Principles of Economics

Supply and Demand

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Course homepage: intro-economics.github.io

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Markets

- A **market** is a group of buyers and sellers of a particular good or service.
  - Buyers as a group determine **demand**.
  - Sellers as a group determine **supply**.
  - Examples: fish market, oil market, stock market
- Markets can take many forms.
  - Some are highly organized, e.g., NYSE, Christie's.
  - Many are less organized.

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Markets and Competition

- **Monopoly**: one seller (seller controls price)
- **Oligopoly**: few sellers (not always aggressive competition)
- **Monopolistically competitive market**: a market with many sellers offering similar but not identical products (**product differentiation**).
  - Sellers in monopolistically competitive markets have some **market power**: each is able to set its own price to a certain degree.
  - E.g., restaurants, clothing, hair salons
- **Perfectly competitive market**
  - Homogeneous good
  - Numerous buyers and sellers so that each has no influence over price.
    - ★ buyers and sellers are **price takers**.
  - Perfect information
- Most markets fall between monopoly and perfect competition.

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Supply and Demand

- Models of supply and demand are used to analyze the equilibrium of competitive markets.

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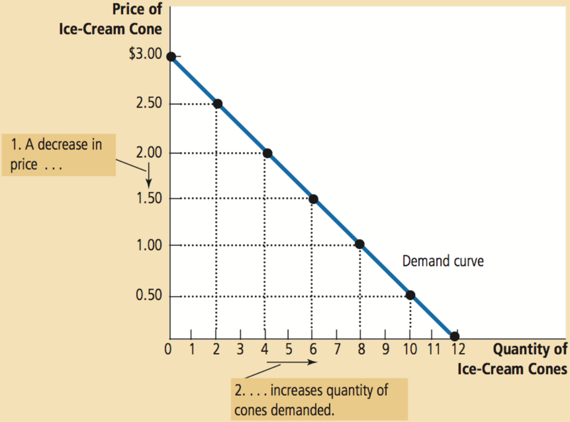
Individual Demand

Price of Ice-Cream Cone	Quantity of Cones Demanded
$0.00	12 cones
0.50	10
1.00	8
1.50	6
2.00	4
2.50	2
3.00	0



Catherine's demand for ice-cream cones

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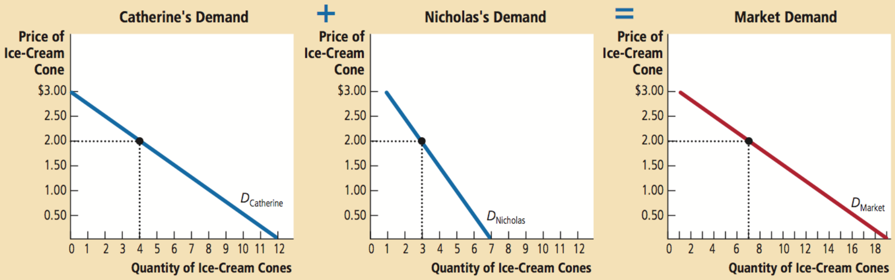
Market Demand

Price of Ice-Cream Cone	Catherine		Nicholas		Market
$0.00	12	+	7	=	19 cones
0.50	10		6		16
1.00	8		5		13
1.50	6		4		10
2.00	4		3		7
2.50	2		2		4
3.00	0		1		1



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Demand Shifters

1. Number of buyers
   - e.g., population growth, immigration, etc.

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Demand Shifters

1. Number of buyers
2. Income and wealth

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Normal and Inferior Goods

- **Normal good**: other things equal, increase in income/wealth leads to increase in demand.
- **Inferior good**: other things equal, increase in income/wealth leads to decrease in demand.
- *Note*: goods can be normal for some ranges of income/wealth and inferior for other ranges.

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Normal Goods

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Inferior Goods

McDonald's

Walmart
Save money. Live better.

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Demand Shifters

1. Number of buyers
2. Income and wealth
3. Price of related goods

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Substitutes and Complements

- Suppose that the price of milk increases. What will happen to the demand for soy milk?
- Demand for soy milk should increase, because people will substitute at least part of their consumption of milk by soy milk.
- Milk and Soy milk are substitute goods, or **substitutes**.

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Substitutes and Complements

- What if the price of cereal increases?
- Demand for both milk/soy milk should decrease, because cereal is usually consumed together with milk/soy milk.
- They are complementary goods, or **complements**.

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Substitutes and Complements

- **Substitutes**: two goods for which the demand for one rises when the price of the other increases.
  - Coffee and Tea
  - Pork and Beef
  - Toyota and Honda
- **Complements**: two goods for which the demand for one falls when the price of the other increases.
  - Bread and butter
  - Car and gas
  - Computers and software

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Substitutes and Complements

- "Gas prices knock bicycle sales, repairs into higher gear," *Associated Press*, 5/11/2008.
- "Camel demand soars in India," *Financial Times*, 5/2/2008.

