



# Demand, supply and government policy

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# Control over price (disequilibrium)

- **Price ceiling**

- A legal maximum on the price at which a good can be sold

- **Price floor**

- A legal minimum on the price at which a good can be sold

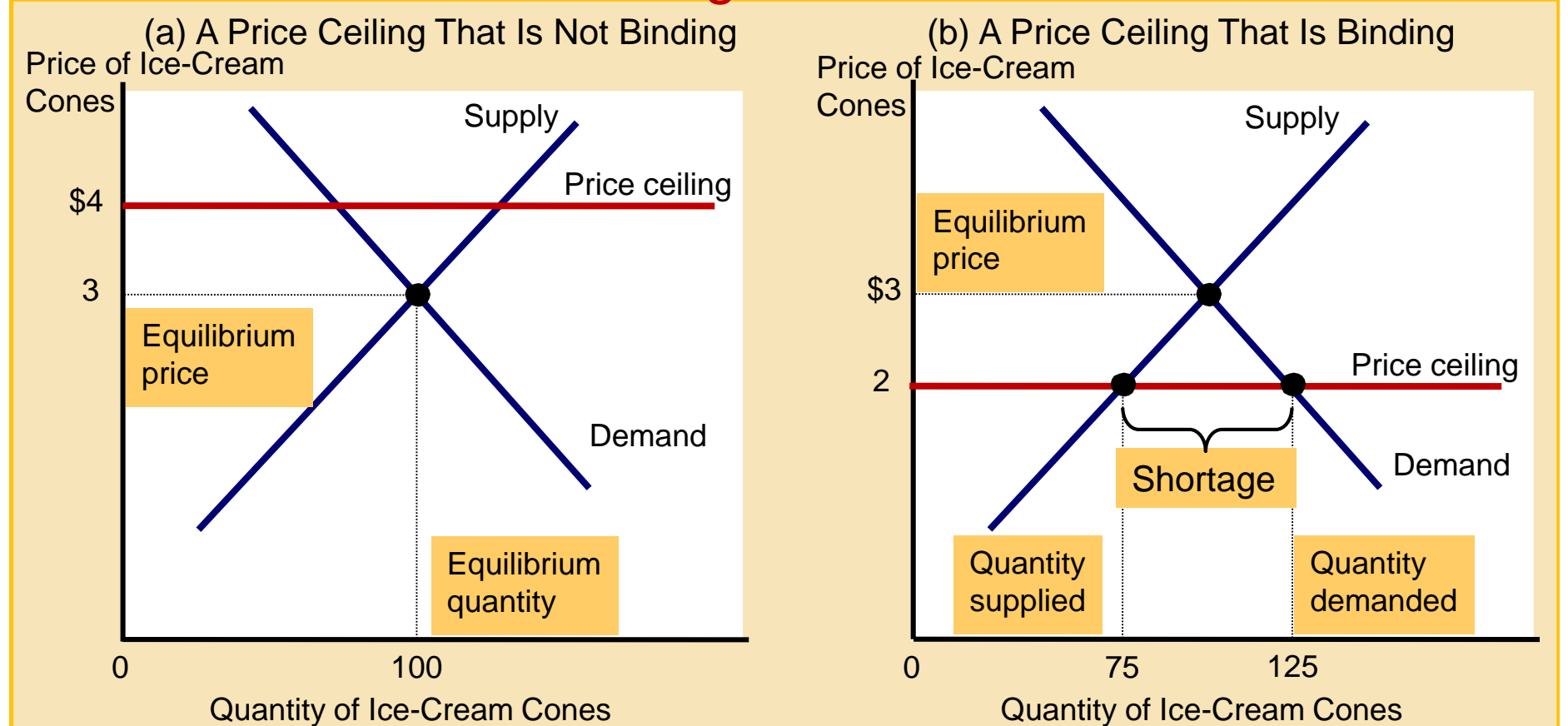


# 01 | Price ceiling

# Control over price

- How price ceilings affect market outcomes
  - Not binding
    - Above the equilibrium price
    - No effect on the price or quantity sold
  - Binding constraint (effective)
    - Below the equilibrium price
    - Shortage
    - Sellers must ration the scarce goods
      - The rationing mechanisms – not desirable

# A Market with a Price Ceiling



In panel (a), the government imposes a price ceiling of \$4. Because the price ceiling is above the equilibrium price of \$3, the price ceiling has no effect, and the market can reach the equilibrium of supply and demand. In this equilibrium, quantity supplied and quantity demanded both equal 100 cones. In panel (b), the government imposes a price ceiling of \$2. Because the price ceiling is below the equilibrium price of \$3, the market price equals \$2. At this price, 125 cones are demanded and only 75 are supplied, so there is a shortage of 50 cones.

