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# Principles of Economics

Sixth Edition

6

## Supply, Demand, and Government Policies



*Premium  
PowerPoint  
Slides by  
Ron Cronovich  
2012 UPDATE*

***In this chapter,  
look for the answers to these questions:***

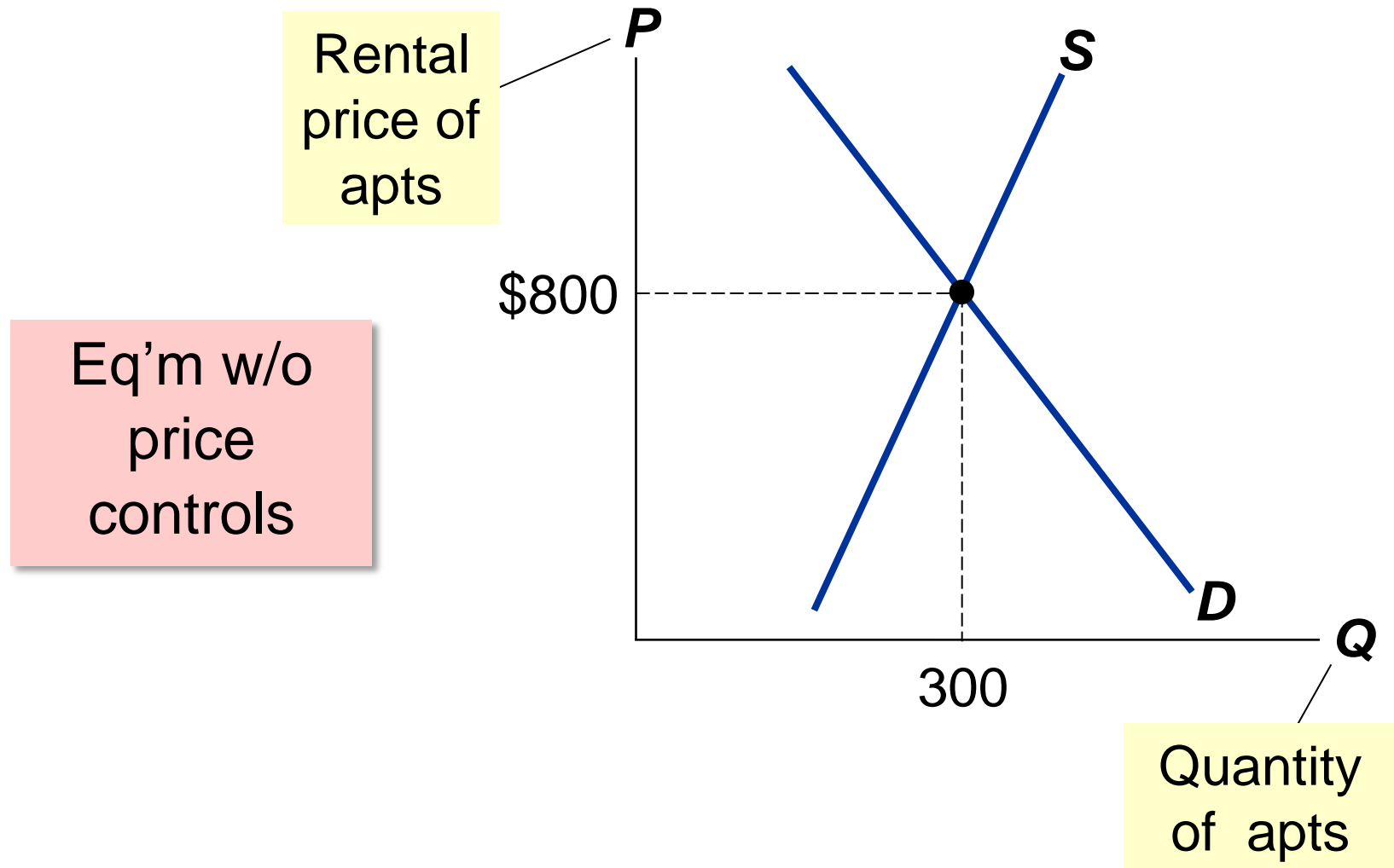
- What are price ceilings and price floors?  
What are some examples of each?
- How do price ceilings and price floors affect market outcomes?
- How do taxes affect market outcomes?  
How do the effects depend on whether the tax is imposed on buyers or sellers?
- What is the incidence of a tax?  
What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

# Government Policies That Alter the Private Market Outcome

- Price controls
  - **Price ceiling**: a legal maximum on the price of a good or service *Example: rent control*
  - **Price floor**: a legal minimum on the price of a good or service *Example: minimum wage*
- Taxes
  - The govt can make buyers or sellers pay a specific amount on each unit.

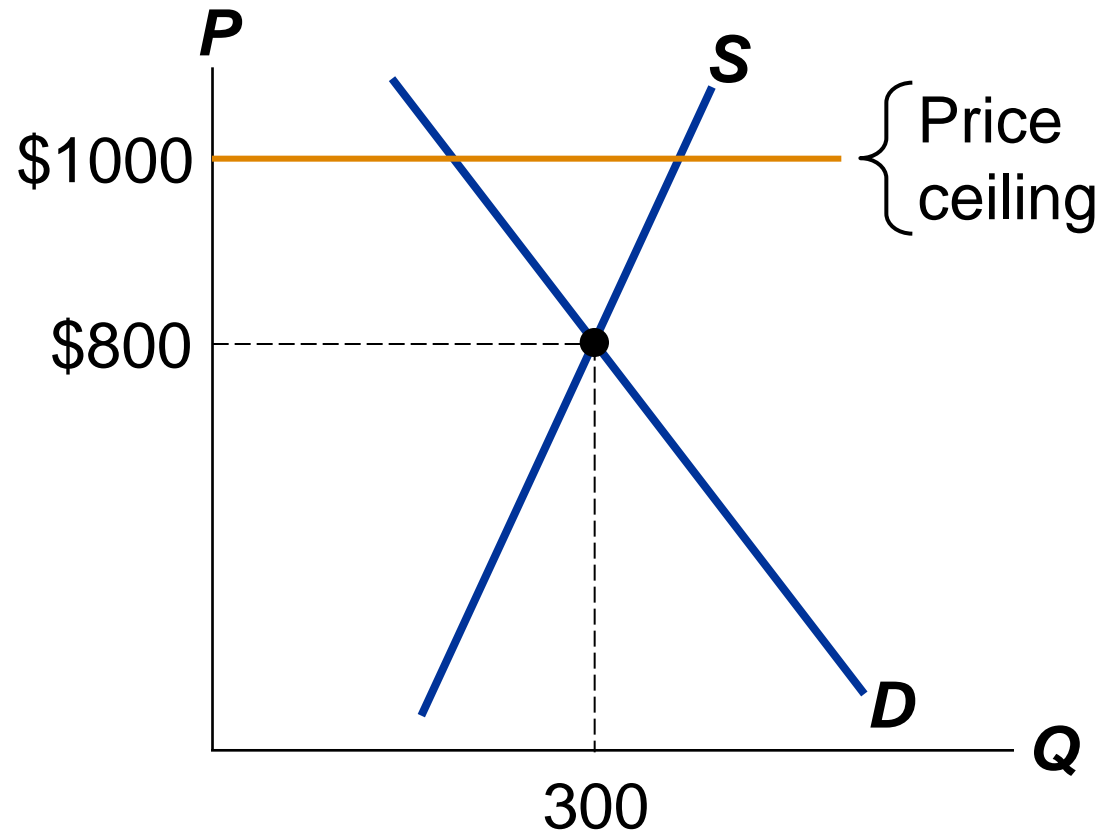
We will use the supply/demand model to see how each policy affects the market outcome (the price buyers pay, the price sellers receive, and eq'm quantity).

# EXAMPLE 1: The Market for Apartments



# How Price Ceilings Affect Market Outcomes

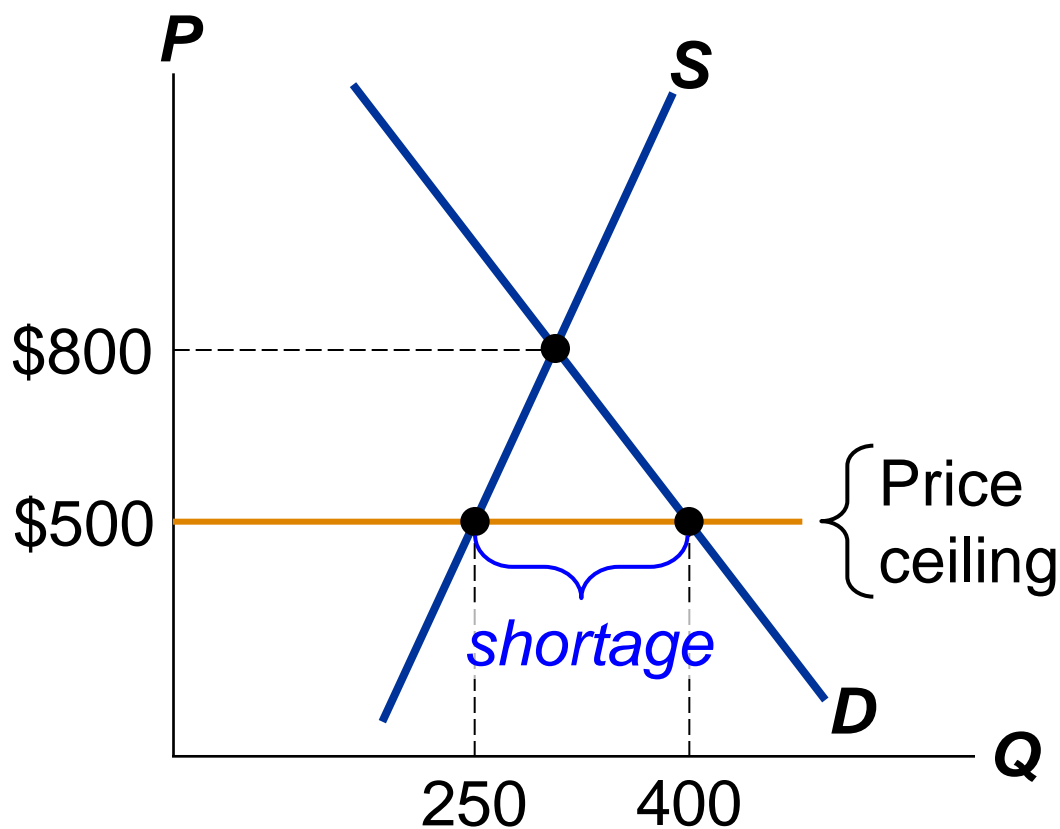
A price ceiling above the eq'm price is **not binding**—has no effect on the market outcome.



# How Price Ceilings Affect Market Outcomes

The eq'm price (\$800) is above the ceiling and therefore illegal.

