

Market Efficiency: how do we measure it?

Markets are (usually) efficient: we can measure their benefit to society by measuring:

consumer surplus.

producer surplus.

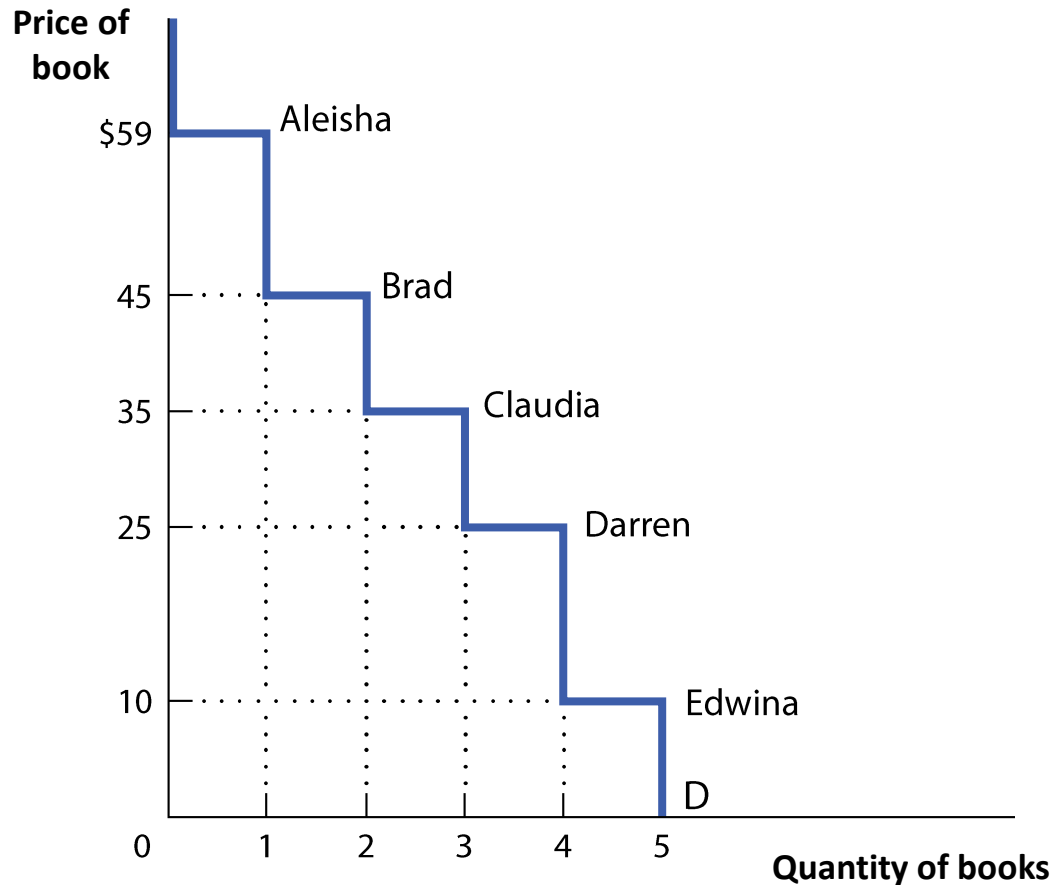
- › What consumer surplus is and its relationship to the demand curve
- › What producer surplus is and its relationship to the supply curve
- › What total surplus is and how it can be used both to measure the gains from trade and to illustrate why markets work so well
- › Why prices as economic signals are critical to smooth functioning of a market
- › Government controls on Price and Quantity – a market intervention: Price ceiling, Price floor, Quota

Consumer Surplus

Consumer surplus: the difference between market price and what consumers (as individuals or the market) would be willing to pay.



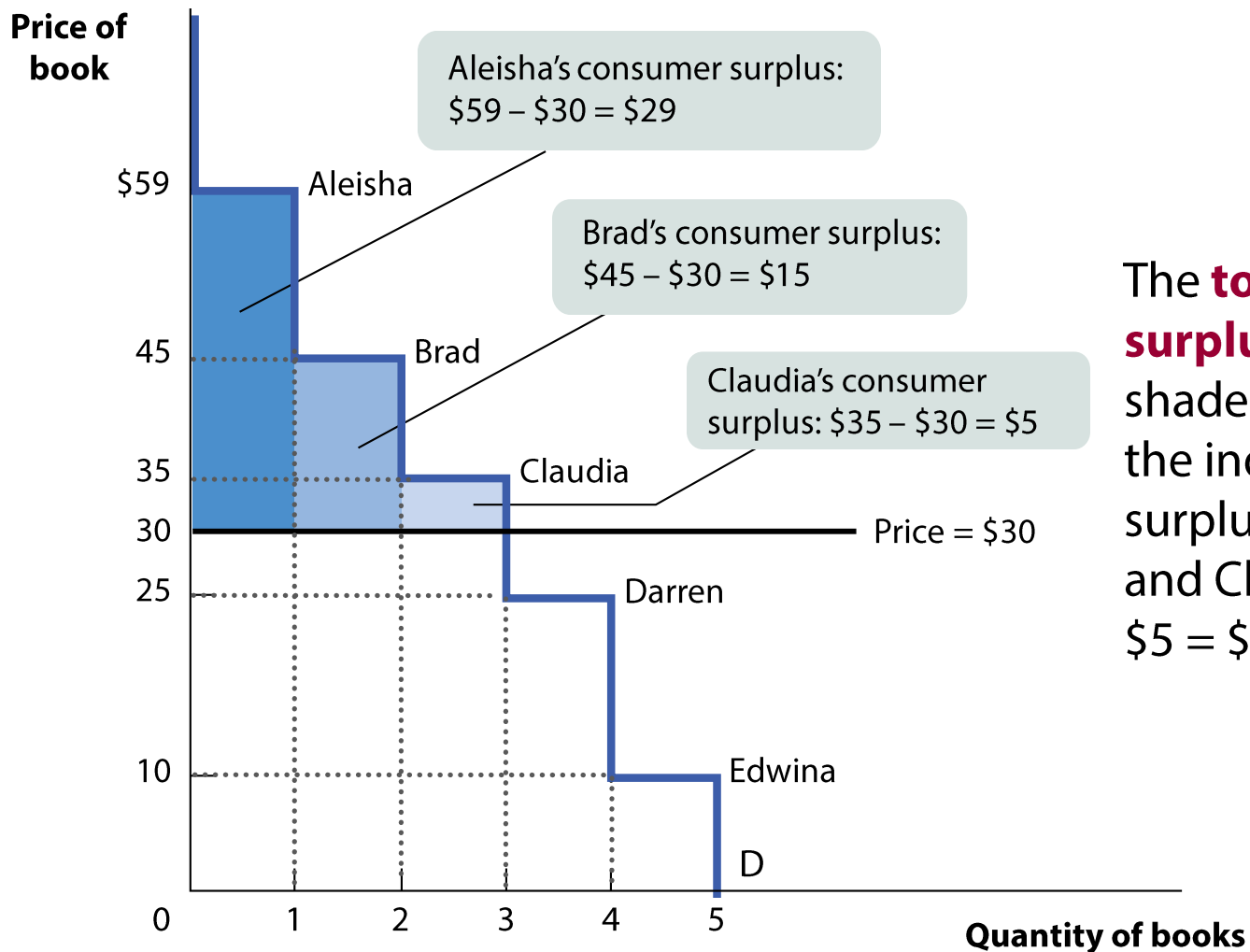
The Demand Curve for Used Textbooks



Potential buyers	Willingness to pay
Aleisha	\$59
Brad	45
Claudia	35
Darren	25
Edwina	10

A consumer's **willingness to pay for a good** is the maximum price at which he or she would buy that good.