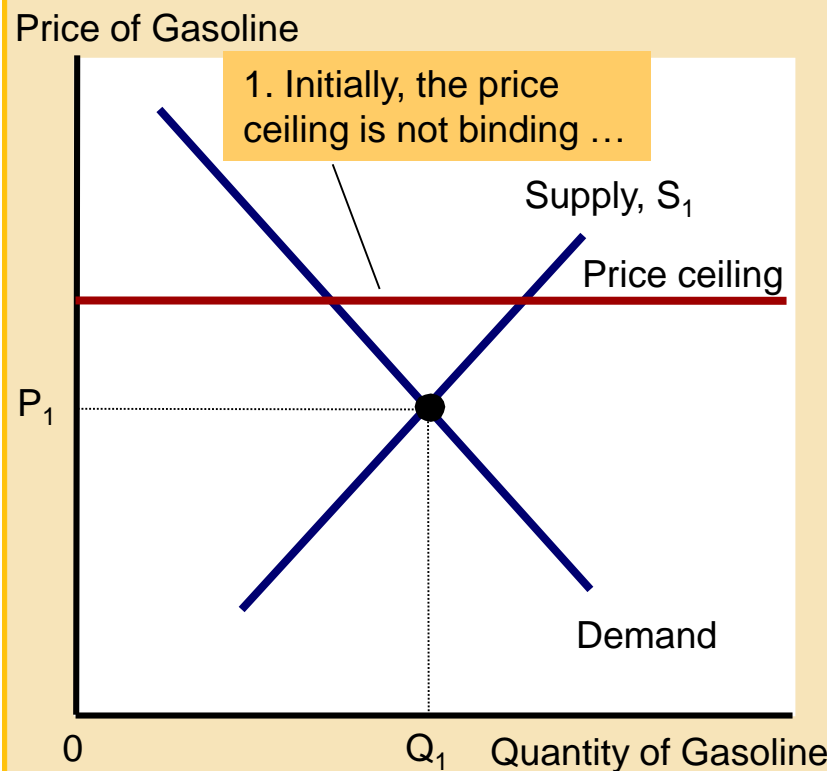
- 1973, OPEC raised the price of crude oil
  - Reduced the supply of gasoline
  - Long lines at gas stations
- What was responsible for the long gas lines?
  - OPEC
    - Reduction of gasoline supply
  - U.S. government regulations
    - Price ceiling on gasoline

- Price ceiling on gasoline
  - Before OPEC raised the price of crude oil
    - Equilibrium price was below the price ceiling
      - No effect on the market
  - When the price of crude oil rose
    - Decrease in the supply of gasoline
    - Equilibrium price – above price ceiling
      - Binding price ceiling
      - Severe shortage
- Laws regulating the price of gasoline were **repealed**

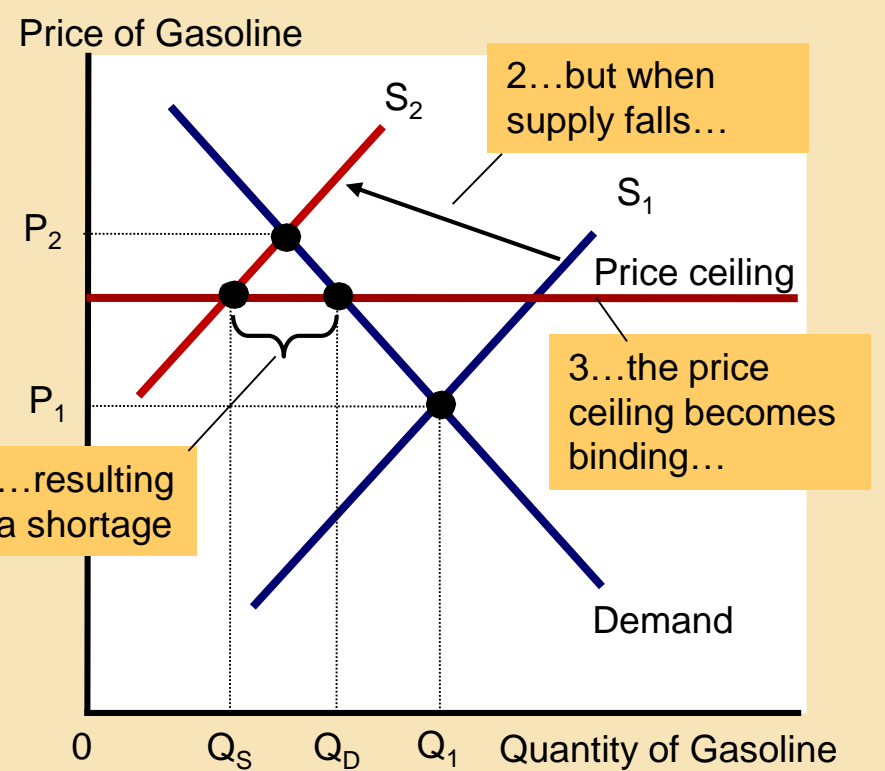


# The Market for Gasoline with a Price Ceiling

(a) The Price Ceiling On Gasoline Is Not Binding



(b) The Price Ceiling On Gasoline Is Binding



Panel (a) shows the gasoline market when the price ceiling is not binding because the equilibrium price,  $P_1$ , is below the ceiling. Panel (b) shows the gasoline market after an increase in the price of crude oil (an input into making gasoline) shifts the supply curve to the left from  $S_1$  to  $S_2$ . In an unregulated market, the price would have risen from  $P_1$  to  $P_2$ . The price ceiling, however, prevents this from happening. At the binding price ceiling, consumers are willing to buy  $Q_D$ , but producers of gasoline are willing to sell only  $Q_S$ . The difference between quantity demanded and quantity supplied,  $Q_D - Q_S$ , measures the gasoline shortage.

- Price ceiling: rent control
  - Local government - ceiling on rents
  - Goal: to help the poor
    - Making housing more affordable
  - Critique
    - Highly inefficient way to help the poor raise their standard of living

