



Applications of supply and demand

Comparative statics and
government policy

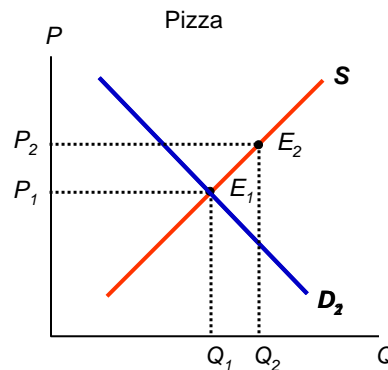


Comparative statics

- The simple supply and demand model we have developed can be used to analyze the effects of many events on a market
- Here, we will start by analyzing the impacts of changes in supply and demand while holding other factors fixed
 - This type of analysis is called a “comparative static”
- We will then use the model to examine how government policy influences outcomes in the market

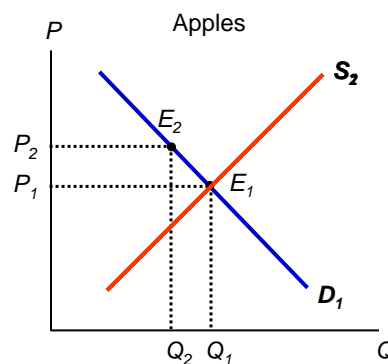
Shifts of the demand curve

- Example:
 - Beer and pizza are complements
 - Suppose the price of beer falls.
- This will result in an increase in demand
 - “a shift of the demand curve”
- Along with this will be an increase in the quantity supplied
 - “a movement along the supply curve”



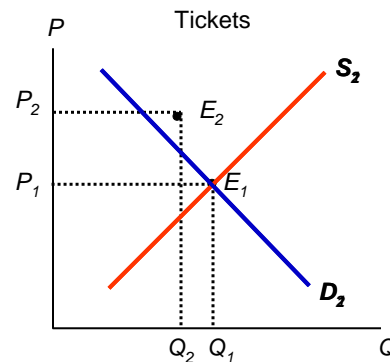
Shifts of the supply curve

- Example:
 - Market for apples
 - Suppose the price of wine increases
- This will result in a decrease in supply
 - “a shift of the supply curve”
- There is also a decrease in the quantity demanded
 - “a movement along the demand curve”



Simultaneous shifts

- What if both demand and supply shift?
- Example:
 - Market for scalped tickets
 - An unexpected addition to the concert
- We know the price rises
- Unclear what will happen to the quantity exchanged
- In this example: big decrease in supply and a small increase in demand
 - Quantity falls



Shifts in the opposite direction

- When supply and demand shift in opposite directions we can predict what happens to price but not quantity
 - Effect on quantity depends on relative size of shifts
- When demand increases and supply decreases price rises but the change in quantity is ambiguous
- When demand decreases and supply increases price falls but the change in quantity is ambiguous

Shifts in the same direction

- When supply and demand shift in the same direction we can predict what happens to quantity but not price
 - Effect on price depends on relative size of shifts
- When both demand and supply increase, quantity rises but the change in price is ambiguous
- When demand and supply decrease quantity falls but the change in price is ambiguous

Government policy

- Government sometimes attempts alternative rationing mechanisms
- Usually on the grounds of moral fairness
 - Equilibrium price of necessities is too high
 - Wages are too low to live on
 - Price of produce is too low to support farming
- Three mechanisms we will study are:
 1. Price Ceilings/Floors
 2. Taxes
 3. Quotas

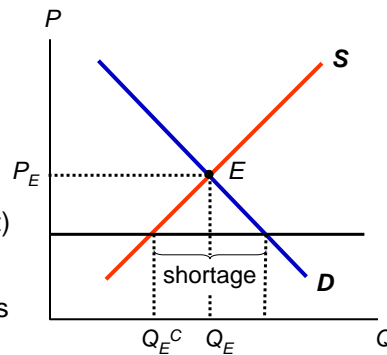
Price ceiling

- Suppose a *price ceiling* is introduced below the equilibrium price.

- Example: rent control

This causes:

- Persistent shortage
 - Alternate rationing (black market)
- Inefficiency
 - Economic allocation - consumers
 - Wasted resources
 - Inefficiently low quality



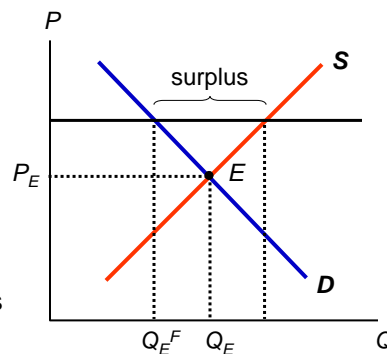
Price floor

- Suppose a *price floor* is introduced above the equilibrium price.

