

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.

Markets and Competition

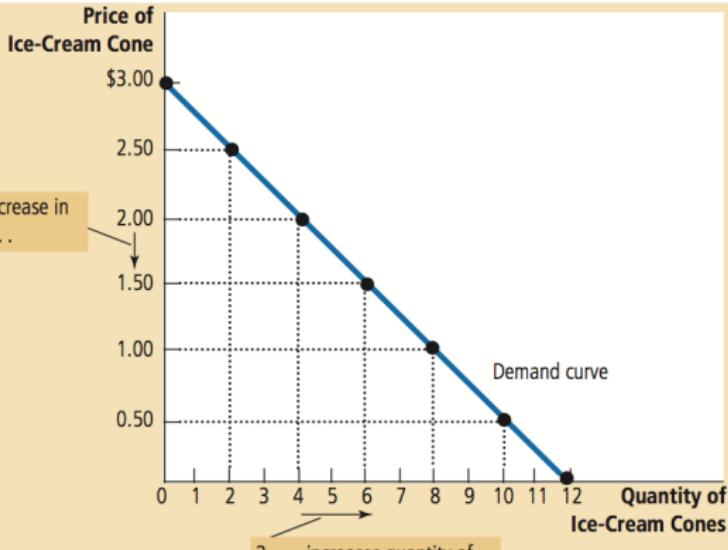
- **Monopoly:** one seller (seller controls price)
- **Oligopoly:** few sellers (not always aggressive competition)
- **Monopolistically competitive market:** a market with many sellers offering similar but not identical products (**product differentiation**).
 - ▶ Sellers in monopolistically competitive 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.

Supply and Demand

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

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

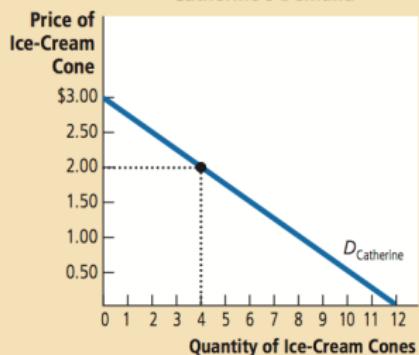


Catherine's demand for ice-cream cones

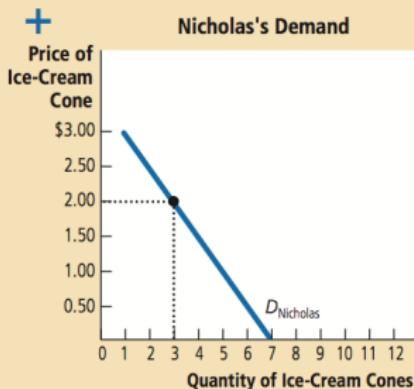
Market Demand

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

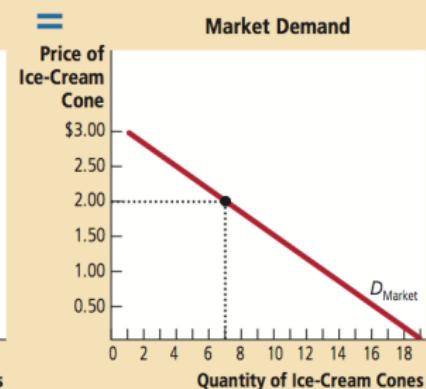
Catherine's Demand



Nicholas's Demand



Market Demand



Demand Shifters

① Number of buyers

- ▶ e.g., population growth, immigration, etc.

Demand Shifters

- ① Number of buyers
- ② Income and wealth

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.

Normal Goods



Inferior Goods



Demand Shifters

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

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**.

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**.

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

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.

