# Chapter 7. Consumers, Producers, and the Efficiency of Markets

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# Introduction

- Principle 5: markets are usually a good way to organize economic activity.
- Question: By what standard we can say that markets are usually a good way to organize economic activity?
- People may say because consumers and producers receive benefits from market transactions and markets can make these benefits as large as possible.
- Then what benefits do consumers and producers receive from market transactions?

# Consumer Surplus

- Willingness to pay: the maximum amount that a buyer is willing to pay for a good.
- Example: the willingness to pay for a Taylor Swift's concert ticket.

| Buyer | Willingness to pay |
|---|---|
| Whitney | \$1,000 |
| Ella | \$800 |
| Mariah | \$700 |
| Karen | \$ 500 |

- If the market price for one ticket is \$800, what benefits does Whitney receive from buying one ticket?

# Consumer Surplus

- Example: the willingness to pay for a ticket of Taylor Swift's concert.

| Buyer | Willingness to pay |
|---|---|
| Whitney | \$1,000 |
| Ella | \$800 |
| Mariah | \$700 |
| Karen | \$ 500 |

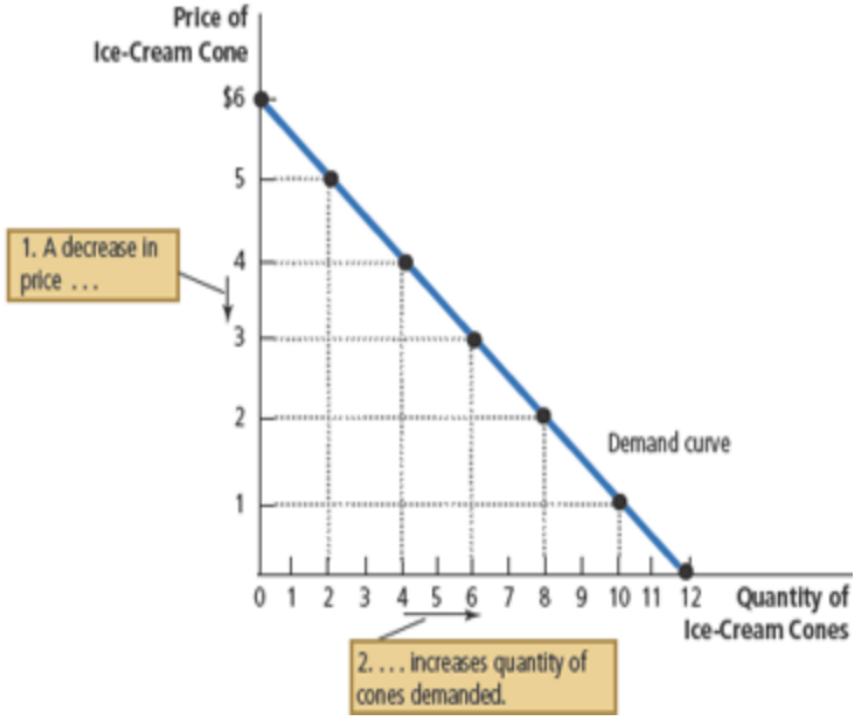
- If the market price for one ticket is \$800, what benefits does Whitney receive from buying one ticket?
- Economists say that Whitney receives consumer surplus of \$(1,000-800) = \$200.

# Consumer Surplus

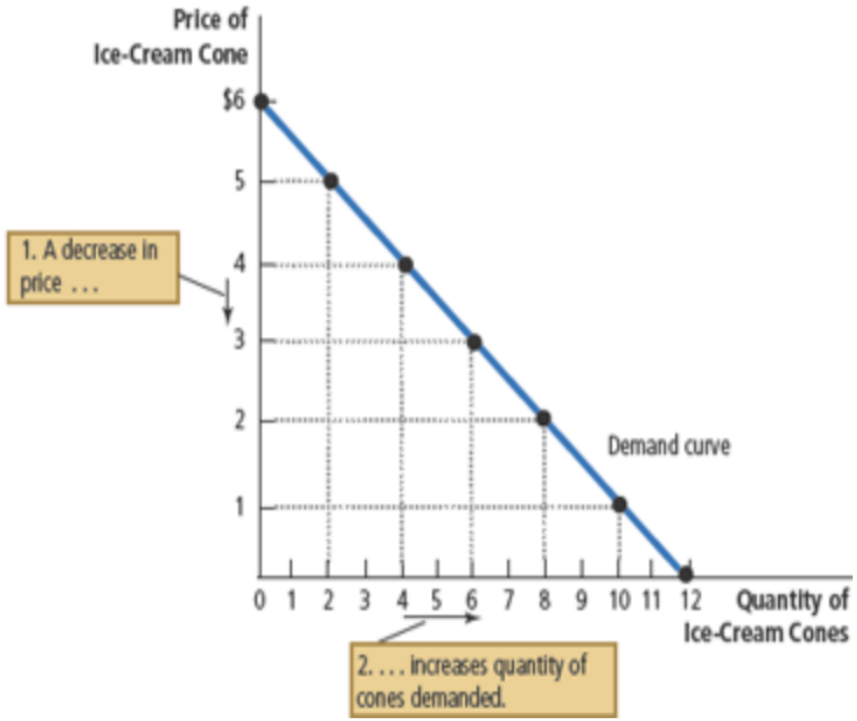
- Consumer surplus: the buyer's willingness to pay minus the price of the good.

| Buyer | Willingness to pay |
|---|---|
| Whitney | \$1,000 |
| Ella | \$800 |
| Mariah | \$700 |
| Karen | \$ 500 |

- Now suppose the market price for one ticket is \$750, who will buy the tickets? what is the total consumer surplus?




