Competitive Markets: Market Forces At Work

Overview and Outline

- Demand-Supply Framework
  - Market Demand
  - Market Supply
  - Market Equilibrium
- Equilibrium Analysis
  - Demand Shift, Supply Shift
  - Equilibrium Adjustment

A Perfectly Competitive Market

Conditions of a perfectly competitive market:

- The product is homogeneous
- There are many sellers in the market
- There are many buyers in the market
- Sellers can freely enter or exit the market
- Buyers and sellers are equally informed about market conditions (no asymmetric information).

The Demand-Supply Framework

- In a perfectly competitive market, individual buyers/sellers have no impact on the market because the amount they buy/sell is small relative to the market.
- Buyers determine the market *demand*.
- Sellers determine the market *supply.*
- Market price is determined by the interaction of the buyers (demand) and sellers (supply) in the market.

Determinants of Individual Demand

- What factors affect the demand for a good (or service)?
  1. Price of the good
  2. Tastes and Preferences
  3. Income
  4. Prices of related goods
  5. Expectations
- To understand the demand behavior of consumers we will examine the effect of one factor at a time, holding everything else constant (*ceteris paribus*).

A Demand Schedule

- Given factors 2 – 5 (i.e. holding those factors constant), we can examine the relationship between *Price* and *Quantity Demanded*.
- That is, given the prices of related goods, the consumer's tastes, income, and expectations, a **demand schedule** of a good tell us the quantity he or she is willing and able to purchase at different prices.
- A **demand curve** depicts this *price* and *quantity* relationship.

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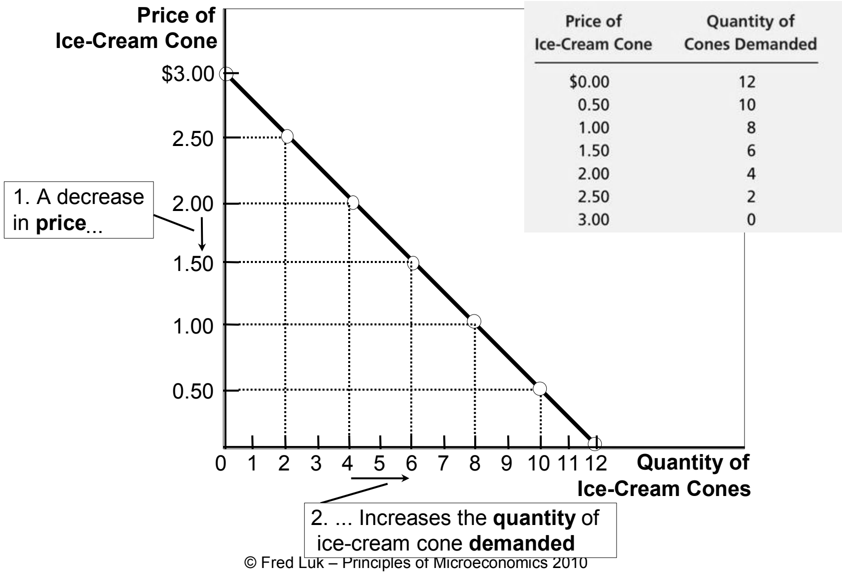
Catherine′s Demand Schedule and Demand Curve



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

From Individual Demand to Market Demand

- The Market Demand of a particular good or service is **the sum of all individual demands** for that good or service at different prices.
- Graphically, a market demand curve is the horizontal summation of individual demand curves.
- So the market demand also depends on the number of buyers in the market.

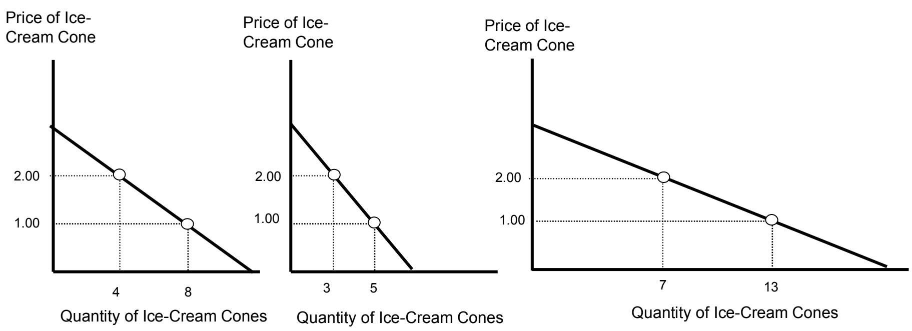
The Market Demand Curve

When the price is $2.00, Catherine will demand 4 ice-cream cones.

