

Chapter 3: Demand, Supply and Equilibrium

3.1

- From Chapter 2: All societies must decide:
 - *What* will be produced?
 - *How* will it be produced?
 - *Who* will get what is produced?
- In a *laissez-faire economy*: individual people and firms pursue their own self-interests without any central direction or regulation. The central institution of a laissez-faire economy is the *free-market system*.
- A **market** is the institution through which buyers and sellers interact and engage in exchange.

The Basic Decision-Making Units

- A *firm* is an organization that transforms resources (inputs) into products (outputs). Firms are the primary producing units in a market economy.
- An *entrepreneur* is a person who organizes, manages, and assumes the risks of a firm, taking a new idea or a new product and turning it into a successful business.

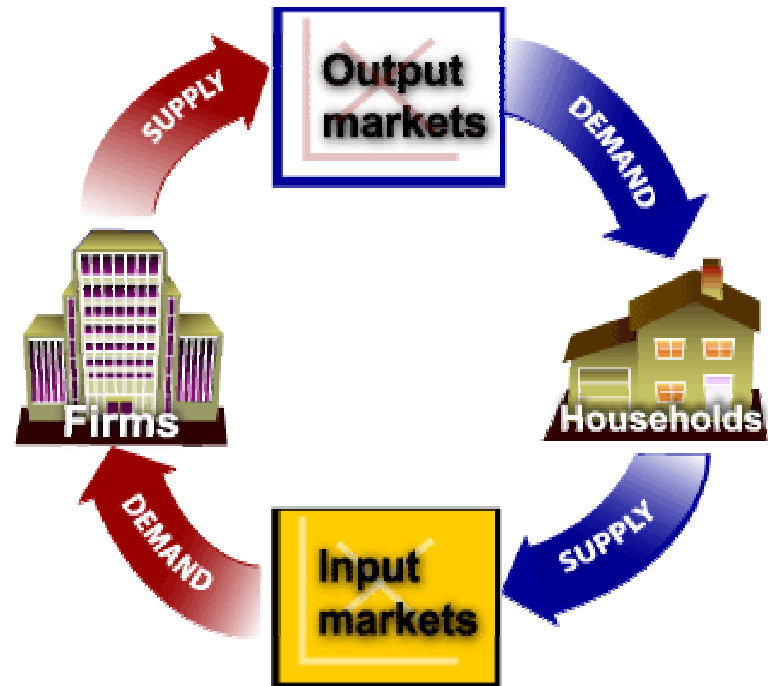
Objective:

- *Households* are the consuming units in an economy.

Objective:

The Circular Flow of Economic Activity

- The *circular flow of economic activity* shows the connections between firms and households in input and output markets.
- *Output, or product, markets* are the markets in which goods and services are exchanged.
- *Input markets* are the markets in which resources—labor, capital, and land—used to produce products, are exchanged.



- the physical flow of resources, goods, and services goes clockwise.
- Payments flow counterclockwise

Input Markets

Input markets include:

- The *labor market*, in which households supply work for wages to firms that demand labor.
- The *capital market*, in which households supply their savings, for interest or for claims to future profits, to firms that demand funds to buy capital goods.
- The *land market*, in which households supply land or other real property in exchange for rent.

Output Markets

- We will start with a discussion of output markets.
- Demand in Output Markets (study consumer demand for outputs)
- Supply in Output Markets (study firm supply of outputs)
- Put Demand and Supply together to show how prices are set and how prices allocate scarce resources in a market economy.

Determinants of Household Demand

A household's decision about the quantity of a particular output to demand depends on:

- The *price of the product* in question.
- The *income/wealth* available to the household: what is the difference between income and wealth?
- The *prices of related products*
- The household's *tastes and preferences*.
- The household's *expectations* about future income, wealth, and prices, etc.

Quantity Demanded

- *Quantity demanded* is the amount (number of units) of a product that a household would buy in a given time period if it could buy all it wanted at the current market price.

There are multiple variables that determine q_D :

$$q_D = f(\text{Price, Income/Wealth, Related Prices, T/P, Exp, Etc.})$$

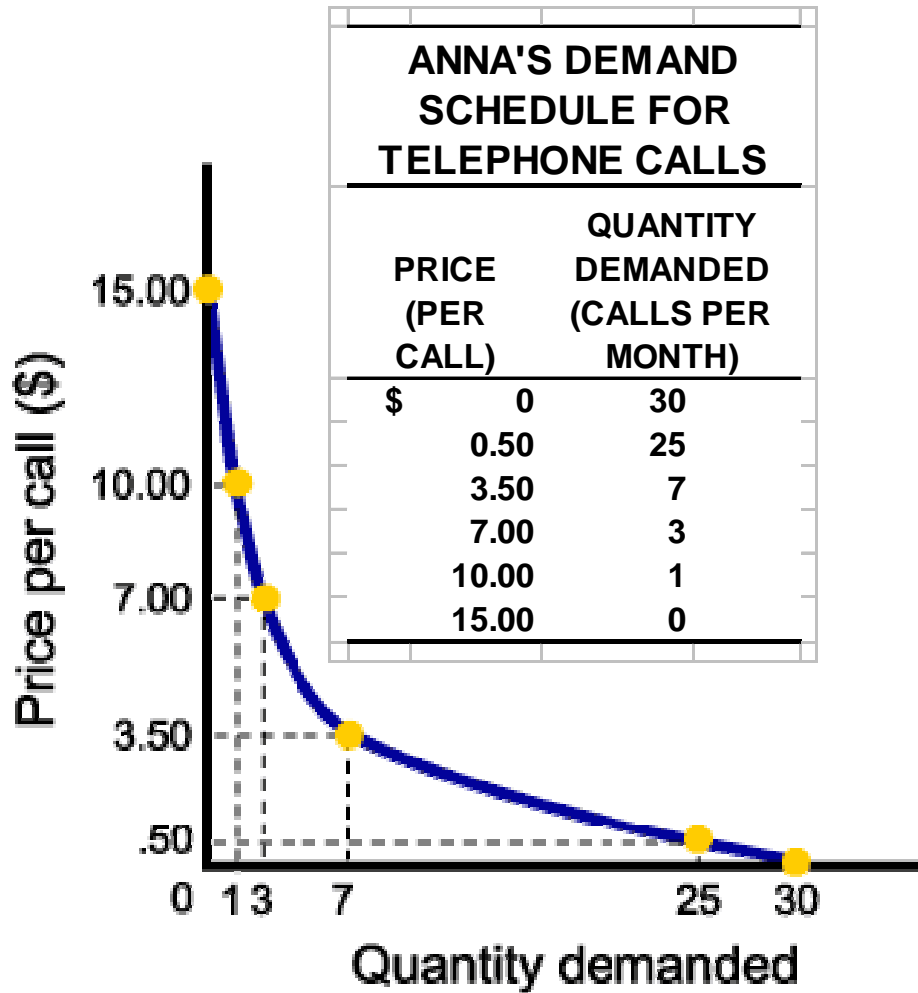
We focus on price.

Demand Schedule

ANNA'S DEMAND SCHEDULE FOR TELEPHONE CALLS	
PRICE (PER CALL)	QUANTITY DEMANDED (CALLS PER MONTH)
\$ 0	30
0.50	25
3.50	7
7.00	3
10.00	1
15.00	0