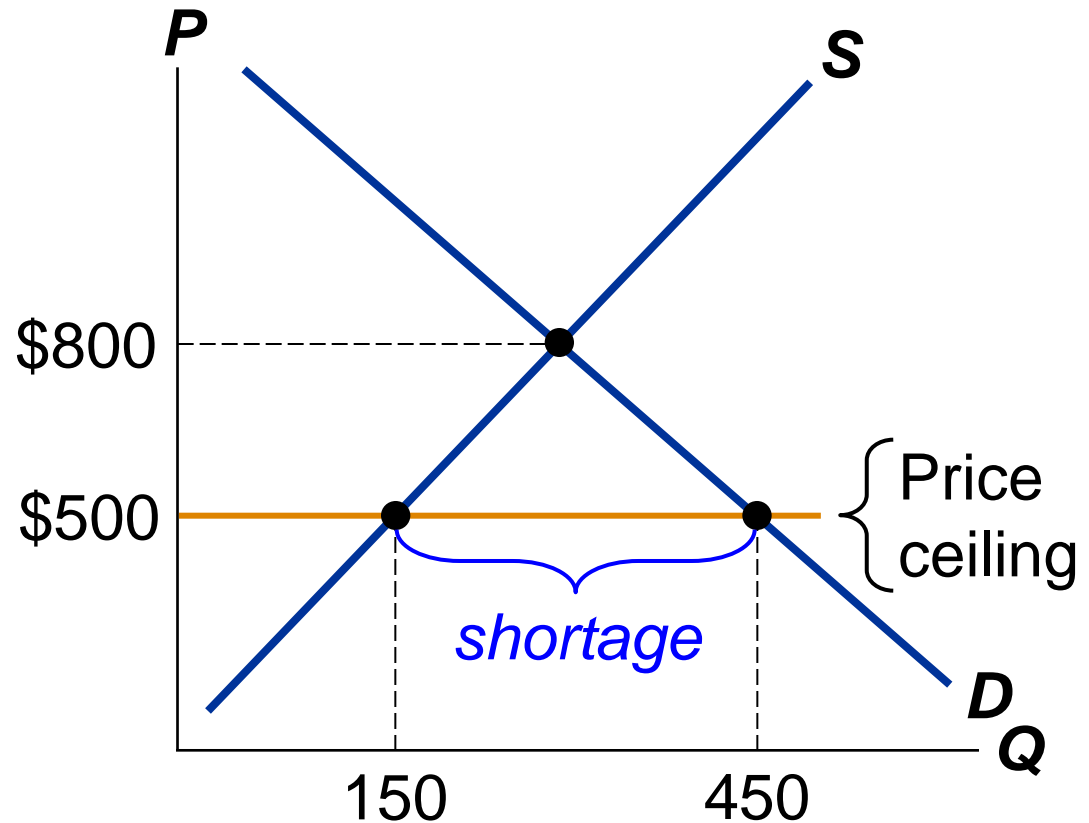
The ceiling is a **binding constraint** on the price, causes a shortage.



# How Price Ceilings Affect Market Outcomes

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

So, the  
shortage  
is larger.

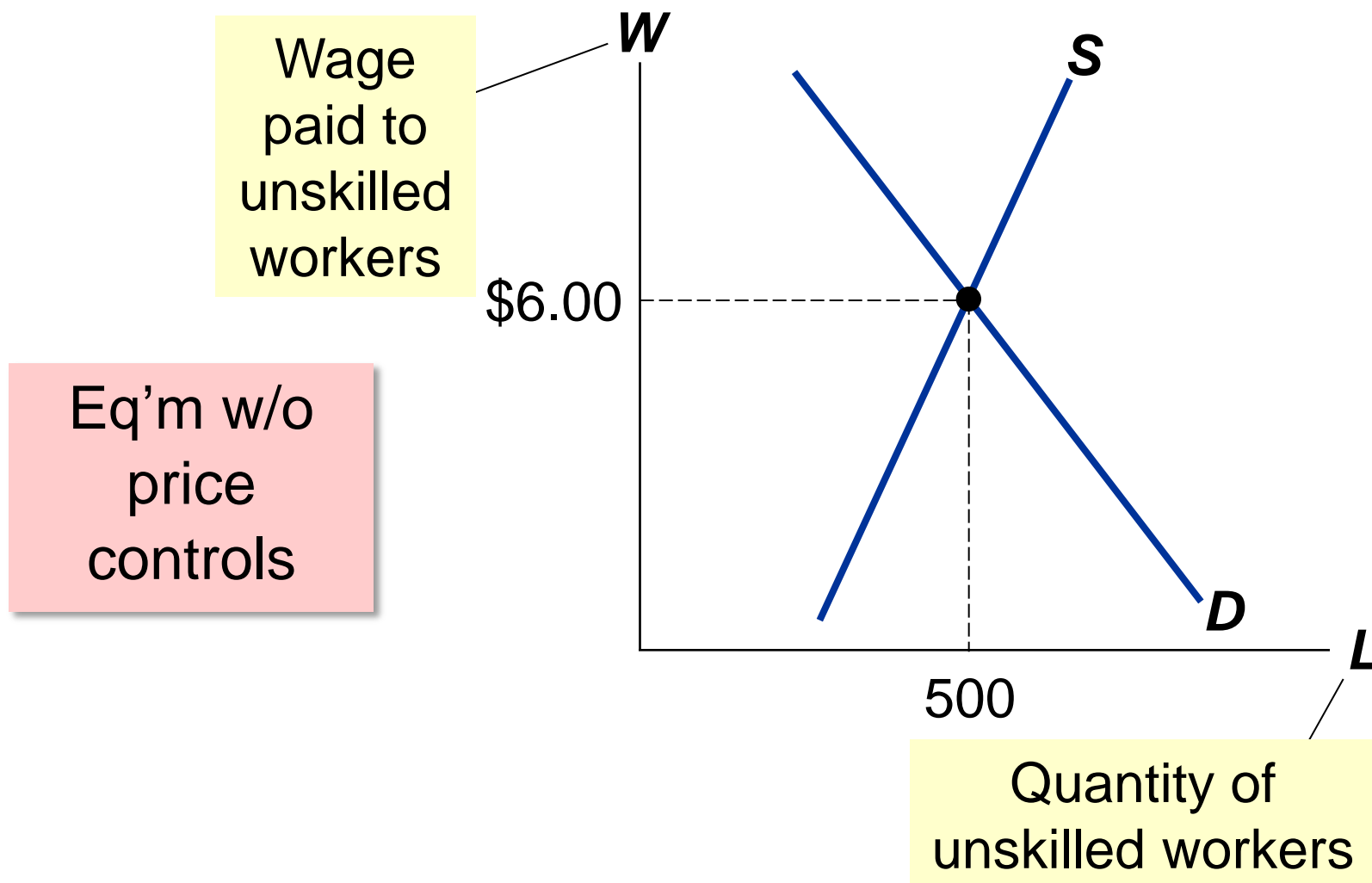


# Shortages and Rationing

- With a shortage, sellers must ration the goods among buyers.
- Some rationing mechanisms: (1) Long lines (2) Discrimination according to sellers' biases
- These mechanisms are often unfair, and inefficient: the goods do not necessarily go to the buyers who value them most highly.
- In contrast, when prices are not controlled, the rationing mechanism is efficient (the goods go to the buyers that value them most highly) and impersonal (and thus fair).

