

The Market Forces of Supply and Demand

Welcome to Session 2, which introduces you to the fundamental concepts of demand and supply. This is the most important chapter in this course and attention to detail in this session will go a very long way in understanding the subsequent material in this unit. This session gives you the building blocks for market analysis. The tools of this chapter help to answer crucial questions such as how much to produce? At what price? Understanding the concepts in the chapter will help us gain understanding of recent trends in the prices of food, clothing, oil, university fees etc.

Markets and Competition

- Supply and demand
 - Words economists use most often
 - The forces that make market economies work
 - Refer to the behavior of people as they interact with one another in competitive markets

Supply and demand are the two words that economists use most frequently. In the economic sense demand curve captures the relationship between price and quantity from the buyers perspective whereas the supply curve captures this relationship from the suppliers perspective. The interaction of demand and supply ultimately determine the prices. Before analyzing the impact of any event or policy in the economy; you must first think how it will affect supply and demand.

Markets and Competition

- **Market**
 - A group of buyers and sellers of a particular good or service
 - Buyers as a group
 - Determine the demand for the product
 - Sellers as a group
 - Determine the supply of the product

A market is composed of group of sellers and buyers of a particular good or service. The sellers determine the supply of the product and the buyers determine the demand for the product. Market demand curve is an aggregate of individual demand curves and market supply curve is determined by the aggregate of individual supply curves. This relationship between the individual and market demand and supply curve will be discussed later on. Examples of markets include, traditional stock markets, retail stores, local vegetable vendors as well as recently developed platforms such as e-bay. However, each market is organized differently.

Markets and Competition

- Markets take many forms
 - Highly organized
 - Markets for many agricultural commodities
 - Less organized
 - Market for ice cream or perfume in a particular town

Examples of markets that are highly organised include agricultural commodities and metals. In these markets, an auctioneer helps to set prices and arranges sales at a predetermined place and time. Mostly, markets are less organized. Business manufacturing and sales are often done in a variety of location and through several mediums. For example, consider the market for ice cream. The buyers and seller of ice cream do not all meet together at any one time or location. Nor are the sales reliant on an auctioneer. Instead individual sellers posts the prices in their shops. Even though it is not organized, the group of ice cream sellers and buyers forms a market and price forms the key signal that helps to organise the market such that resources are allocated efficiently.

Markets and Competition

- **Competitive market**
 - Market in which there are many buyers and many sellers
 - Each has a negligible impact on market price
 - Price and quantity are determined by all buyers and sellers
 - As they interact in the marketplace

Ice-cream is an example of a competitive market. A competitive market has some distinct characteristics in economics. These include:

- Market in which there are many buyers and many sellers
- Each has a negligible impact on market price
- Price and quantity are determined by all buyers and sellers as they interact in the marketplace

Markets and Competition

- Perfectly competitive market
 - Goods offered for sale are all exactly the same
 - Buyers and sellers are so numerous
 - No single buyer or seller has any influence over the market price
 - Price takers
 - At the market price
 - Buyers can buy all they want
 - Sellers can sell all they want

An even stricter definition of competition is perfectly competitive market. The main defining feature of perfectly competitive market as opposed to competitive markets is that the goods produced are exactly the same. Other features of perfectly competitive market include

Buyers and sellers are so numerous that no single buyer or seller has any influence over the market price. Buyers and sellers are price takers.

At the market price buyers can buy all they want and sellers can sell all they want.

Perfect competition does not apply to all markets but a market such as wheat market is a good example. In the wheat market there are tens of thousands of farmers who sell wheat and millions of consumers who use wheat. Since no individual producer can influence the price of wheat, each has to accept the market price.

Markets and Competition

- Monopoly
 - The only seller in the market
 - Sets the price
- Other markets
 - Between perfect competition and monopoly

On the other hand some markets only have one seller and these are classified as monopolies. For example, Australia Post or the local water company. A lot of markets fall between the extremes of perfect competition and monopoly. One such market is called an oligopoly which is a prevalent form of market structure, especially in Australia. In an oligopoly there are a handful of firms and each is large relatively large compared to the total industry. Examples include automobiles, airlines and computers. Another common type of market is monopolistically or imperfectly competitive; it contains many sellers but each offers a slightly different product. For example, Hungry Jack burgers are slightly different from McDonalds.

In the real world, most markets are not perfectly competitive. Even the examples of perfume or ice cream used so far do not strictly meet the criteria of perfectly competitive market. Nevertheless, we will pursue the study of supply and demand in perfectly competitive markets for two reasons. Firstly, it is easier to do so. Secondly, this understanding will assist us in understanding more complicated markets.

Supply

- Quantity supplied
 - Amount of a good
 - Sellers are willing and able to sell
- Law of supply
 - Other things equal
 - When the price of a good rises, the quantity supplied of the good also rises
 - When the price falls, the quantity supplied falls as well