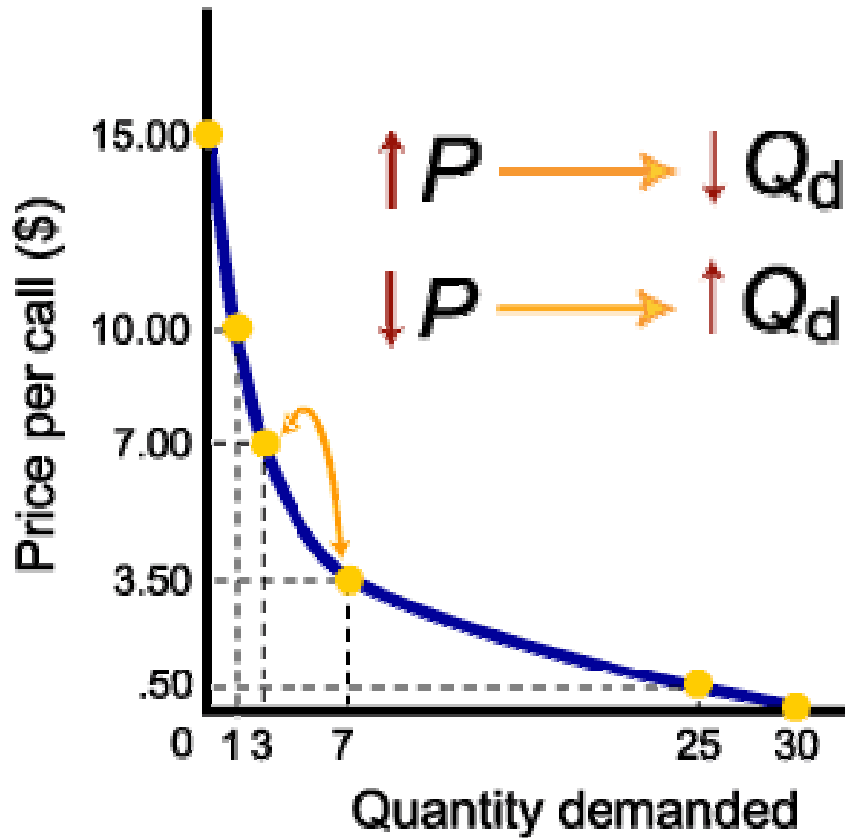
- A *demand schedule* is a table showing how much of a given product a household would be willing to buy at different prices. It is a list of prices and the associated quantities demanded.

The Demand Curve



- The *demand curve* is a graph illustrating how much of a given product a household would be willing to buy at different prices.
- Demand curves intersect the quantity (X)-axis, as a result of time limitations and diminishing marginal utility.
- Demand curves intersect the (Y)-axis, as a result of limited incomes and wealth.

The Law of Demand

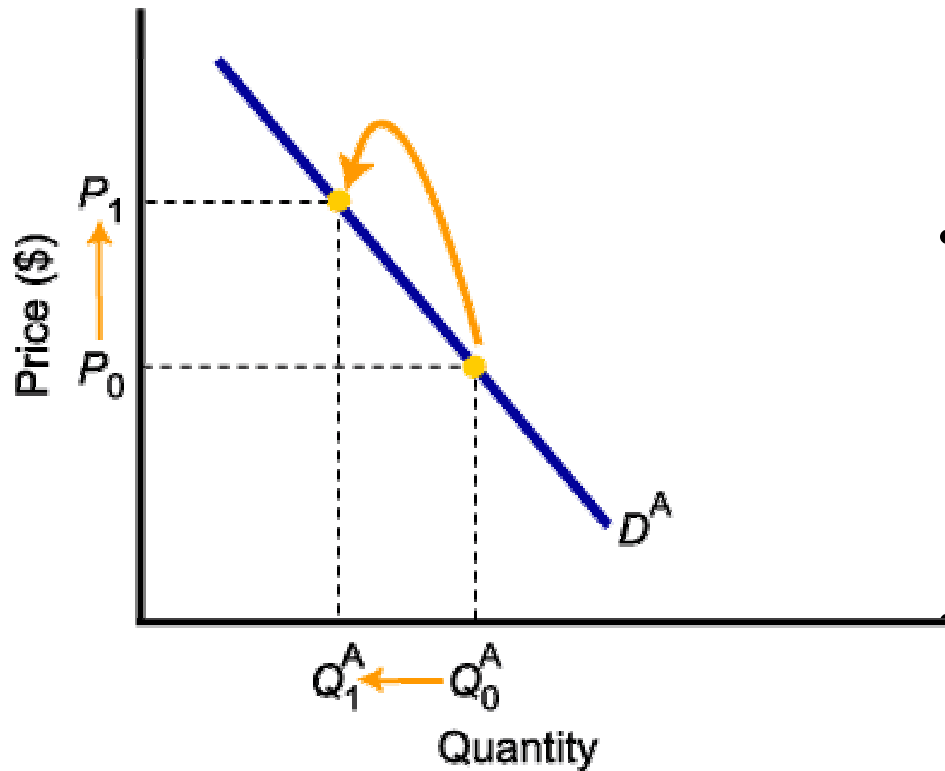


- The *law of demand* states that there is a negative, or inverse, relationship between price and the quantity of a good demanded, *ceteris paribus*.

Why is the relationship negative?

Why do we need the *ceteris paribus* assumption?

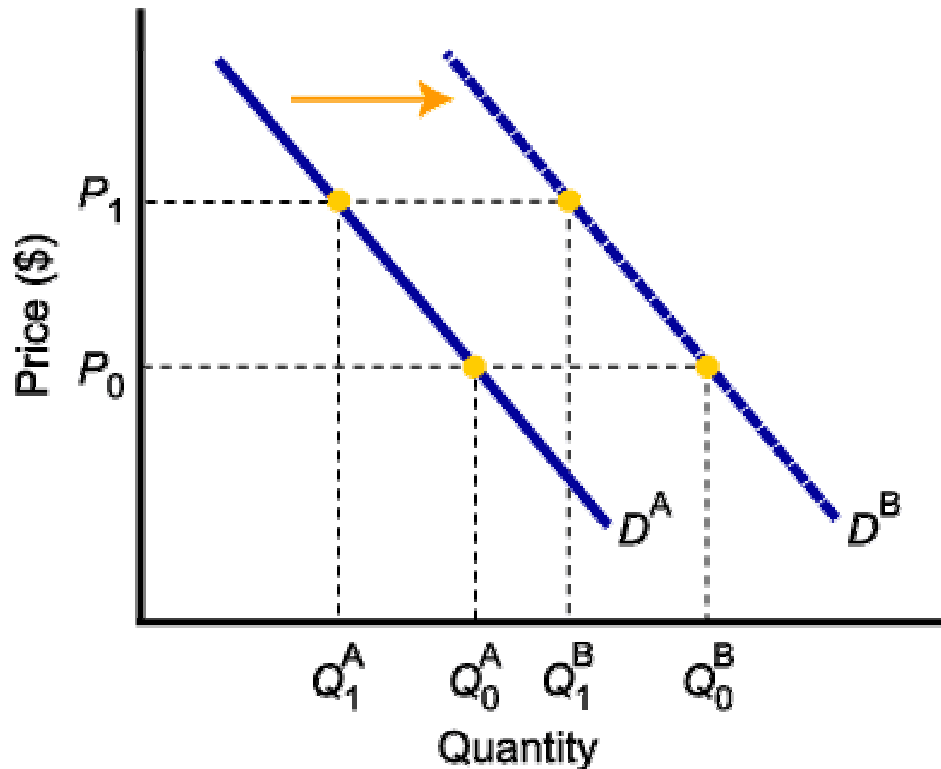
Shift of Demand Versus Movement Along a Demand Curve



- A “change in *demand*” is not the same as a “change in *quantity demanded*.”
- A higher price causes a lower *quantity demanded*. This is shown here: price increases from P_0 to P_1 , causing quantity demanded to fall from Q_0^A to Q_1^A .

We do not say that a higher price causes a lower demand.

A Change in Demand Versus a Change in Quantity Demanded



- An “increase in demand” is captured with a shift of the demand curve to the right: *quantity demanded* is greater than it was prior to the shift, *for each and every price level*.
- Changes in determinants of demand, other than price, cause a change in *demand*, or a *shift* of the entire demand curve, from D^A to D^B .

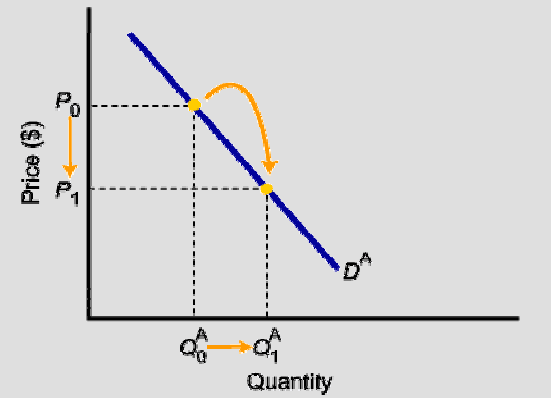
A Change in Demand Versus a Change in Quantity Demanded

To summarize:

Change in price of a good or service leads to



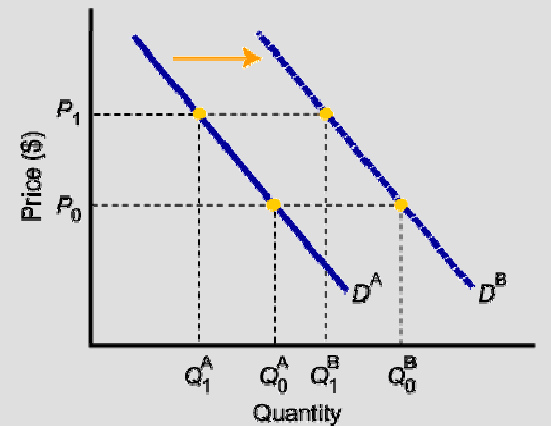
Change in *quantity demanded*
(Movement along the curve).



