Economics

6th edition

Chapter 3

Where Prices Come From: The Interaction of Demand and Supply

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For Principles of Microeconomics
Florida International University
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What determines the price of a smartwatch?

Demand for smartwatches

- How many smartwatches do *consumers* want to buy?
- Affected by *price of the smartwatches*
- Affected by *other factors*, including prices of other goods

Supply of smartwatches

- How many smartwatches are *producers* willing to sell?
- Affected by *price of the smartwatches*
- Affected by *other factors*, including prices of other goods

Our model of a market

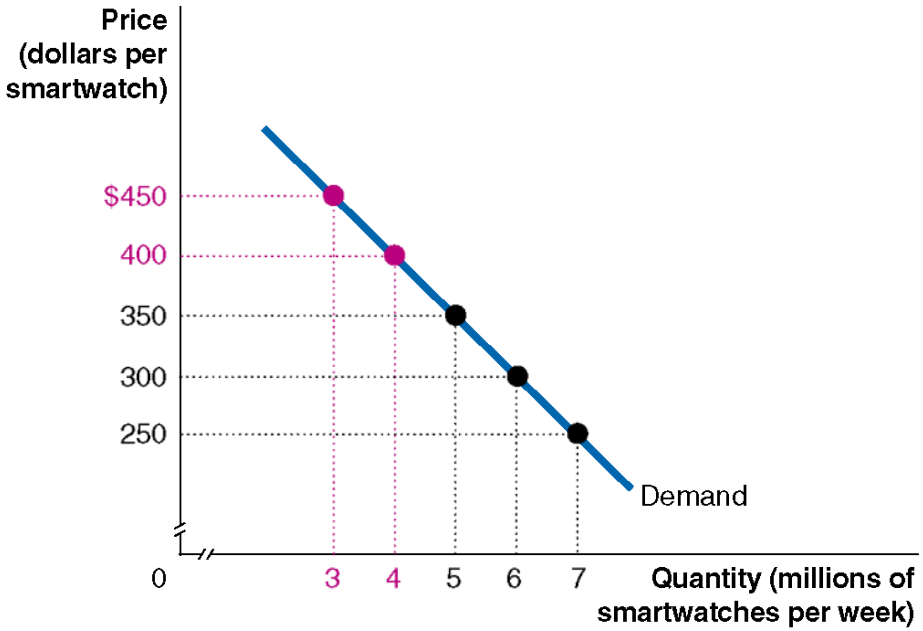
To analyze the market for smartwatches, we need a model how buyers and sellers behave.

The model we use in this chapter is a **perfectly competitive market**, a market with (1) many buyers and sellers, (2) all firms selling identical products, and (3) no barriers to new firms entering the market.

3.1 The Demand Side of the Market

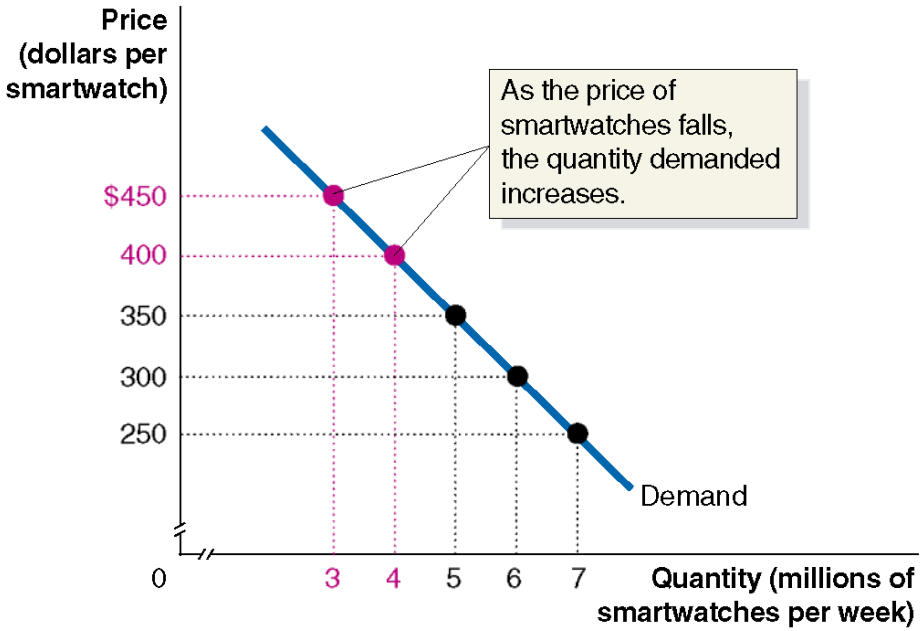
Market demand: the demand by all the consumers of a given good or service.

Demand Schedule	
Price (dollars per smartwatch)	Quantity (millions of smartwatches per week)
$450	3
400	4
350	5
300	6
250	7



Demand curve: A curve that shows the relationship between the price of a product and the quantity of the product demanded.

Demand Schedule	
Price (dollars per smartwatch)	Quantity (millions of smartwatches per week)
$450	3
400	4
350	5
300	6
250	7



Quantity demanded: The amount of a good or service that a consumer is willing and able to purchase at a given price.

Law of Demand

Law of Demand:

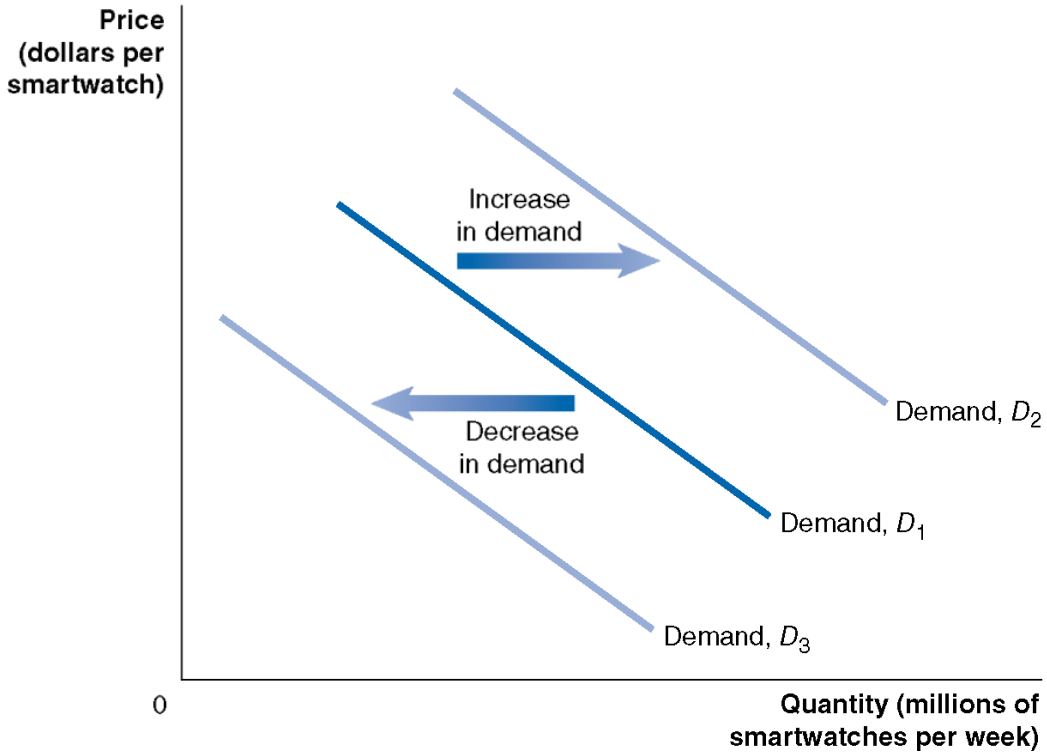
A rule that states that, holding everything else constant, when the price of a product falls, the quantity demanded of the product will increase, and when the price of a product rises, the quantity demanded of the product will decrease.