Consumer Surplus

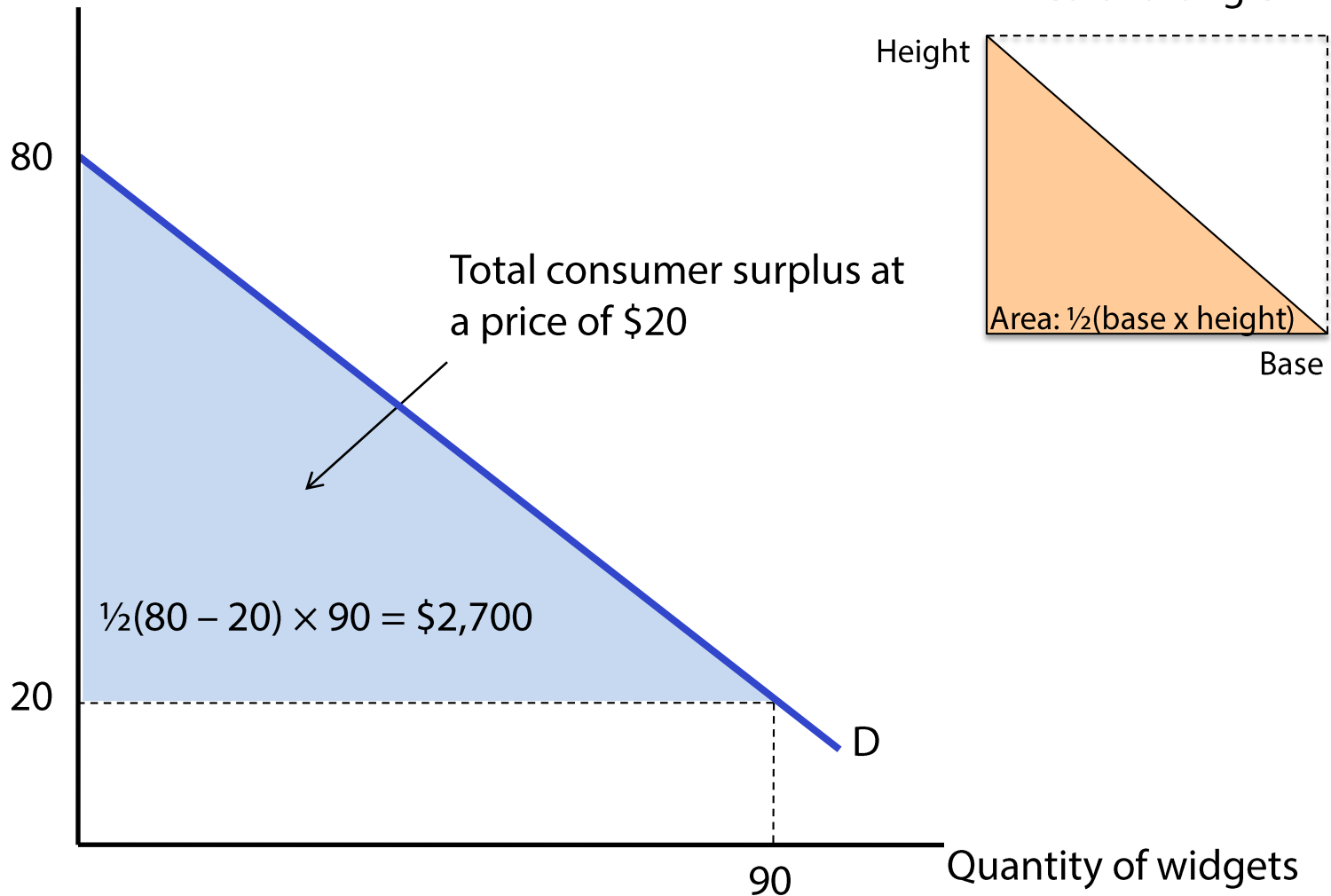


The **total consumer surplus** is the entire shaded area—the sum of the individual consumer surpluses of Aleisha, Brad, and Claudia ($\$29 + \$15 + \$5 = \49).

Consumer Surplus

Consumer surplus is the area beneath the demand curve and above the price.

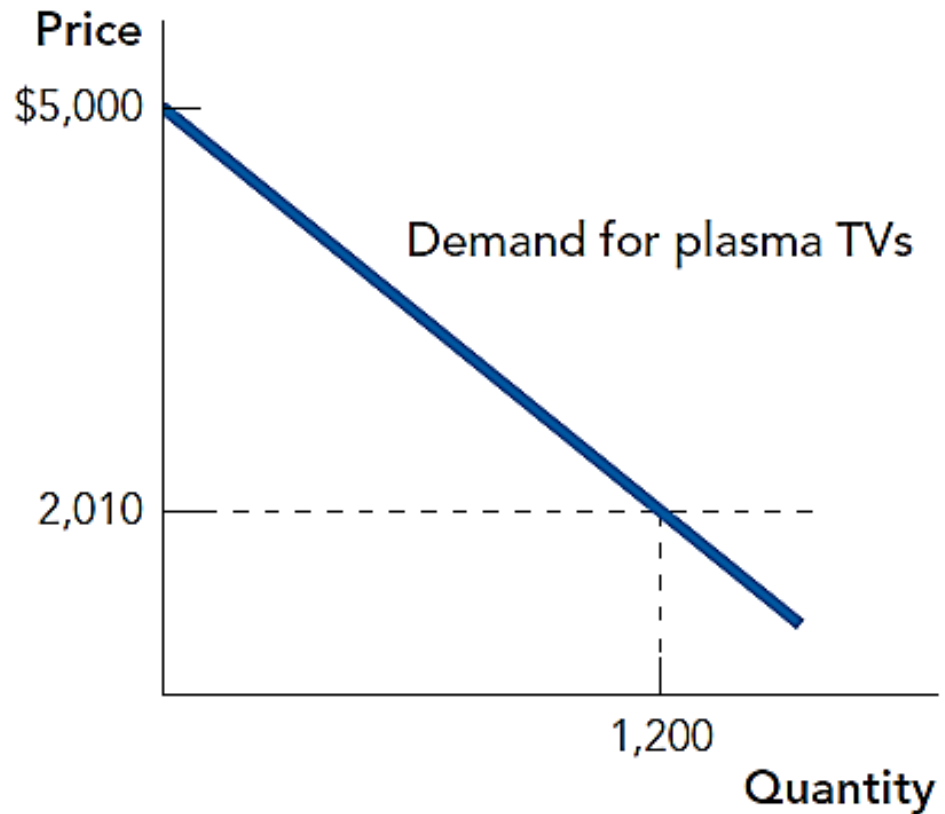
Price of widgets



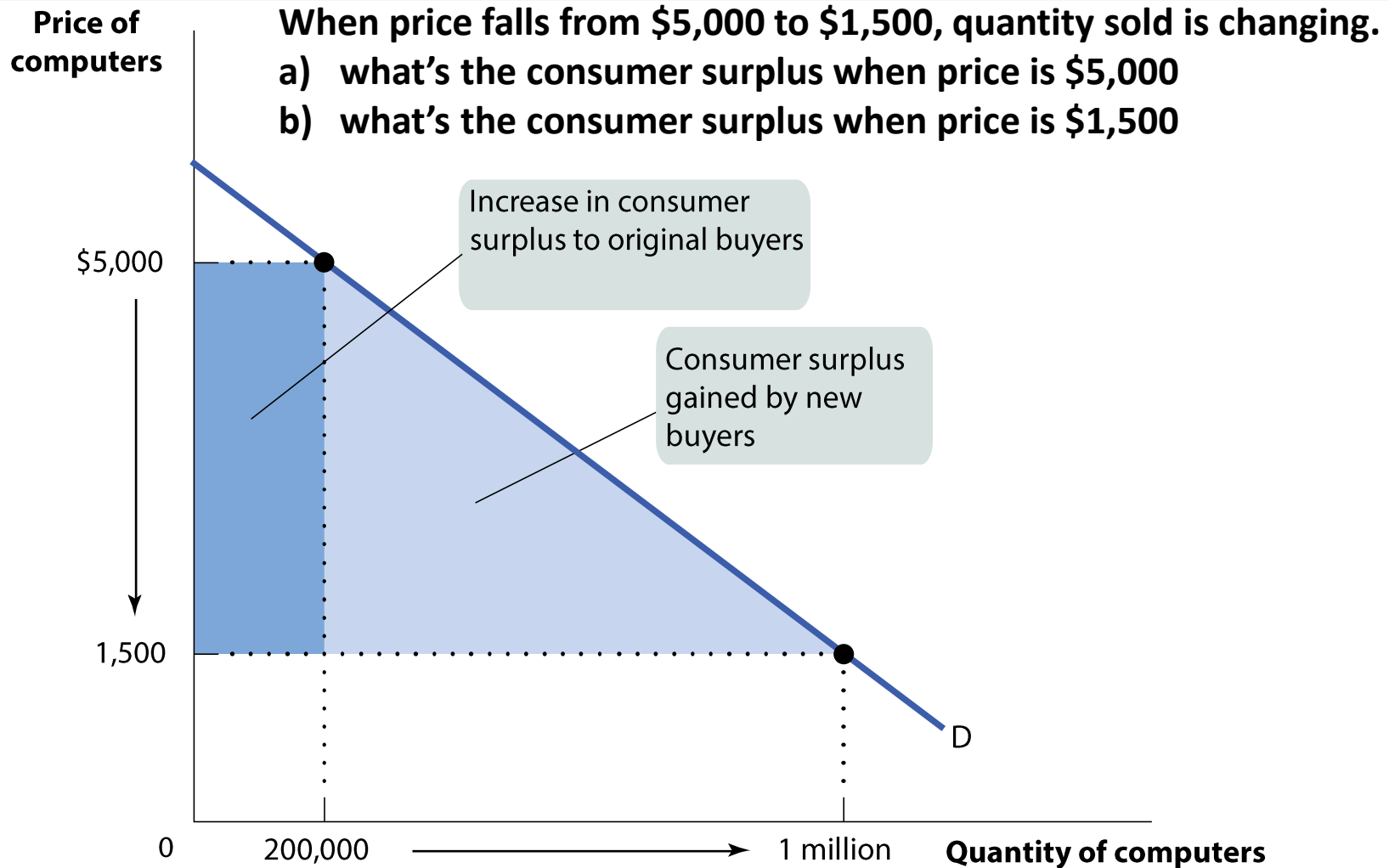


If the price is \$2010, what is the consumer surplus?

