

# Supply and Demand

ECO 120: Global Macroeconomics

# Goals

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## Unit Goals

Define demand and identify what influences demand

Define supply and identify what influences supply

Predict how prices and quantities are determined by supply and demand.

Use these skills to make predictions about changes in price and quantity.

## Learning Objectives

LO 2: Use the supply and demand model to predict price and quantity outcomes for markets for products and services.

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## Reading and Exercises

2 / 31

Textbook: Demand, Module 5

Textbook: Supply and Equilibrium, Module 6

Textbook: Changes and Equilibrium, Module 7

**Canvas Quiz due Wed 11:59 PM.**

Multiple-choice, 10 questions, unlimited attempts allowed,  
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**Homework/In-class Exercise due Friday 11:59 PM.** We  
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# Demand

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The **quantity demanded** of a good or service is the amount consumers are willing and able to buy in a given time period at a particular price.

**Law of demand:** All other things remaining equal, the higher (lower) the price of the good, the smaller (higher) is the quantity demanded.

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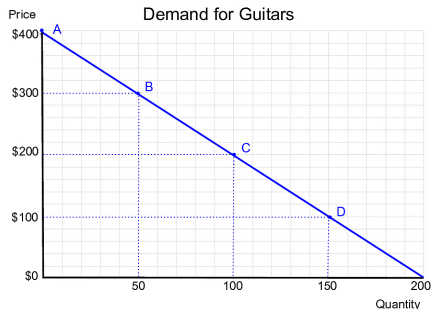
**Law of demand:** All other things remaining equal, the higher (lower) the price of the good, the smaller (higher) is the quantity demanded.

# Demand

## Demand Schedule For Guitars

Point	Price	$Q_D$
A	\$400	0
B	\$300	50
C	\$200	100
D	\$100	150

## Demand Curve for Guitars



Law of demand makes the demand curve **downward sloping**.

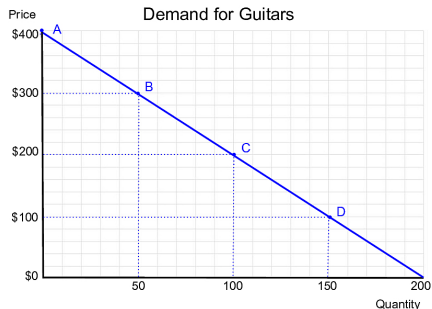
**Change in quantity demanded:** when there is a **change in price** causing a **movement** from one point on the demand curve to another point.

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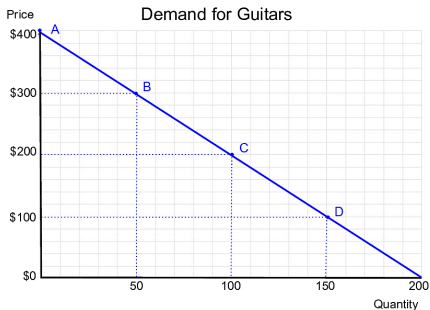
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## Income and Substitution effects

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The demand curve is downward sloping because of the income and substitution effect.

**Substitution effect:** when the price of a good rises, people may buy substitute goods instead.

**Income effect:** When the price of a good rises, the real purchasing power of your income decreases. When the real value of your income decreases, you buy less of everything.

Close to correct. More on the income effect later.

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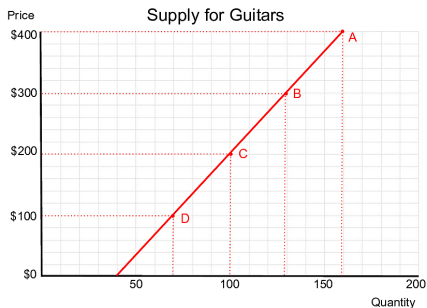
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Point	Price	$Q_S$
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## Supply Curve for Guitars



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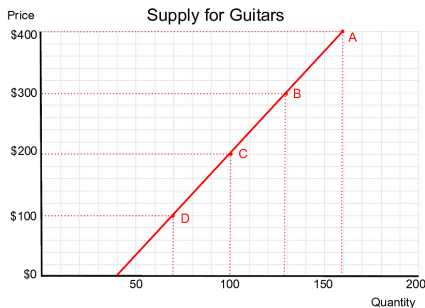
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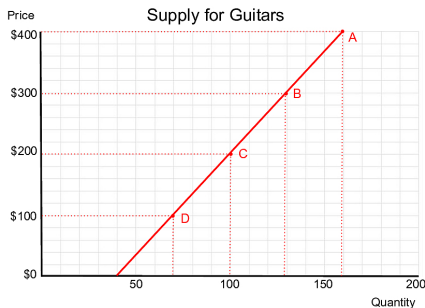
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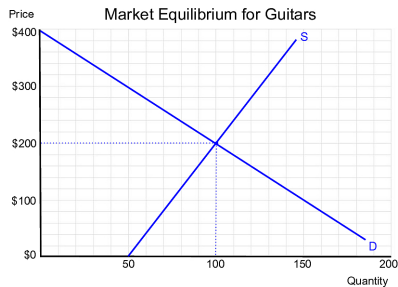
## Equilibrium Definition

The **equilibrium price** is the price where the quantity supplied is equal to the quantity demanded.

The **equilibrium quantity** is the corresponding quantity.

This is the price and quantity that will prevail in an unregulated market.

## Graphical Equilibrium



# Equilibrium

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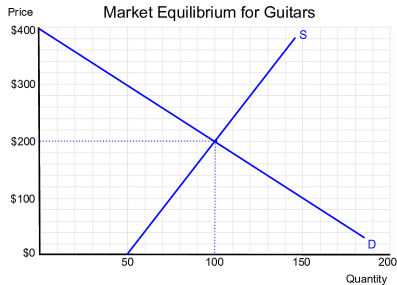
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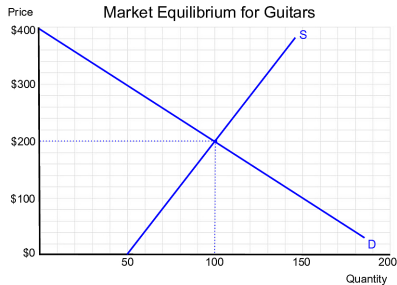
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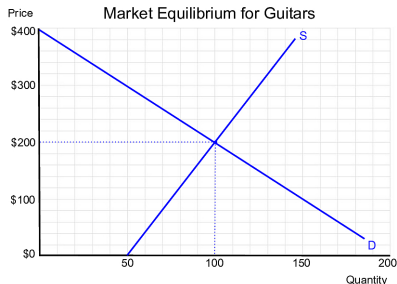
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# Surplus

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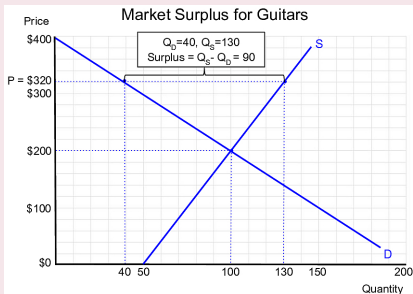
## Surplus Definition

When the prevailing price is **above** equilibrium price, quantity supplied exceeds quantity demanded

