

Markets in Perfect Competition (II)

“There is always an opportunity created by a new demand ...”



Supply, Demand and Equilibrium (I)

Finding the Equilibrium Price and Quantity (I)

- A **competitive market** is in **equilibrium** when price has moved to a level at which the **quantity demanded** of a good equals the **quantity supplied** of that good.
- The price at which this takes place is **the equilibrium price**, also referred to as the **market-clearing price**. The **quantity** of the good **bought and sold** at that price is the **equilibrium quantity**.
- Every buyer finds a seller and vice versa.

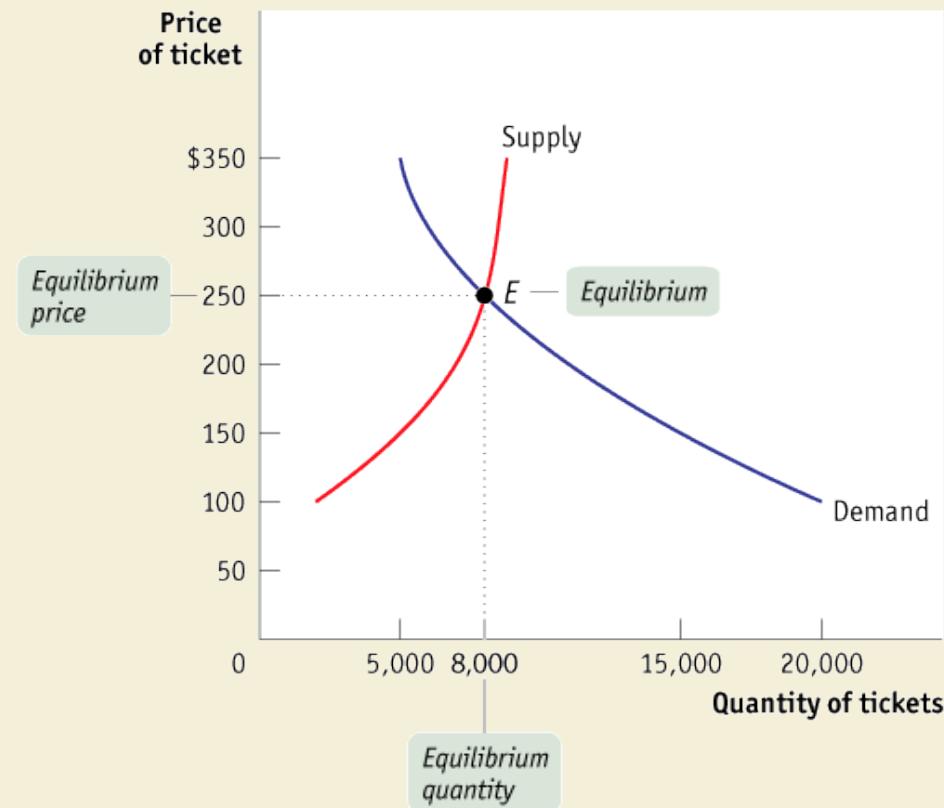
Supply, Demand and Equilibrium (II)

Finding the Equilibrium Price and Quantity (II)

Figure 3-9

Market Equilibrium

Market equilibrium occurs at point *E*, where the supply curve and the demand curve intersect. In equilibrium, the quantity demanded is equal to the quantity supplied. In this market, the equilibrium price is \$250 and the equilibrium quantity is 8,000 tickets.



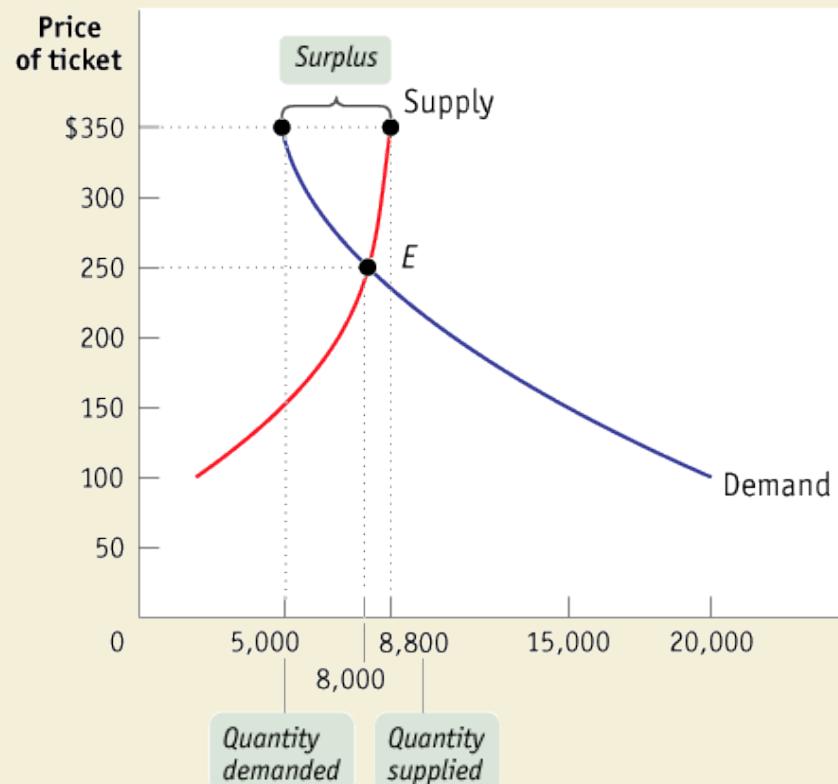
Supply, Demand and Equilibrium (II)

Why Does the Market Price Fall when It Is Above the Equilibrium Price?

Figure 3-10

Price Above Its Equilibrium Level Creates a Surplus

The market price of \$350 is above the equilibrium price of \$250. This creates a surplus: at \$350 per ticket, suppliers would like to sell 8,800 tickets but fans are willing to purchase only 5,000, so there is a surplus of 3,800 tickets. This surplus will push the price down until it reaches the equilibrium price of \$250.



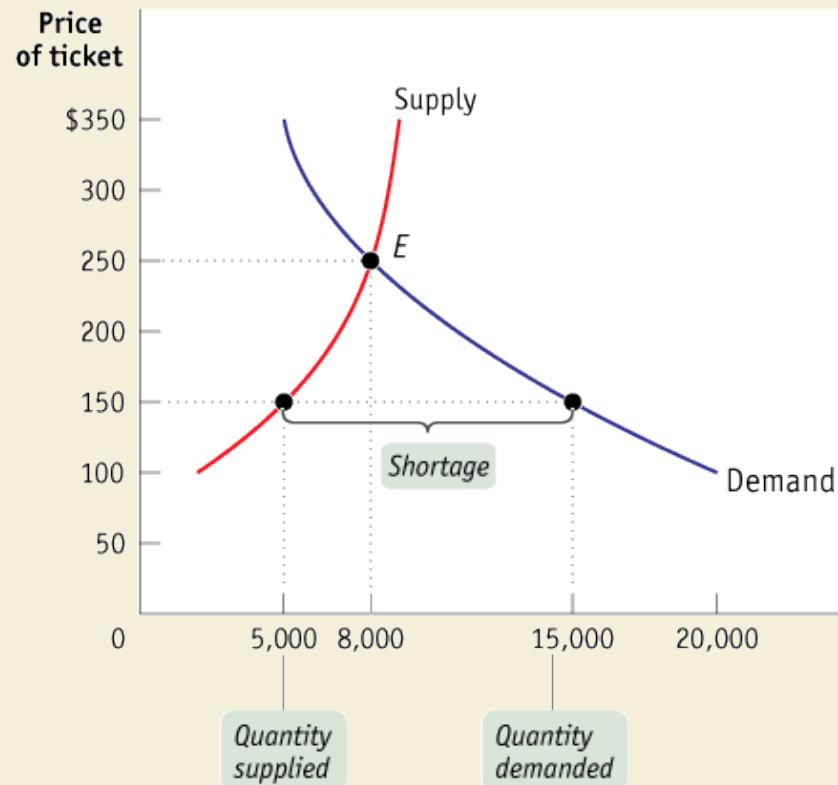
Supply, Demand and Equilibrium (III)

Why Does the Market Price Rise when It Is Below the Equilibrium Price?

Figure 3-11

Price Below Its Equilibrium Level Creates a Shortage

The market price of \$150 is below the equilibrium price of \$250. This creates a shortage: fans want to buy 15,000 tickets but only 5,000 are offered for sale, so there is a shortage of 10,000 tickets. This shortage will push the price up until it reaches the equilibrium price of \$250.



Supply, Demand and Equilibrium (VI)

Why Does the Market Price Fall (Rise) If It Is Above (Below) the Equilibrium Price?