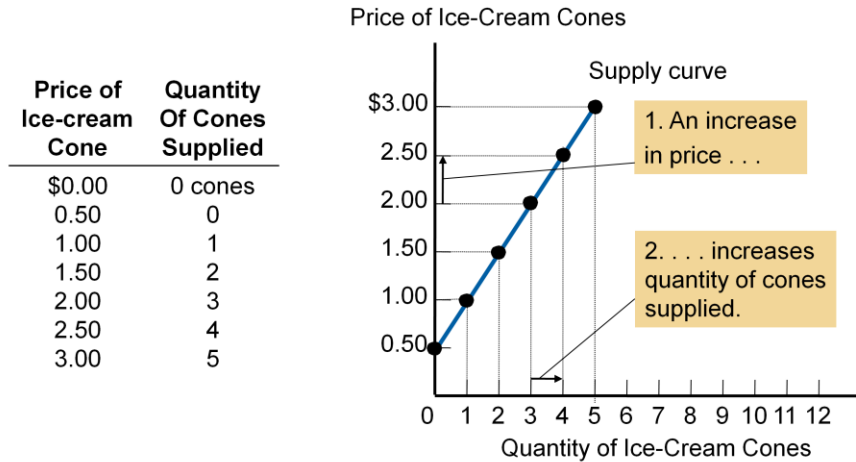
The supply curve simply captures the relationship between price and quantity supplied. The quantity supplied is the amount producers plan and are able to sell at a given price when all other factors that can affect the amount produced remain the same. Note the words plan and able to sell. The supply curve simply shows how the producers respond changes in prices, holding everything else constant. For example, if the price of ice cream is high then selling ice cream is more profitable. Businesses will therefore hire more workers, work long hours etc. to produce more. Whereas at low prices businesses will not bother allocating extra resources to the production of ice cream. The same will apply to the production of wheat or oil. The relationship between the price and quantity supplied is called law of supply. Law of supply states that, other things equal, when the price of a good rises, the quantity supplied of the good also rises and when the price falls, the quantity supplied falls as well.

Supply

- Supply
 - Relationship between the price of a good and the quantity supplied
 - Supply schedule: a table
 - Supply curve: a graph
 - Price on the vertical axis
 - Quantity on the horizontal axis
- Individual supply
 - A seller's individual supply

The supply curve can be represented using a table or graph. Supply schedule shows the relationship between the price of a good and the quantity supplied in the form of a table. The supply schedule purely depicts the relationship between price and quantity produced, holding everything else constant. A graph represents the same information but in a diagrammatic form.

Ben's Supply Schedule and Supply Curve



The supply schedule is a table that shows the quantity supplied at each price. This supply curve, which graphs the supply schedule, illustrates how the quantity supplied of the good changes as its price varies. Because a higher price increases the quantity supplied, the supply curve slopes upward.

The above slide shows an individual seller's supply schedule as well as the supply curve of quantity of cones. The supply schedule is a table that shows the quantity of cones supplied at each price. The supply curve, which graphs the supply schedule, illustrates how the quantity supplied of the good changes as its price varies. Take a minute to look at the supply curve. The supply curve has price on the vertical axis and quantity of ice-cream cones on the horizontal axis. As price goes up, quantity supplied increases. Because a higher price increases the quantity supplied, the supply curve slopes upward. It is very important to reiterate the point that graphs form a very important part of this course and so it is imperative that we get comfortable with them.

Supply

- **Market supply**
 - Sum of the supplies of all sellers for a good or service
- **Market supply curve**
 - Sum of individual supply curves horizontally
 - Total quantity supplied of a good varies
 - As the price of the good varies
 - All other factors that affect how much suppliers want to sell are held constant

In a market there are many producers and the market supply curve is an aggregation of individual supplies. All individual suppliers are different and will produce different quantities at different prices. To find the market supply curve from individual curves we sum the individual supply curves horizontally.

Market Supply as the Sum of Individual Supplies

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

The quantity supplied in a market is the sum of the quantities supplied by all the sellers at each price. Thus, the market supply curve is found by adding horizontally the individual supply curves. At a price of \$2.00, Ben supplies 3 ice-cream cones, and Jerry supplies 4 ice-cream cones. The quantity supplied in the market at this price is 7 cones.

To understand the aggregation process further let's first look at the table above. The table shows the supply schedule of two ice-cream cone producers- Ben and Jerry. At \$1 Ben is willing and able to produce one ice-cream cone. But at this price Jerry wants to produce none. So the sum of Ben and Jerry supply at \$1 is just one ice-cream cone. At the price of \$1.50 Ben and Jerry both are willing and able to produce two cones each. So at \$1.50 the number of cones supplied in the market are four. The quantity supplied in a market is the sum of the quantities supplied by all the sellers at each price. Thus, the market supply curve is found by adding individual supplies.

Market Supply as the Sum of Individual Supplies

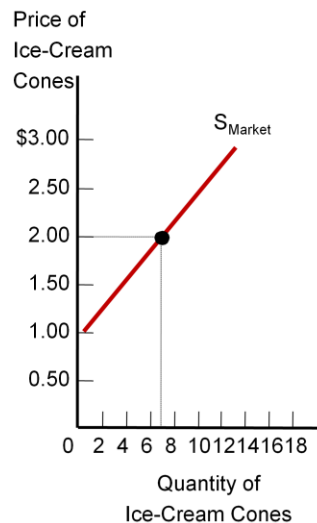
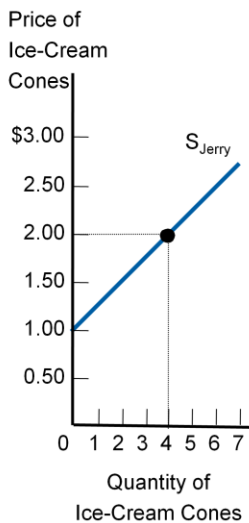
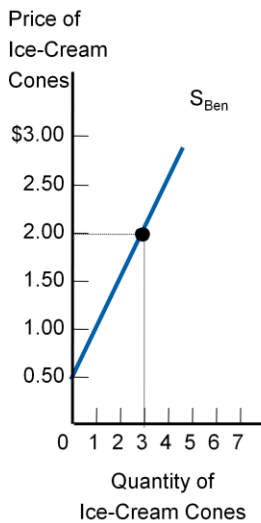
Ben's supply

+

Jerry's supply

=

Market supply



The same process can be applied to supply curves. The quantity supplied in a market is the sum of the quantities supplied by all the sellers at each price. Thus, the market supply curve is found by adding horizontally the individual supply curves. Or in other words to find market supply curve we add the individual quantities found on the horizontal axis at each price for all the firms in the market. At a price of \$2.00, Ben supplies 3 ice-cream cones, and Jerry supplies 4 ice-cream cones. The quantity supplied in the market at this price is 7 cones.