Shifting the demand curve (1 of 2)

A change in something other than price that affects demand causes the entire demand curve to shift.

A shift to the right (D_1 to D_2) is an *increase in demand*.

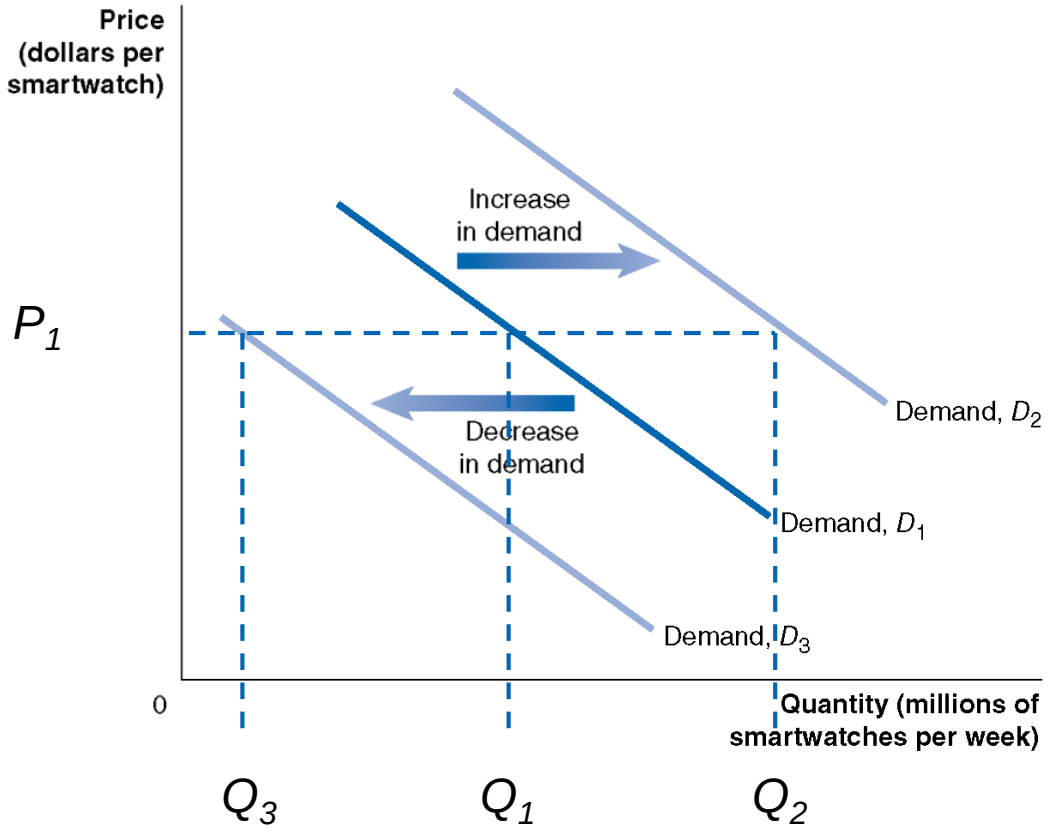
A shift to the left (D_1 to D_3) is a *decrease in demand*.



Shifting the demand curve (2 of 2)

As the demand curve shifts, the quantity demanded will change, *even if the price doesn't change*.

The quantity demanded changes at every possible price.



What factors influence market demand?

-Income

-Prices of related goods

-Tastes

-Population

-Expected future prices

-And so on

Changes in income of Consumers

Normal goods:

Goods for which the demand increases as income rises and decreases as income falls.

Examples: *Clothing*

Restaurant meals

Vacations

Changes in Income of Consumers

Inferior goods: Goods for which the demand increases as income falls and decreases as income rises.

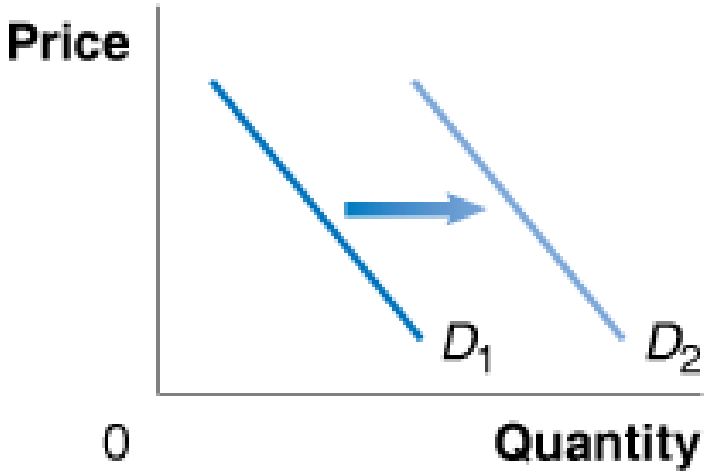
Examples: *Second-hand clothing*

Cheaper cars

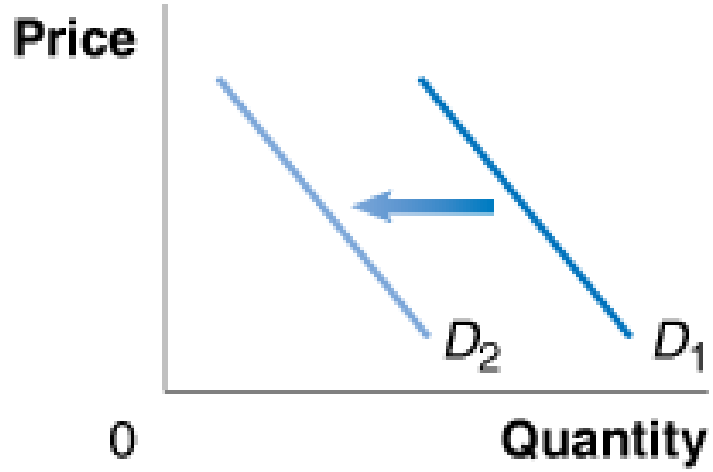
Inter-city bus service

Effects of changes in income

An increase in income would increase the demand for clothing, *ceteris paribus*.



However the same increase in income would likely *decrease* the demand for second-hand clothing.



Changes in the price of related goods

Substitutes: Goods and services that can be used for the same purpose.

Examples:

Potatoes from different farms

Coke and Pepsi

McDonald's and Burger King hamburgers

Crest and Colgate toothpastes

Changes in the Price of Related Goods

Complements: Goods and services that are used together.

