N. GREGORY MANKIW

PRINCIPLES OF

ECONOMICS

Eighth Edition

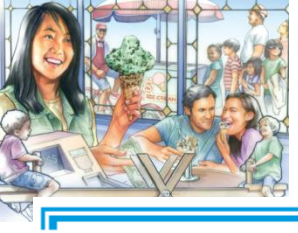
CHAPTER

6

Supply, Demand, and Government Policies

Look for the answers to these questions:

- What are price ceilings and price floors? What are some examples of each?
- How do price ceilings and price floors affect market outcomes?
- How do taxes affect market outcomes? How do the effects depend on whether the tax is imposed on buyers or sellers?
- What is the incidence of a tax? What determines the incidence?

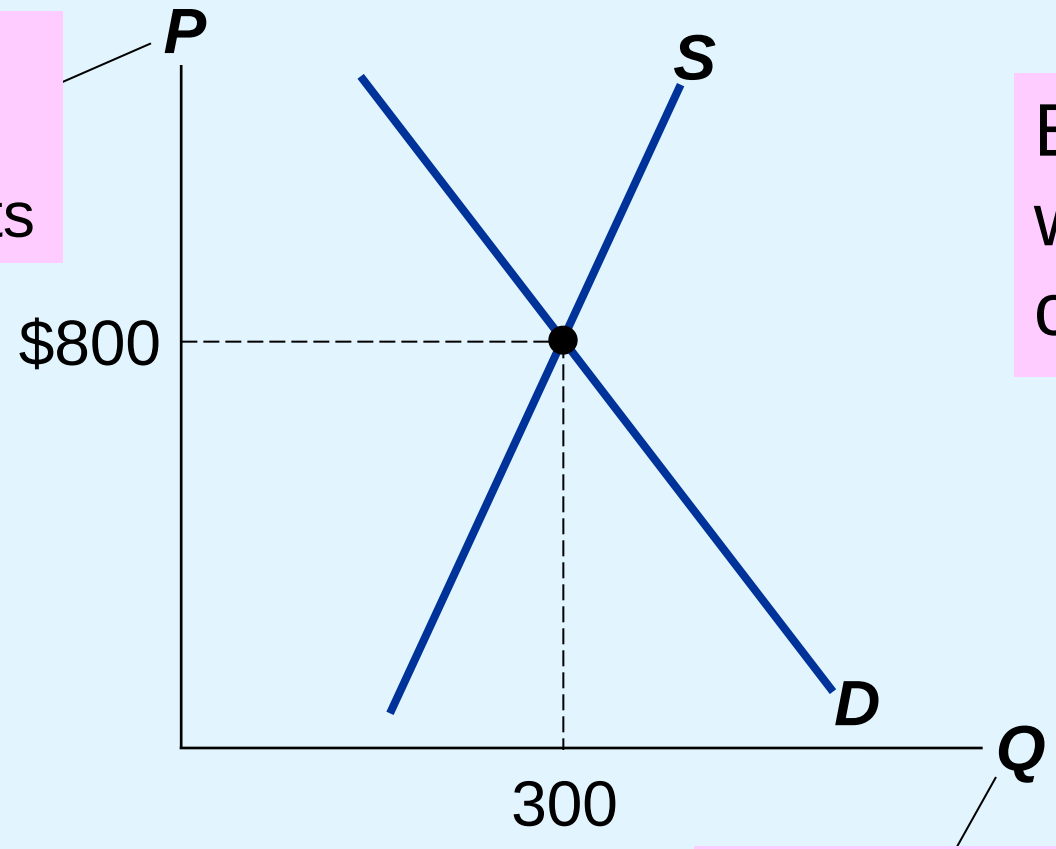


Government Policies That Alter the Private Market Outcome

- Price controls
  - Price ceiling: legal maximum on the price at which a good can be sold
    - Rent-control laws
  - Price floor: legal minimum on the price at which a good can be sold
    - Minimum wage laws
- Taxes: government can make buyers or sellers pay a specific amount on each unit

EXAMPLE 1: The Market for Apartments

Rental price of apartments

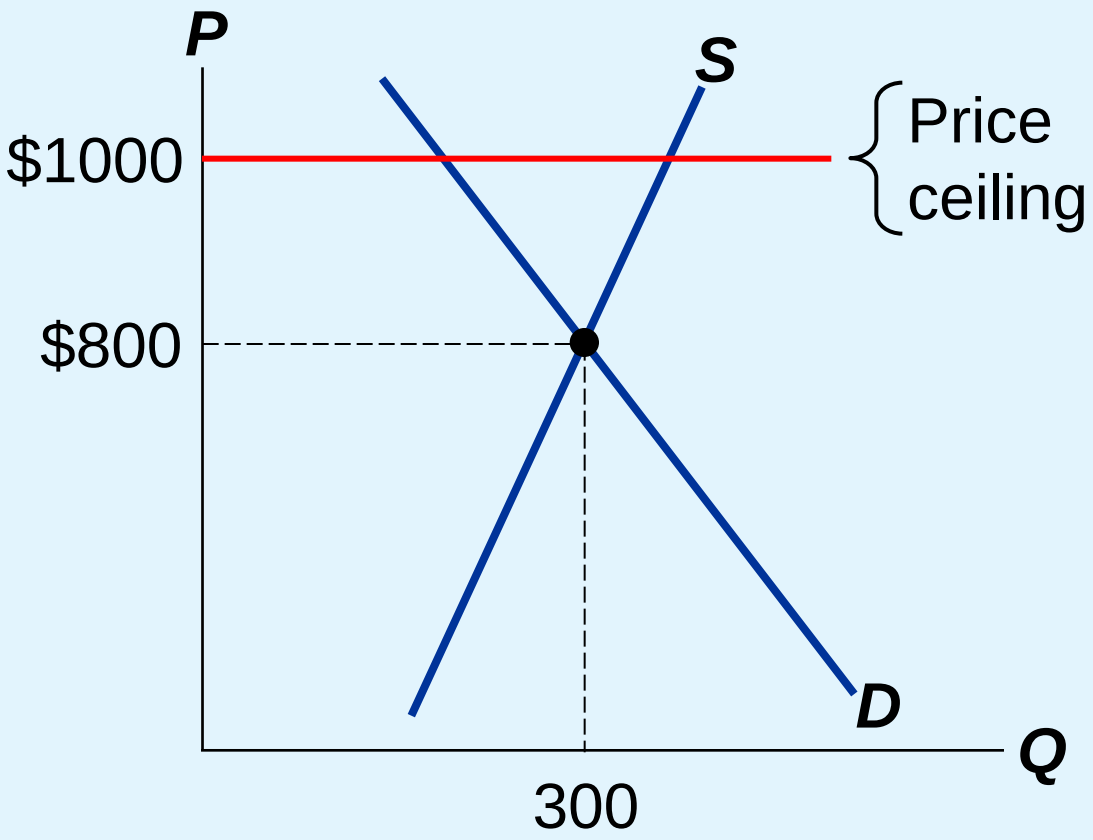


Equilibrium without price controls

Quantity of apartments

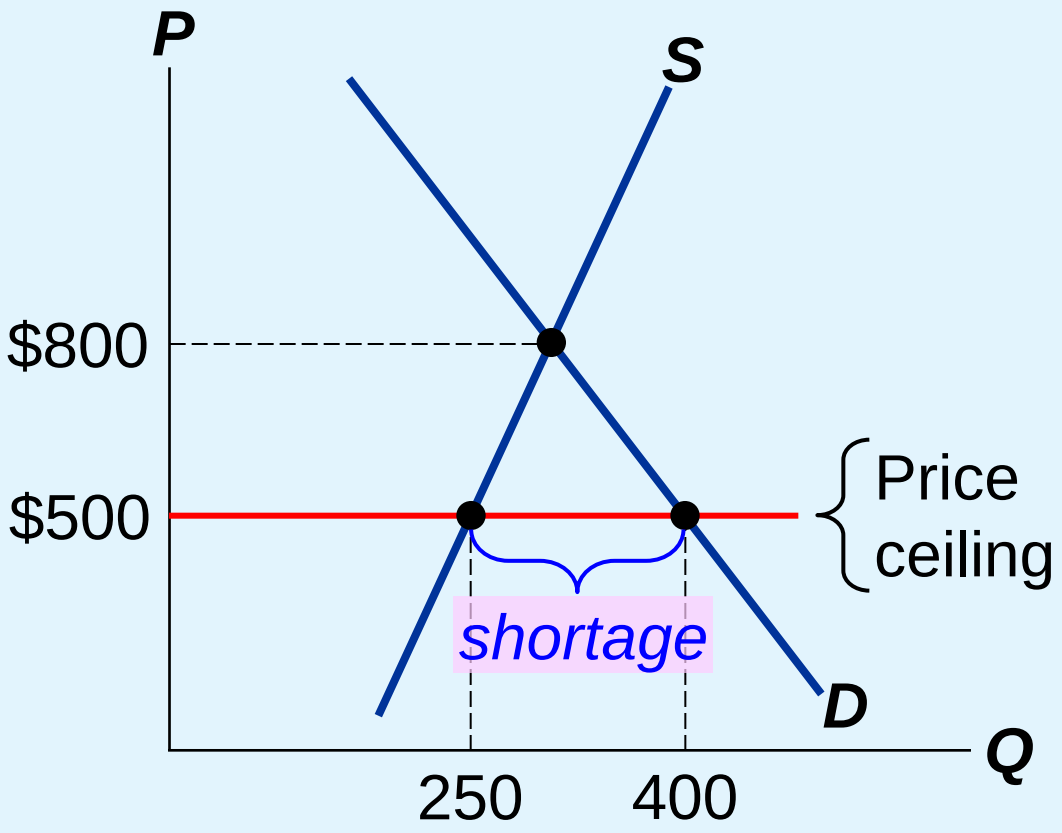
How Price Ceilings Affect Market Outcomes

A price ceiling above the equilibrium price is **not binding**— has no effect on the market outcome.