Change in income, preferences, prices of other goods or services, or expectations leads to

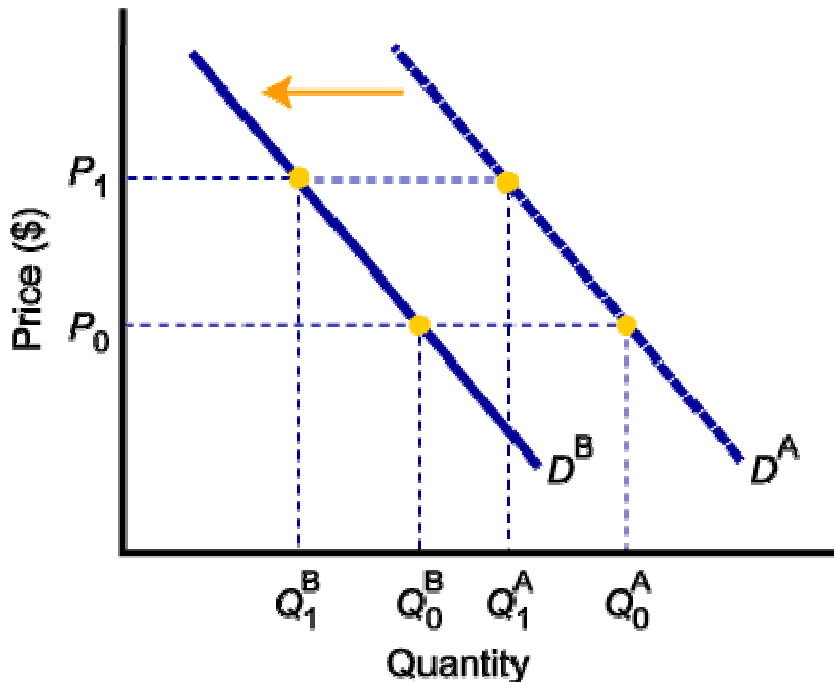


Change in demand
(Shift of curve).

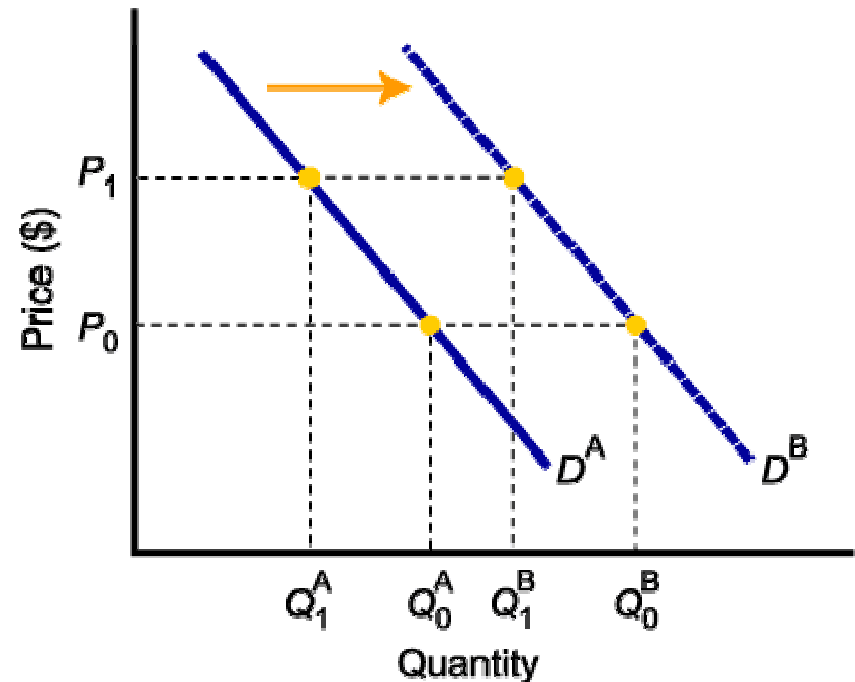


The Impact of a Change in Income

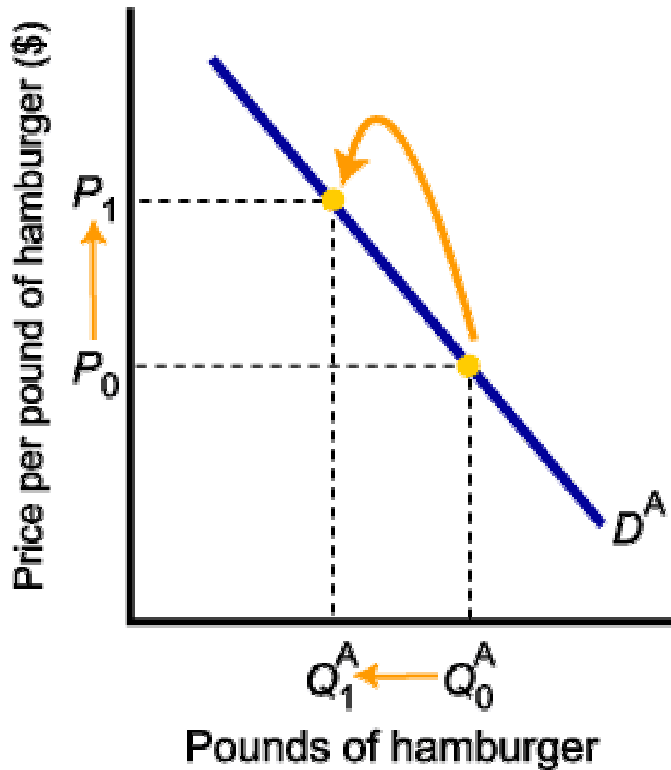
- Higher income decreases the demand for an *inferior* good



- Higher income increases the demand for a *normal* good



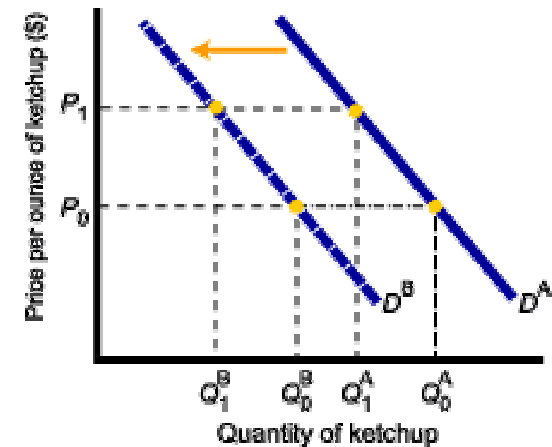
The Impact of a Change in the Price of Related Goods



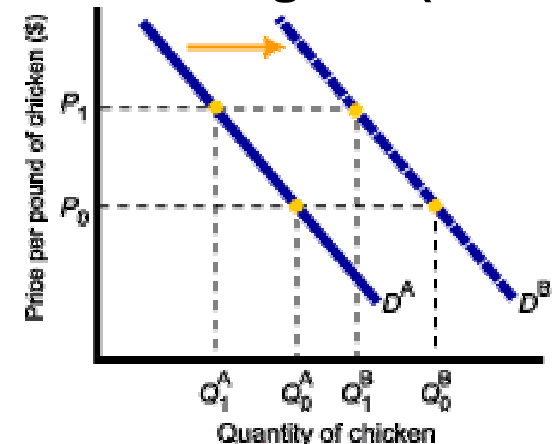
1. It all starts with:

- The Price of hamburger rises \rightarrow
- Quantity of hamburgers demanded falls

