ECO2011 Basic Microeconomics

Mankiw Chapter 6 (Government Policies)
Mankiw Chapter 8 (Taxation)
Mankiw Chapter 9 (International Trade)
Pindyck Chapter 9 (Analysis of Competitive Markets)

2025

Agenda

1. Motivation

Motivation: Trump's Trade War

"I always say 'tariffs' is the most beautiful word to me in the dictionary."
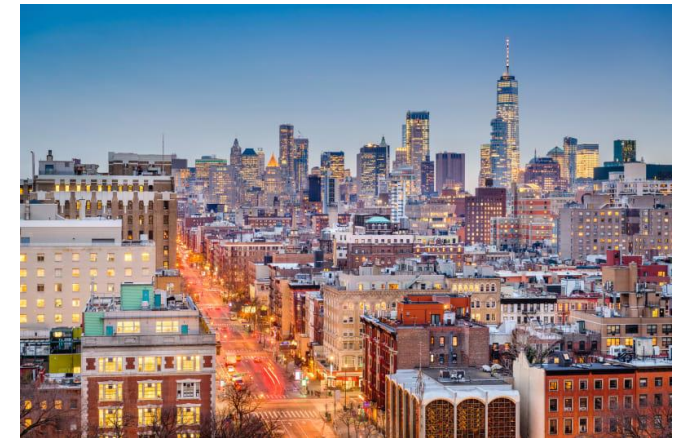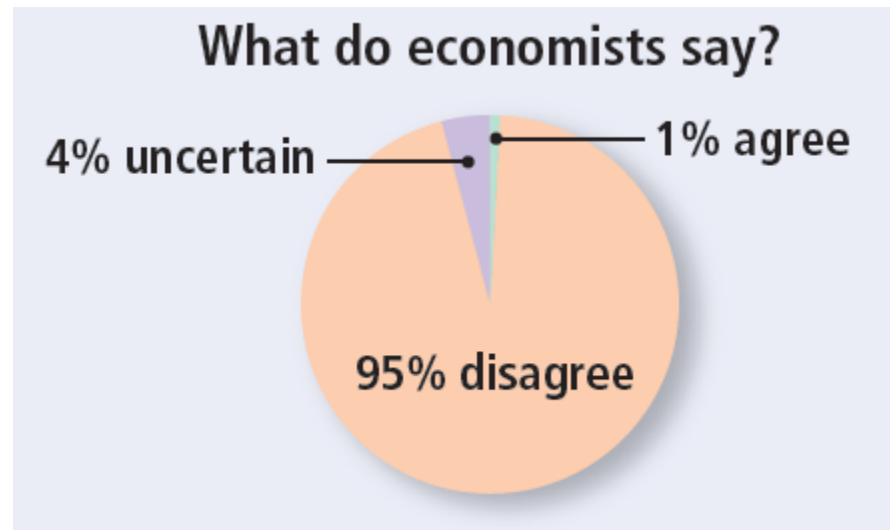
—Donald Trump

Agenda

1. Motivation

2. Price Ceiling and Price Floor

3. Price Support

4. Production Quota

5. Incentive Program

6. Tax and Subsidy

7. Import Quotas and Tariffs

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
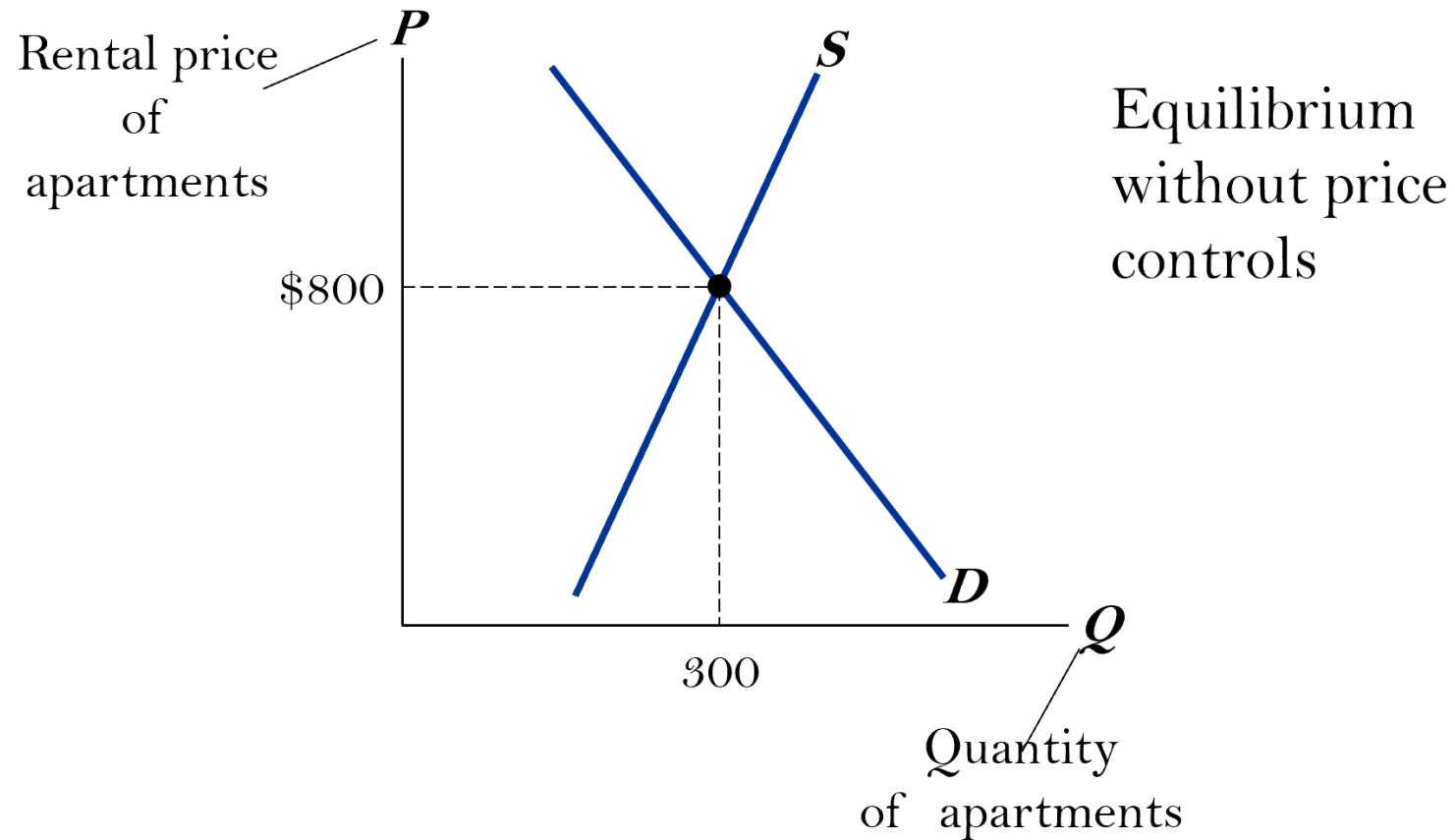   - Minimum wage laws

Case Study: 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."
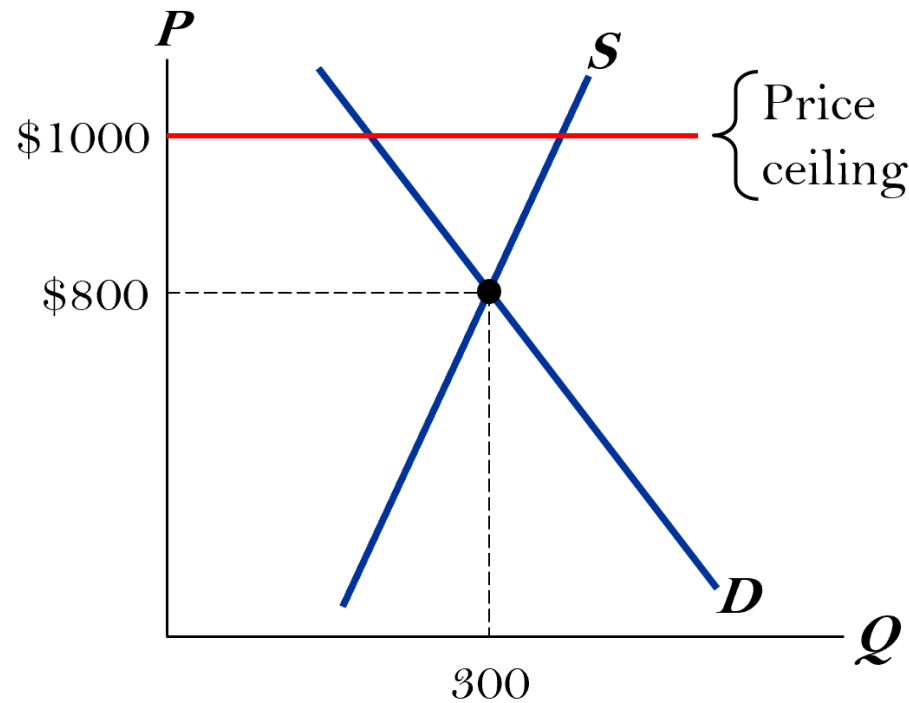

What do economists say?

4% uncertain

1% agree

95% disagree

Internet photo

The Market for Apartments

Rental price of apartments (P axis)

$800

300

S

D

Equilibrium without price controls
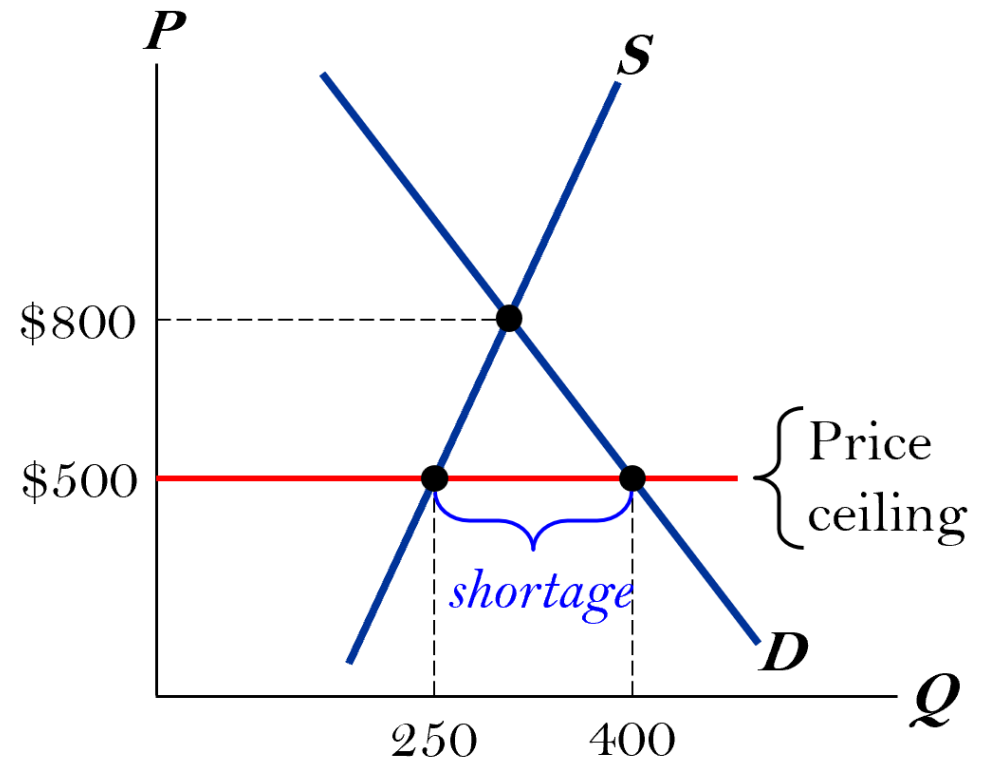
Quantity of apartments (Q axis)