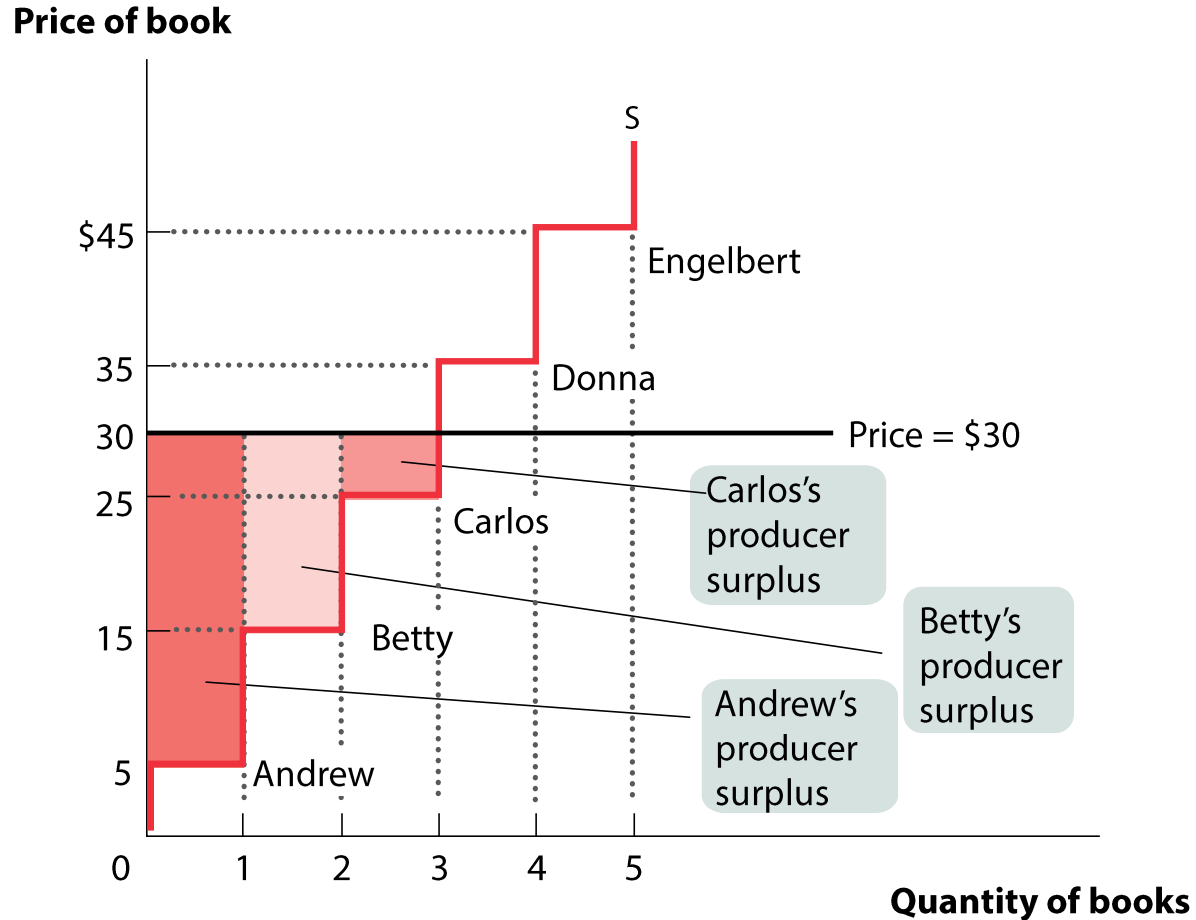
- a) \$3.588 million
- b) \$1.794 million
- c) \$6 million
- d) \$3 million



How the Gains in Consumer Surplus Are Split

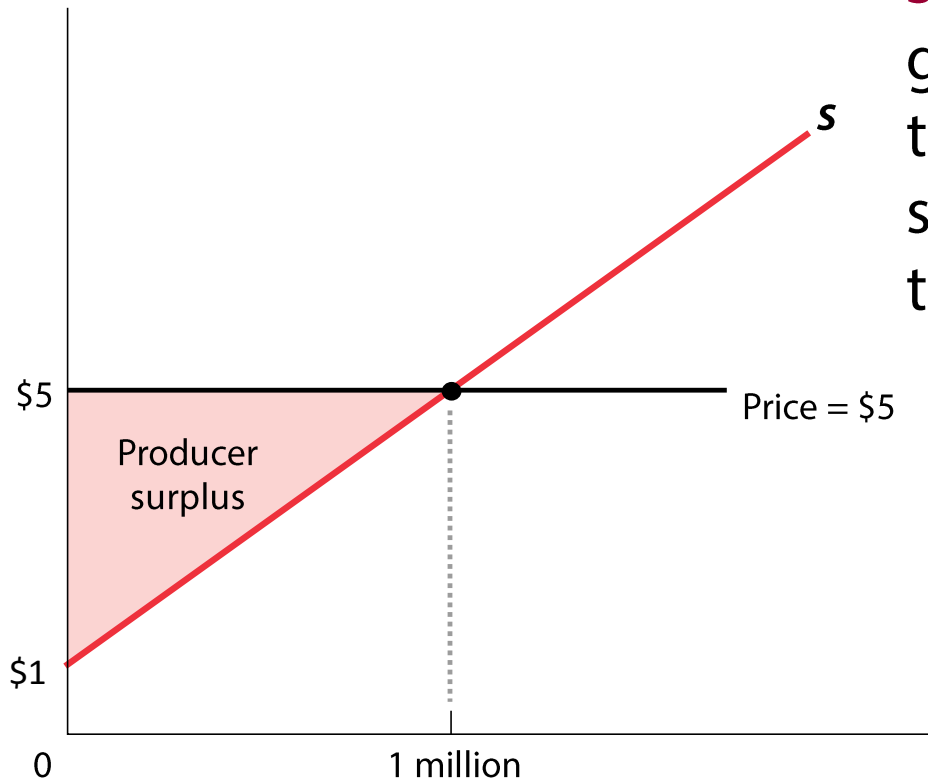


Producer Surplus



Producer Surplus

Price of wheat (per bushel)



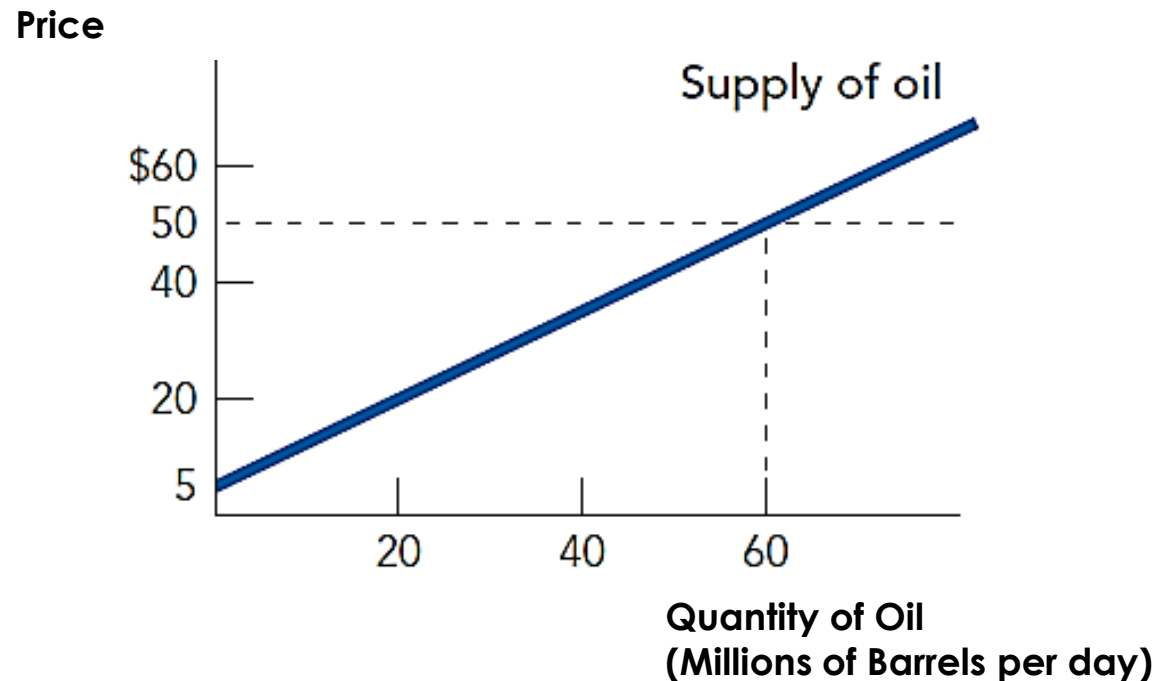
Quantity of wheat (bushels)

The **total producer surplus** from sales of a good at a given price is the area above the supply curve but below that price.