2. Demand for complement good (ketchup) shifts left

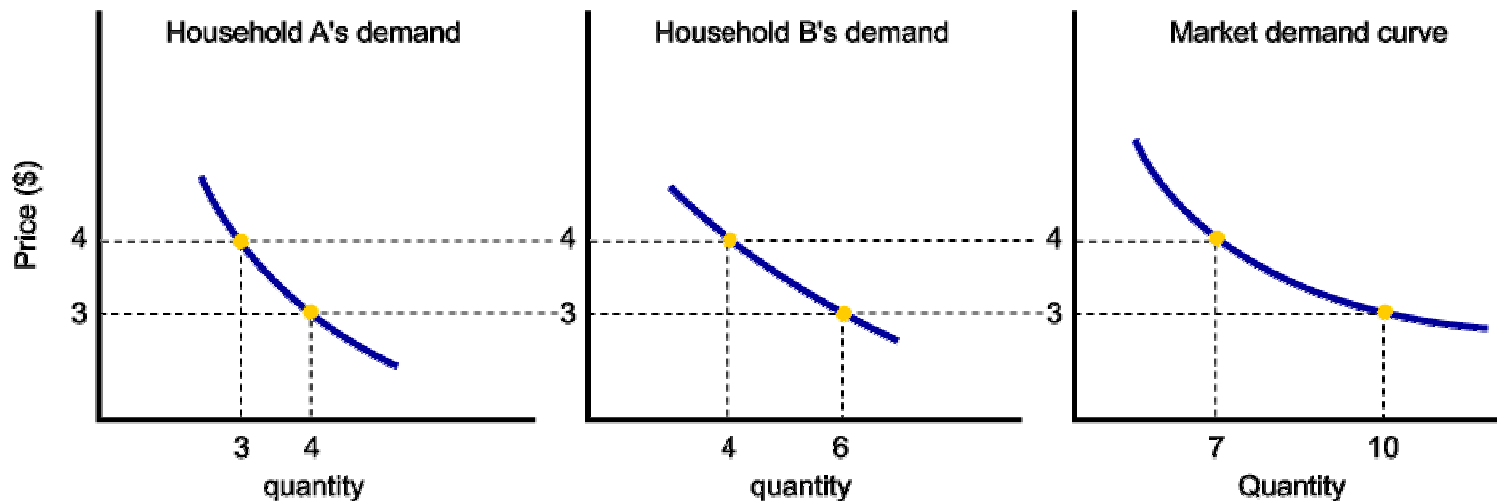


3. Demand for substitute good (chicken) shifts right



From Household to Market Demand

- Demand for a good or service can be defined for an *individual household*, or for a group of households that make up a *market*.
- *Market demand* is the sum of all the quantities of a good or service demanded per period by all the households buying in the market for that good or service.
- Assuming there are only two households (A and B) in the market, market demand is derived as follows:



Supply in the Output Markets

- Firms produce goods and services and sell them in the output markets
- In a free market system, firms operate under the motivation of maximum profit.
- Start with the idea of a small firm operating in a large market. It must decide what quantity to offer for sale in the market. It doesn't set price.
- $\text{Profits} = \text{Revenues} - \text{Costs}$

Supply in Output Markets

Quantity supplied represents the number of units of a product that a firm would be willing and able to offer for sale at a particular price during a given time period.

Determinants of quantity supplied (q_s):

- **Price**
- **Costs of production:**
 - The **price of required inputs** (labor, capital, and land)
 - The **technologies** that can be used to produce the product
- **Prices of Related Goods** (related in production)

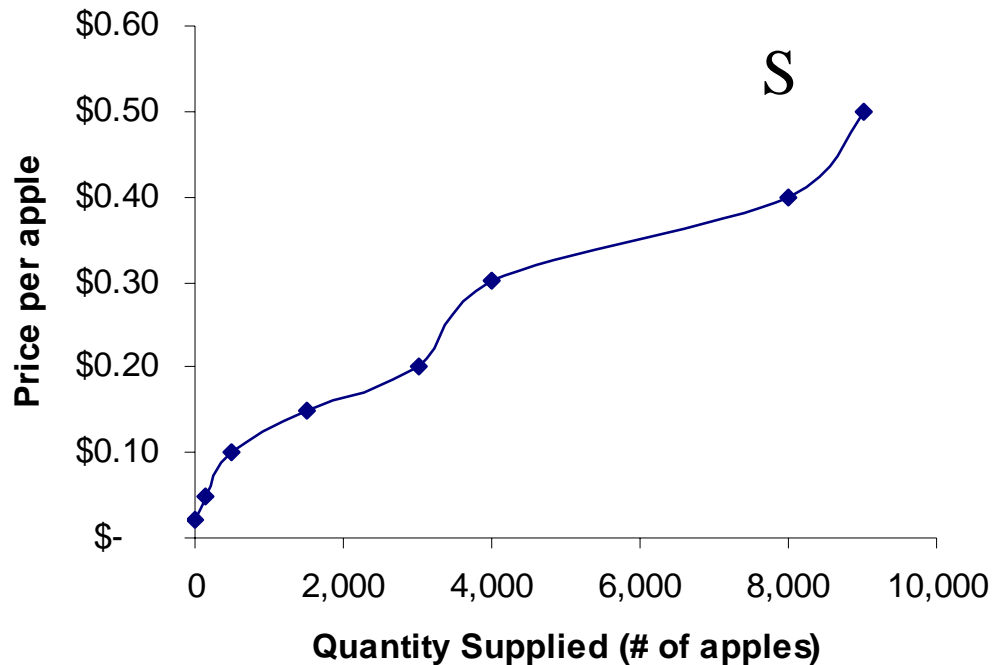
Supply in Output Markets

- A *supply schedule* is a table showing how much of a product firms will supply at different prices.

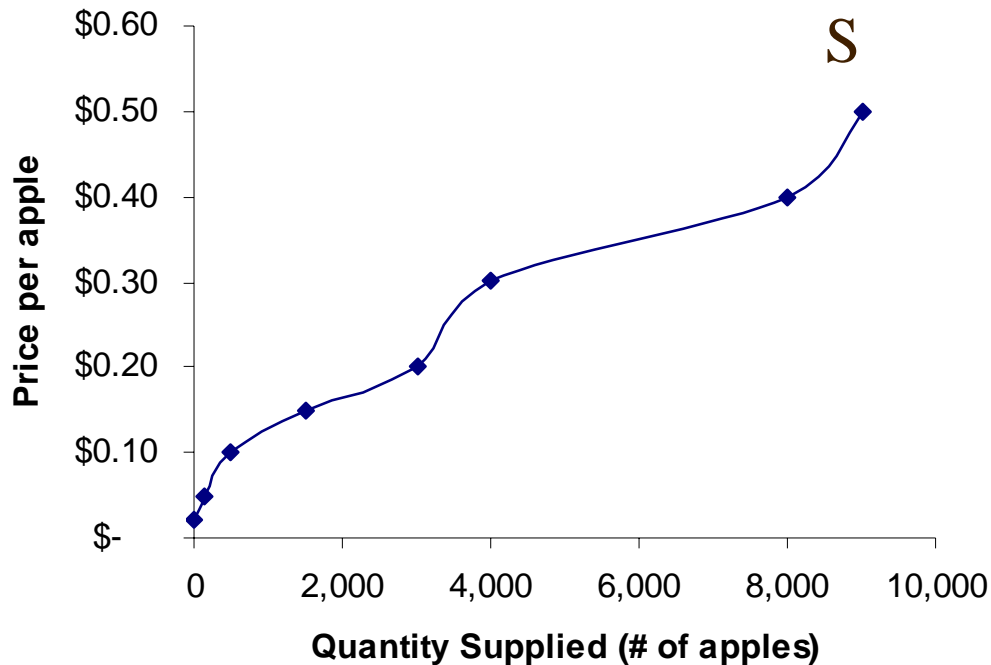
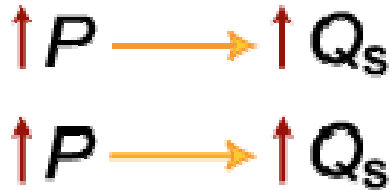
Apple Orchard: Supply Schedule		
Price per apple	Quantity Supplied (qs): # of apples	Production Technique
\$ 0.02	0	
\$ 0.05	150	
\$ 0.10	500	
\$ 0.15	1,500	
\$ 0.20	3,000	
\$ 0.30	4,000	
\$ 0.40	8,000	

The Supply Curve and the Supply Schedule

- A *supply curve* is a graph illustrating how much of a product a firm will supply at different prices.