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 <u>long run</u>, supply and demand of rental apartments are more price-elastic.
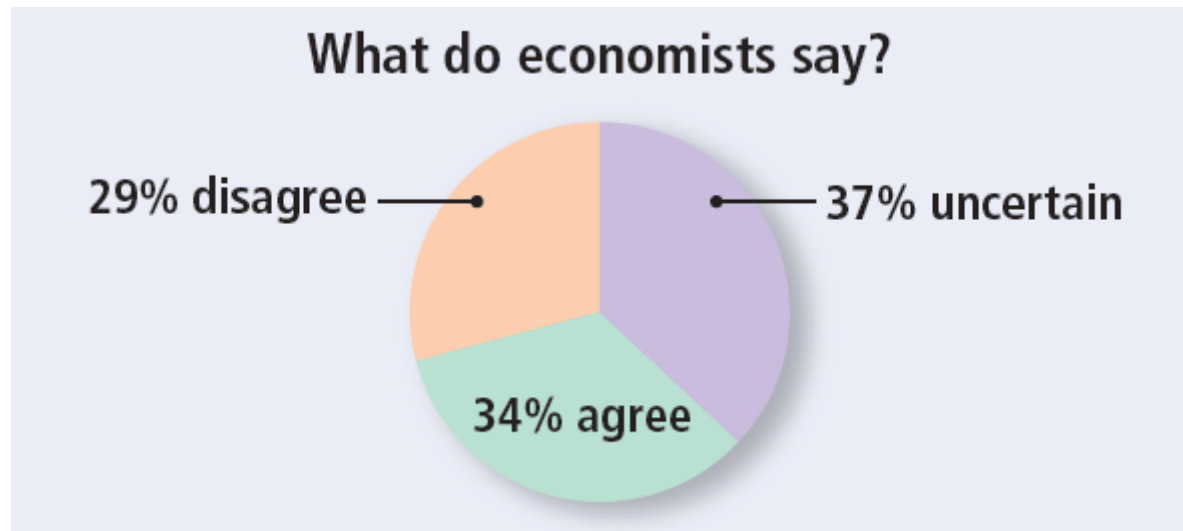
- So, the shortage is larger.
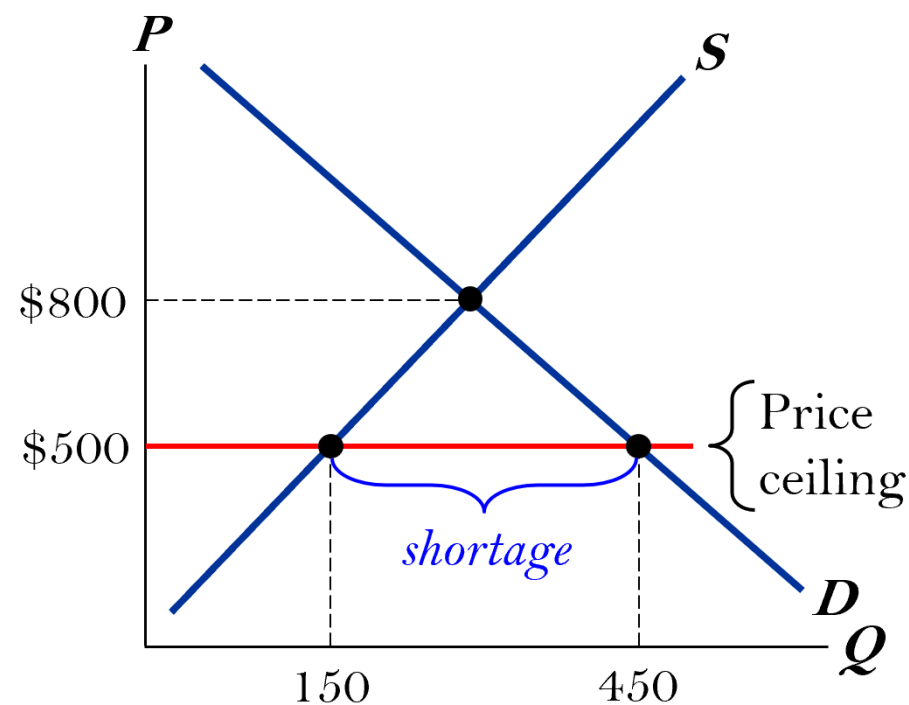
Change in Total Surplus From Price Ceiling

- The price of a good has been regulated to be no higher than Pmax, which is below the market-clearing price P0.

- The gain to consumers is the difference between rectangle A and triangle B.

- The loss to producers is the sum of rectangle A and triangle C.

- Triangles B and C together measure the deadweight loss from price controls,

- Deadweight loss: Net loss of total (consumer plus producer) surplus.

Price

Deadweight Loss

P_0

P_{max}

A

B
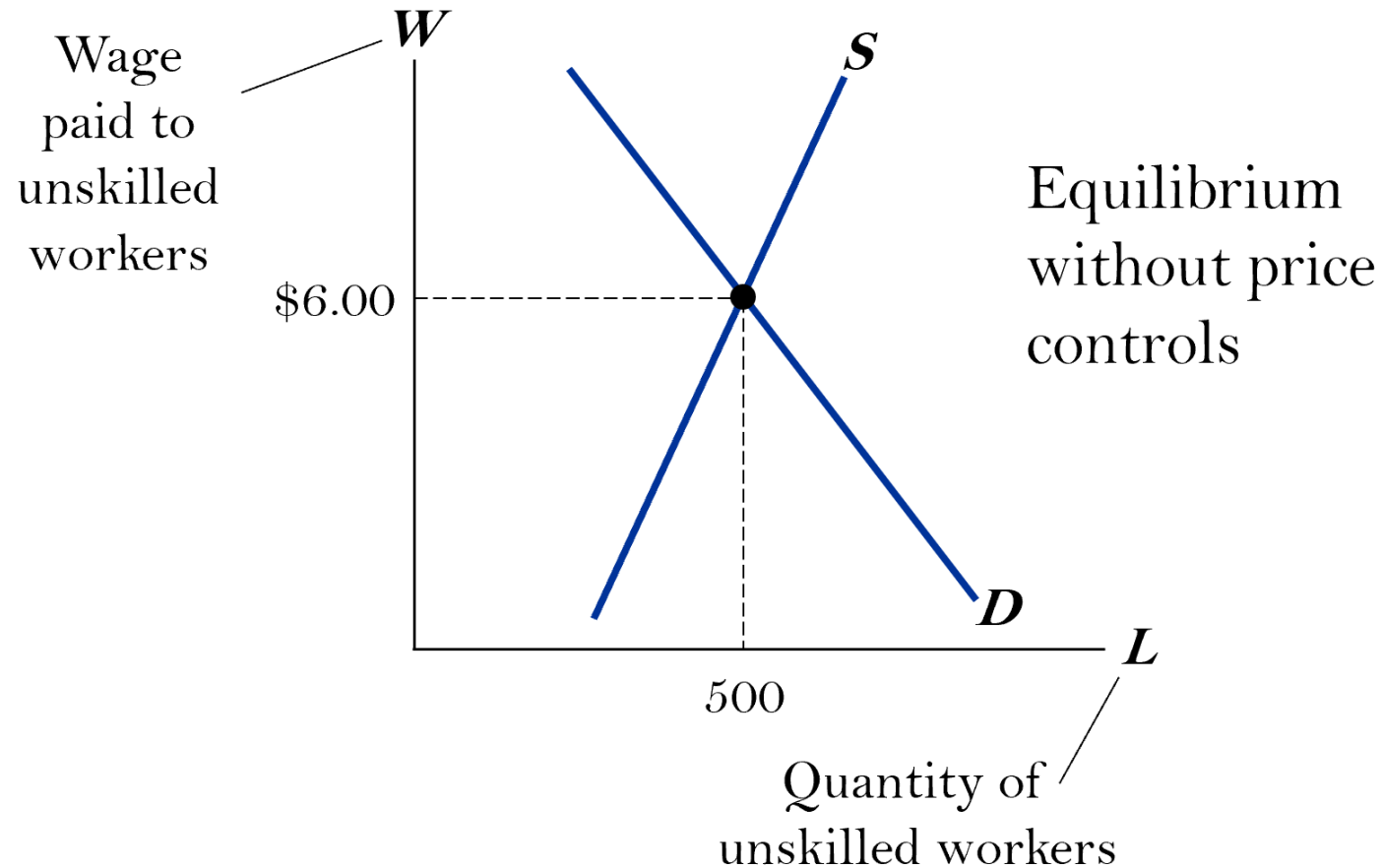
C

S

D

Shortage

Q_1 Q_0 Q_2 Quantity
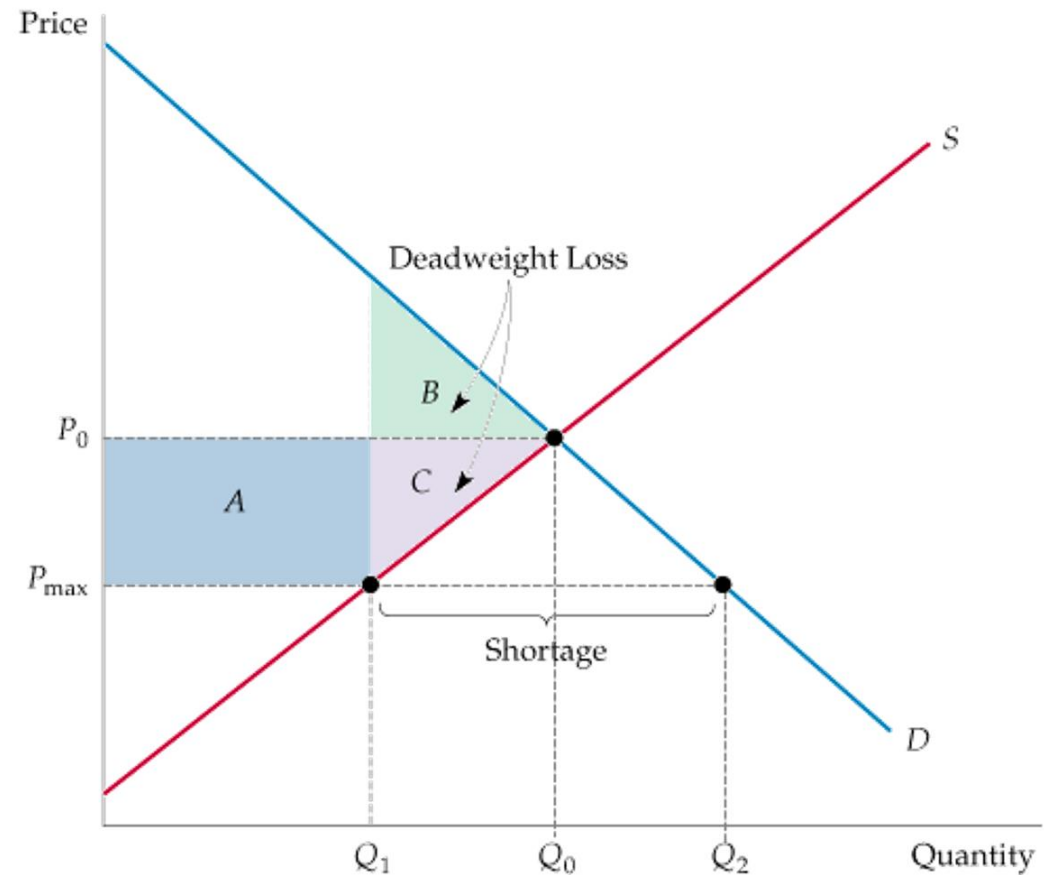
Case Study: The Minimum Wage

- "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."

What do economists say?