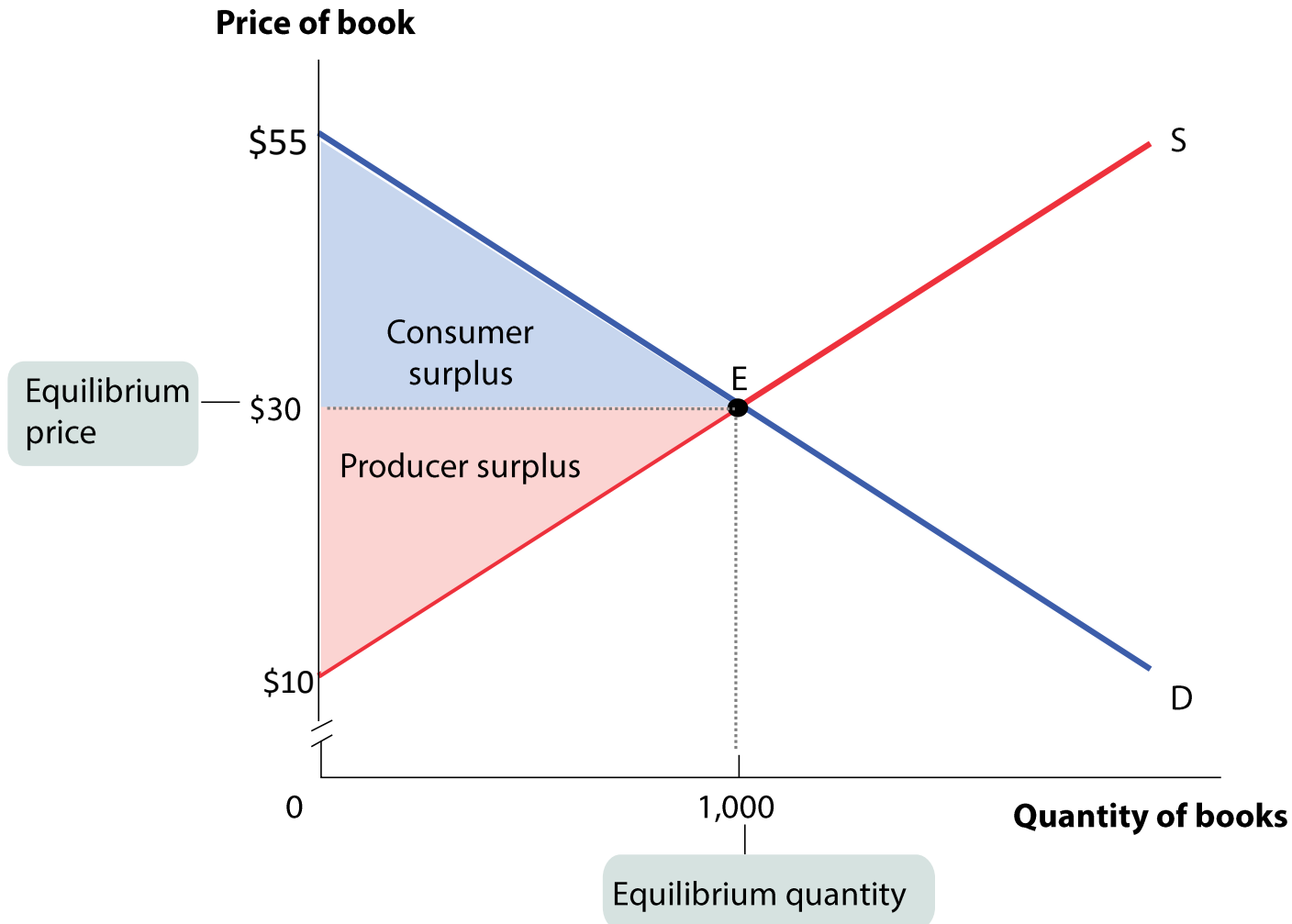
Using the following diagram, calculate total producer surplus if the price of oil is \$50 per barrel.

- a) 0
- b) \$45
- c) \$1,350
- d) \$2,700



Total Surplus Is Maximized at Market Equilibrium

Total surplus: the sum of the producer and consumer surpluses.

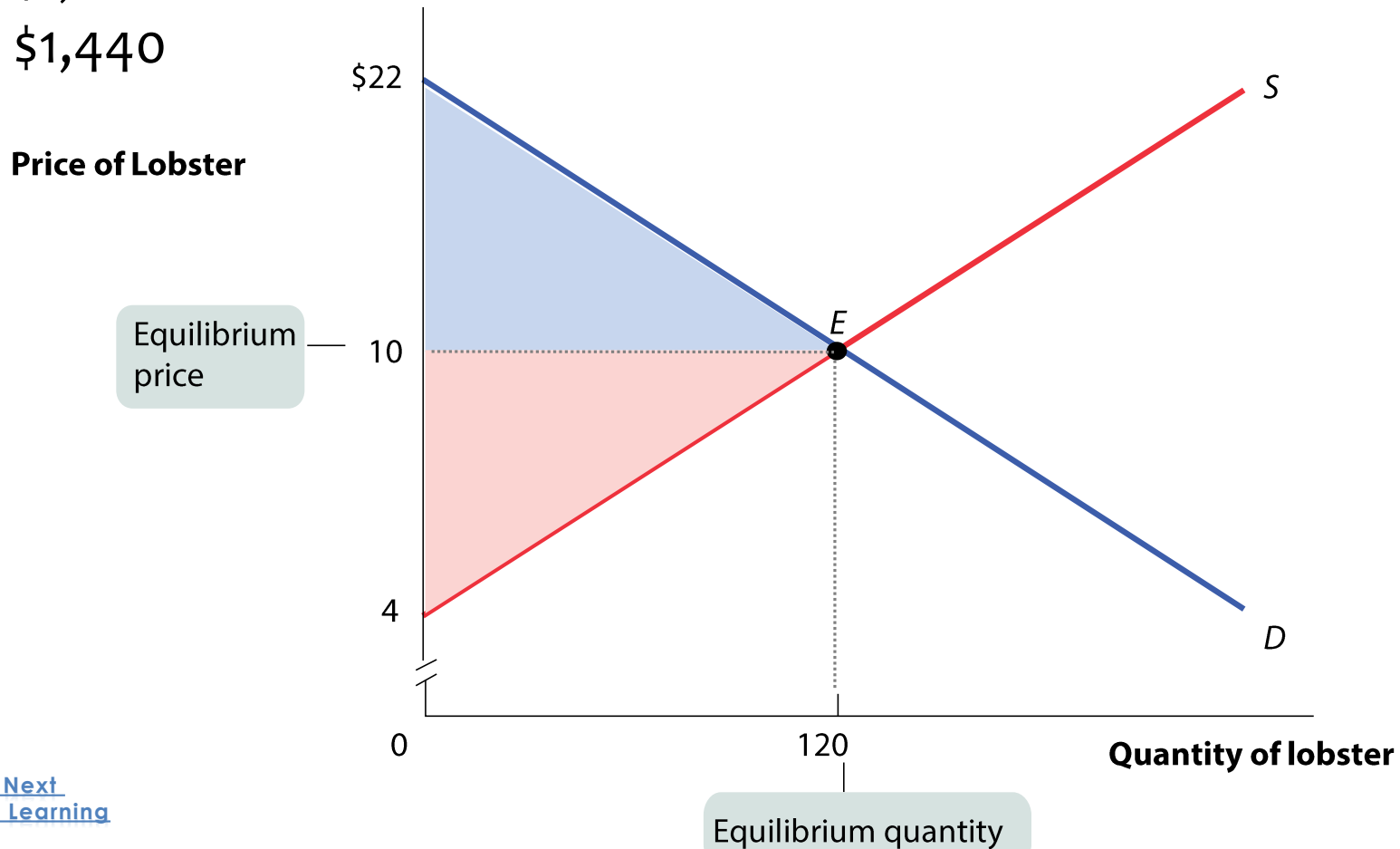




Total Surplus is Maximized at Market Equilibrium

What is the total surplus when price is at equilibrium?

- a) \$480
- b) \$720
- c) \$1,080
- d) \$1,440



A Few Words of Caution

Market Failure:

When Market Fails to achieve efficiency

Some people could be better off but making other people worse off.



Price Ceilings



Venezuela's food shortages: Price ceilings may be well intentioned but are usually not a good idea.