When the price is $2.00, Nicholas will demand 3 ice-cream cones.

The market demand at $2.00 will be 7 ice-cream cones.

Catherine's Demand + Nicholas's Demand = Market Demand



When the price is $1.00, Catherine will demand 8 ice-cream cones.

When the price is $1.00, Nicholas will demand 5 ice-cream cones.

The market demand at $1.00 will be 13 ice-cream cones.

The Market Demand Curve

- A market demand curve depicts the relationship between **price** and **quantity demanded**, given
  - Income
  - Prices of related goods
  - Tastes & Preferences
  - Expectations
  - **Number of buyers in the market**

  (i.e. holding all of the above "other" factors constant.)

The Law of Demand

- Law of Demand
  - The *law of demand* states that, other things equal, **price** and **quantity demanded** are inversely related.
  - i.e. when the price of a good increases (decreases), the quantity demanded of the good will decrease (increase)
- The Law of Demand implies that a demand curve is *downward sloping*.
- If there is a change in one or more of the “other things” – income, preferences, price of related goods, expectations, number of buyers – there will be **a shift** in the demand curve.

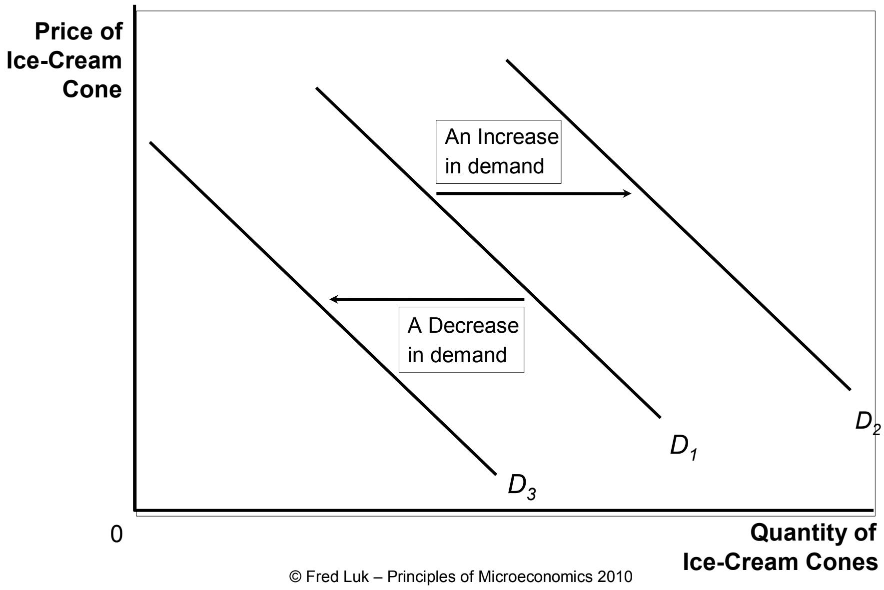
Change in Quantity Demanded vs. Change in Demand

- **A change in quantity demanded** is *a movement along a demand curve*, holding “other things” constant.
- **A change in demand** is *a shift in the demand curve* when one or more of the “other things” changes.
- The distinction between the two is VERY important.

Change in Demand

- A Change in Demand is a *shift* in the demand curve:
  - An **increase** in demand: a rightward shift of the demand curve → a larger quantity demanded at every price.
  - A **decrease** in demand: a leftward shift of the demand curve → a smaller quantity demanded at every price.
- A change in demand means a change in the entire price-quantity relationship.