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Demand Shifters

1. Number of buyers
2. Income and wealth
3. Price of related goods
4. Tastes and needs
    - If medical research shows that drinking coffee has significant health benefits, demand for coffee will increase.
    - If the weather becomes hotter, demand for air-conditioner will increase.

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Surge Pricing

"Two dollars"

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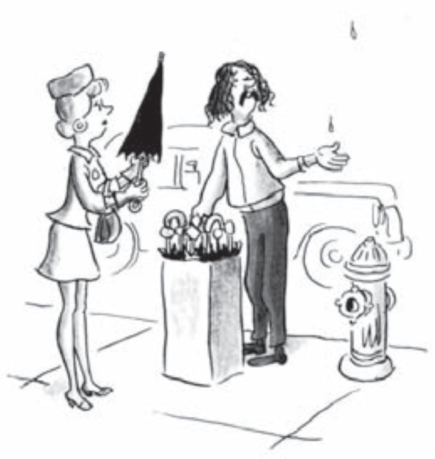
Surge Pricing



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Surge Pricing

"—and seventy-five cents."

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Demand Shifters

1. Number of buyers
2. Income and wealth
3. Price of related goods
4. Tastes and needs
5. Expectations
    - Expectations of future income, wealth, prices of related goods, tastes, needs, etc. can affect demand today.
    - Expectations of future higher prices can lead to higher demand today.

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Demand Shifters

Concept Check

What happens to the demand curve of a good if

- the number of potential buyers ↑
- the prices of substitute goods ↑
- the prices of complementary goods ↓
- expected future income ↑
  - if the good is a normal good
  - if the good is an inferior good

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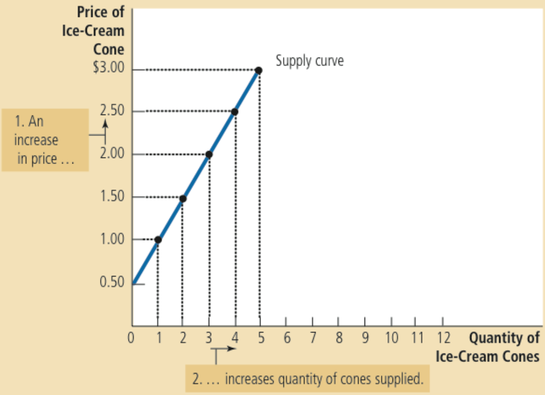
Individual Supply

Price of Ice-Cream Cone	Quantity of Cones Supplied
$0.00	0 cones
0.50	0
1.00	1
1.50	2
2.00	3
2.50	4
3.00	5



Ben's supply of ice-cream cones

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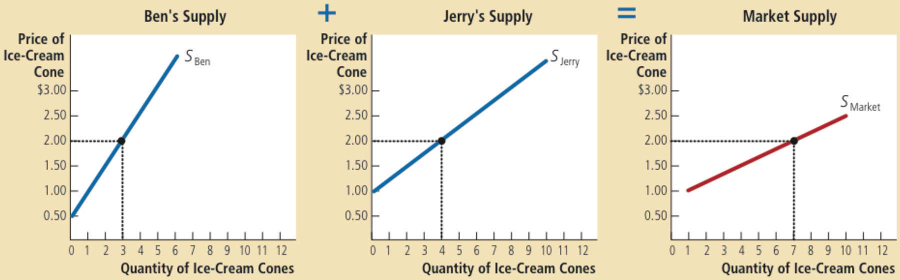
Market Supply

Price of Ice-Cream Cone	Ben		Jerry		Market
$0.00	0	+	0	=	0 cones
0.50	0		0		0
1.00	1		0		1
1.50	2		2		4
2.00	3		4		7
2.50	4		6		10
3.00	5		8		13



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Supply Shifters

1. Number of sellers
   - e.g., trade liberalization $\rightarrow$ supply $\uparrow$

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Supply Shifters

1. Number of sellers
2. Input Prices
   - e.g., milk price $\uparrow \rightarrow$ ice cream supply $\downarrow$

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Supply Shifters

1. Number of sellers
2. Input Prices
3. Technology
   - e.g., invention of the assembly line $\rightarrow$ manufactured goods supply $\uparrow$

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Supply Shifters

1. Number of sellers
2. Input Prices
3. Technology
4. Expectations
   - e.g., expectations of higher corn prices next year $\rightarrow$ corn supply $\downarrow$ this year (store for sale next year)

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Market Equilibrium

- Market equilibrium is determined by the intersection of the supply and demand curves.
- Supply and demand together determine the prices of the economy's goods and services.