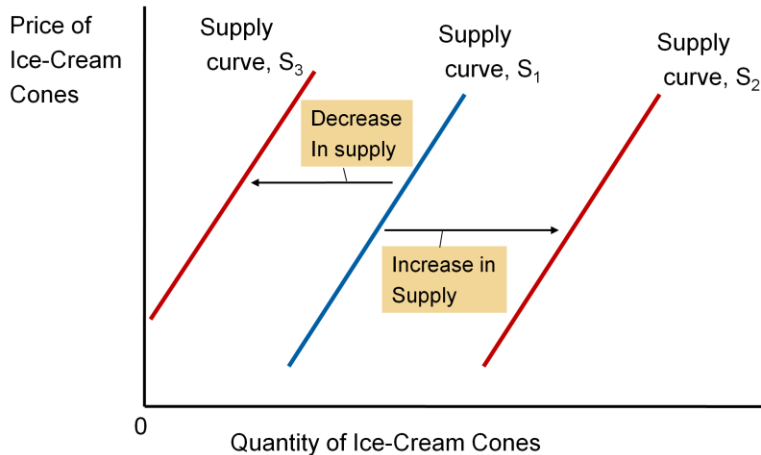
Supply

- Shifts in supply
 - Increase in supply
 - Any change that increases the quantity supplied at every price
 - Supply curve shifts right
 - Decrease in supply
 - Any change that decreases the quantity supplied at every price
 - Supply curve shifts left

So far we have only looked at the relationship of supply curve with price. However, a number of variables other than price can cause changes in supply. These non-price determinants of supply refer to factors—other than the price of a good—that determine sellers' supply of the good. These non-price factors cause a shift in the supply curve as opposed to the movement in the supply curve discussed earlier.

An increase in supply causes supply curve to shift rightward and a decrease in supply causes supply curve to shift leftward.

Shifts in the Supply Curve



Any change that raises the quantity that sellers wish to produce at any given price shifts the supply curve to the right. Any change that lowers the quantity that sellers wish to produce at any given price shifts the supply curve to the left.

Any change that raises the quantity that sellers wish to produce at any given price shifts the supply curve to the right. Any change that lowers the quantity that sellers wish to produce at any given price shifts the supply curve to the left. So a shift in the supply curve occurs from a fundamental change in the relationship between price and quantity supplied. For example, if the supply curve shifts to the left- what we are really saying is that at the given prices producers are now willing to supply less than before.

Supply

- Variables that can shift the supply curve
 - Input prices
 - Technology
 - Expectations about future
 - Number of sellers
 - Natural/Social factors

So what are the important supply shifters? A number of important factors are as follows:

Input prices or costs- As input prices rise (e.g labor wages, cost of material, rent), producers are willing to produce less at each price, shifting supply to the left. Supply is negatively related to prices of inputs. Higher input prices decreases supply or supply curve shifts to the left. For example, a number of inputs are required in agricultural production such as fertilizer, fuel for tractors, machines, computers, farm buildings and the labour of workers. When the price of one or more of these inputs rises, it will make the agricultural produce less profitable leading to a reduction in supply. More specifically the supply curve will shift to the left.

Technology - Improvement in technology can cause a reduction in costs. Advance in technology lead to an increase in supply. For example the introduction of better farming techniques has caused the cost of farming to reduce, shifting the supply curve to the right. The improvement in technology in agriculture has been typically related to mechanization of production, better plants and fertilizers. All of this has allowed to increase productivity using fewer inputs. Thus increasing supply.

Number of sellers- If more firms enter, then more supply. If more farmers in Australia start producing milk, then the supply of milk will increase.

Producer expectation of future prices can change the supply of goods. For example if oil producers believe that price of oil will be high in the future then the supply curve for oil will shift to the left in the current period, as producers hoard on oil.

Natural social factors- A variety of natural and social factors can affect the supply. Natural disaster, diseases, earthquakes are all examples of natural disasters that impact production. Changing social attitudes and expectations also impact supply. For example, the recent trends in organic foods, healthy living, and reducing carbon emissions can all induce more producers to enter these markets.

Variables That Influence Sellers

Variable	A Change in This Variable . . .
Price of the good itself	Represents a movement along the supply curve
Input prices	Shifts the supply curve
Technology	Shifts the supply curve
Expectations	Shifts the supply curve
Number of sellers	Shifts the supply curve

This table lists the variables that affect how much producers choose to sell of any good. Notice the special role that the price of the good plays: A change in the good's price represents a movement along the supply curve, whereas a change in one of the other variables shifts the supply curve.

This table lists the variables that affect how much producers choose to sell of any good. Notice the special role that the price of the good plays: A change in the good's price represents a movement along the supply curve, whereas a change in one of the other variables- input prices, technology, expectations, number of sellers- shifts the supply curve.

Demand

- Quantity demanded
 - Amount of a good that buyers are willing and able to purchase
- Law of demand
 - Other things equal
 - When the price of a good rises, the quantity demanded of the good falls
 - When the price falls, the quantity demanded rises