Demand Shifters

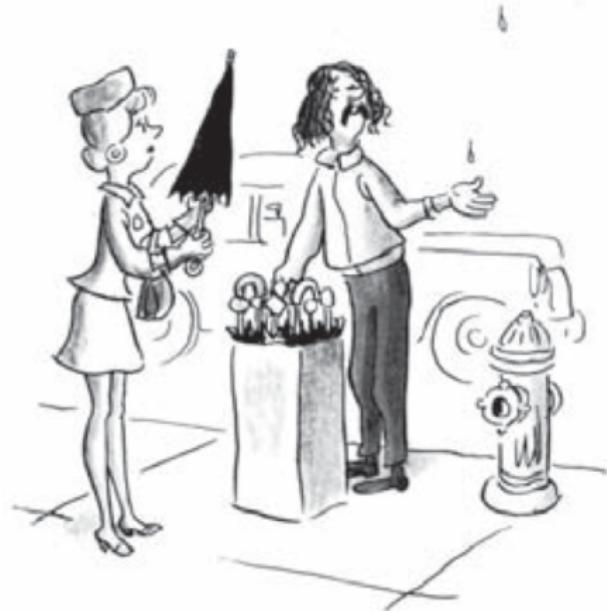
- ① Number of buyers
- ② Income and wealth
- ③ Price of related goods
- ④ Tastes and needs
 - ▶ If medical research shows that drinking coffee has significant health benefits, demand for coffee will increase.
 - ▶ If the weather becomes hotter, demand for air-conditioner will increase.

Surge Pricing



“Two dollars”

Surge Pricing



Surge Pricing



“—and seventy-five cents.”

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.

Demand Shifters

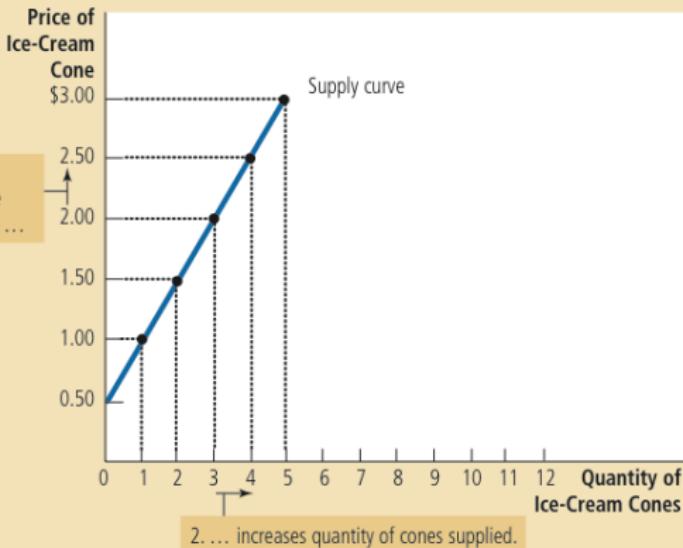
Concept Check

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

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

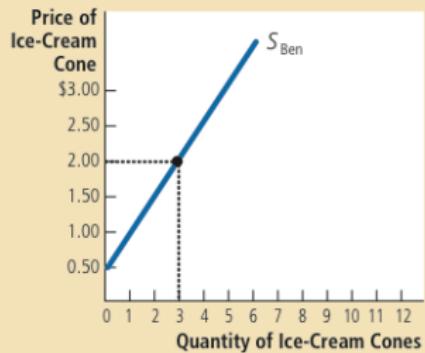


Ben's supply of ice-cream cones

Market Supply

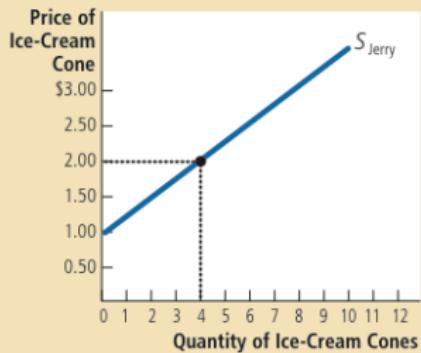
Price of Ice-Cream Cone	Ben	Jerry	Market
\$0.00	0	+	0 cones
0.50	0	0	0
1.00	1	0	1
1.50	2	2	4
2.00	3	4	7
2.50	4	6	10
3.00	5	8	13