- There is a **surplus** of a good when the **quantity supplied exceeds the quantity demanded**. Surpluses occur when **the price is above its equilibrium level**.
- There is a **shortage** of a good when the **quantity demanded exceeds the quantity supplied**. Shortages occur when **the price is below its equilibrium level**.
- A market tends to have a **single price** – the market price falls if it is above the equilibrium level but rises if it is below that level.
- The market price always moves toward the equilibrium price, the price at which there is neither surplus nor shortage.

Check your understanding (I)

In the following situation, the market is initially in equilibrium

- 2012 was a very good year for California wine-grape growers, who produced a bumper crop. This causes:
 1. a shortage of grapes and prices rise.
 2. a shortage of grapes and prices fall.
 3. a surplus of grapes and prices rise.
 4. a surplus of grapes and prices fall.

Check your understanding (II)

In the following situation, the market is initially in equilibrium

- After a hurricane, Florida hoteliers often find that people cancel their upcoming vacations, leaving them with empty hotel rooms. This causes:
 1. a shortage of hotel rooms and prices rise.
 2. a shortage of hotel rooms and prices fall.
 3. a surplus of hotel rooms and prices rise.
 4. a surplus of hotel rooms and prices fall.

Check your understanding (III)

In the following situation, the market is initially in equilibrium

- After a heavy snowfall, many people want to buy secondhand snow blowers at the local tool shop. This causes:
 1. a shortage of secondhand snow blowers and prices rise.
 2. a shortage of secondhand snow blowers and prices fall.
 3. a surplus of secondhand snow blowers and prices rise.
 4. a surplus of secondhand snow blowers and prices fall.

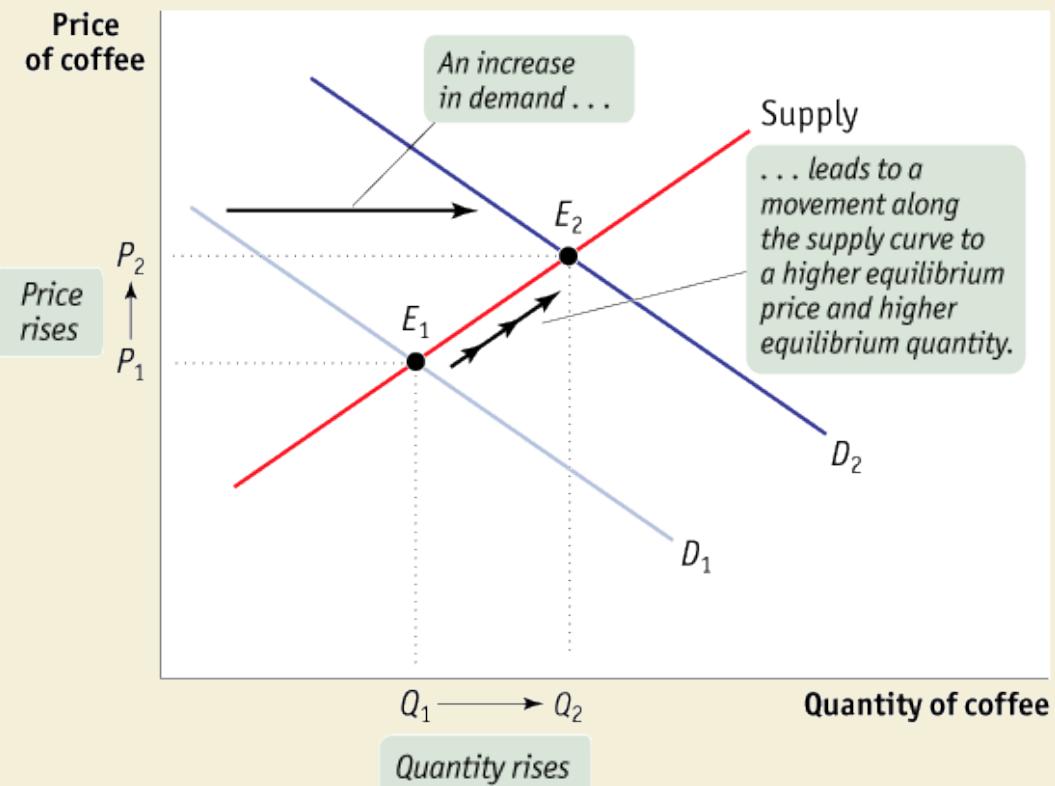
Changes in Supply and Demand (I)

What Happens When the Demand Curve Shifts?

Figure 3-12

Equilibrium and Shifts of the Demand Curve

The original equilibrium in the market for coffee is at E_1 , at the intersection of the supply curve and the original demand curve D_1 . A rise in the price of tea, a substitute, shifts the demand curve rightward to D_2 . A shortage exists at the original price P_1 , so both price and the quantity supplied rise, a movement along the supply curve. A new equilibrium is reached at E_2 , with a higher equilibrium price P_2 and a higher equilibrium quantity Q_2 . *When demand for a good increases, the equilibrium price and the equilibrium quantity of the good both rise.*



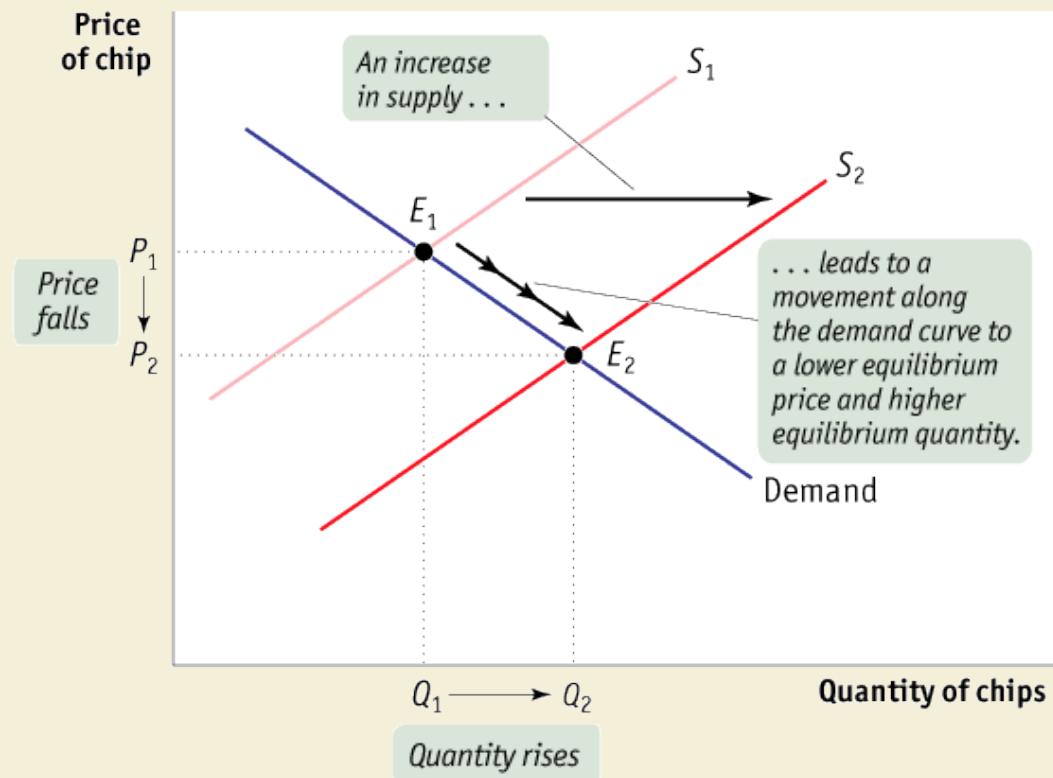
Changes in Supply and Demand (II)

What Happens When the Supply Curve Shifts?