29% disagree

37% uncertain

34% agree

The Market for Unskilled Labor

Wage paid to unskilled workers
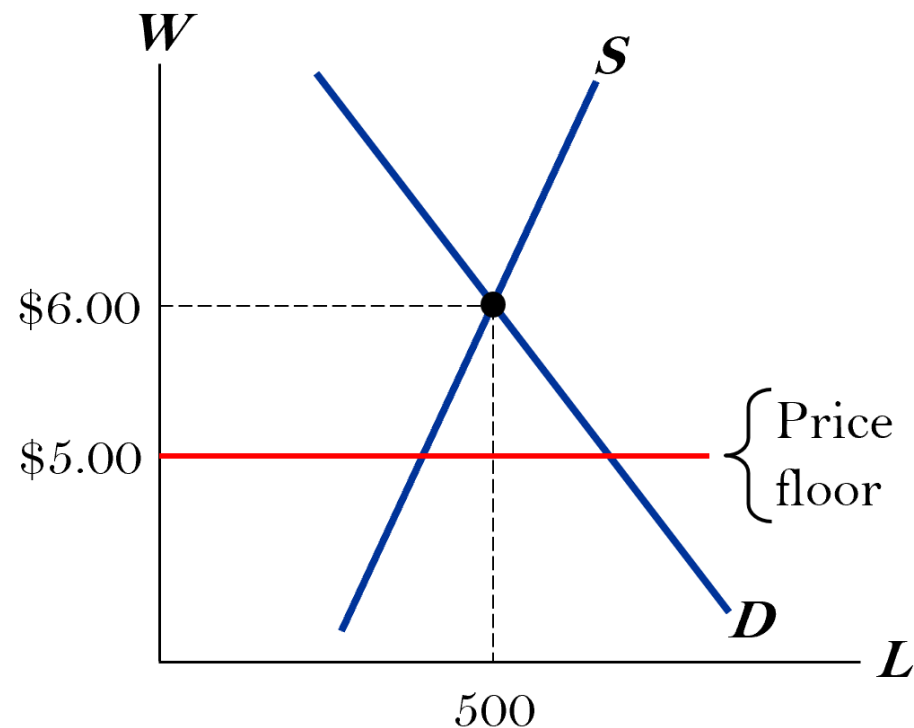
$6.00

Equilibrium without price controls

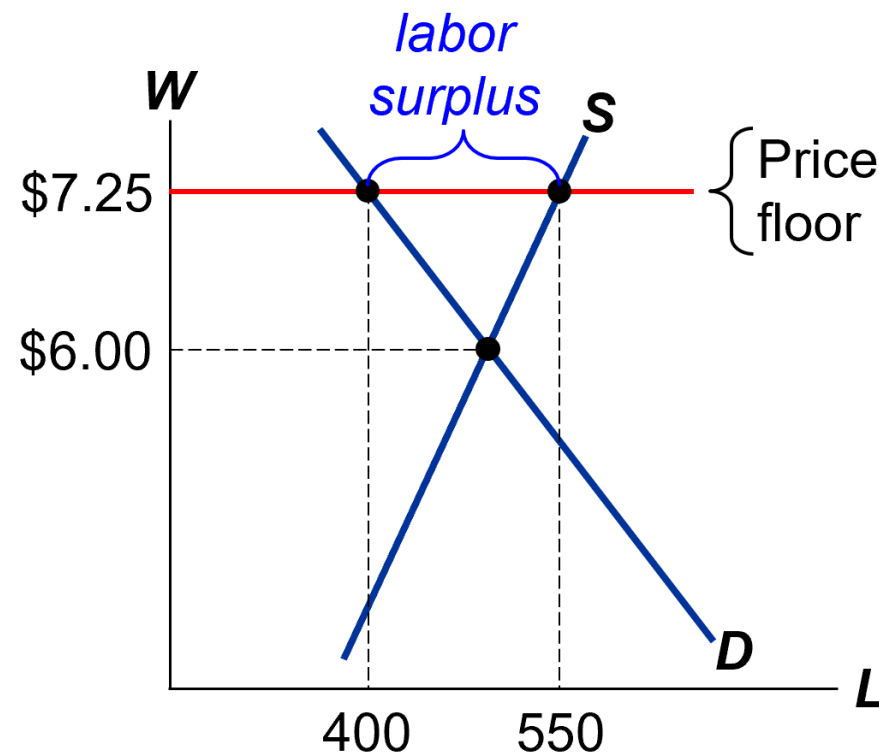500

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).

Change in Total Surplus From Price Floor

- Price is regulated to be no lower than P_{min}.

- Producers would like to supply Q_2, but consumers will buy only Q_3.

- If producer produce Q_3, the deadweight loss will be B+C

- If producers indeed produce Q_2, the amount $Q_2 - Q_3$ will go unsold and the change in producer surplus will be $A - C - D$. In this case, producers as a group may be worse off. The total change in consumer surplus is $-A - B$. The total change in producer surplus is $A - C - D$
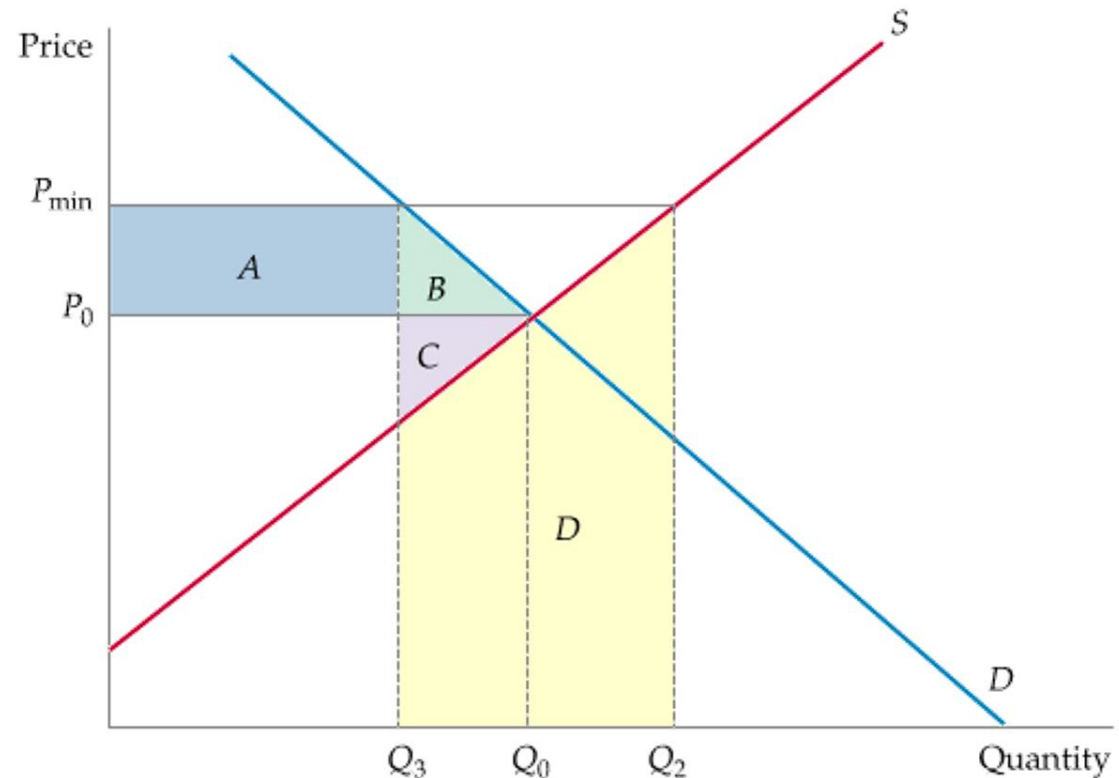
Change in Total Surplus From The Minimum Wage

- Although the market-clearing wage is w_0, firms are not allowed to pay less than w_{min}.

- This results in unemployment of an amount $L_2 - L_1$, and a deadweight loss given by triangles B and C.
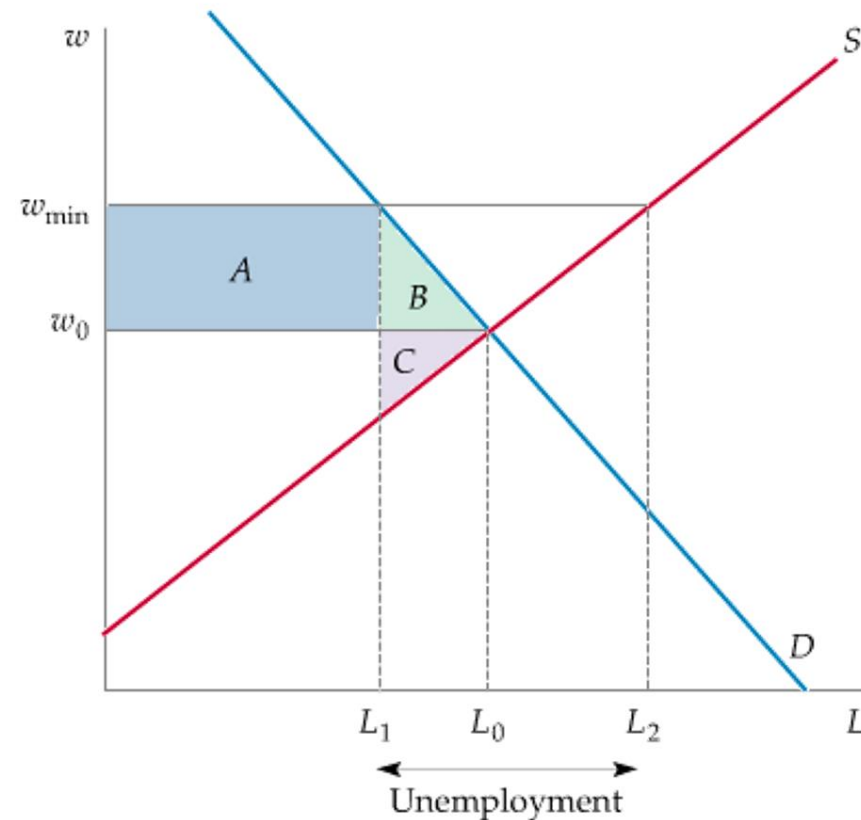
Evaluating Price Controls

- 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)

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3. Price Support

4. Production Quota

5. Incentive Program

6. Tax and Subsidy

7. Import Quotas and Tariffs

Price Supports

- Price Support
  - Price set by government above free-market level and maintained by governmental purchases of excess supply.
  - To maintain a price Ps above the market-clearing price P0, the government buys a quantity?
  - The gain to producers is ? The loss to consumers is ?
  - The cost to the government is?
 - What is total change in welfare? Is it positive or negative?
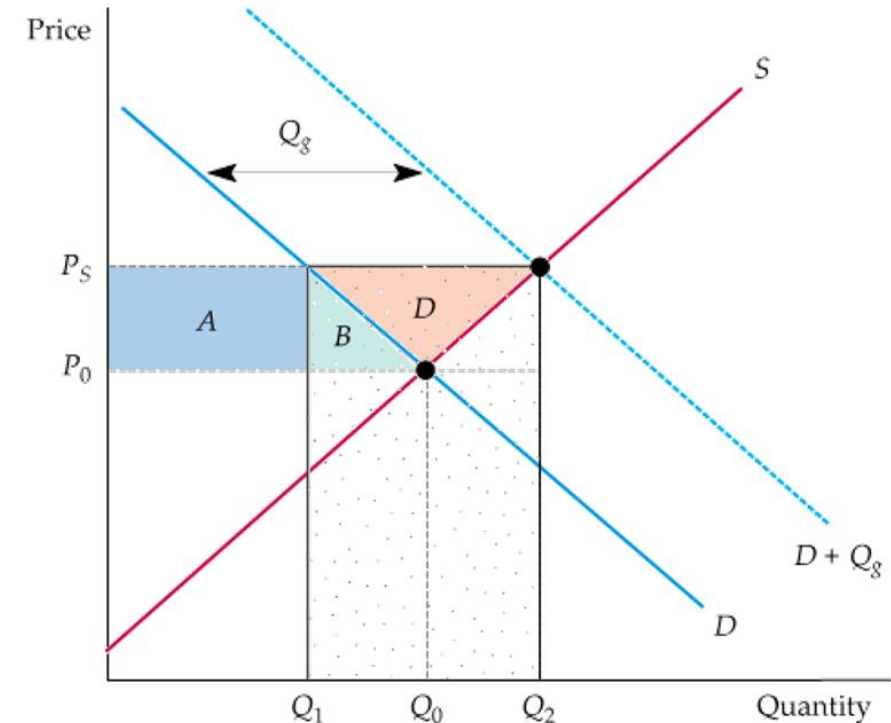
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Production Quotas

- To maintain a price Ps above the market-clearing price P0, the government can restrict supply to Q1 by imposing production quotas (as with taxicab medallions in the following example).