Examples:

Hot dogs and hot dog buns

Coffee and Coffer filters

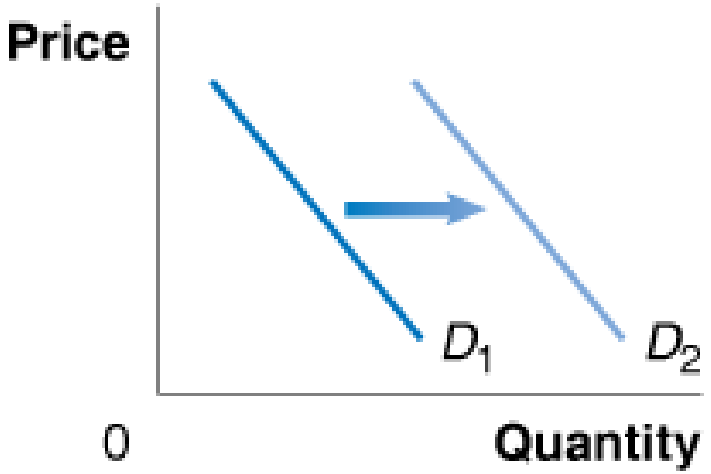
Mobile phones and SIM cards

DVD players and DVDs

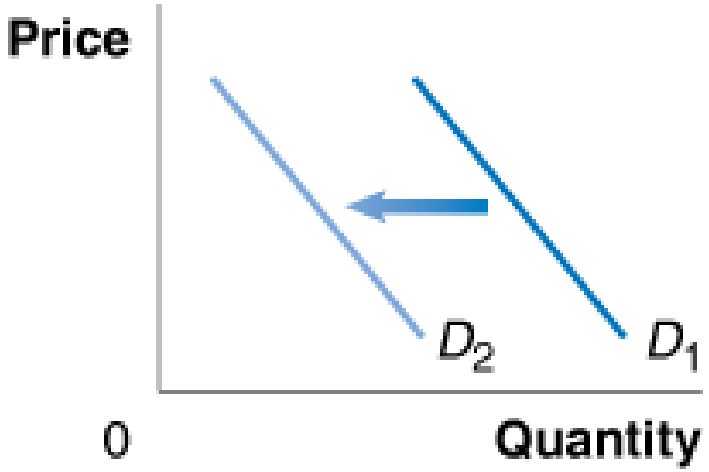
Flashlight and Battery

Effects of changes in the price of related goods

An increase in the price of a Coke would increase the demand for Pepsi.



An increase in the price of coffee would *decrease* the demand for coffee filter.



Practice

Suppose that when the price of hamburgers decreases, John increases his purchases of ketchup. To John,

A) hamburgers and ketchup are complements.

B) hamburgers and ketchup and substitutes.

C) hamburgers and ketchup are normal goods.

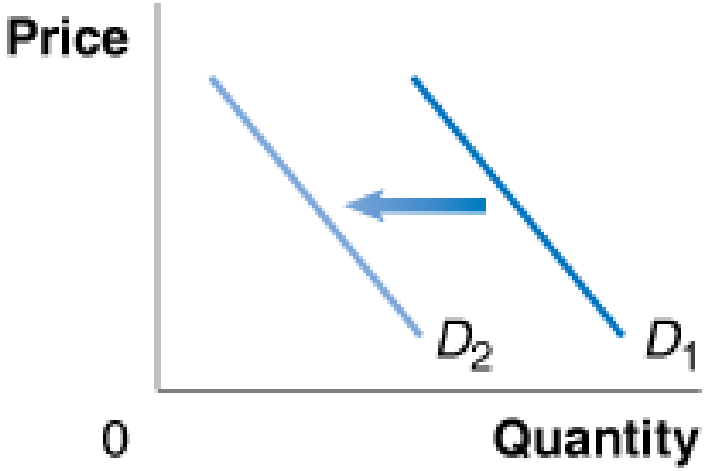
D) hamburgers are normal goods and ketchup is an inferior good.

Changes in tastes

Tastes

If consumers' tastes change, they may buy more or less of the product.

Example: If consumers become more concerned about eating healthily, they might decrease their demand for fast food.



Changes in Tastes

Example:

Advertisement

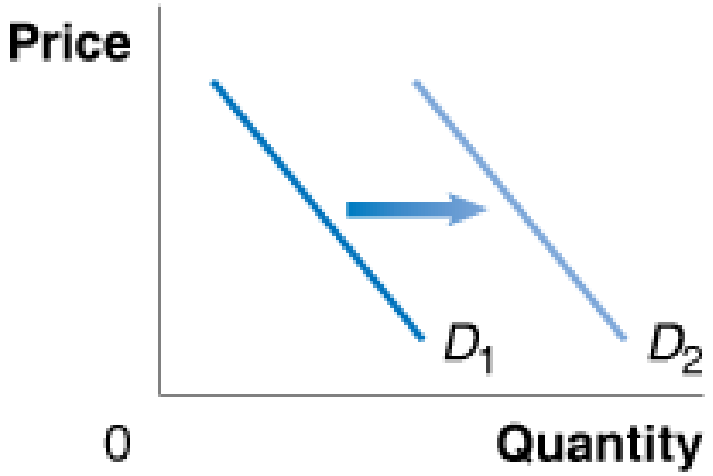
Fashion and Trends

In general, when consumer's taste for a product increases, the demand curve will shift to right; and when consumer's taste for a product decreases, the demand curve will shift to the left.

Changes in population/demographics

Demographics: The characteristics of a population with respect to age, race, and gender. Increases in the number of people buying something will increase the amount demanded.

Example: An increase in the elderly population increases the demand for medical care.



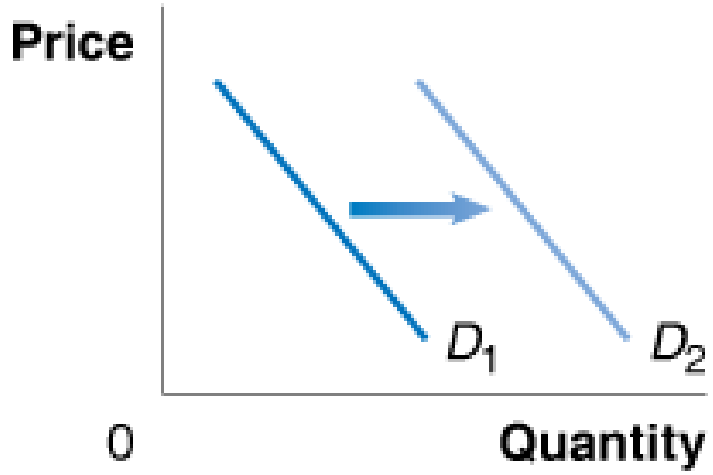
Changes in expectations about future prices

Consumers decide *which* products to buy and *when* to buy them.

- An expected *increase* in the price tomorrow *increases demand today*.
- An expected *decrease* in the price tomorrow *decreases demand today*.

Changes in Expectations about Future Prices

Example: If you found out the price of gasoline would go up tomorrow, you would increase your demand today.