Figure 3-13

Equilibrium and Shifts of the Supply Curve

The original equilibrium in the market for silicon chips is at E_1 , at the intersection of the demand curve and the original supply curve S_1 . After a technological change increases the supply of silicon chips, the supply curve shifts rightward to S_2 . A surplus exists at the original price P_1 , so price falls and the quantity demanded rises, a movement along the demand curve. A new equilibrium is reached at E_2 , with a lower equilibrium price P_2 and a higher equilibrium quantity Q_2 . *When supply of a good increases, the equilibrium price of the good falls and the equilibrium quantity rises.*



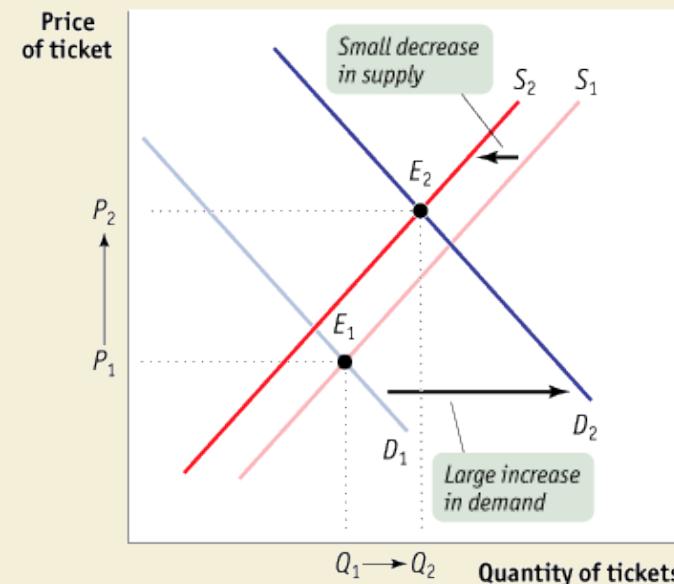
Changes in Supply and Demand (III)

Simultaneous Shifts in Supply and Demand

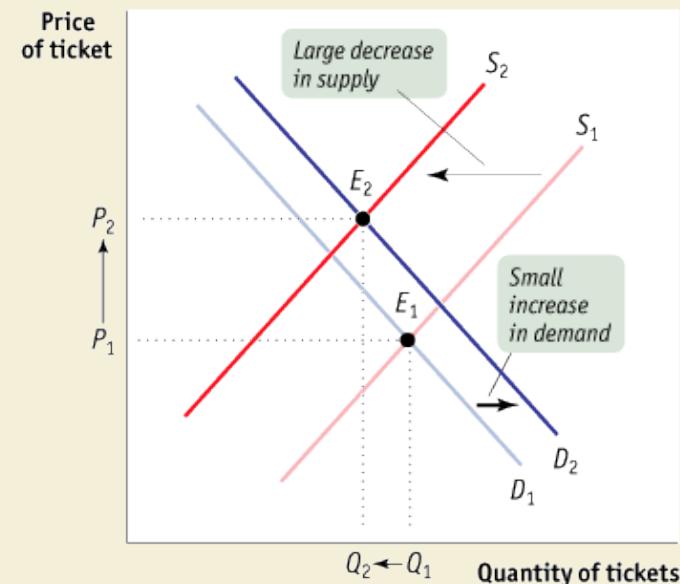
Figure 3-14

Simultaneous Shifts of the Demand and Supply Curves

(a) One Possible Outcome:
Price Rises, Quantity Rises



(b) Another Possible Outcome:
Price Rises, Quantity Falls



In panel (a) there is a simultaneous rightward shift of the demand curve and leftward shift of the supply curve. Here the increase in demand is relatively larger than the decrease in supply, so the equilibrium price and equilibrium quantity both rise.

In panel (b) there is also a simultaneous rightward shift of the demand curve and leftward shift of the supply curve. Here the decrease in supply is relatively larger than the increase in demand, so the equilibrium price rises and the equilibrium quantity falls.

Changes in Supply and Demand (IV)

Simultaneous Shifts in Supply and Demand

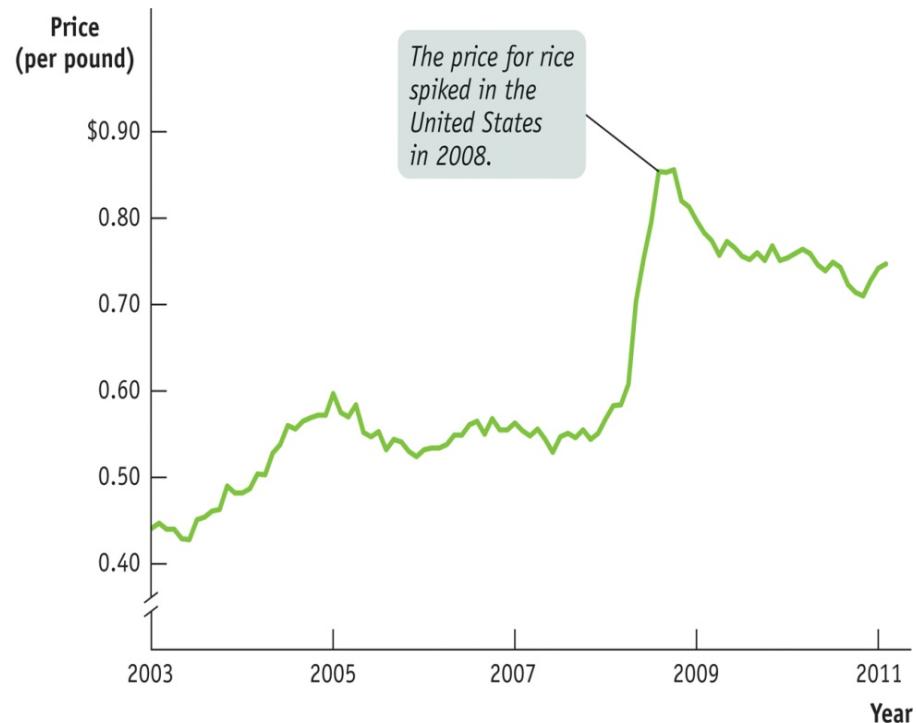
<i>Simultaneous Shifts of Supply and Demand</i>	Supply Increases	Supply Decreases
Demand Increases	<u>Price</u> : ambiguous <u>Quantity</u> : up	<u>Price</u> : up <u>Quantity</u> : ambiguous
Demand Decreases	<u>Price</u> : down <u>Quantity</u> : ambiguous	<u>Price</u> : ambiguous <u>Quantity</u> : down

Example (I)

The Rice Run of 2008

- In April 2008, the price of rice exported from Thailand (the global benchmark) was \$950 a ton, compared to \$360 a ton at the beginning of 2008.
- Knowing that:
 - Growing incomes in India and China
 - Drought in Australia
 - Export ban by India

Explain the rise in rice price.



Source: U.S. Bureau of Labor Statistics.

Example (II)

The Tortilla Crisis

- There was a sharp rise in the price of tortillas, a staple food of Mexico's poor, which had gone from 25 cents/pound to between 35 and 45 cents/pound in just a few months in early 2007.
- Why did tortilla prices soar?
- Tortillas are made from corn; much of Mexico's corn is imported from the United States, with the price of corn in both countries basically set in the U.S. corn market.
- U.S. corn prices were rising rapidly thanks to surging demand in a new market: the market for [ethanol](#).

Consumer Surplus and the Demand Curve (I)

Consumer Surplus

- A consumer's **willingness to pay** for a good is the maximum price at which he or she would buy that good.
- **Individual consumer surplus** is the net gain to an individual buyer from the purchase of a good.
- **Consumer surplus** can also be stated as:
Buyer's willingness to pay – Price paid
or
Area below demand curve but above price

Consumer Surplus and the Demand Curve (II)

Willingness to Pay and Consumer Surplus

- **Total consumer surplus** is the sum of the individual consumer surpluses of all the buyers of a good in a market.
- The term **consumer surplus** is often used to refer to both individual and total consumer surplus.

Consumer Surplus and the Demand Curve (III)