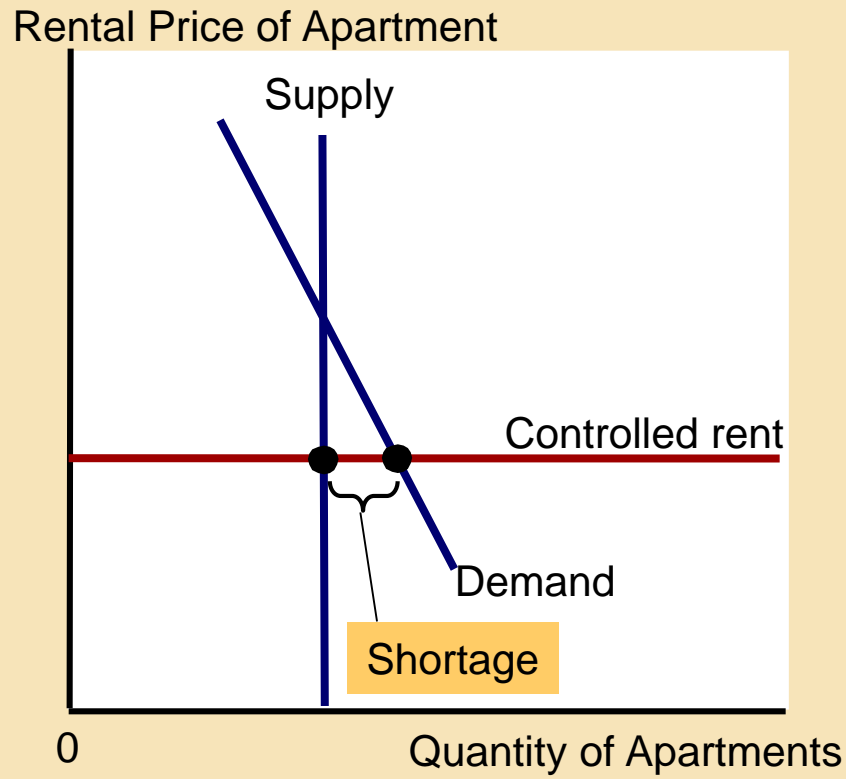
- Adverse effects in the short run
  - Supply and demand for housing are relatively inelastic
  - Small shortage
  - Reduced rents

- Adverse effects in the long run
  - Supply and demand are more elastic
    - Landlords
      - Are building new apartments
      - Are failing to maintain existing ones
    - People
      - Find their own apartments
      - Induce more people to move into a city
  - Large shortage of housing

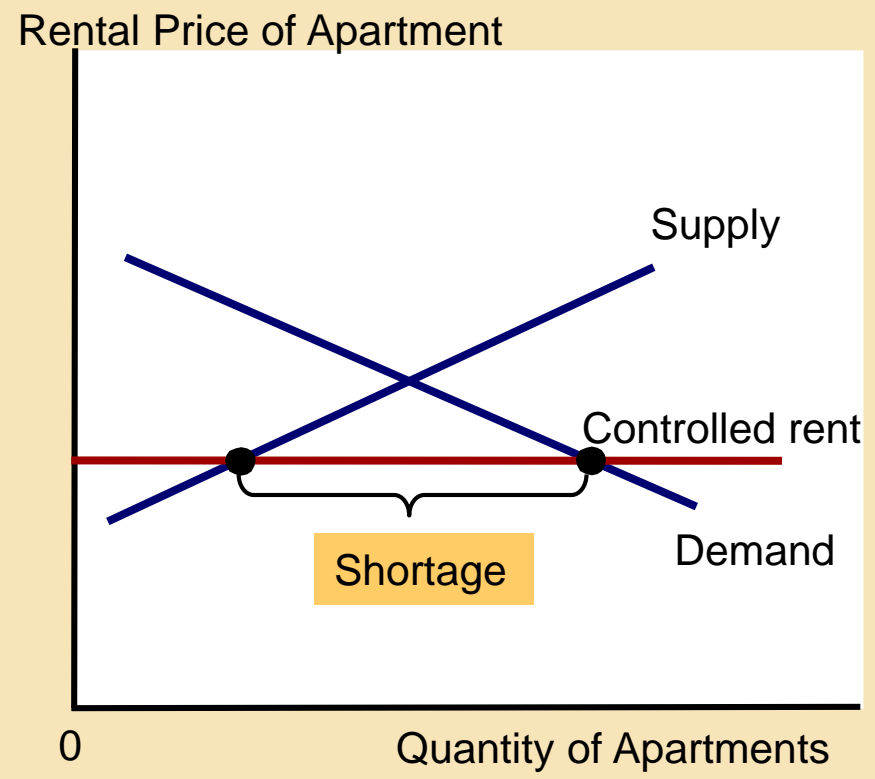
- Adverse effects in the long run
  - Rationing mechanisms
    - Long waiting lists
    - Preference to tenants without children
    - Discriminate on the basis of race
    - Bribes to building superintendents
- People respond to incentives
  - Free markets
    - Landlords – clean and safe buildings
    - Higher prices

# Rent Control in the Short Run and in the Long Run

(a) Rent Control in the Short Run  
(supply and demand are inelastic)



(b) Rent Control in the Long Run  
(supply and demand are elastic)



Panel (a) shows the short-run effects of rent control: Because the supply and demand for apartments are relatively inelastic, the price ceiling imposed by a rent-control law causes only a small shortage of housing. Panel (b) shows the long-run effects of rent control: Because the supply and demand for apartments are more elastic, rent control causes a large shortage.

- People respond to incentives
  - Rent control
    - Shortages & waiting lists
    - Landlords lose their incentive to respond to tenants' concerns
    - Tenants get lower rents and lower-quality housing
- Policymakers – additional regulations
  - Difficult and costly to enforce