The Law of Supply



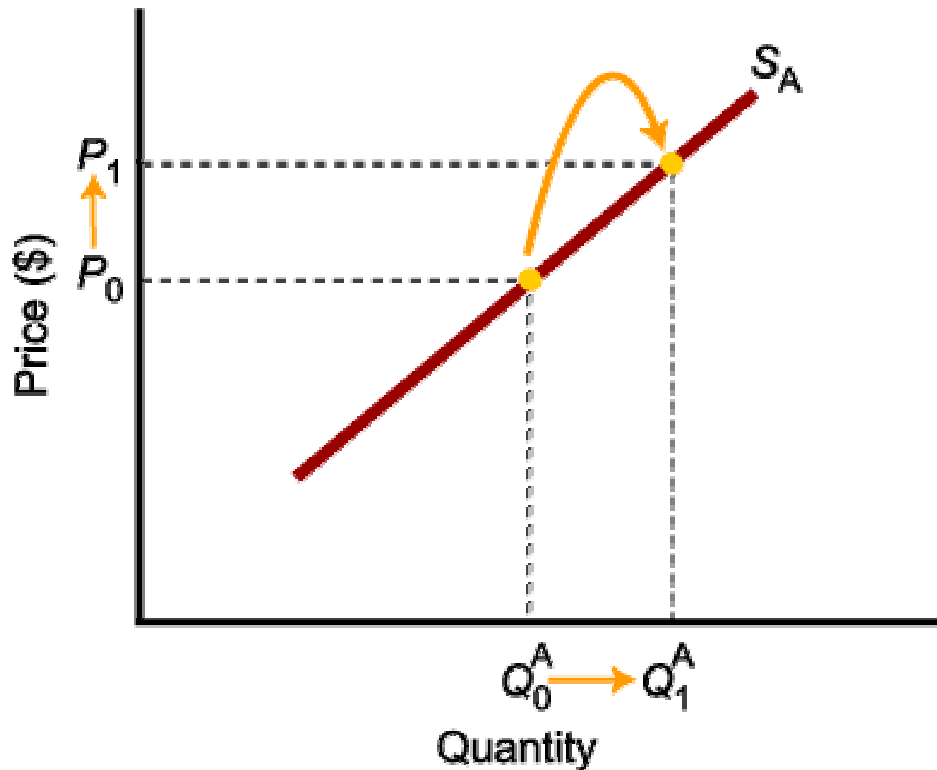
- The *law of supply* states that there is a positive relationship between price and quantity of a good supplied, *ceteris paribus*.
- This means that supply curves typically have a positive slope.
- Why *ceteris paribus*?

Why Ceteris Paribus?

Along a supply curve the only two variables that vary are price and the quantity supplied by the firm. Held constant are all the other factors that influence the firm's decision on how much to supply, such as the prices of inputs and the available technologies, and the prices of related goods.

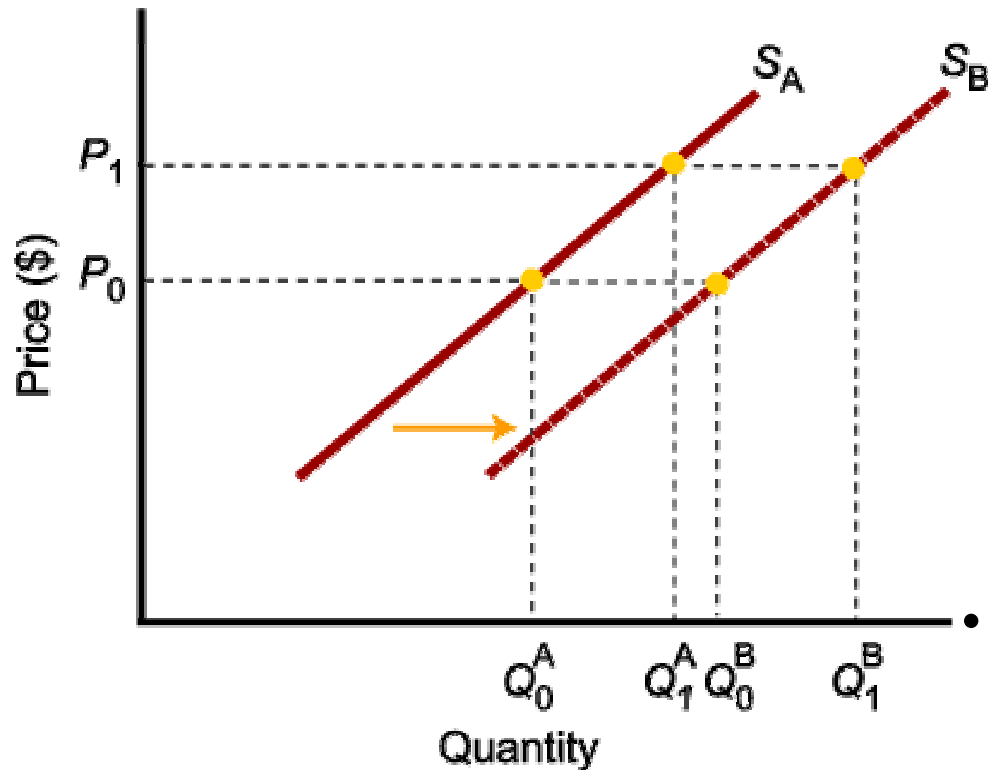
If we didn't hold these variables constant, we would not be certain of a positive relationship between price and quantity supplied.

A Change in Supply Versus a Change in Quantity Supplied



- A “change in *supply*” is not the same as a “change in *quantity supplied*.”
- A higher price causes a larger *quantity supplied*. This is shown here with price increasing from P_0 to P_1 , causing quantity supplied to increase from Q_0^A to Q_1^A .
- We do not say that a higher price causes a larger supply.

A Change in Supply Versus a Change in Quantity Supplied



- An “increase in supply” is captured with a shift of the supply curve to the right: *quantity supplied* is greater than it was prior to the shift, *for each and every price level*.

- Changes in determinants of supply, other than price of the product, cause a change in *supply*, or a *shift* of the entire supply curve, from S^A to S^B .

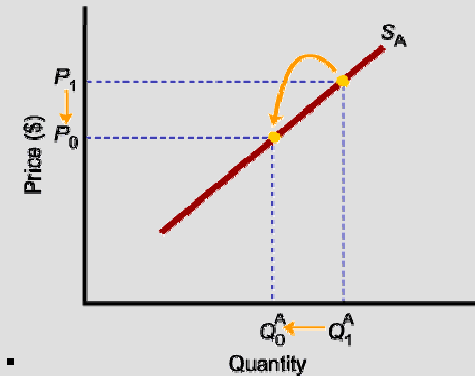
A Change in Supply Versus a Change in Quantity Supplied

To summarize:

Change in price of a good or service
leads to



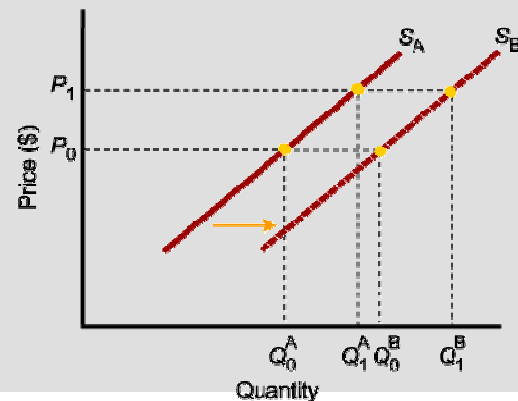
Change in *quantity supplied*
(Movement along the curve).



Change in costs, input prices, technology, or prices of
related goods and services
leads to



Change in supply
(Shift of curve).