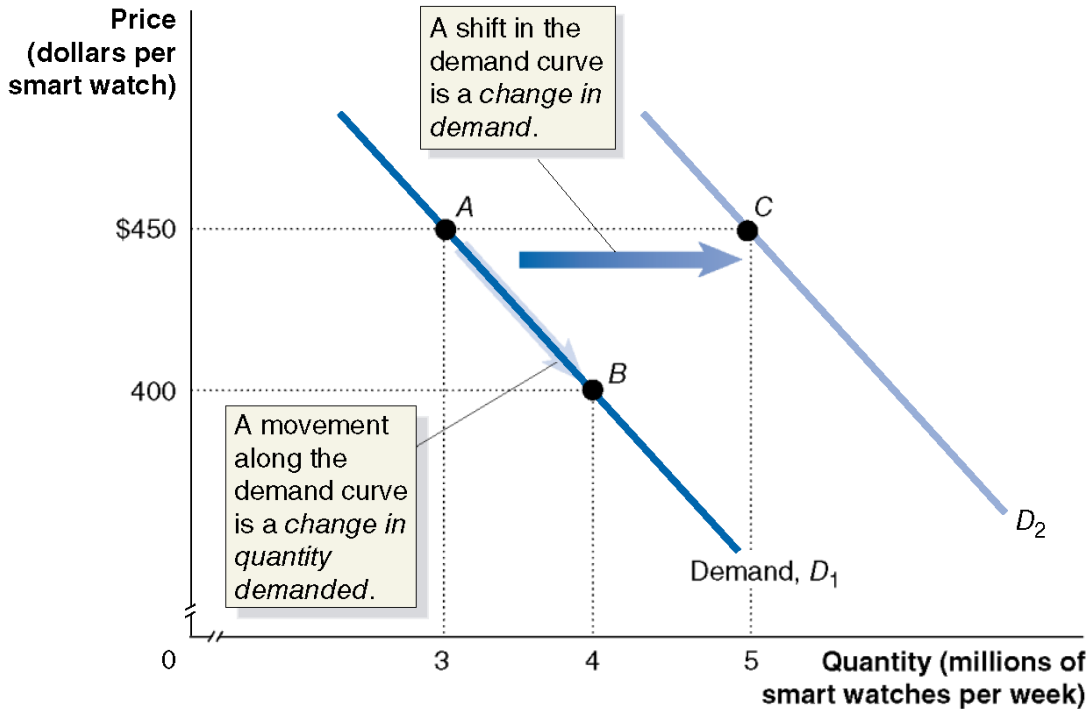
Change in demand vs. change in quantity demanded

A change in the price of the product being examined causes a movement along the demand curve.

- This is a *change in quantity demanded*.

Any other change affecting demand causes the entire demand curve to shift.

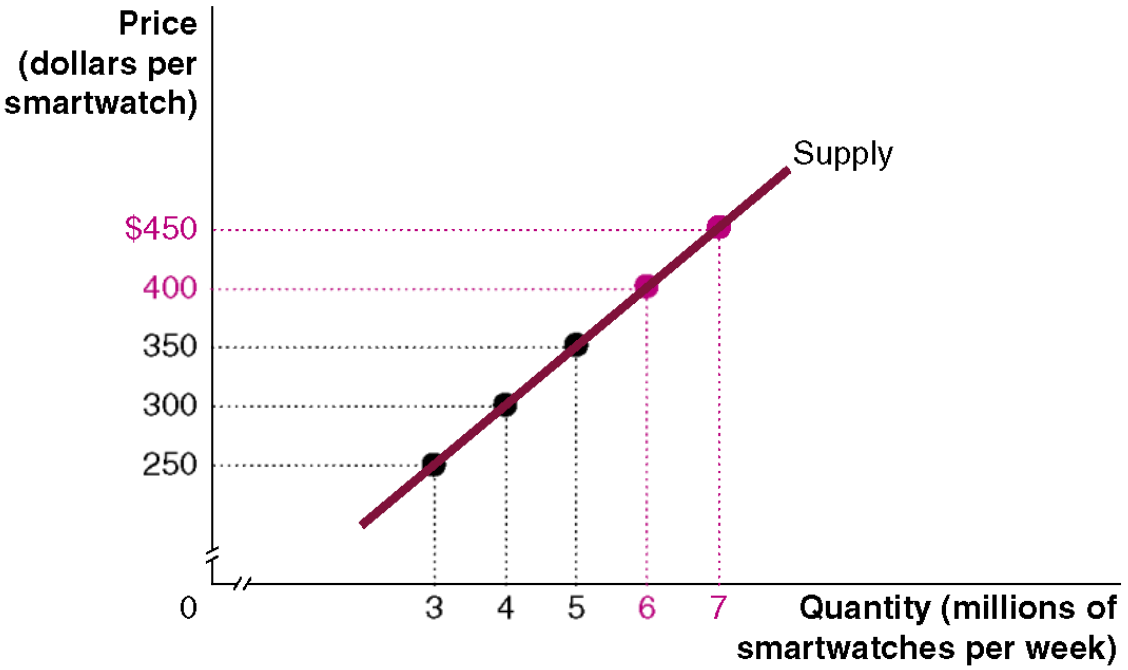
- This is a *change in demand.*



3.2 The Supply Side of the Market

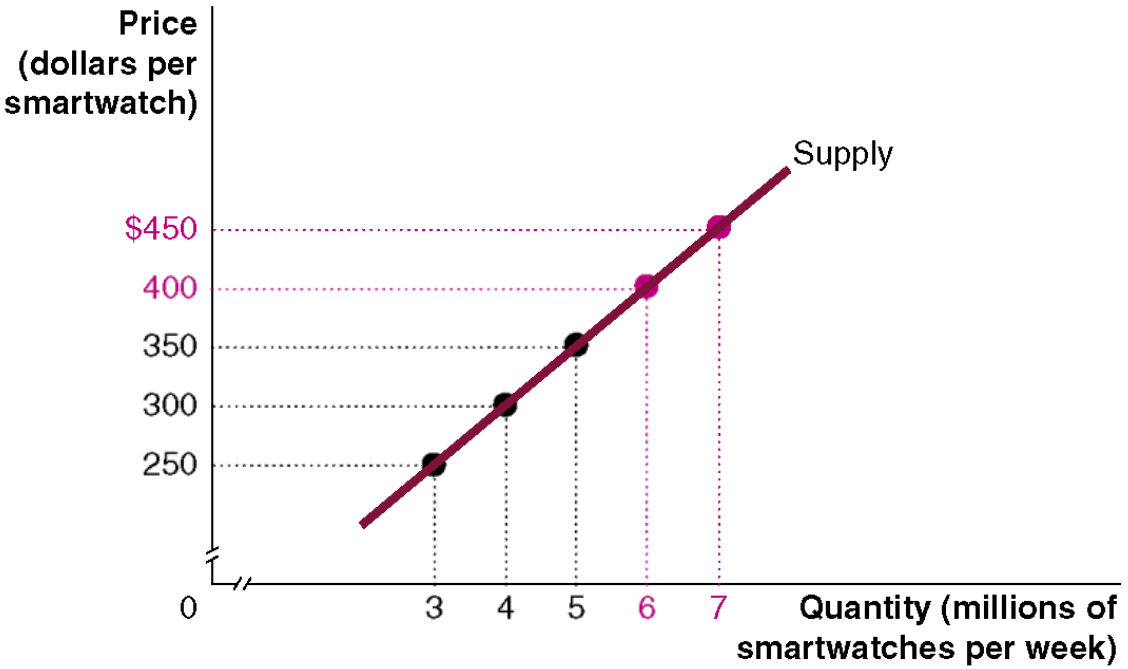
Market supply, i.e. the decisions of (generally) firms about how much of a product to provide at various prices.

Supply Schedule	
Price (dollars per smartwatch)	Quantity (millions of smartwatches per week)
$450	7
400	6
350	5
300	4
250	3



Supply curve: A curve that shows the relationship between the price of a product and the quantity of the product supplied.

Supply Schedule	
Price (dollars per smartwatch)	Quantity (millions of smartwatches per week)
$450	7
400	6
350	5
300	4
250	3



Quantity supplied: The amount of a good or service that a firm is willing and able to supply at a given price.