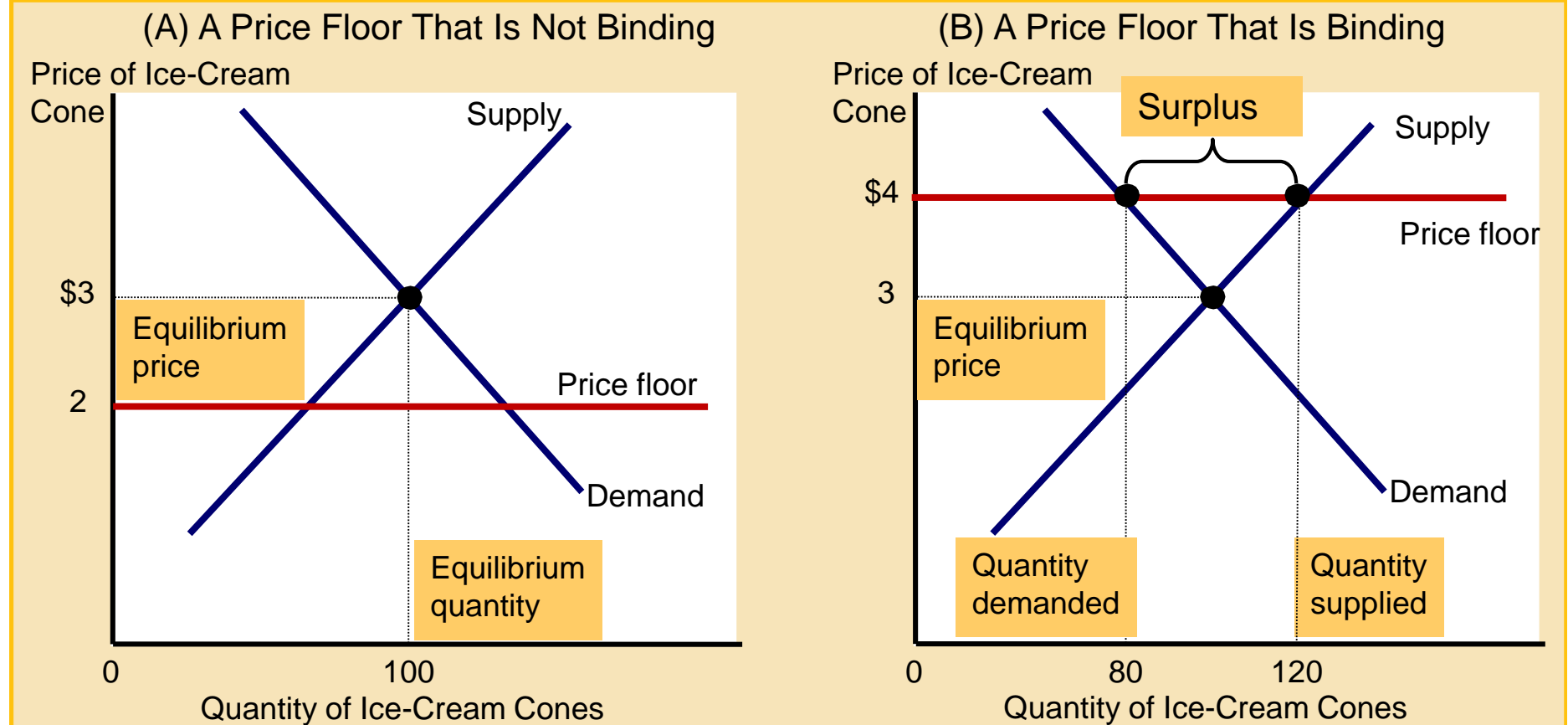
# 02 | Price floor



# Controls on Prices

- How price floors affect market outcomes
  - Not binding
    - Below the equilibrium price
    - No effect on the market
  - Binding constraint
    - Above the equilibrium price
    - Surplus
    - Some sellers are unable to sell what they want
      - The rationing mechanisms – not desirable

# A Market with a Price Floor



In panel (a), the government imposes a price floor of \$2. Because this is below the equilibrium price of \$3, the price floor has no effect. The market price adjusts to balance supply and demand. At the equilibrium, quantity supplied and quantity demanded both equal 100 cones. In panel (b), the government imposes a price floor of \$4, which is above the equilibrium price of \$3. Therefore, the market price equals \$4. Because 120 cones are supplied at this price and only 80 are demanded, there is a surplus of 40 cones.

- Market for labor
  - Workers – supply of labor
  - Firms – demand for labor
- If minimum wage is above equilibrium
  - Unemployment
  - Higher income for workers who have jobs
  - Lower income for workers who cannot find jobs

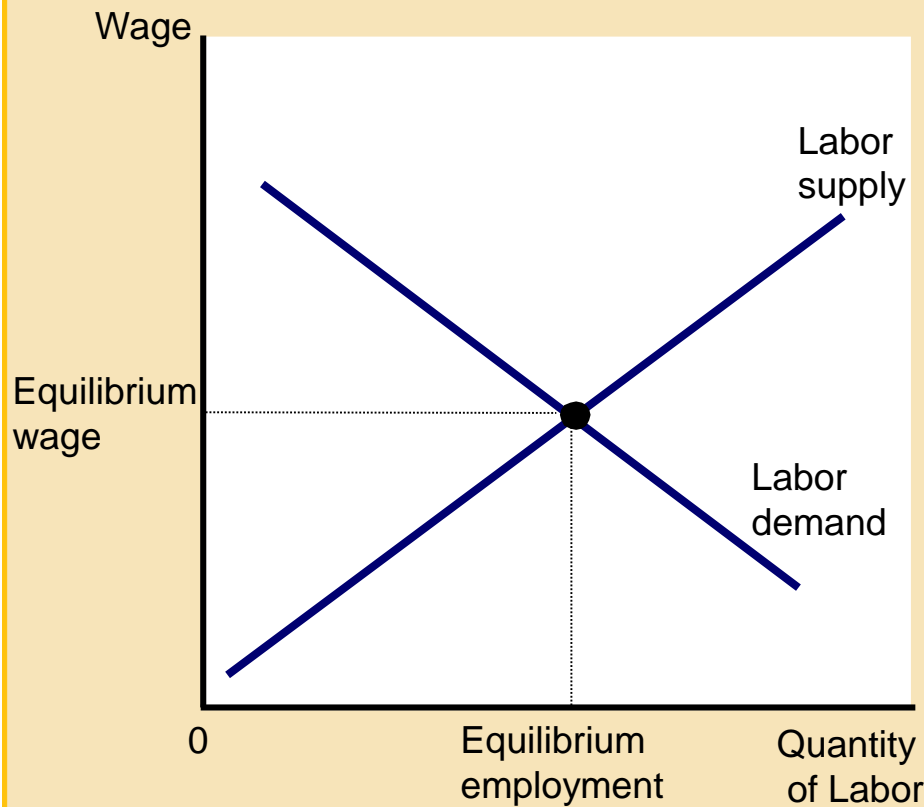
- Price floor: minimum wage
  - Lowest price for labor that any employer may pay
- Fair Labor Standards Act of 1938
  - Ensure workers a minimally adequate standard of living
- 2009: federal minimum wage = \$7.25 per hour
  - Some states mandate minimum wages above the federal level