How Price Ceilings Affect Market Outcomes

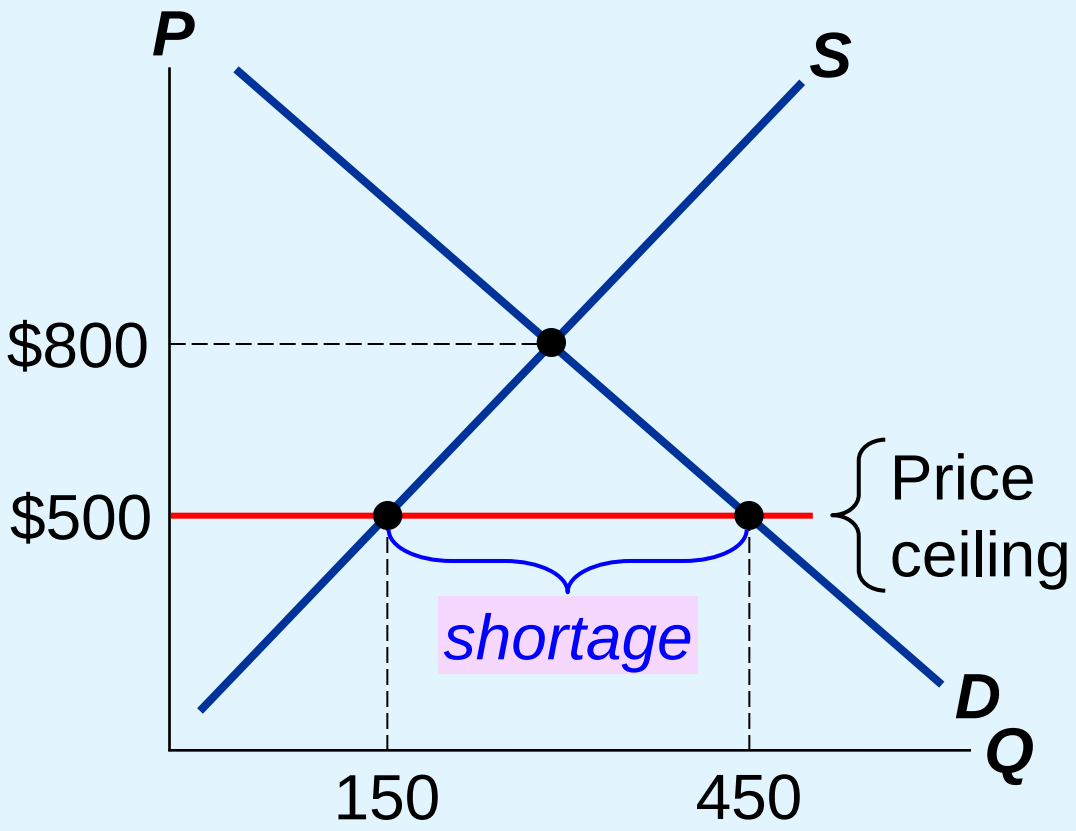
The equilibrium price ($800) is above the ceiling and therefore illegal.
The price ceiling is **binding**, causes a shortage.

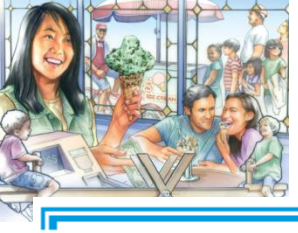


How Price Ceilings Affect Market Outcomes

In the long run, supply and demand of rental apartments are more price-elastic.

So, the shortage is larger.



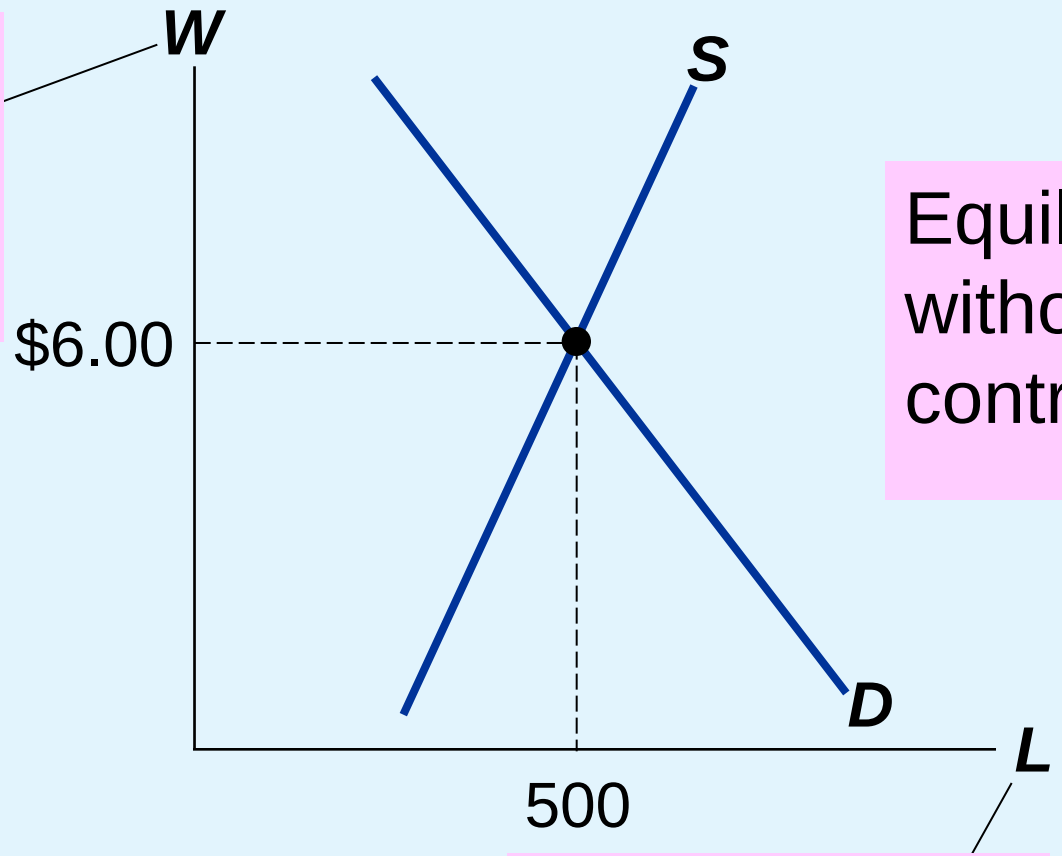


Shortages and Rationing

- Because of shortage
  - Sellers must ration the goods among buyers
- Some rationing mechanisms:
    - Long lines
    - Discrimination according to sellers' biases
  - Are often unfair and inefficient
    - The goods do not necessarily go to the buyers who value them most highly

EXAMPLE 2: The Market for Unskilled Labor

Wage paid to unskilled workers

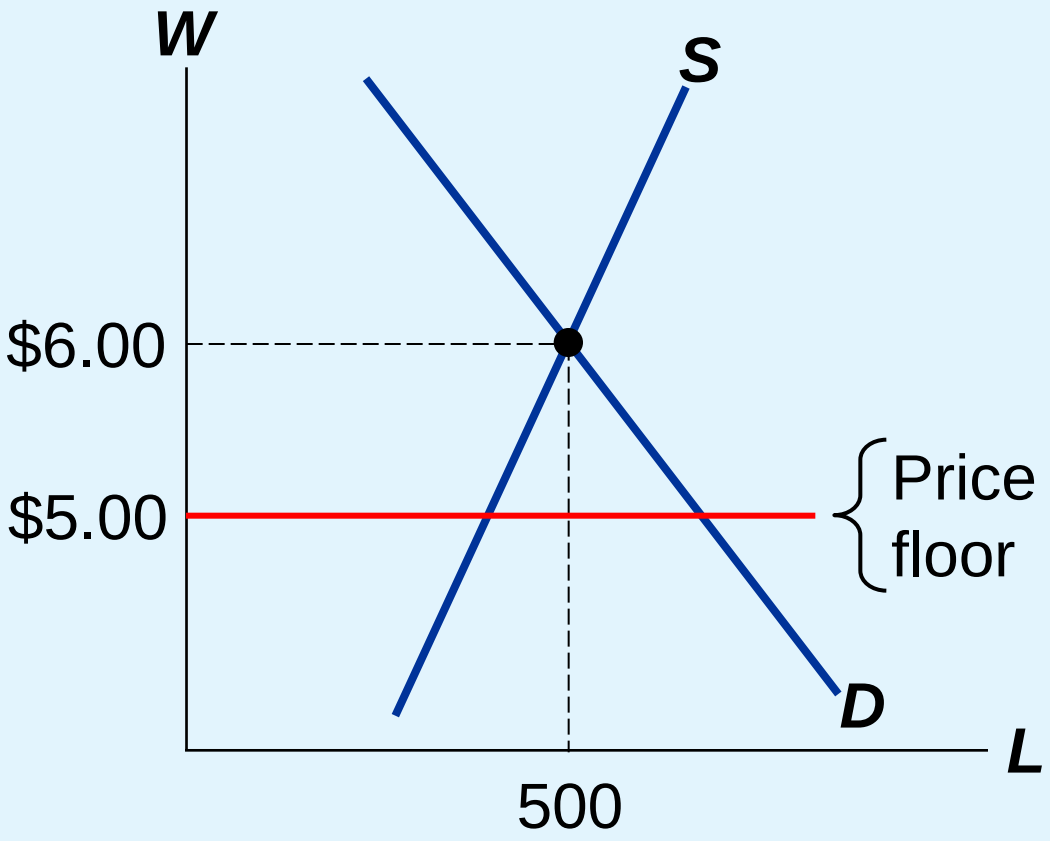


Equilibrium without price controls

Quantity of unskilled workers

How Price Floors Affect Market Outcomes

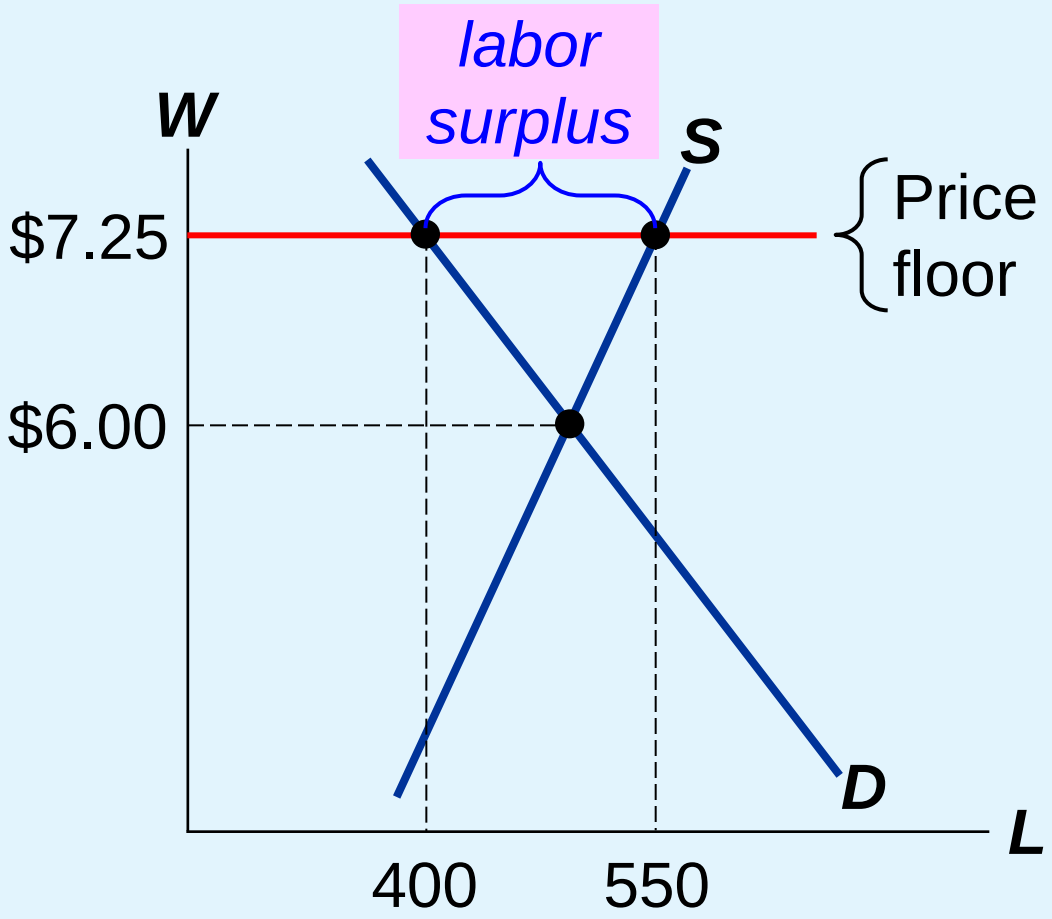
A price floor below the equilibrium price is **not binding** – has no effect on the market outcome.