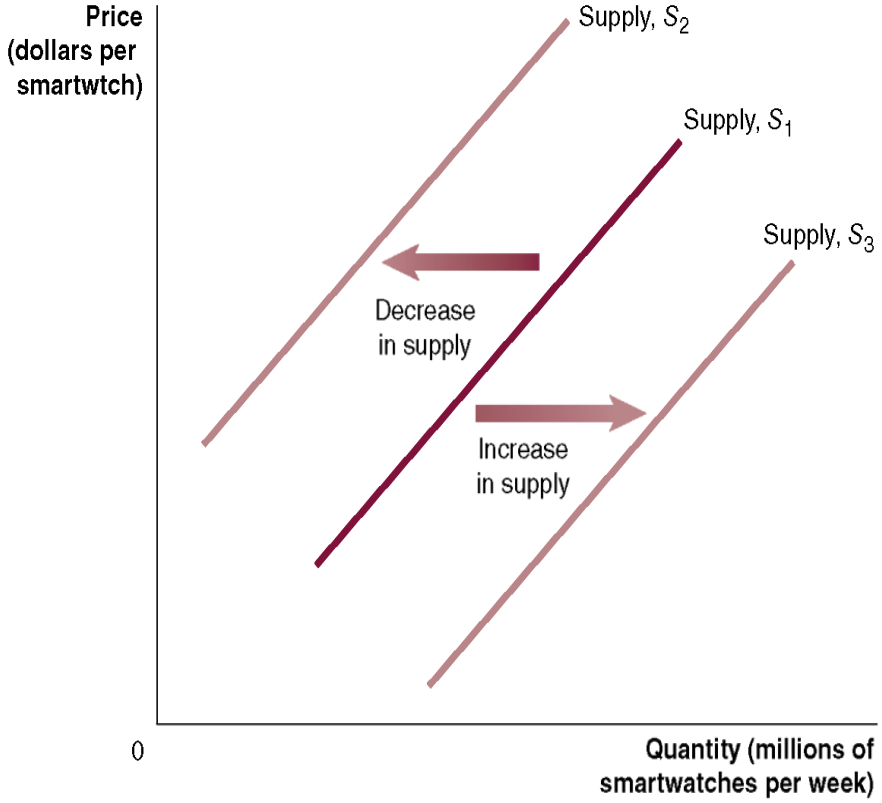
Law of Supply

The law of supply: The rule that, holding everything else constant, increases in price cause increases in the quantity supplied, and decreases in price cause decreases in the quantity supplied.

Shifting the Supply Curve (1 of 2)

A change in something other than price that affects supply causes the entire supply curve to shift.

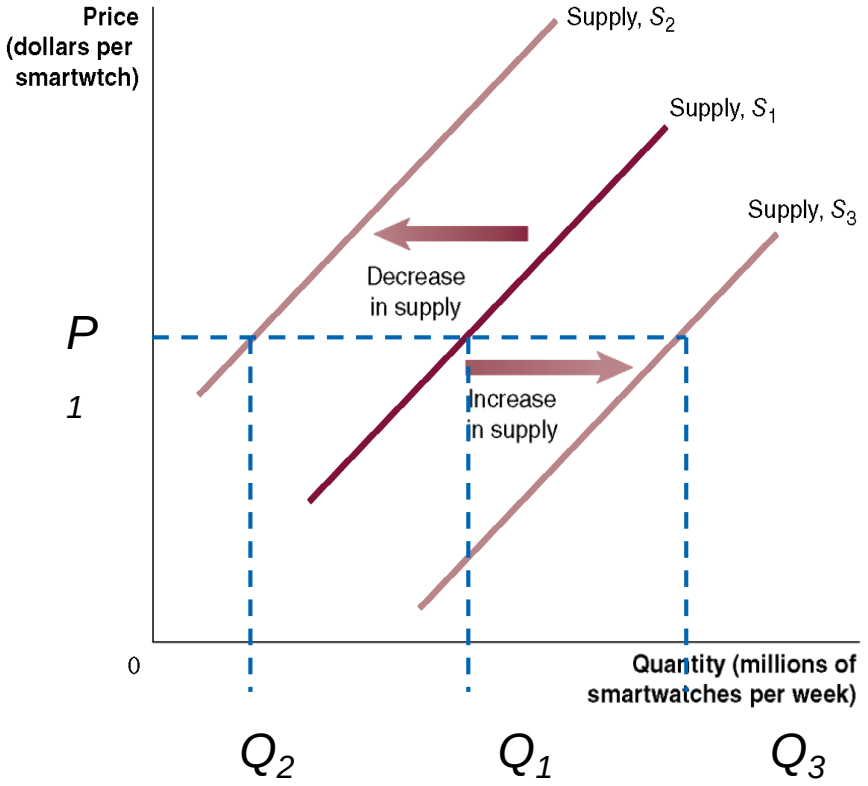
- A shift to the right (S_1 to S_3) is **an *increase in supply***.
- A shift to the left (S_1 to S_2) is a ***decrease in supply***.



Shifting the Supply Curve (2 of 2)

As the supply curve shifts, the quantity supplied will change, *even if the price doesn't change*.

The quantity supplied changes at every possible price.



What factors influence market supply?

-Prices of inputs

-Technological change

-Prices of substitutes in production

-Number of firms in the market

-Expected future prices

-And so on

Change in prices of inputs

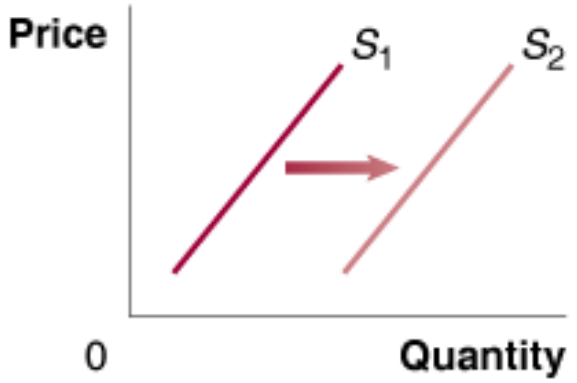
Inputs are things used in the production of a good or service.

An *increase in the price of an input* decreases the profitability of selling the good, causing a *decrease in supply.*

A *decrease in the price of an input* increases the profitability of selling the good, causing an *increase in supply.*

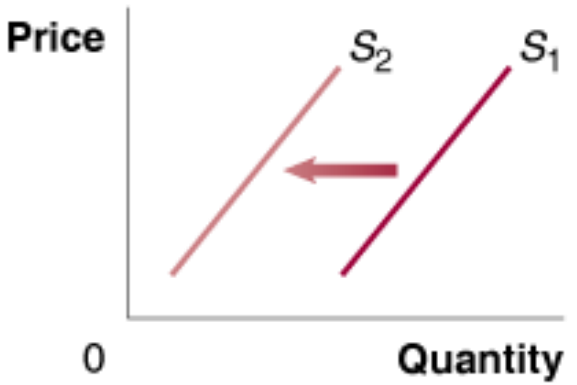
Technological change

A firm may experience a positive or negative change in its ability to produce a given level of output with a given quantity of inputs. We call this a **technological change**.