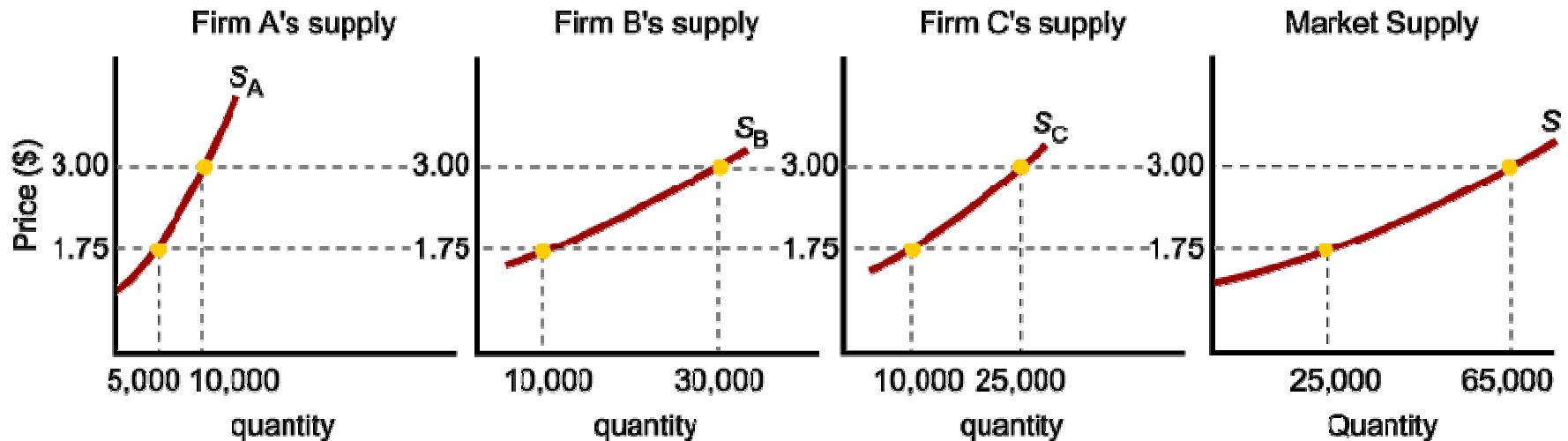
From Individual Supply to Market Supply

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- The supply of a good or service can be defined for an individual firm, or for a group of firms that make up a market or an industry.
- *Market supply* is the sum of all the quantities of a good or service supplied per period by all the firms selling in the market for that good or service.

Market Supply

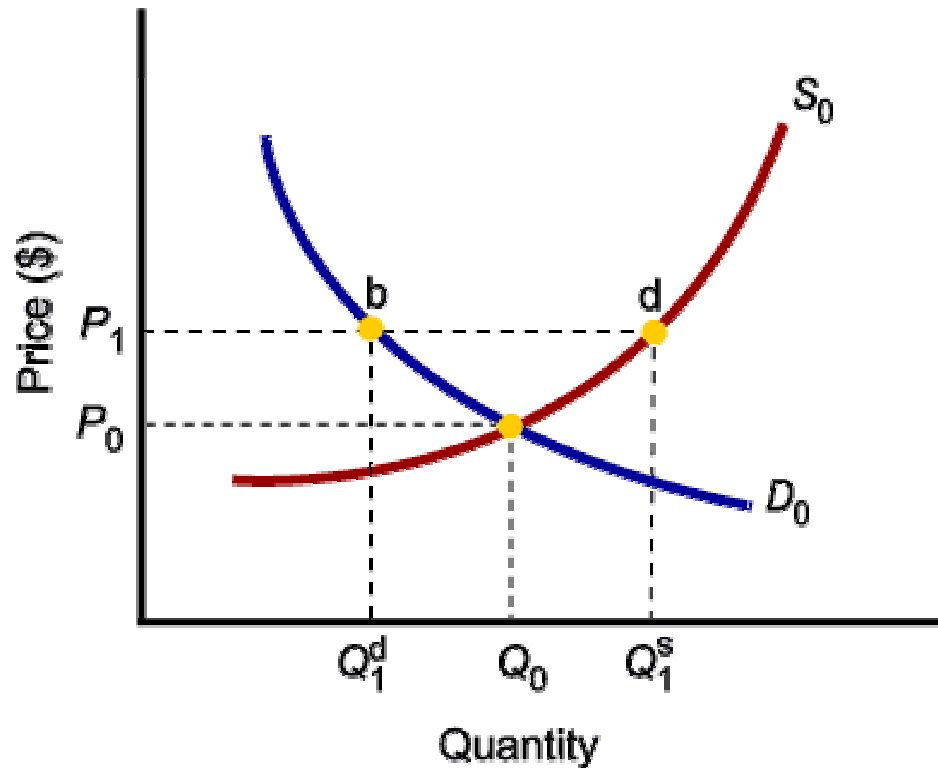
- As with market demand, *market supply* is the horizontal summation of individual firms' supply curves.



Market Equilibrium

- The operation of the market depends on the interaction between buyers and sellers.
- An *equilibrium* is the condition that exists when quantity supplied and quantity demanded are equal.
- At equilibrium, there is no tendency for the market price to change.

Market Equilibrium



Equilibrium is where quantity supplied equals quantity demanded:

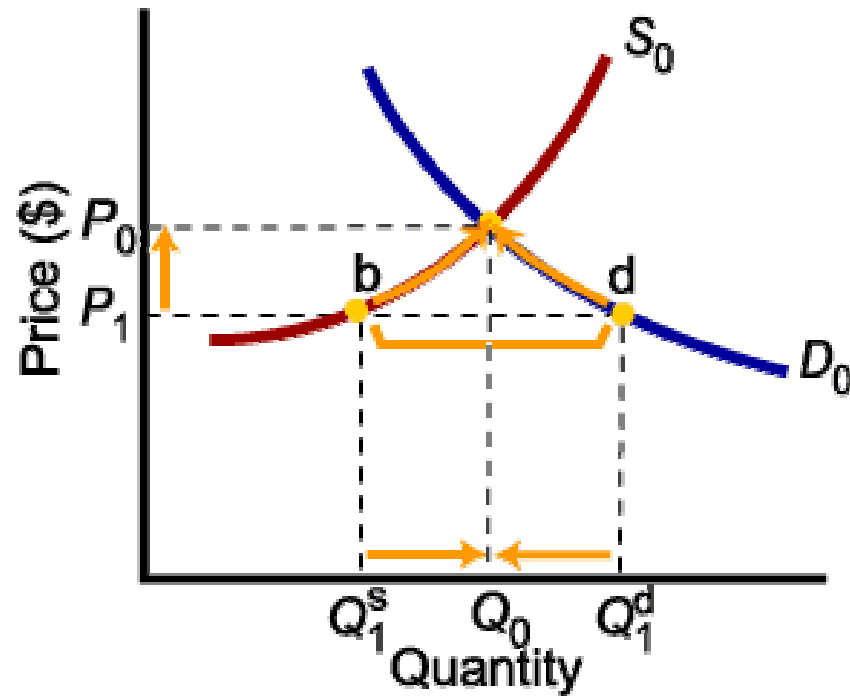
Specifically, it is the price where

$$Q_D = Q_S$$

(not where demand = supply)

- At any price level other than P_0 , the wishes of buyers and sellers do not coincide → disequilibrium

Market Disequilibria

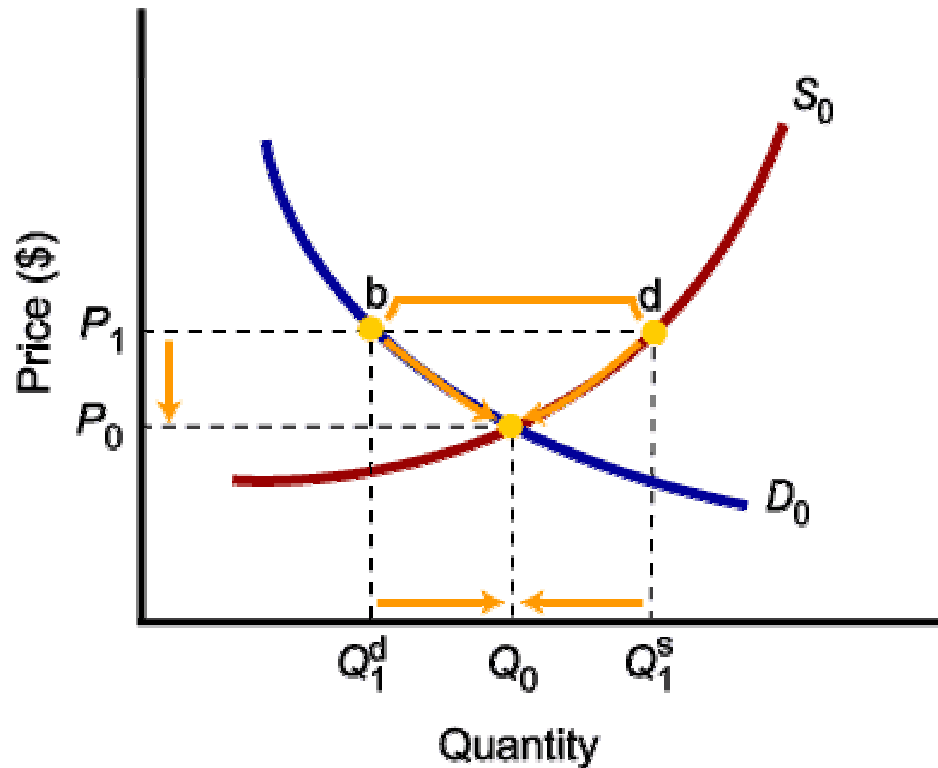


Excess demand, or shortage, is the condition that exists when quantity demanded exceeds quantity supplied at the current price:

At P_1 , $Q_1^D > Q_1^S$

Price rationing: “as long as there is a way for buyers and sellers to interact, those who are willing and able to pay more will make that fact known”

Market Disequilibria

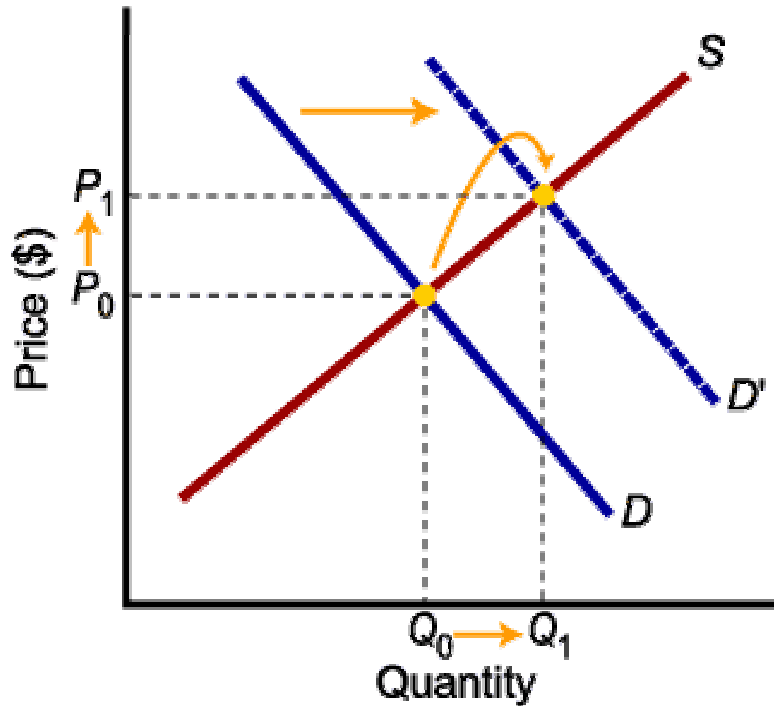


Excess supply, or surplus, is the condition that exists when quantity supplied exceeds quantity demanded at the current price:

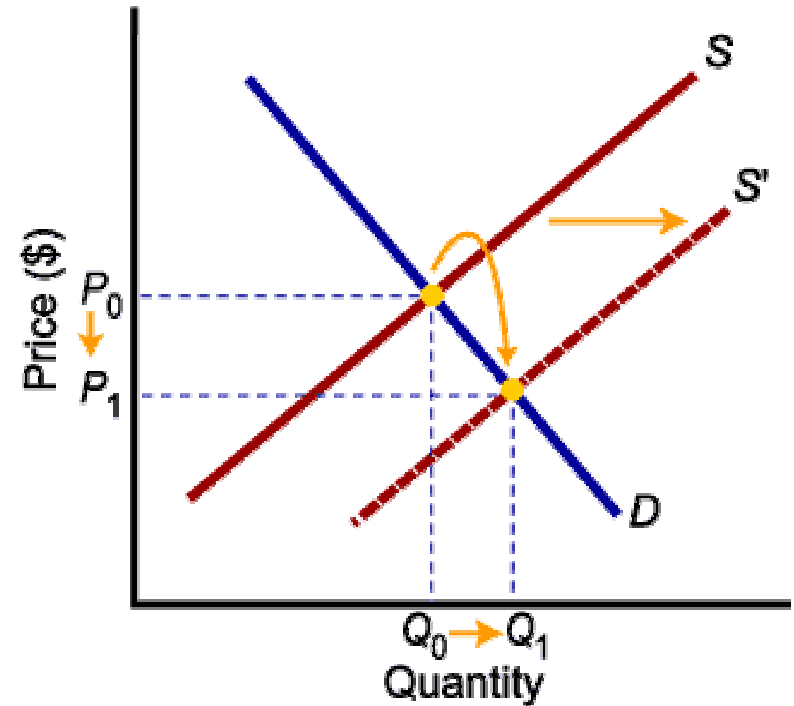
$$\text{At } P_1, Q_1^S > Q_1^D$$

Changes in Equilibrium: Increases in Demand and Supply

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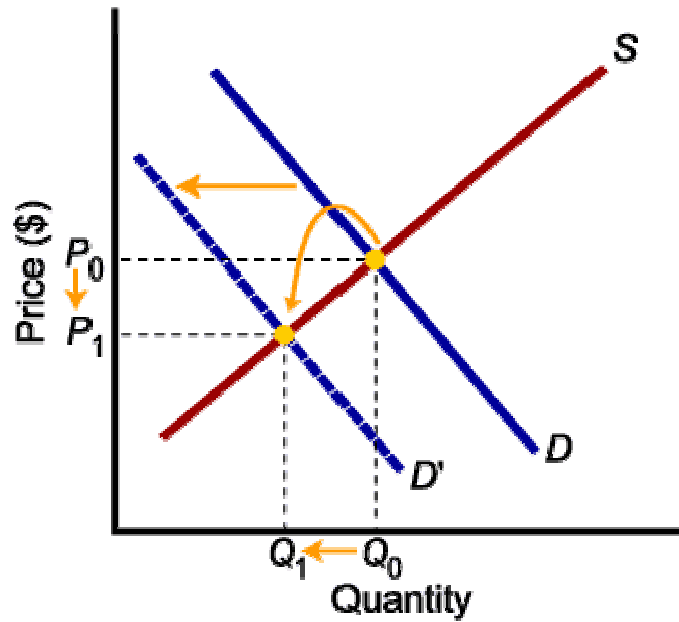


An increase in demand leads to higher equilibrium price and higher equilibrium quantity.

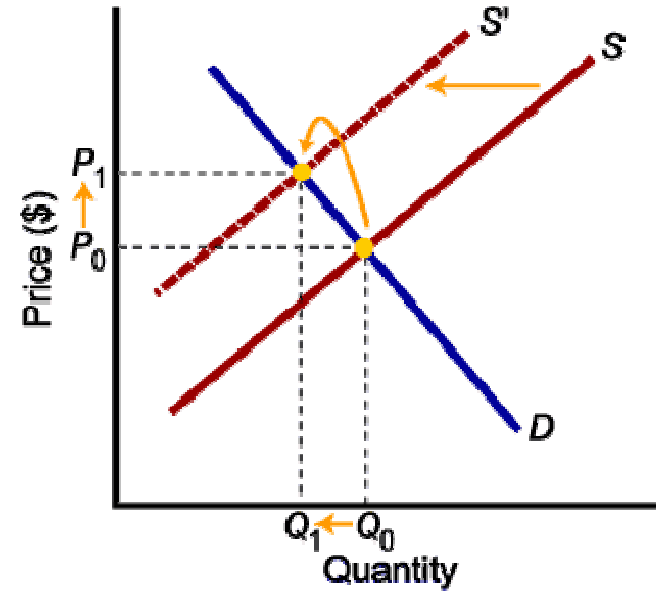


An increase in supply leads to lower equilibrium price and higher equilibrium quantity.