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Supply and Demand Together

Demand Schedule

Price	Quantity
$0.00	19
0.50	16
1.00	13
1.50	10
2.00	7
2.50	4
3.00	1

Supply Schedule

Price	Quantity
$0.00	0
0.50	0
1.00	1
1.50	4
2.00	7
2.50	10
3.00	13

At $2.00, the quantity demanded is equal to the quantity supplied!

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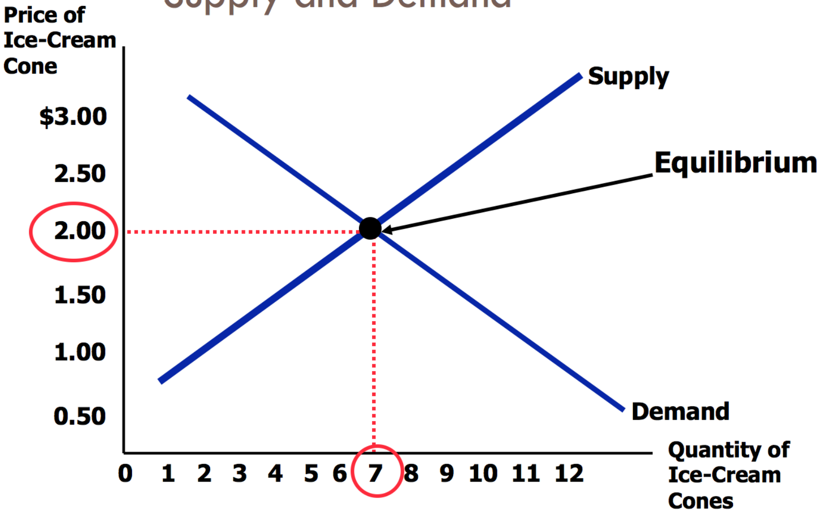
Equilibrium of Supply and Demand



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Market Equilibrium

- At the equilibrium price, quantity demanded = quantity supplied.
- The equilibrium price is also called the **market-clearing price**.
- In market economies, prices adjust to balance supply and demand. These equilibrium prices are the signals that guide economic decisions and thereby allocate scarce resources.

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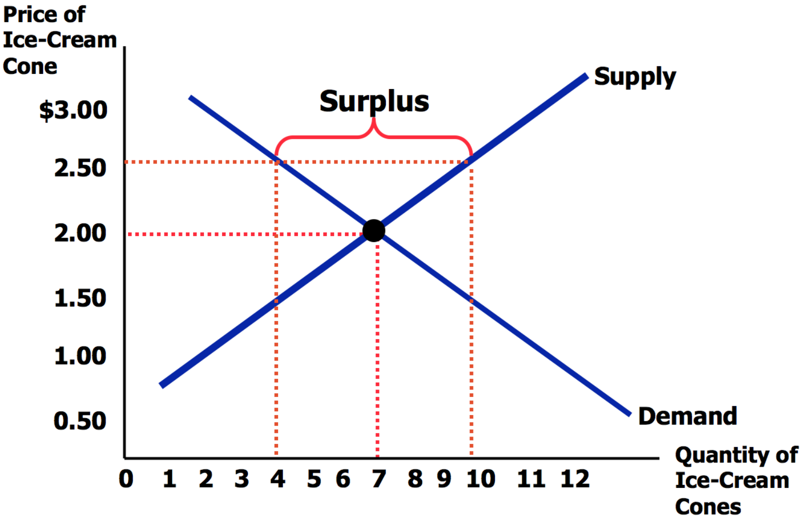
Excess Supply



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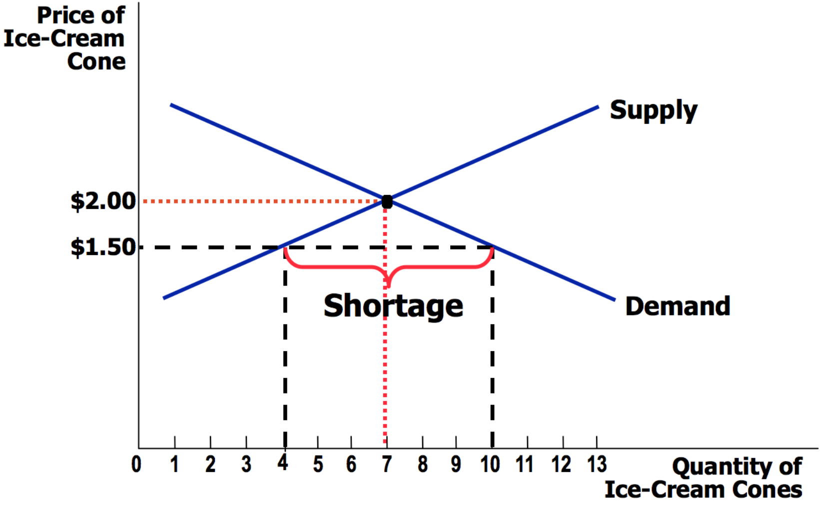
Excess Demand