- What's the deadweight loss in this case?
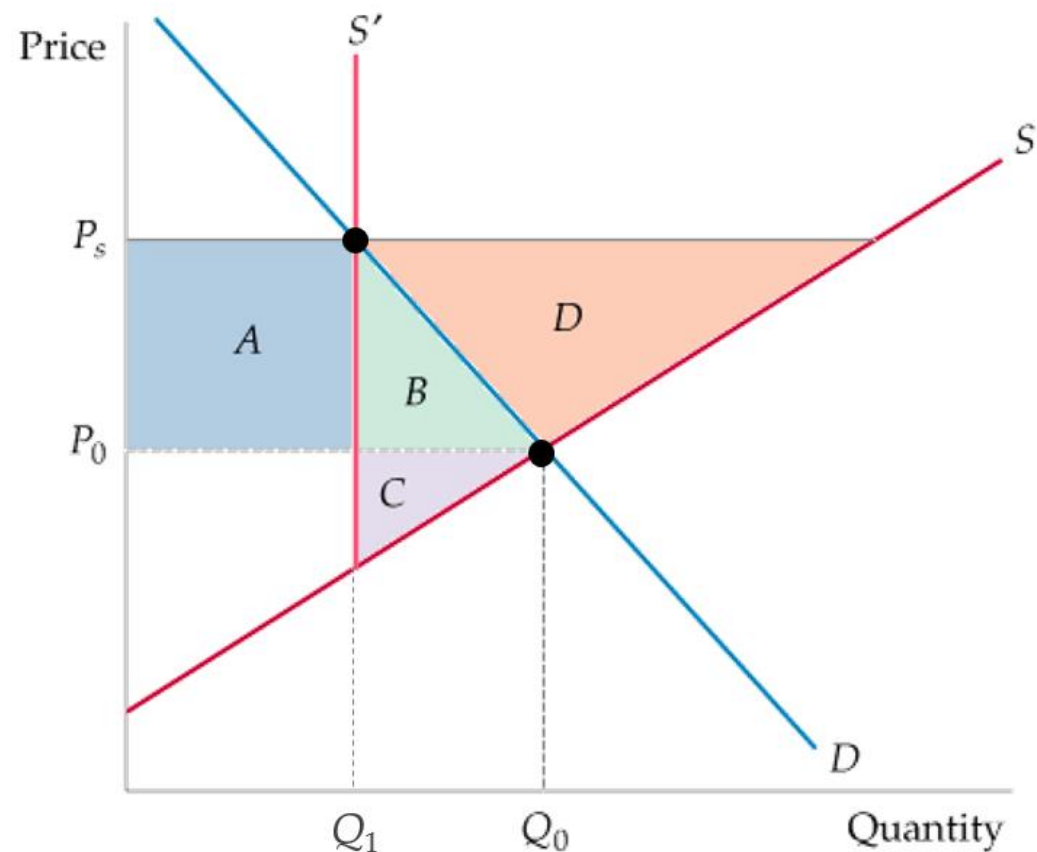
Application: Why Can't I Find A Taxi?

The city of New York limits the number of taxis by requiring each taxi to have a medallion (essentially a permit), and then limiting the number of medallions. In 2011 there were 13,150 medallions in New York—roughly the same number as in 1937. Why not just issue more medallions? The reason is simple. Doing so would incur the wrath of the current owners of medallions. Medallions can be bought and sold by the companies that own them.

In 1937, there were plenty of medallions to go around, so they had little value. By 1947, the value of a medallion had increased to $2,500, by 1980 to $55,000, and by 2011 to $880,000. That's right—because New York City won't issue more medallions, the value of a taxi medallion is approaching $1 million!

But of course that value would drop sharply if the city starting issuing more medallions. So the New York taxi companies that collectively own the 13,150 available medallions have done everything possible to prevent the city from issuing any more—and have succeeded in their efforts.

If the city were to issue another 7,000 medallions for a total of about 20,000, demand and supply would equilibrate at a price of about $350,000 per medallion– still a lot, but just enough to lease cabs, run a taxi business, and still make a profit.

Application: Why Can't I Find A Taxi?

- The demand curve D shows the quantity of medallions demanded by taxi companies as a function of the price of a medallion.

- The supply curve S shows the number of medallions that would be sold by current owners as a function of price.

- New York limits the quantity to 13,150, so the supply curve becomes vertical and intersects demand at $880,000, the market price of a medallion in 2011.
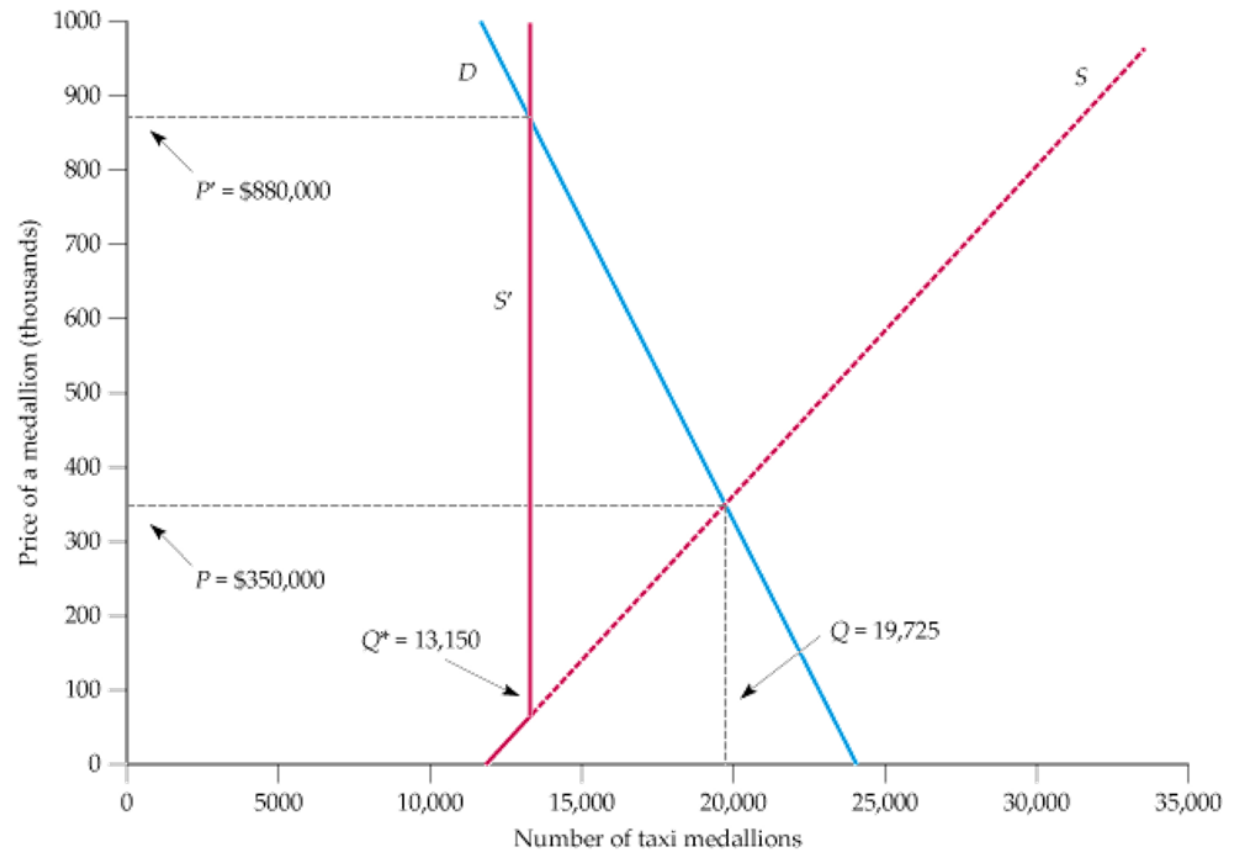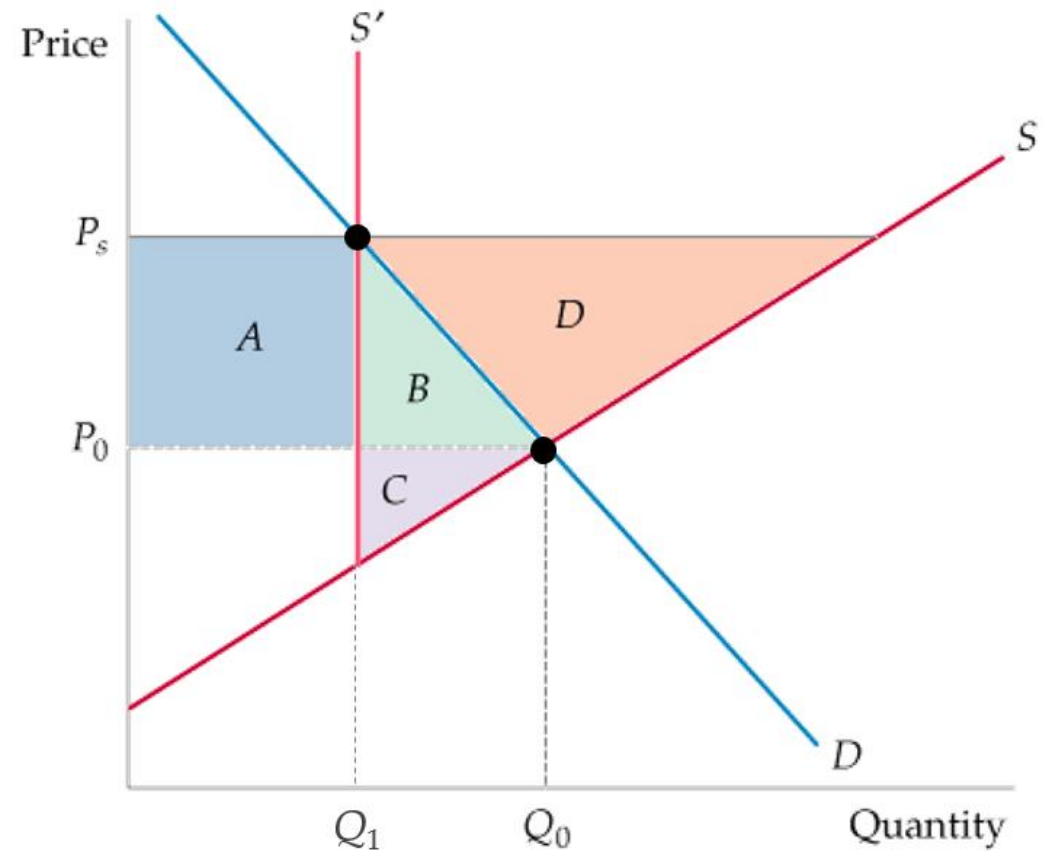
Agenda

Incentive Program

- To maintain a price P_s above the market-clearing price P_0, the government can also restrict supply to Q_1 by giving producers a financial incentive to reduce output (as with acreage limitations in agriculture).

- What's the deadweight loss in this case?

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Taxes

- Specific tax: tax of a certain amount of money per unit sold

- Government uses taxes
  - To raise revenue for public projects
    - Roads, schools, and national defense

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

Internet photo

Change in Total Surplus From Taxes

- P_b is the price (including the tax) paid by buyers. P_s is the price that sellers receive, less the tax.

- Here the burden of the tax is split evenly between buyers and sellers.

- Buyers lose A + B.

- Sellers lose D + C.

- The government earns A + D in revenue.