Difference is the surplus

In an unregulated market, market forces will push price lower toward equilibrium

## Graphical Surplus



# Surplus

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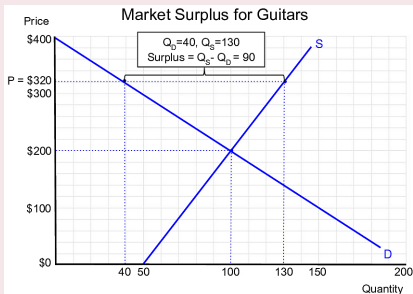
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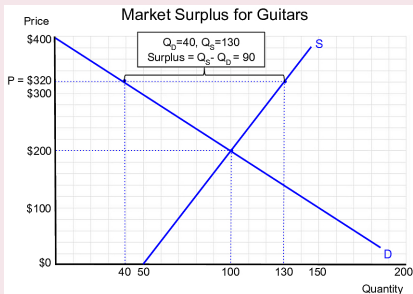
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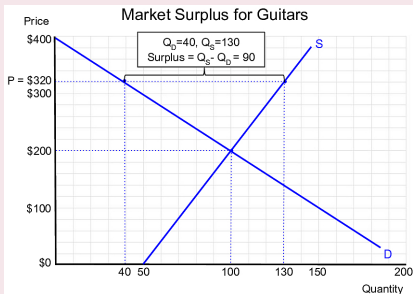
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# Shortage

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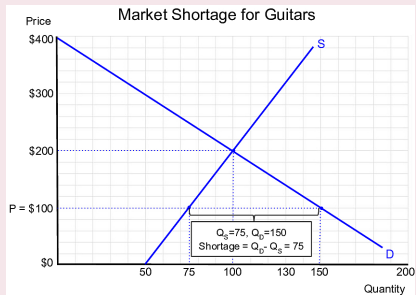
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When the prevailing price is **below** equilibrium price, quantity demanded exceeds quantity supplied

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In an unregulated market, market forces will push equilibrium price higher

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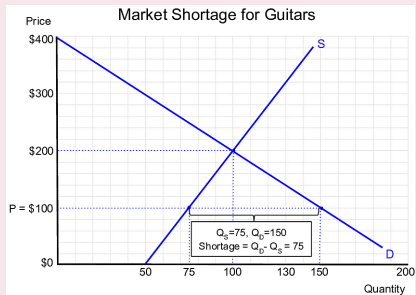
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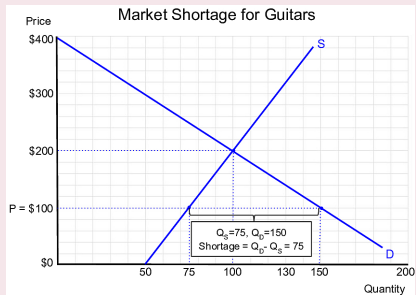
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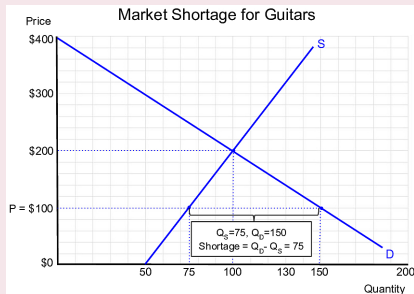
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# Demand Curve Shifts

11 / 31

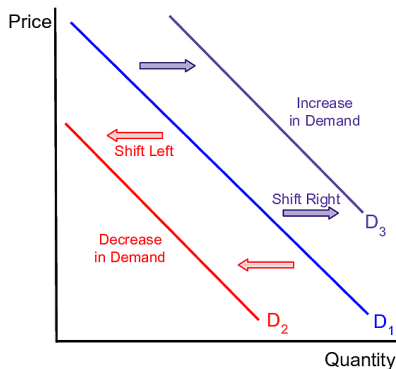
## Shifts in Whole Demand Curve

When something *besides the price of the good* affects demand, we say there is a *change or shift in demand*.

Something that **increases** demand shifts the demand curve to the **right**

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## Shifts in Demand



# Demand Curve Shifts

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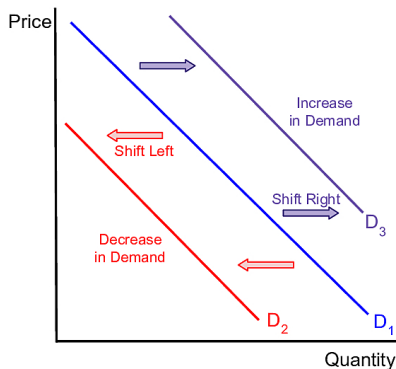
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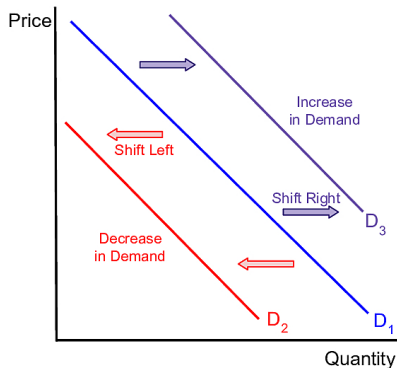
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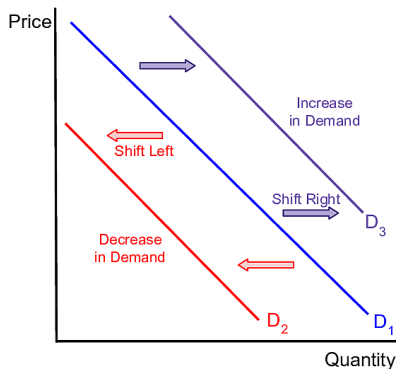
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## Substitute Goods

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### Price of Substitute Goods

**Substitutes:** a substitute good is a good that can be consumed instead of another good.

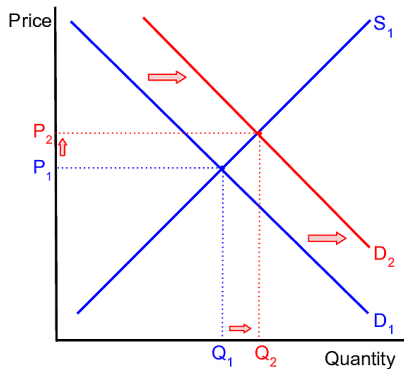
Examples: hamburgers and hot dogs, iPhones and Samsung smartphones, E-books and print books

If the price of a **substitute** increases, this will **increase demand** for a good

Eqm price increases, quantity increases

### Price of Samsung phones increase

#### Market for iPhones



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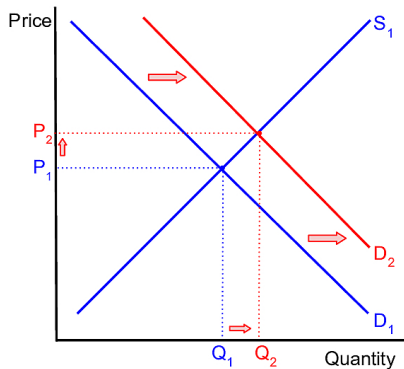
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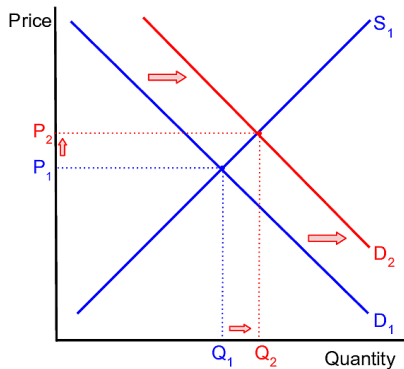
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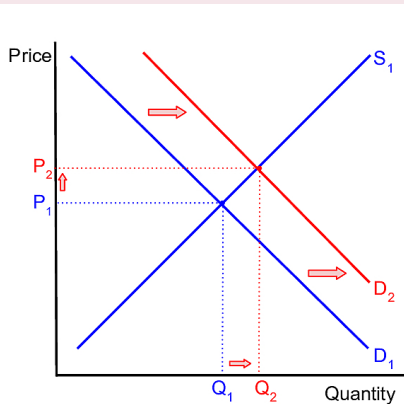
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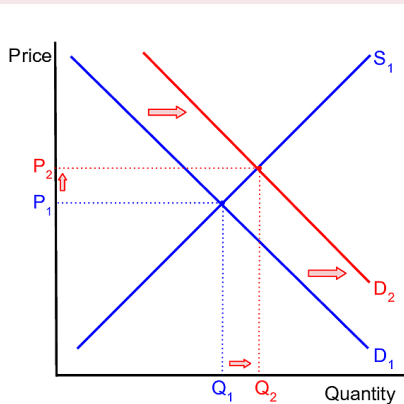
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13/ 31

