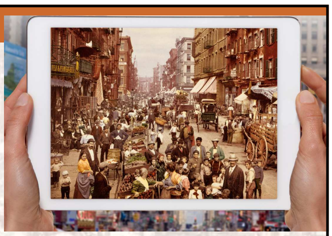

N. GREGORY MANKIW

PRINCIPLES OF

ECONOMICS

Eight Edition

CHAPTER 6

Supply, Demand, and Government Policies

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Premium PowerPoint Slides by:
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Eastern Illinois University

 1

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?

 2

Government Policies That Alter the Private Market Outcome

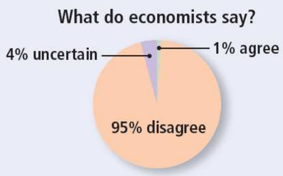
- Price controls
  - Price ceiling: legal maximum on the price at which a good can be sold
    - Rent-control laws
  - Price floor: legal minimum on the price at which a good can be sold
    - Minimum wage laws
- Taxes: government can make buyers or sellers pay a specific amount on each unit

 3

ASK THE EXPERTS

Rent Control

"Local ordinances that limit rent increases for some rental housing units, such as in New York and San Francisco, have had a positive impact over the past three decades on the amount and quality of broadly affordable rental housing in cities that have used them."



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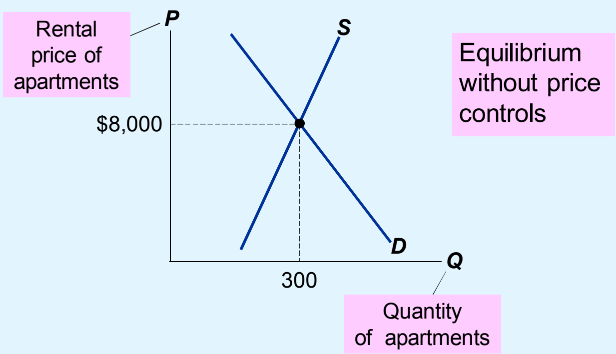
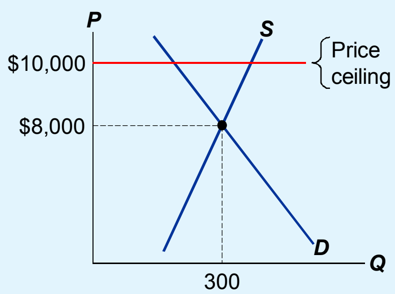
EXAMPLE 1: The Market for Apartments



 5

How Price Ceilings Affect Market Outcomes

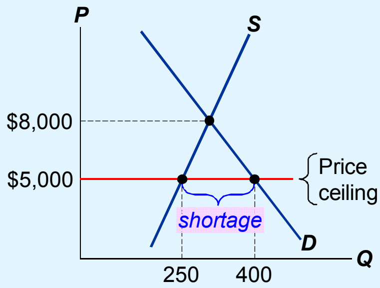
A price ceiling above the equilibrium price is **not binding**—has no effect on the market outcome.



 6

How Price Ceilings Affect Market Outcomes

The equilibrium price ($8,000) is above the ceiling and therefore illegal.
The price ceiling is **binding**, causes a shortage.



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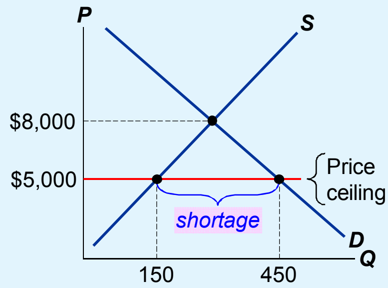
How Price Ceilings Affect Market Outcomes

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

So, the shortage is larger.