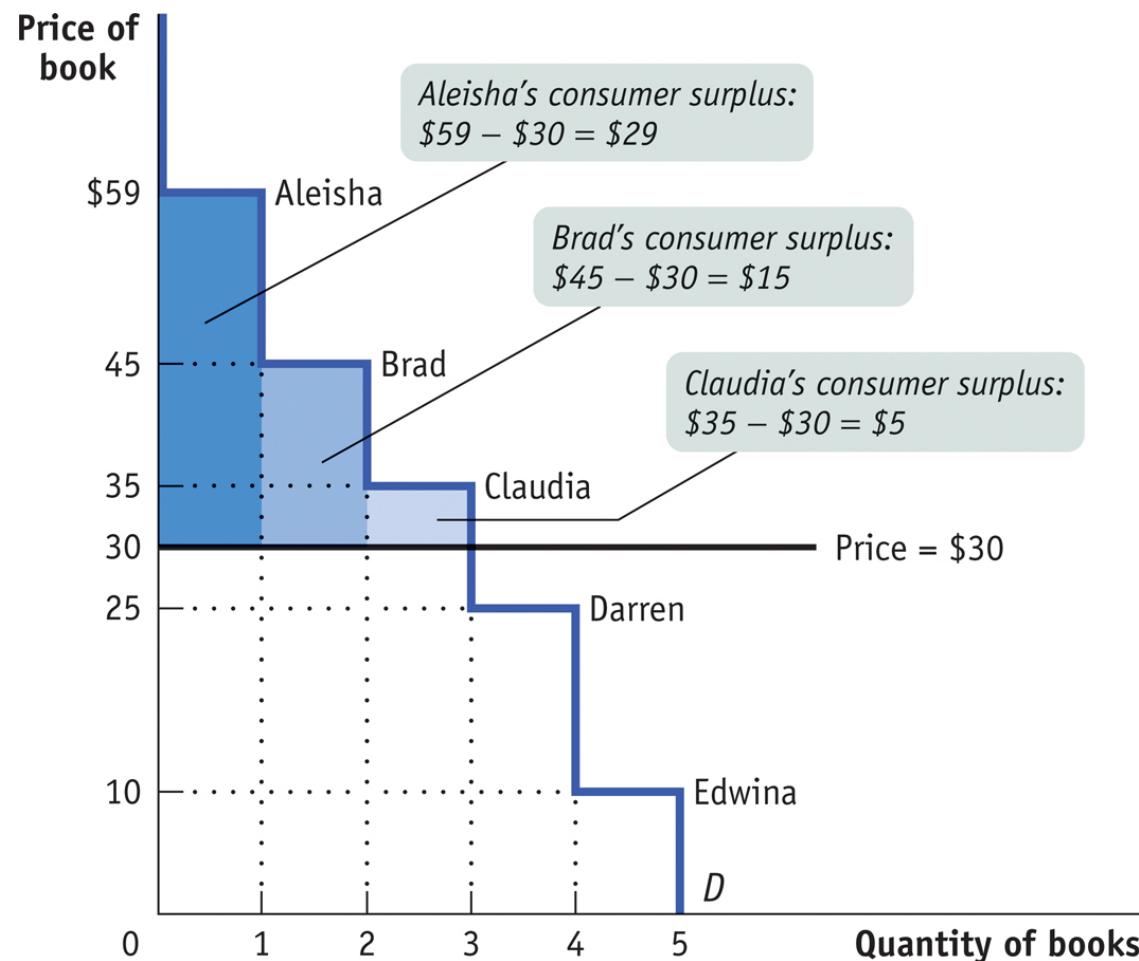
Example (I)

TABLE 4-1 Consumer Surplus When the Price of a Used Textbook Is \$30

Potential buyer	Willingness to pay	Price paid	Individual consumer surplus = Willingness to pay – Price paid
Aleisha	\$59	\$30	\$29
Brad	45	30	15
Claudia	35	30	5
Darren	25	—	—
Edwina	10	—	—
All buyers			Total consumer surplus = \$49

Consumer Surplus and the Demand Curve (IV)

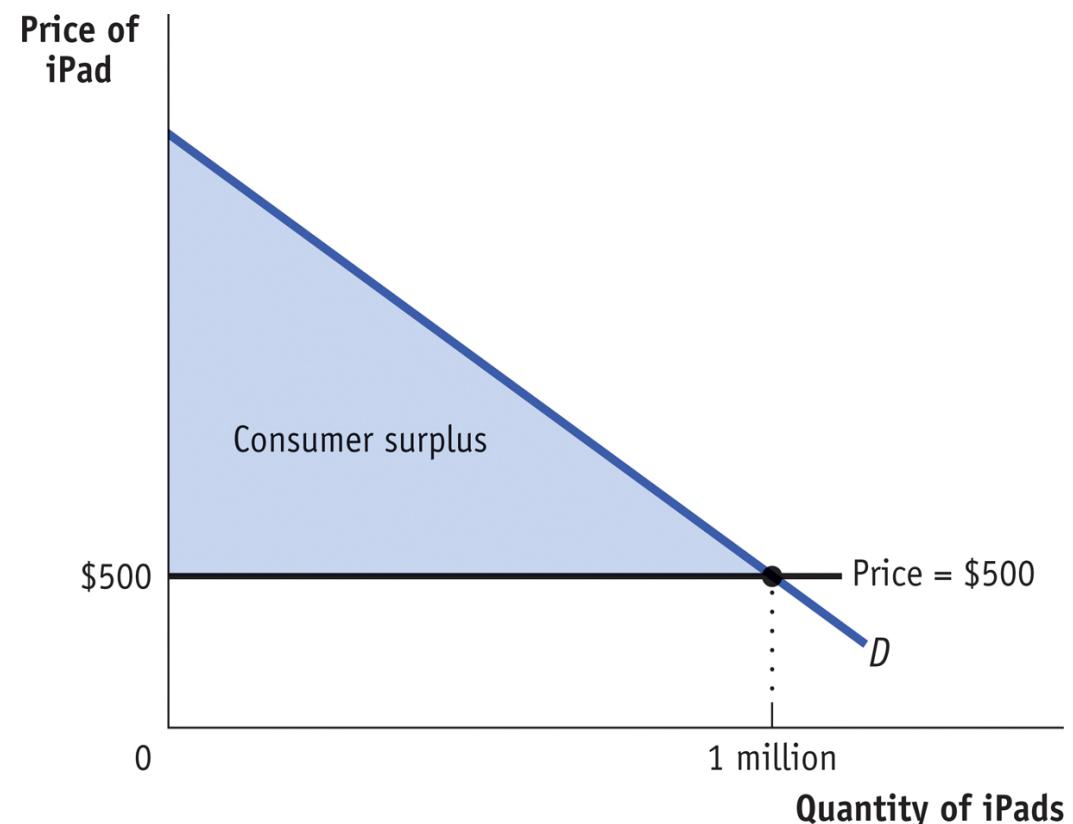
Example (II)



Consumer Surplus and the Demand Curve (V)

A fall in the price of a good increases consumer surplus through two channels:

1. A gain to consumers who would have bought at the original price and
2. A gain to consumers who are persuaded to buy by the lower price.



Consumer Surplus and the Demand Curve (VI)

Example: A Matter of Life and Death

- In 2010 over 3,900 people in the US die while waiting for a kidney transplant.
- Under current United Network for Organ Sharing (UNOS) guidelines, a donated kidney goes to the person who has waited the longest regardless of his or her age.
- The UNOS is devising a new set of guidelines that would allocate kidneys according to those who will receive the greatest net benefit, where the net benefit is measured as the increase in lifespan from the transplant. This change would increase the recipients' extra years by 11,000.
- The net benefit concept is similar to consumer surplus: the individual consumer surplus generated from getting a new kidney.

Producer Surplus and the Supply Curve (I)

Producer Surplus

- A potential seller's **cost** is the lowest price at which he or she is willing to sell a good.
- **Total producer surplus** in a market is the sum of the individual producer surpluses of all the sellers of a good.
- **Individual producer surplus** is the net gain to a seller from selling a good.

Price received – Seller's cost

or

Area above the supply curve below price

Producer Surplus and the Supply Curve (II)

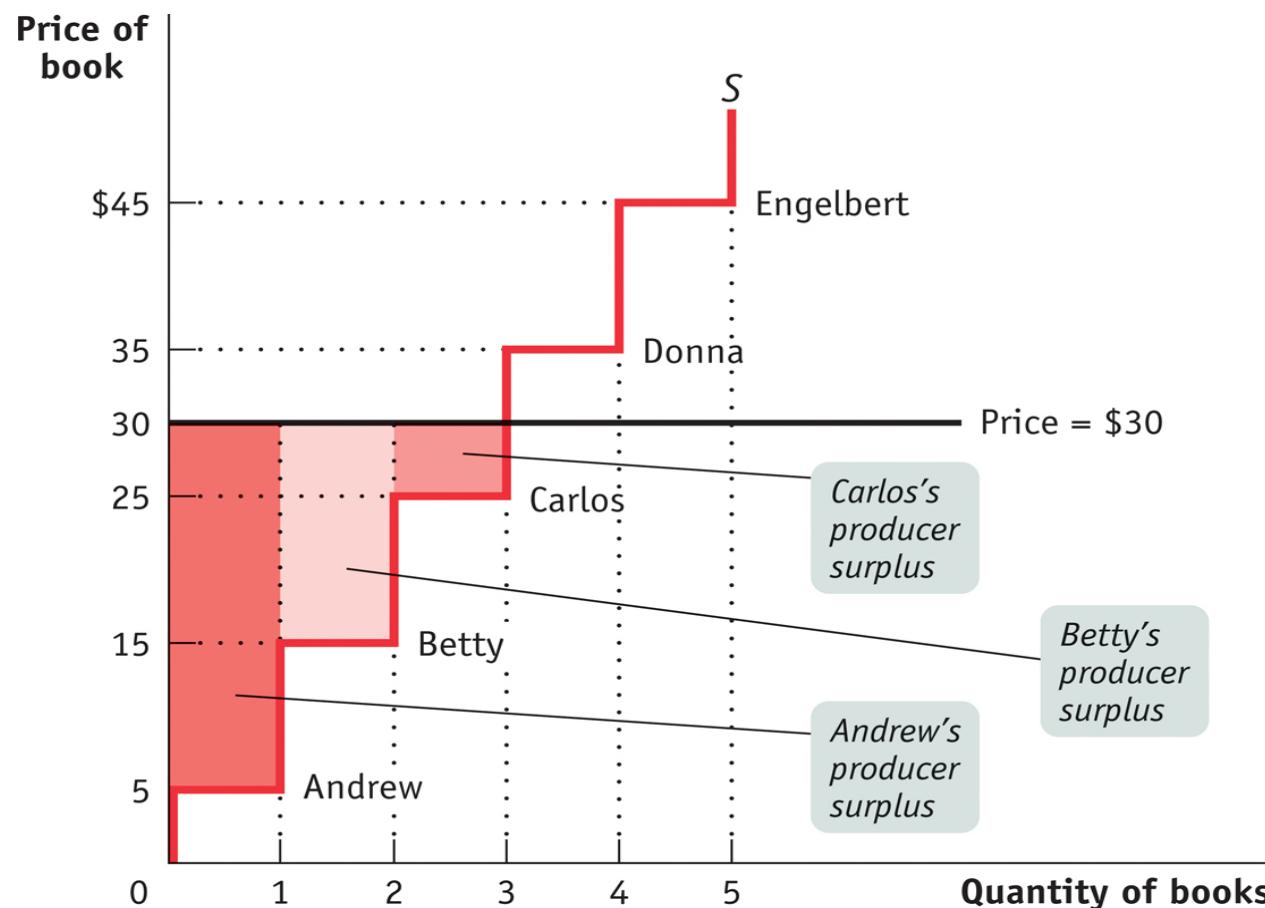
Example (I)