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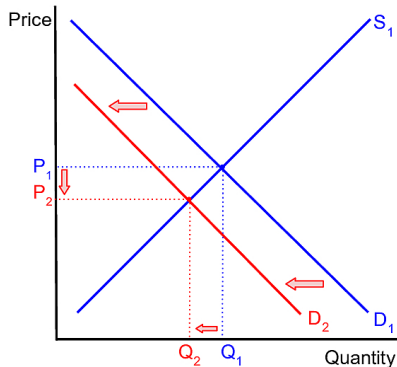
Examples: peanut butter and jelly, iPads and Ebooks, smartphones and apps

If the price of a **complement increases**, this will **decrease demand** for a good

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13/ 31

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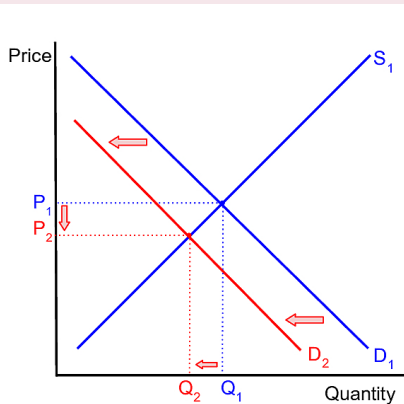
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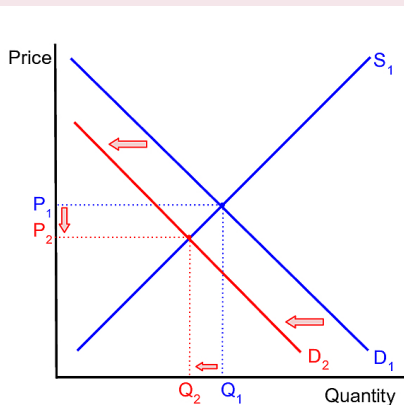
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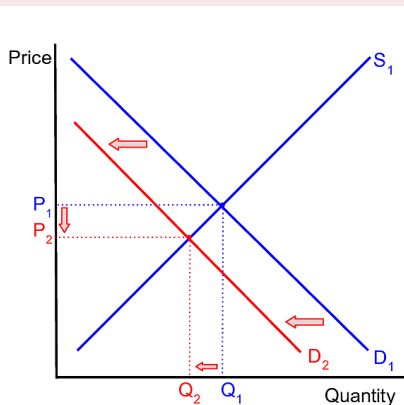
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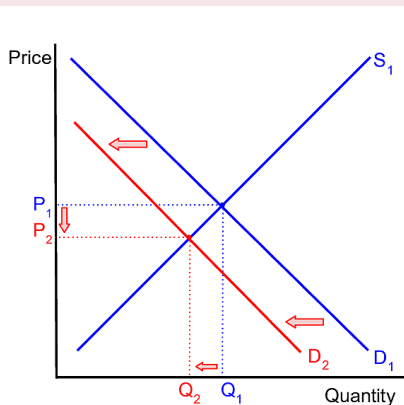
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## Changes in Income

**Normal good:** a good whose demand increases when consumers' incomes increase.

**Inferior good:** a good whose demand decreases when consumers' incomes increase.

Can you think of examples of an inferior good?

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## Changes in Income: Normal Goods

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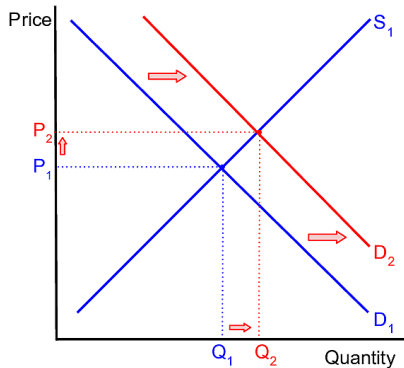
Examples: Most things, computers, automobiles, restaurant meals

If **income increases**, this will **increase demand** for a normal good

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### Increase in Income

#### Market for Automobiles



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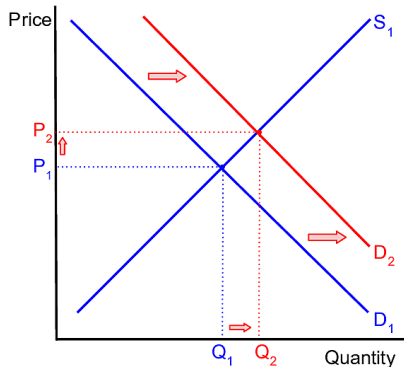
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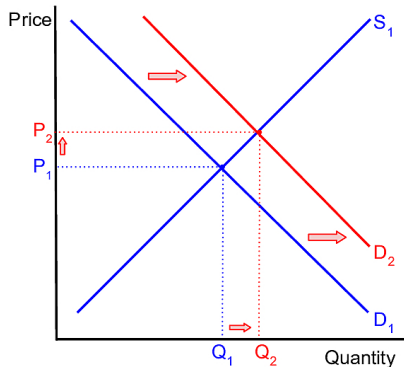
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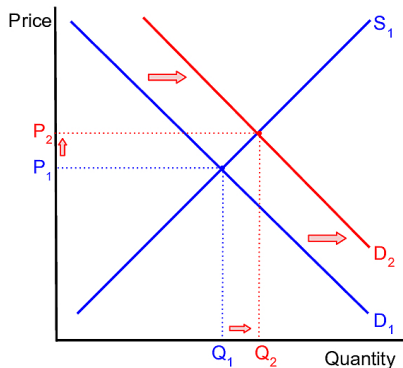
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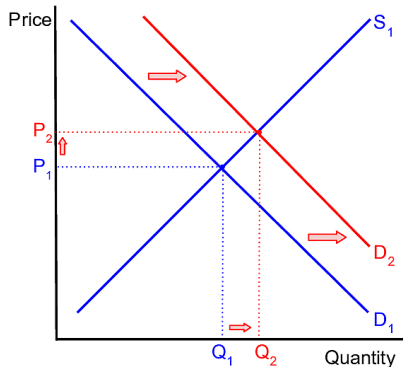
Examples: Most things, computers, automobiles, restaurant meals