- If this is Catherine's demand curve for ice cream, for the point (6, \$3) on the demand curve, our previous interpretation is: When the price of ice cream is \$3, Catherine's quantity demanded for ice cream are 6 units.
- The new interpretation is: Catherine's willingness to pay for the 6th ice cream is \$3 (Catherine's willingness to pay for the 1st, 2nd, 3rd, 4th, and 5th unit of ice cream is larger than \$3).




- If this is the market demand curve for ice cream, for the point (6, \$3) on the demand curve, our previous interpretation is: When the price of ice cream is \$3, market quantity demanded for ice cream are 6 units.
- The new interpretation is: there are at least six consumers whose willingness to pay for one unit of ice cream is at least \$3 (we assume each consumer only buys one ice cream).

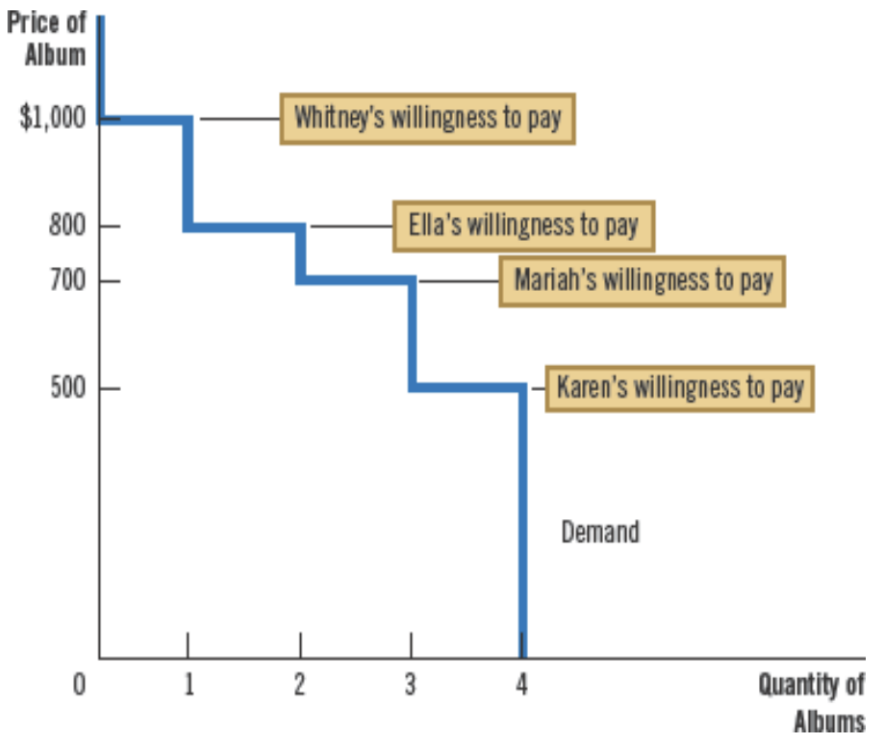
# Using the Demand Curve to Measure Consumer Surplus

- The demand schedule and the demand curve

| Price | Buyers | Quantity Demanded |
|---|---|---|
| More than \$1,000 | None | 0 |
| \$800 to \$1,000 | Whitney | 1 |
| \$700 to \$800 | Whitney, Ella | 2 |
| \$500 to \$700 | Whitney, Ella, Mariah | 3 |
| \$500 or less | Whitney, Ella, Mariah, Karen | 4 |

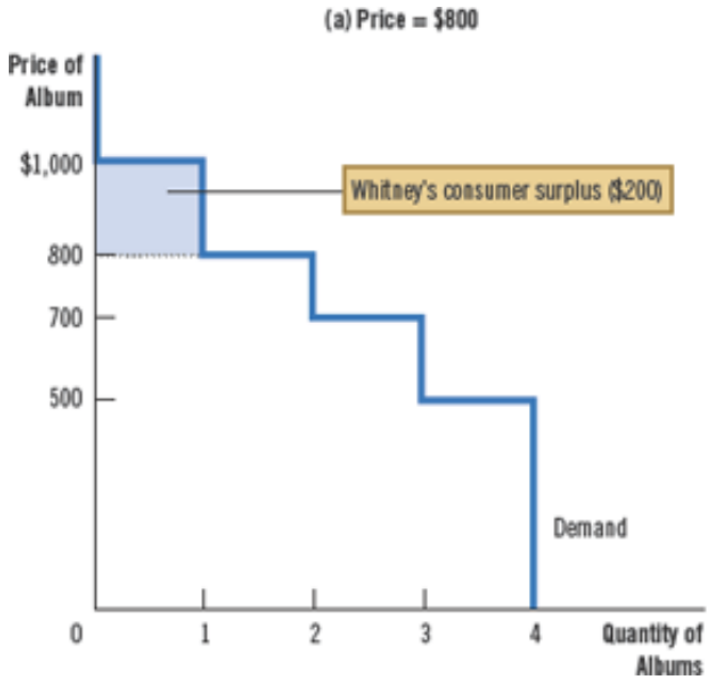
# Using the Demand Curve to Measure Consumer Surplus

