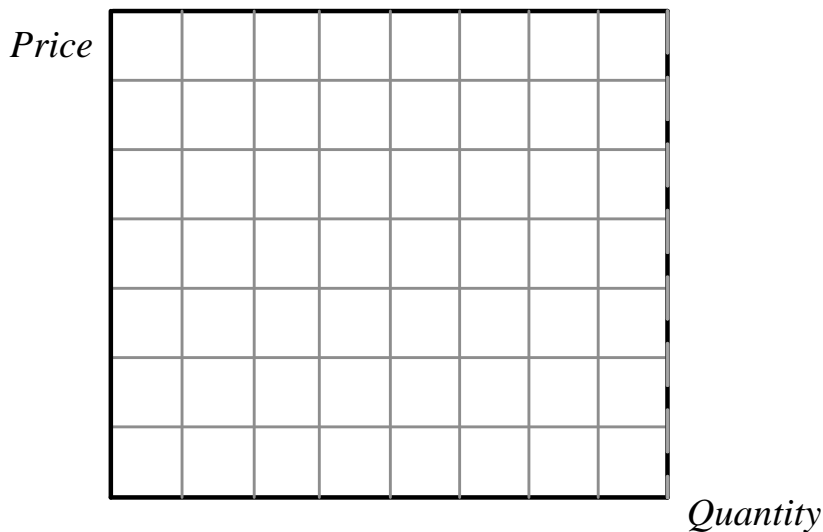
Situation	Specified market	Movement or shift	Rightward or leftward shift in supply
Labor costs for air travel and cruise ships increase	Market for exotic vacations		
Prices of office equipment and phone service rise by 40%	Market for call center services		
Price of bicycles increases	Market for bicycles		
Price of leather boots increases	Market for beef products		
New technology for music-playing device revealed	Market for music-playing devices		
Price of brand-name designer clothing increases	Market for brand-name designer clothing		
Stock market prices expected to fall next quarter	Stock market today		
Increase in number of coffee shop owners in the metro area	Market for coffee shops in the metro area		

2. The competitive market for bicycles in Pedal City is described by the demand curve  $P = 2,000 - 2Q$  and the supply curve  $P = 6Q$ . There are twenty bicycle manufacturers in Pedal City and each of these manufacturers produces the same number of bicycles as every other manufacturer.
- a. Using the two equations for the demand and supply curves, fill in the following table describing the demand and supply schedules for bicycles in Pedal City.

Price	Quantity demanded	Quantity supplied
\$ 0		
240		
480		
720		
960		
1,200		
1,440		
1,680		
1,920		

- b. Examine the table you created in (a) and provide a range of prices that you expect the equilibrium price to fall between. Why do you expect the equilibrium price to fall within this range?
- c. Sketch a graph of the demand and supply curves for bicycles in Pedal City.

Market for Bicycles in Pedal City



- d. If the current price for bicycles is \$240, how many bicycles will be supplied in Pedal City and how many bicycles will a single manufacturer produce? At a price of \$240, how many bicycles will be demanded? At a price of \$240, is the market in equilibrium? Explain your answer.
- e. If the current price for bicycles is \$480, how many bicycles will be supplied in Pedal City and how many bicycles will a single manufacturer produce? At a price of \$480, how many bicycles will be demanded? At a price of \$480, is the market in equilibrium? Explain your answer.
- f. If the current price for bicycles is \$1,680, how many bicycles will be supplied in Pedal City and how many bicycles will a single manufacturer produce? At a price of \$1,680, how many bicycles will be demanded? At a price of \$1,680, is the market in equilibrium? Explain your answer.
- g. Calculate the equilibrium price and the equilibrium quantity in the market for bicycles in Pedal City.

## EconS 101 – Principles of Microeconomics

### Recitation #3 – January 26<sup>th</sup> to February 1<sup>st</sup>, 2009.

Demand given by  $Q = 100 - 2P$

Supply given by  $Q = 10P - 20$

#### 1) Find the equilibrium and calculate CS and PS.

We know that:

(1) Demand:  $Q = 100 - 2P$

(2) Supply:  $Q = 10P - 20$

In order to obtain the equilibrium we have to equalize (1) and (2)

$$100 - 2P = 10P - 20$$

$$-12P = -120 \quad /x-1$$

$$12P = 120$$

$$\mathbf{P = 10} \quad \mathbf{(3)}$$

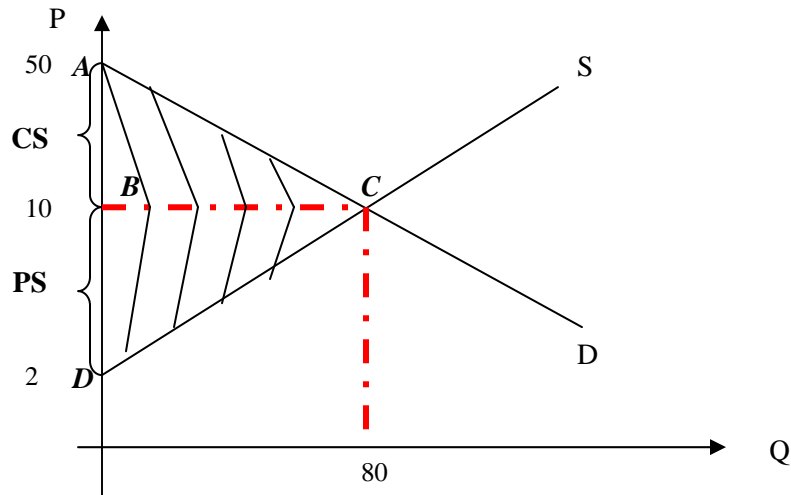
Substituting (3) into (1) or (2):

$$Q = 100 - 2 \times 10$$

$$\mathbf{Q = 80}$$

Moreover we know that: when  $Q_d=0 \implies P_d=50$ , and when  $Q_s=0 \implies P_s=2$

Graphically:



The *Consumer Surplus*<sup>1</sup> is the area of the triangle ABC:

$$CS = \frac{(50 - 10) \times 80}{2} = \frac{40 \times 80}{2} = 1600dls$$

The *Producer Surplus*<sup>2</sup> is the area of the triangle BCD:

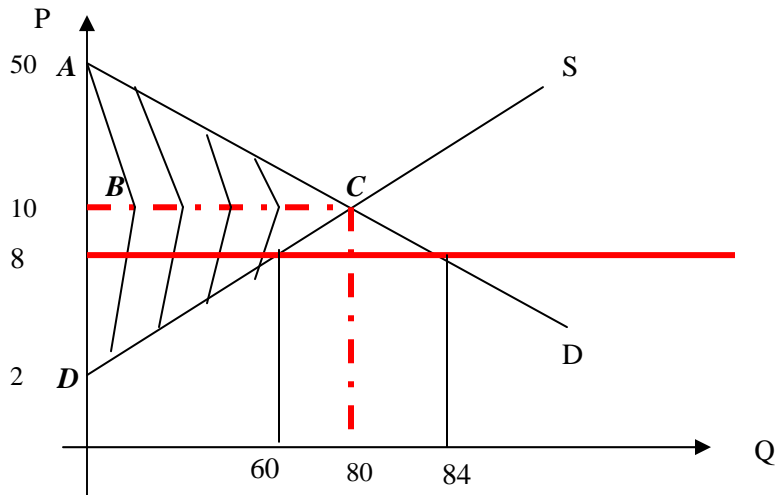
$$PS = \frac{(10 - 2) \times 80}{2} = \frac{8 \times 80}{2} = 320dls$$

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<sup>1</sup> The marginal benefit from a good or service minus the price paid for it, summed over the quantity consumed

<sup>2</sup> The price of a good minus the marginal cost of producing it, summed over the quantity producer.

2) Find the price and quantity traded when the government imposes a price ceiling of 8.



When  $P=8$  we have that the quantity demanded is:

(Using the demand equation)

$$\text{Demand: } Q = 100 - 2 \times 8 = 84$$

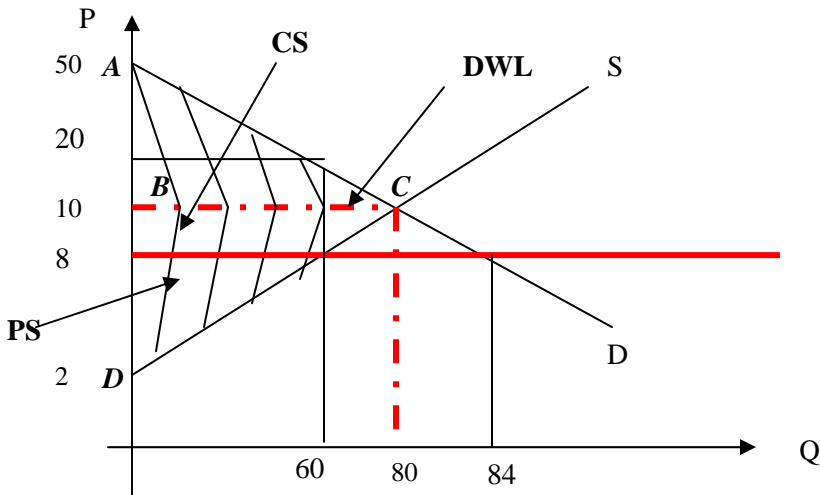
$$\text{Supply: } Q = 10 \times 8 - 20 = 60$$

Therefore the quantity trade is **60** and the price is **8**

3) Find the shortage at this price.

$$\text{Therefore Shortage at this price is } = (84 - 60) = 24$$

4) Calculate CS and PS. Did CS increase compared to case 1)?