If **income increases**, this will **increase demand** for a normal good

Eqm price increases, quantity increases

### Increase in Income

#### Market for Automobiles





## Changes in Income: Inferior Goods

16 / 31

### Income Effect on Inferior Goods

**Inferior good:** a good whose demand **decreases** when consumers' incomes increase.

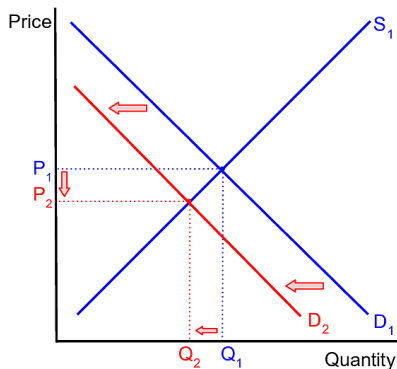
Examples: Used clothing, Ramen noodles

If **income increases**, this will **decrease demand** for an inferior good

Eqm price decreases, quantity decreases

### Increase in Income

#### Market for Used Clothing



## Changes in Income: Inferior Goods

16 / 31

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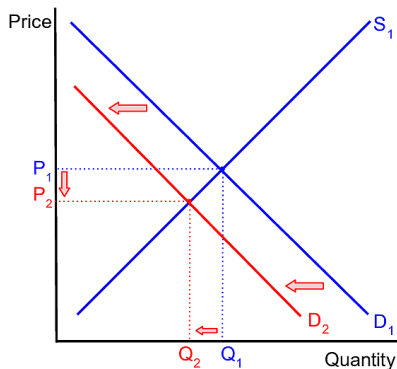
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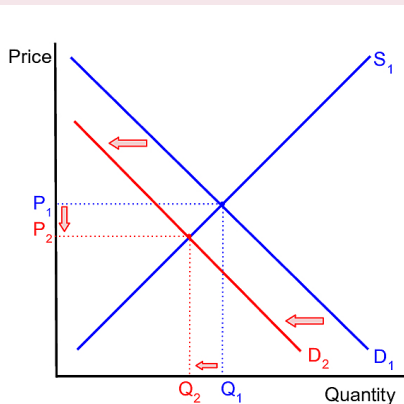
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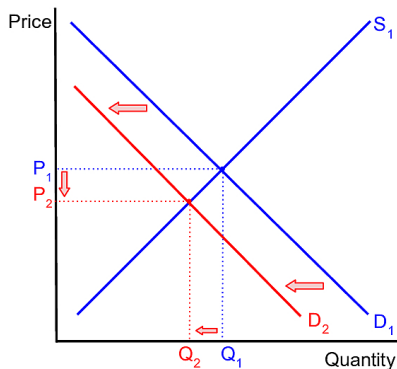
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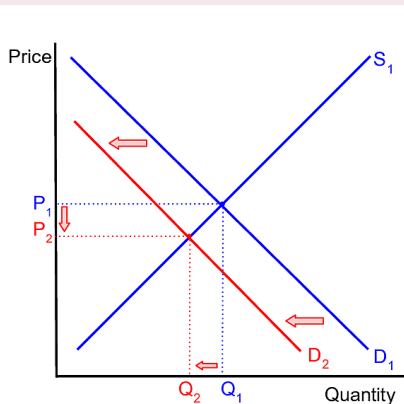
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## Consumers Expect Price Increase

17 / 31

### Expectation of Price Increase

If consumers expect a price will increase in the future, demand will increase in the present

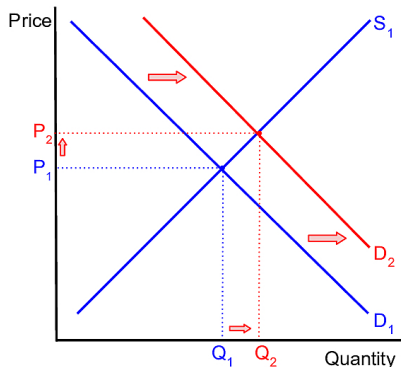
The expectation can be well-informed or even unfounded speculation

Results in higher price, higher quantity

*Self-fulfilling expectations are possible!*

### Expectation of a Price Increase

#### Market for Gasoline on 9/11/2001



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17 / 31

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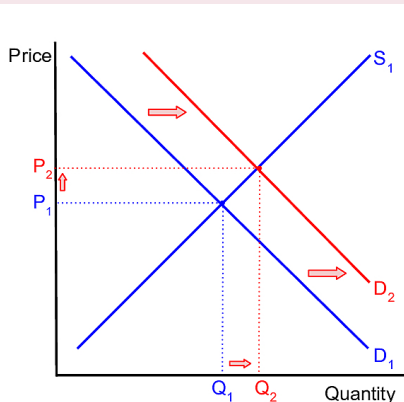
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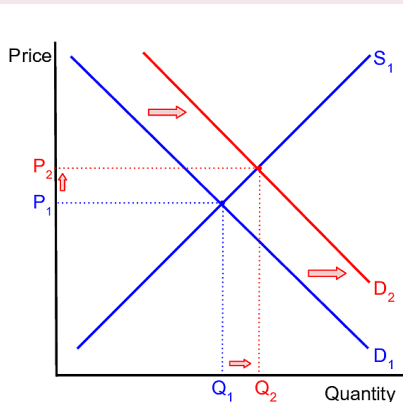
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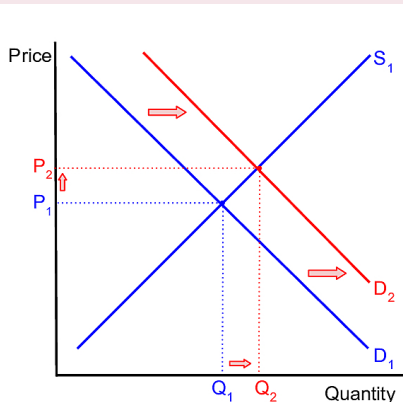
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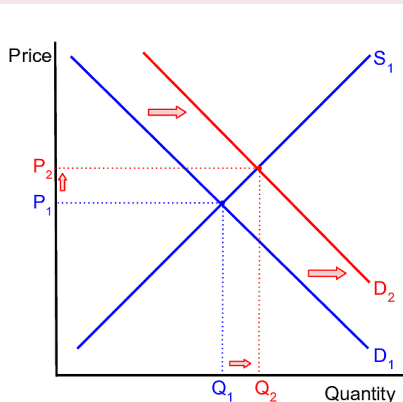
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## Consumers Expect Increase in Income

18 / 31

### Expectation of Increase in Income

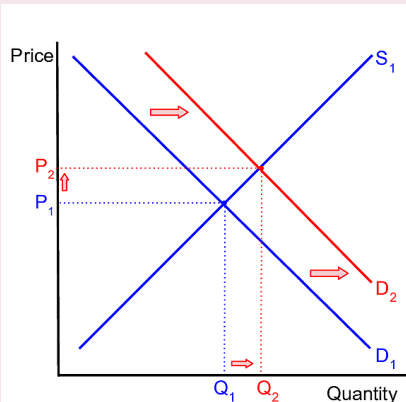
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Why consumer confidence is so important for macroeconomy

### Expectation of Higher Income

#### Market for Automobiles (Normal Good)



## Consumers Expect Increase in Income

18 / 31

### Expectation of Increase in Income

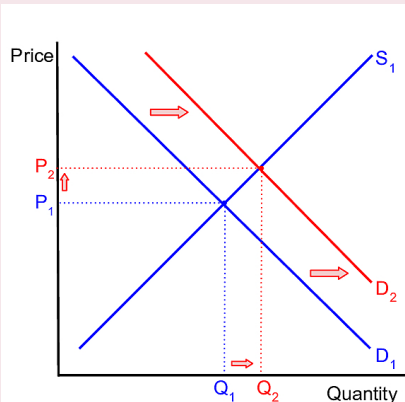
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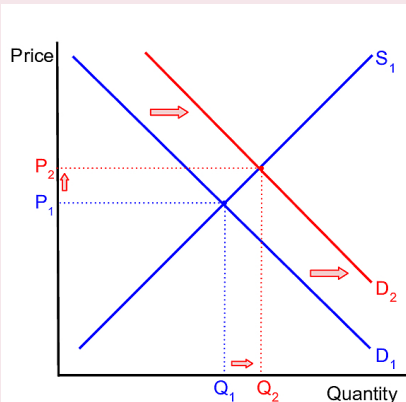
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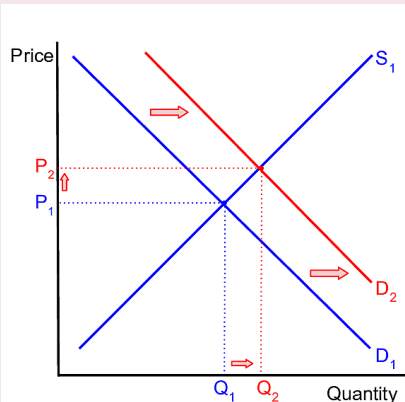
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# Supply Curve Shifts

19/ 31

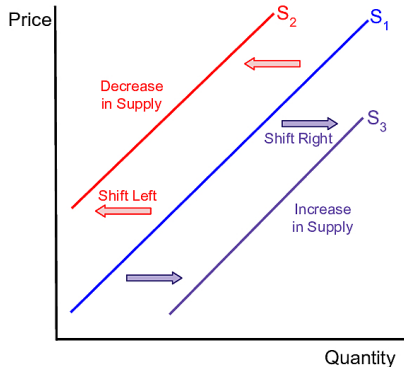
## Shifts in Whole Supply Curve

When something *besides the price of the good* affects supply, there is a *change or shift in supply*.