- Example: minimum wage

This causes:

- Persistent surplus
 - Alternate rationing
- Inefficiency
 - Economic allocation – producers
 - Wasted resources
 - Inefficiently high quality

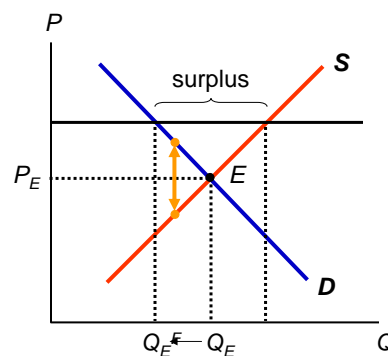


Equilibrium and efficiency

- The demand curve tells you:
 - At any given price, what is the quantity demanded?
- But it also tells you:
 - How much is a consumer *willing to pay* at most for each unit of the good?
- Similarly, the supply curve tells you:
 - At any given price, what is the quantity supplied?
- But it also tells you:
 - What is the least amount the producer is willing to sell each unit of the good for (minimum cost)?

Equilibrium and efficiency

- If the market is not in equilibrium, it's *inefficient*.
 - *Inefficient* means some person could be made better off without making other people worse off.
- Example: price floor
 - At least one consumer could be made better off without making others worse off.
 - But the price floor prevents that trade (it would take place below the price floor).

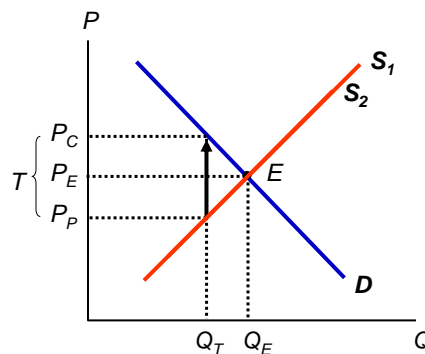


Taxes

- We will study *excise taxes*
 - An *excise tax* is a tax of a certain dollar amount on each unit bought or sold
 - This can be imposed either on producers or on consumers (the *legal incidence* of the tax)
 - Tax on Producer
 - Government collects $\$T$ per unit sold
 - As though revenue per unit has fallen by $\$T$
 - Tax on Consumer
 - Government collects $\$T$ per unit purchased
 - As though the price per unit has increased by $\$T$

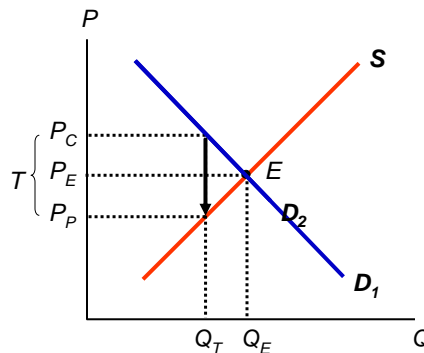
An excise tax on producers

- An excise tax on producers of $\$T$ per unit shifts the supply curve up.
 - Each unit now costs $\$T$ more to produce.
- The *economic incidence* of the tax is split between consumers and producers.



An excise tax on consumers

- An excise tax on consumers of $\$T$ per unit shifts the demand curve down.
 - For each unit consumers are willing to pay $\$T$ less.
- The *economic incidence* of the tax is split between consumers and producers.

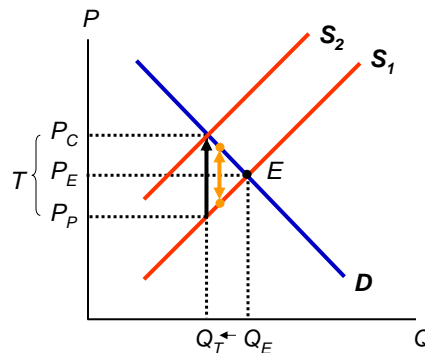


Economic incidence of a tax

- The economic incidence (who really pays the tax) does not depend on whether consumers or producers are legally responsible for paying the tax.
 - In our two examples, if we assume that the amount of the tax (T) is the same, the results are exactly the same
 - Same increase in price to consumers
 - Same decrease in price to producers
- How exactly the tax is split up between consumers and producers we will look at in the next topic.