- The deadweight loss is B + C.
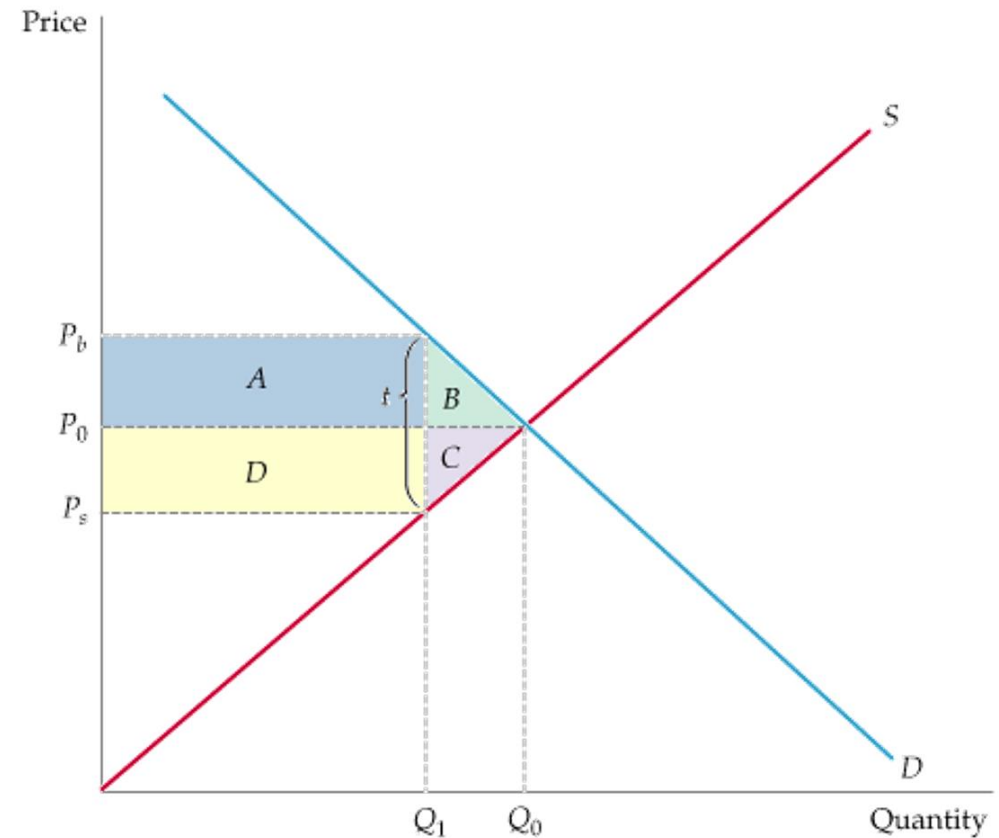
Exercise: A Tax on Gasoline

$Q^D = 150 - 25P_b$ *(Demand)*

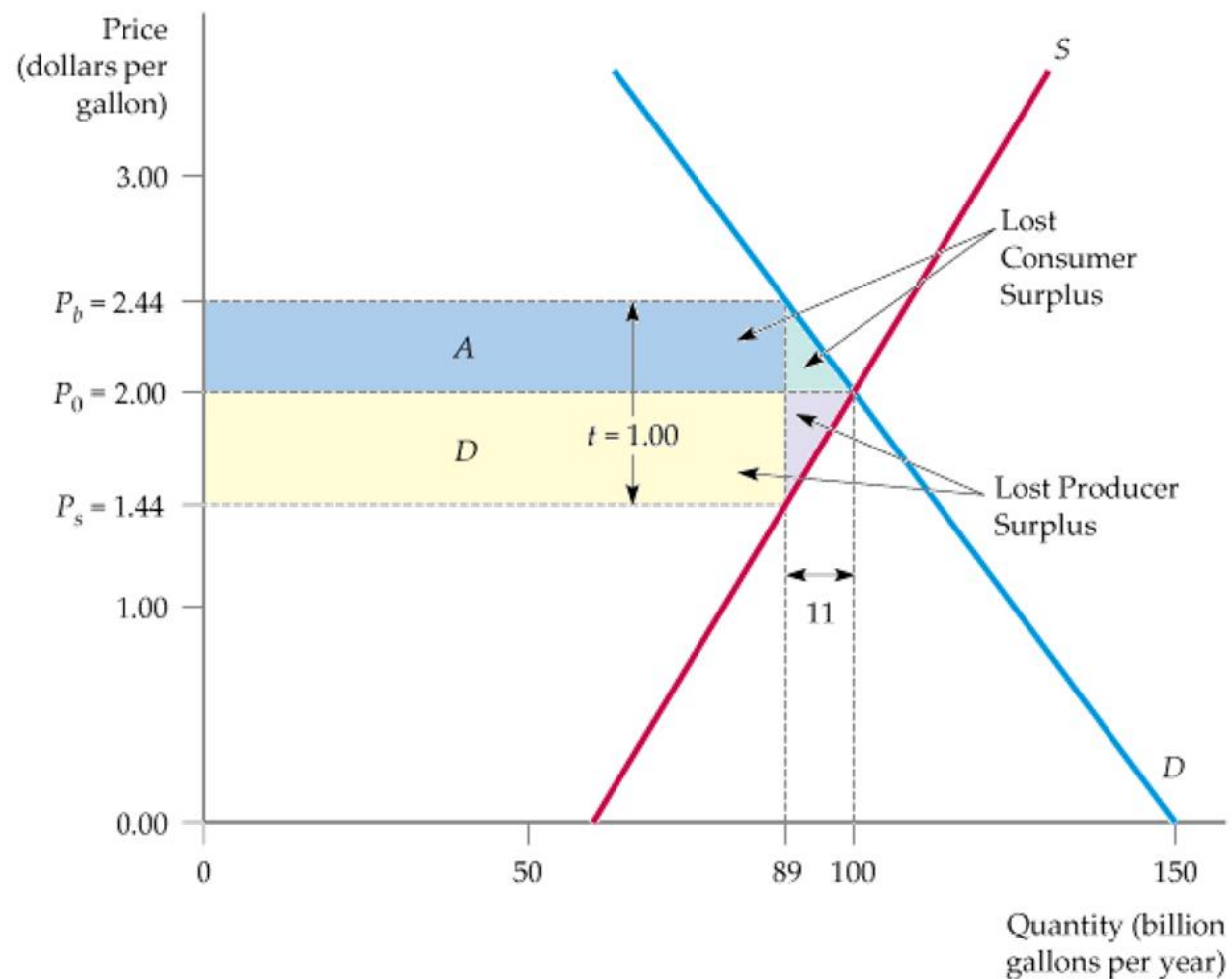$Q^S = 60 + 20P_s$ (Supply)

$Q^D = Q^S$ (Supply must equal demand)

Tax = 1.00 (Government must receive $1.00/gallon)

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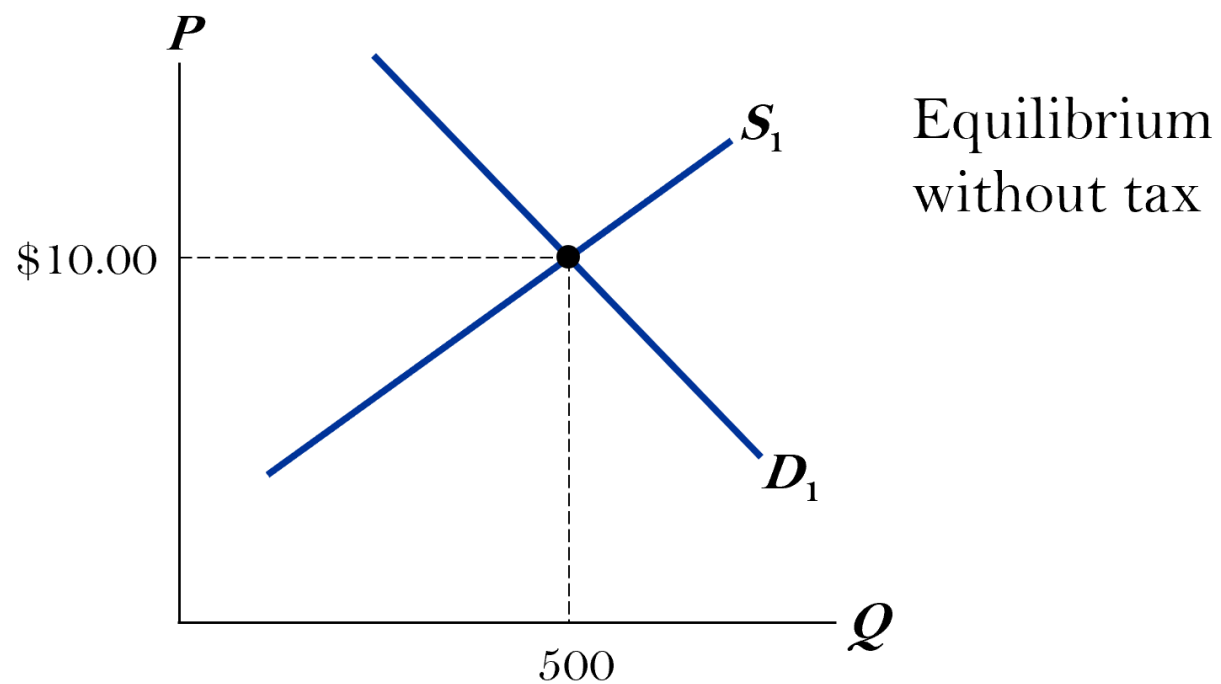
Scan the QR or use link to join

Exercise: A Tax on Gasoline

Tax Incidence

- 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: The Market for Pizza

Equilibrium without tax

A Tax on Buyers

- **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.
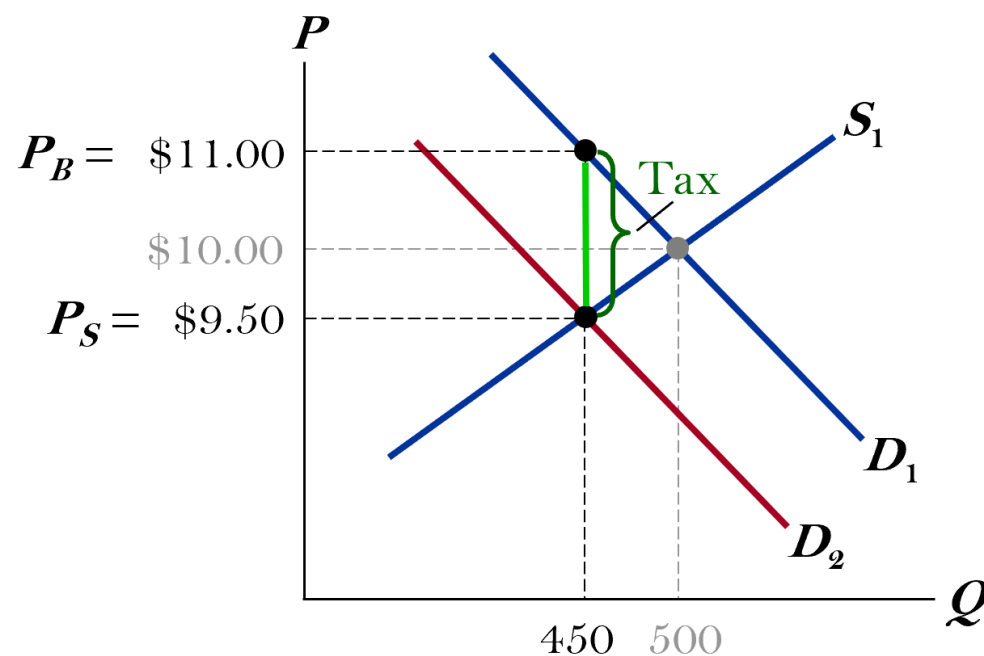
Effects of a $1.50 per unit
<u>tax on buyers</u>
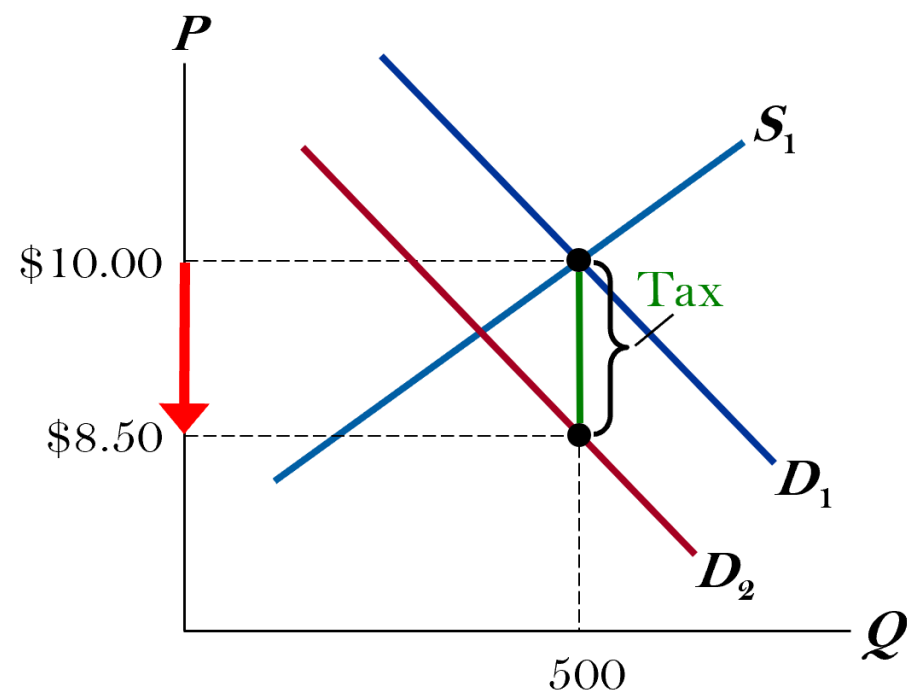
A Tax on Buyers