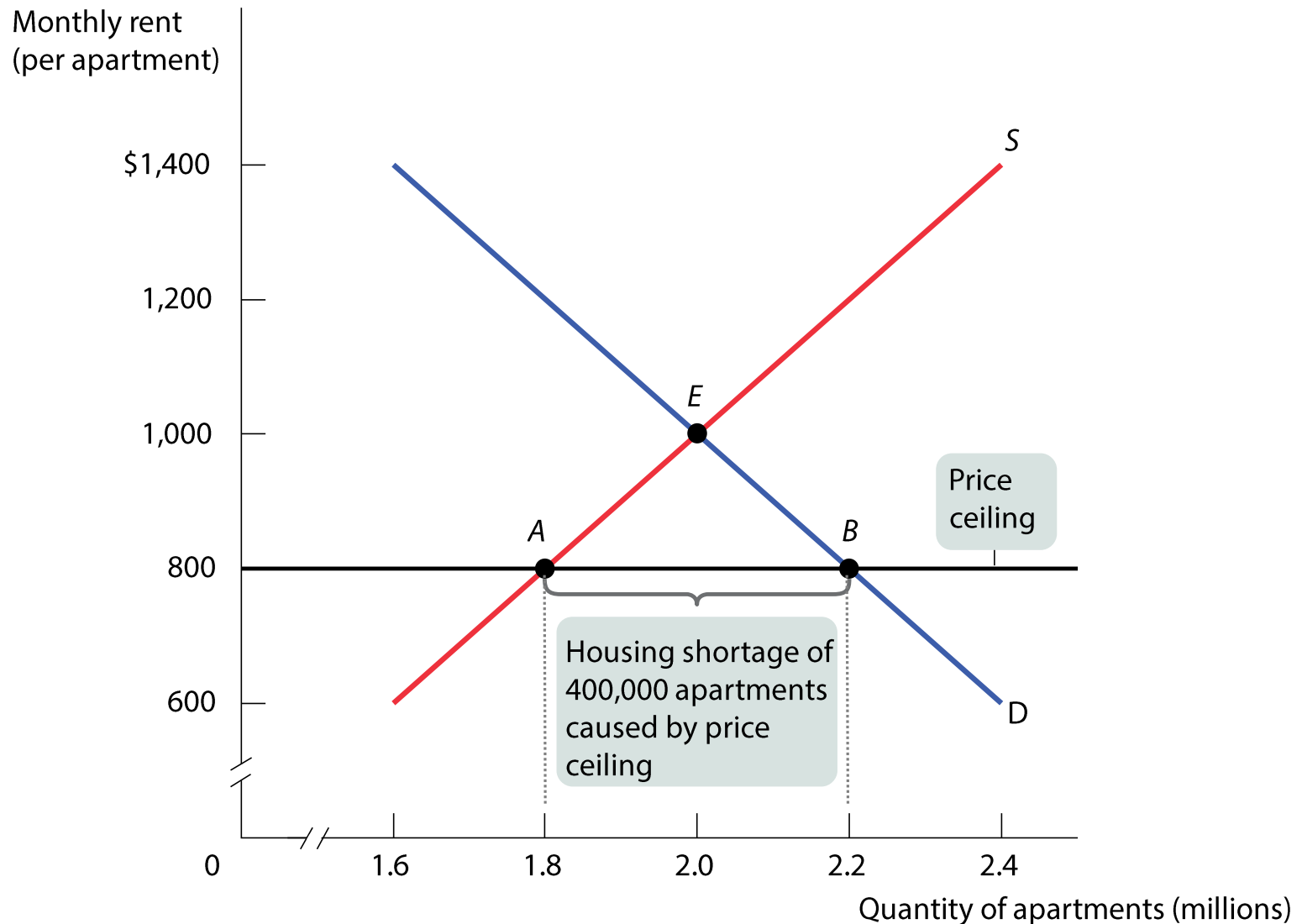
Price Controls

Price controls: legal restrictions on how high or low a market price may go. There are **two main types**:

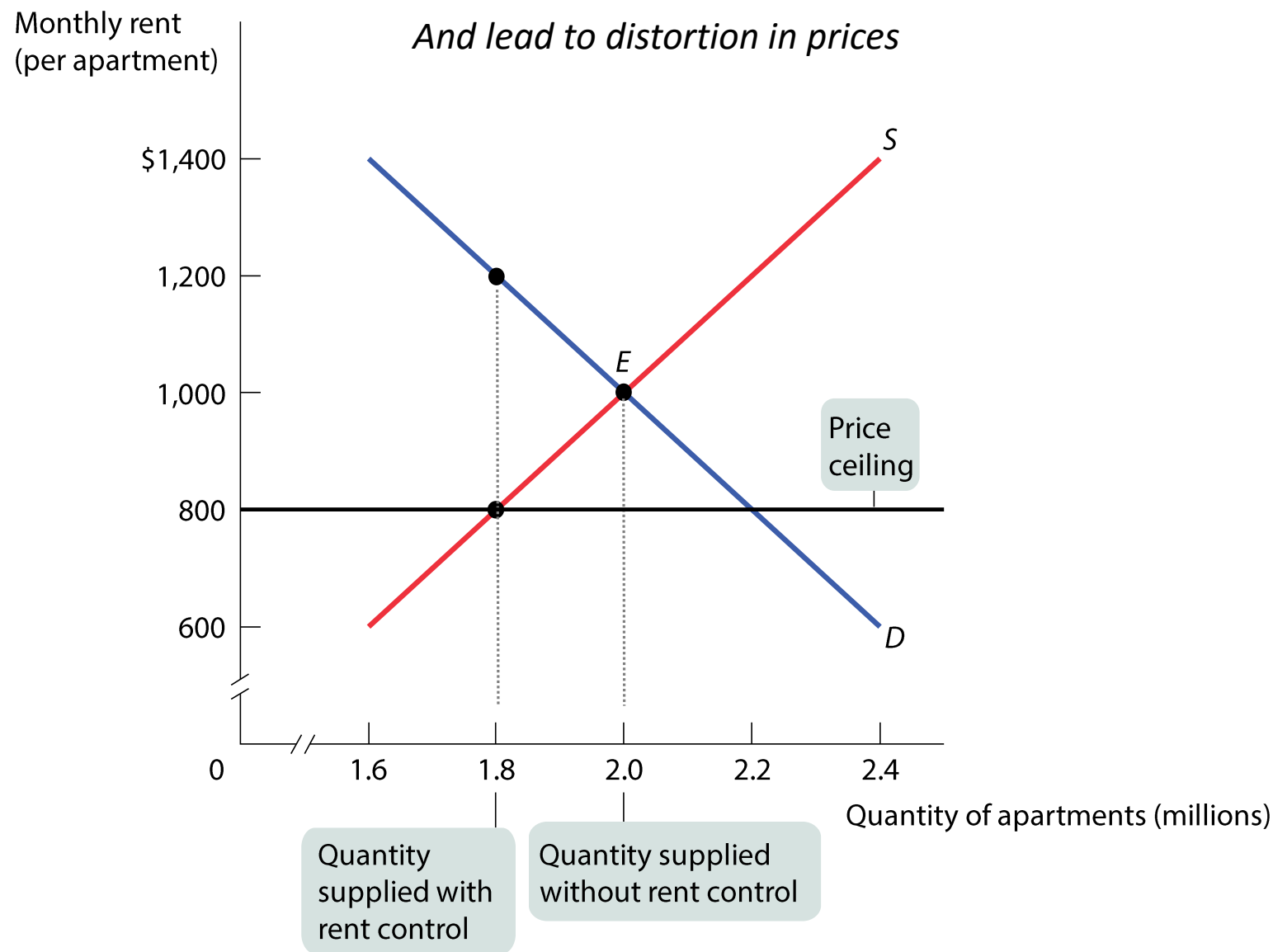
Price ceiling: a maximum price sellers are allowed to charge (*usually set BELOW equilibrium*).

Price floor: a minimum price buyers are required to pay (*usually set ABOVE equilibrium*).