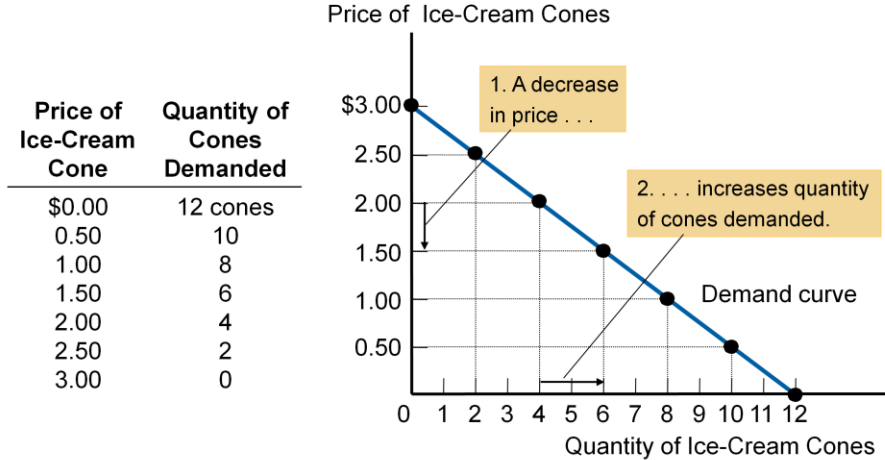
We now turn to the notion of demand curve. The demand curve captures the relationship between price and quantity demanded. The quantity demanded is the amount of a good that buyers are willing and able to purchase. Note the words willing and able to purchase. The demand curve simply shows how the buyers respond to changes in prices, holding everything else constant. The demand curve is not composed of dreamy objectives but captures buyers buying power as well the ability to afford goods and services. As price of good increases, the quantity demanded decreases whereas when the price reduces the quantity demanded increases. This should be fairly intuitive. We buy more if things get cheaper and vice versa. This relationship is so pervasive that economist call it the law of demand. Law of demand states that, other things equal, when the price of a good rises, the quantity demanded of the good falls. When the price falls, the quantity demanded rises. Holding other things equal or constant is a key assumption. In other words a demand curve shows the relationship between quantity demanded of a good and its price, when everything else that can possibly affect the demand of that particular good is held constant.

Demand

- Demand
 - Relationship between the price of a good and quantity demanded
 - Demand schedule: a table
 - Demand curve: a graph
 - Price on the vertical axis
 - Quantity on the horizontal axis
- Individual demand
 - An individual's demand for a product

The demand curve can be represented using a table or graph. Demand schedule shows the relationship between the price of a good and the quantity demanded in the form of a table. The demand schedule purely depicts the relationship between price and quantity demanded, holding everything else constant. A graph represents the same information but in a diagrammatic form.

Catherine's Demand Schedule and Demand Curve



The demand schedule is a table that shows the quantity demanded at each price. The demand curve, which graphs the demand schedule, illustrates how the quantity demanded of the good changes as its price varies. Because a lower price increases the quantity demanded, the demand curve slopes downward.

The above slide shows an individual buyers demand schedule as well as demand curve of quantity of cones. The demand schedule is a table that shows the quantity of cones demanded at each price. The demand curve, which graphs the demand schedule, illustrates how the quantity demanded of the good changes as its price varies. Take a minute to look at the demand curve. The demand curve has price on the vertical axis and quantity of ice-cream cones on the horizontal axis. As price goes up, quantity demanded decreases. Because a higher price decreases quantity demanded, the demand curve slopes downward.

Demand

- **Market demand**
 - Sum of all individual demands for a good or service
- **Market demand curve**
 - Sum the individual demand curves horizontally
 - Total quantity demanded of a good varies
 - As the price of the good varies
 - Other things constant

In a market there are many consumers and the market demand curve is an aggregation of individual buyers. All individual consumers are different and will consume different quantities at different prices. To find the market demand curve from individual curves we sum the individual demand curves horizontally.

Market Demand as the Sum of Individual Demands

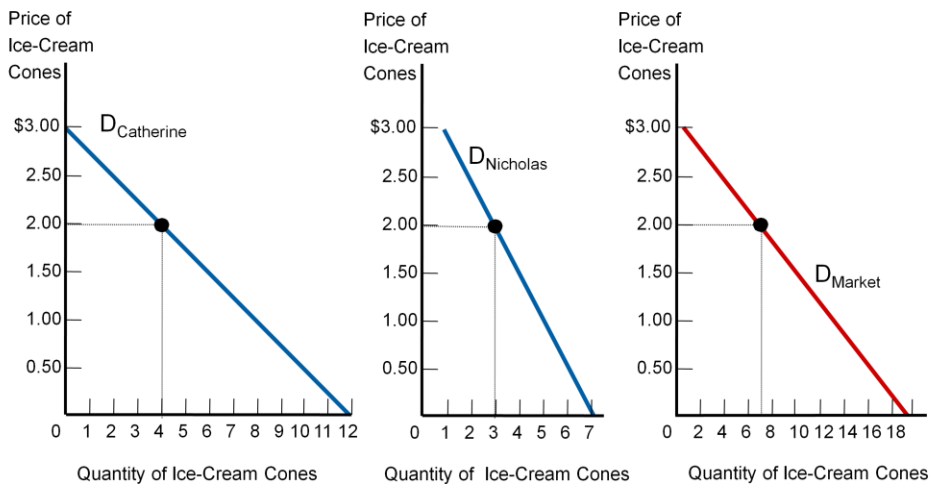
Price of Ice-Cream Cone	Catherine		Nicholas		Market
\$0.00	12	+	7	=	19 cones
0.50	10		6		16
1.00	8		5		13
1.50	6		4		10
2.00	4		3		7
2.50	2		2		4
3.00	0		1		1

The quantity demanded in a market is the sum of the quantities demanded by all the buyers at each price. Thus, the market demand curve is found by adding horizontally the individual demand curves. At a price of \$2.00, Catherine demands 4 ice-cream cones, and Nicholas demands 3 ice-cream cones. The quantity demanded in the market at this price is 7 cones.

To understand the aggregation process further let's first look at the table above. The table shows the demand schedule of two ice-cream cone consumers—Catherine and Nicholas. At \$1 Catherine is willing and able to buy eight ice-cream cones. But at this price Nicholas wants only five. So the sum of Catherine and Nicholas demand at \$1 is 13 ice-cream cones, which is also the market demand at this price as there are only two customers. At the price of \$1.50 Catherine's demand of cones drops to six while Nicholas wants four cones. So at \$1.50 the total number of cones demanded are 10. Thus, the market demand curve is found by adding individual demand curves.