How Price Floors Affect Market Outcomes

The equilibrium wage ($6) is below the floor and therefore illegal.
The price floor is **binding**, causes a surplus (i.e., unemployment).

Minimum wage laws do not affect highly skilled workers. They do affect teen workers. A 10% increase in the minimum wage raises teen unemployment by 1–3%.



Example: Price controls

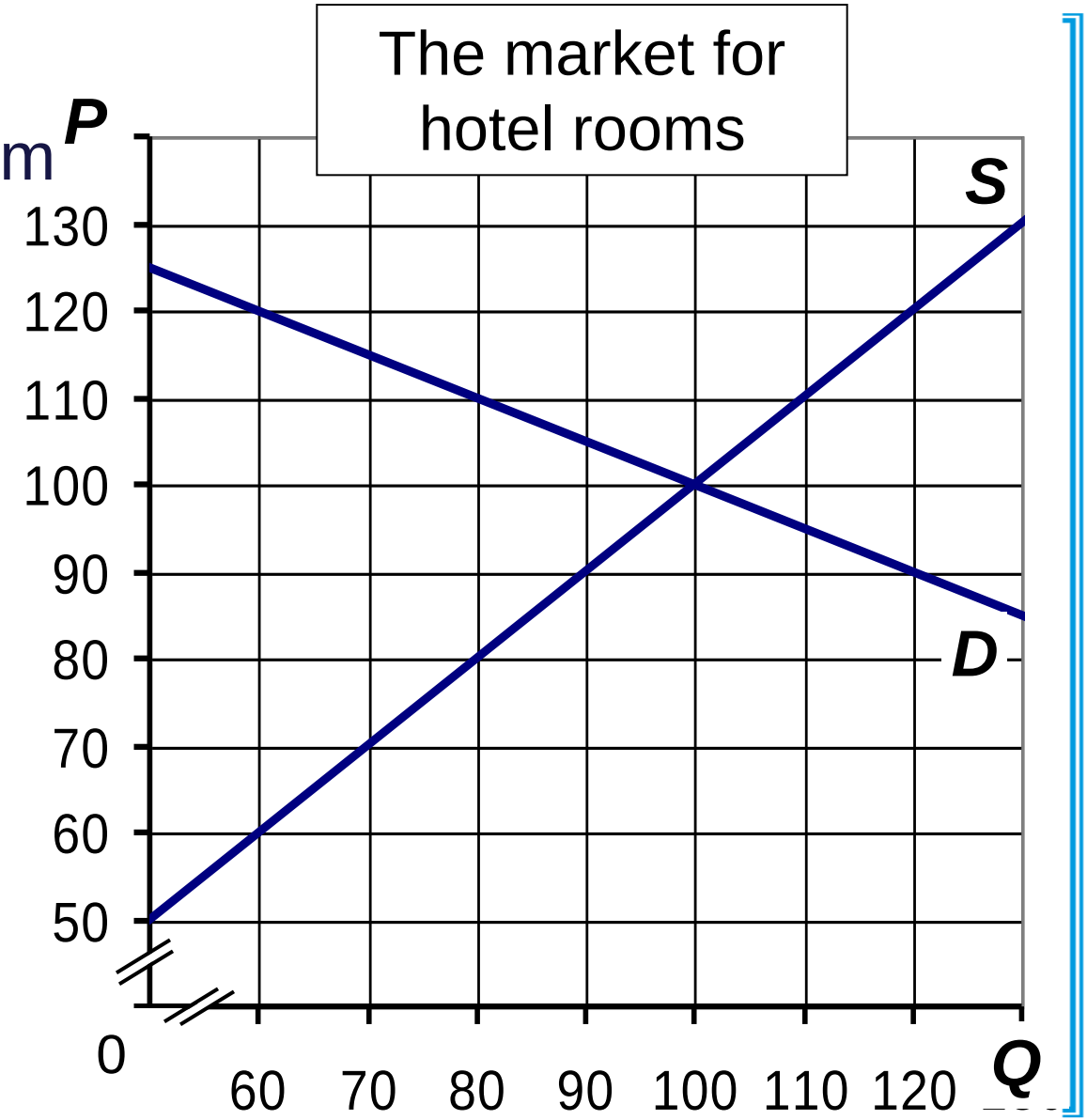
The market for hotel rooms is in equilibrium as in the graph.

- Determine the effects of:

A. $90 price ceiling

B. $90 price floor

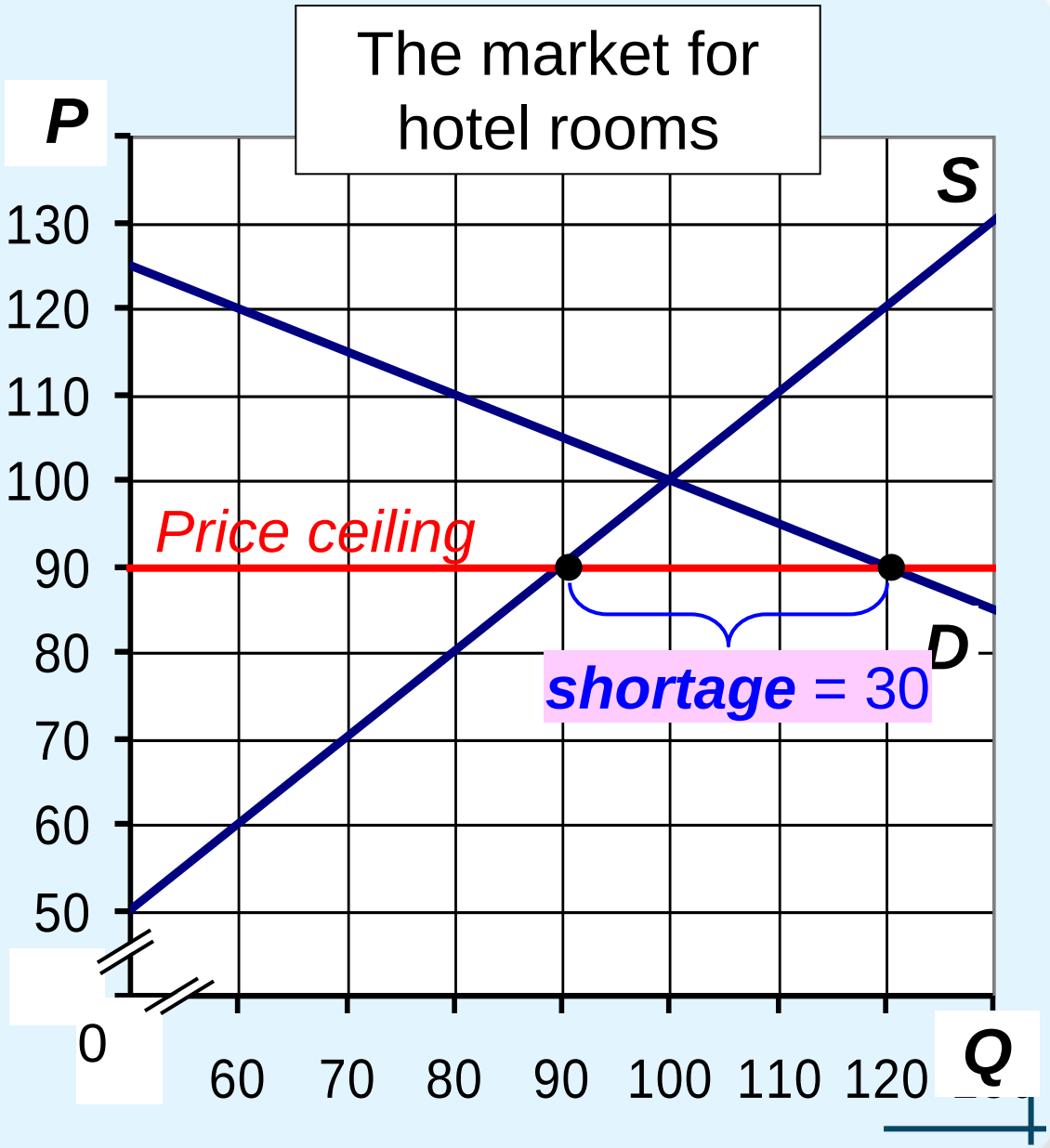
C. $120 price floor



A. $90 price ceiling

The price falls to $90. (binding price ceiling below the equilibrium)

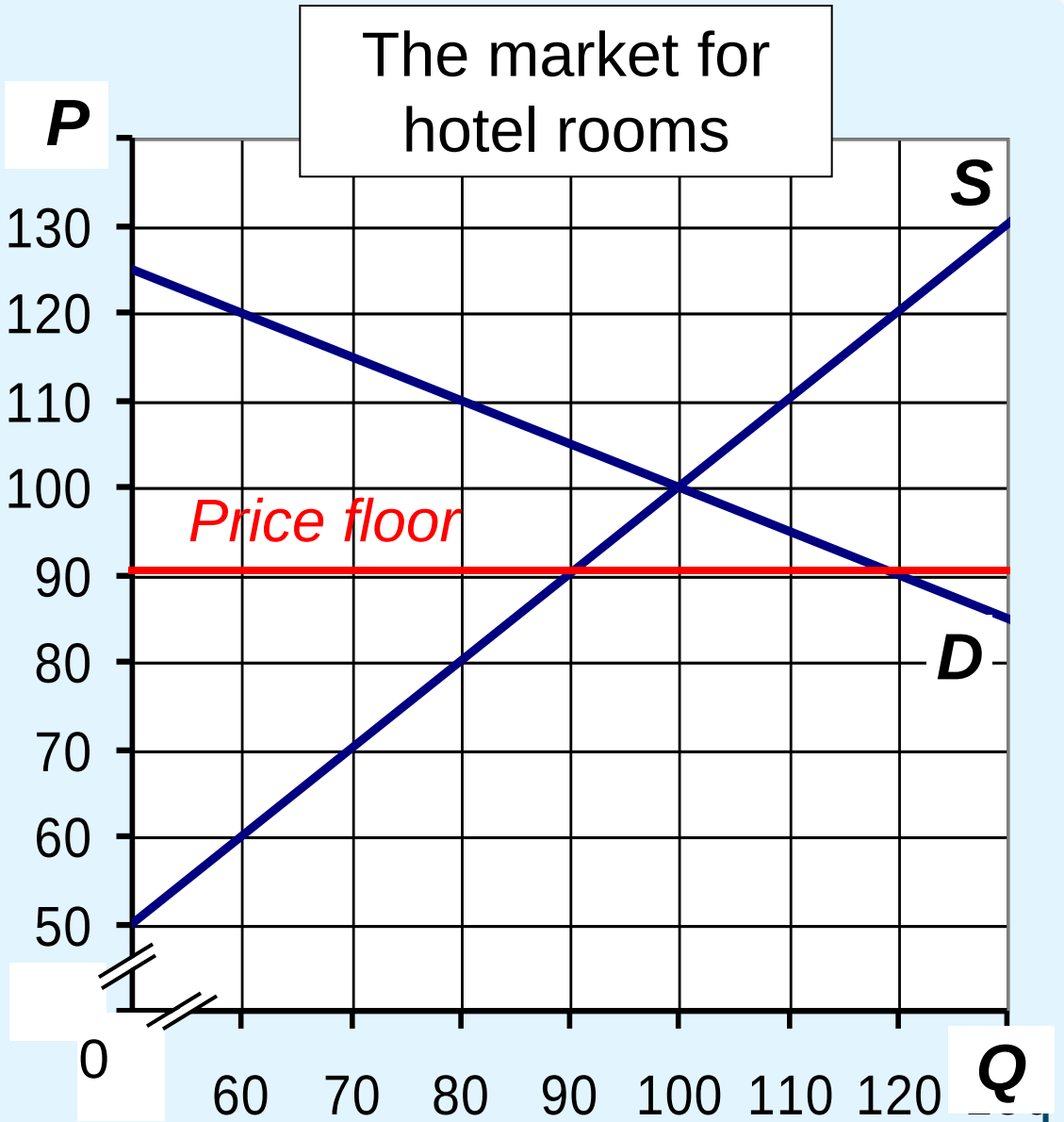
Buyers demand 120 rooms, sellers supply 90, leaving a shortage.