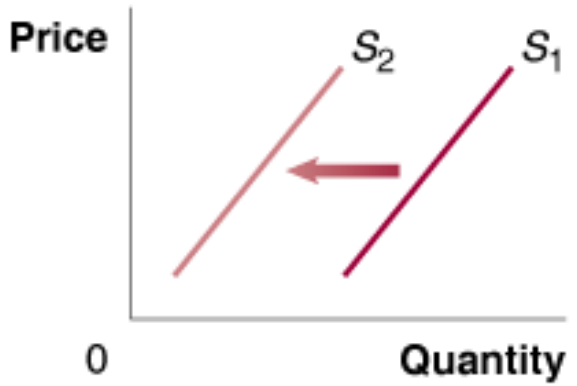
Examples:

- *A new, more productive variety of wheat would increase the supply of wheat.*
- *Governmental restrictions on land use for agriculture might decrease the supply of wheat.*

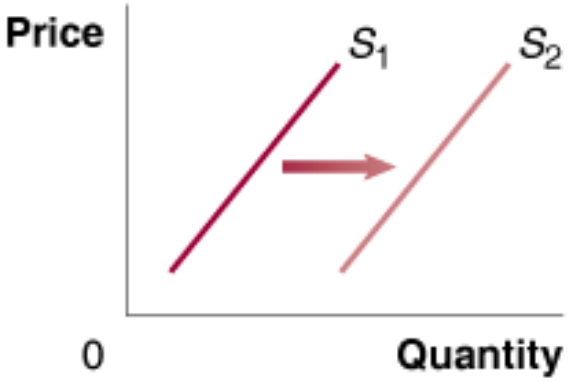


Prices of related goods in production

Many firms can produce and sell alternative products. Eg*: A farmer can plant corn or soybeans. If the price of soybeans rises, he will plant (supply) less corn.*

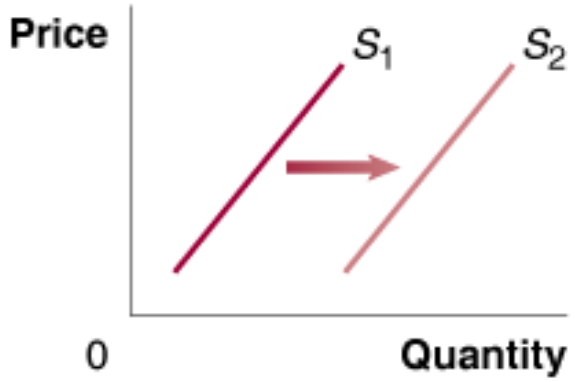


Sometimes, two products are necessarily produced together. Eg: *Cattle provide both beef and leather. An increase in the price of beef encourages more cattle farming, and hence increase the supply of leather.*

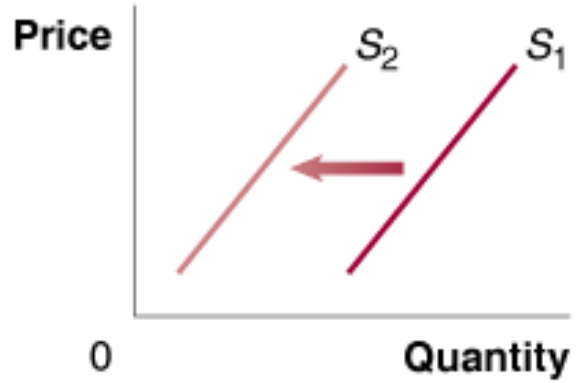


Number of firms and expected future prices

More firms in the market will result in more product available at a given price (greater supply).

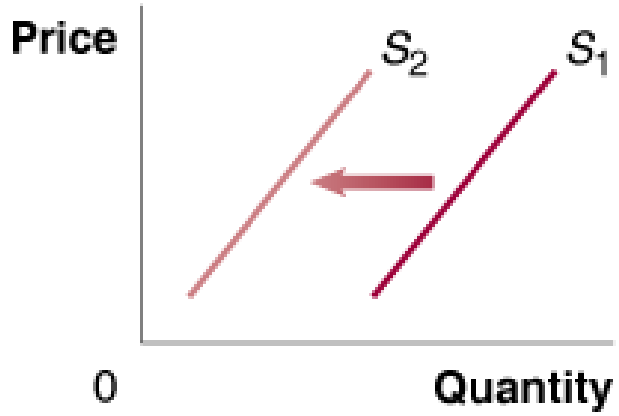


Fewer firms → supply decreases.



Expected Future Prices

If a firm anticipates the price of its product will be higher in the future, it might decrease its supply today in order to increase it in the future.



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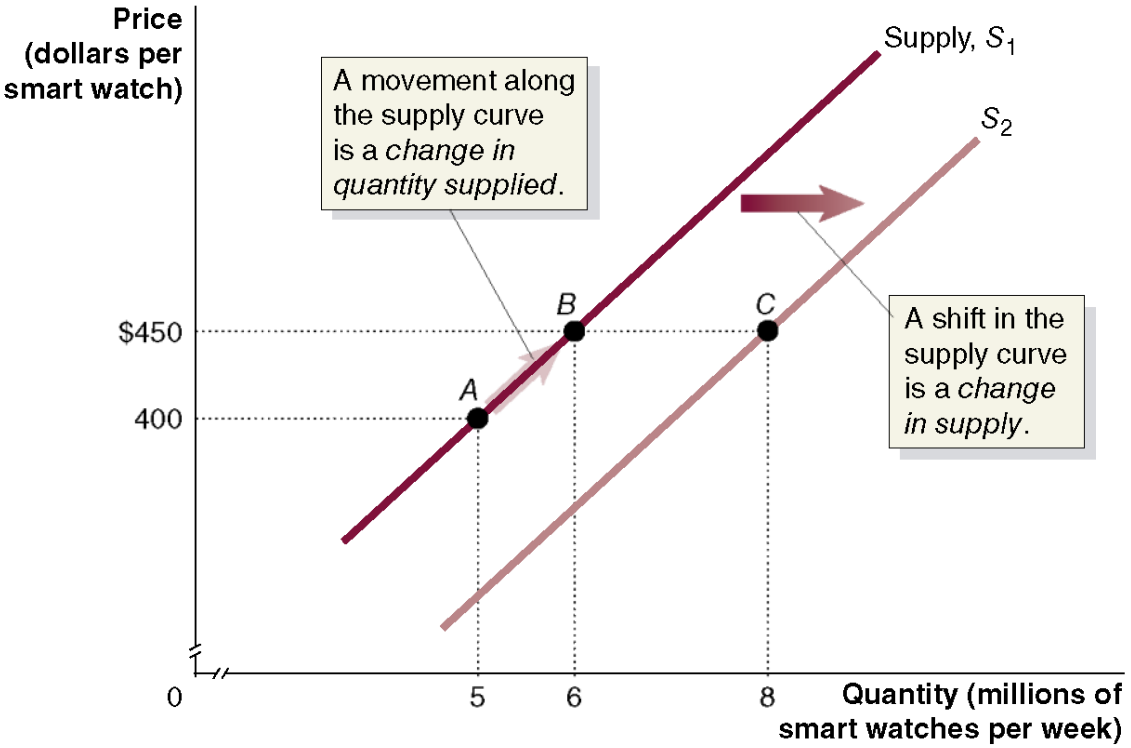


3.3 Market Equilibrium: Putting Demand and Supply Together

Market equilibrium is a situation in which quantity demanded equals quantity supplied.