Market Demand as the Sum of Individual Demands

Catherine's demand + Nicholas's demand = Market demand



The same process can be applied to demand curves. The quantity demanded in a market is the sum of the quantities demanded by all consumers at each price. Thus, the market demand curve is found by adding horizontally the individual demand curves. Or in other words to find market demand curve we add the individual quantities found on the horizontal axis at each price for all the firms in the market. At a price of \$2.00, Catherine demands 4 ice-cream cones, and Nicholas demands 3 ice-cream cones. The quantity demanded in the market at this price is 7 cones.

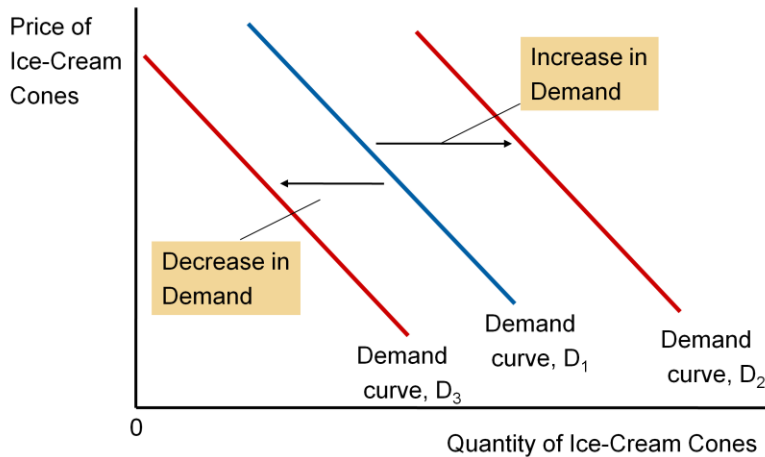
Demand

- Shifts in the demand curve
 - Increase in demand
 - Any change that increases the quantity demanded at every price
 - Demand curve shifts right
 - Decrease in demand
 - Any change that decreases the quantity demanded at every price
 - Demand curve shifts left

So far we have only looked at the relationship of demand curve with price. However, a number of variables other than price can cause changes in demand. These non-price determinants of demand refer to factors—other than the price of a good—that determine buyers' demand of the good. These non-price factors cause a shift in the demand curve as opposed to the movement in the demand curve discussed earlier.

An increase in demand causes demand curve to shift rightward and a decrease in demand causes demand curve to shift leftward.

Shifts in the Demand Curve



Any change that raises the quantity that buyers wish to purchase at any given price shifts the demand curve to the right. Any change that lowers the quantity that buyers wish to purchase at any given price shifts the demand curve to the left.

Any change that raises the quantity that consumers wish to buy at any given price shifts the demand curve to the right. Any change that lowers the quantity that consumers wish to buy at any given price shifts the demand curve to the left. So a shift in the demand curve occurs from a fundamental change in the relationship between price and quantity demanded. For example, if the demand curve shifts to the left- what we are really saying is that at the given prices buyers are now willing to purchase less than before.

Demand

- Variables that can shift the demand curve
 - Income
 - Prices of related goods (substitutes and complements)
 - Tastes
 - Expectations
 - Number of buyers

•26

So we just spoke about the relationship price and quantity demanded, holding everything else constant. This slide lists the factors that cause the demand curve to shift and this referred to as change in demand. Economists do realize that factors other than price affect the demand. Some of the determinants of demand include:

Income- For most goods as our income goes up we demand more of it. For example I would like to buy a house if I get paid more. As I get paid more I want more! Goods such T.V, car, house, gourmet food are all normal goods. And, hence, the positive relationship. However, the relationship is different for inferior goods. To me a burger at MacDonald's is a inferior good. As my income goes up, I would like less of McDonald burgers. This may not hold true for each and every human being on planet earth. What we are talking here is about general patterns not a scientific law! So if McDonald's is an inferior good then as price goes up demand shifts to the left.

Prices of substitutes- Substitutes are goods for which an increase in the price of one good leads to an increase in the demand for the other good. Or a simple way is to think of Coke and Pepsi. If price of Coke goes up most people would shift to Pepsi. Hence, the demand curve for Pepsi will shift to the right.

Prices of complements: Complements are goods that are used together. For example, tennis ball and rackets. These two things go together. If rackets become too expensive then people's demand for playing tennis and hence tennis balls is going to go down. Another example is petrol and cars.

Tastes- Can also change the demand by altering consumer preferences or tastes. For example, I may have no preference for carrying designer handbags but advertising may convince me that it is cool to do so. Tastes may also change for other reasons. For example, an ageing population can create a greater demand for classical music.

Consumer expectations-Suppose I think that my dream home's is going to be twice as expensive in six months. What do you think I will do? Buy my dream home today if I can. This is simply the effect of consumer expectations.

Number of buyers- This is impacted by both size and structure of the population. More people-more consumption of absolutely everything. But structure matters too. A rapidly ageing population in Australia means there will be a greater demand for retirement homes etc.

Are there any other factors? Yes. Anything that affects the willingness or ability of consumers to purchase a particular good is a determinant of demand.

When the above factors change, we say that there is a change in demand or a shift in the demand curve.

Variables That Influence Buyers

Variable	A Change in This Variable . . .
Price of the good itself	Represents a movement along the demand curve
Income	Shifts the demand curve
Prices of related goods	Shifts the demand curve
Tastes	Shifts the demand curve
Expectations	Shifts the demand curve
Number of buyers	Shifts the demand curve

This table lists the variables that affect how much consumers choose to buy of any good. Notice the special role that the price of the good plays: A change in the good's price represents a movement along the demand curve, whereas a change in one of the other variables shifts the demand curve.

This table lists the variables that affect how much producers choose to buy of any good. Notice the special role that the price of the good plays: A change in the good's price represents a movement along the demand curve, whereas a change in one of the other variables- income, prices of related goods, tastes, expectation and number of buyers shift the demand curve.