- New equilibrium:
  - Q = 450
  - Sellers receive P_S = $9.50
  - Buyers pay P_B = $11.00
- Difference between them = $1.50 = tax

Effects of a $1.50 per unit tax on buyers

P

P_B = $11.00

Tax

$10.00

P_S = $9.50

S_1

D_1

D_2

Q

450   500

Tax Incidence

- Tax incidence: how the burden of a tax is shared among market participants

- In our example, buyers pay $1.00 more, sellers get $0.50 less.
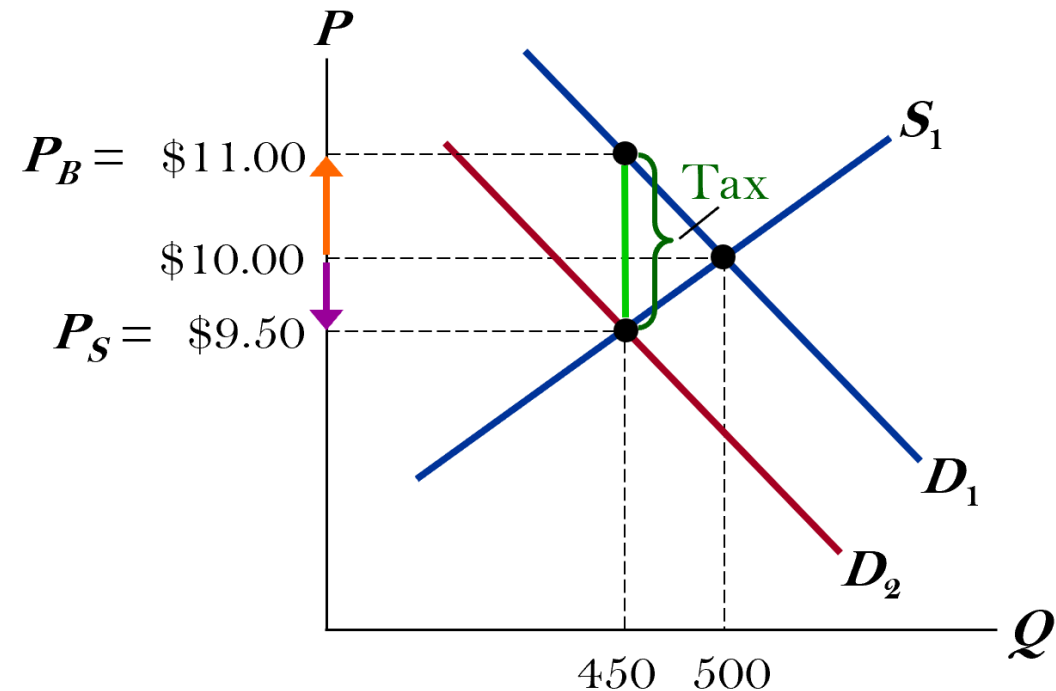
A Tax on Sellers

- **A tax on sellers shifts the S curve up by the amount of the tax.**

- 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.

Effects of a $1.50 per unit tax on sellers
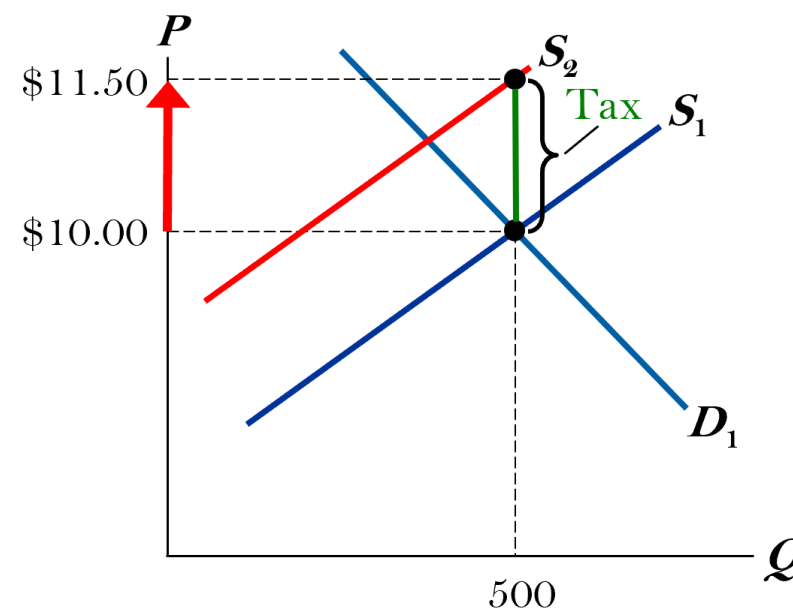
A Tax on Sellers

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

- Difference between them = $1.50 = tax

- Again, buyers pay $1.00 more, sellers get $0.50 less.

Effects of a $1.50 per unit
tax on sellers
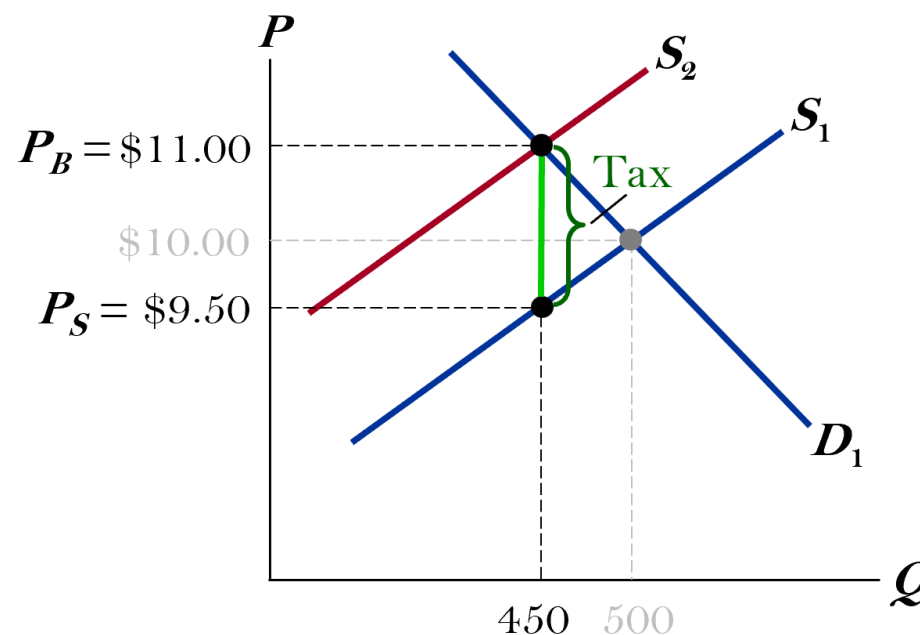
The Outcome Is the Same in Both Cases!

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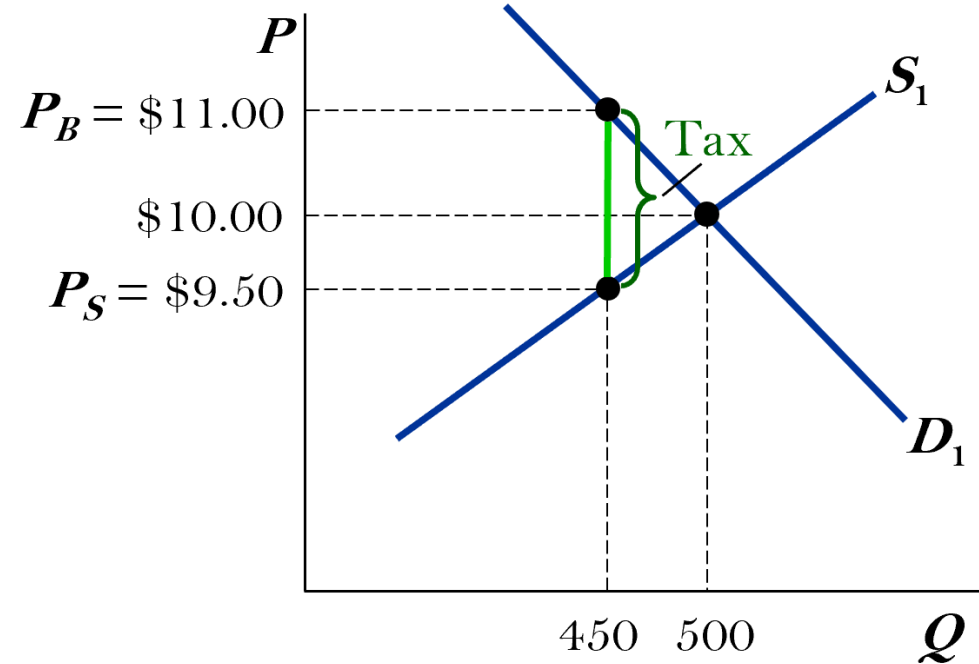
Active Learning   Tax Incidence

Scan the QR or use link to join

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MbeAc?origin=lprLink
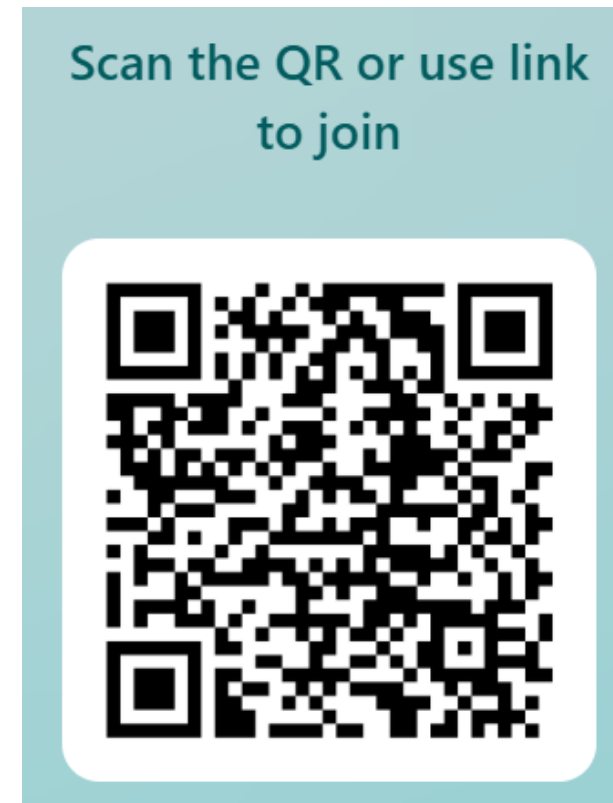
Elasticity and Tax Incidence