Something that **increases** supply shifts the supply curve to the **right**

Something that **decreases** supply shifts the supply curve to the **left**

## Shifts in Supply



# Supply Curve Shifts

19/ 31

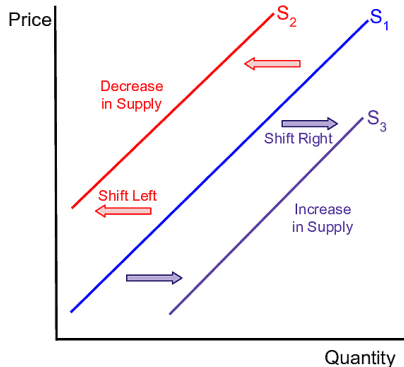
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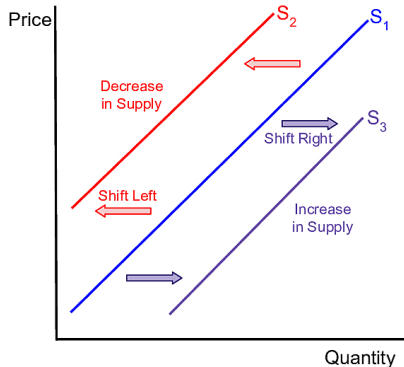
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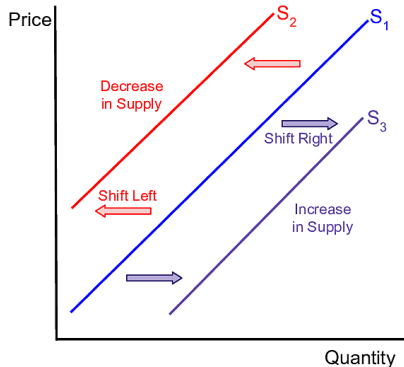
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## Shifts in Supply



## Improvements in Technology

20 / 31

### Improvements in Technology

Improvements in technology can make it possible to produce more

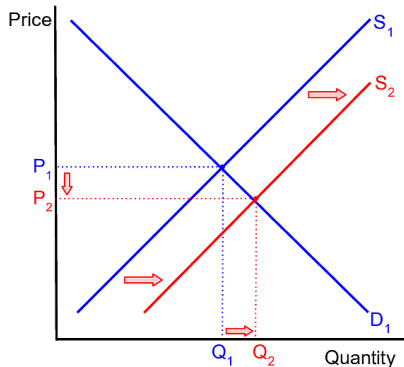
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Shift supply to the right

Eqm quantity increases, price decreases

### Improvement in Technology

#### Market for Computers



## Improvements in Technology

20 / 31

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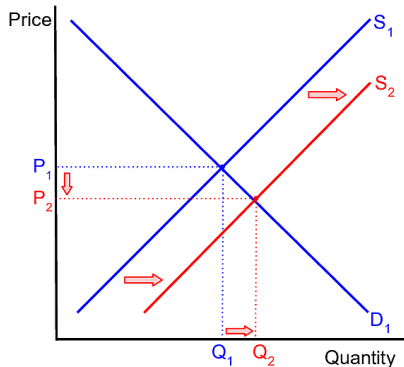
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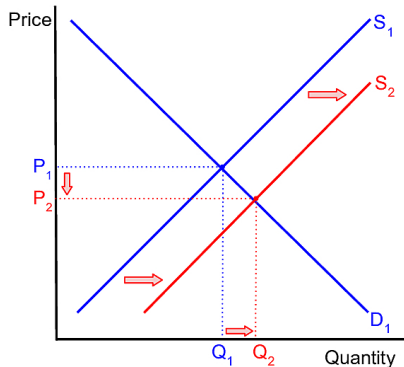
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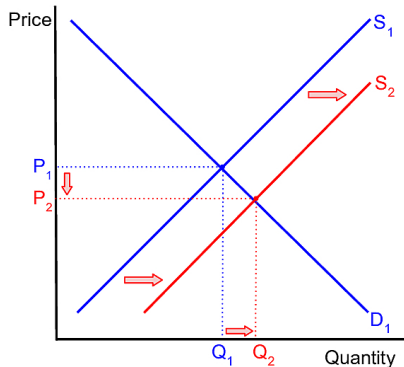
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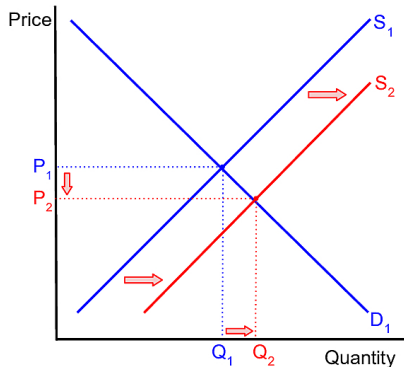
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## Increase in Production Costs

21 / 31

### Increase in Production Costs

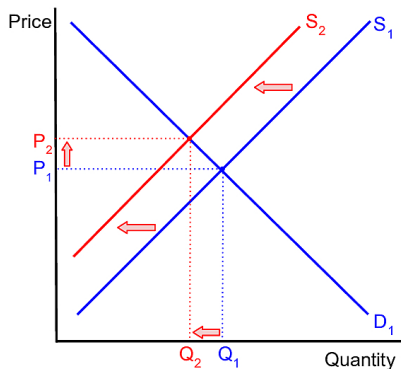
Any increase in production costs causes supply to shift to the left

For example: Increase in price of lumber for construction of new housing

Eqm quantity decreases, price increases

### Increase in Production Costs: Lumber Used in Construction

#### Market for New Housing





## Increase in Production Costs

21 / 31

### Increase in Production Costs

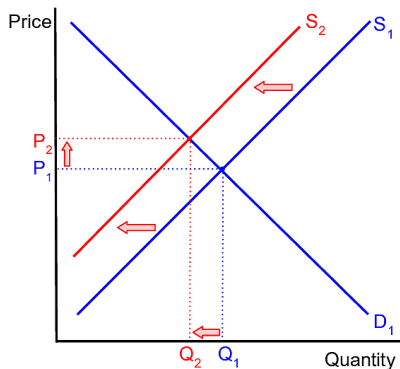
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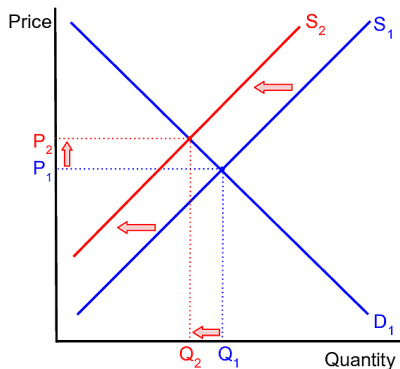
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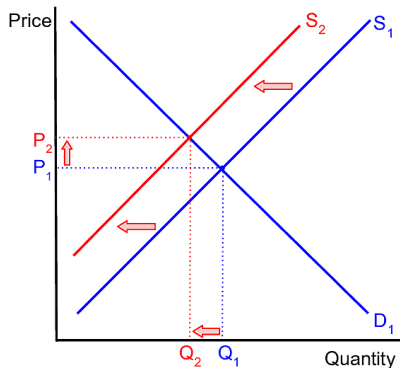
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# Producers Expect Higher Prices in Future