B. $90 price floor

Equilibrium price is above the $90 price floor, so the price floor is not binding.

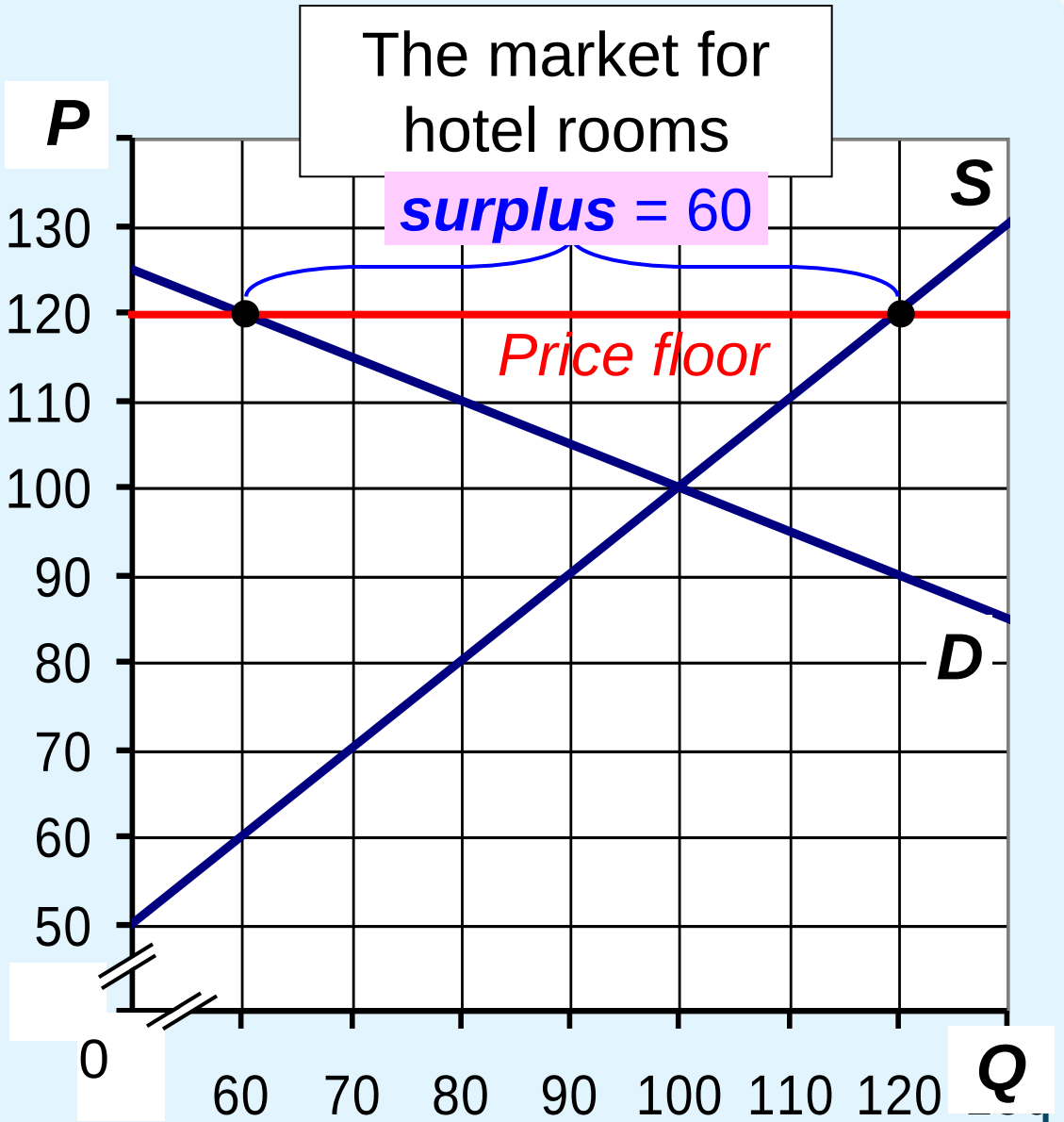
P = $100,
Q = 100 rooms.

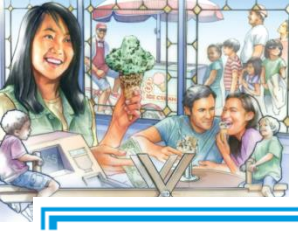


C. $120 price floor

The price rises to $120. (binding price floor above the equilibrium)

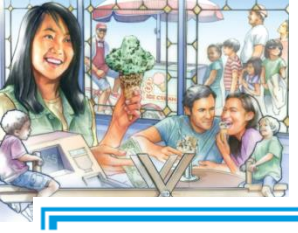
Buyers demand 60 rooms, sellers supply 120, causing a surplus.





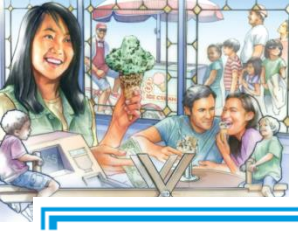
Evaluating Price Controls

- Markets are usually a good way to organize economic activity
  - Economists usually oppose price ceilings and price floors
  - Prices are not the outcome of some haphazard process
  - Prices have the crucial job of balancing supply and demand
    - Coordinating economic activity

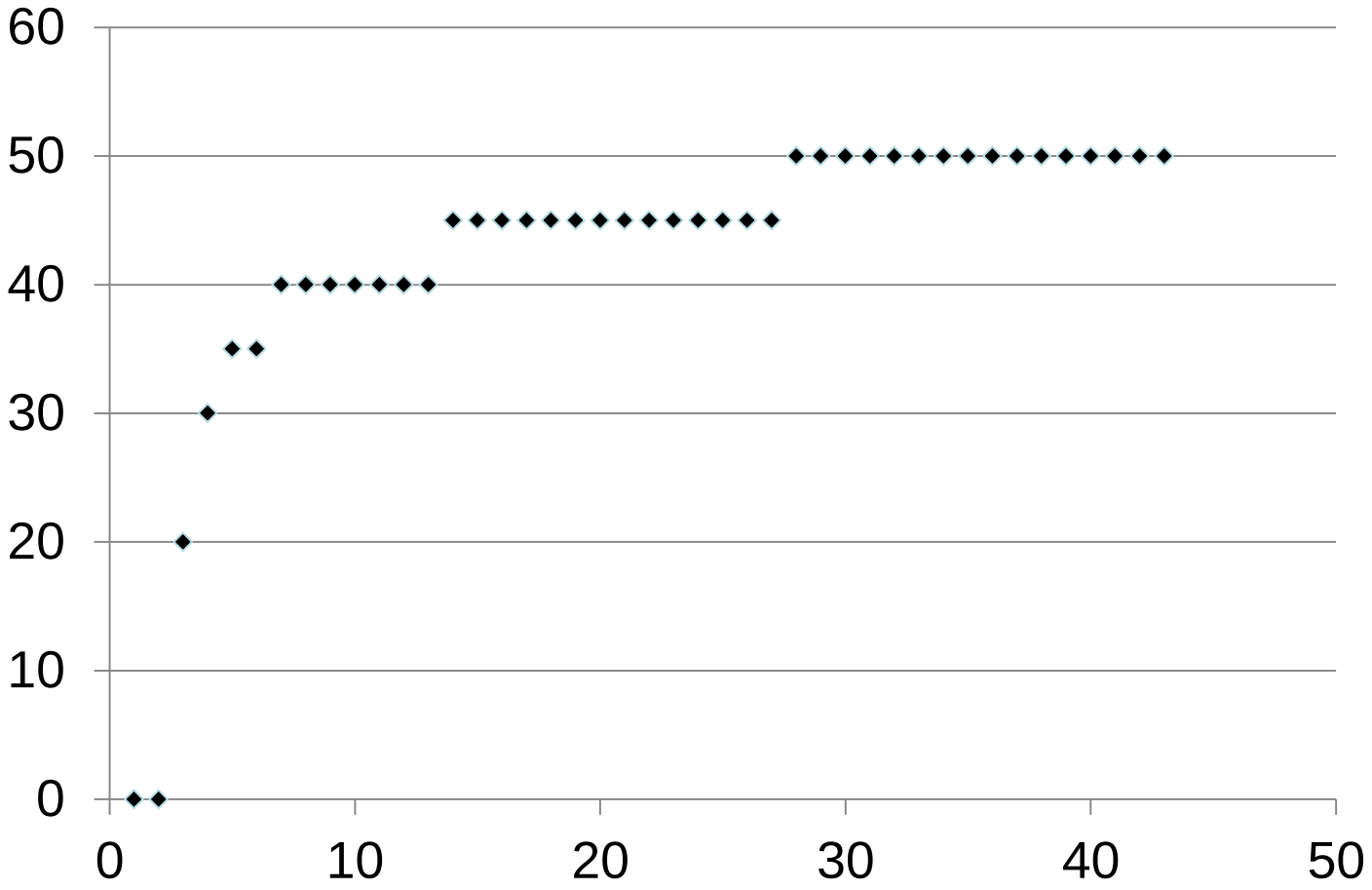


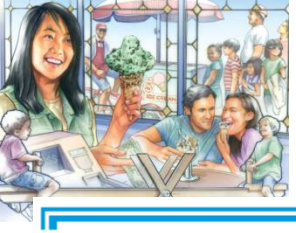
Evaluating Price Controls

- Governments can sometimes improve market outcomes
  - Want to use price controls
    - Because of unfair market outcome
    - Aimed at helping the poor
  - Often hurt those they are trying to help
  - Other ways of helping those in need
    - Rent subsidies
    - Wage subsidies (earned income tax credit)