CASE 1: Supply is more elastic than demand

Buyers' share of tax burden

Price if no tax

Sellers' share of tax burden

P_B

P_S

Tax

P

S

D

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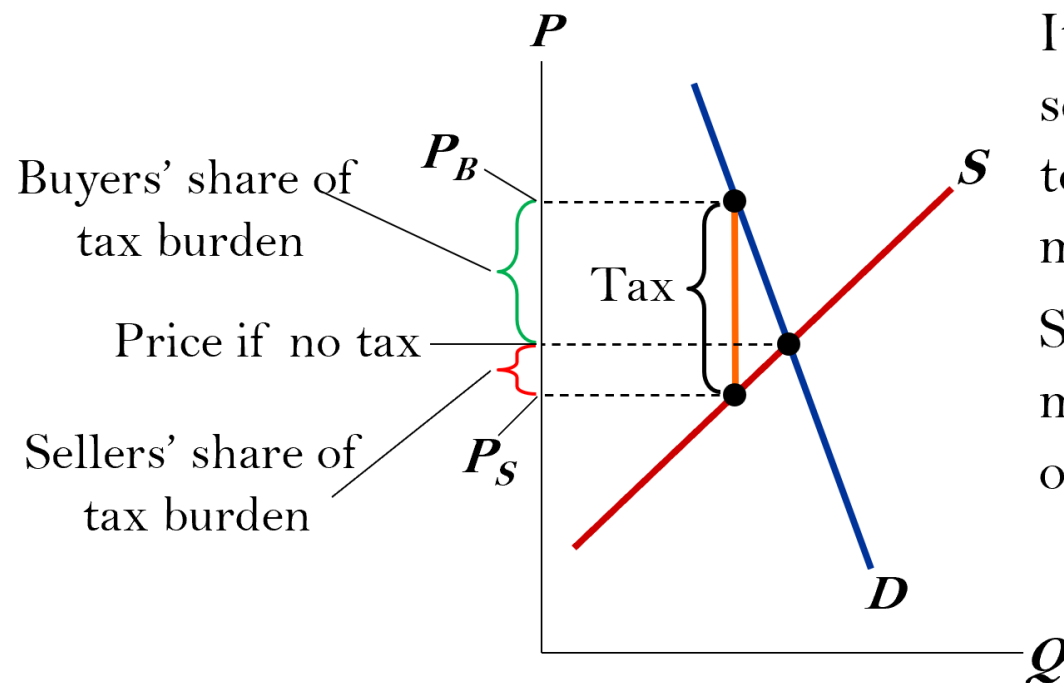
It's easier for sellers than buyers to leave the market.

So buyers bear most of the burden of the tax.

Elasticity and Tax Incidence

CASE 2: Demand is more elastic than supply

Buyers' share of
tax burden

Price if no tax

Sellers' share of
tax burden

P

P_B

P_S

S

D

Tax

Q

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?
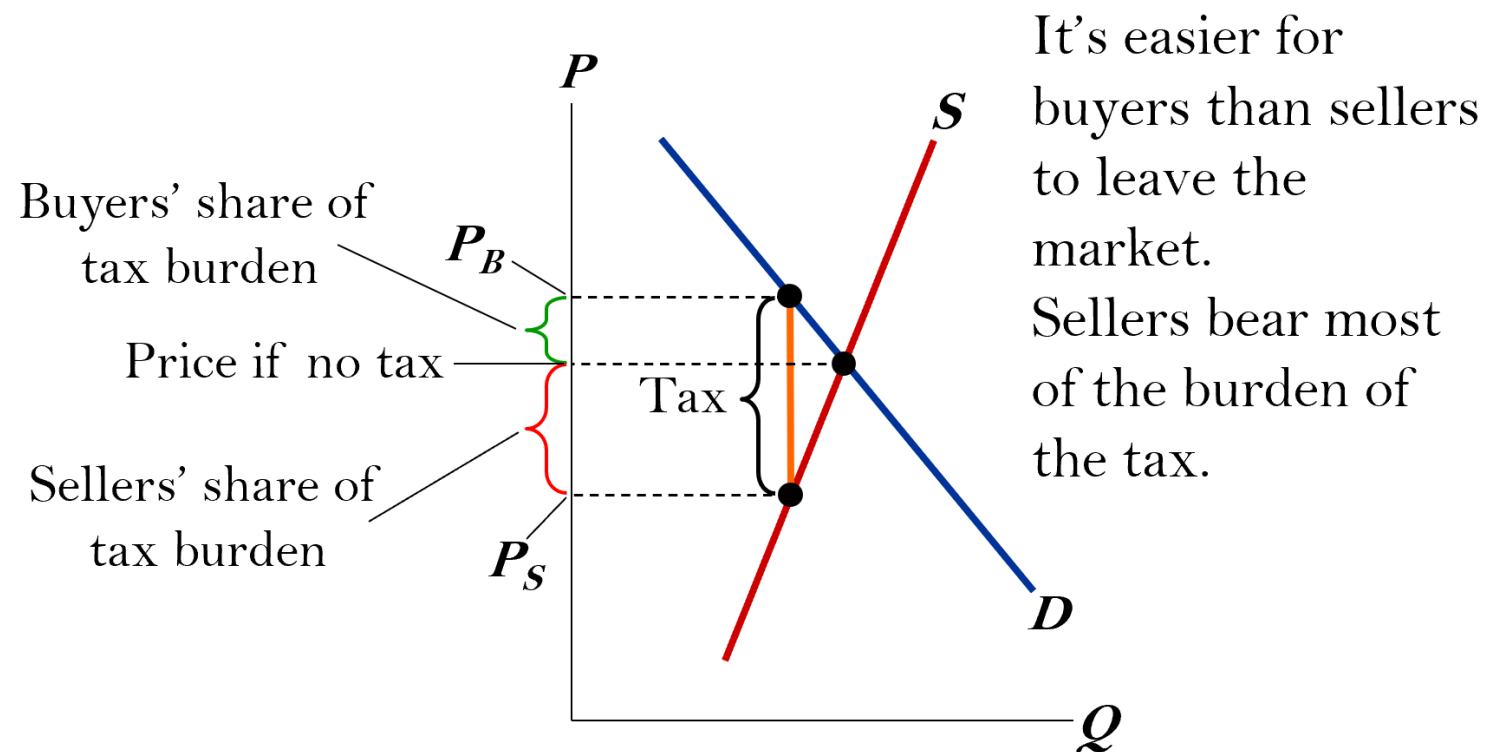
- 1990, Congress adopted a new luxury tax
  - On yachts, private airplanes, furs, jewelry, expensive cars
  - Goal: to raise revenue from those who could most easily afford to pay
  - Luxury items
    - Demand is quite elastic
    - In the short run, supply is relatively inelastic
    - Hence, companies that build yachts pay most of the tax.

The market for yachts

Buyers' share of tax burden

Sellers' share of tax burden
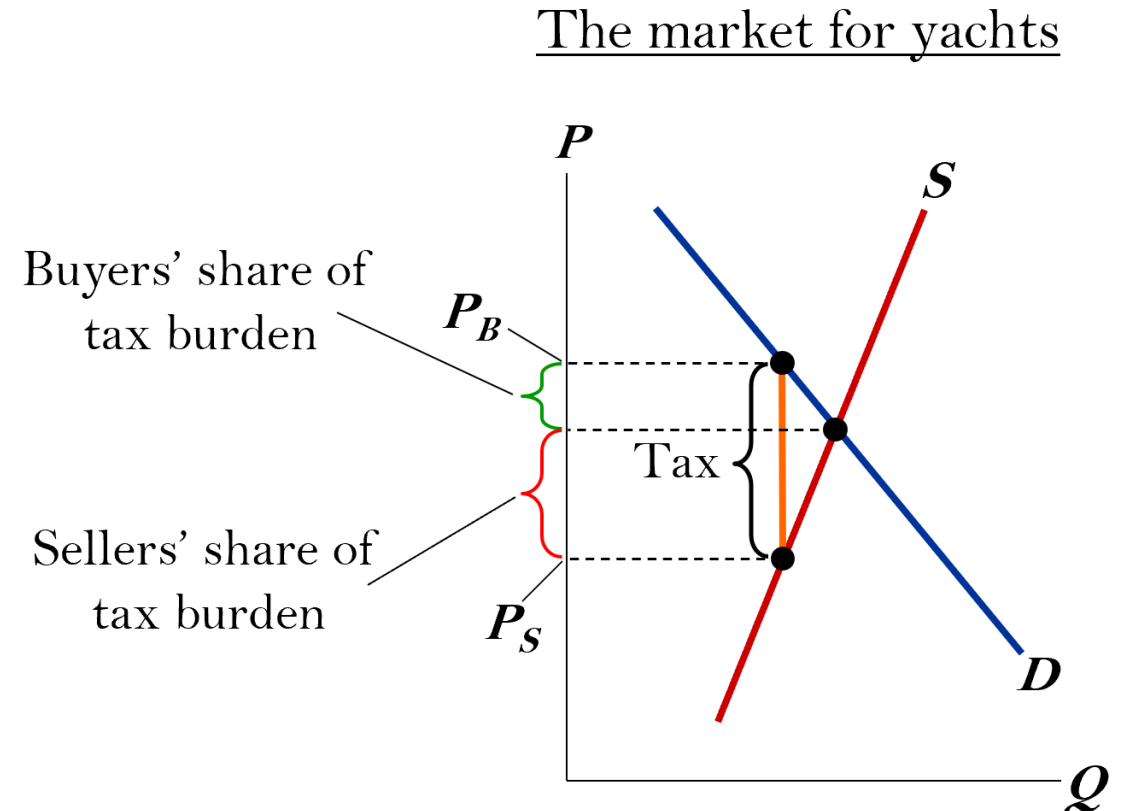
The Effects of a Subsidy

- Subsidy: payment reducing the buyer's price below the seller's price; i.e., a negative tax.

- A subsidy can be thought of as a negative tax. Like a tax, the benefit of a subsidy is split between buyers and sellers, depending on the relative elasticities of supply and demand.
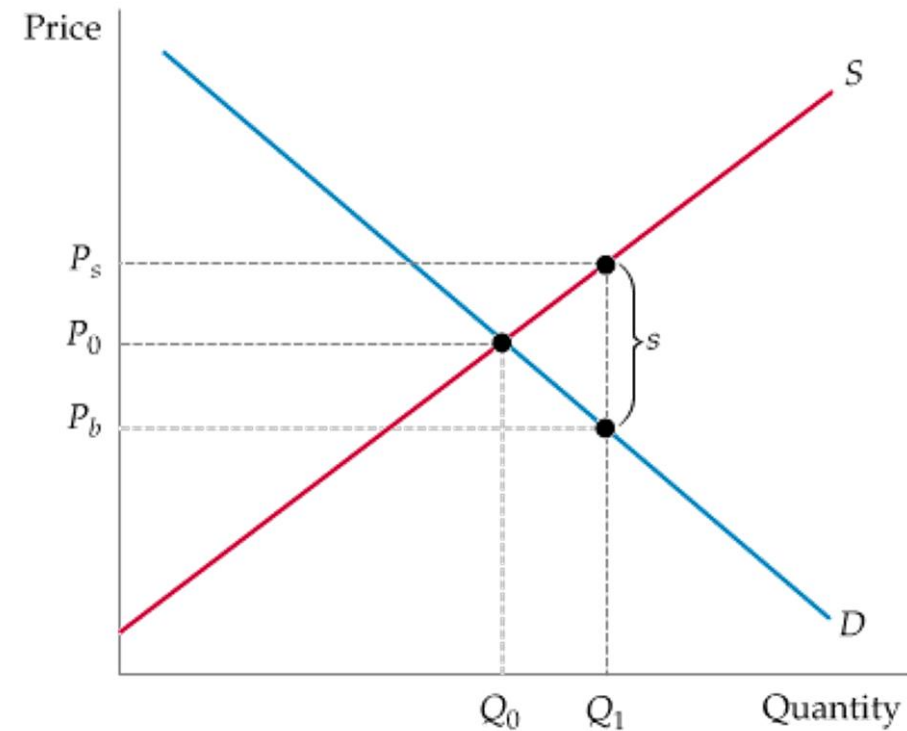
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Import Quotas and Tariffs

- Import quota: Limit on the quantity of a good that can be imported.

- Tariff: Tax on an imported good.

# Import Quota or Tariff That Eliminates Imports

- In a free market, the domestic price equals the world price Pw.

- A total Qd is consumed, of which Qs is supplied domestically and the rest imported.

- When imports are eliminated, the price is increased to P0.

- The gain to producers is trapezoid A.