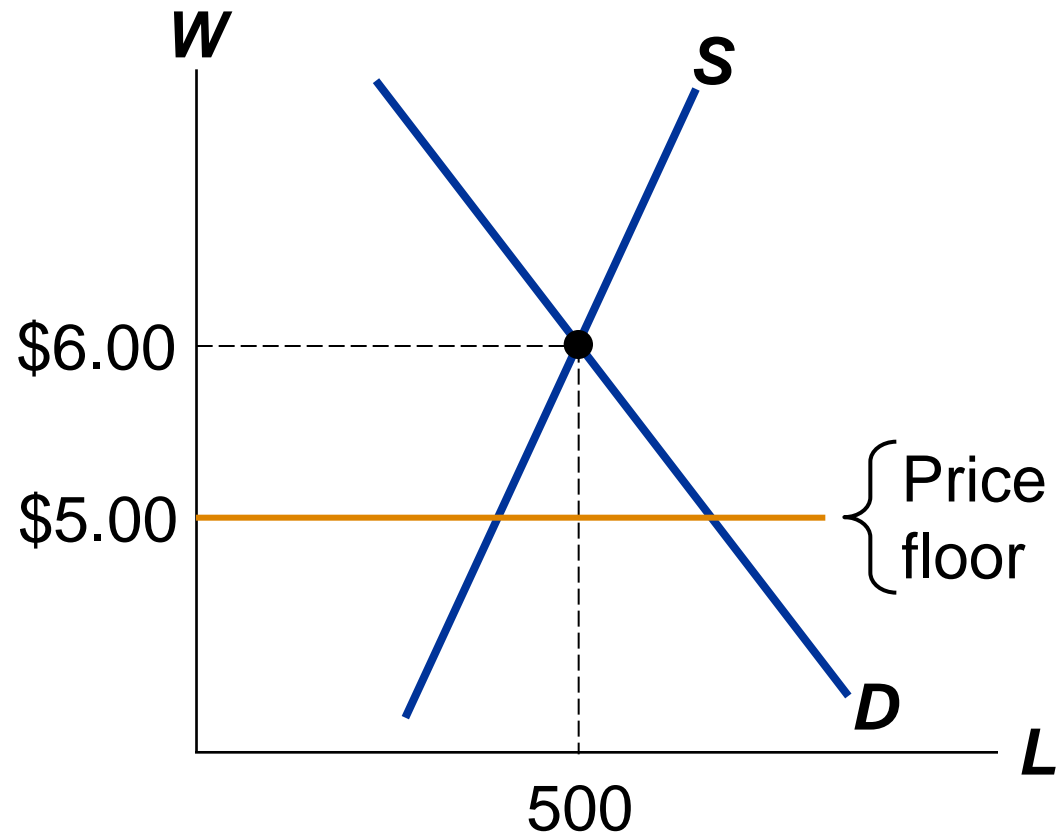


## EXAMPLE 2: The Market for Unskilled Labor



# How Price Floors Affect Market Outcomes

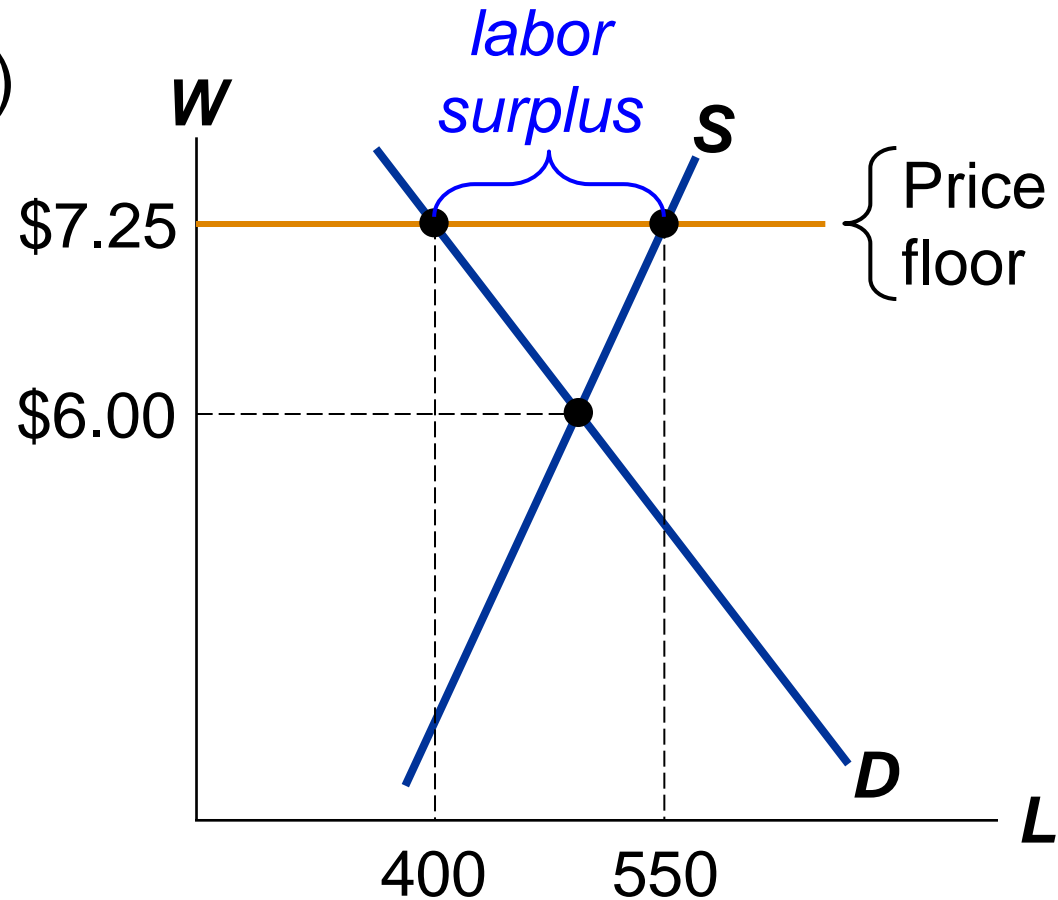
A price floor below the eq'm price is **not binding** – has no effect on the market outcome.



# How Price Floors Affect Market Outcomes

The eq'm wage (\$6)  
is below the floor  
and therefore  
illegal.

The floor  
is a **binding  
constraint**  
on the wage,  
causes a  
surplus (i.e.,  
unemployment).

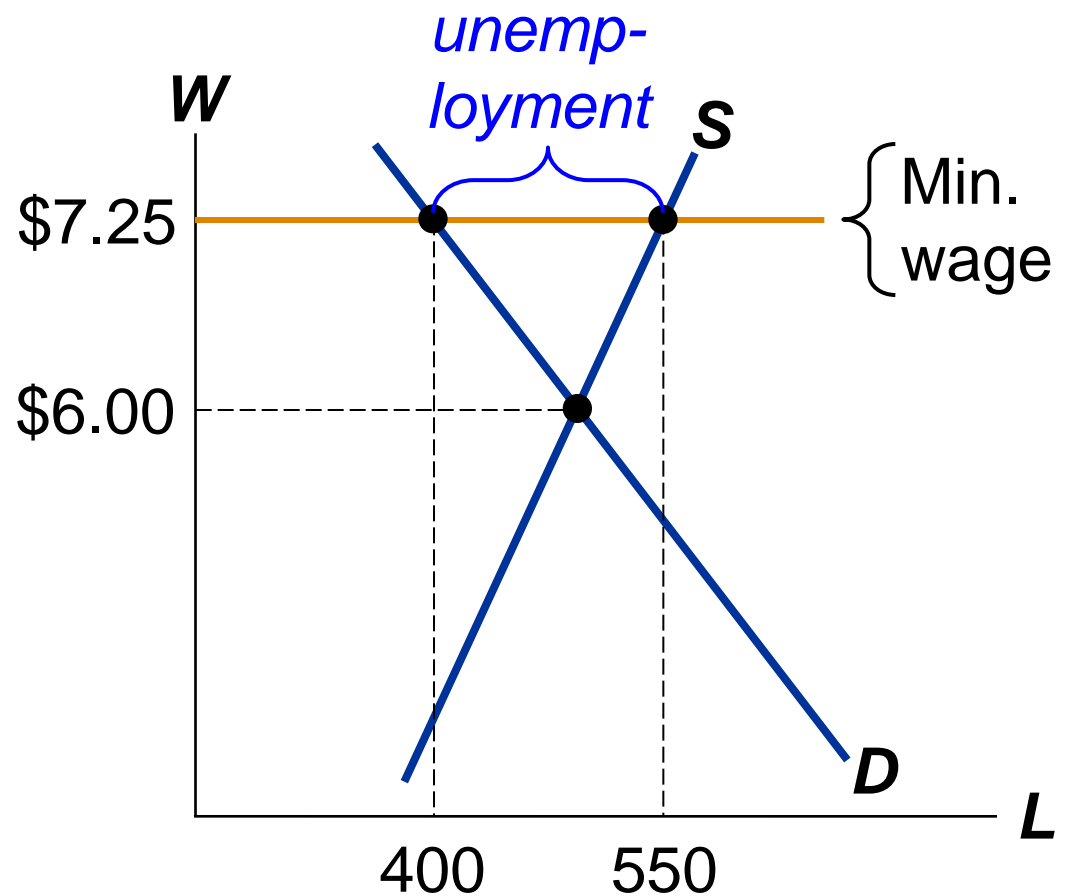


# The Minimum Wage

Min wage laws do not affect highly skilled workers.

They do affect teen workers.

Studies:  
A 10% increase in the min wage raises teen unemployment by 1–3%.

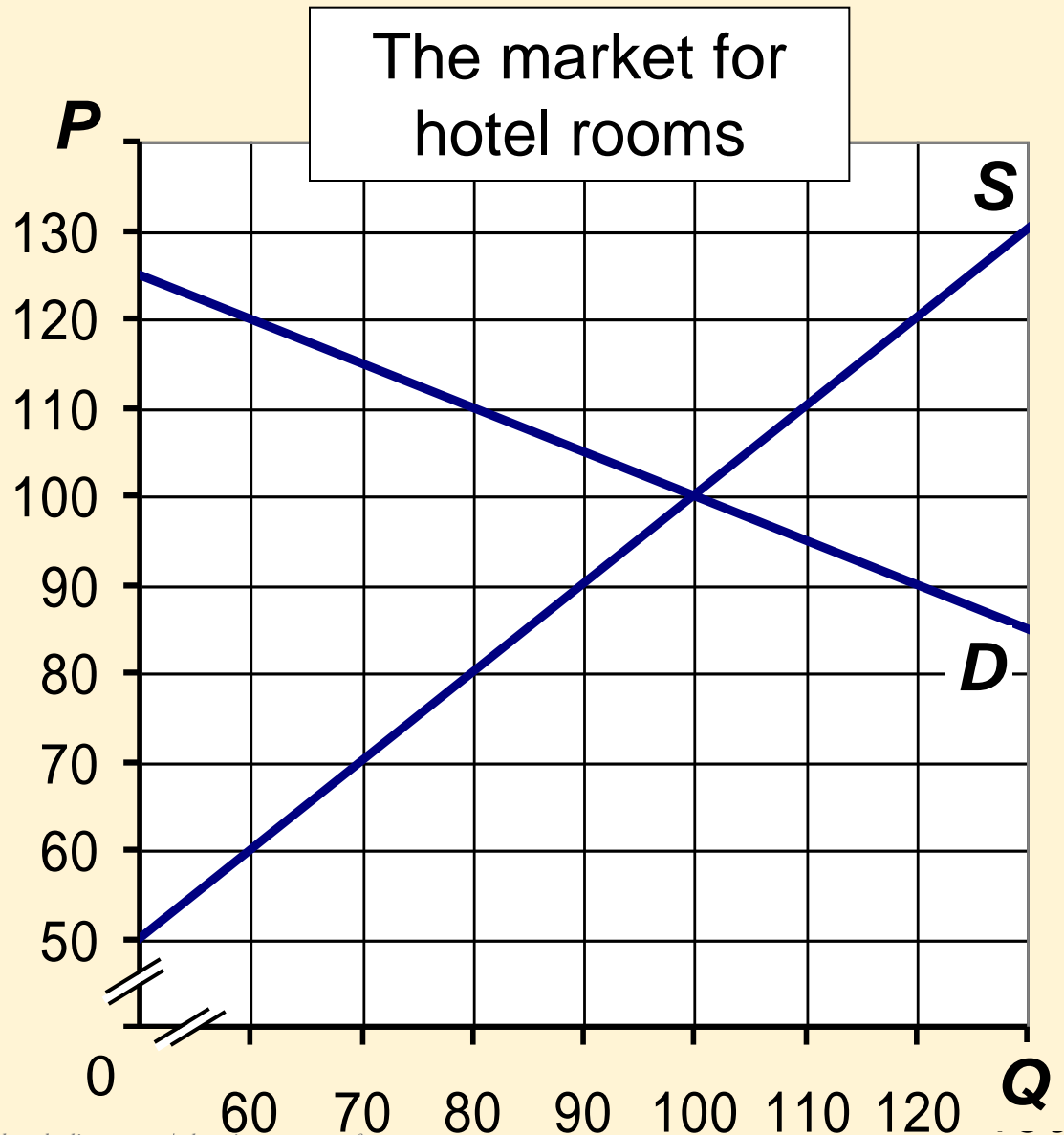


# ACTIVE LEARNING 1

## Price controls

Determine effects of:

- A. \$90 price ceiling
- B. \$90 price floor
- C. \$120 price floor

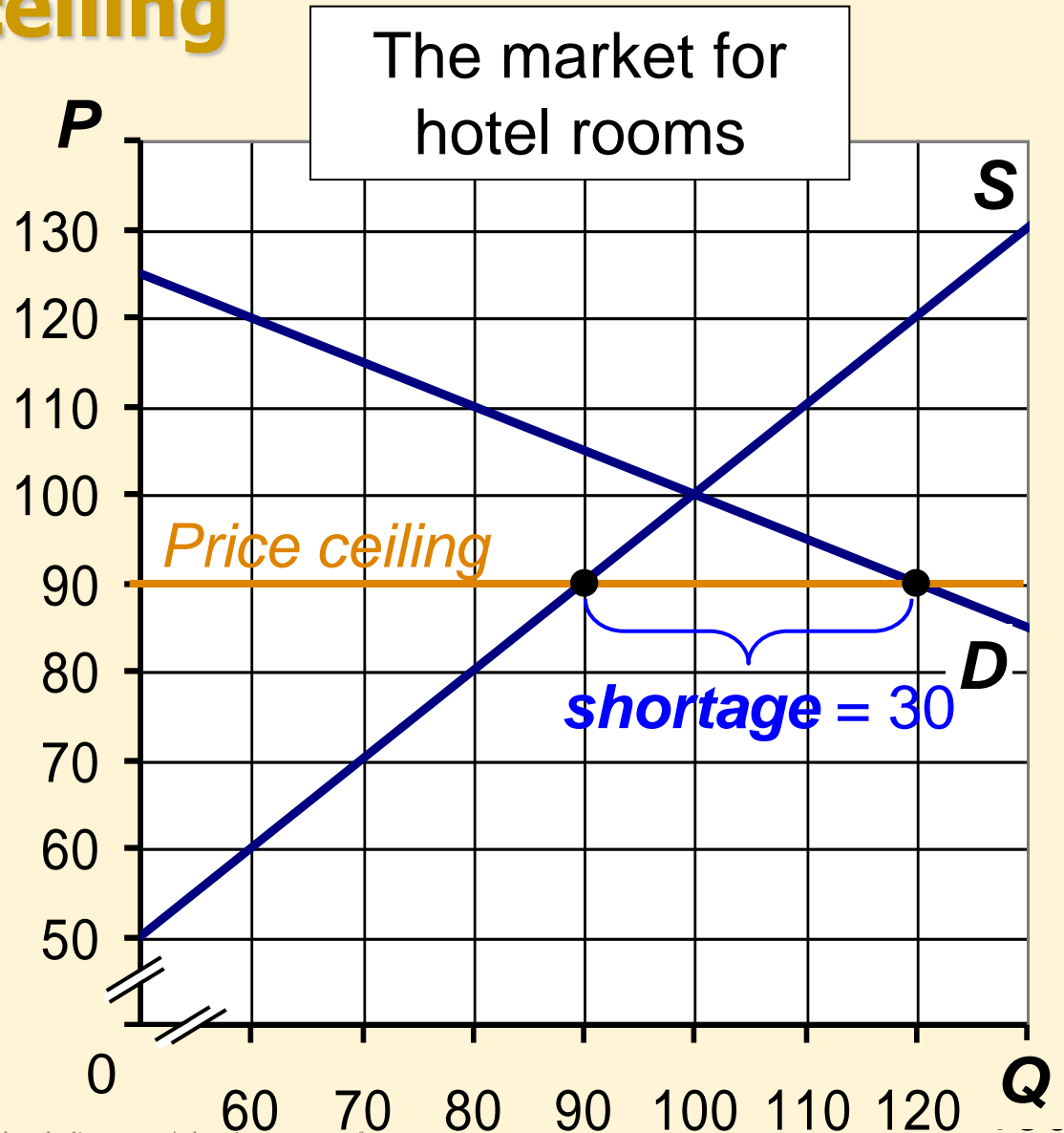


# ACTIVE LEARNING 1

## A. \$90 price ceiling

The price falls to \$90.

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



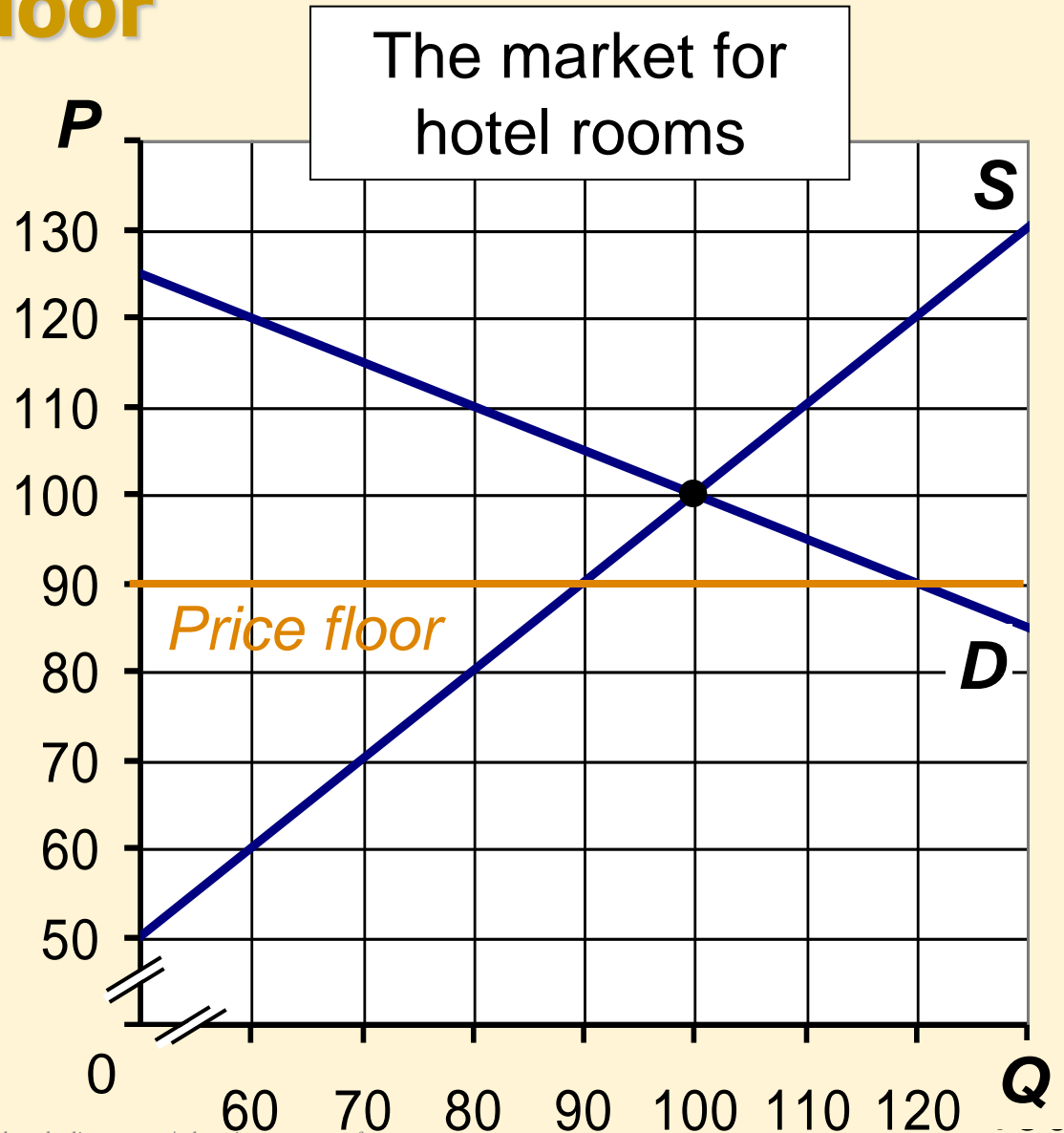
# ACTIVE LEARNING 1

## B. \$90 price floor

Eq'm price is above the floor, so floor is not binding.

$P = \$100$ ,

$Q = 100$  rooms.

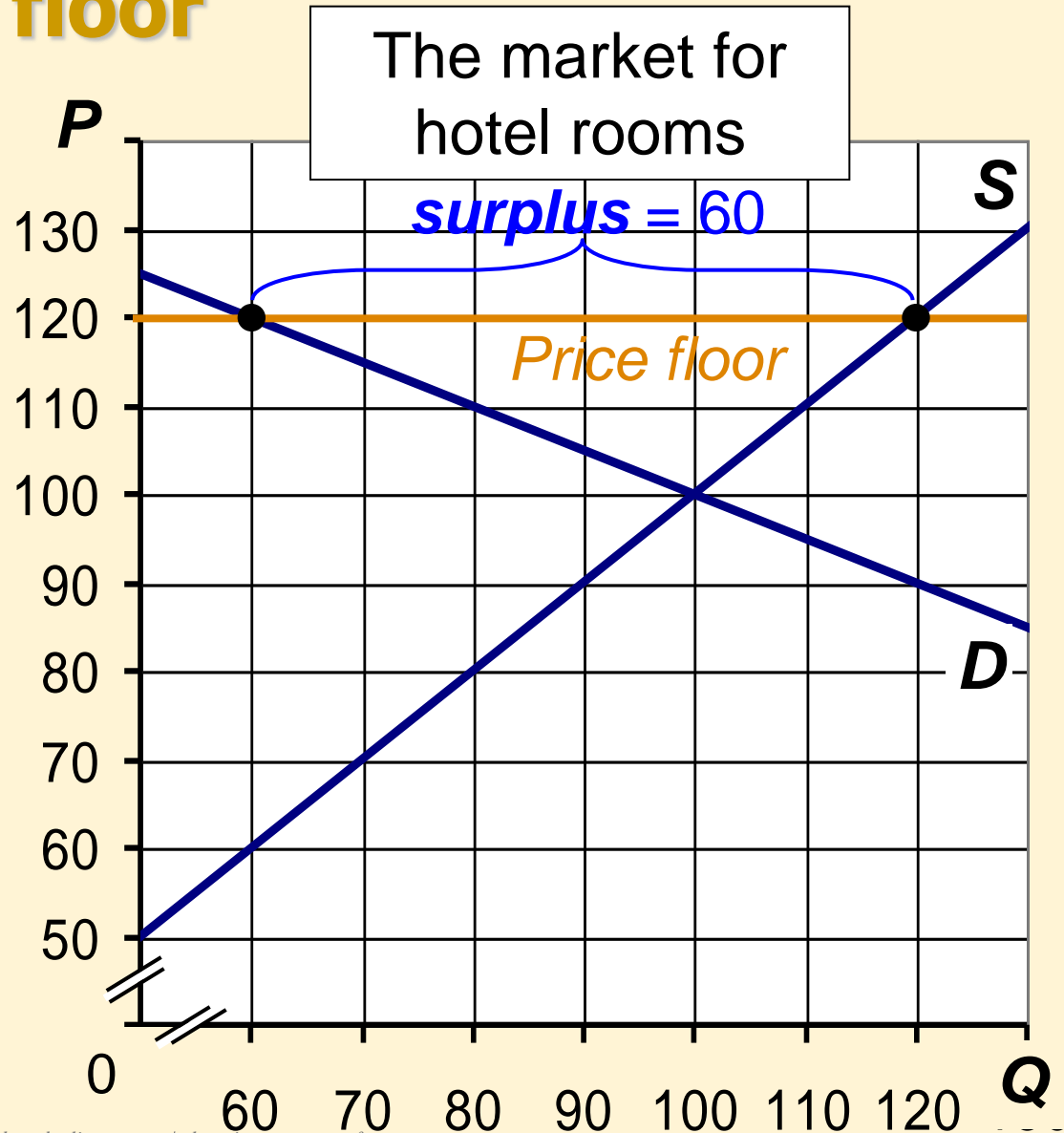


# ACTIVE LEARNING 1

## C. \$120 price floor

The price rises to \$120.