- The demand schedule and the demand curve



# How a Lower Price Raises Consumer surplus

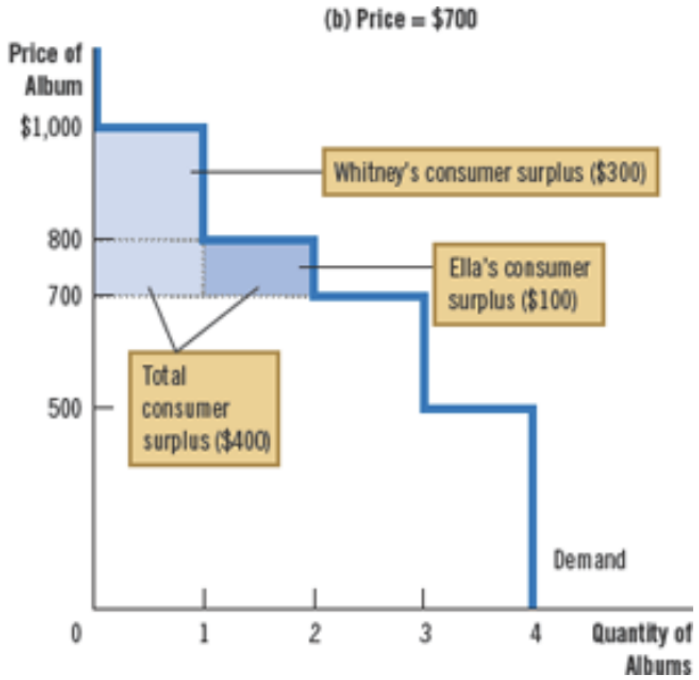
- If the price is \$800 or slightly above, the quantity demanded is 1.




- Consumer surplus is the area above the price line and below the demand curve, which is \$200. This amount is the consumer surplus calculated earlier when only one ticket is sold.

# How a Lower Price Raises Consumer surplus

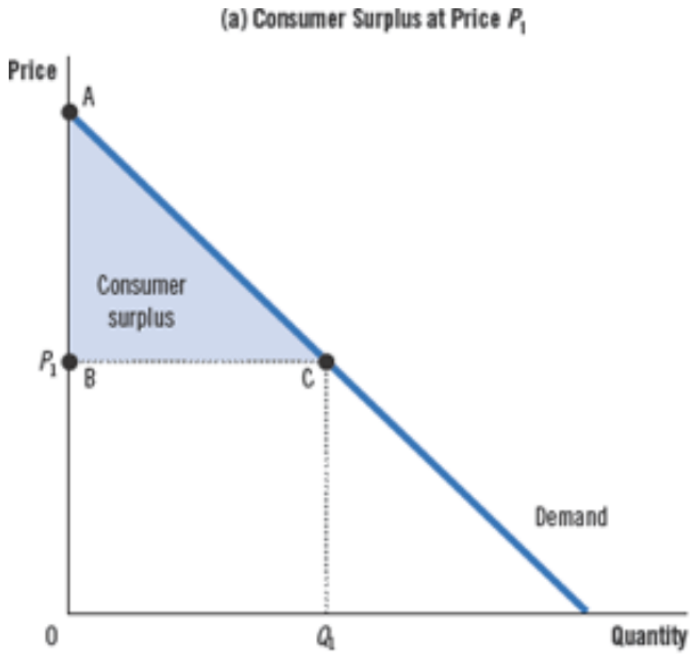
- If the price is \$700 or slightly above, the quantity demanded is 2.




- Consumer surplus is the area above the price line and below the demand curve, which is (\$300 + \$100) = \$400. This amount is the consumer surplus calculated earlier when two tickets are sold.