Ben's Supply



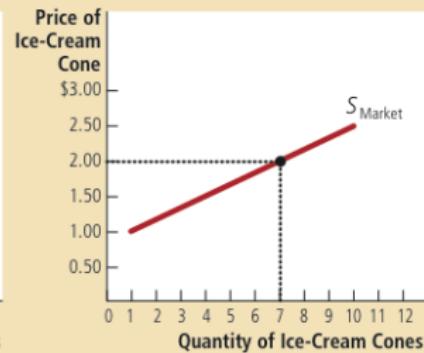
+

Jerry's Supply



=

Market Supply



Supply Shifters

① Number of sellers

- ▶ e.g., trade liberalization → supply ↑

Supply Shifters

① Number of sellers

② Input Prices

- ▶ e.g., milk price $\uparrow \rightarrow$ ice cream supply \downarrow

Supply Shifters

- ① Number of sellers
- ② Input Prices
- ③ Technology
 - ▶ e.g., invention of the assembly line → manufactured goods supply ↑

Supply Shifters

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

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.

Supply and Demand Together

Demand Schedule

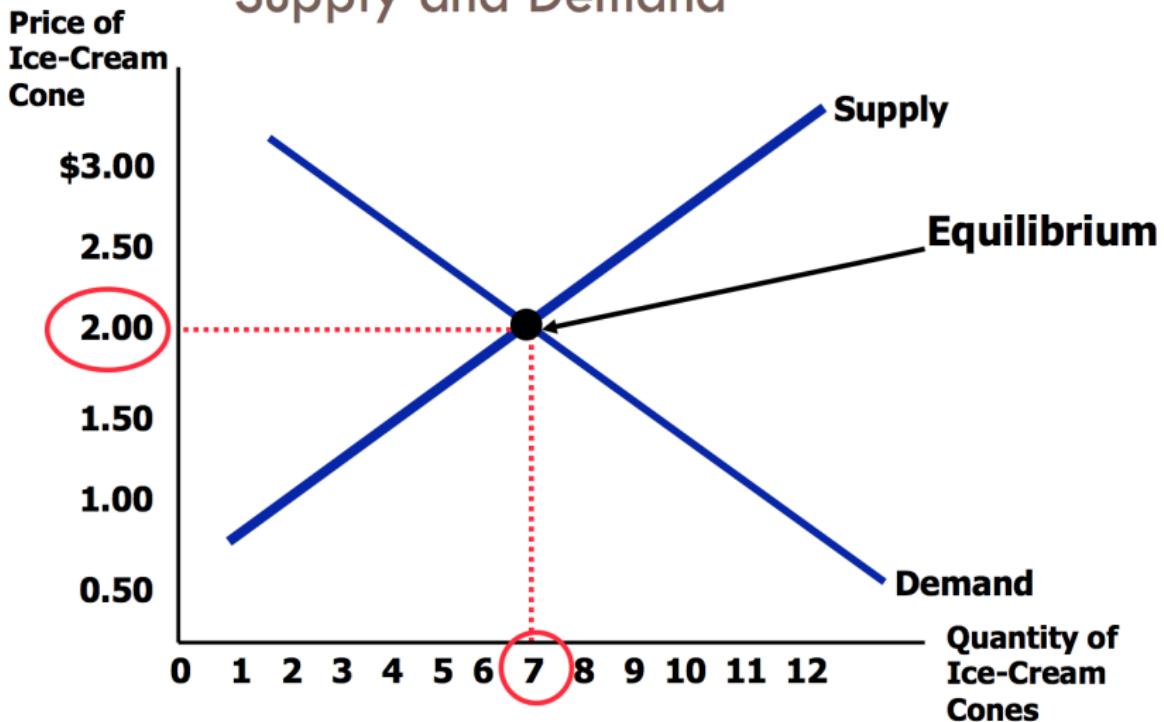
Price	Quantity
\$0.00	19
0.50	16
1.00	13
1.50	10
2.00	7
2.50	4
3.00	1

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!