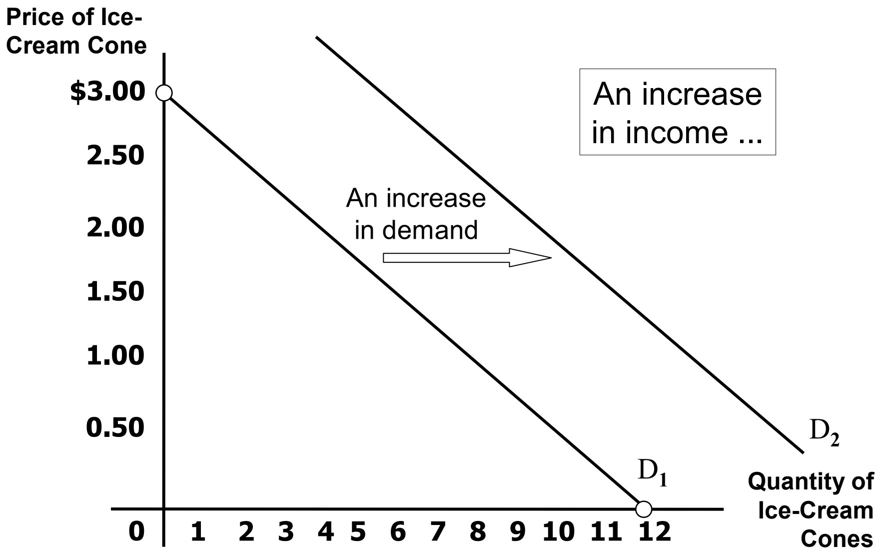
Shifts in the Demand Curve



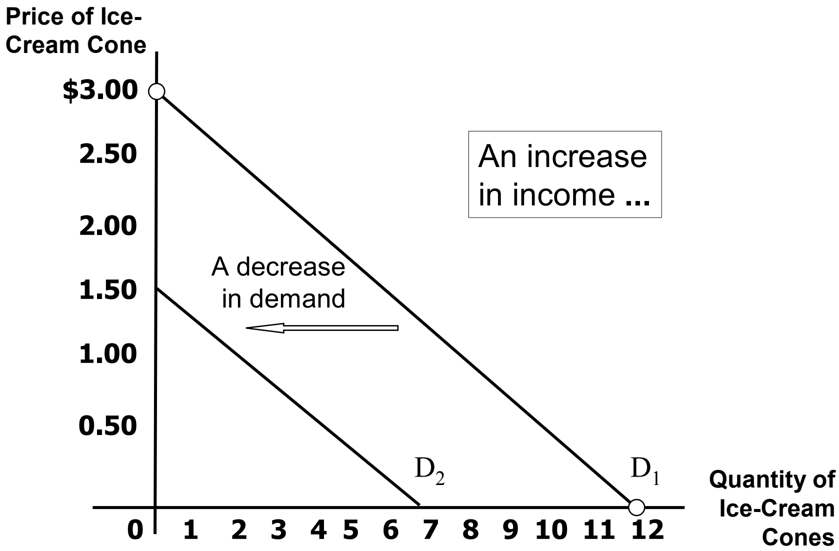
A Change in Consumer Income

- If an increase in income results in an increase in the demand for a good (a rightward shift of the demand curve), then it is a *normal good*.
- If an increase in income results in a decrease in the demand for a good (a leftward shift of the demand curve), then it is an *inferior good*.
  - e.g. generic brand vs. name brand

Change in Income: Effect on a Normal Good



Change in Income: Effect on an Inferior Good

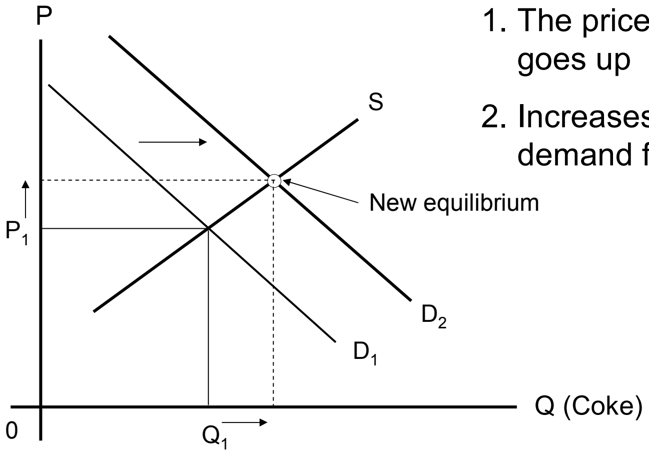


A Change in the Price of a Related Good

- When a fall in the price of one good reduces the demand for another good, the two goods are *substitutes.*
  - e.g. Tea and coffee, Coke and Pepsi
- When a fall in the price of one good increases the demand for another good, the two goods are *complements.*
  - e.g. Bread and butter, DVD player and DVDs