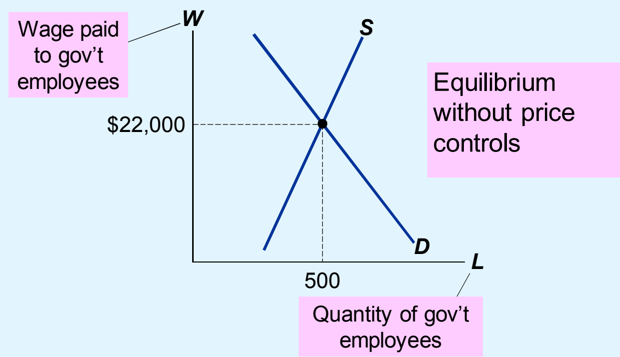
8

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

9

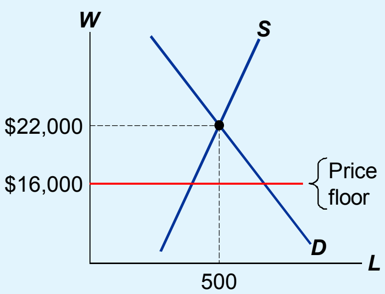
EXAMPLE 2: The Market for Governmental Employees



10

How Price Floors Affect Market Outcomes

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



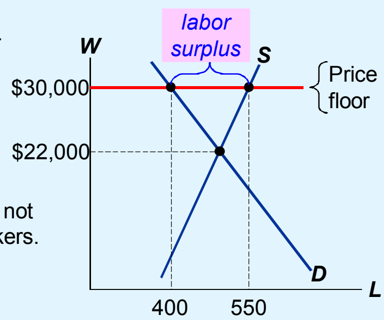
11

How Price Floors Affect Market Outcomes

The equilibrium wage ($22k) 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 unskilled workers.

What is the form of unemployment for governmental employees in Taiwan?

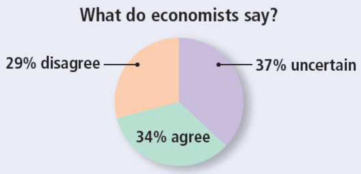


Everyone takes the exams!

12

ASK THE EXPERTS
The Minimum Wage

"If the federal minimum wage is raised gradually to $15-per-hour by 2020, the employment rate for low-wage U.S. workers will be substantially lower than it would be under the status quo."

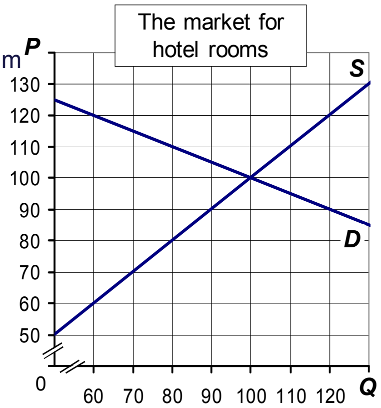


Active Learning 1 — Price controls

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

- Determine the effects of:

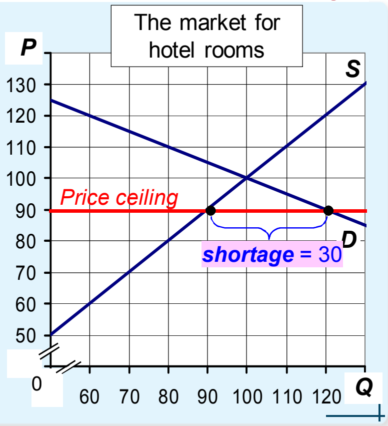
A. $90 price ceiling
B. $90 price floor
C. $120 price floor



Active Learning 1 — A. $90 price ceiling

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

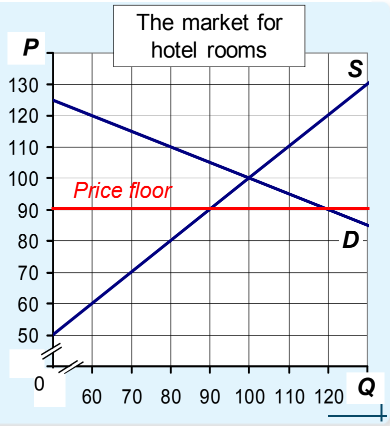
Buyers demand 120 rooms, sellers supply 90, leaving a shortage.