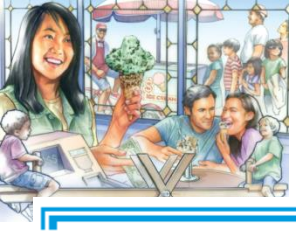
Quiz Score Distribution(3/26)



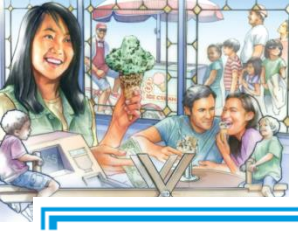


Taxes

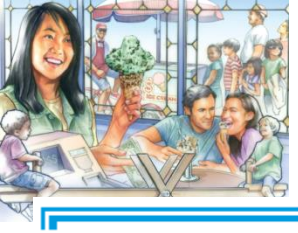
- Government uses taxes
  - To raise revenue for public projects
    - Roads, schools, and national defense
- Tax incidence
  - Manner in which the burden of a tax is shared among participants in a market
    - The government can make the seller or the buyer to pay the tax



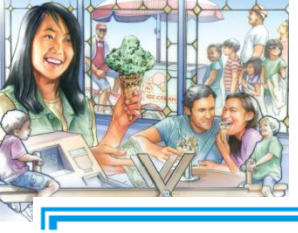
Digression



Boston Tea Party (1773)



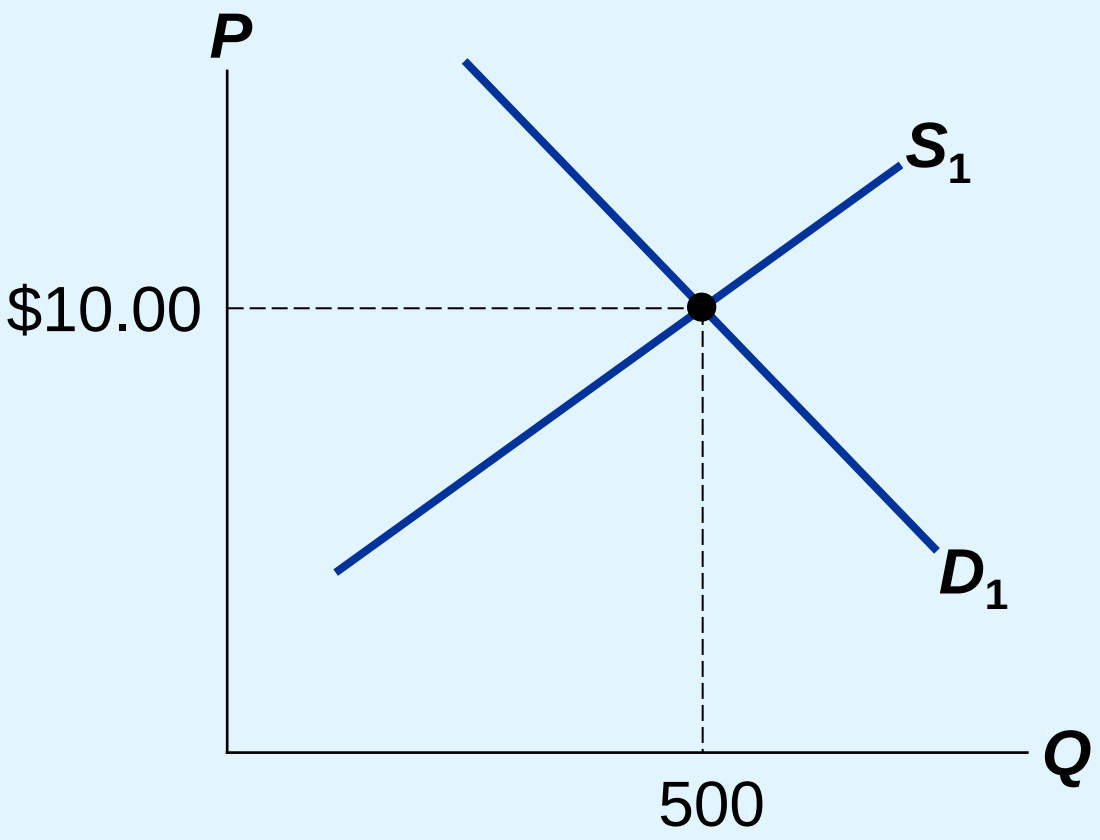
“Plucking the geese”



Fundamentals on Tax

- "No taxes, no representatives"
- Direct(income tax, corporate tax) vs. Indirect(VAT, Sales Tax)… Tax Resistance
- National vs. Local
- Special purpose tax(National defense, education)
- Flat rate vs. Progressive rate
- Tax refund, Tax deduction or exemption
- National Tax Service(IRS), Tax accountant

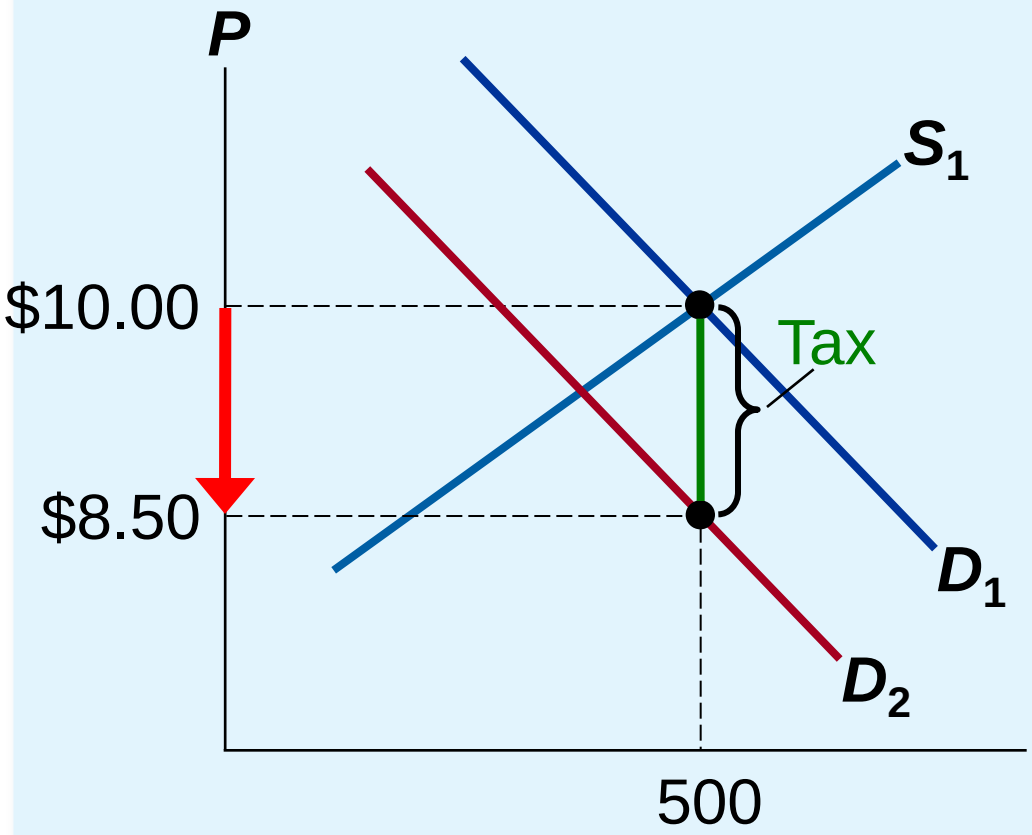
EXAMPLE 3: The Market for Pizza



Equilibrium without tax

① A Tax on Buyers

Effects of a $1.50 per unit tax on buyers



Hence, a tax on buyers shifts the *D* curve down by the amount of the tax.

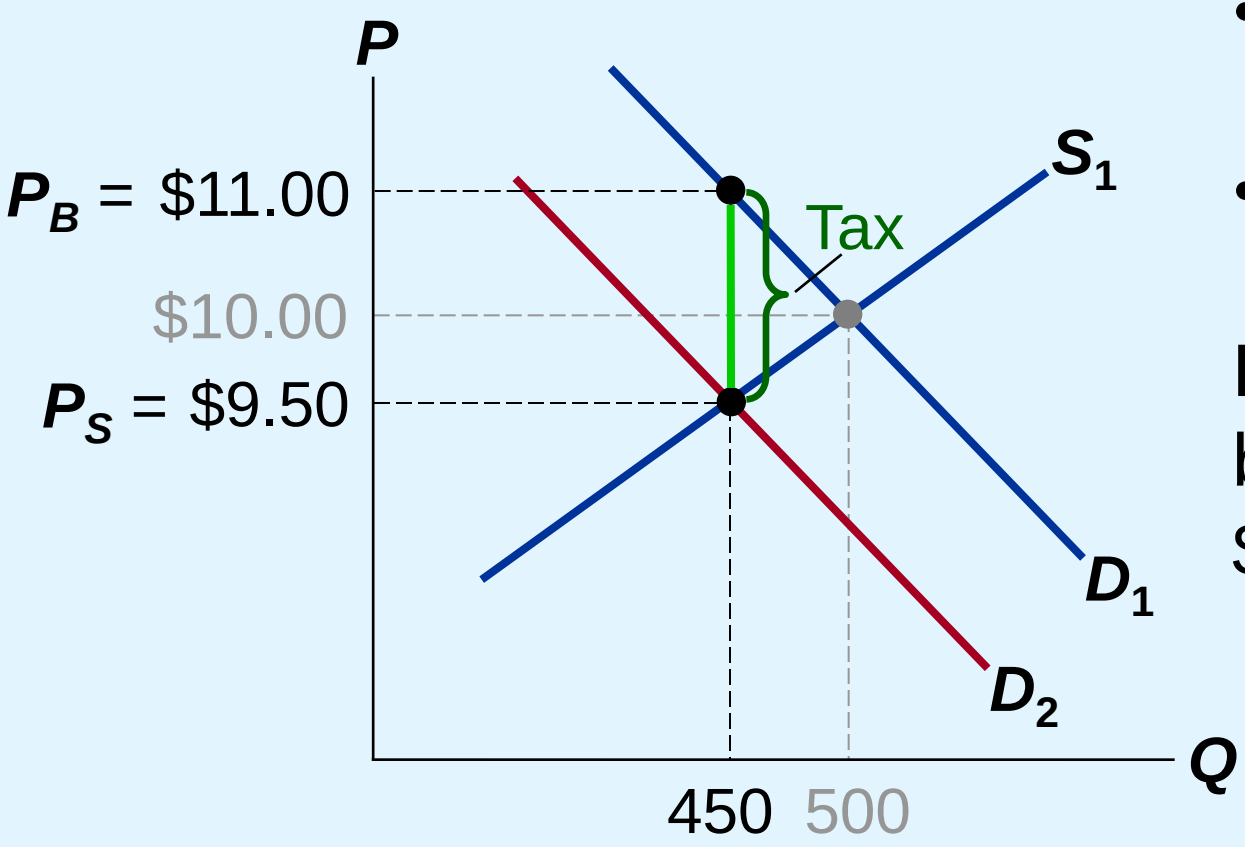
The price buyers pay is now $1.50 higher than the market price ***P***.