Change in the price of a related good: Substitutes

The Market for Coke



1. The price of Pepsi goes up
2. Increases the demand for coke

A Change in Expectations

- Changes in expectations on variables that can affect current demand:
  - Income
    - Expected future income ↑ → an increase in demand
    - Expected future income ↓ → a decrease in demand
  - Price
    - Expected future price ↑ → an increase in demand
    - Expected future price ↓ → a decrease in demand

Effect of A Change in Demand Factor

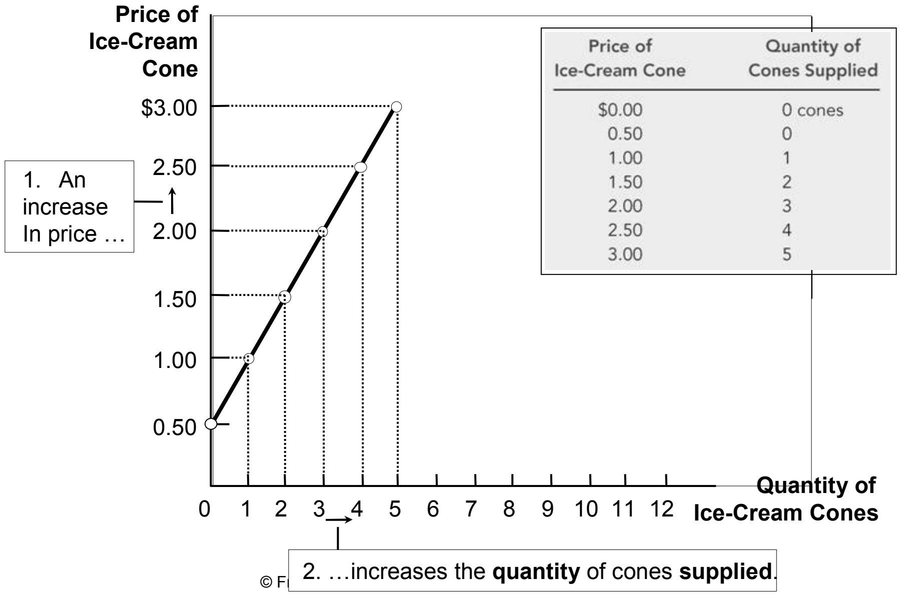
Demand Factors	A change in one of these factors will result in …
Price	a movement along the demand curve
Income	a shift in the demand curve
Price of Related Goods	a shift in the demand curve
Tastes	a shift in the demand curve
Expectations	a shift in the demand curve
Number of Buyers	a shift in the demand curve

Determinants of Supply

- What factors affect the supply of a good (or service)?
  1. Price of the good
  2. Price of input factors
  3. Technology
  4. Expectations

} Determine the cost of production

Ben’s Supply Schedule and Supply Curve



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

From Individual Supply to Market Supply

- Market supply is the sum of the quantity supplied by all the sellers of a particular good or service at different prices.
- Graphically, the market supply curve is the horizontal summation of the supply curves of the individual suppliers in the market.

The Market Supply Curve

- A market supply curve depicts the relationship between **price** and **quantity supplied**, given
  (i.e. holding all the following factors constant.)
  - Factor prices
  - Technology
  - Expectations
  - **Number of sellers in the market**

The Law of Supply

- Law of Supply
  - The *law of supply* states that, other things equal, price and quantity supplied are positively related.
  - i.e. the quantity supplied of a good rises when the price of the good rises.
- The law of supply implies that a supply curve is upward sloping.
- If there is a change in one or more of "the other things" – input price, technology, expectations, and number of sellers – there will be a <u>change in supply</u>.