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





# Evaluating Price Controls

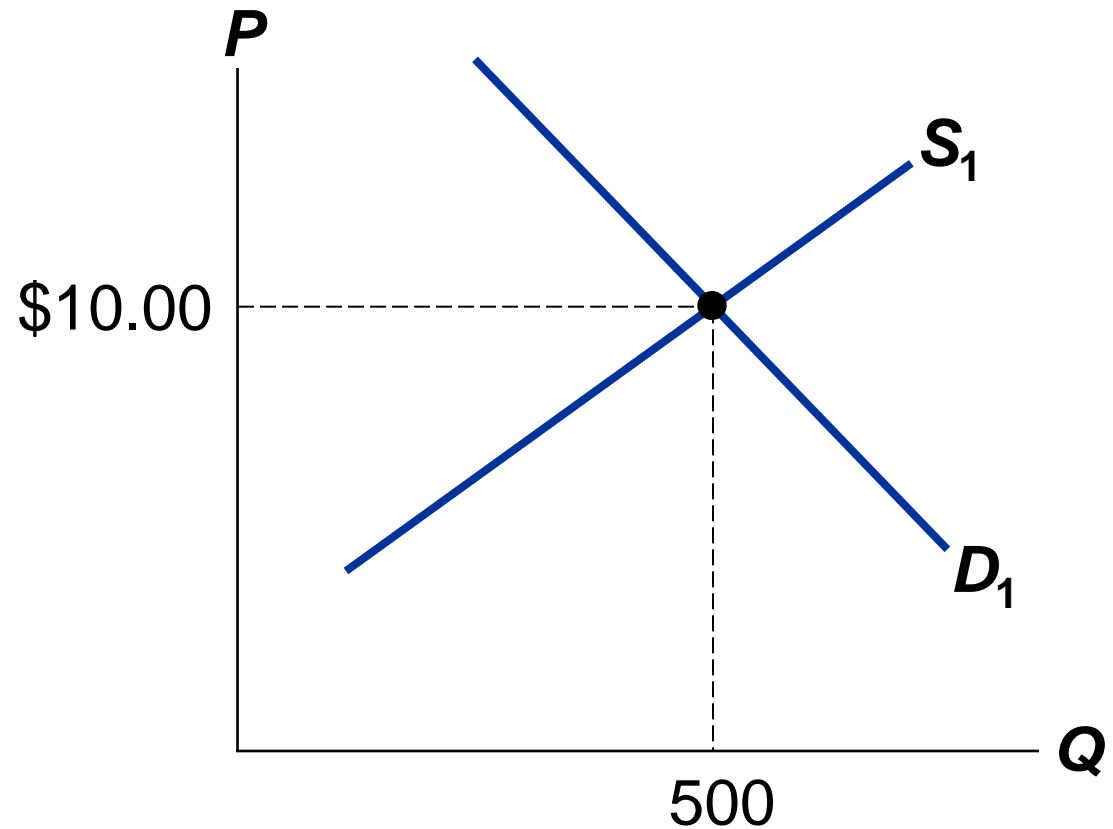
- Recall one of the Ten Principles from Chapter 1:  
*Markets are usually a good way to organize economic activity.*
- Prices are the signals that guide the allocation of society's resources. This allocation is altered when policymakers restrict prices.
- Price controls often intended to help the poor, but often hurt more than help.

# Taxes

- The govt levies taxes on many goods & services to raise revenue to pay for national defense, public schools, etc.
- The govt can make buyers or sellers pay the tax.
- The tax can be a % of the good's price, or a specific amount for each unit sold.
  - For simplicity, we analyze per-unit taxes only.

# EXAMPLE 3: The Market for Pizza

Eq'm  
w/o tax



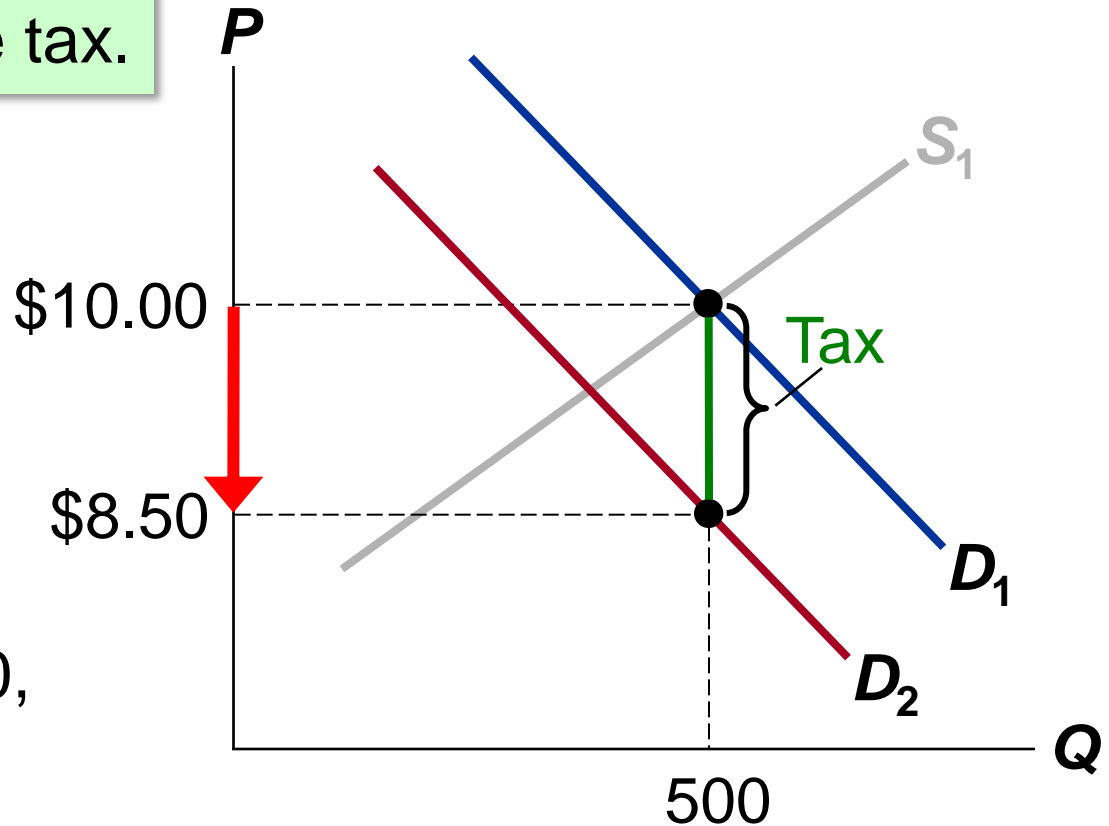
# A Tax on Buyers

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

**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 still willing to purchase 500 pizzas.

Effects of a \$1.50 per unit tax on buyers



# A Tax on Buyers

New eq'm:

$Q = 450$

Sellers  
receive

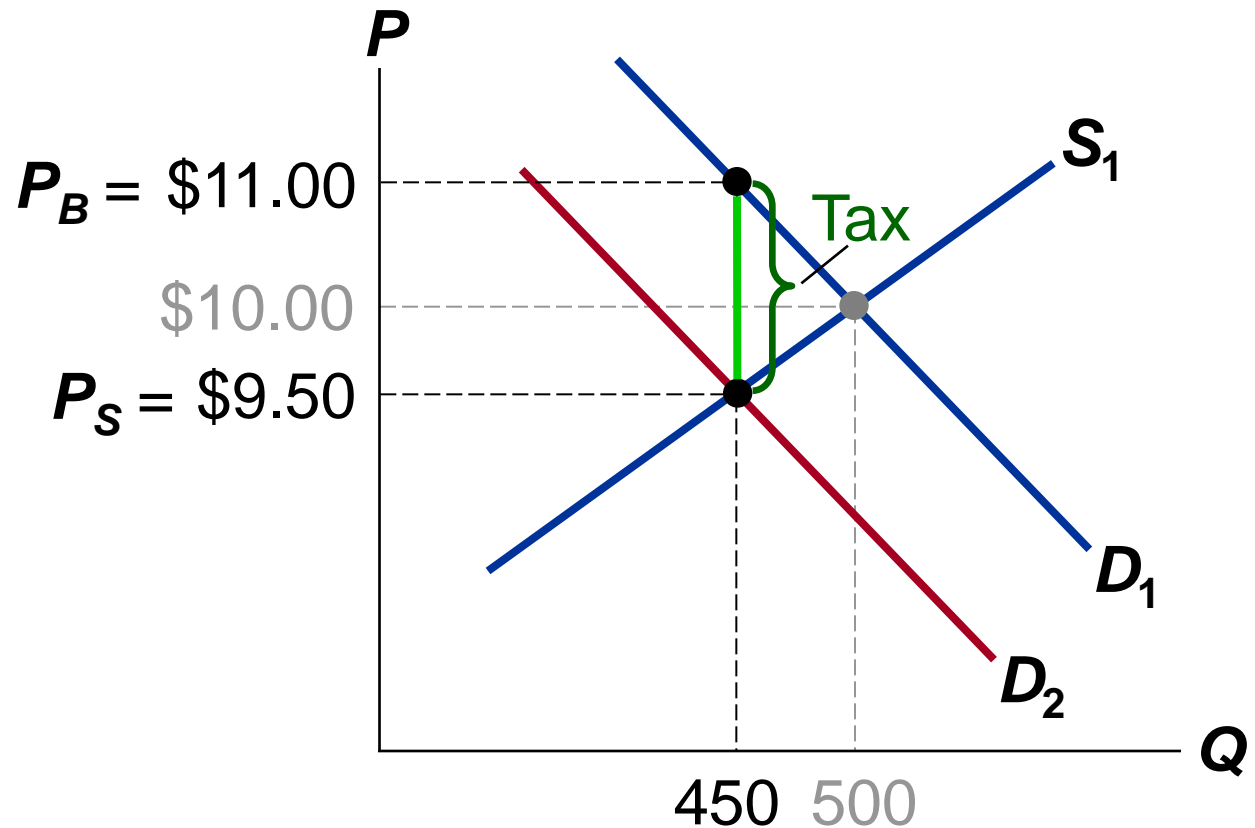
$P_S = \$9.50$

Buyers pay

$P_B = \$11.00$

Difference  
between them  
 $= \$1.50 = \text{tax}$

Effects of a \$1.50 per  
unit tax on buyers



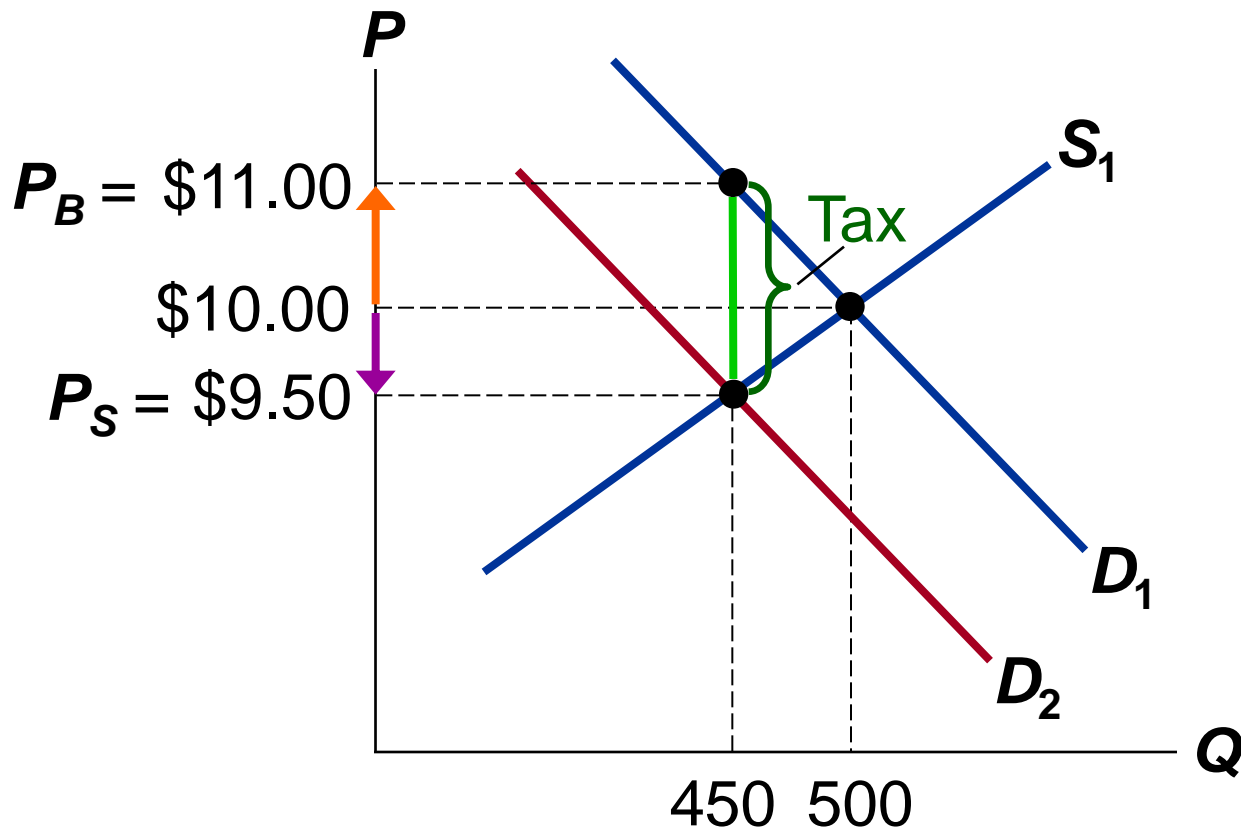
# The Incidence of a Tax:

how the burden of a tax is shared among market participants

In our example,

buyers pay  
\$1.00 more,

sellers get  
\$0.50 less.



# A Tax on Sellers

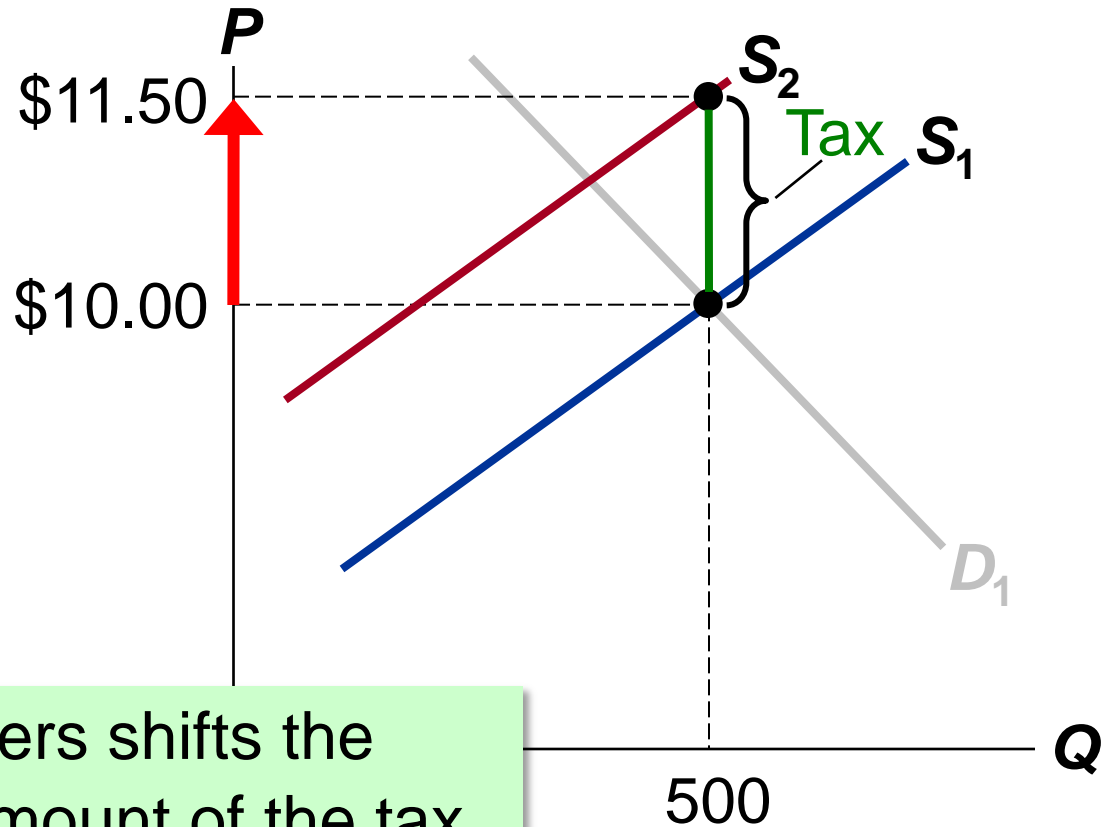
The tax effectively raises sellers' costs by \$1.50 per pizza.

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.

Effects of a \$1.50 per unit tax on sellers



# A Tax on Sellers

New eq'm:

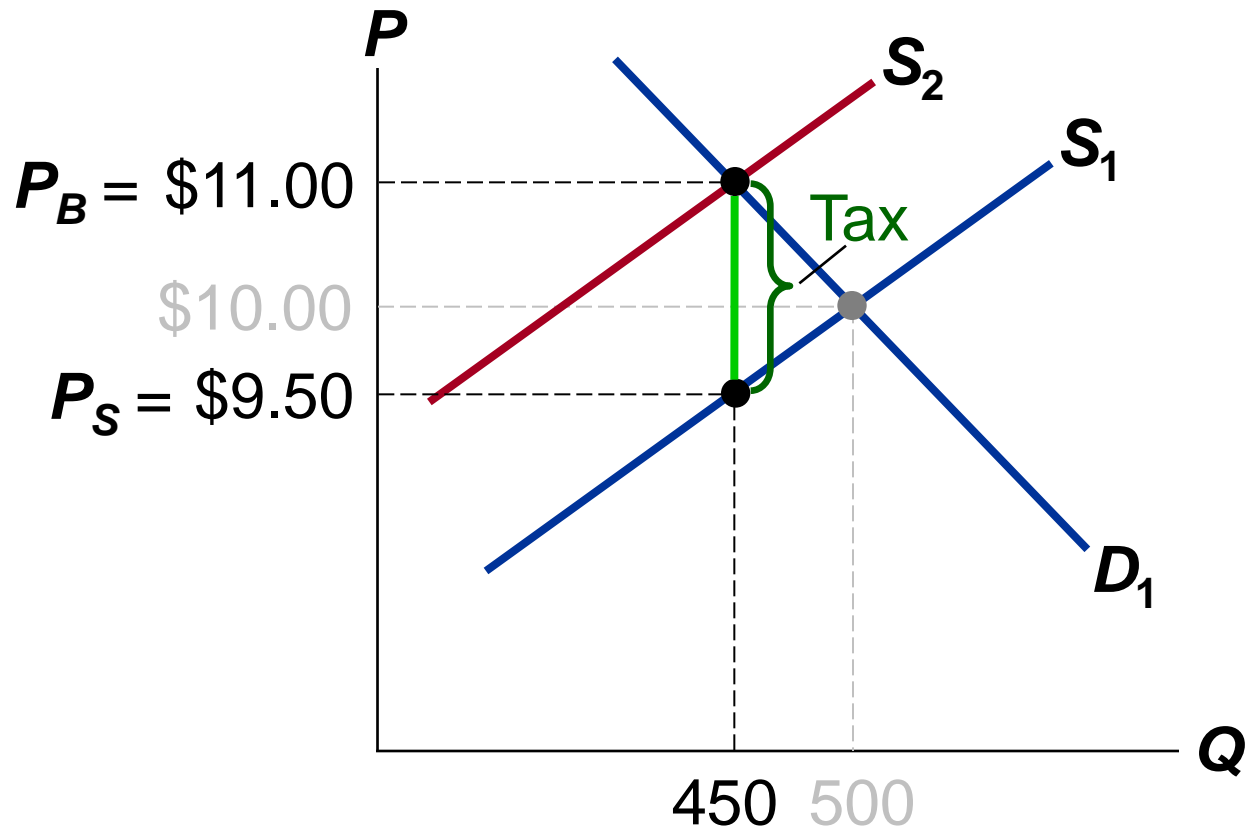
$$Q = 450$$

Buyers pay  
 $P_B = \$11.00$

Sellers  
receive  
 $P_S = \$9.50$

Difference  
between them  
 $= \$1.50 = \text{tax}$

Effects of a \$1.50 per  
unit tax on sellers



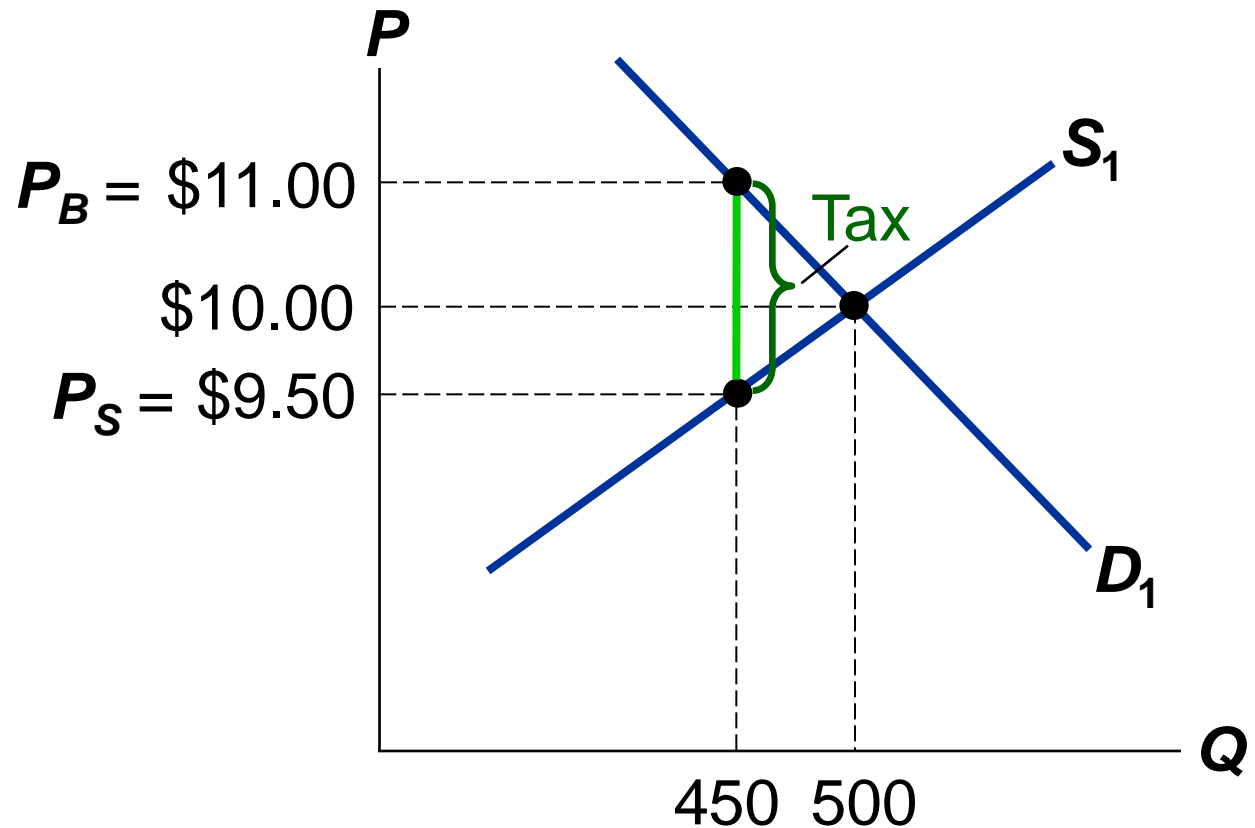


# The Outcome Is the Same in Both Cases!

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

What matters is this:

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

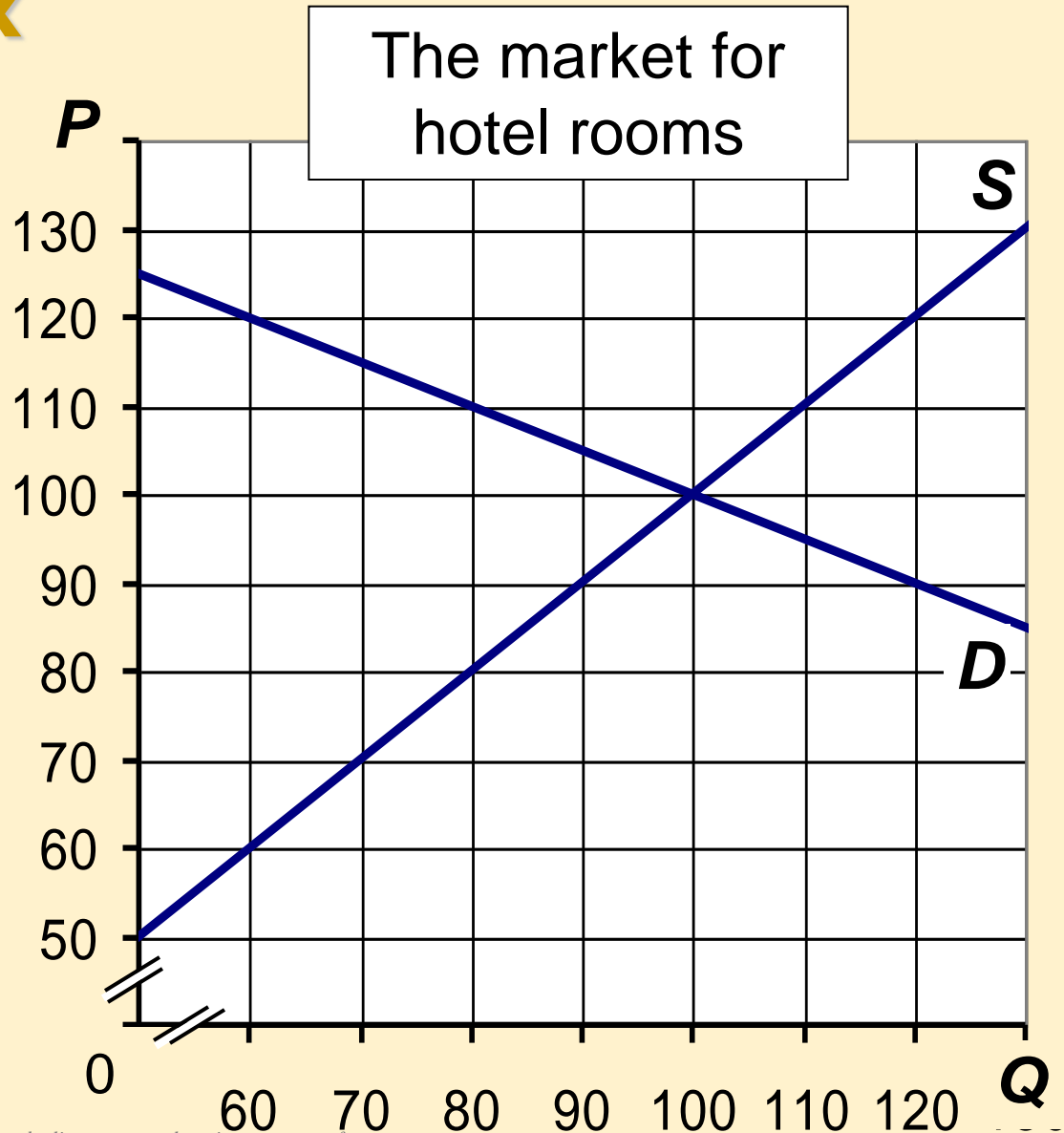


# ACTIVE LEARNING 2

## Effects of a tax

Suppose govt imposes a tax on buyers of \$30 per room.

Find new  $Q$ ,  $P_B$ ,  $P_S$ , and incidence of tax.