# How a Lower Price Raises Consumer surplus

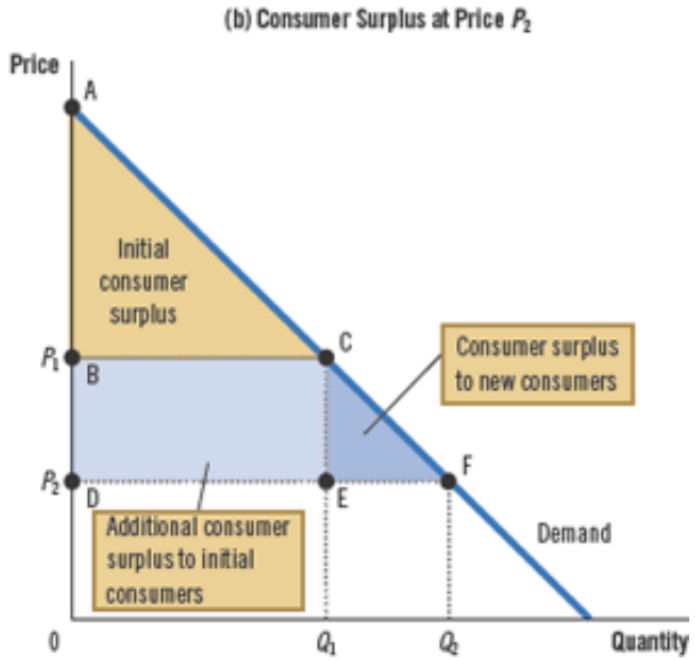
- If there are numerous buyers (this is our assumption about competitive market), we will have a smooth demand curve because the resulting steps from each buyer dropping out is so small compared to the total quantity demanded in the market.




- Consumer surplus is the area above the price line and below the demand curve, which is the area of triangle ABC.

# How a Lower Price Raises Consumer surplus

- If there are numerous buyers (this is our assumption about competitive market), we will have a smooth demand curve because the resulting steps from each buyer dropping out is so small compared to the total quantity demanded in the market.




- Consumer surplus is the area above the price line and below the demand curve, which is the area of triangle ADF.

# Practice 1

For each of the three potential buyers of oranges, the table displays the willingness to pay for Bob, Sasha, and Eric, who are the only three buyers of oranges. Assume that only three oranges can be supplied per day.

| | Willingness to Pay (Dollars) | | |
|---|---|---|---|
| | **First Orange** | **Second Orange** | **Third Orange** |
| **Bob** | 2.00 | 1.50 | 0.75 |
| **Sasha** | 1.50 | 1.00 | 0.60 |
| **Eric** | 0.75 | 0.25 | 0.00 |

. **Refer to Table 7-4.** If the market price of an orange is \$0.60, then the market quantity of oranges demanded per day is

# Producer Surplus

- Cost: the value of everything a seller must give up to produce a good.

- Example: the cost of painting a house by four painting companies.

| Seller | Cost |
|---|---|
| Vincent | \$3,600 |
| Claude | \$3,200 |
| Pablo | \$2,400 |
| Andy | \$ 2,000 |

- Suppose you want to hire one person to paint your house, and these four person bid for this job. Who will get the job and at which price?

# Producer Surplus

| Seller | Cost |
|---|---|
| Vincent | $3,600 |
| Claude | $3,200 |
| Pablo | $2,400 |
| Andy | $ 2,000 |

- If there is only one house that needs painting, Andy will get the job at the price $2, 400 (or slightly less).
- Producer surplus: the amount a seller is paid for a good minus the seller's cost of providing it.
- What is Andy's producer surplus?

# Producer Surplus

| Seller | Cost |
|---|---|
| Vincent | \$3,600 |
| Claude | \$3,200 |
| Pablo | \$2,400 |
| Andy | \$ 2,000 |

- If there are two houses that need painting, Andy and Pablo each will paint one house at the price \$3, 200 (or slightly less). Why?
- What is the total producer surplus?

# Using the Supply Curve to Measure Producer Surplus

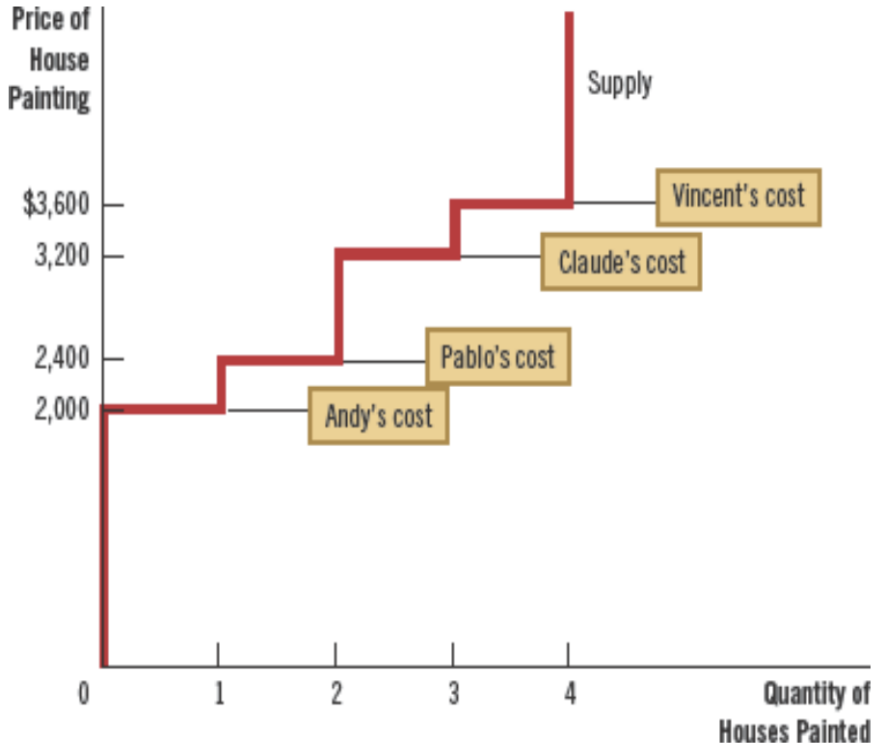
| Seller | Cost |
|---|---|
| Vincent | $3,600 |
| Claude | $3,200 |
| Pablo | $2,400 |
| Andy | $ 2,000 |

