



# Applications of supply and demand

Comparative statics and  
government policy



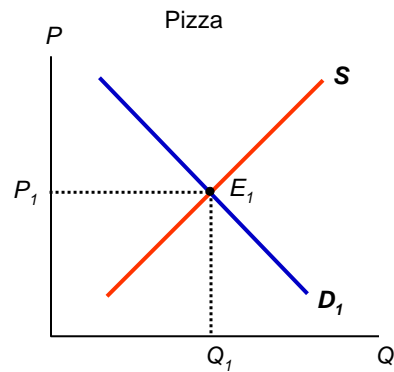
## Comparative statics

- 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
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- We will then use the model to examine how government policy influences outcomes in the market

## Shifts of the demand curve

- Example:

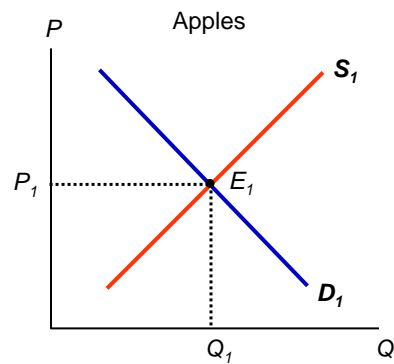
- Beer and pizza are complements
- Suppose the price of beer falls.



## Shifts of the supply curve

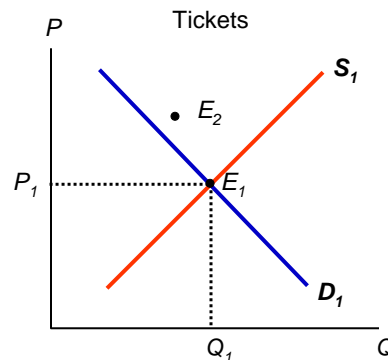
- Example:

- Market for apples
- Suppose the price of wine increases



## Simultaneous shifts

- What if both demand and supply shift?
- Example:
  - Market for scalped tickets
  - An unexpected addition to the concert
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- In this example: big decrease in supply and a small increase in demand
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## Shifts in the opposite direction

- When supply and demand shift in opposite directions we can predict what happens to price but not quantity
  -
- When demand increases and supply decreases:
- When demand decreases and supply increases:

## Shifts in the same direction

- When supply and demand shift in the same direction we can predict what happens to quantity but not price
  -
- When both demand and supply increase:
- When demand and supply decrease:

## Government policy

- Government sometimes attempts alternative rationing mechanisms
- Usually on the grounds of moral fairness
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- Three mechanisms we will study are:
  1. Price Ceilings/Floors
  2. Taxes
  3. Quotas

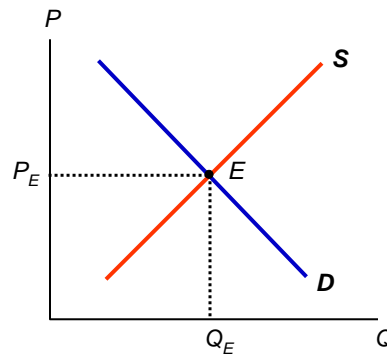
## Price ceiling

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

- Example: rent control

This causes:

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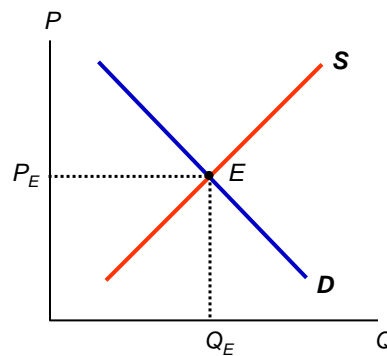
## Price floor

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

- Example: minimum wage

This causes

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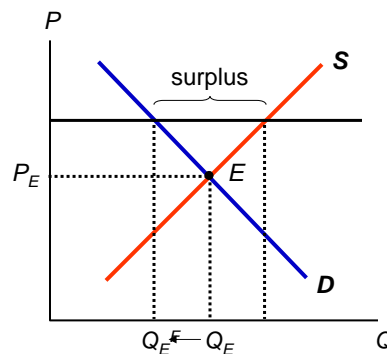


## Equilibrium and efficiency

- The demand curve tells you:
  - At any given price, what is the quantity demanded?
- But it also tells you:
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- Similarly, the supply curve tells you:
  - At any given price, what is the quantity supplied?
- But it also tells you:
  -

## Equilibrium and efficiency

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

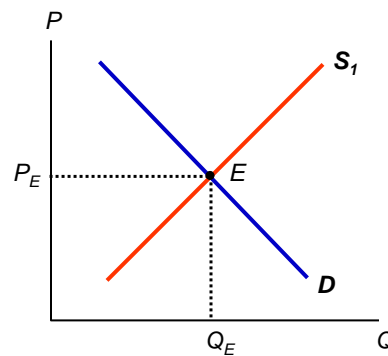


# Taxes

- 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
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  - Tax on Consumer
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## An excise tax on producers

- An excise tax on producers of \$ $T$  per unit shifts the supply curve up.
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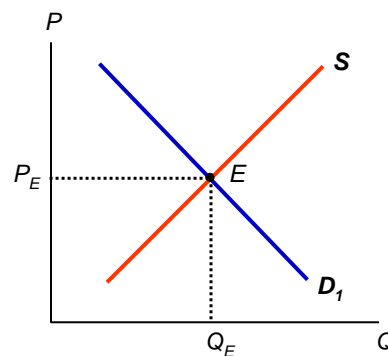


## An excise tax on consumers

- An excise tax on consumers of  $\$T$  per unit shifts the demand curve down.