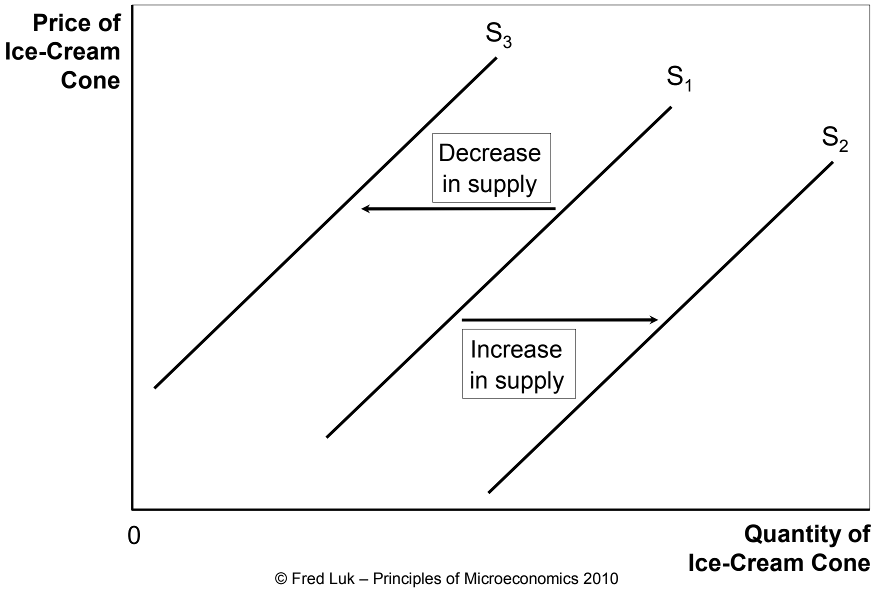
Change in Quantity Supplied vs. Change in Supply

- **A change in quantity supplied** is *a movement along a supply curve*, holding “other things” constant.
- **A change in supply** is *a shift in the supply curve* when one or more of the “other things” change.
  - i.e. there is a change in the price-quantity relationship
- Again, the distinction between the two are important.

Shifts in the Supply Curve

- A Change in Supply is a <u>shift</u> in the supply curve caused by a change in one or more of the determinants of supply *other than price*.
  - An **increase** in supply: a **rightward** shift of the supply curve → a larger quantity will be supplied at every price.
  - A **decrease** in supply: a **leftward** shift of the supply curve → a smaller quantity is being supplied at every price.

Shifts in the Supply Curve



Effect of A Change in Supply Factor

Supply Factors	A change in one of these factors will result in …
Price	a movement along the supply curve
Factor Prices	a shift in the supply curve
Technology	a shift in the supply curve
Expectations	a shift in the supply curve
Number of Sellers	a shift in the supply curve

SUPPLY AND DEMAND TOGETHER

- An *Equilibrium* refers to a situation in which the price has reached the level where quantity supplied **equals** quantity demanded.
- A market equilibrium is usually denoted by a price-quantity pair (P^*, Q^*).
- That is, there is a price P^* at which $Q^s = Q^d$.

SUPPLY AND DEMAND TOGETHER

Demand Schedule

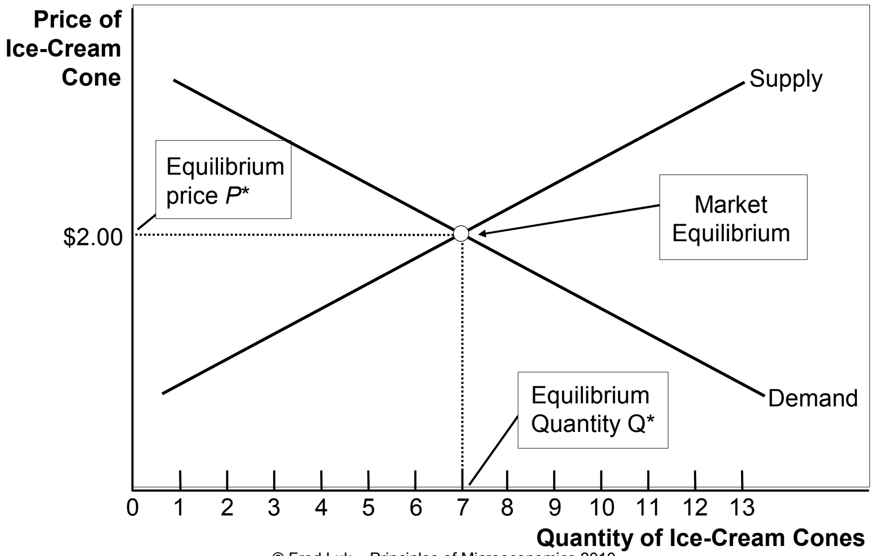
Price of Ice-Cream Cone	Market
$0.00	19
0.50	16
1.00	13
1.50	10
2.00	7
2.50	4
3.00	1

Supply Schedule

Price of Ice-Cream Cone	Market
$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!