22 / 31

## Producer Expectations

If producers expect an increase in prices, may hold back production or sales until prices are higher

Easier for goods than can be stored or warehoused

For example: Agriculture producers expects an increase in price of grain

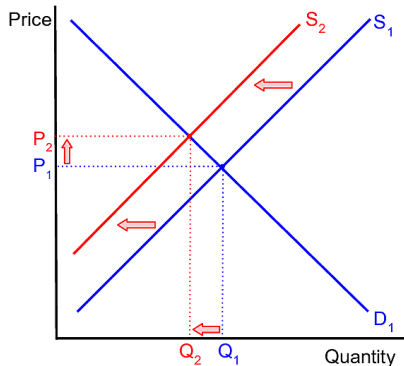
Store grain to sell later, supplying less today, supply shifts left

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*Can lead to self-fulfilling expectations*

## Expectation of Higher Price

### Market for Grain



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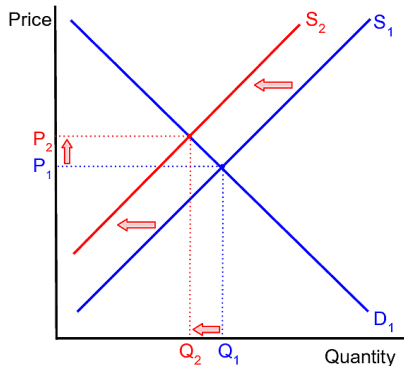
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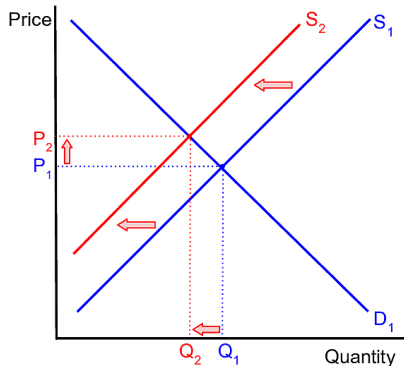
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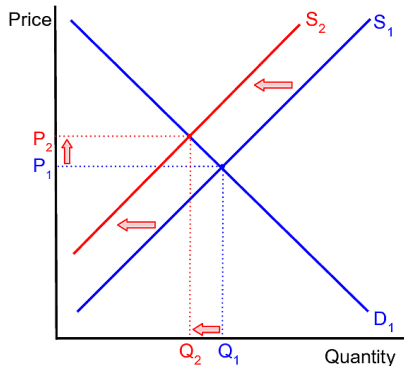
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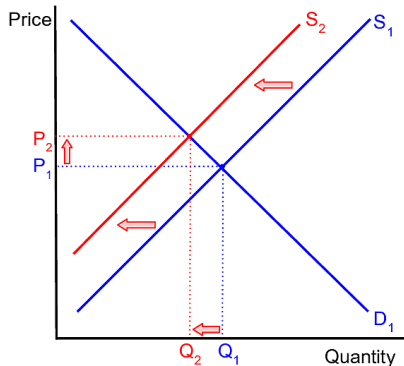
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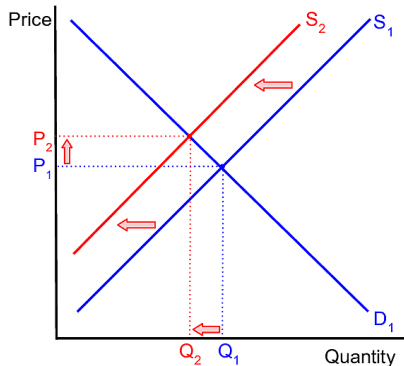
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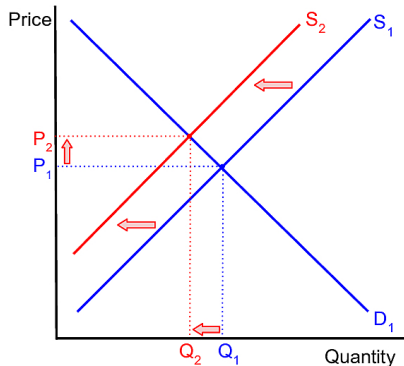
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# Subsidy on Ethanol Production

23 / 31

## Scenario

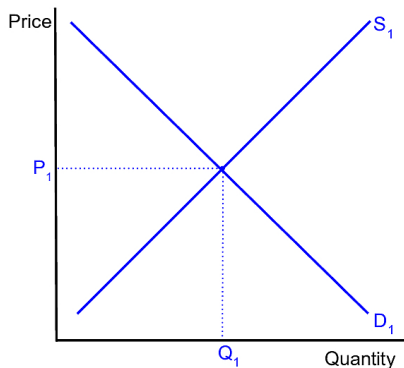
Suppose the government increases the subsidy to gasoline producers for blending ethanol into gasoline.

## Impact

Supply for gasoline with ethanol increases  
Eqm quantity increases, price decreases

## Supply and Demand

Market for Gasoline with Ethanol



# Subsidy on Ethanol Production

23 / 31

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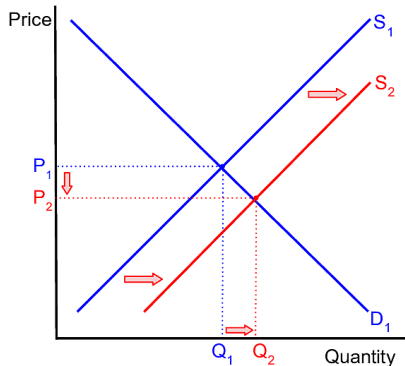
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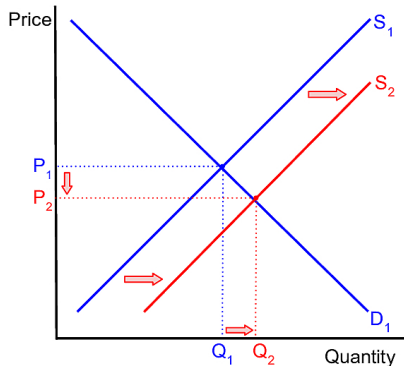
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# Taxes on Goods and Services

24 / 31

## Scenario

Suppose the government increases the taxes on cigarettes.