- Impact of the minimum wage
  - Highly skilled and experienced workers
    - Not affected, their equilibrium wages are well above the minimum
    - Minimum wage - not binding
  - Teenage labor – least skilled and least experienced
    - Low equilibrium wages
    - Willing to accept a lower wage in exchange for on-the-job training
    - Minimum wage – binding

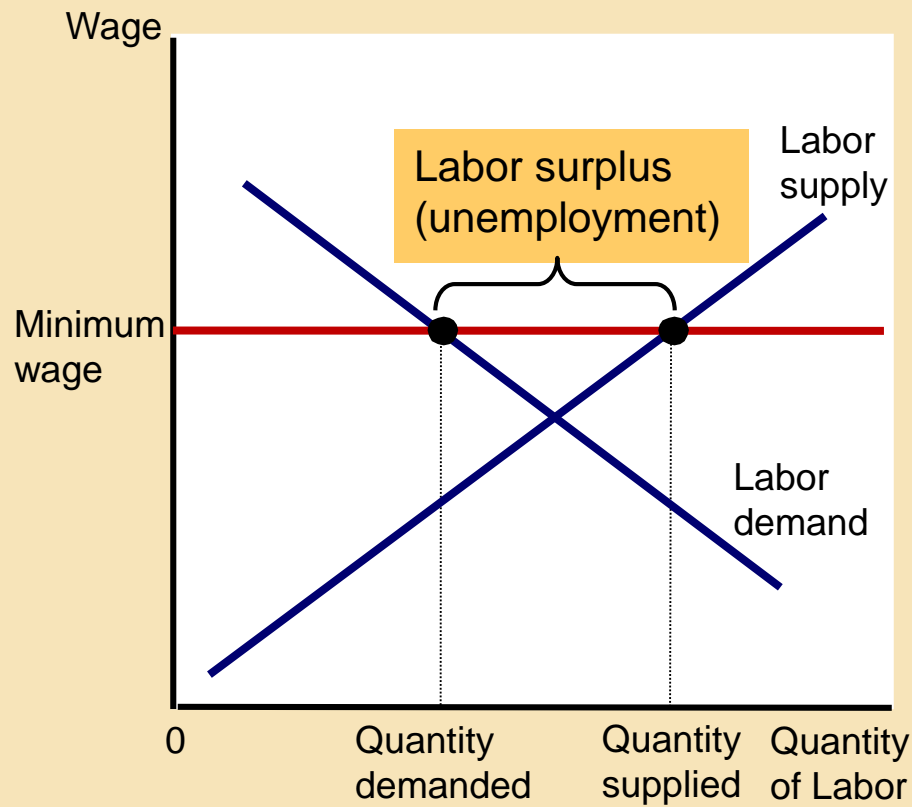
- Teenage labor market
  - A 10% increase in the minimum wage depresses teenage employment between 1 and 3%
  - Some teenagers who are still attending high school choose to drop out and take jobs
    - Displace other teenagers who had already dropped out of school and who now become unemployed

# How the Minimum Wage Affects the Labor Market

(a) A Free Labor Market



(b) A Labor Market with a Binding Minimum Wage



Panel (a) shows a labor market in which the wage adjusts to balance labor supply and labor demand. Panel (b) shows the impact of a binding minimum wage. Because the minimum wage is a price floor, it causes a surplus: The quantity of labor supplied exceeds the quantity demanded. The result is unemployment.

# Controls on Prices

- **Evaluating price controls**
  - Markets are usually a good way to organize economic activity
    - Economists usually oppose price ceilings and price floors