The Equilibrium of Supply and Demand



Disequilibrium

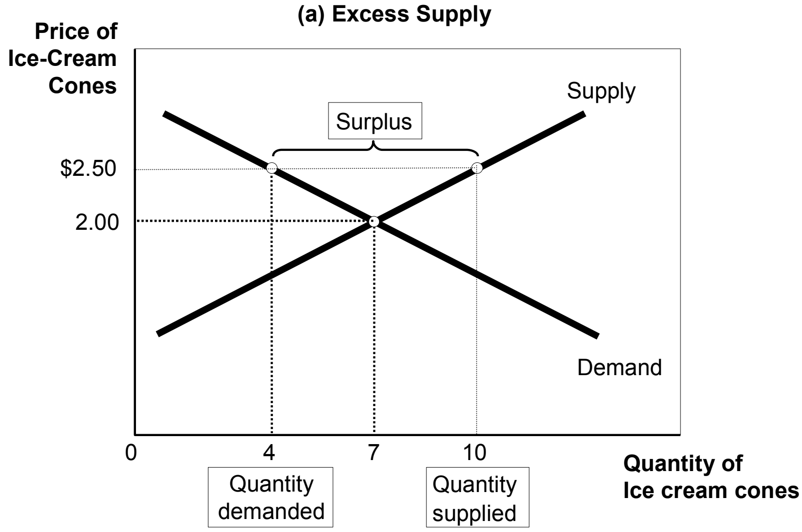
Excess Supply (a Surplus)

- **A surplus** occurs when $Q^S > Q^D$ at the prevailing market price.
  - Suppliers will lower the price to increase sales, thereby putting downward pressure on price towards equilibrium.

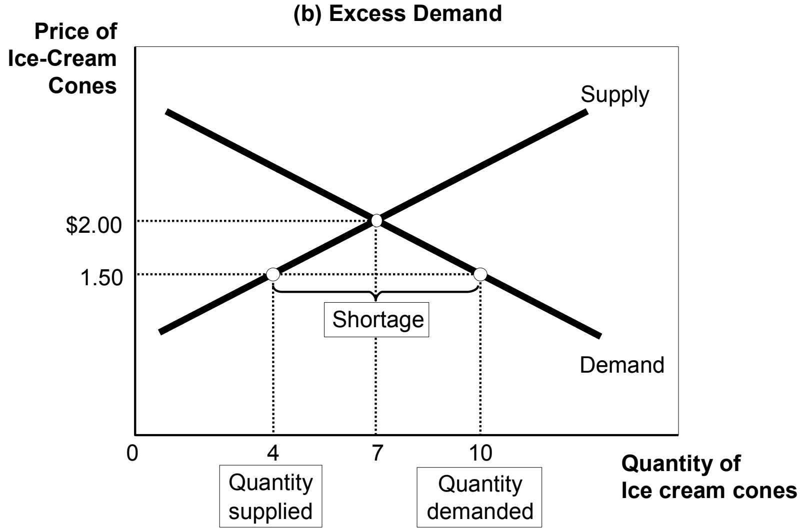
Excess Demand (a Shortage)

- **A shortage** occurs when $Q^S < Q^D$ at the prevailing market price.
  - Buyers competing for limited quantity will put upward pressure on the price to move towards the equilibrium.

A Markets in Disequilibrium: A Surplus



A Market in Disequilibrium: A Shortage



Market Equilibrium

- The equilibrium price is also called a “market clearing” price.
- Why? Because there will be neither a surplus nor a shortage at the equilibrium price, so the market “clears” at that price.
- So a *surplus* or a *shortage* is meaningful only in reference to a price:
  - If there is a surplus, the prevailing price is too high.
  - If there is a shortage, the prevailing price is too low.