Two ways to reduce the quantity of smoking demanded



“What is the best way to stop this?”

1. Shift the demand curve for cigarettes and other tobacco products
2. Try to raise the price of cigarettes

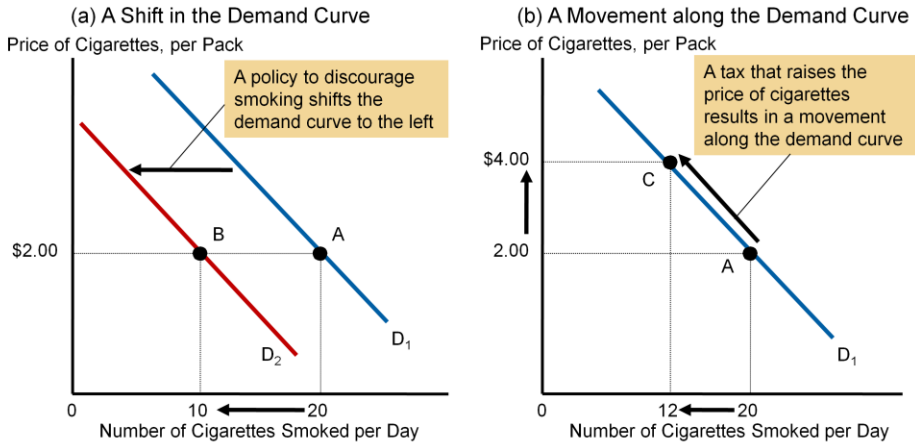
In recent years there has been a strong push by the government to reduce the rates of smoking.

Some strategies adopted to shift the demand curve for cigarettes and other tobacco products have included public service announcements; mandatory health warnings on cigarette packages and prohibition of cigarette advertising on television

If successful the government expects these to shift demand curve to the left. Why do you think these strategies are expected to shift the demand curve to the left?

Another strategy has been to raise the price of cigarettes through imposing taxes. This effectively causes a movement along the demand curve and a reduction in quantity demanded.

Shifts in the Demand Curve versus Movements along the Demand Curve



If warnings on cigarette packages convince smokers to smoke less, the demand curve for cigarettes shifts to the left. In panel (a), the demand curve shifts from D_1 to D_2 . At a price of \$2.00 per pack, the quantity demanded falls from 20 to 10 cigarettes per day, as reflected by the shift from point A to point B. By contrast, if a tax raises the price of cigarettes, the demand curve does not shift. Instead, we observe a movement to a different point on the demand curve. In panel (b), when the price rises from \$2.00 to \$4.00, the quantity demanded falls from 20 to 12 cigarettes per day, as reflected by the movement from point A to point C.

If warnings on cigarette packages convince smokers to smoke less, essentially changing consumer preferences, the demand curve for cigarettes shifts to the left. In panel (a), the demand curve shifts from D_1 to D_2 . At a price of \$2.00 per pack, the quantity demanded falls from 20 to 10 cigarettes per day, as reflected by the shift from point A to point B. By contrast, if a tax raises the price of cigarettes, the demand curve does not shift. Instead, we observe a movement to a different point on the demand curve. In panel (b), when the price rises from \$2.00 to \$4.00, the quantity demanded falls from 20 to 12 cigarettes per day, as reflected by the movement from point A to point C.

Supply and Demand Together

- Equilibrium
 - Various forces are in balance
 - A situation in which market price has reached the level where
 - Quantity supplied = quantity demanded
 - Supply and demand curves intersect

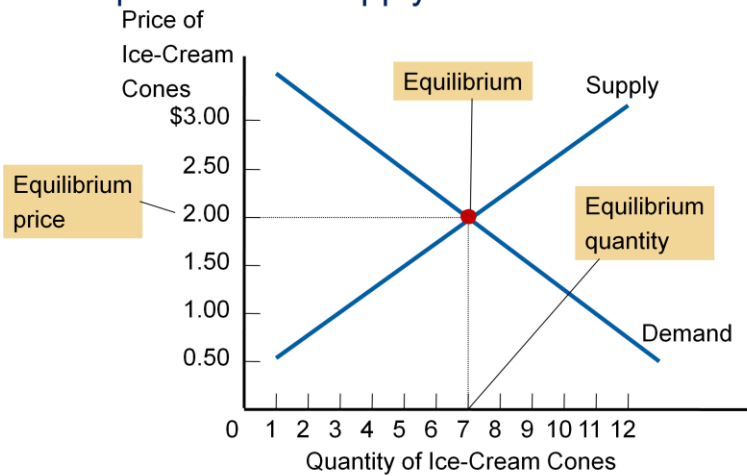
So far we have analysed the market demand and supply separately. If we bring the two together then we can establish the equilibrium point. The equilibrium point is when both market demand and supply intersect or demand is equal to supply. The equilibrium point is a state where there are no pressures on price of quantity to change. For example, if supply is greater than demand or vice versa, then there is pressure on price to change.

Supply and Demand Together

- **Equilibrium price**
 - Balances quantity supplied and quantity demanded
 - Market-clearing price
- **Equilibrium quantity**
 - Quantity supplied and quantity demanded at the equilibrium price

Equilibrium price is also called the market clearing price and equilibrium is quantity supplied and quantity demanded balance at the equilibrium price.