- The Supply Schedule

| Price | Sellers | Quantity Supplied |
|---|---|---|
| $3,600 or more | Vincent, Claude, Pablo, Andy | 4 |
| $3,200 to less than $3,600 | Claude, Pablo, Andy | 3 |
| $2,400 to less than $3,200 | Pablo, Andy | 2 |
| $2, 000 to less than $2, 400 | Andy | 1 |
| less than $2, 000 | None | 0 |

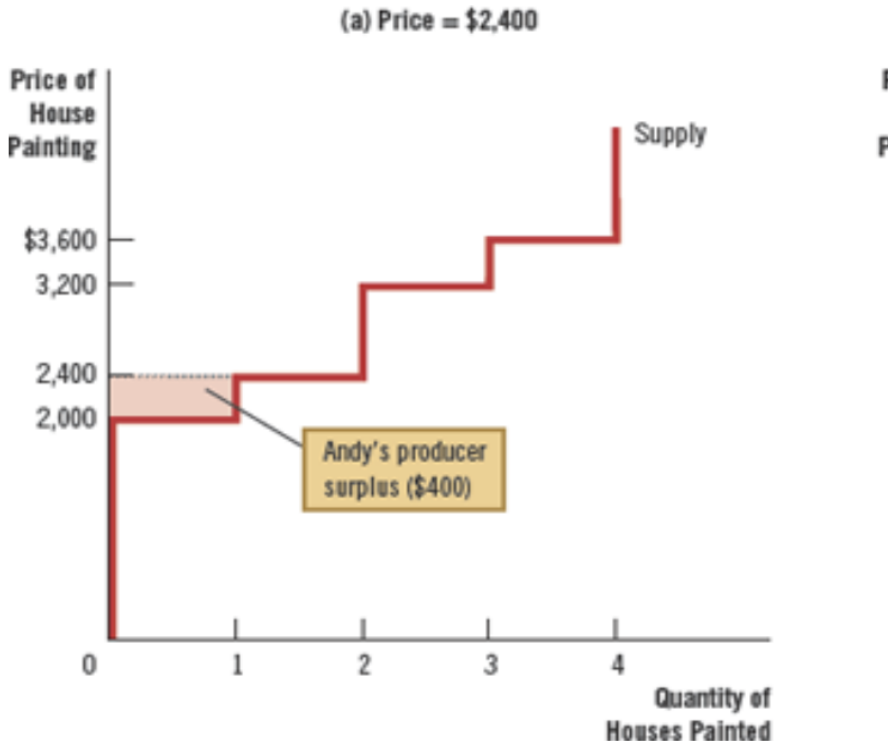
# Using the Supply Curve to Measure Producer Surplus

- The Supply Curve



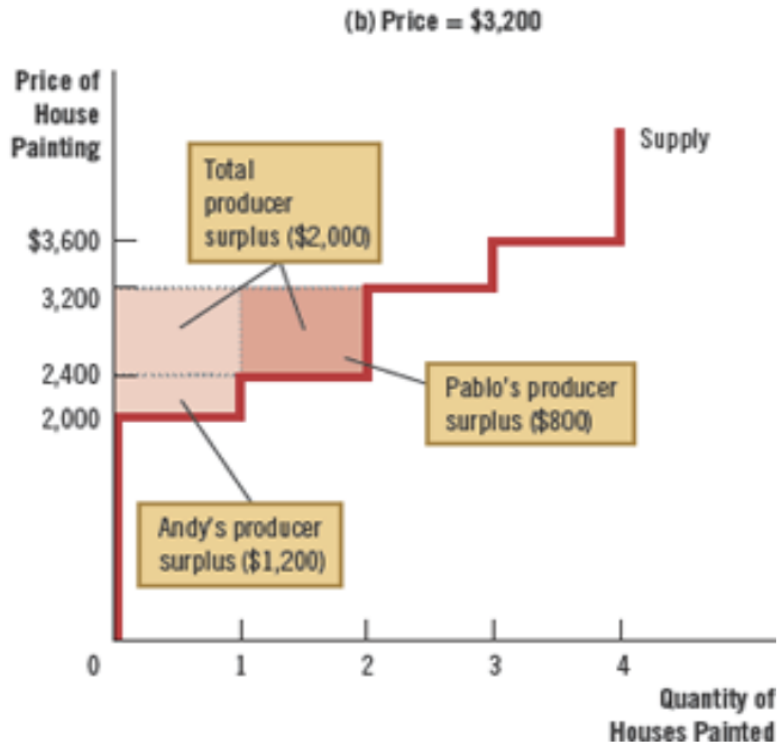
# Using the Supply Curve to Measure Producer Surplus

- The producer surplus when price is \$2,400
- The area below the price and above the supply curve measures the producer surplus.