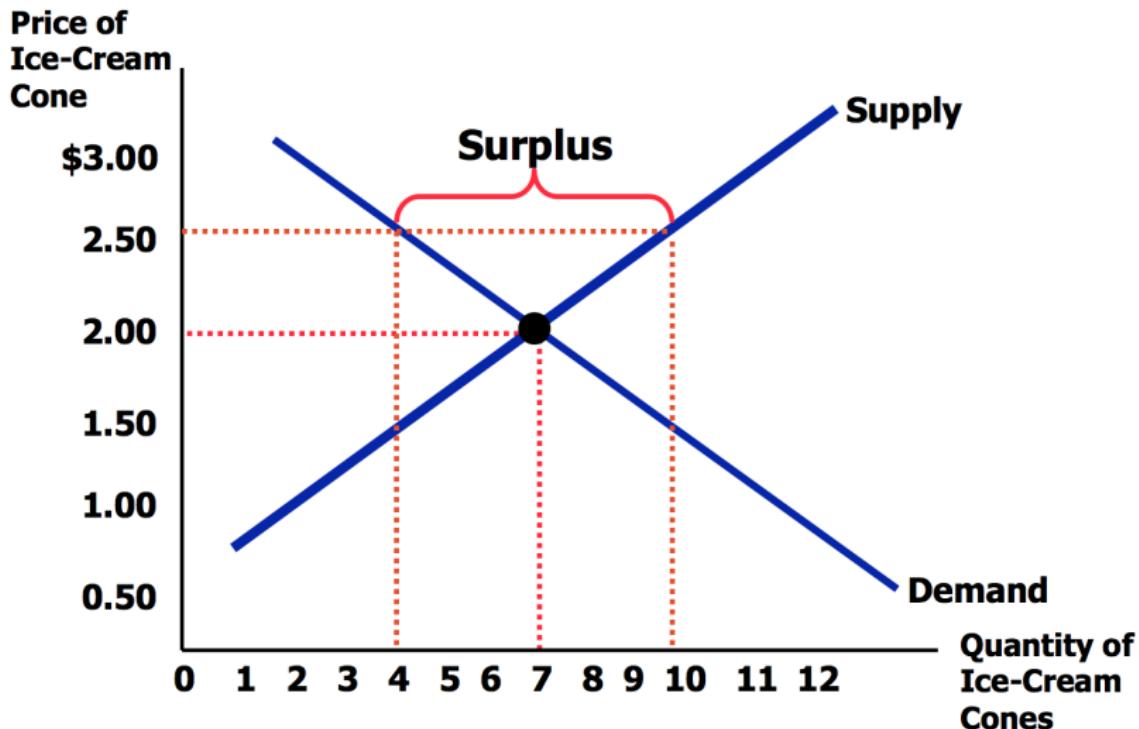
Equilibrium of Supply and Demand



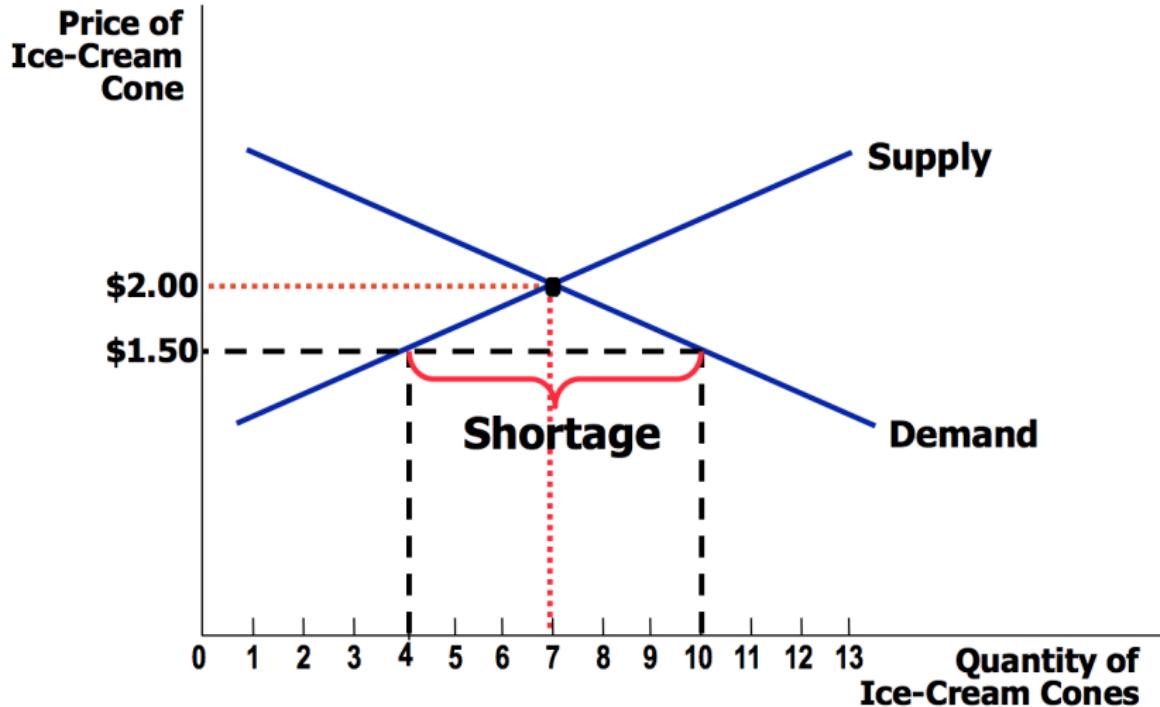
Market Equilibrium

- 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.