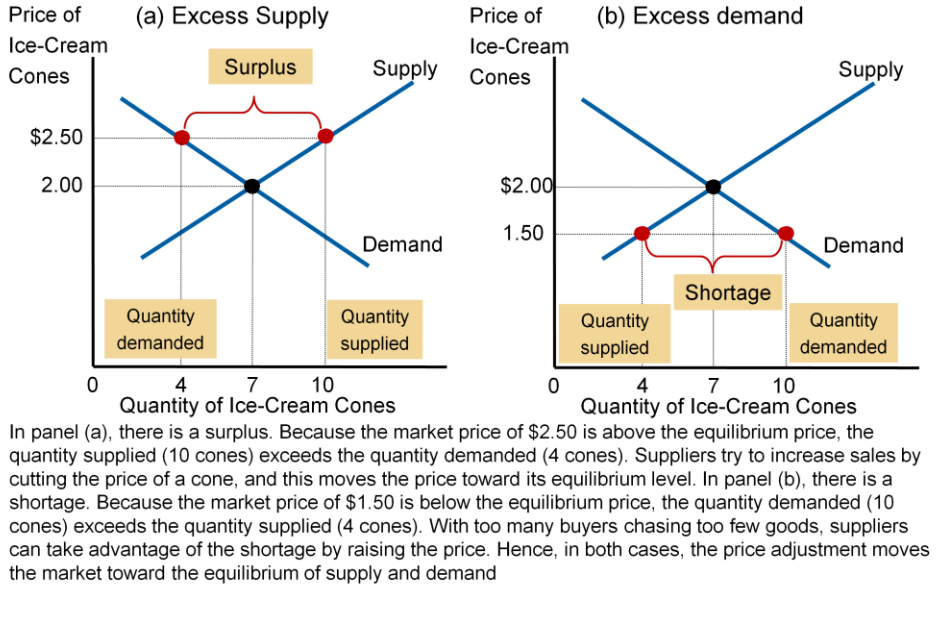
The Equilibrium of Supply and Demand



The equilibrium is found where the supply and demand curves intersect. At the equilibrium price, the quantity supplied equals the quantity demanded. Here the equilibrium price is \$2.00: At this price, 7 ice-cream cones are supplied, and 7 ice-cream cones are demanded.

The equilibrium is found where the supply and demand curves intersect. At the equilibrium price, the quantity supplied equals the quantity demanded. Here the equilibrium price is \$2.00: At this price, 7 ice-cream cones are supplied, and 7 ice-cream cones are demanded.

Markets Not in Equilibrium



To understand the equilibrium point better, let's analyse the state of disequilibrium. Let's say there is a situation of surplus in the market and quantity supplied > quantity demanded. If quantity supplied is greater than quantity demanded then producers will be unable to sell everything they are producing. This is depicted at \$2.50 where there is a surplus of six units. To sell more units the producers will have to lower the price causing:

- Movements along the demand and supply curves
- Increase in quantity demanded
- Decrease in quantity supplied

The opposite will occur if there is a shortage on the market caused by quantity demanded > quantity supplied. This is depicted in the second panel at price \$1.50. In this case we have excess demand or shortage. Since in this situation we have too many buyers chasing too few goods; sellers will raise the price to capitalise on this. As price rises, quantity demand falls and market moves towards the equilibrium point.

Supply and Demand Together

- Three steps to analyzing changes in equilibrium
 1. Decide whether the event shifts the supply curve, the demand curve, or, in some cases, both curves
 2. Decide whether the curve shifts to the right or to the left
 3. Use the supply-and-demand diagram
 - Compare the initial and the new equilibrium
 - Effects on equilibrium price and quantity

Even though we have established the equilibrium point, markets rarely stay at the equilibrium for long. In a dynamic environment, demand and supply are constantly changing. For example, the stock market changes nearly every day. When an event shifts supply or demand or both one (or both) of these curves, the equilibrium in the market changes. To analyse this further we proceed in three steps.

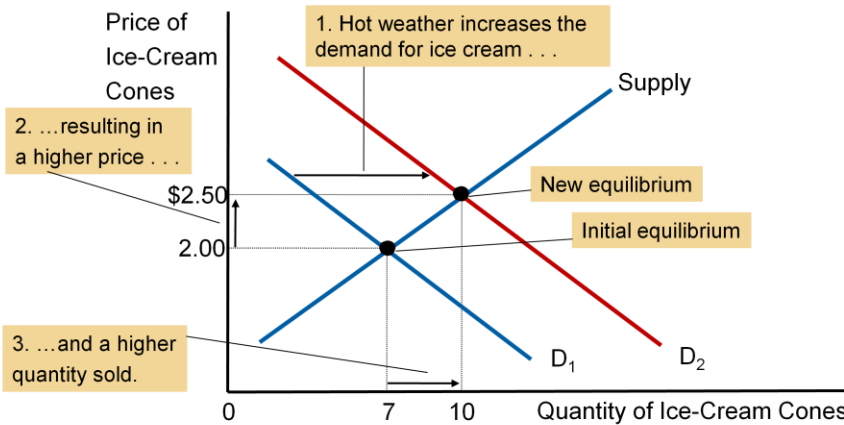
1. Decide whether the event shifts the supply curve, the demand curve, or, in some cases, both curves
2. Decide whether the curve shifts to the right or to the left
3. Use the supply-and-demand diagram. Compare the initial and the new equilibrium. Effects on equilibrium price and quantity

Supply and Demand Together

- A change in market equilibrium due to a shift in demand
 - One summer, very hot weather
 - Effect on the market for ice cream?
 1. Hot weather: shifts the demand curve (tastes)
 2. Demand curve shifts to the right
 3. Higher equilibrium price; higher equilibrium quantity

Lets take an example of market demand and supply changing together. First lets start with the demand side of the equation. If there is an unusually hot day then what is likely to be the effect on the market for ice cream? Hot weather is likely to shift the demand curve to the right leading to higher equilibrium price and quantity.