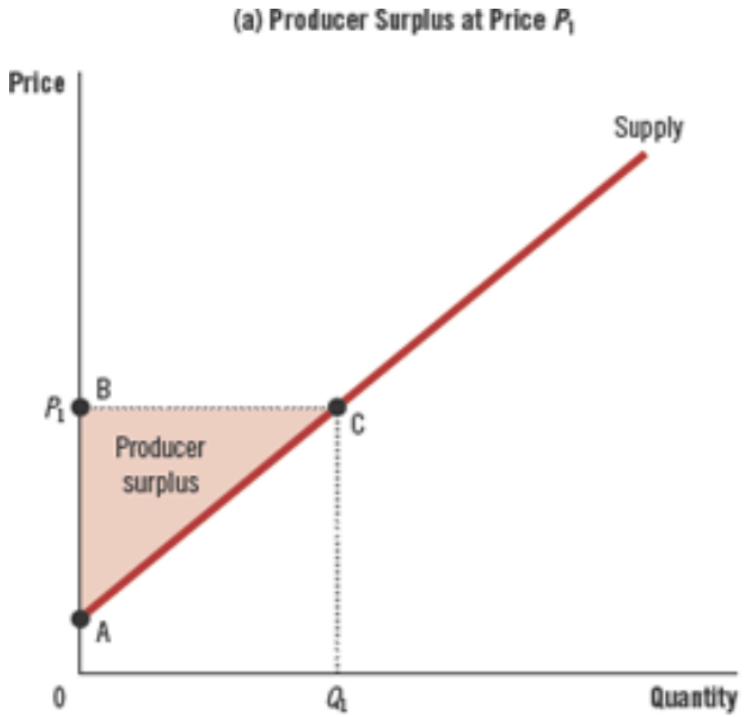
# Using the Supply Curve to Measure Producer Surplus

- The producer surplus when price is \$3,200
- The area below the price and above the supply curve measures the producer surplus.



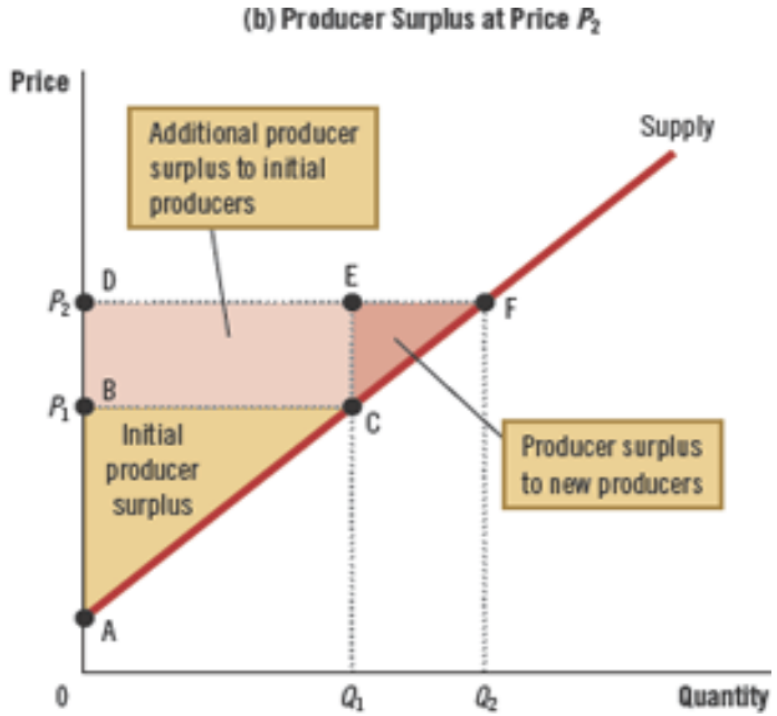
# How a Higher Price Raises Producer Surplus

- If the price is $P_1$, the producer surplus is area of triangle ABC.
- The area below the price and above the supply curve measures the producer surplus.



# How a Higher Price Raises Producer Surplus

- If the price is $P_2$, the producer surplus is area of triangle ADF.
- The area below the price and above the supply curve measures the producer surplus.



| Seller | Cost (Dollars) |
|---|---|
| Nick | 1,600 |
| Laura | 1,300 |
| Sasha | 1,100 |
| David | 900 |
| Carlos | 700 |

. **Refer to Table 7-7**. If the price is $1,050, who would be willing to supply the product?

a. Nick and Laura

b. Nick, Laura, and Sasha

c. David and Carlos

d. Sasha, David and Carlos

. **Refer to Table 7-7**. Suppose each of the five sellers can supply at most one unit of the good. The market quantity supplied is exactly 2 if the price is

# Market Efficiency

- Consumer surplus and producer surplus are the basic tools that economists use to study the welfare of buyers and sellers in a market.
- They can be used to answer the question: Do competitive markets reach a desirable allocation of resources?