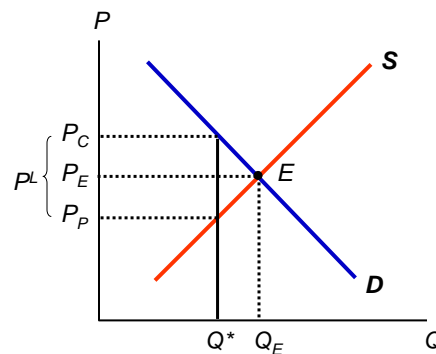
Taxes and efficiency

- Taxes create inefficiency:
 - At least one consumer could be made better off without making others worse off.
 - But the tax prevents that trade (not the whole tax T would be paid).
- The tax “drives a wedge” between producers and consumers



Quotas

- A quota simply limits the quantity of a good sold.
 - Achieved by selling quota licenses.
- Quotas have the same impact as an excise tax
- The difference in the price of the good is exactly matched by the price of a quota license.

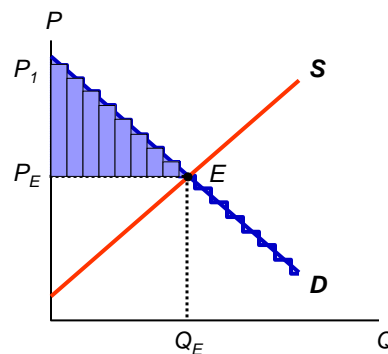


Supply and demand and welfare

A story about happiness in dollars: consumer and producer surplus

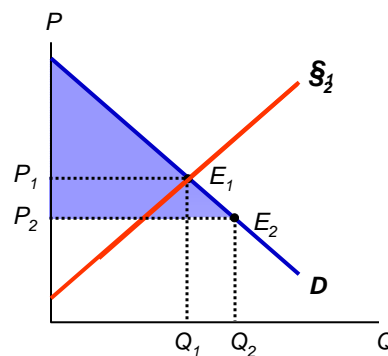
Consumer surplus

- The demand curve shows the *willingness to pay* for each unit of the good.
- The consumer who buys the first unit of the good would have been willing to pay P_1 but only has to pay P_E .
 - She experiences *individual consumer surplus* of $P_1 - P_E$.
- *(Total) consumer surplus* is the sum of each individual's consumer surplus.



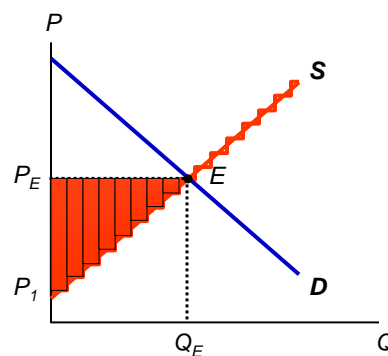
Changes in consumer surplus

- Suppose the equilibrium price falls.
 - (Maybe because of an increase in supply.)
- Consumer surplus increases for two reasons:
 - Increase to original buyers
 - New consumer surplus to new buyers



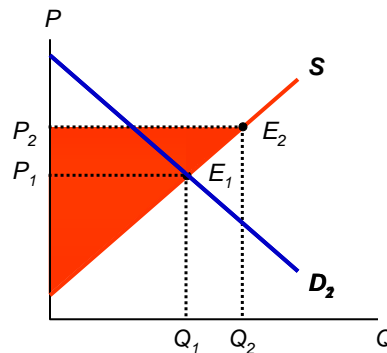
Producer surplus

- The supply curve shows the *minimum cost* for each unit of the good.
- The producer who sells the first unit of the good would have been willing to sell for P_1 but actually gets P_E .
 - She experiences *individual producer surplus* of $P_E - P_1$.
- (*Total*) *producer surplus* is the sum of each individual's producer surplus.



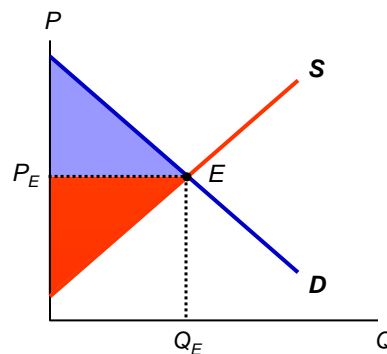
Changes in producer surplus

- Suppose the equilibrium price rises.
 - (Maybe because of an increase in demand.)
- Producer surplus increases for two reasons:
 - Increase to original buyers
 - New producer surplus to new buyers



Total surplus

- Total surplus is the sum of (total) consumer surplus and (total) producer surplus.



Taxes and efficiency

- Taxes create inefficiency (a loss of total surplus).
- Available to society:
 - Consumer surplus
 - Producer surplus
 - Tax revenue ($Q_T \cdot T$)
- Lost to society:
 - Deadweight loss