# ACTIVE LEARNING 2

## Answers

$$Q = 80$$

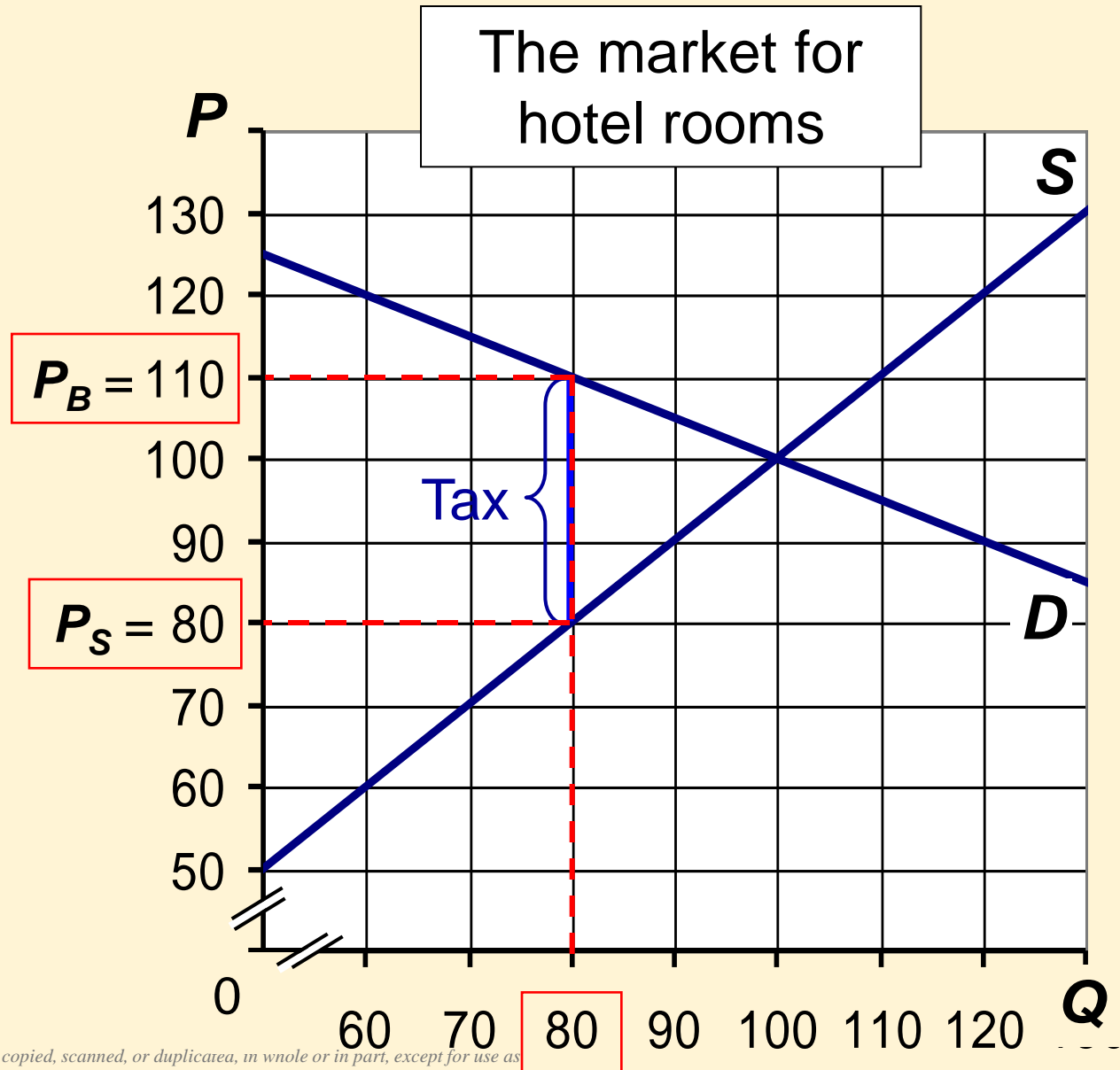
$$P_B = \$110$$

$$P_S = \$80$$

### Incidence

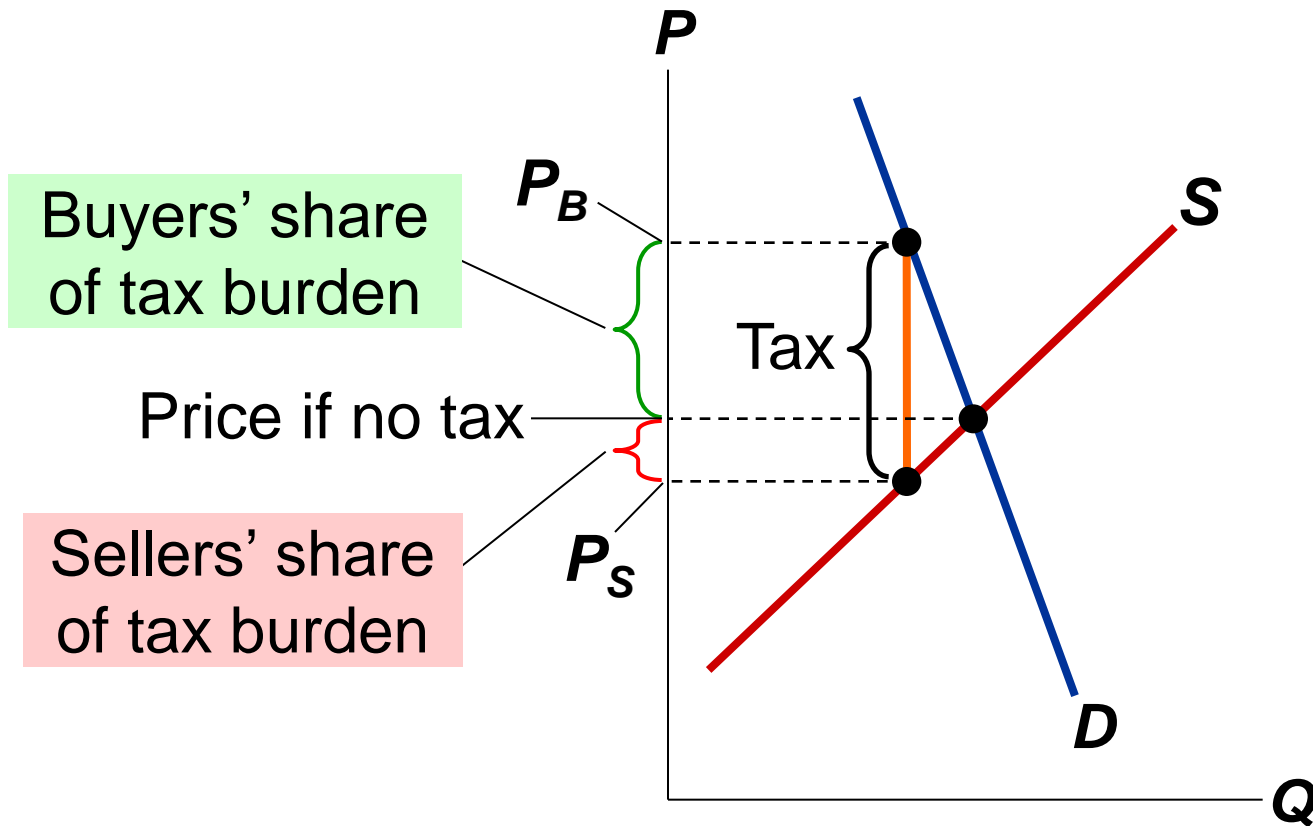
buyers: \$10

sellers: \$20



# Elasticity and Tax Incidence

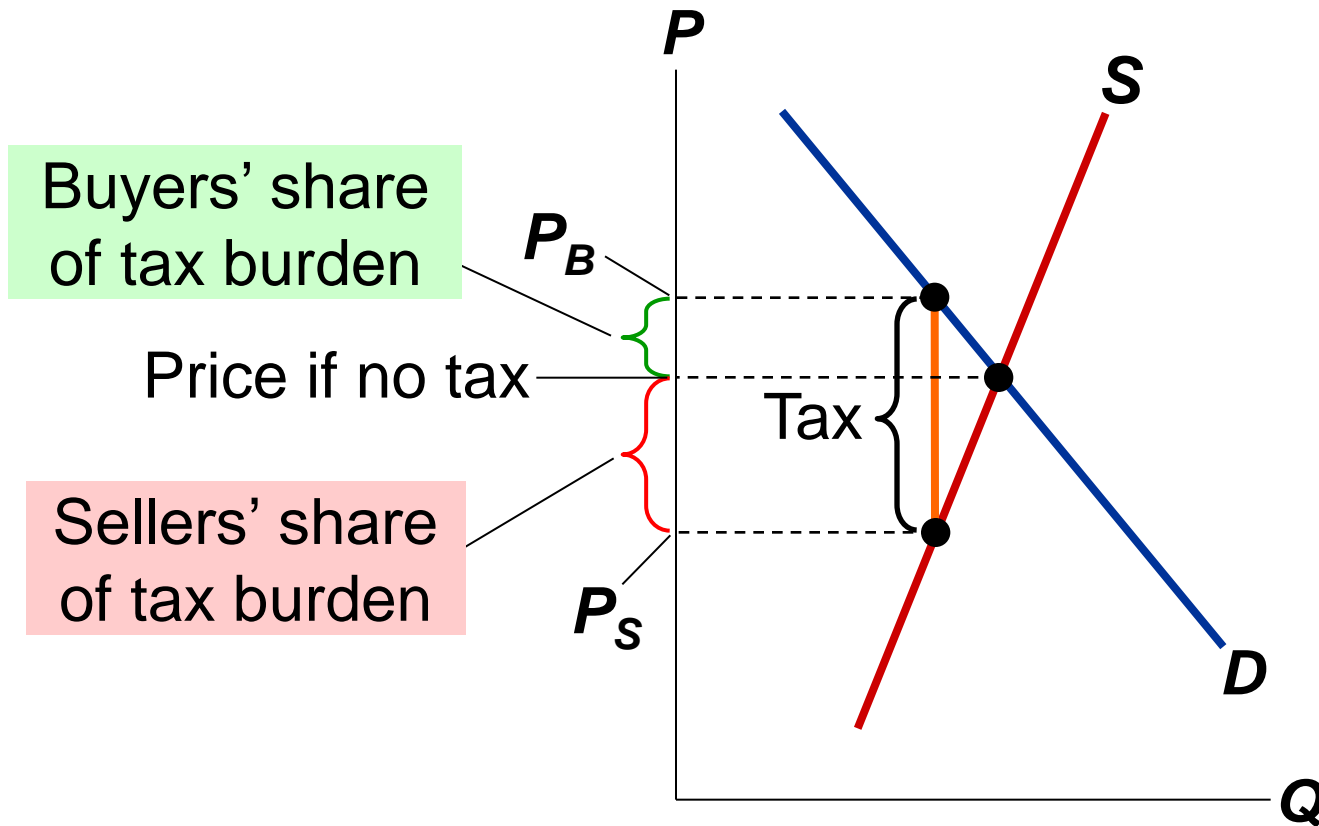
## CASE 1: Supply is more elastic than demand



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.

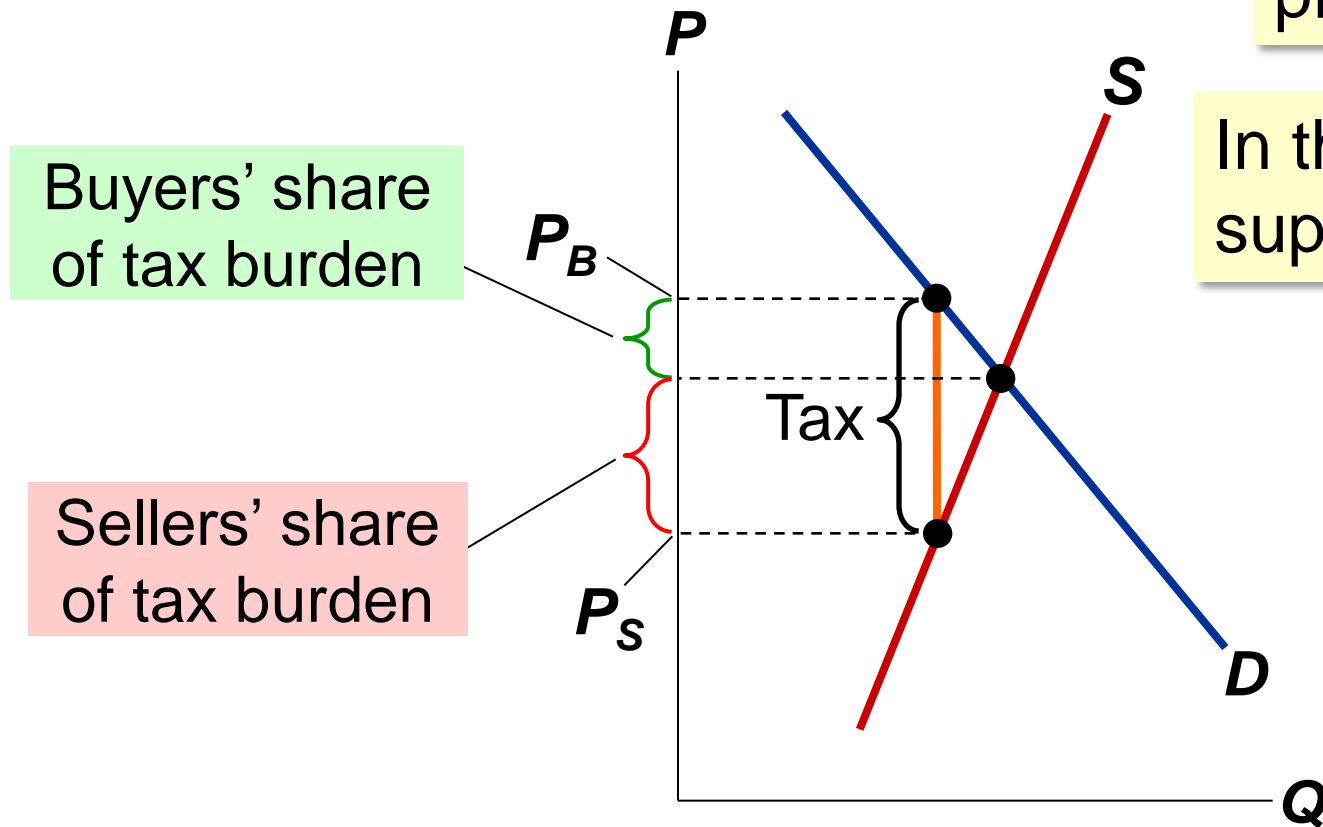
Sellers bear most of the burden of the tax.

# CASE STUDY: Who Pays the Luxury Tax?

- 1990: Congress adopted a luxury tax on yachts, private airplanes, furs, expensive cars, etc.
- Goal: raise revenue from those who could most easily afford to pay—wealthy consumers.
- But who really pays this tax?

# CASE STUDY: Who Pays the Luxury Tax?

## The market for yachts



Demand is price-elastic.

In the short run, supply is inelastic.

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

## The 2011 payroll tax cut

- Prior to 2011, the Social Security payroll tax was 6.2% taken from workers' pay and 6.2% paid by employers (total 12.4%).
- The Tax Relief Act (2010) reduces the worker's portion from 6.2% to 4.2% (for 2011 only), but leaves the employer's portion at 6.2%.

### QUESTION:

Will the typical worker's take-home pay rise by exactly 2%, more than 2%, or less than 2%?

Do any elasticities affect your answer? Explain.



## Answers

- As long as labor supply and labor demand both have price elasticity  $> 0$ , the tax cut will be shared by workers and employers, i.e., workers' take-home pay will rise less than 2%.
- The answer does NOT depend on whether labor demand is more or less elastic than labor supply.

### **FOLLOW-UP QUESTION:**

Who gets the bigger share of this tax cut, workers or employers? How do elasticities determine the answer?

## ACTIVE LEARNING 3

### Answers to follow-up question

- If labor demand is more elastic than labor supply, workers get more of the tax cut than employers.
- If labor demand is less elastic than labor supply, employers get the larger share of the tax cut.

# CONCLUSION: Government Policies and the Allocation of Resources

- Each of the policies in this chapter affects the allocation of society's resources.
  - *Example 1:* A tax on pizza reduces eq'm  $Q$ .  
With less production of pizza, resources (workers, ovens, cheese) will become available to other industries.
  - *Example 2:* A binding minimum wage causes a surplus of workers, a waste of resources.
- So, it's important for policymakers to apply such policies very carefully.

# 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 eq'm 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 eq'm 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 eq'm 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.