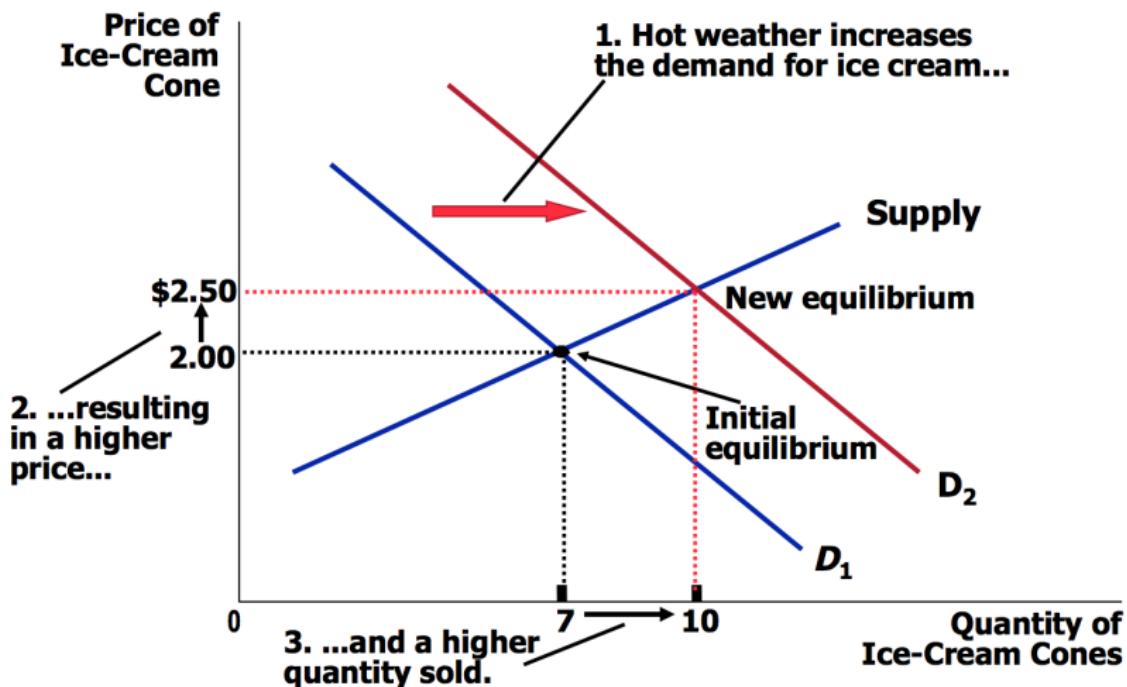
Excess Supply



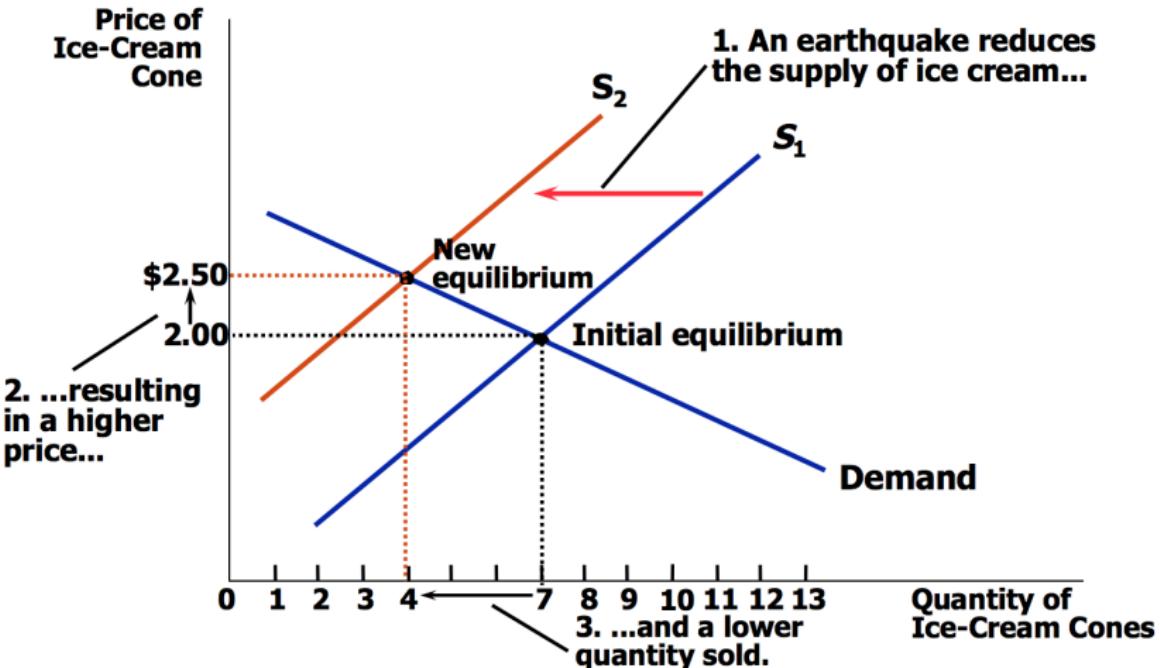
Excess Demand



How an Increase in Demand Affects the Equilibrium



How a Decrease in Supply Affects the Equilibrium



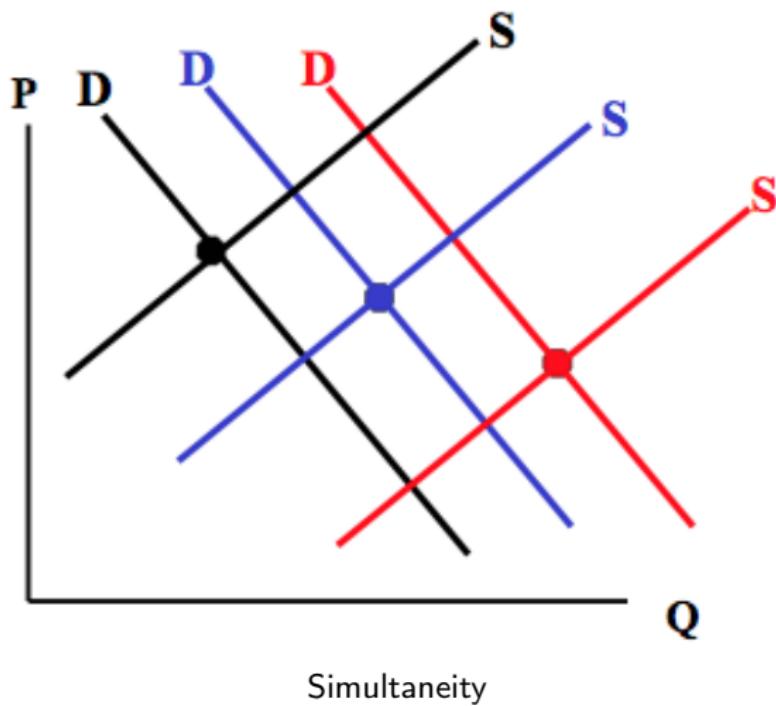
What happens to equilibrium price and quantity when supply or demand shifts

	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

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.

Estimating Demand and Supply



Acknowledgement

Parts of this lecture, including examples and figures, are adopted from the following sources:

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