The Effects of a Price Ceiling: Shortage

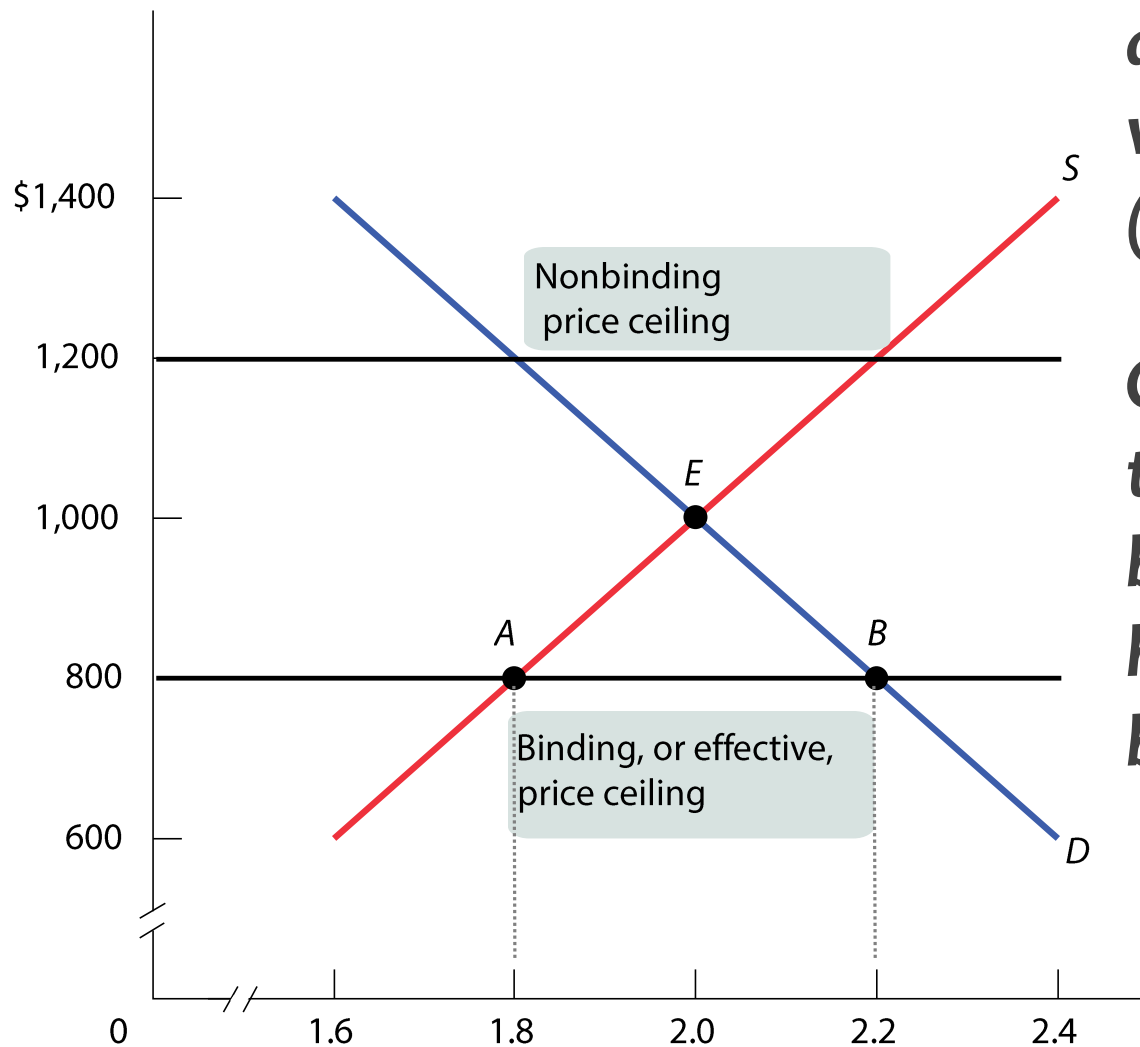


A Price Ceiling Causes Inefficiently Low Quantity & Low Quality



Binding, or Effective, Price Ceilings

Monthly rent
(per apartment)



If a price ceiling is set above equilibrium, it will have no effect (called nonbinding).

Only a price ceiling that forces price below equilibrium will have any effect (called binding or effective).

Quantity of apartments (millions)

How Price Ceilings Cause Inefficiency

Price ceilings cause predictable side effects:

- › **Inefficiently low quantity**
- › **Inefficient allocation to customers**
- › **Inefficiently low quality**
- › **Black markets**
- › **Wasted resources**

So Why Are There Price Ceilings?

They do benefit some people (who are typically better organized and more vocal than those who are harmed by them).



Government officials often do not understand supply and demand analysis, or ignore it.



Try this:

Let's try this: Price Ceiling: Roses

The supply and demand equations for roses are given by $Q_s = 3P - 10$ and $Q_d = 20 - 2P$ respectively, where P is dollars per dozen roses, and Q is dozens of roses in hundred thousands.

- a) What is the equilibrium market price and quantity of roses sold?
- b) What is the consumer surplus and producer surplus?
- b) Suppose the government decided to make roses more affordable, and sets price ceiling at \$4 a dozen. Calculate the deadweight loss (the welfare loss to the society).

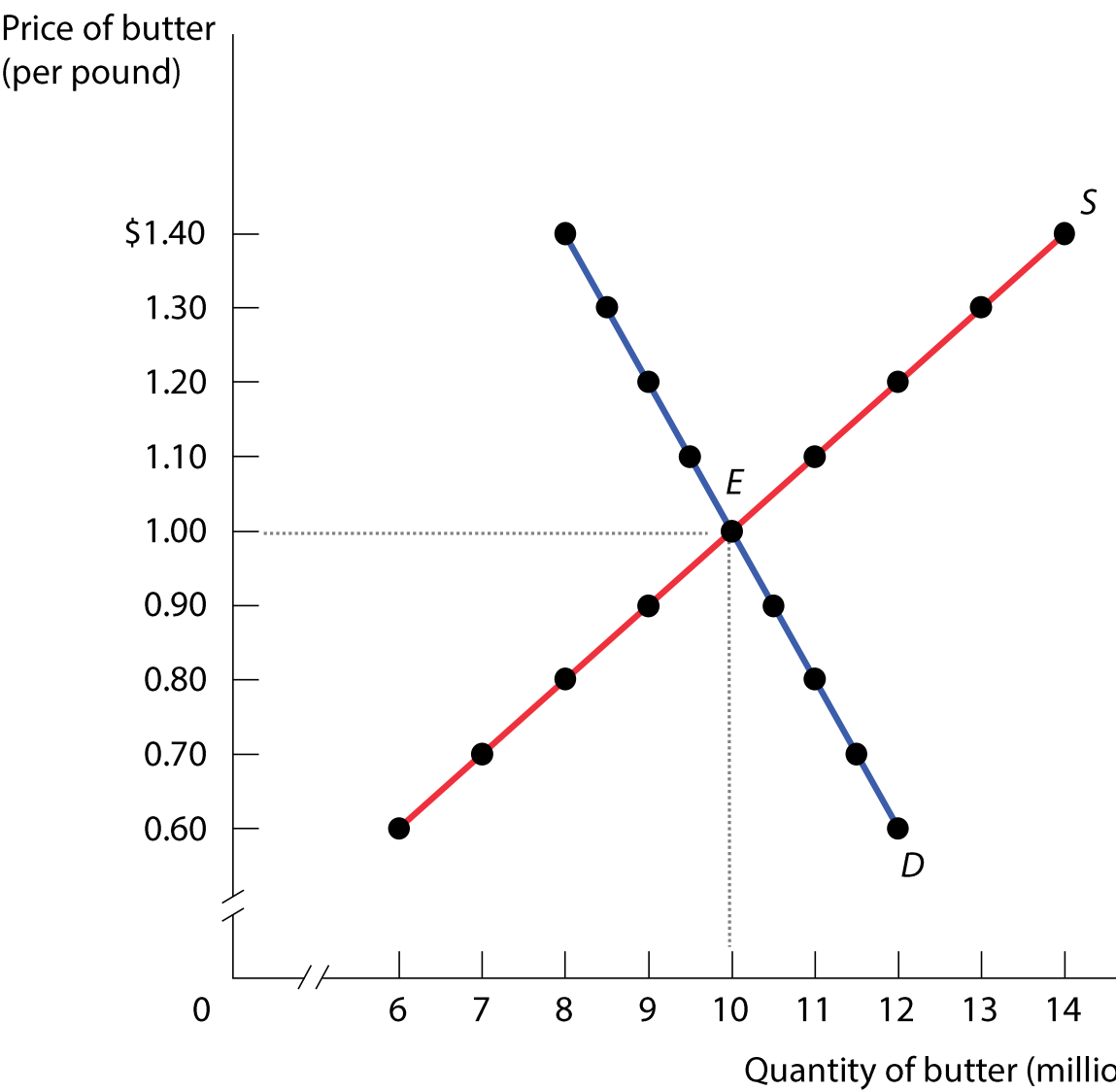
Price Floors

Sometimes governments intervene to push market prices up instead of down.