TABLE 4-2 Producer Surplus When the Price of a Used Textbook Is \$30

Potential seller	Cost	Price received	Individual producer surplus = Price received – Cost
Andrew	\$5	\$30	\$25
Betty	15	30	15
Carlos	25	30	5
Donna	35	—	—
Engelbert	45	—	—
All sellers		Total producer surplus = \$45	

Producer Surplus and the Supply Curve (III)

Example (II)

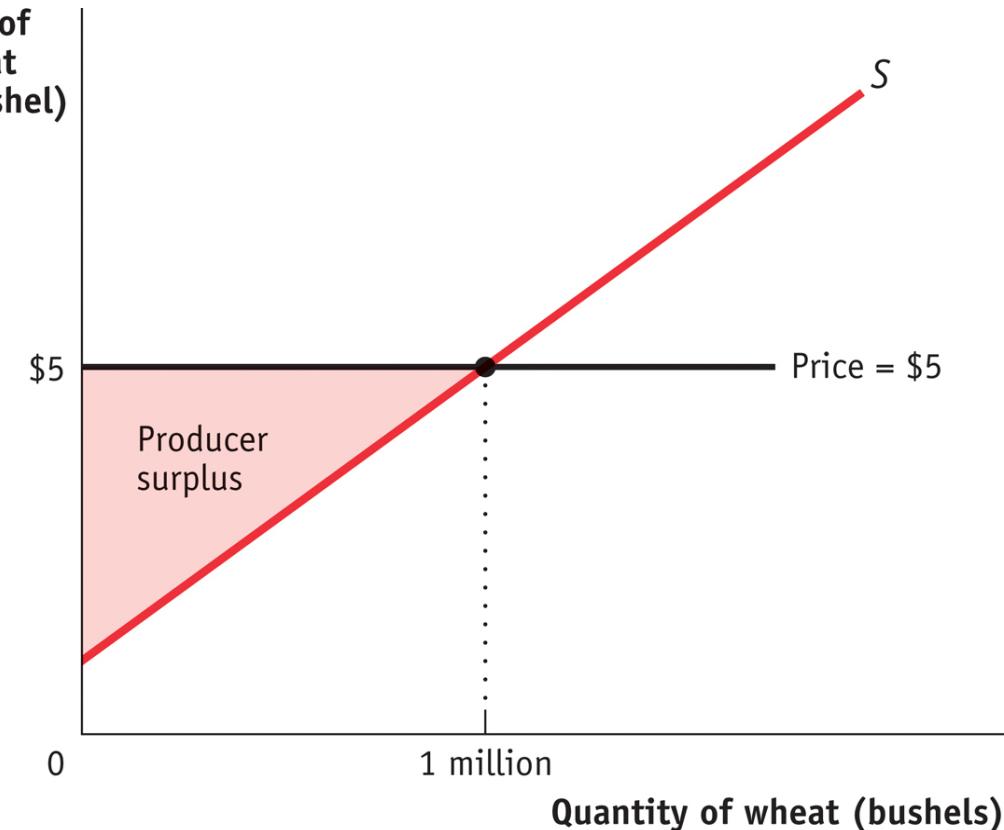


Producer Surplus and the Supply Curve (IV)

Producer Surplus

A rise in the price of a good increases producer surplus through two channels:

1. A gain to producers who would have sold at the original price and
2. A gain to producers who will now sell at a higher price.



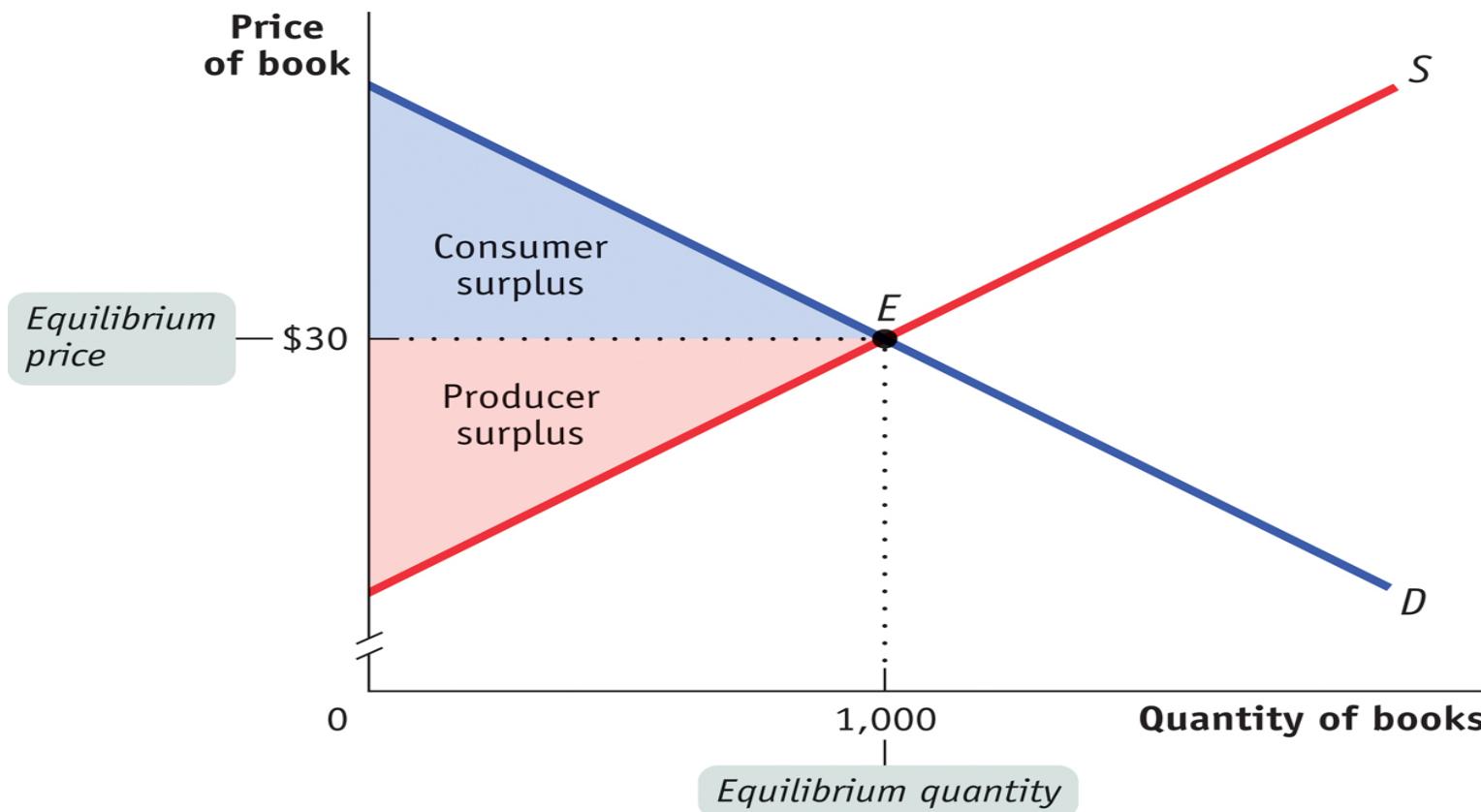
Putting all Together: Total Surplus (I)

Total Surplus (I)

- The **total surplus** generated in a market is
 - total net gain to consumers and producers from trading in the market
 - or
 - the sum of the producer and the consumer surplus.
- The concepts of consumer surplus and producer surplus can help us understand why markets are an effective way to organize economic activity.