From the demand equation we can determine the price that the consumer would pay if the quantity produced is 60:

$$\text{Demand: } 60 = 100 - 2P$$

$$P = 20$$

$$CS = \frac{(50 - 20) \times 60}{2} + (20 - 8) \times 60 = \frac{30 \times 60}{2} + 12 \times 60 = 900 + 720 = 1620 \text{dls}$$

$$PS = \frac{(8 - 2) \times 60}{2} = \frac{6 \times 60}{2} = 180 \text{dls}$$

**CS increases in 20dls (1620-1600)**

5) We know this situation is not efficient, calculate how big the inefficiency<sup>3</sup> is.

$$DWL = \frac{(20 - 8) \times (80 - 60)}{2} = \frac{12 \times 20}{2} = 120 \text{dls}$$

<sup>3</sup> When the professor is asking about inefficiency in this kind of exercises you must think in DWL

**PROBLEMS:**

Suppose the market for demand for the market of milk is given by  $Q=100-2P$  and the supply is given by  $Q=P/2$  (quantity is given in thousand gallons of milk).

**a. Find the equilibrium price of a gallon of milk and the equilibrium quantity.**

Equalizing demand and supply we have:

Demand:  $Q=100-2P$

Supply:  $Q=P/2$

$$100-2P = P/2 \quad / \times 2$$

$$200-4P=P$$

$$\mathbf{P=40}$$

Substituting price into the demand (or Supply) we have:

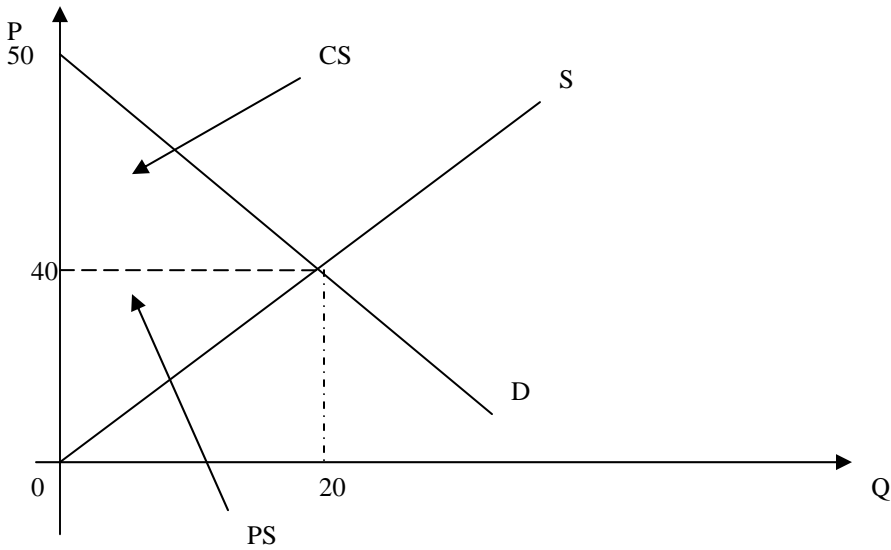
$$Q=100-2 \times 40$$

$$\mathbf{Q=20}$$

When  $Q_d=0$   $P_d=100/2=50$  and  $Q_s=0$   $P=0$

b. (6 points) Find the CS and PS.