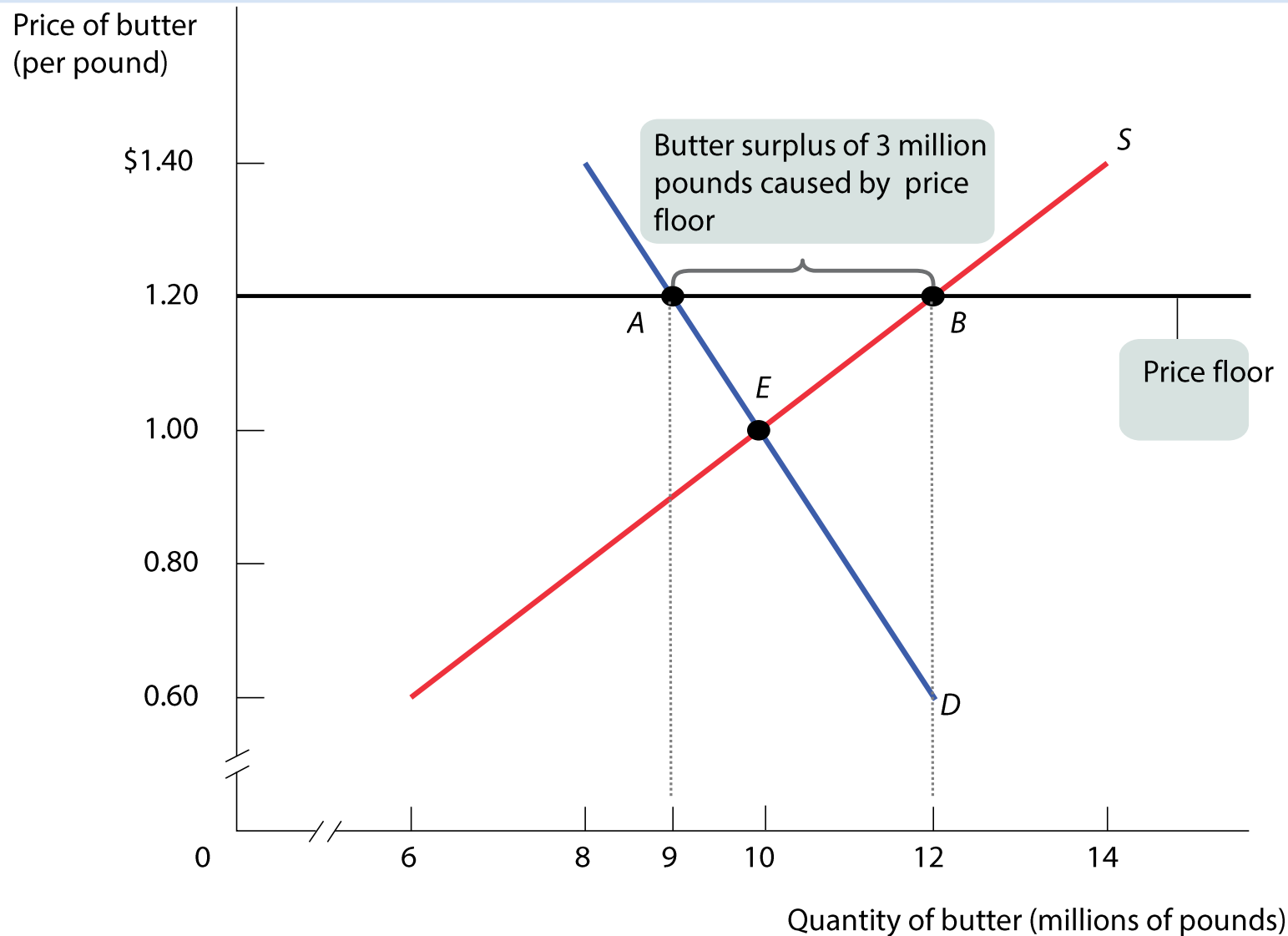
The generous minimum wage in many European countries has contributed to a high rate of unemployment and the flourishing of an illegal labor market.

The Market for Butter in the Absence of Government Controls



Price of butter (per pound)	Quantity of butter (millions of pounds)	
	Quantity demanded	Quantity supplied
\$1.40	8.0	14.0
1.30	8.5	13.0
1.20	9.0	12.0
1.10	9.5	11.0
1.00	10.0	10.0
0.90	10.5	9.0
0.80	11.0	8.0
0.70	11.5	7.0
0.60	12.0	6.0

The Effects of a Price Floor



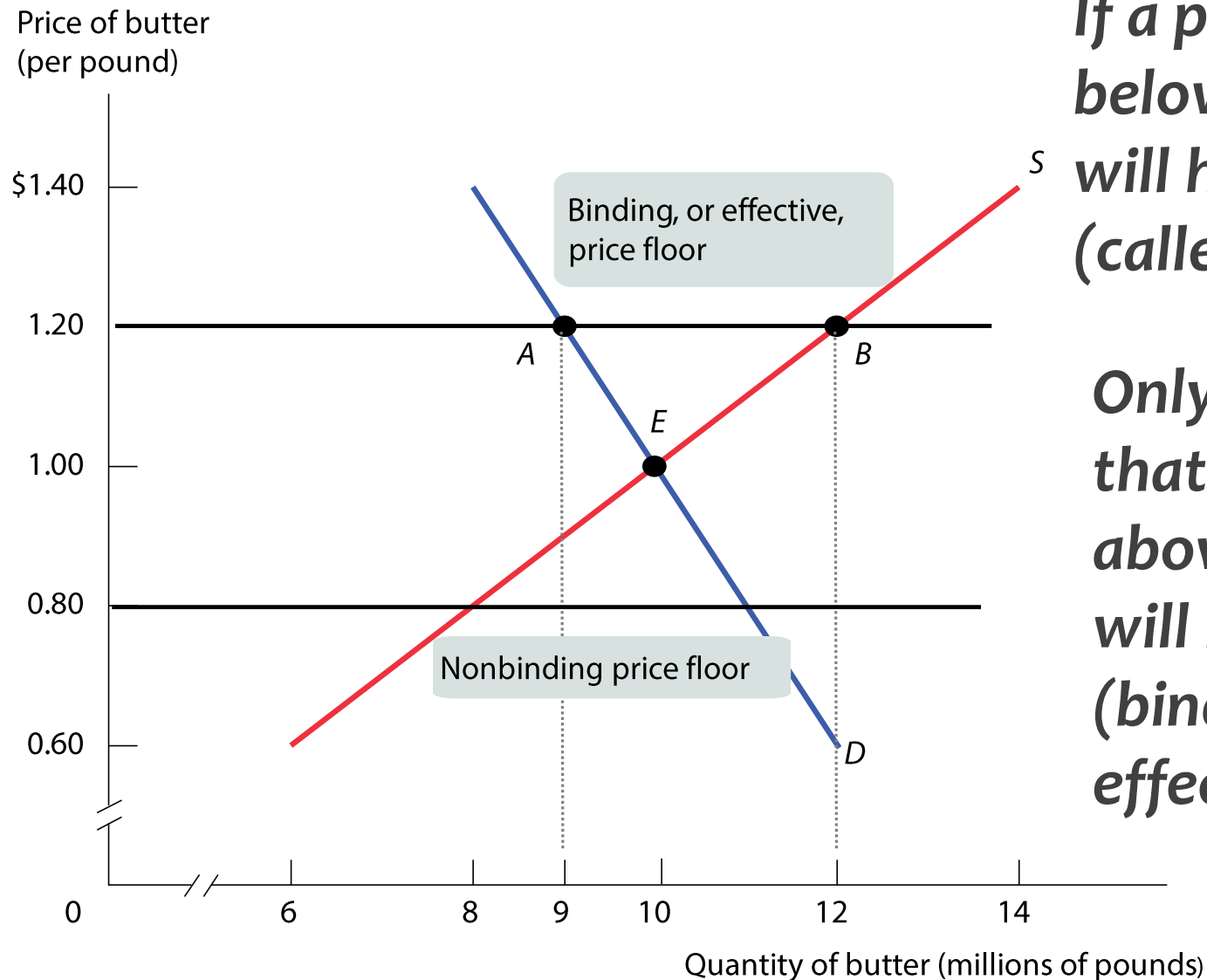
Wasted Resources

Price floors encourage waste.

To deal with the surplus generated by agricultural price floors, the U.S. government sometimes buys back the excess and donates or destroys it.



Binding, or Effective, Price Floors



If a price floor is set below equilibrium, it will have no effect (called nonbinding).

Only a price floor that forces price above equilibrium will have any effect (binding, or effective).

How a Price Floor Causes Inefficiency

Price floors cause predictable side effects:

- › **inefficiently low quantity**
- › **Inefficient allocation of sales among sellers**
- › **Wasted resources**
- › **Inefficiently high quality**
- › **Temptation to break the law by selling below the legal price**

Inefficiently High Quality

Higher quality raises costs and reduces sellers' profit.
Buyers get higher quality but would prefer a lower price.
Price floors encourage sellers to waste resources:
higher quality than buyers are willing to pay for