# Market Efficiency

- To answer this question, we introduce a hypothetical group: the benevolent social planners.
- The social planners are all-powerful, all-knowing, and well-intentioned. Their intention is to maximize the overall economic well-being of the society.

# Market Efficiency

- To maximize the well-being of the society, social planners must first decide how to measure the well-being of society.
- Total surplus = Consumer surplus + Producer surplus.
- The total surplus in a market is the total value to buyers of the goods, measured by their willingness to pay, minus the total cost to sellers of providing those goods. Why?

# Market Efficiency

- Consumer surplus = Values to buyers - Amount paid by buyers.
- Producer surplus = Value received by sellers - Cost to sellers.
- If there is no tax, then amount paid by buyers equals to value received by sellers.
- Total surplus = Consumer surplus + Producer surplus
  = Values to buyers - cost to sellers.

# Market Efficiency

- If an allocation of resources maximizes total surplus, economists say that the allocation exhibits efficiency.
- If an allocation is not efficient, some of the potential gains from trade among buyers and sellers are not being realized.
- For example, an allocation is not efficient if a good is not being produced by the seller with the lowest costs.

# Market Efficiency

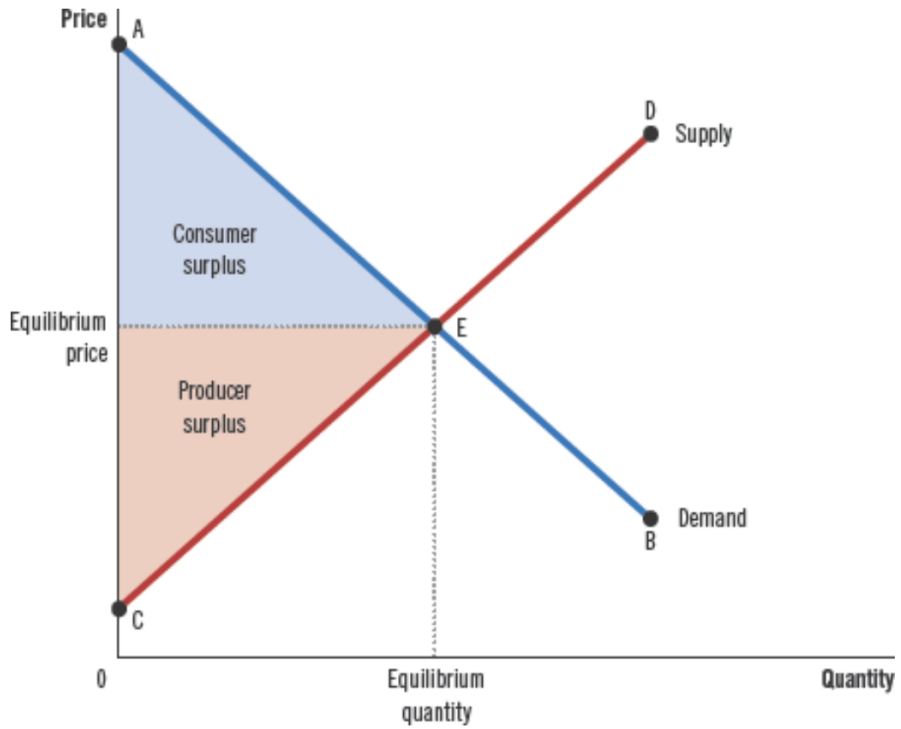
- Social planners can maximize social surplus because they have all the information about the good's value to consumers and the cost to producers.
- They can simply allocate the goods to buyers value the goods most and assign the production to sellers with lowest costs. In this way, the social surplus is maximized.

# Market Efficiency

- Efficiency: the property that a resource allocation maximizes the total surplus received by all members of society.
- Equality: the property that economic prosperity is distributed uniformly among the members of society.

# Evaluating the Market Equilibrium

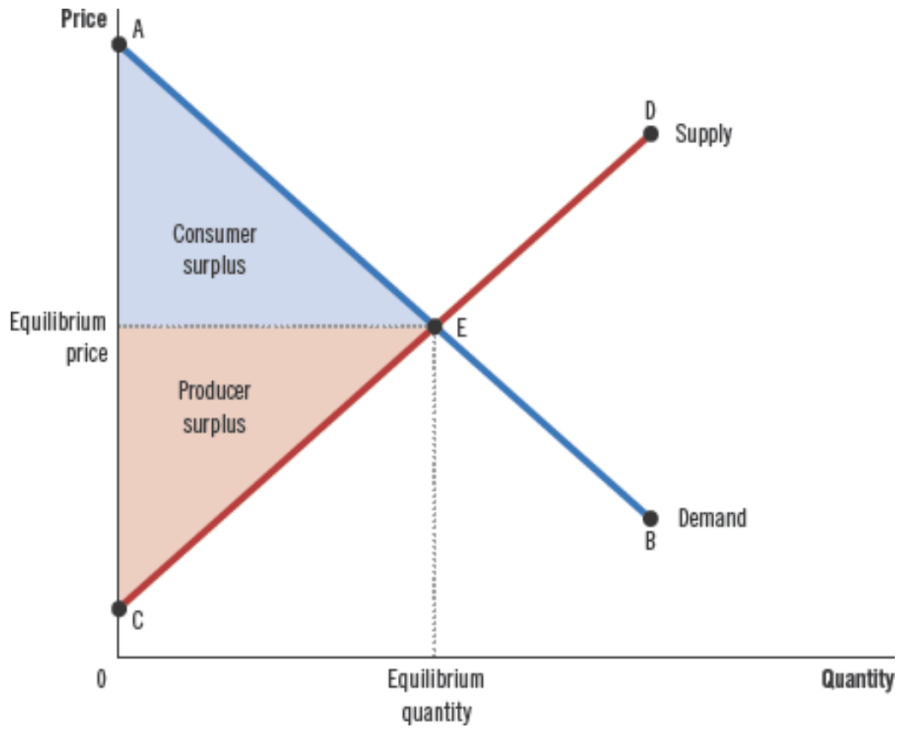
- Consumer surplus equals the area above the price and under the demand curve.
- Producer surplus equals the area below the price and above the supply curve.
- Total surplus is the area between the supply curve and demand curves up to the point of equilibrium.