P would have to fall by $1.50 to make buyers willing to buy same ***Q*** as before.

- *E.g.*, if ***P*** falls from $10.00 to $8.50, buyers are still willing to purchase 500 pizzas.

① A Tax on Buyers

Effects of a $1.50 per unit tax on buyers



New equilibrium:

- Q = 450
- Sellers receive P_S = $9.50
- Buyers pay P_B = $11.00

Difference between them = $1.50 = tax

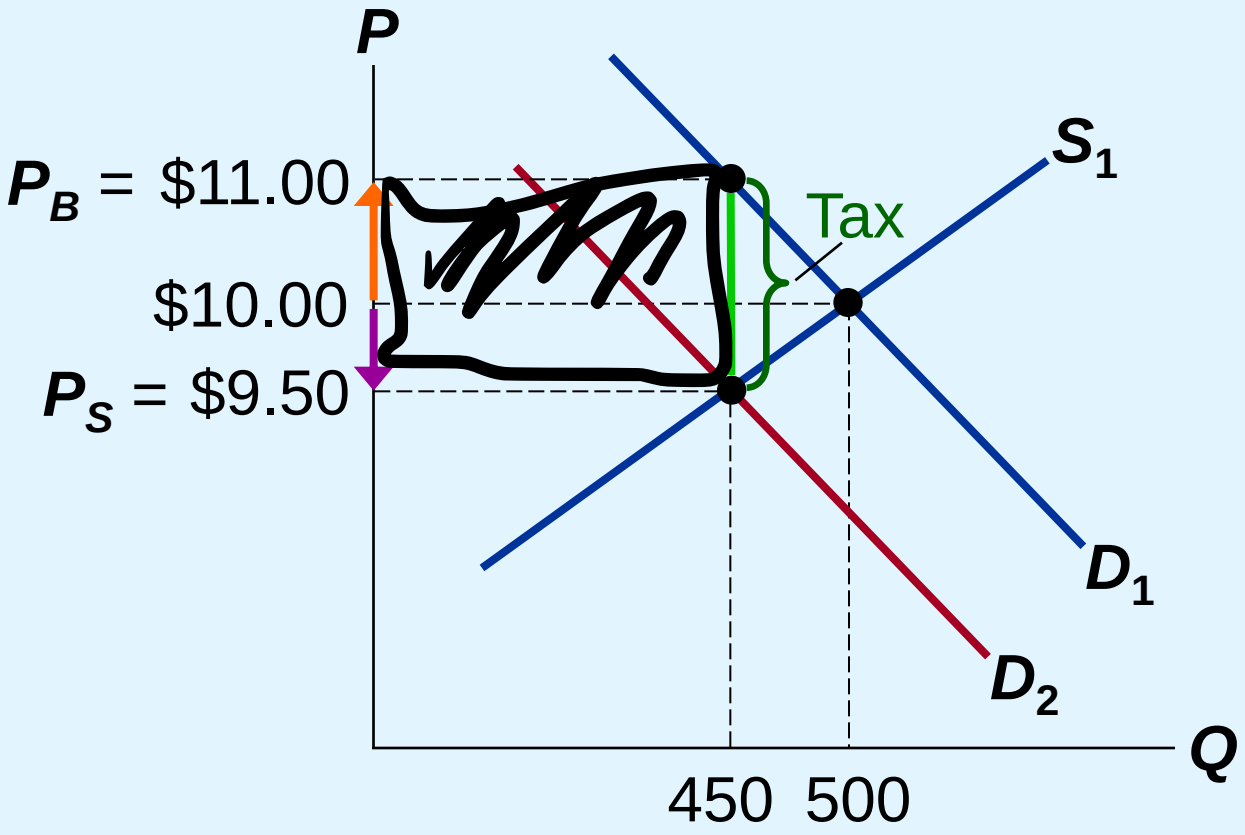
The **Incidence** of a Tax:

how the burden of a tax is shared among market participants

In our example,

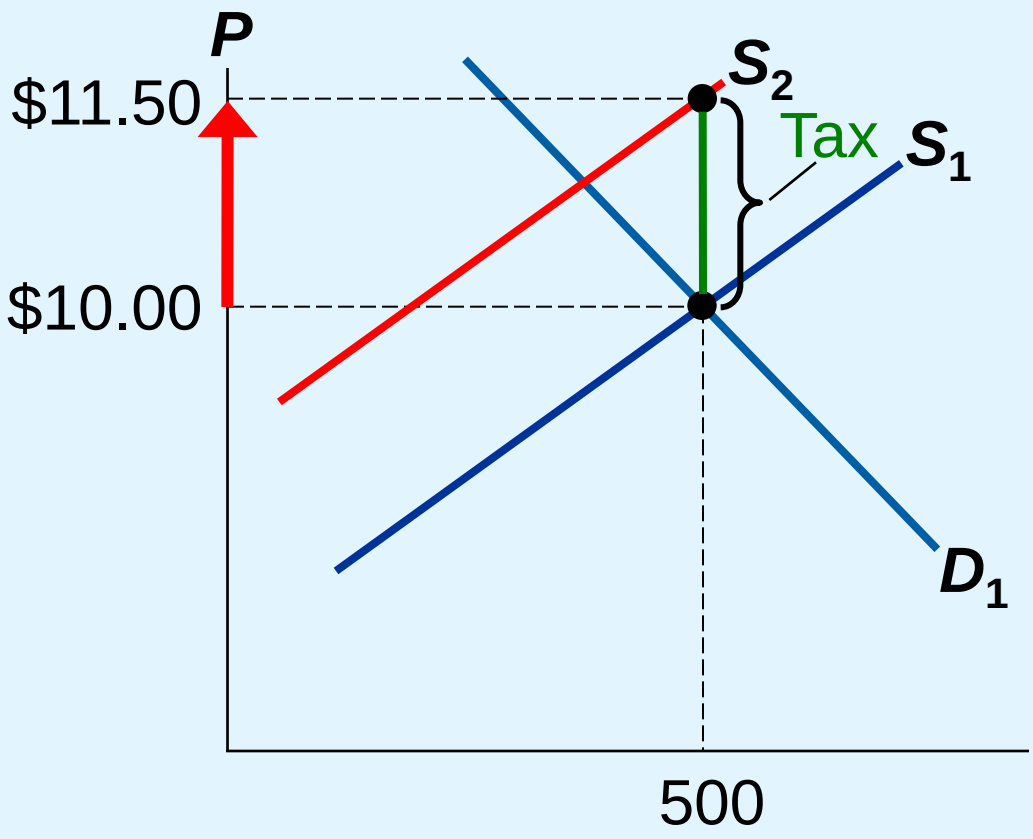
buyers pay $1.00 more,

sellers get $0.50 less.



② A Tax on Sellers

Effects of a $1.50 per unit tax on sellers



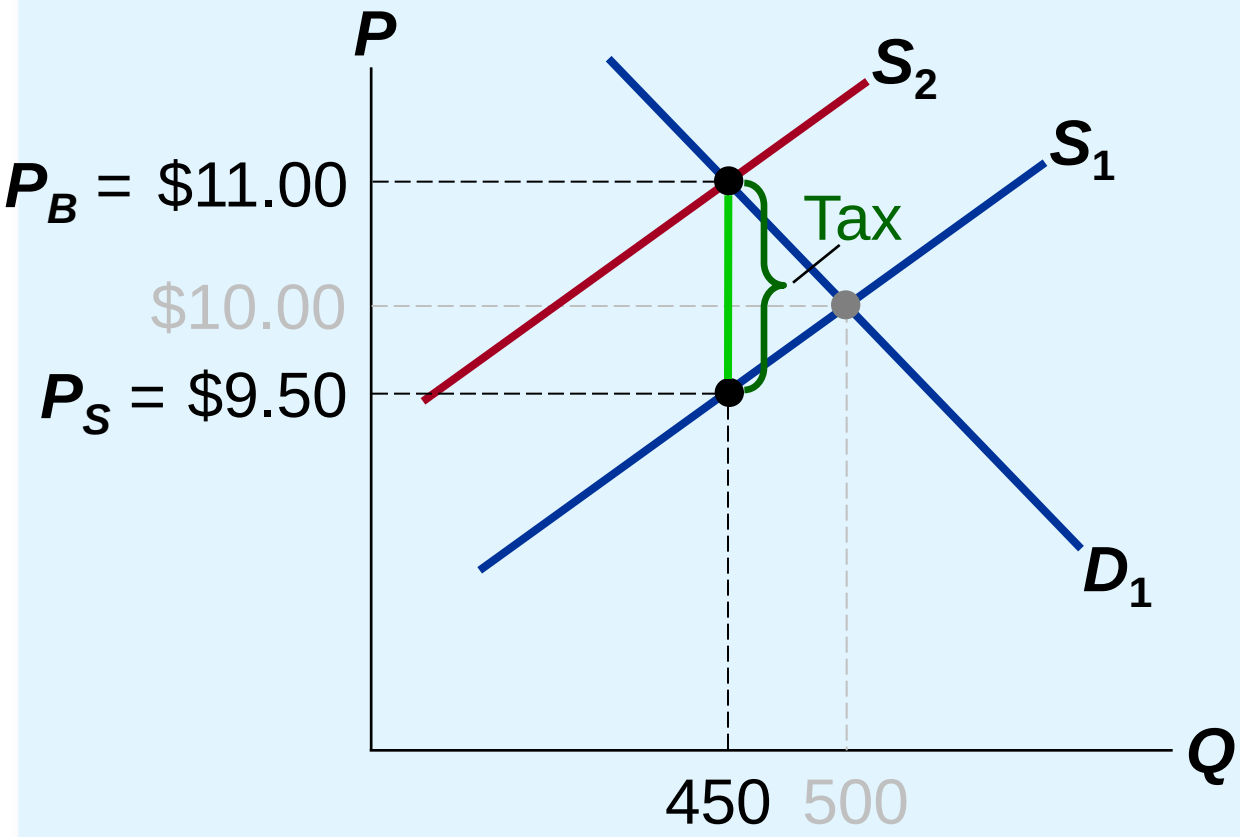
The tax effectively raises sellers' costs by $1.50 per pizza.

Sellers will supply 500 pizzas only if ***P*** rises to $11.50, to compensate for this cost increase.

Hence, a tax on sellers shifts the *S* curve up by the amount of the tax.