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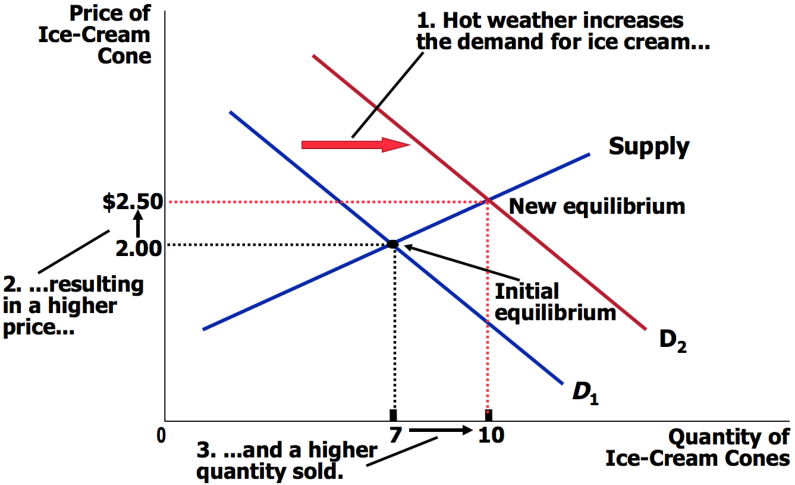
How an Increase in Demand Affects the Equilibrium



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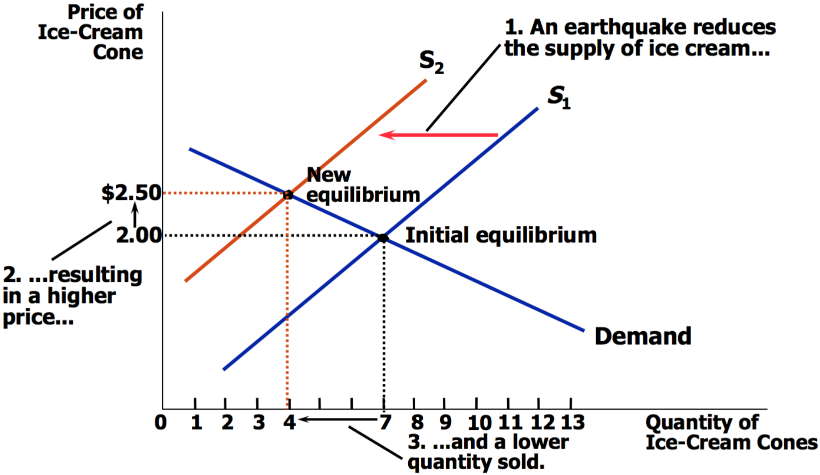
How a Decrease in Supply Affects the Equilibrium



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What happens to equilibrium price and quantity when supply or demand shifts

	No Change In Supply	An Increase In Supply	A Decrease In Supply
No Change In Demand	P same Q same	P down Q up	P up Q down
An Increase In Demand	P up Q up	P ambiguous Q up	P up Q ambiguous
A Decrease In Demand	P down Q down	P down Q ambiguous	P ambiguous Q down

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Estimating Demand and Supply

- The prices and quantities sold of a good that we observe in a market are equilibrium prices and quantities.
- Changes in equilibrium price and quantity can reflect changes in both demand and supply.
- Therefore, we often cannot directly infer the shape of the demand curve or the shape of the supply curve from observed market prices and quantities. This is called the **simultaneity problem**.
- To estimate the shape of the demand curve, we want the demand curve to stay constant while the supply curve shifts.
- To estimate the shape of the supply curve, we want the supply curve to stay constant while the demand curve shifts.

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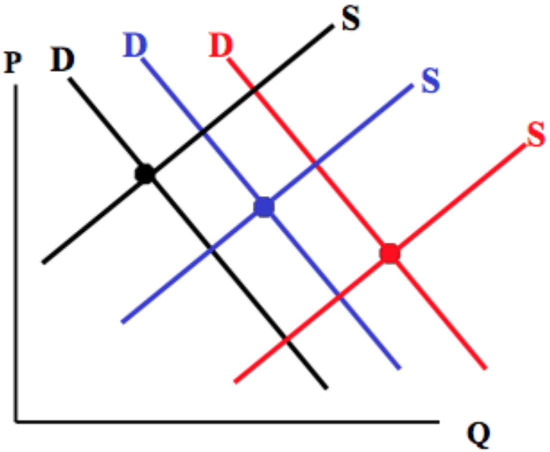
Estimating Demand and Supply



Simultaneity

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Acknowledgement

Part of this lecture is adapted from the following source(s):

- Mankiw, N. G. 2017. *Principles of Economics*, 8^{th} edition, Cengage Learning.

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