Active Learning 1 — B. $90 price floor

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

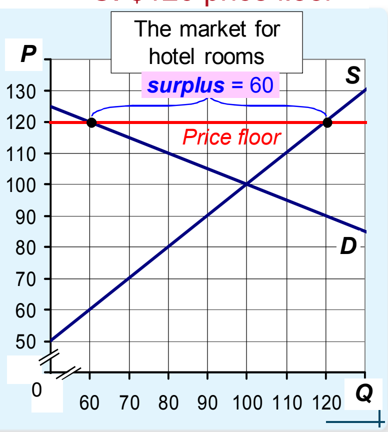
P = $100,
Q = 100 rooms.

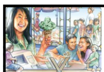


Active Learning 1 — C. $120 price floor

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

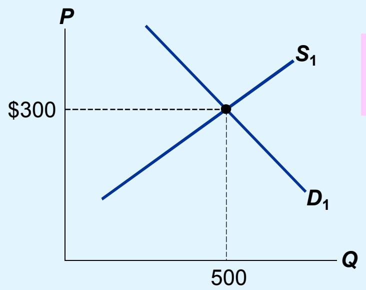
Evaluating Price Controls

- 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)

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

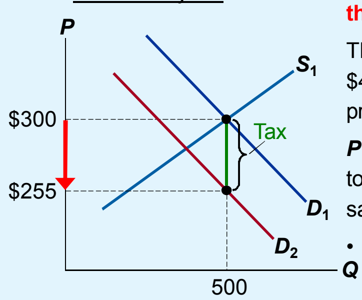
EXAMPLE 3: The Market for Pizza



Equilibrium without tax

A Tax on Buyers

Effects of a $45 per unit tax on buyers



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

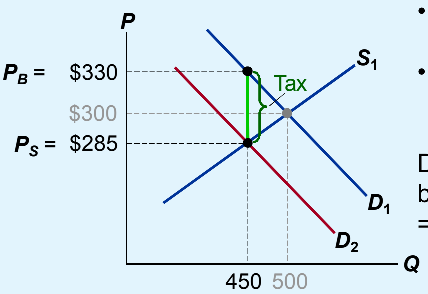
The price buyers pay is now $45 higher than the market price ***P***.

P would have to fall by $45 to make buyers willing to buy same ***Q*** as before.

- *E.g.*, if ***P*** falls from $300 to $255, buyers are still willing to purchase 500 pizzas.

A Tax on Buyers

Effects of a $45 per unit tax on buyers



New equilibrium:

- Q = 450
- Sellers receive P_S = $285
- Buyers pay P_B = $330

Difference between them = $45 = tax

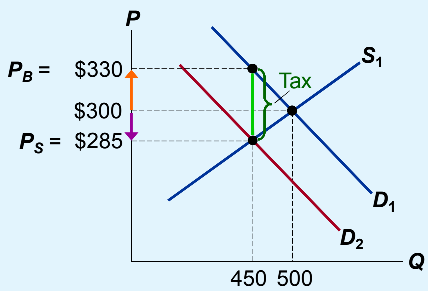
The **Incidence** of a Tax:

how the burden of a tax is shared among market participants

In our example,

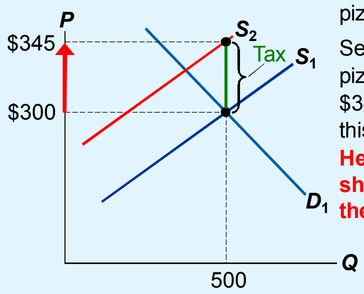
buyers pay $30 more,

sellers get $15 less.