How an increase in demand affects the equilibrium

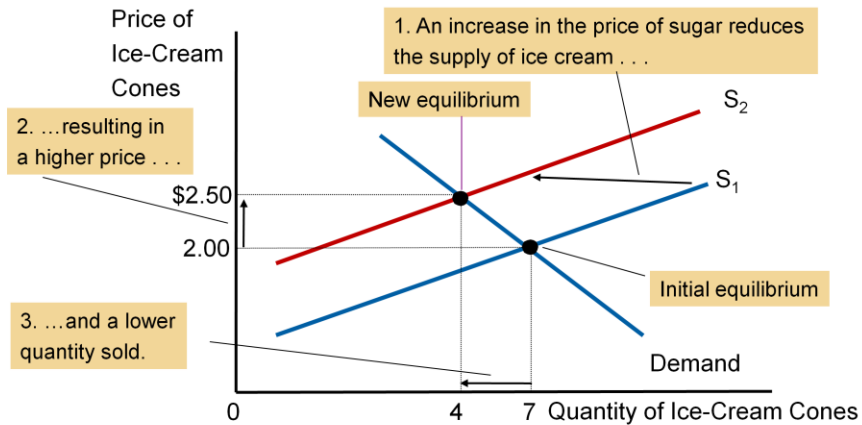


An event that raises quantity demanded at any given price shifts the demand curve to the right. The equilibrium price and the equilibrium quantity both rise. Here an abnormally hot summer causes buyers to demand more ice cream. The demand curve shifts from D_1 to D_2 , which causes the equilibrium price to rise from \$2.00 to \$2.50 and the equilibrium quantity to rise from 7 to 10 cones.

In the above slide we have an unexpected hot weather that causes an increase in demand for ice-cream. An event that raises quantity demanded at any given price shifts the demand curve to the right. The equilibrium price and the equilibrium quantity both rise. Here an abnormally hot summer causes buyers to demand more ice cream. The demand curve shifts from D_1 to D_2 , which causes the equilibrium price to rise from \$2.00 to \$2.50 and the equilibrium quantity to rise from 7 to 10 cones.

At this stage it is important to remember the difference between shift vs movement in curves. In the above example, the demand curve has shifted. However, because of an increase in price there is a movement along the supply curve. There has been an increase in quantity supplied but no shift in the supply curve.

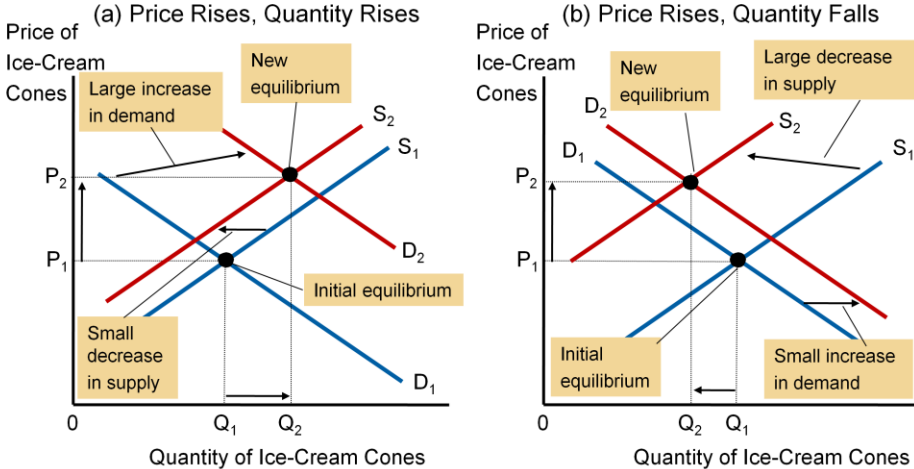
How a Decrease in Supply Affects the Equilibrium



An event that reduces quantity supplied at any given price shifts the supply curve to the left. The equilibrium price rises, and the equilibrium quantity falls. Here an increase in the price of sugar (an input) causes sellers to supply less ice cream. The supply curve shifts from S_1 to S_2 , which causes the equilibrium price of ice cream to rise from \$2.00 to \$2.50 and the equilibrium quantity to fall from 7 to 4 cones.

Now let's assume that we have a rise in the price of sugar. Sugar is an input price in making ice-cream, which will thus cause a shift in the supply curve. An event that reduces quantity supplied at any given price shifts the supply curve to the left. The equilibrium price rises, and the equilibrium quantity falls. Here an increase in the price of sugar (an input) causes sellers to supply less ice cream. The supply curve shifts from S_1 to S_2 , which causes the equilibrium price of ice cream to rise from \$2.00 to \$2.50 and the equilibrium quantity to fall from 7 to 4 cones.

A Shift in Both Supply and Demand



Here we observe a simultaneous increase in demand and decrease in supply. Two outcomes are possible. In panel (a), the equilibrium price rises from P_1 to P_2 , and the equilibrium quantity rises from Q_1 to Q_2 . In panel (b), the equilibrium price again rises from P_1 to P_2 , but the equilibrium quantity falls from Q_1 to Q_2 .

Suppose that both demand and supply shift simultaneously. In this case the outcome may not be as clear cut. Here we observe a simultaneous increase in demand and decrease in supply. Two outcomes are possible. In panel (a), the equilibrium price rises from P_1 to P_2 , and the equilibrium quantity rises from Q_1 to Q_2 . In panel (b), the equilibrium price again rises from P_1 to P_2 , but the equilibrium quantity falls from Q_1 to Q_2 . Thus, unless the magnitude of change is known precisely the change in equilibrium quantity cannot be predicted.

The above example demonstrates that to predict the equilibrium in the case when demand and supply both change may not be as straightforward and therefore conclusions should be drawn after careful, step by step analysis.

How Prices Allocate Resources

- Supply and demand together
 - Determine the prices of the economy's many different goods and services



"Two dollars"



"—and seventy-five cents."

In this session we have shown that supply and demand together determine the prices of goods and services. Ultimately prices act as a signal in the allocation of scarce resources. For example, if there is a expensive house facing the beach. Who should get this house? The simple answer is that whoever is willing to pay the price. The price of the property adjusts until demand meets supply. Moreover, prices determine who produces each good and how much is produced.