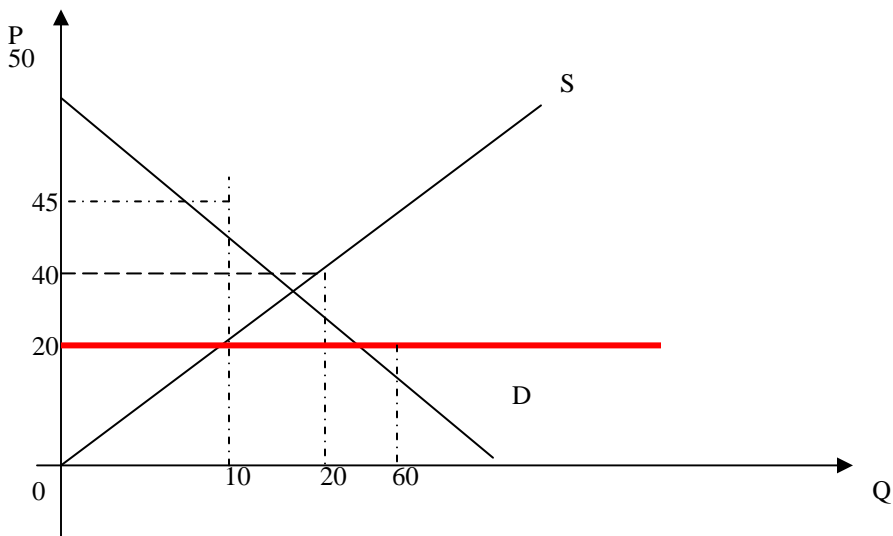




$$CS = \frac{(50 - 40) \times 20}{2} = \frac{10 \times 20}{2} = 100$$

$$PS = \frac{(40 - 0) \times 20}{2} = \frac{40 \times 20}{2} = 400$$

**c. How will the equilibrium change if the government imposes a price ceiling of 20, this is what is the new price and quantity of milk?**



If  $P=20$  then:  $Q_d=100-2 \times 20=60$  and  $Q_s=20/2=10$

Moreover if the quantity that the firm is willing to produce is 10 then the price that it must charge<sup>4</sup> is:  
 $10=100-2P$ ,  $P=45$ .

**d. Find the loss in efficiency due to this price ceiling.**

$$DWL = \frac{(45 - 20) \times (20 - 10)}{2} = \frac{25 \times 10}{2} = 125$$

**e. (4 points) Find the CS after the price ceiling.**

$$CS = \frac{(50 - 45) \times 10}{2} + (45 - 20) \times 10 = 25 + 250 = 275$$

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<sup>4</sup> Remember: the price that firm must charge is obtained from the DEMAND for the market of milk

## MULTIPLE CHOICE QUESTIONS

1. The negative slope of the production possibilities frontier represents the idea
  - a. that free lunches are possible.
  - b. of tradeoffs, that in order to produce more of one good, you must produce less of another.
  - c. of unemployment.
  - d. of inefficient production.
  
2. To find the opportunity cost of producing one more unit of any product while on the production possibilities frontier requires
  - a. setting the amounts of the two products equal to each other.
  - b. setting the change in one product equal to the change in the other product.
  - c. dividing the amount of the product forgone by the amount of the product gained.
  - d. None of these describe how to find opportunity cost..
  
3. A competitive market has no price ceiling nor floor, no external cost nor external benefit, and no taxes. If production of the good is less than the efficient quantity, then
  - a. someone is willing to buy the good for more than the cost of producing it.
  - b. market forces will increase the quantity to its efficient level.
  - c. the marginal cost of another unit of the good exceeds its marginal benefit.
  - d. Both answers (a) and (b) are correct.

4. Which of the following is necessary for allocative efficiency to be achieved?
- a. Marginal benefit must be maximized.
  - b. Marginal cost must be minimized.
  - c. Marginal benefit must equal marginal cost.
  - d. The difference between marginal benefit and marginal cost must be maximized.
5. If John can produce 10 chairs or 20 lamps during a week while Mary can produce 12 chairs or 22 lamps in the same time, who has the comparative advantage in producing each good?
- a. Mary in producing both goods
  - b. John in producing both goods
  - c. Mary in producing chairs, John in producing lamps
  - d. John in producing chairs, Mary in producing lamps.
6. Which of the following will increase the quantity supplied of compact discs but NOT increase the supply of compact discs?
- a. a decrease in the price of a compact disc
  - b. an increase in the price of a compact disc
  - c. a decrease in the number of suppliers of compact discs
  - d. an increase in the price of the resources used to produce compact discs

7. Assume that an association of young workers has lobbied Congress to require that all workers retire once they reach the age of fifty. What impact would this law have on the nation's production possibilities frontier?

a. no impact at all

b. The level of unemployment would decrease so the production possibilities frontier would shift outward.

c. The nation would move to a new position on its production possibilities frontier but the frontier itself would not shift.

d. The production possibilities frontier would shift inward.

<b>Price (dollars)</b>	<b>Quantity demanded (units)</b>
10	2
8	4
6	6
4	8
2	10

## **ANSWERS TO THE MULTIPLE CHOICE EXERCISES**

1. B
2. C
3. D
4. C
5. C
6. B
7. D