Putting all Together: Total Surplus (II)

Total Surplus (II)



Consumer Surplus and Producer Surplus

Gains from Trade

Both consumers and producers are better off because there is a market for this good, i.e., there are ***gains from trade***.

- These gains from trade are the reason people are better off participating in a market economy than they would be if each individual tried to be self-sufficient.
- But are we as well off as we could be? This brings us to the question of the efficiency of markets.

Check your Understanding (I)

Two consumers, Casey and Josey, want cheese-stuffed jalapeno peppers for lunch. Two producers, Cara and Jamie, can provide them. The table shows the consumers' willingness to pay and the producers' costs. Note that consumers and producers in this market are not willing to consume or produce more than four peppers at any price.

Quantity of peppers	Casey's willingness to pay	Josey's willingness to pay	Cara's cost	Jamie's cost
1st pepper	\$0.90	\$0.80	\$0.10	\$0.30
2nd pepper	0.70	0.60	0.10	0.50
3rd pepper	0.50	0.40	0.40	0.70
4th pepper	0.30	0.30	0.60	0.90

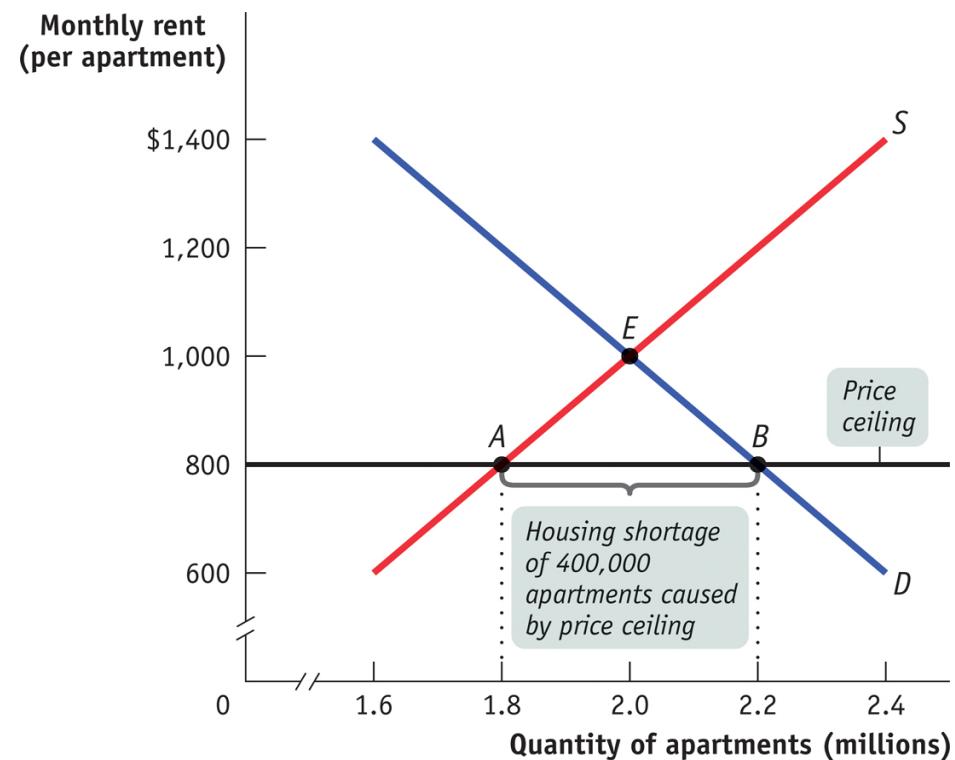
- What is the quantity demanded when $Price = \$0.90$?
- The supply schedule when $Price = \$0.70$?
- The equilibrium price and quantity?
- Total consumer surplus at equilibrium?
- Producer surplus at equilibrium?

Why Do Governments Control Prices (I)

- The market price moves to a level at which **quantity supplied = quantity demanded**, however this equilibrium price may not please either buyers or sellers.
- The government intervenes with **price controls**, which are legal restrictions on how high or low a market price may go.
 - A **price ceiling** is the **maximum price** sellers are allowed to charge for a good or service.
 - A **price floor** is the **minimum price** buyers are required to pay for a good or service.

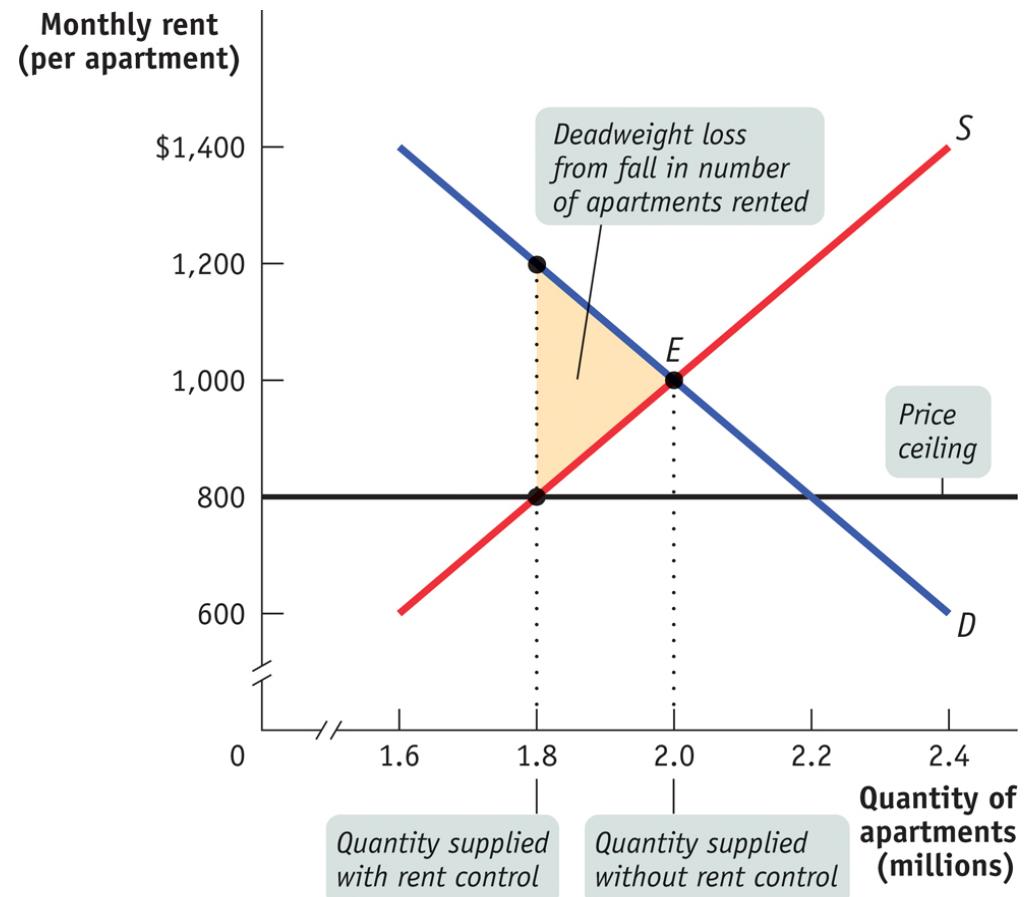
Why Do Governments Control Prices (II)

- Price Ceiling: The maximum price sellers are allowed to charge for a good or a service
- Price ceilings are typically imposed during crises—wars, harvest failures, natural disasters—because these events often lead to sudden price increases that hurt many people but produce big gains for a lucky few.
 - Ex.: Ceilings on aluminum and steel prices imposed by the U.S. government during World War II, rent control in New York



Why Do Governments Control Prices (III)

- An **inefficiently low quantity** is lower than the quantity in an unregulated market. It creates a **deadweight loss**.
- Deadweight loss** is the loss in total surplus that occurs whenever an action or a policy reduces the quantity transacted below the efficient market equilibrium quantity. In a graph it is a triangular area that represents the overall loss to society.