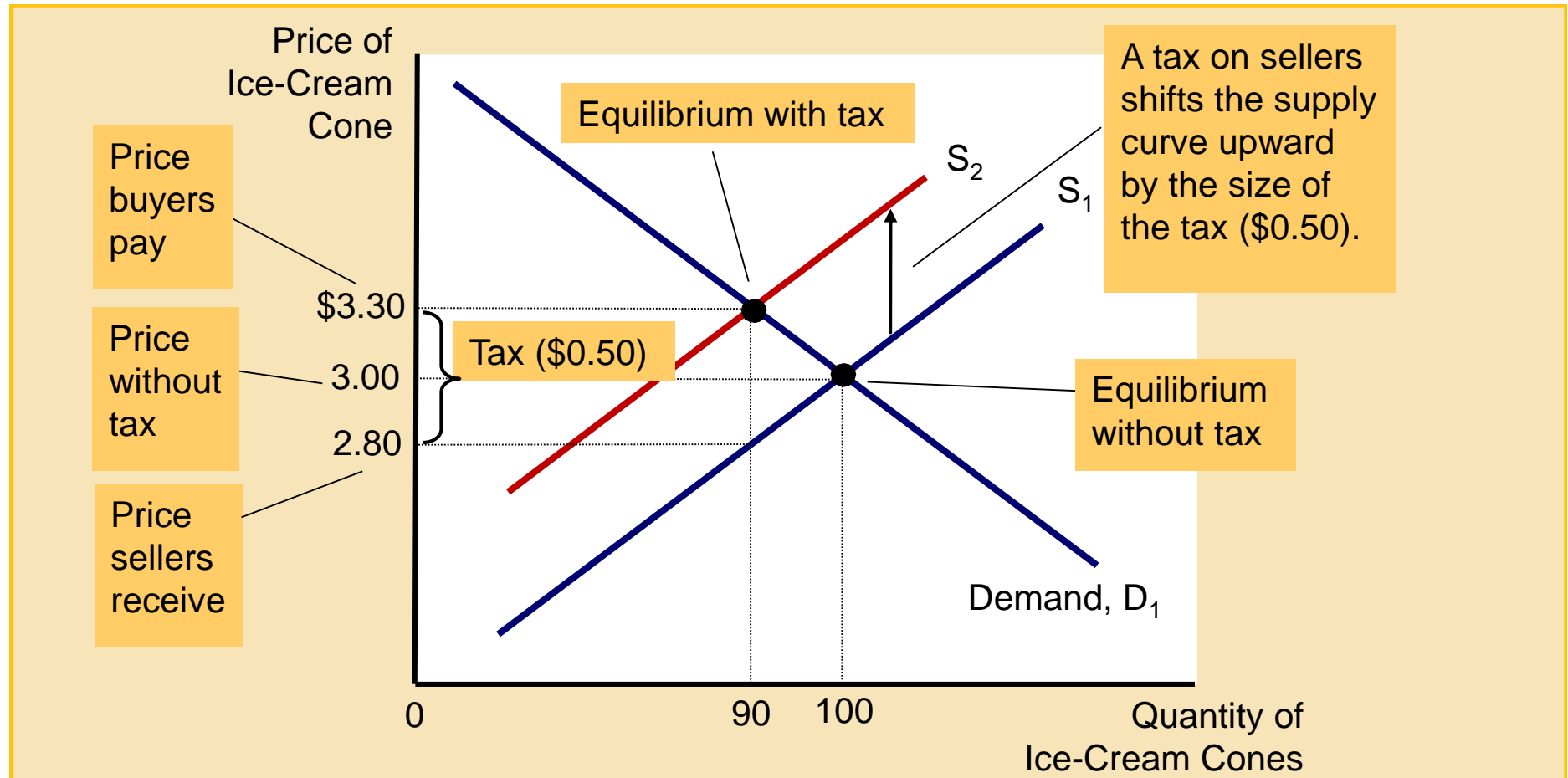
# Controls on Prices

- 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

# Tax

- **Government use taxes**
  - To raise revenue for public projects
- **Tax incidence**
  - Manner in which the burden of a tax is shared among participants in a market

# A Tax on Sellers



When a tax of \$0.50 is levied on sellers, the supply curve shifts up by \$0.50 from  $S_1$  to  $S_2$ . The equilibrium quantity falls from 100 to 90 cones. The price that buyers pay rises from \$3.00 to \$3.30. The price that sellers receive (after paying the tax) falls from \$3.00 to \$2.80. Even though the tax is levied on sellers, buyers and sellers share the burden of the tax.

# Taxes

- Tax levied on sellers of a good
  - Immediate impact on sellers - shift in supply
  - Supply curve shifts left
  - Higher equilibrium price
  - Lower equilibrium quantity
  - The tax – reduces the size of the market