Steps for Analyzing the Effect of an Event on a Market Equilibrium

Using a demand-supply diagram:

1. Begin with an initial market equilibrium.
2. Determine whether the event will shift the demand or the supply curve (or both).
3. Determine the direction in which the curve(s) will shift.
4. Find the new equilibrium price and quantity.

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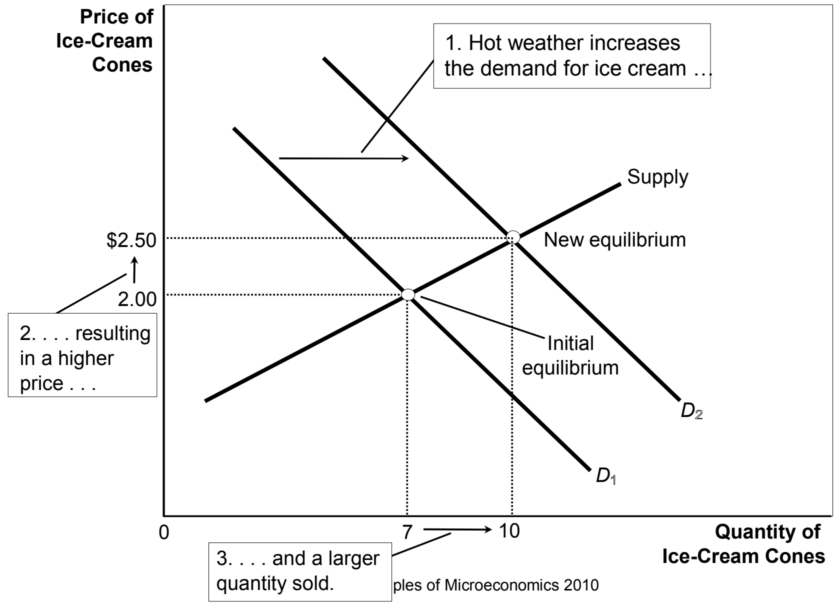
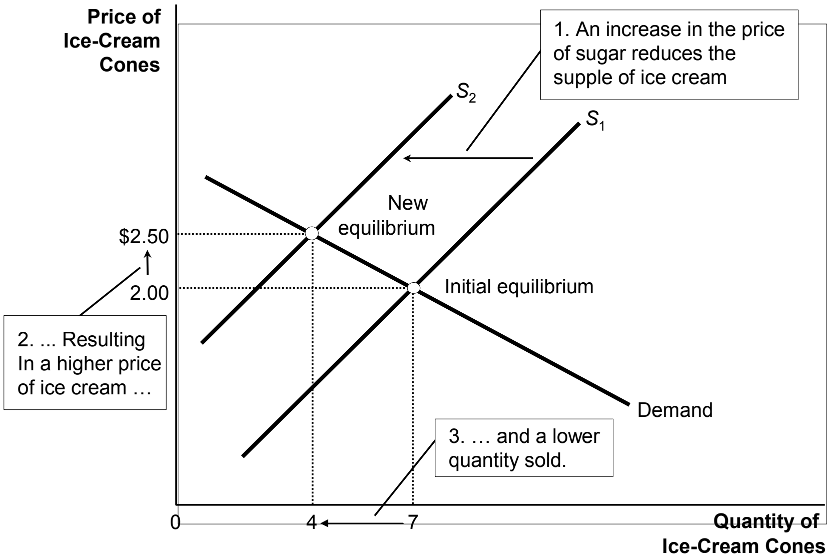
How an Increase in Demand Affects the Equilibrium



Exercise

- List three other changes that can result in **an increase in demand** (shift the demand curve outward to the right)
  1.
  2.
  3.

How a Decrease in Supply Affects the Equilibrium



What Will Happen to Equilibrium Price and Quantity when Supply and/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

Study Hint

- Do NOT try to memorize this table.
- Draw a DD-SS diagram for each scenario and verify the effect on equilibrium price and quantity in each case.

Application Questions

- Why is the Hung Hum Cross-Harbour Tunnel always congested?
- Why are the wages of private securities and cleaning crew so low?
- Suppose the price of a good in June last year was \$2.5 and 120 units were sold. The price last month was \$2.75 and 150 units were sold. Does it mean the demand curve for this good is upward sloping?