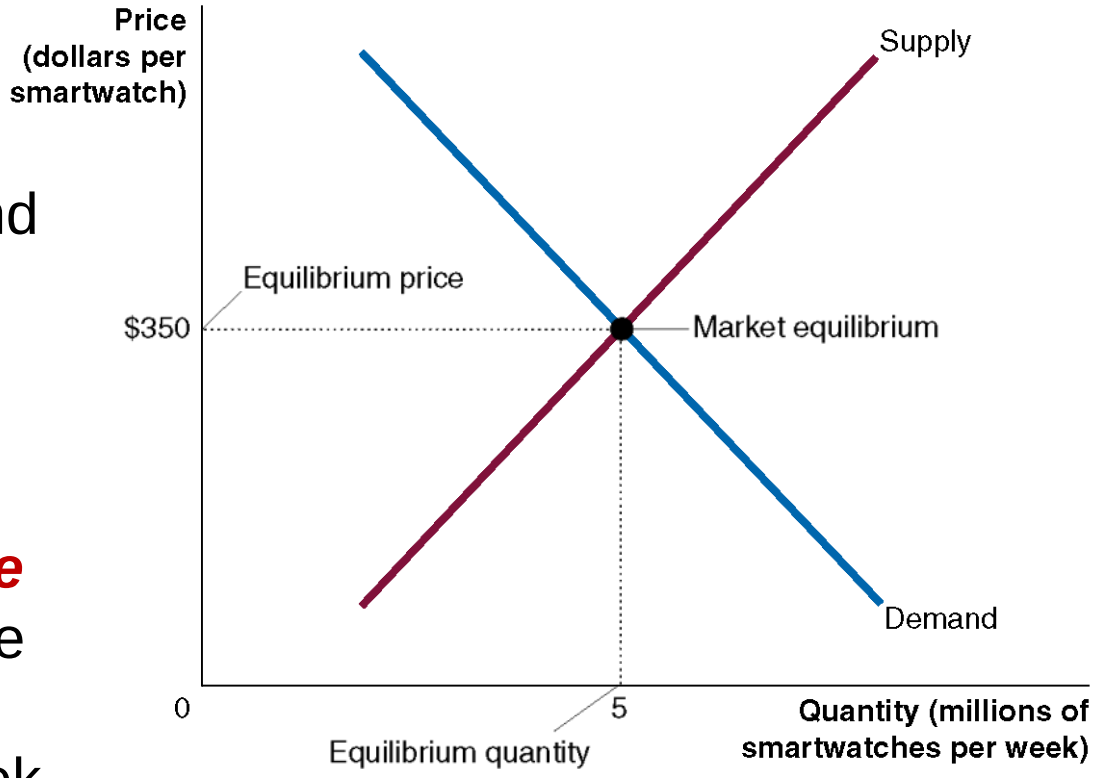
Price is determined by the **interaction of buyers and sellers.**

Neither group can dictate price in a competitive market (i.e. one with many buyers and sellers).

Example: Market equilibrium

At a price of $350,

- consumers want to buy 5 million smartwatches, and
- producers want to sell 5 million smartwatches.



We say the ***equilibrium price*** in this market is $350, and the **equilibrium quantity** is 5 million smartwatches per week.

Quantitative Demand and Supply Analysis

Example:

Suppose that the demand for apartments in New York City is

$$Q^D = 4{,}750{,}000 - 1{,}000P$$

and the supply of apartments is

$$Q^S = -1{,}000{,}000 + 1{,}300P$$

In equilibrium, we know

$$Q^D = Q^S \text{ (the } \textit{equilibrium condition.)}$$

Solving for the equilibrium rent and quantity

$$Q^D = 4{,}750{,}000 - 1{,}000P$$

$$Q^S = -1{,}000{,}000 + 1{,}300P$$

$$Q^D = Q^S$$

We use these to find the equilibrium rent and quantity:

$$4{,}750{,}000 - 1{,}000P = -450{,}000 + 1{,}300P$$

$$5{,}750{,}000 = 2{,}300P$$

$$P = 5{,}750{,}000/2{,}300$$

$$= \$2{,}500$$

Find the equilibrium quantity of apartments rented:

$Q^D = 4{,}750{,}000 - 1{,}000P$

$= 4{,}750{,}000 - 1{,}000(2{,}500)$

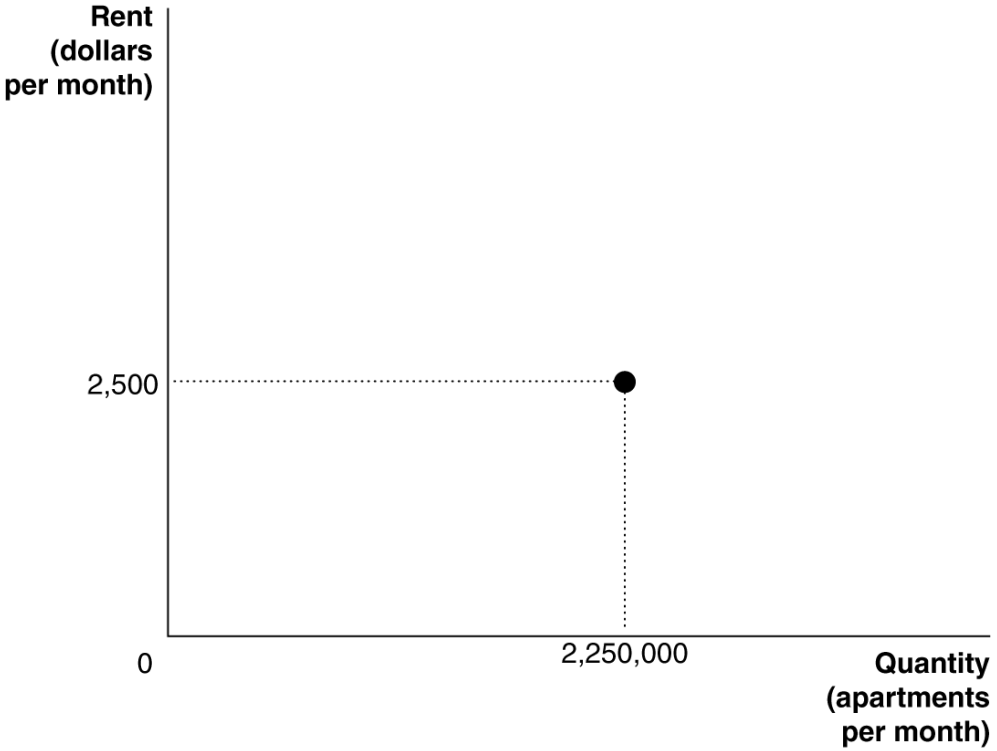
$= 2{,}250{,}000$

or

$Q^S = -1{,}000{,}000 + 1{,}300P$

$= -1{,}000{,}000 + 1{,}300(2{,}500)$

$= 2{,}250{,}000$

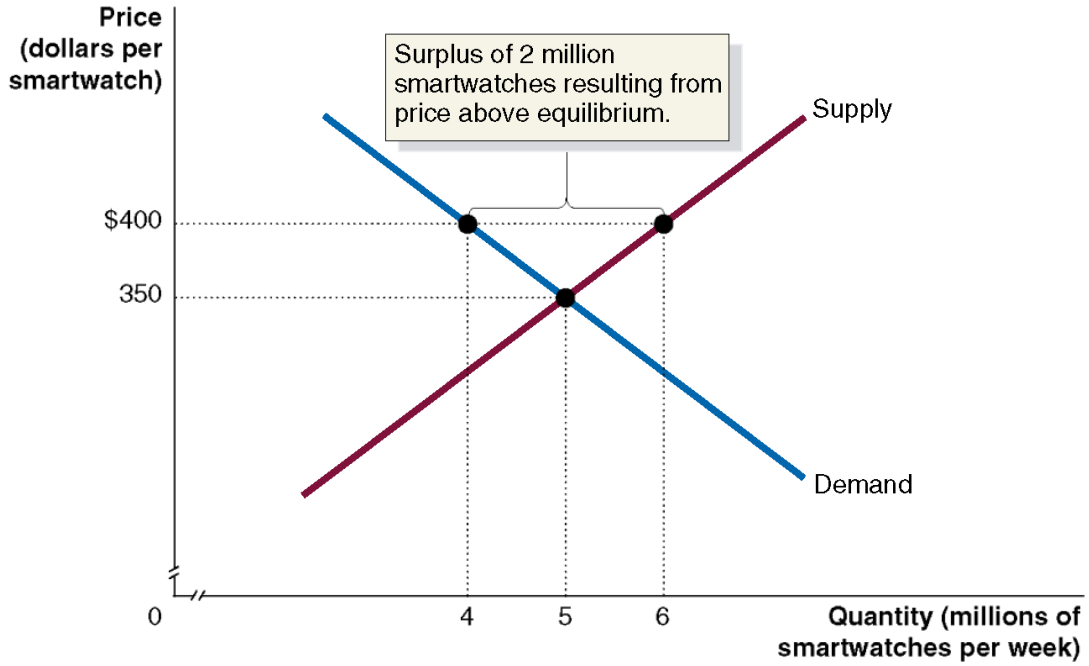


The effect of **surpluses** on the market price

What if the price were $400 instead?