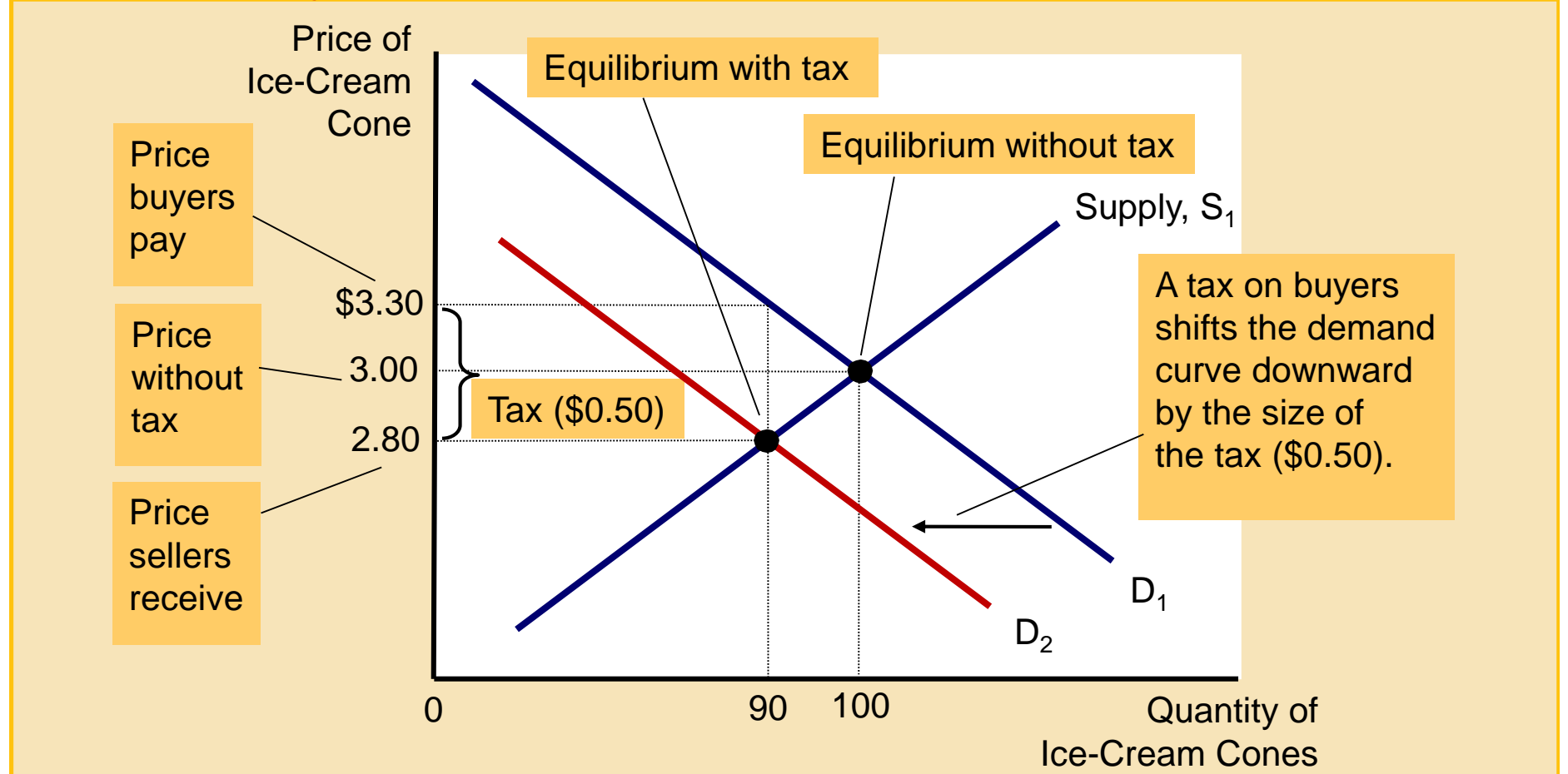
# Taxes

- Tax levied on sellers of a good
  - Taxes discourage market activity
  - Buyers and sellers share the burden of tax
  - Buyers pay more
    - Worse off
  - Sellers receive less
    - Get the higher price but pay the tax
    - Overall: effective price fall
    - Worse off

# Taxes

- Tax levied on buyers of a good
  - Initial impact on the demand
  - Demand curve shifts left
  - Lower equilibrium price
  - Lower equilibrium quantity
  - The tax – reduces the size of the market

# A Tax on Buyers



When a tax of \$0.50 is levied on buyers, the demand curve shifts down by \$0.50 from  $D_1$  to  $D_2$ . The equilibrium quantity falls from 100 to 90 cones. The price that sellers receive falls from \$3.00 to \$2.80. The price that buyers pay (including the tax) rises from \$3.00 to \$3.30. Even though the tax is levied on buyers, buyers and sellers share the burden of the tax.

# Taxes

- Tax levied on buyers of a good
  - Buyers and sellers share the burden of tax
  - Sellers get a lower price
    - Worse off
  - Buyers pay a higher market price
    - Effective price (with tax) rises
    - Worse off

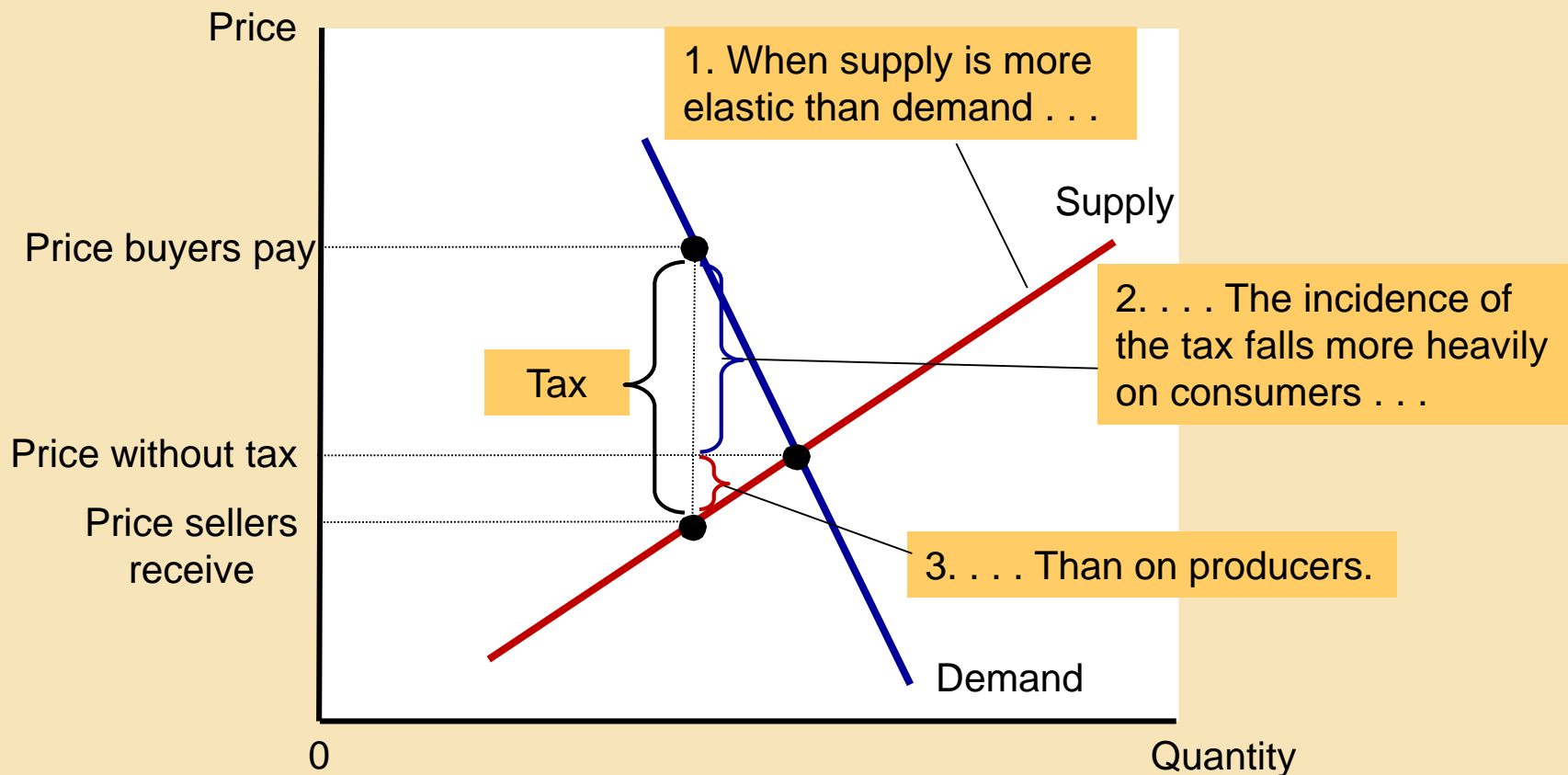


# Taxes

- Elasticity and tax incidence
  - Very elastic supply and relatively inelastic demand
    - Sellers – small burden of tax
    - Buyers – most of the burden
  - Relatively inelastic supply and very elastic demand
    - Sellers – most of the tax burden
    - Buyers – small burden