② A Tax on Sellers

Effects of a $1.50 per unit tax on sellers



New equilibrium:

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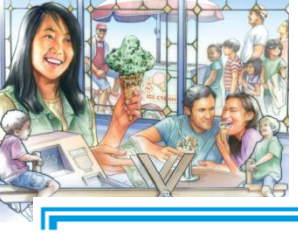
- Sellers receive P_S = $9.50

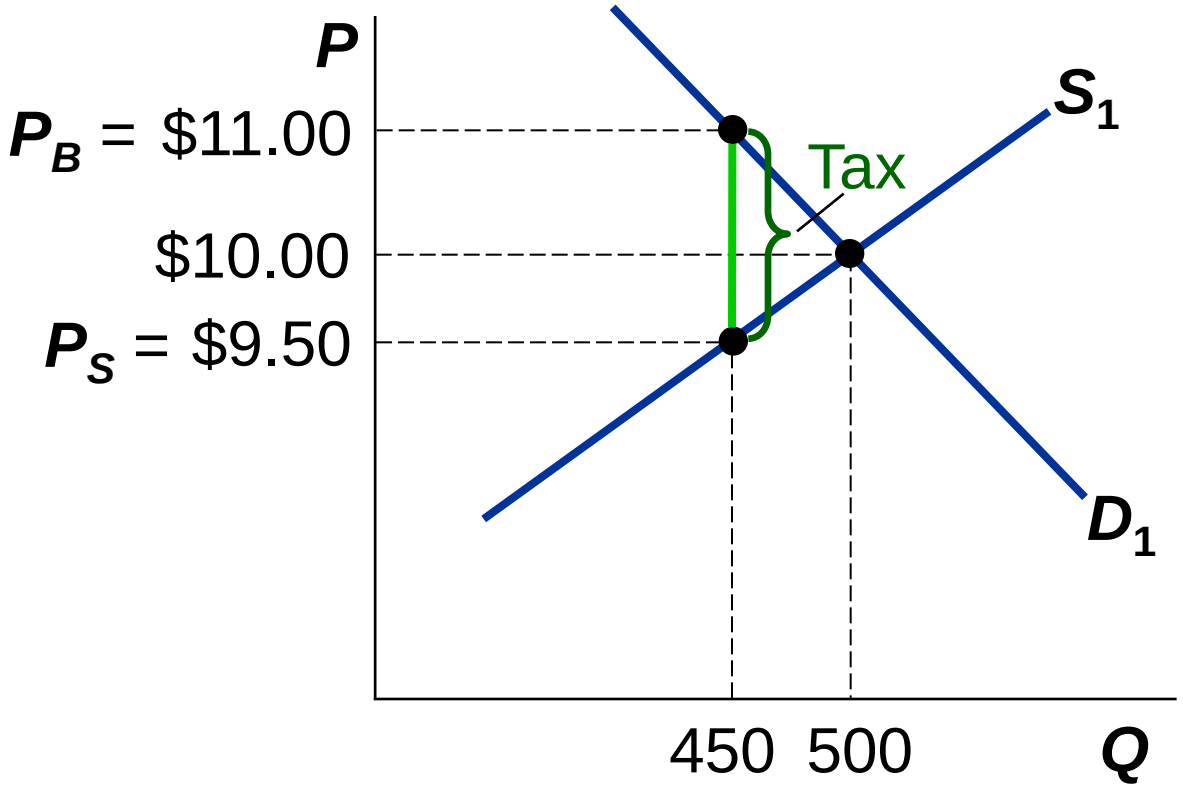
Difference between them = $1.50 = tax



The Outcome Is the Same in Both Cases!

- The effects on P and Q, and the tax incidence are the same whether the tax is imposed on buyers or sellers!

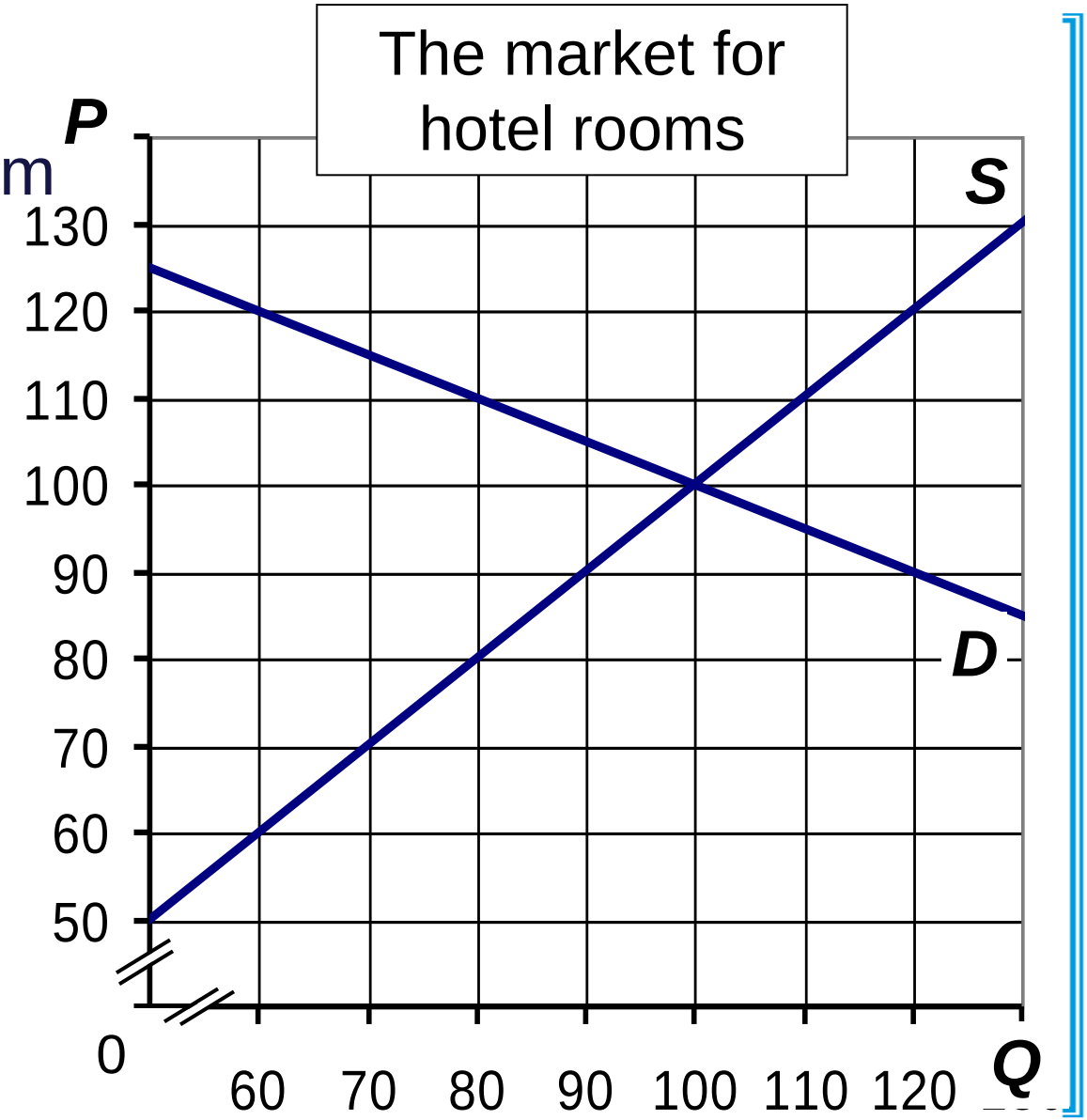
A tax drives a wedge between the price buyers pay and the price sellers receive.



Example: Effects of a tax

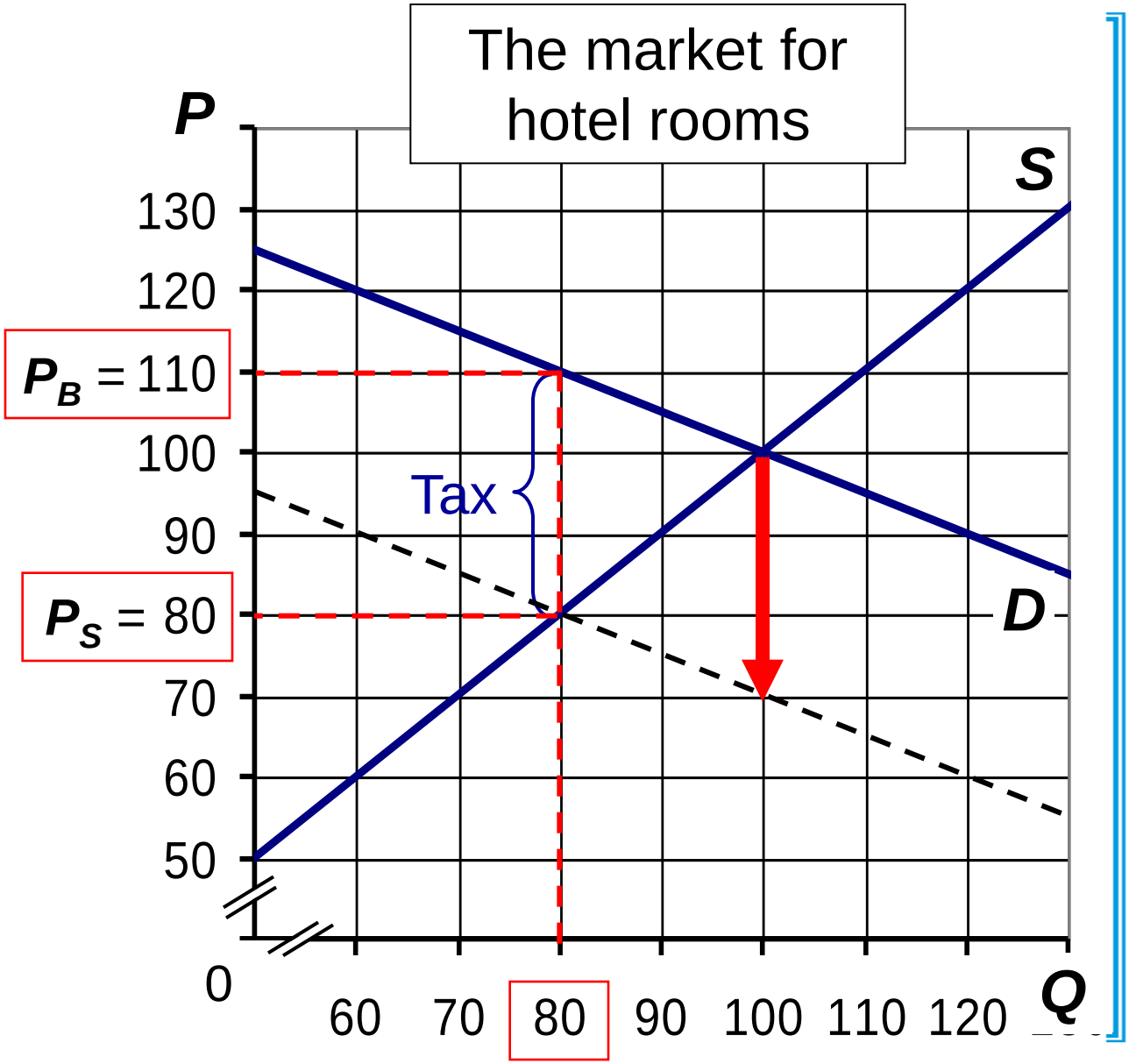
The market for hotel rooms is in equilibrium as in the graph.

- Suppose the government imposes a tax on buyers of $30 per room
- Find the new Q, P_B, P_S, and incidence of tax.