- The loss to consumers is A + B + C, so the deadweight loss is B + C.
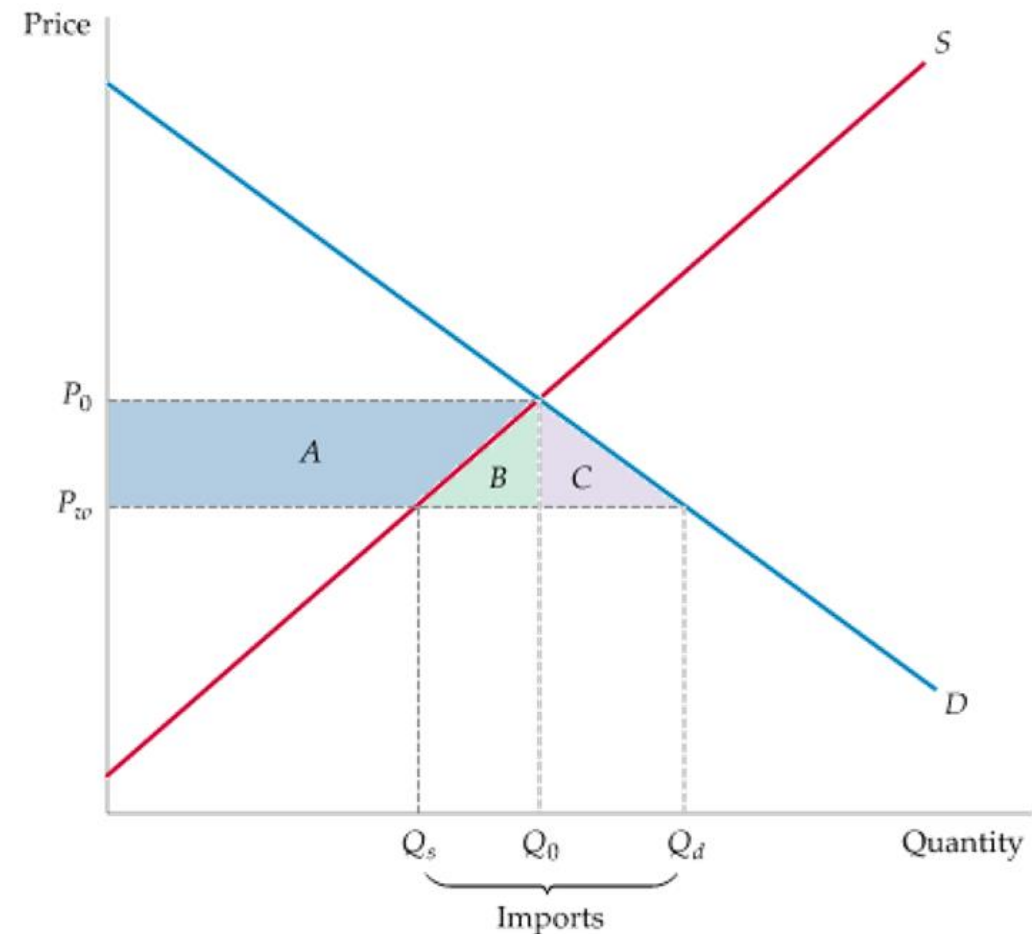
Import Quota or Tariff (General Case)

- When imports are reduced, the domestic price is increased from Pw to P*. This can be achieved by a quota, or by a tariff $T = P* - Pw$.

- Trapezoid A is again the gain to domestic producers.

- The loss to consumers is A + B + C + D.

- If a tariff is used, the government gains D, the revenue from the tariff. The net domestic loss is B + C.

- If a quota is used instead, rectangle D becomes part of the profits of foreign producers, and the net domestic loss is B + C + D.
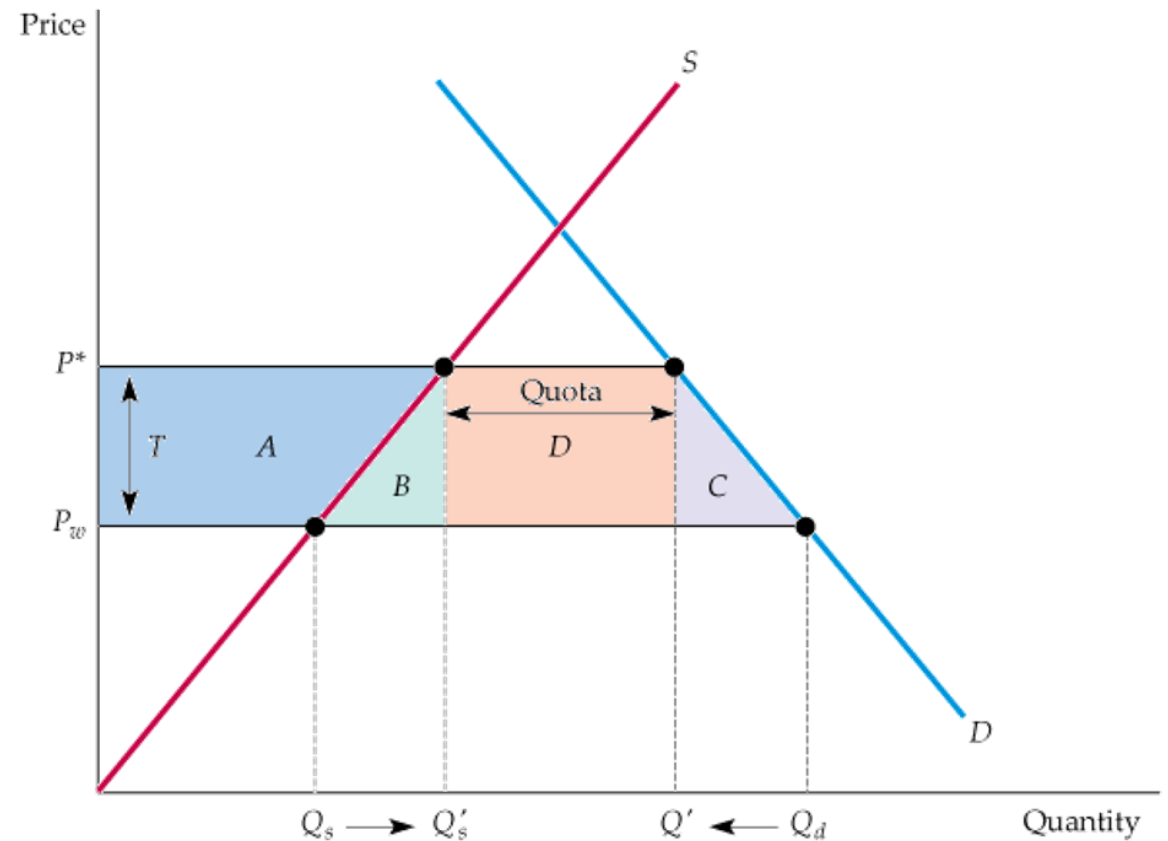
Application: The Sugar Quota

- In recent years, the world price of sugar has been between 10 and 28 cents per pound, while the U.S. price has been 30 to 40 cents per pound. Why?

- By restricting imports, the U.S. government protects the $4 billion domestic sugar industry, which would virtually be put out of business if it had to compete with low-cost foreign producers. This policy has been good for U.S. sugar producers, but bad for consumers.
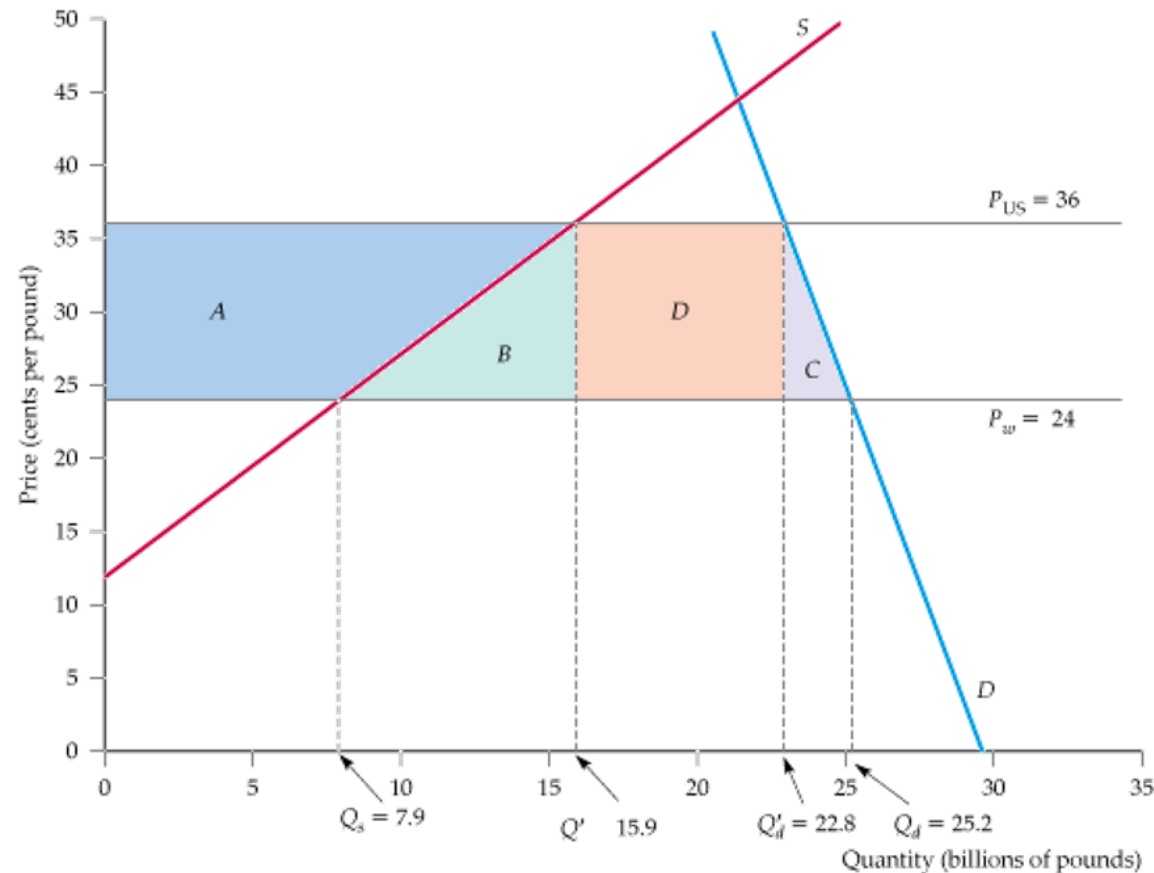
Is this a "festival article" or "clothing"?

Internet photo

Business Application: Santa Suits and Tariffs

- Rubie's Costume Company versus the United States

- Harmonized Tariff Schedule of the U.S. lists tens of thousands of specific items. But it doesn't list everything. The Santa suits could be classified as "festive articles," which are duty-free, or as "clothing," which incurs a high tariff.

- The differences in the classification have important economic consequences.

- Sources: NPR Planet Money: The Santa Suit

- Link: https://www.npr.org/2020/08/05/899393029/summer-school-5-trade-santa

Questions

- Businesses often engage in "tariff engineering" to find ways to reduce their tax burden, which can involve changing product design or classifications.

- Q1: how do you think tariffs affect business and consumers?

- Q2: why might a government choose to impose high tariffs on certain goods?

- Q3: why might Rubie's want to classify Santa costume as festive articles?

RUBIES COSTUME COMPANY, Plaintiff-Appellant v. UNITED STATES, Defendant-Appellee: 2018-1305

- "Rubies Costume Company appeals the grant of summary judgment by the Court of International Trade in favor of the Government as to the tariff classification of certain imported merchandise. The imported merchandise consists of a nine-piece Santa Claus costume packaged and sold together as a set. The Santa Claus costume is customarily worn in connection with the celebration of the Christmas holiday. The parties argue as to the implications of the "festive" nature of the costume. The merchandise, however, is excluded from classification as "festive articles" by the notes to chapter 95 of the Harmonized Tariff Schedule of the United States. The correct classification of the merchandise is under HTSUS 6110.30.30, 6103.43.15, 6116.93.94, and 4209.92.30. On that basis, we affirm the judgment of the Court of International Trade."

Can You Answer the Following 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?

End