# How the Burden of a Tax Is Divided (a)

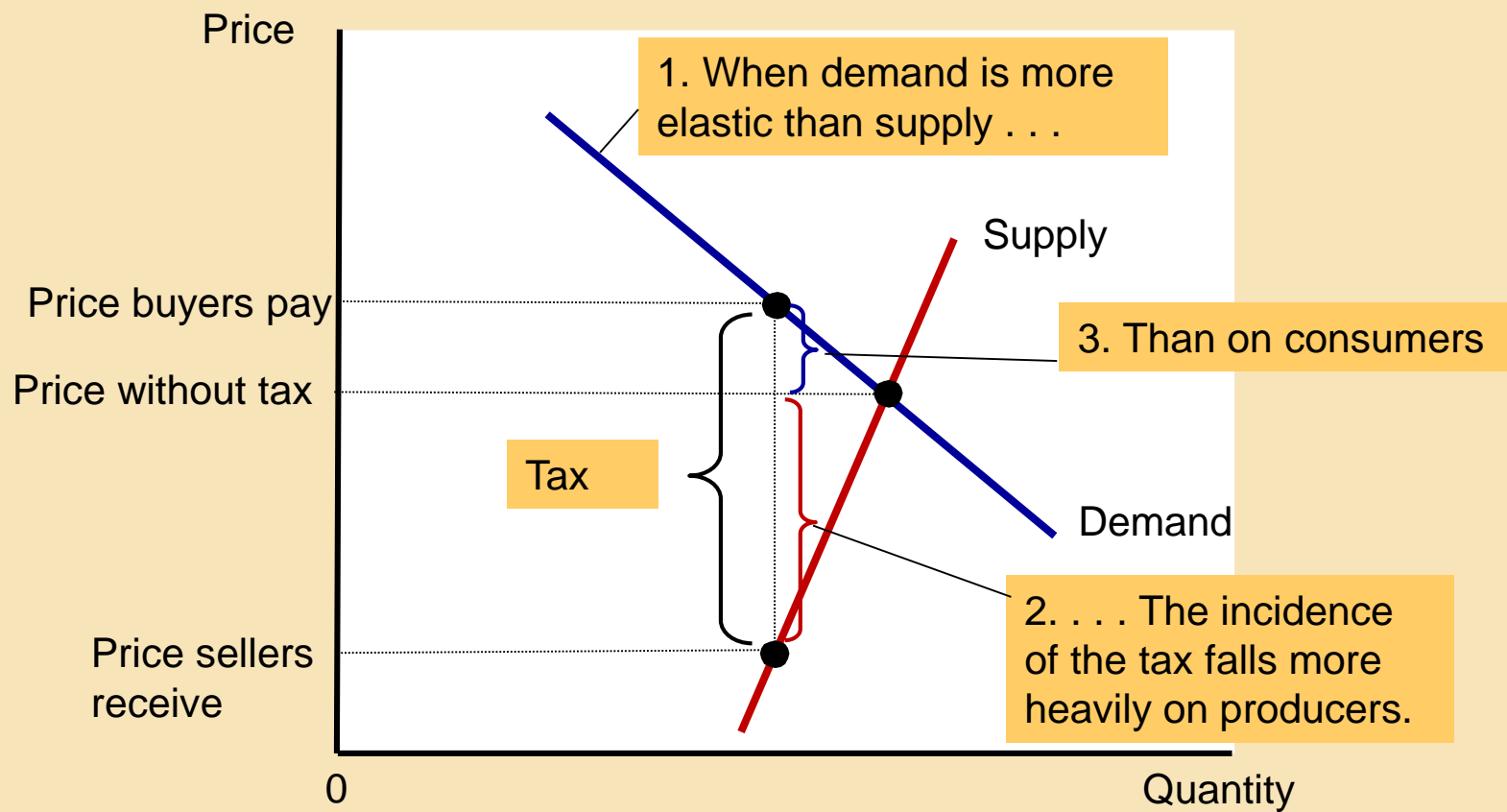
(a) Elastic Supply, Inelastic Demand



In panel (a), the supply curve is elastic, and the demand curve is inelastic. In this case, the price received by sellers falls only slightly, while the price paid by buyers rises substantially. Thus, buyers bear most of the burden of the tax.

# How the Burden of a Tax Is Divided (b)

(b) Inelastic Supply, Elastic Demand



In panel (b), the supply curve is inelastic, and the demand curve is elastic. In this case, the price received by sellers falls substantially, while the price paid by buyers rises only slightly. Thus, sellers bear most of the burden of the tax.

# Taxes

- Tax burden

- Falls more heavily on the side of the market that is less elastic
- Small elasticity of demand
  - Buyers do not have good alternatives to consuming this good
- Small elasticity of supply
  - Sellers do not have good alternatives to producing this good

- 1990 - 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 - quite elastic
    - Supply - relatively inelastic

- Outcome:
  - Burden of a tax falls largely on the suppliers
    - Relatively inelastic supply
- 1993: most of the luxury tax was repealed



# 谢谢!

# THANK YOU!