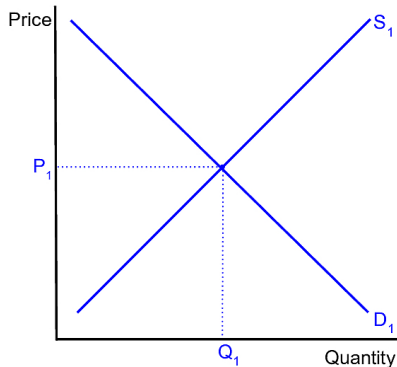
## Impact

Demand for cigarettes decreases

Eqm quantity decreases, price decreases

## Supply and Demand

### Market for Cigarettes



# Taxes on Goods and Services

24 / 31

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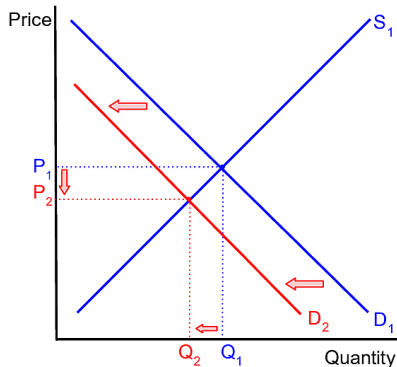
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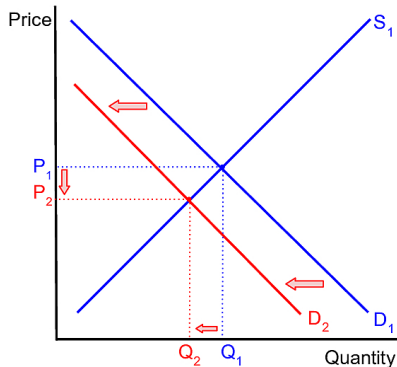
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### Market for Cigarettes





# Changes in Opinions and Preferences: Peloton

25 / 31

## Scenario

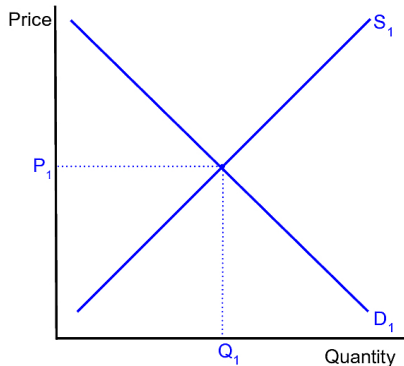
Suppose Mr. Big dies while working out on his Peloton bike, and this leads people to think that Peloton bikes are dangerous.

## Impact

Demand for Peloton bikes decreases  
Eqm quantity decreases, price decreases

## Supply and Demand

Market for Peloton Bikes



# Changes in Opinions and Preferences: Peloton

25 / 31

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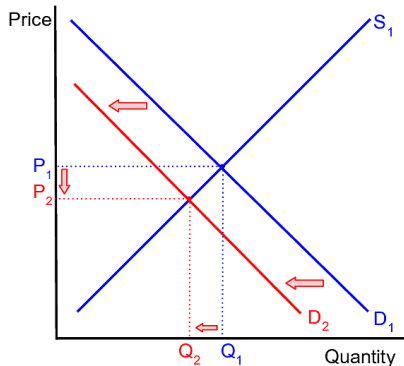
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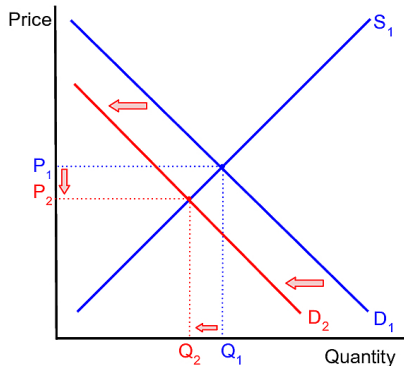
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# Changes in Preferences: Christmas Trees

26 / 31

## Scenario

After a difficult year in 2020, more people decided to celebrate the holiday season with real Christmas trees.

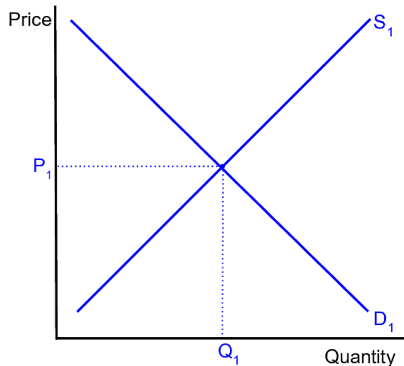
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## Supply and Demand

Market for Christmas Trees



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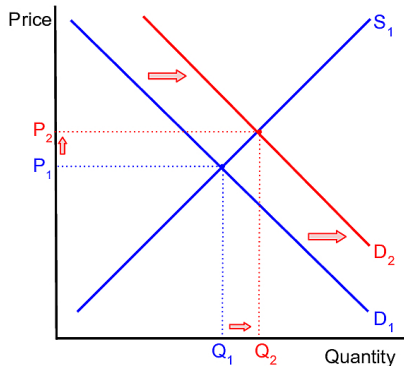
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## Scenario

After a difficult year in 2020, more people decided to celebrate the holiday season with real Christmas trees.

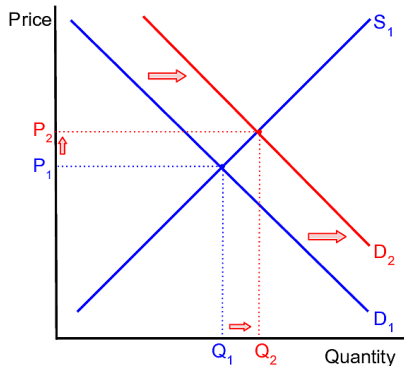
## Impact

Demand for Christmas trees increases

Eqm quantity increases, price increases

## Supply and Demand

Market for Christmas Trees



# Changes in Supply and Demand: Christmas Trees

27 / 31

## Scenario

During a very difficult recession in 2009-2010, many Christmas tree farmers did not invest in planting new trees. It takes about 10-11 years for trees to grow to typical room height.

Also, after a difficult year in 2020, more people decided to celebrate the holiday season with real Christmas trees.

## Impact

Demand increases

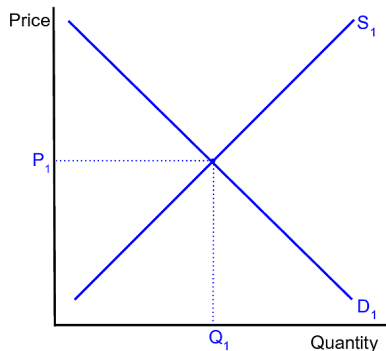
Supply also decreases

Equilibrium price increases

Change in equilibrium quantity is indeterminate

## Supply and Demand

Market for Christmas Trees



# Changes in Supply and Demand: Christmas Trees

27 / 31

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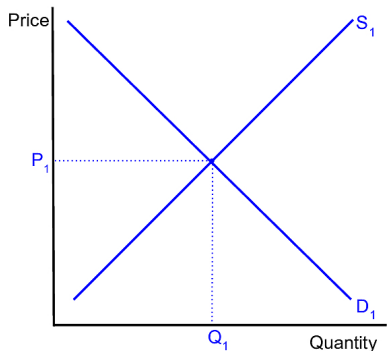
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Equilibrium price increases

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## Supply and Demand

Market for Christmas Trees





# Changes in Supply and Demand: Christmas Trees

27 / 31

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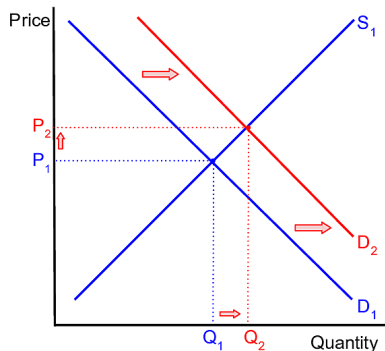
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Equilibrium price increases

Change in equilibrium quantity is indeterminate

## Supply and Demand

Market for Christmas Trees



# Changes in Supply and Demand: Christmas Trees

27 / 31

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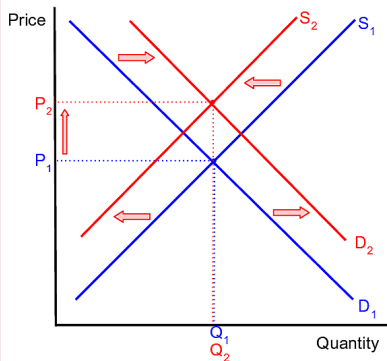
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Equilibrium price increases