A Tax on Sellers

Effects of a $45 per unit tax on sellers



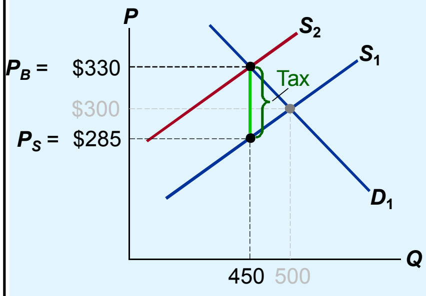
The tax effectively raises sellers' costs by $45 per pizza.

Sellers will supply 500 pizzas only if ***P*** rises to $345, to compensate for this cost increase.

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

A Tax on Sellers

Effects of a $45 per unit tax on sellers



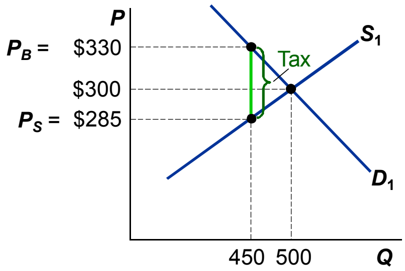
New equilibrium:
- Q = 450
- Buyers pay P_B = $330
- Sellers receive P_S = $285

Difference between them = $45 = 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!

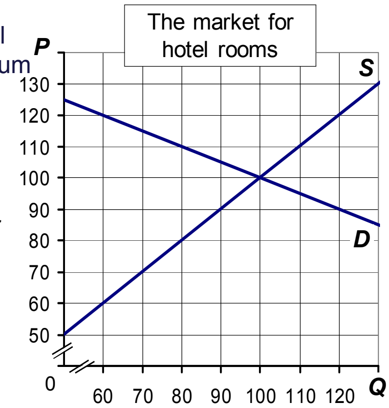
A tax drives a wedge between the price buyers pay and the price sellers receive.



Active Learning 2 — Effects of a tax

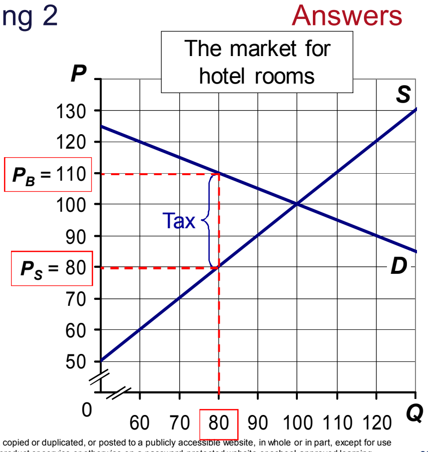
The market for hotel rooms is in equilibrium as in the graph.

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



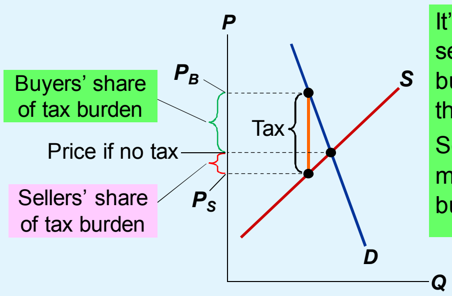
Active Learning 2 — Answers

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



Elasticity and Tax Incidence

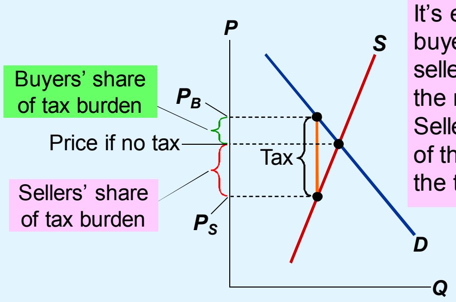
CASE 1: Supply is more elastic than demand



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

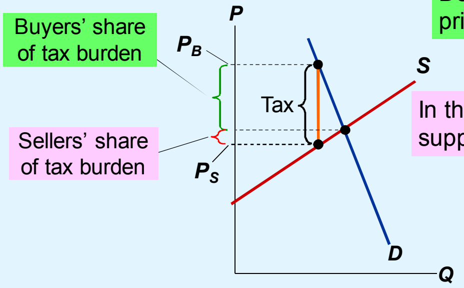
Who pays the cigarette tax?