# Evaluating the Market Equilibrium

- Is this market equilibrium allocation of resources efficient? It is.

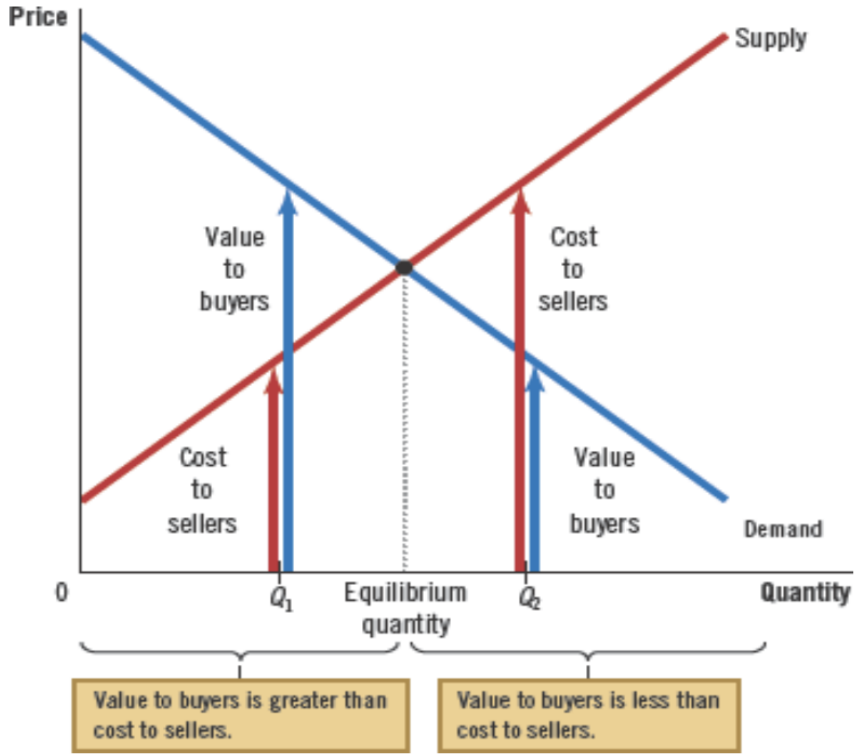
1. Competitive markets allocate goods supplied to the buyers who value them most, as measured by their willingness to pay.
2. Competitive markets allocate the production of goods to sellers who can produce them at the lowest cost.



# Evaluating the Market Equilibrium

- Is this market equilibrium allocation of resources efficient? It is.

3 Competitive markets produce the quantity of godds that maximize the sum of consumer and producer surplus.



# Practice 3

- What is the equilibrium price and quantity?
- At market equilibrium, what is the consumer surplus, producer surplus and social surplus? We assume the demand curve and supply curve are both straight lines.

| Price (Dollars per unit) | Quantity Demanded (Units) | Quantity Supplied (Units) |
|---|---|---|
| 12.00 | 0 | 36 |
| 10.00 | 3 | 30 |
| 8.00 | 6 | 24 |
| 6.00 | 9 | 18 |
| 4.00 | 12 | 12 |
| 2.00 | 15 | 6 |
| 0.00 | 18 | 0 |

# Conclusion: Market Efficiency and Market Failure

- In this chapter we show that even though buyers and sellers are each concerned only about their own welfare, they are guided by market's invisible hand (price) to an equilibrium that maximizes the total benefits to buyers and sellers.
- But to achieve this efficient outcome, we have several assumptions about the market:
  1. We assume that markets are perfectly competitive. No market power.
  2. We assume that market outcome matters only to the buyers and sellers who participate in the market. No externalities.
     - Market power and externalities are examples of market failure.

# Conclusion: Market Efficiency and Market Failure

- Market power: the ability of a single buyer or seller (or a group of them) to have a substantial influence on market prices..
- Externalities: the impact of one person's act on the well-being of a bystander.
- Market failure: a situation in which a market left on its own does not allocation resources efficiently.