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## Supply and Demand

Market for Christmas Trees



# Changes in Supply and Demand: Christmas Trees

27 / 31

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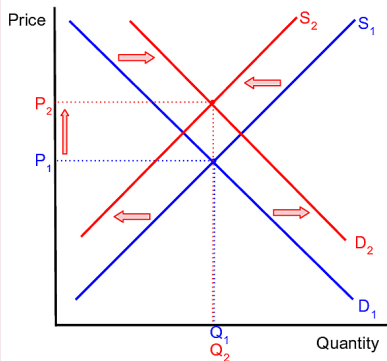
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Market for Christmas Trees



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27 / 31

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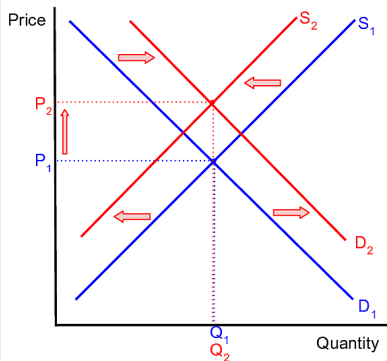
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## Supply and Demand

Market for Christmas Trees



# Changes in Supply and Demand: New Homes

28 / 31

## Scenario

Suppose that global supply chain problems cause a decrease in availability for construction materials

Suppose also that the country is in a recession and people have lower incomes

## Impact on Market for Homes

Demand for new homes decreases

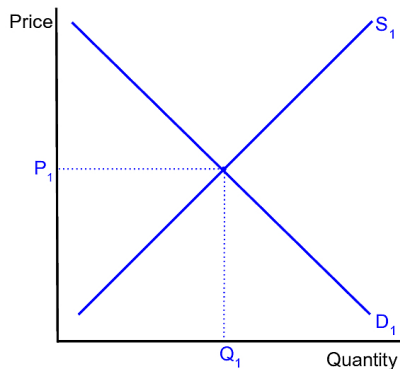
Supply for new homes decreases

Equilibrium quantity decreases

Change in equilibrium price is indeterminate

## Supply and Demand

### Market for New Homes



# Changes in Supply and Demand: New Homes

28 / 31

## Scenario

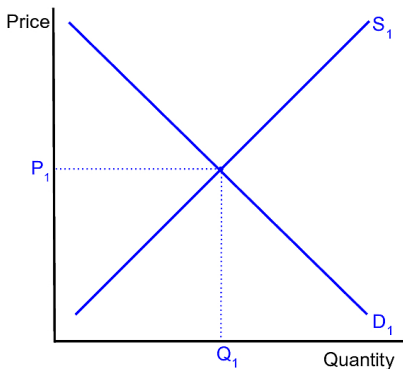
Suppose that global supply chain problems cause a decrease in availability for construction materials  
Suppose also that the country is in a recession and people have lower incomes

## Impact on Market for Homes

Demand for new homes decreases  
Supply for new homes decreases  
Equilibrium quantity decreases  
Change in equilibrium price is indeterminate

## Supply and Demand

Market for New Homes



# Changes in Supply and Demand: New Homes

28 / 31

## Scenario

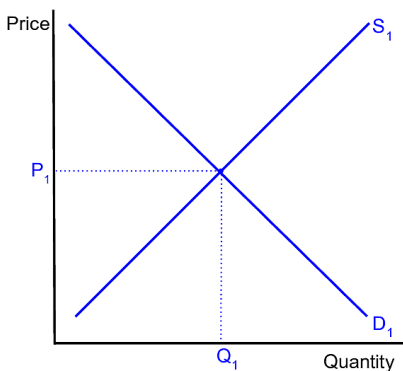
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## Impact on Market for Homes

Demand for new homes decreases  
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Equilibrium quantity decreases  
Change in equilibrium price is indeterminate

## Supply and Demand

Market for New Homes



# Changes in Supply and Demand: New Homes

28 / 31

## Scenario

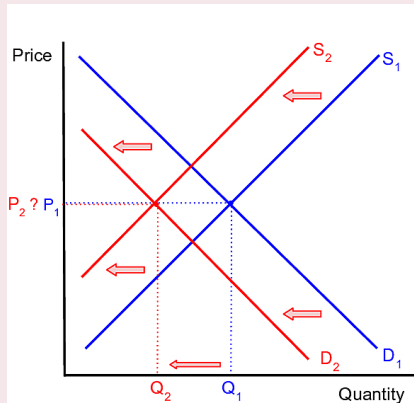
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## Supply and Demand

### Market for New Homes





# Changes in Supply and Demand: New Homes

28 / 31

## Scenario

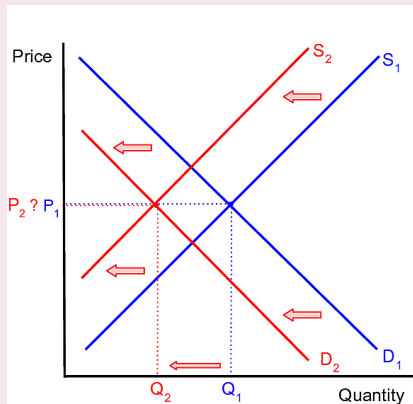
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## Supply and Demand

### Market for New Homes



# Changes in Supply and Demand: New Homes

28 / 31

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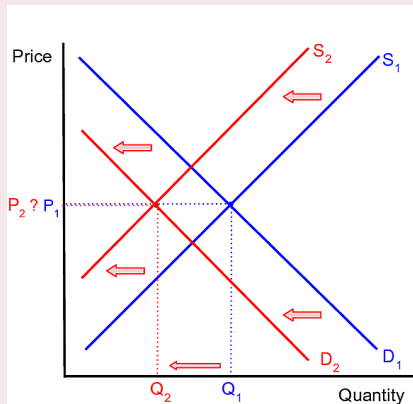
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## Supply and Demand

### Market for New Homes



## Scholar Spotlight: Zsuzsanna Csereklyei

29 / 31

**The effect of wind and solar power generation on wholesale electricity prices in Australia**, *Energy Policy* August 2019.  
(with Songze Qu and Tihomir Ancev)

### Wind, Solar, and Electricity Markets

Clean energy production and electricity prices have been rising together in Australia.

Estimated the impact: Increases in wind and solar energy production have led to decreases in electricity prices.

Increasing natural gas prices has led to increases in electricity prices.



**Dr. Zsuzsanna Csereklyei**

Senior Lecturer  
School of Economics, Finance and Marketing  
RMIT University, Melbourne, Australia

## Scholar Spotlight: Sheida Teimouri

30 / 31

**Housing Prices and Import Competition** (with Joachim Zietz)  
*Empirical Economics*, July 2024.

### Trade Liberalization with China

New trade agreement with China in October 2000 led to more imports of Chinese goods

Less demand for similar U.S. produced items led to less employment in some industries

Less employment → less income → less demand for housing

Housing prices fell 7% in *heavily trade-exposed areas*



**Dr. Sheida Teimouri**

Associate Professor of Economics  
University of Wisconsin-La Crosse

## Reading and Exercises

31 / 31

Textbook: Demand, Module 5

Textbook: Supply and Equilibrium, Module 6

Textbook: Changes and Equilibrium, Module 7

**Canvas Quiz due Wed 11:59 PM.**

Multiple-choice, 10 questions, unlimited attempts allowed, only best score counts

**Homework/In-class Exercise due Friday 11:59 PM.** We will work together in class on Thursday.

**Next week!** Apply our knowledge of supply and demand to currencies: looking at behavior of exchange rates, imports, and exports (Module 47)

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