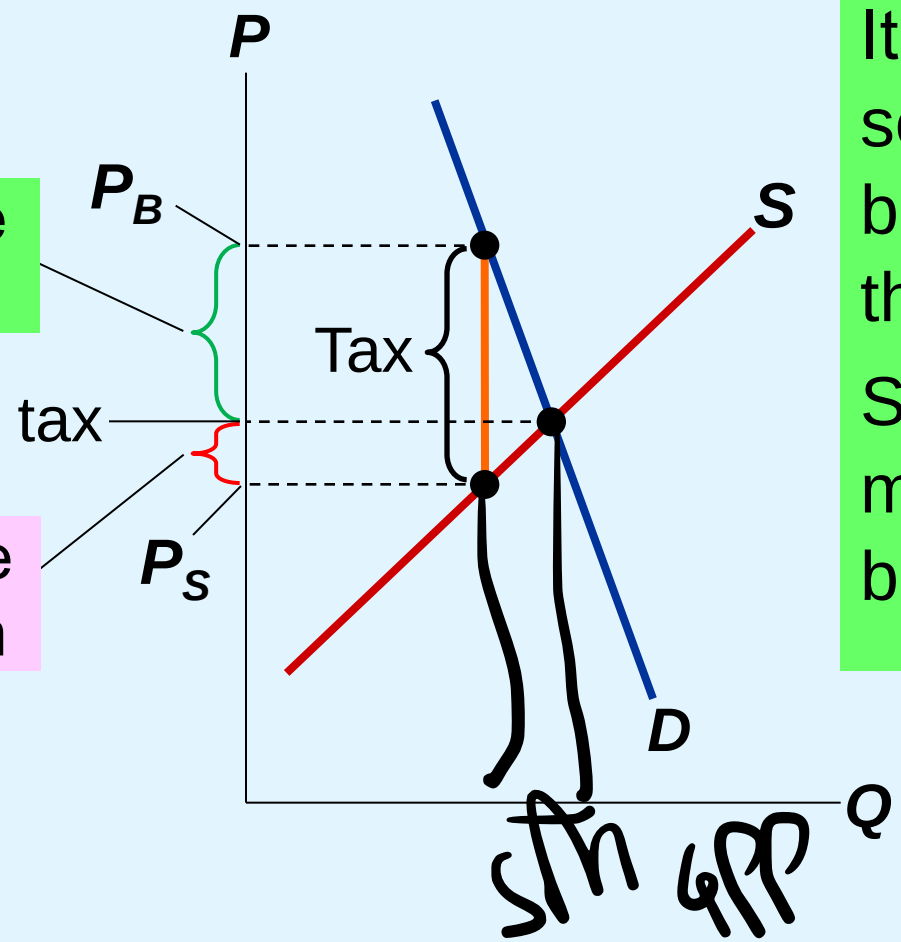
Answers

- Q = 80
- P_B = \$110
- P_S = \$80
- Incidence
  - buyers: \$10
  - sellers: \$20



Elasticity and Tax Incidence

CASE 1: Supply is more elastic than demand



Buyers' share of tax burden

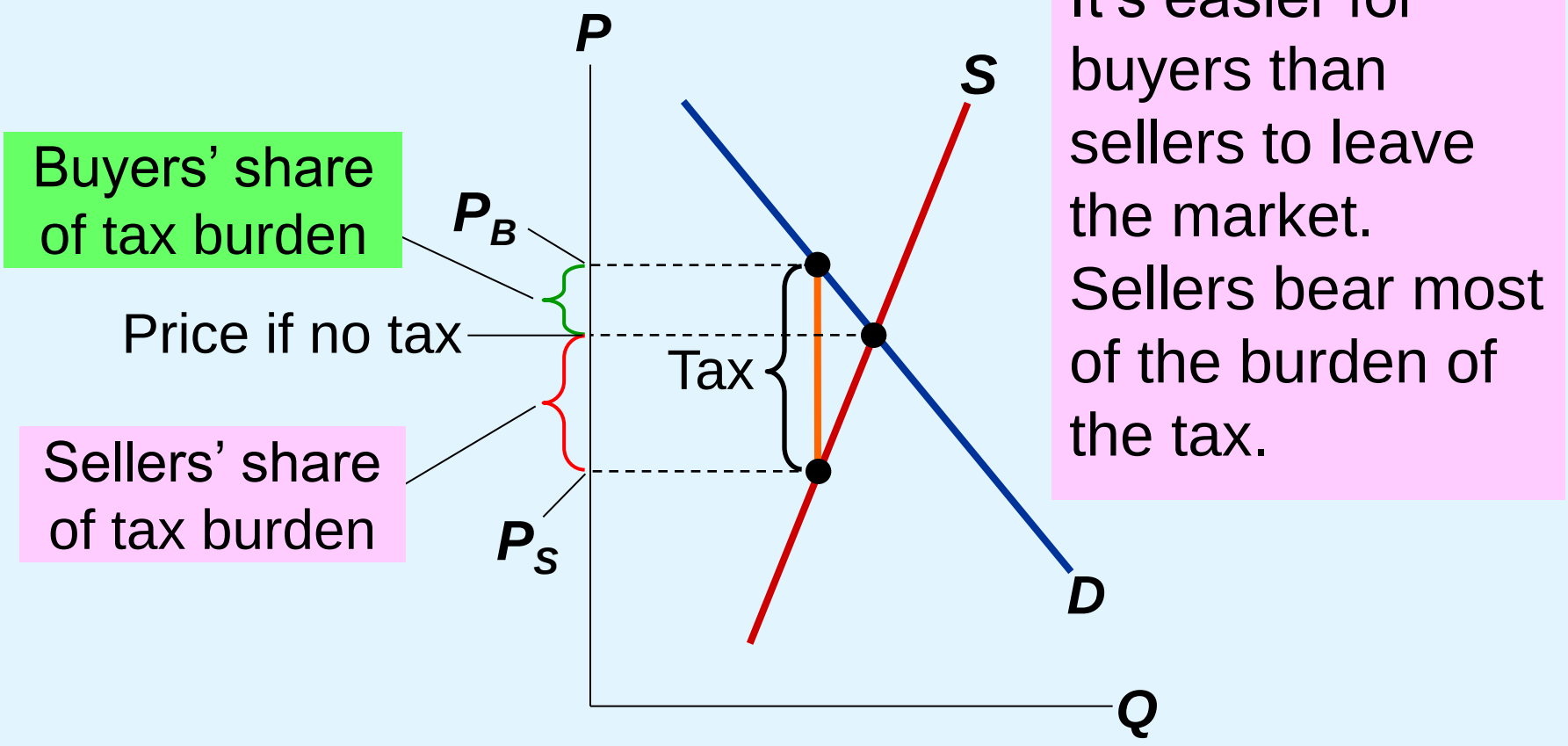
Sellers' share of tax burden

It's easier for sellers than buyers to leave the market.

So buyers bear most of the burden of the tax.

Elasticity and Tax Incidence

CASE 2: Demand is more elastic than supply



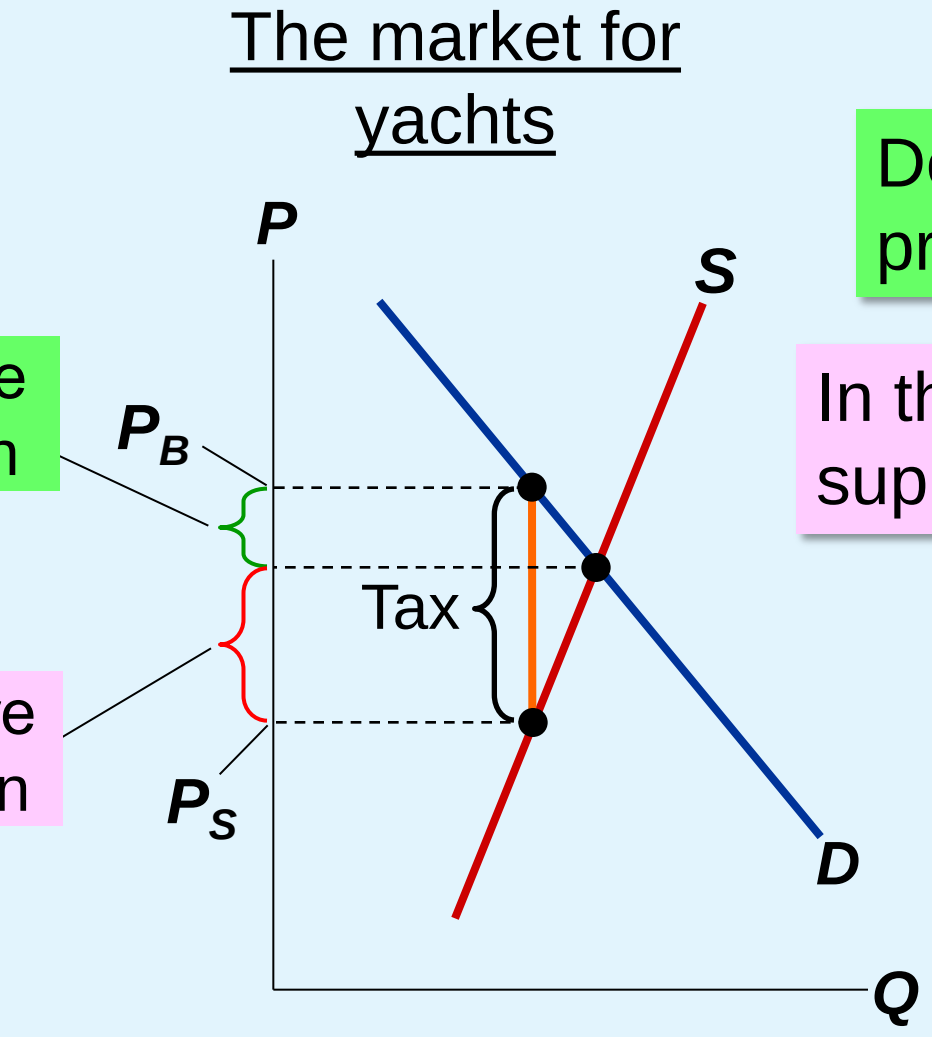
It's easier for buyers than sellers to leave the market. Sellers bear most of the burden of the tax.

CASE STUDY

Who pays the luxury tax?

- 1990, Congress adopted a new luxury tax
  - On yachts, private airplanes, furs, jewelry, expensive cars
  - Goal: to raise revenue from those who could most easily afford to pay
  - Luxury items
    - Demand is quite elastic
    - Supply is relatively inelastic

CASE STUDY: Who Pays the Luxury Tax?



Demand is price-elastic.

In the short run, supply is inelastic.

Buyers' share of tax burden

Sellers' share of tax burden

Hence, companies that build yachts pay most of the tax.

Summary

- A price ceiling is a legal maximum on the price of a good. An example is rent control. If the price ceiling is below the equilibrium price, it is binding and causes a shortage.
- A price floor is a legal minimum on the price of a good. An example is the minimum wage. If the price floor is above the equilibrium price, it is binding and causes a surplus. The labor surplus caused by the minimum wage is unemployment.

Summary

- A tax on a good places a wedge between the price buyers pay and the price sellers receive, and causes the equilibrium quantity to fall, whether the tax is imposed on buyers or sellers.
- The incidence of a tax is the division of the burden of the tax between buyers and sellers, and does not depend on whether the tax is imposed on buyers or sellers.
- The incidence of the tax depends on the price elasticities of supply and demand.