- 2017, Taiwan's Legislative Yuan increased the cigarette tax by NT$20.
  - Goal: to raise revenue from those "evil" and wealthy cigarette companies
  - Addictive items
    - Demand is quite inelastic
    - Supply is relatively elastic

CASE STUDY: Who Pays the Cigarette Tax?

The market for cigarettes

Demand is price-inelastic.



In the short run, supply is elastic.

Hence, addicted smokers pay most of the tax.

Active Learning 3 — 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) reduced the worker's portion from 6.2% to 4.2% in 2011, but left the employer's portion at 6.2%.

- Should this change have increased the typical worker's take-home pay by exactly 2%, more than 2%, or less than 2%? Do any elasticities affect your answer? Explain.
- <u>FOLLOW-UP QUESTION</u>: Who gets the bigger share of this tax cut, workers or employers? How do elasticities determine the answer?

Active Learning 3 — 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.

<u>FOLLOW-UP QUESTION :</u>

- 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.

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.

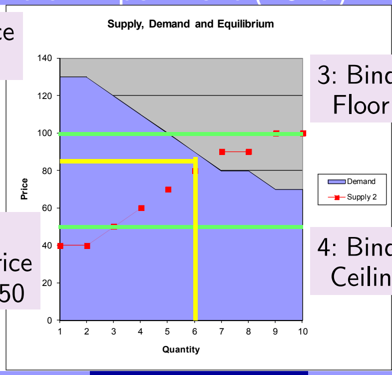
Summary

- 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.

Price Control Experiment (2017)

1: No Price Control

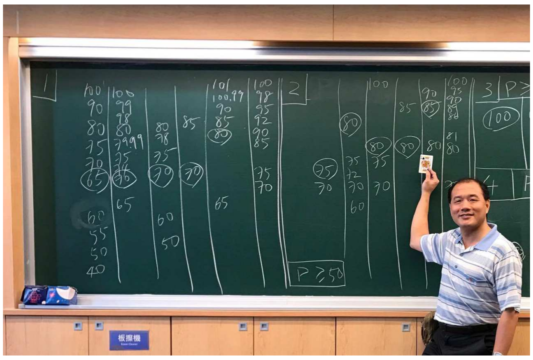
2: Non-Binding Price Floor of $50



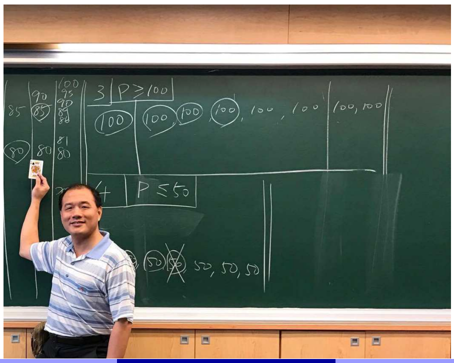
3: Binding Price Floor of $100

4: Binding Price Ceiling of $50

Round 1: No Price Control
Round 2: Non-Binding Price Floor



Round 3: Binding Price Floor of $100
Round 4: Binding Price Ceiling of $50



Chapter 6: Price Control and Taxation

- Markets are good? Price control is bad!
- Homework:
  - Mankiw, Ch. 6, Problem 3, 5, 7, 8, 9, 10
- Challenge Questions:
  - 2009 - (Multiple Choice Q11)
  - 2010 - (True/False Q6-Q8)
  - 2012 - (True/False Q3-Q4)
  - 2013 - (True/False Q6-7)
  - 2016 - Essay C

Chapter 6: Price Control and Taxation

- Additional Questions:
  - True or False. A price ceiling on wheat would cause the price of bread to fall.
  - True or False. ASUS computers contain hard drivers made by other manufacturers. If ASUS made its own hard drives, ASUS computers would be cheaper.