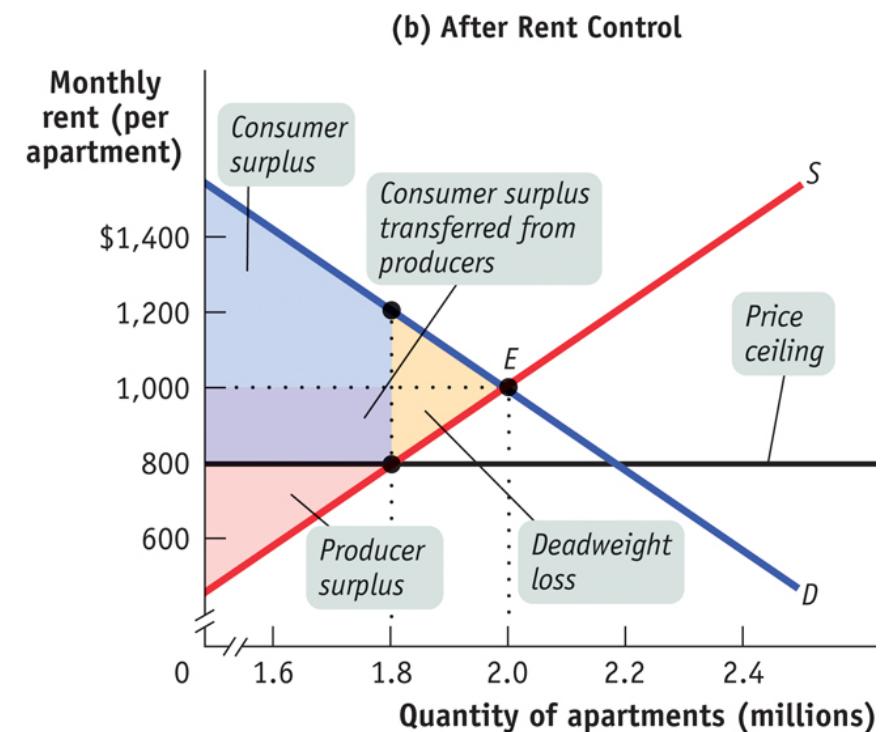
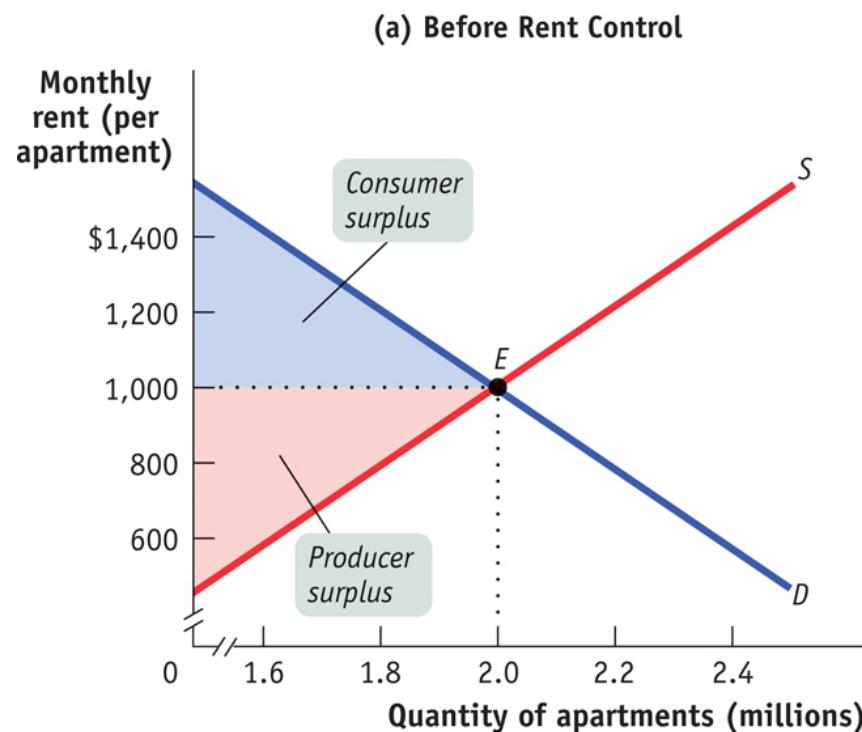


Other Outcomes of Price Ceilings

- **Inefficiently Low Quantity:** Fewer apartments exist to rent.
- **Inefficient Allocation to Consumers:** Among renters, those who willing to pay a high price don't get it and those who care relatively little about the good and are only willing to pay a low price do get it.
- **Wasted resources:** Time and effort are wasted in apartment searches because of the shortage caused by the price ceiling.
- **Inefficiently Low quality:** Landlords maintain apartments at minimum standards because of low rent received.
- **Black Markets:** Black markets arise if goods or services are bought and sold illegally.

Winners and Losers from Rent Control

Example



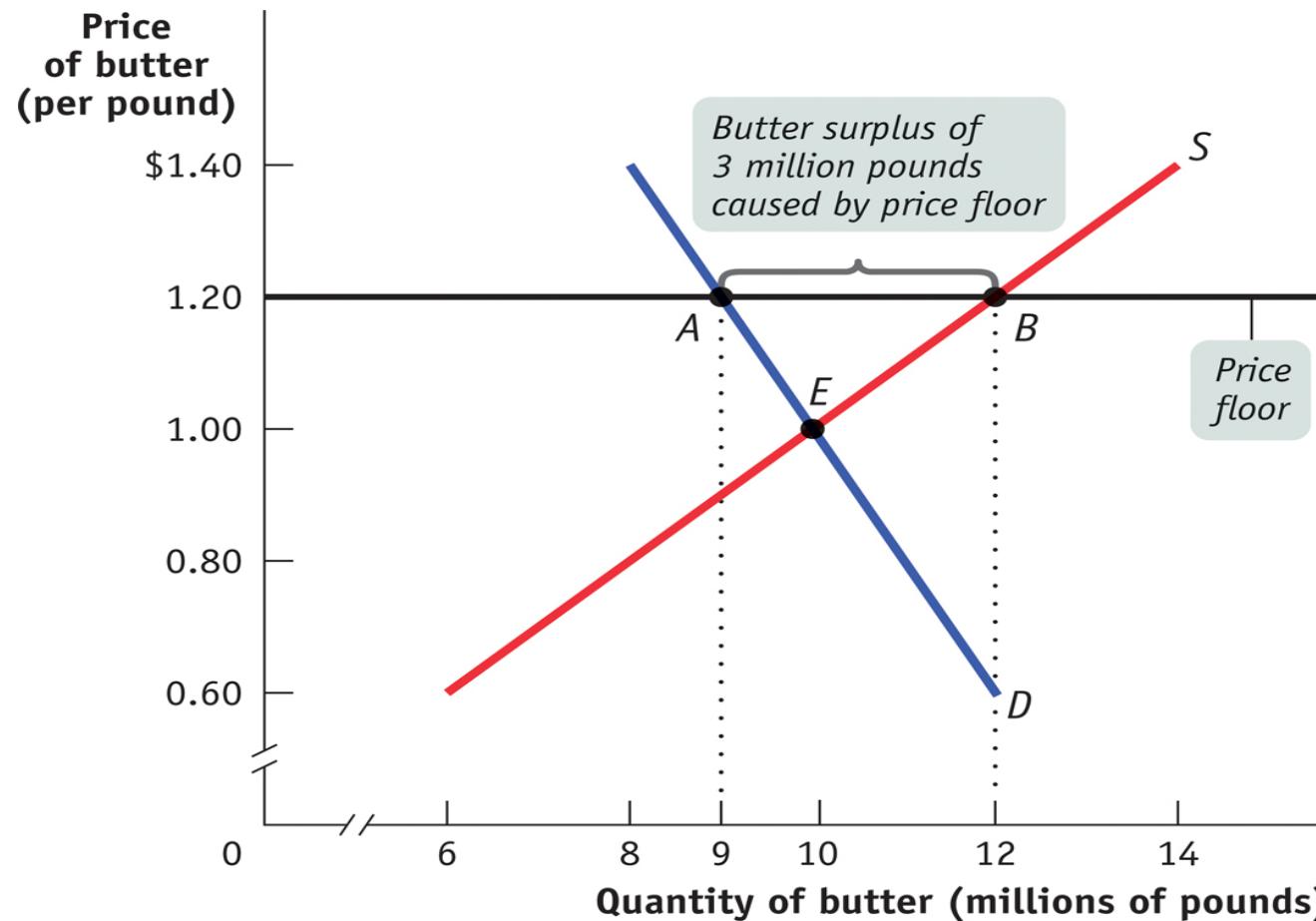
Price Floors (I)

Minimum Price

- **Price Floor:** The minimum price that producers are allowed to charge for a good or a service.
- Sometimes governments intervene to push market prices up instead of down.
- The **minimum wage** is a legal floor on the wage rate, which is the market price of labor.
- Just like price ceilings, price floors are intended to help some people but generate predictable and undesirable side effects.