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## Economic incidence of a tax

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- In our two examples, if we assume that the amount of the tax (T) is the same, the results are exactly the same

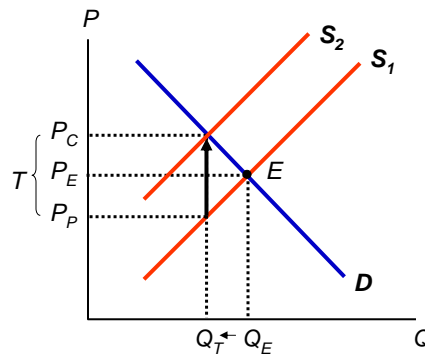
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- How exactly the tax is split up between consumers and producers we will look at in the next topic.



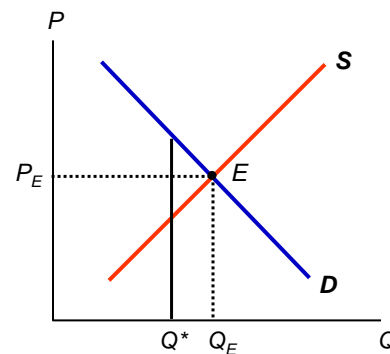
## Taxes and efficiency

- 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).



## Quotas

- A quota simply limits the quantity of a good sold.
  - Achieved by selling quota licenses.

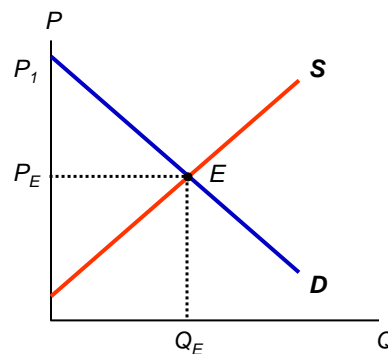


# Supply and demand and welfare

A story about happiness in dollars: consumer and producer surplus

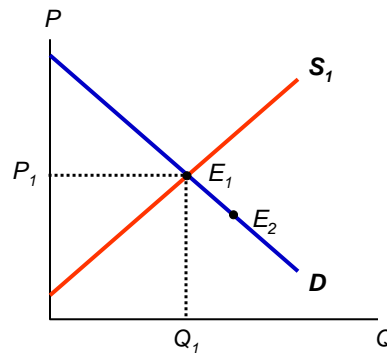
## Consumer surplus

- 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  $P_E$ .
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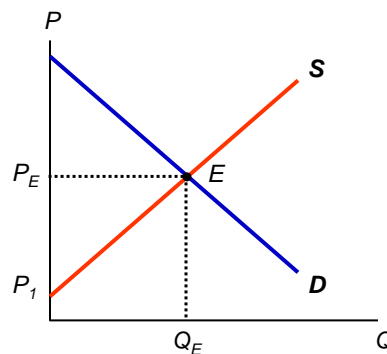
## Changes in consumer surplus

- Suppose the equilibrium price falls.
  - (Maybe because of an increase in supply.)
- Consumer surplus increases for two reasons:
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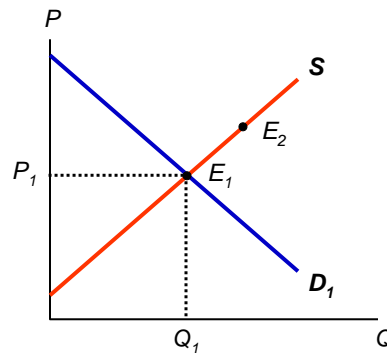
## Producer surplus

- 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  $P_E$ .
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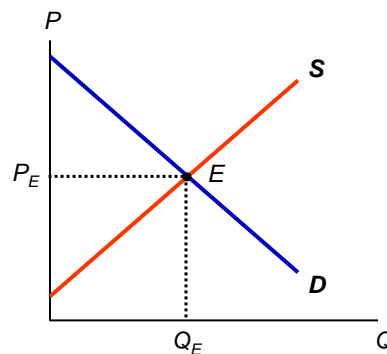
## Changes in producer surplus

- Suppose the equilibrium price rises.
  - (Maybe because of an increase in demand.)
- Producer surplus increases for two reasons:
  - 
  -



## 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:
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