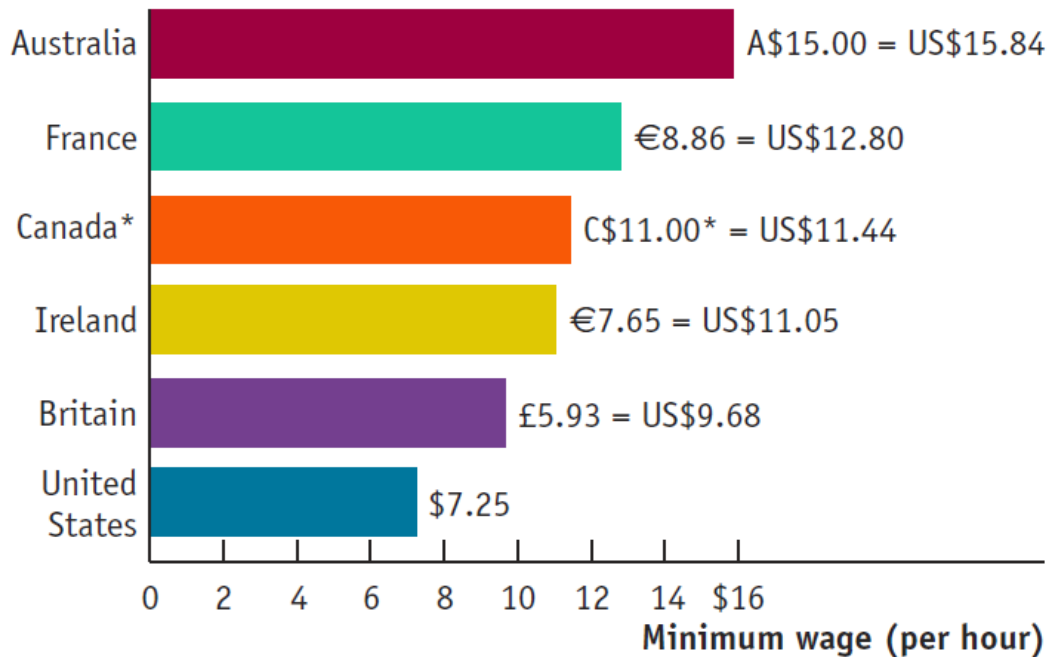


Most flyers prefer a lower ticket price (with no food included)

Illegal Activity

Price floors encourage black markets.

There are willing sellers (and buyers) at illegal prices, so they are tempted to break the law



In Spain it's estimated that one-third of the "unemployed" have under-the-table jobs.

So Why Are There Price Floors?

Same as price ceilings:

They do benefit some people (who are typically better organized and more vocal than those who are harmed by them).



Government officials often do not understand supply and demand analysis, or ignore it.

Don't be confused: price ceilings , price floors, and quotas.

Similarity: all decrease the quantity traded.

But, Differences:

A price ceiling pushes the price of a good down; fewer sellers will want to sell.

A price floor pushes the price of a good up; fewer buyers will want to buy.

A quota, by definition, reduces sales.

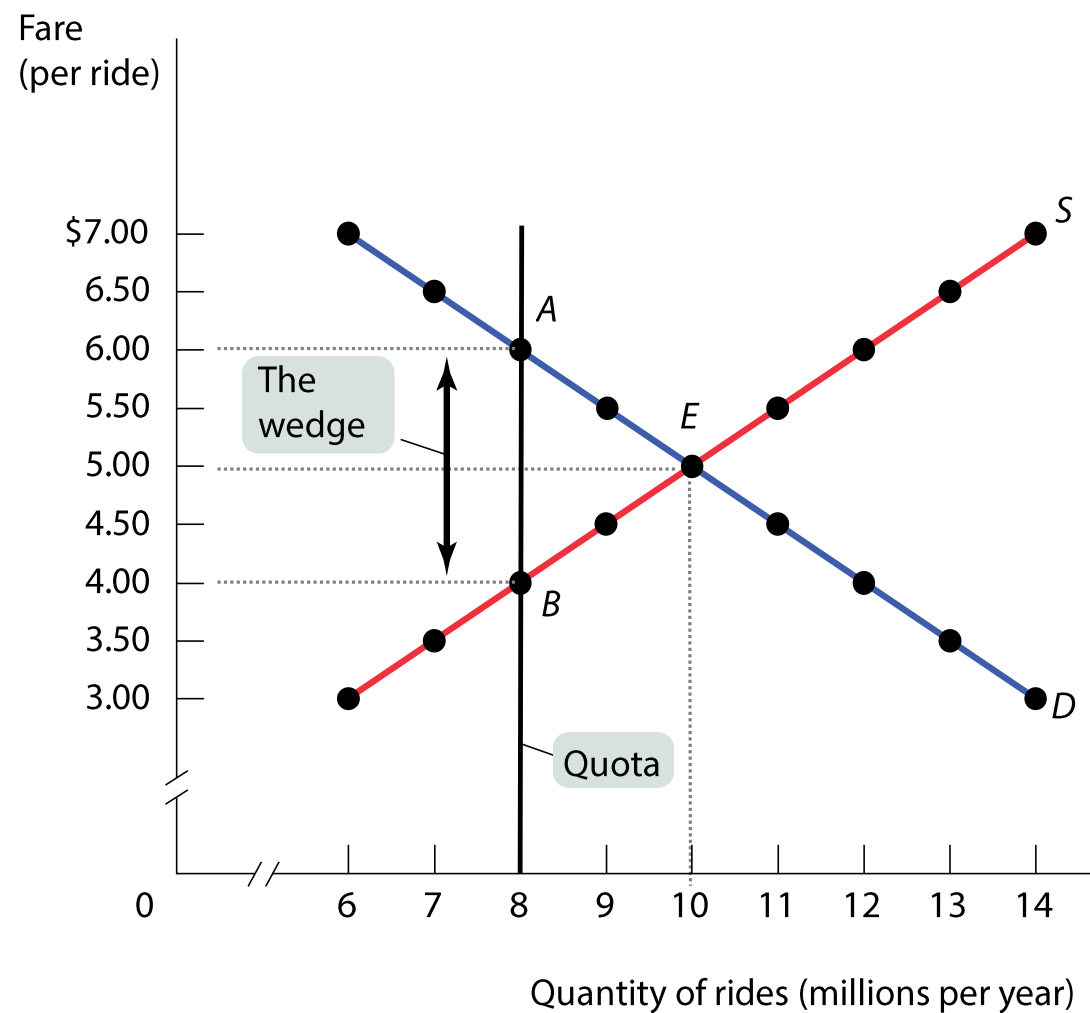
QUOTA: Controlling Quantities

Governments sometimes control quantity instead of price. **Quota:** an upper limit, set by the government, on the quantity of some good that can be bought or sold; also referred to as a *quantity control*.

Quota limit: the total amount of a good under a *quota* or *quantity control* that can be legally transacted.

License: the right, conferred by the government, to supply a good.

Effect of a Quota on the Market for Taxi Rides

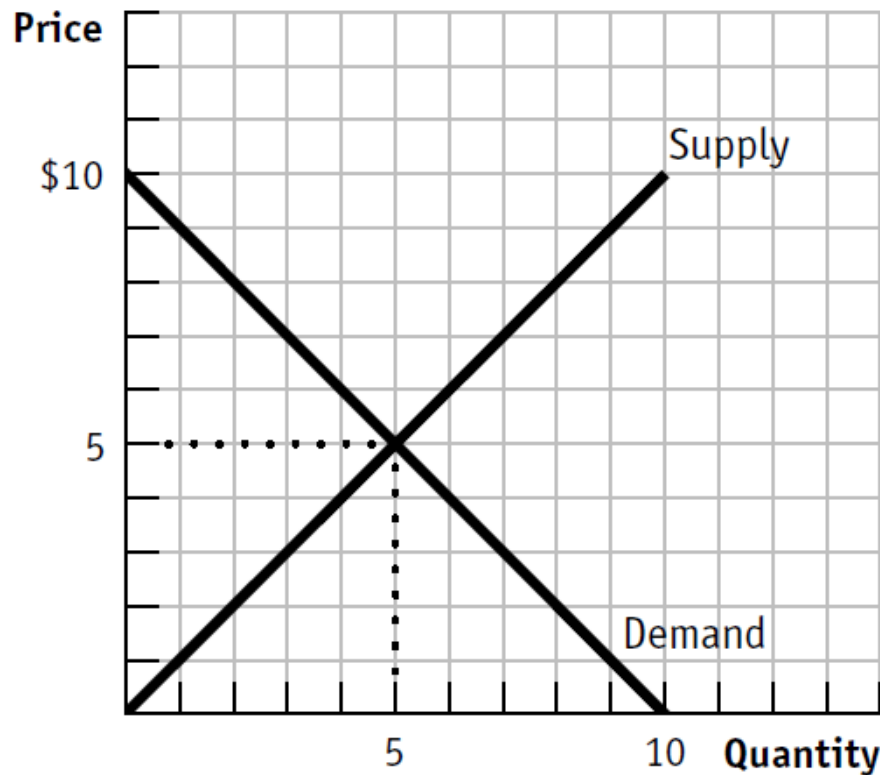


Fare (per ride)	Quantity of rides (millions per year)	
	Quantity demanded	Quantity supplied
\$7.00	6	14
6.50	7	13
6.00	8	12
5.50	9	11
5.00	10	10
4.50	11	9
4.00	12	8
3.50	13	7
3.00	14	6

A: Demand Price
B: Supply Price

The Wedge, or Quota, rent: the difference between the demand price and the supply price at the quota limit. Equal to the market price of the license when the license is traded.

Active Learning: Practice



What is the value of the quota rent if the quota is set to 2 units?

- a) \$8
- b) \$6
- c) \$4
- d) \$3