Changes in Equilibrium: Decreases in Demand and Supply

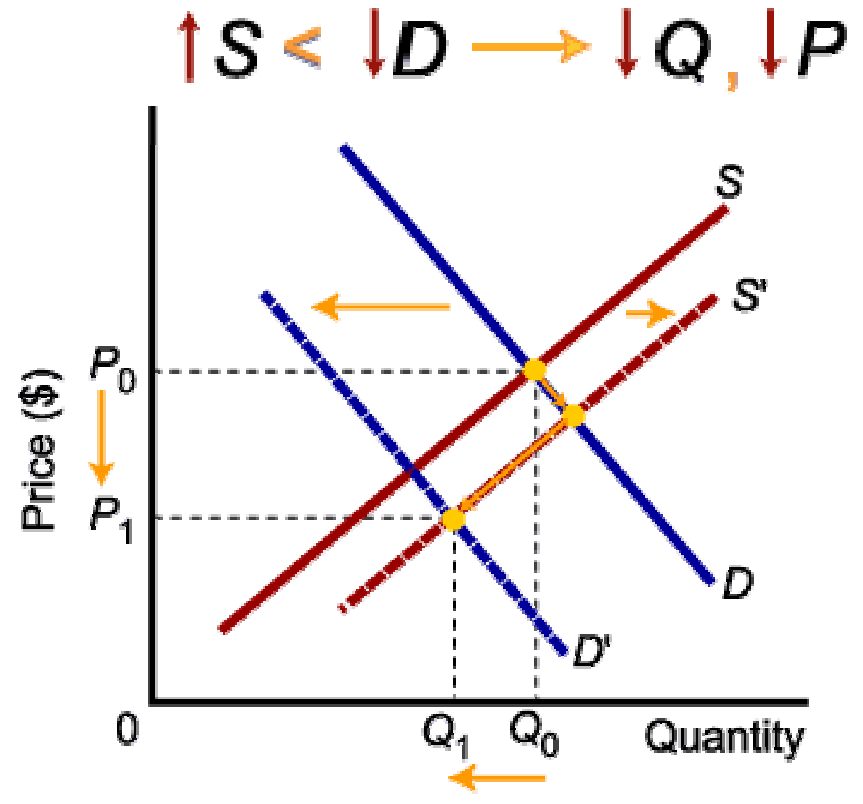
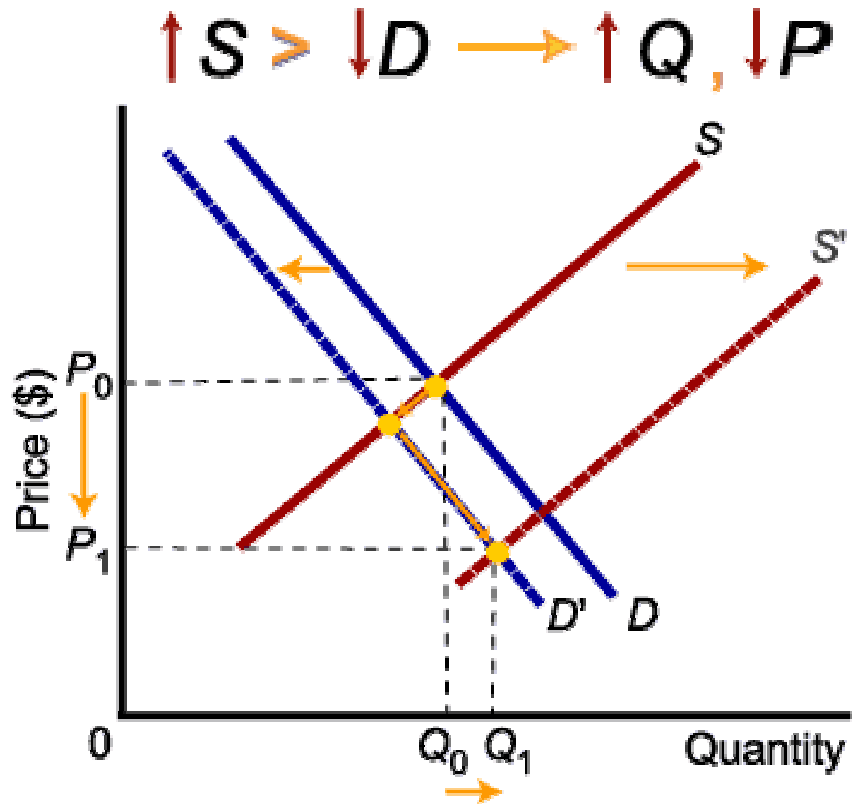


A decrease in demand leads to lower price and lower quantity exchanged.



A decrease in supply leads to higher price and lower quantity exchanged.

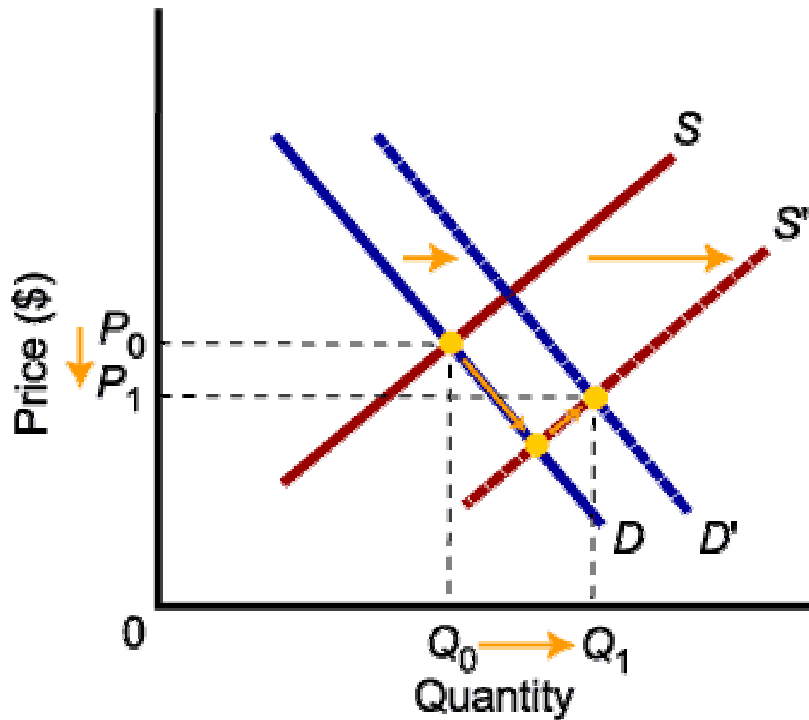
Relative Magnitudes of Change



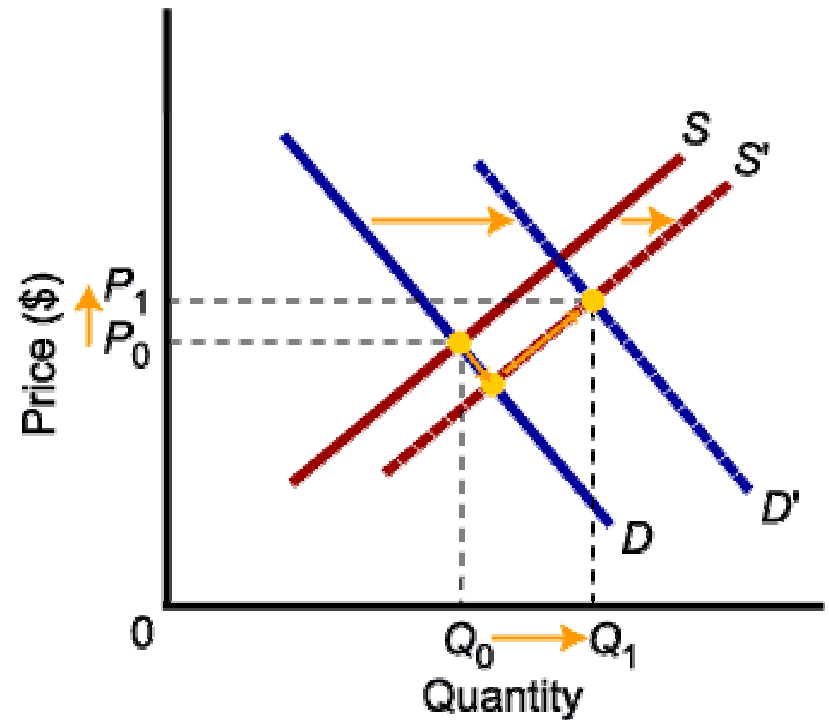
The relative magnitudes of change in supply and demand determine the outcome of market equilibrium.

Relative Magnitudes of Change

$\uparrow S > \uparrow D \rightarrow \uparrow Q, \downarrow P$



$\uparrow D > \uparrow S \rightarrow \uparrow Q, \uparrow P$



When supply and demand both increase, quantity will increase, but price may go up or down.