At a price of $400,

- consumers want to buy 4 million smartwatches, while
- producers want to sell 6 million.



This gives a **surplus** of 2 million smartwatches: a situation in which quantity supplied is greater than quantity demanded.

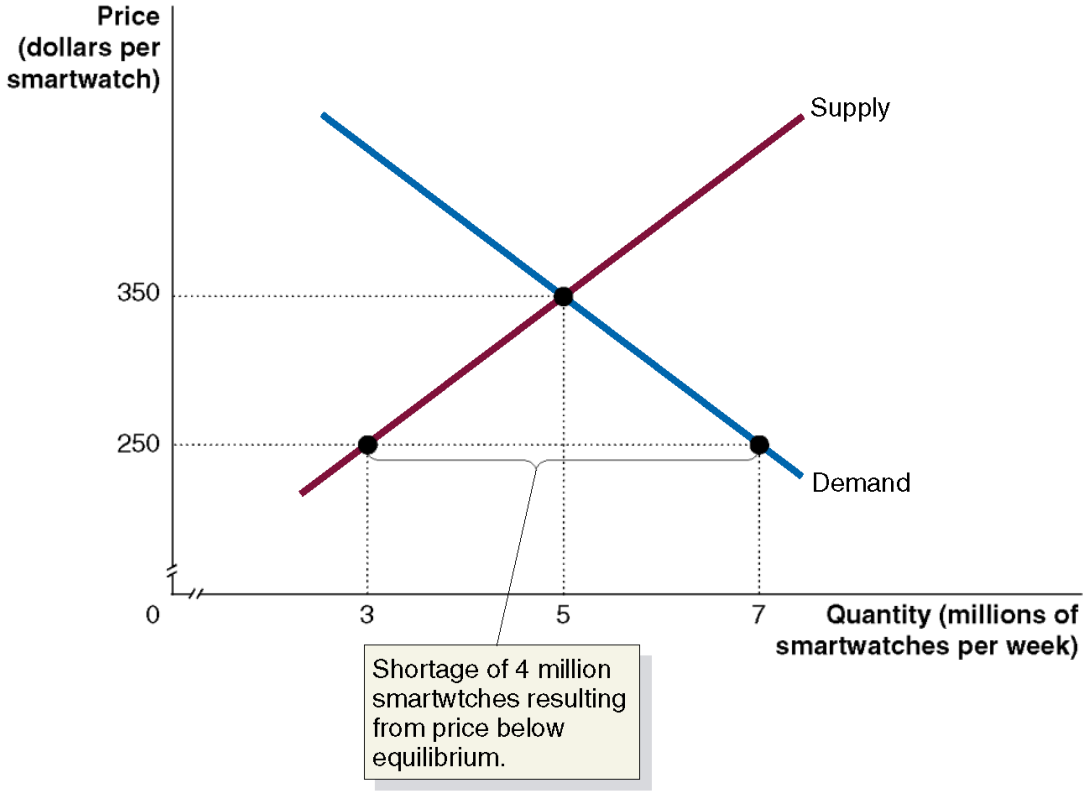
Prediction: sellers will compete amongst themselves, driving the price down.

The effect of **shortages** on the market price

Now what if the price were $250?

At a price of $250,

- consumers want to buy 7 million smartwatches, while
- producers want to sell 3 million.



This gives a **shortage** of 4 million smartwatches: a situation in which quantity demanded is greater than quantity supplied.

Prediction: sellers will realize they can increase the price and still sell as many smartphones, so the price will rise.

3.4 The Effect of Demand and Supply Shifts on Equilibrium

Predictions about price and quantity in model require us to know

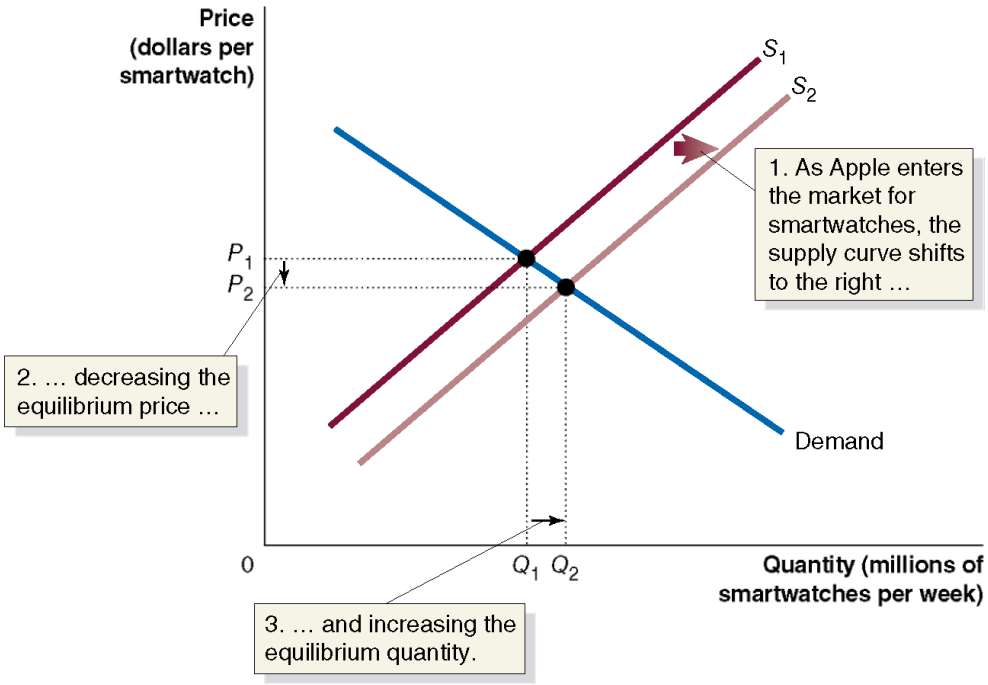
- Supply curve
- Demand curves
- How the curve moves

Example: The effect of an increase in supply on equilibrium

The graph shows the market for smartwatches before Apple enters the market.

When Apple enters, more smartphones are supplied at any given price—an increase in supply from S_1 to S_2.

- Equilibrium price falls from P_1 to P_2.
- Equilibrium quantity rises from Q_1 to Q_2.



Example: The effect of an increase in demand on equilibrium

Suppose incomes increase. What happens to the equilibrium in the smartwatch market?

Smartwatches are a *normal good*, so as income rises, demand shifts to the right (D_1 to D_2).

- Equilibrium price rises (P_1 to P_2).
- Equilibrium quantity rises (Q_1 to Q_2).