Price Floors (II)

Effects



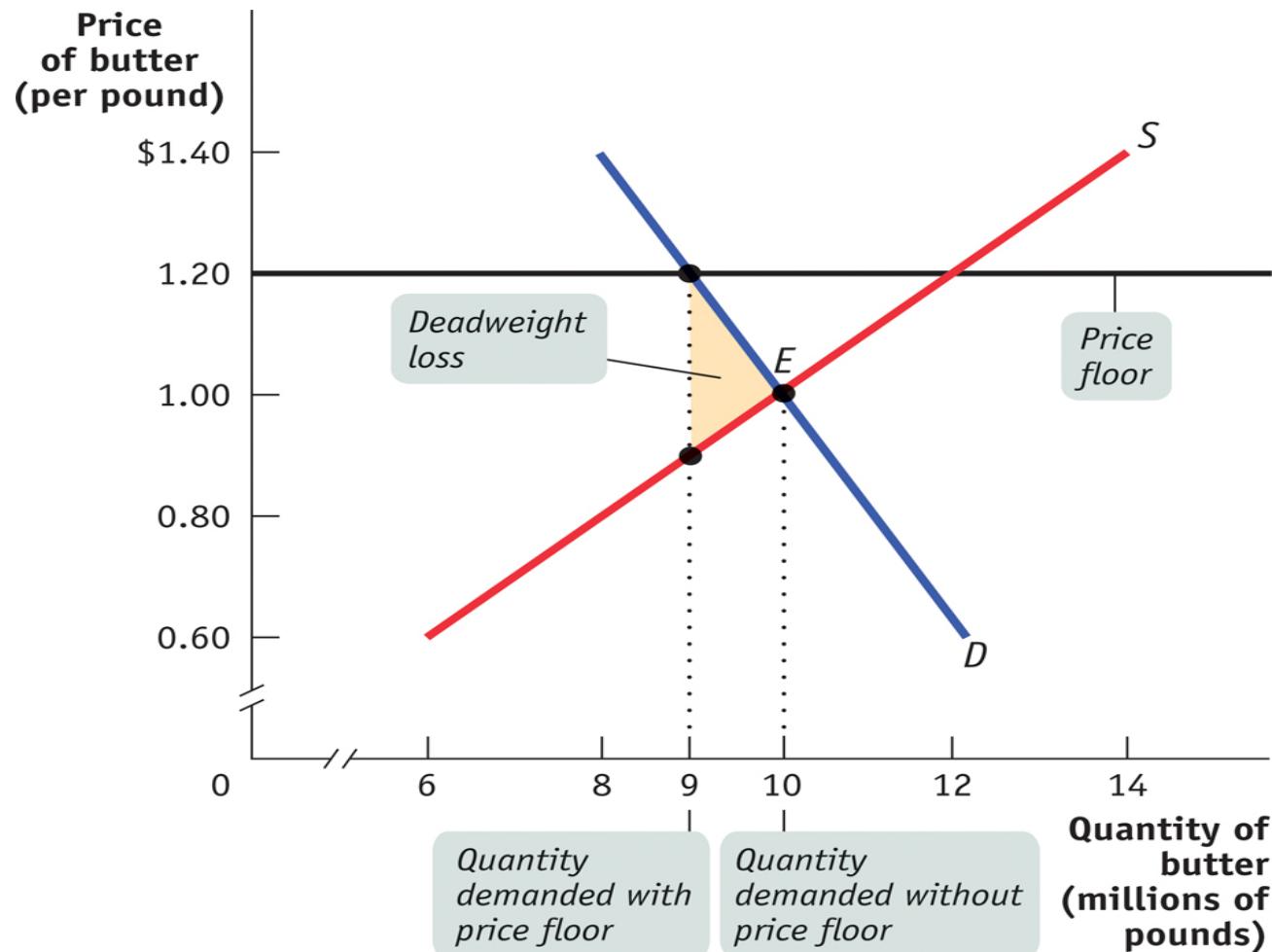
Price Floors (III)

Inefficiency

- The **persistent surplus** that results from a price floor creates missed opportunities—inefficiencies—similar to those created by the persistent shortage that results from a price ceiling.
- These include:
 - **Deadweight loss** from inefficiently low quantity
 - Inefficient allocation of sales among sellers
 - Wasted resources
 - Inefficiently high quality offered by sellers
 - Temptation to break the law by selling below the legal price

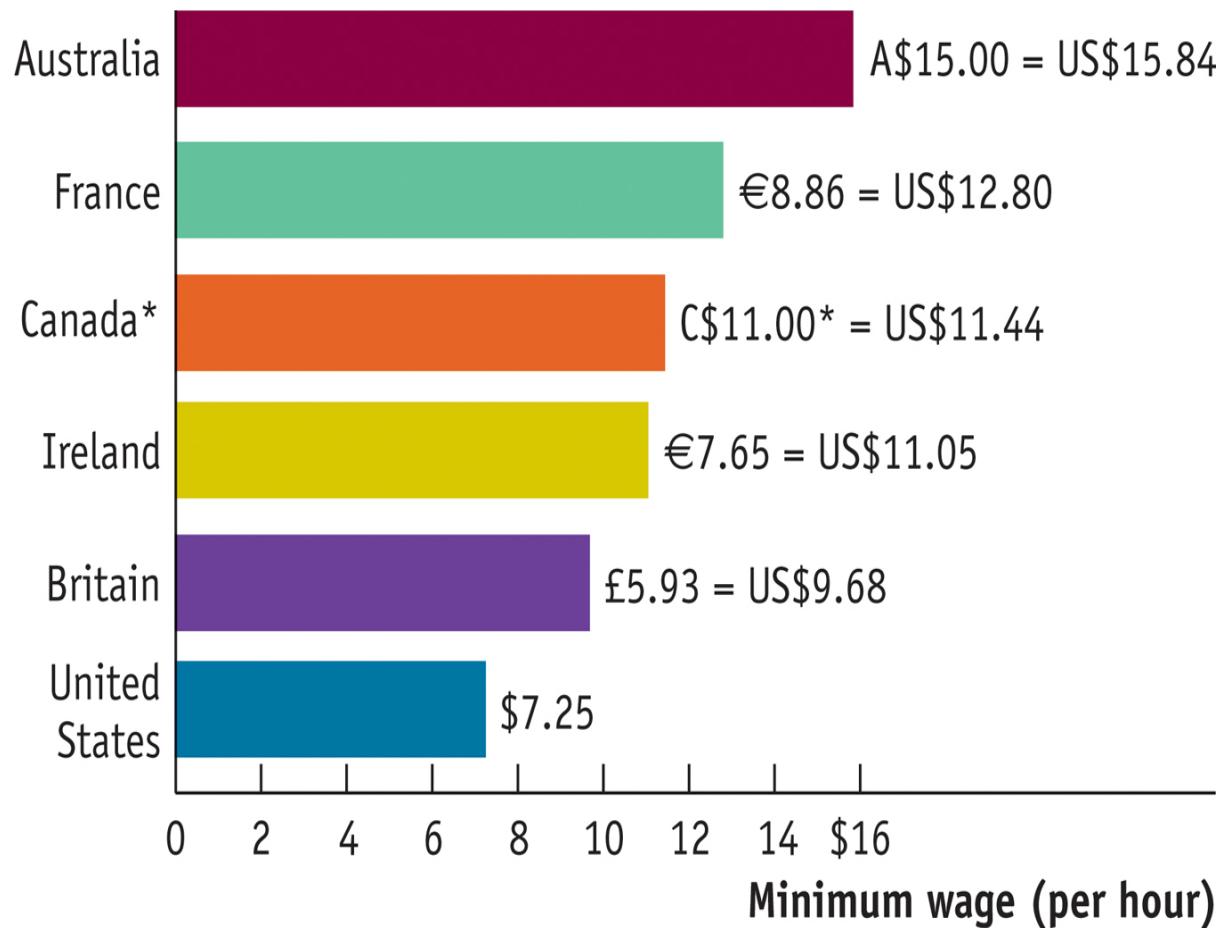
Price Floors (IV)

Deadweight loss



Price Floors (V)

Example: Low Wages (I)



Price Floors (VI)

Example: Low Wages (II)

- As of April 15, 2011, the Australian minimum wage was over twice as high as the U.S. rate.
- The cost of hiring a bagger at the grocery store is much more expensive in Europe, consequently, the Europeans always bag their own groceries.
- The minimum wage in many European countries is much higher than in the United States.
- The persistent surplus that results from this price floor appears in the form of high unemployment.
- In countries where enforcement of labor law is lax, it results in widespread evasion of the law.
- In Italy and Spain, workers are employed by companies that pay them less than the minimum wage and fail to provide health care and retirement benefits. Many jobs also go unreported.
- Companies also find ways to evade the law to avoid paying minimum wage.

KEY TERMS

Quantity supplied

Supply curve

Shift of the supply curve

Equilibrium price

Equilibrium quantity

Market-clearing price

Surplus

Shortage

Willingness to pay

Individual consumer surplus

Individual producer surplus

Total surplus

Price ceiling

Price floor

Deadweight loss

Inefficient allocation