

CH 4: THE MARKET FORCES OF SUPPLY AND DEMAND

Supply and demand are the forces that make market economies work. They determine the quantity of each good produced and the price at which it is sold. If you want to know how any event or policy will affect the economy, you must think first about how it will affect supply and demand.

A **market** is a group of buyers and sellers of a particular good or service. The buyers as a group determine the demand for the product, and the sellers as a group determine the supply of the product.

Markets take many forms. A **competitive market** is a market in which there are many buyers and many sellers so that each has a negligible impact on the market price. A seller has little reason to charge less than the going price, and if he charges more, buyers will make their purchases elsewhere.

Perfectly competitive markets are defined by two primary characteristics: (1) the goods being offered for sale are all the same, and (2) the buyers and sellers are so numerous that no single buyer or seller can influence the market price. Because buyers and sellers in perfectly competitive markets must accept the price the market determines, they are said to be *price takers*. e.g. wheat market.

Some markets have only one seller, and this seller sets the price. Such a seller is called a *monopoly*. e.g. local cable television company.

Some markets fall between the extremes of perfect competition and monopoly. One such market, called an *oligopoly*, has a few sellers that do not always compete aggressively. e.g. airline routes. Another type of market is *monopolistically competitive*; it contains many sellers, each offering a slightly different product. Because the products are not exactly the same, each seller has some ability to set the price for its own product. An example is the software industry.

DEMAND

Quantity demanded of any good, which is the amount of the good that buyers are willing and able to purchase.

WHAT DETERMINES THE QUANTITY AN INDIVIDUAL DEMANDS?

Price Because the quantity demanded falls as the price rises and rises as the price falls, we say that the quantity demanded is *negatively related* to the price.

The **law of demand**: Other things equal, when the price of a good rises, the quantity demanded of the good falls.

Income A lower income means that you have less to spend in total, so you would have to spend less on some—and probably most— goods. If the demand for a good falls when income falls, the good is called a **normal good**.

If the demand for a good rises when income falls, the good is called an **inferior good**. An example of an inferior good might be bus rides. As your income falls, you are less likely to buy a car or take a cab, and more likely to ride the bus.

Prices of Related Goods When a fall in the price of one good reduces the demand for another good, the two goods are called **substitutes**. Substitutes are often pairs of goods that are used in place of each other, such as hot dogs and hamburgers.

When a fall in the price of one good raises the demand for another good, the two goods are called **complements**. Complements are often pairs of goods that are used together, such as gasoline and automobiles, computers and software.

Tastes Tastes are based on historical, social and psychological forces.

Expectations Your expectations about the future may affect your demand for a good or service today. For example, if you expect to earn a higher income next month, you may be more willing to spend some of your current savings buying ice cream. As another example, if you expect the price of ice cream to fall tomorrow, you may be less willing to buy an ice-cream cone at today's price.

THE DEMAND SCHEDULE AND THE DEMAND CURVE

A **demand schedule** is a table that shows the relationship between the price of a good and the quantity demanded.

Demand curve, which graphs the demand schedule, shows how the quantity demanded of the good changes as its price varies. By convention, the price of ice cream is on the vertical axis, and the quantity of ice cream demanded is on the horizontal axis. The downward-sloping line relating price and quantity demanded is called the **demand curve**. Because a lower price increases the quantity demanded, the demand curve slopes downward.

CETERIS PARIBUS

A demand curve is drawn holding many things constant, such as assuming that the person's income, tastes, expectations, and the prices of related products are not changing.

Economists use the term **ceteris paribus** to signify that all the relevant variables, except those being studied at that moment, are held constant. The Latin phrase literally means "other things being equal." The demand curve slopes downward because, *ceteris paribus*, lower prices mean a greater quantity demanded.

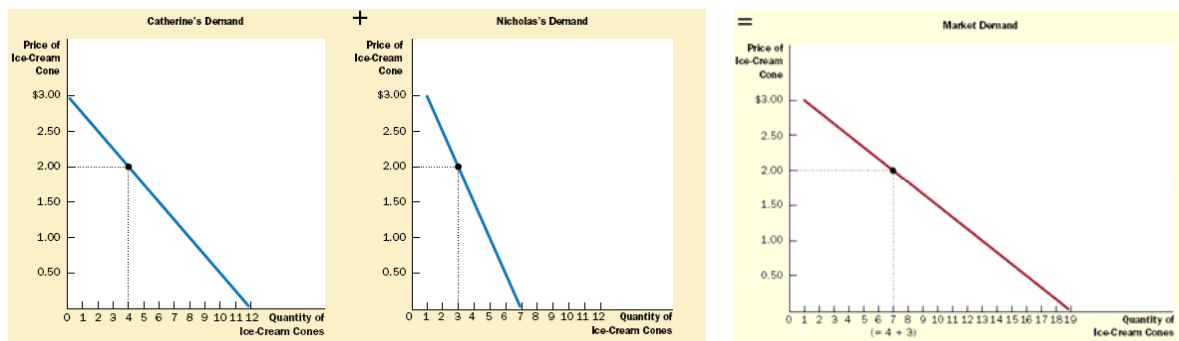
MARKET DEMAND VERSUS INDIVIDUAL DEMAND

To analyze how markets work, we need to determine the *market demand*, which is the sum of all the individual demands for a particular good or service.

Because market demand is derived from individual demands, it depends on all those factors that determine the demand of individual buyers. Thus, market demand depends on buyers' incomes, tastes, expectations, and the prices of related goods. It also depends on the number of buyers.

The market demand curve is found by adding horizontally the individual demand curves. That is, to find the total quantity demanded at any price, we add the individual quantities found on the horizontal axis of the individual demand curves. e.g. At a price of \$2, 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.

PRICE OF ICE-CREAM CONE	CATHERINE		NICHOLAS		MARKET
\$0.00	12	+	7	=	19
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 market demand curve shows how the total quantity demanded of a good varies as the price of the good varies.

SHIFTS IN THE DEMAND CURVE

Whenever any determinant of demand changes, other than the good's price, the demand curve shifts. Any change that increases the quantity demanded at every price shifts the demand curve to the right. Similarly, any change that reduces the quantity demanded at every price shifts the demand curve to the left.

Because price is on the vertical axis when we graph a demand curve, a change in price does not shift the curve but represents a movement along it. By contrast, when there is a change in income, the prices of related goods, tastes, expectations, or the number of buyers, the quantity demanded at each price changes; this is represented by a shift in the demand curve.

In summary, the demand curve shows what happens to the quantity demanded of a good when its price varies, holding constant all other determinants of quantity demanded. When one of these other determinants changes, the demand curve shifts.

SUPPLY

The **quantity supplied** of any good or service is the amount that sellers are willing and able to sell.

WHAT DETERMINES THE QUANTITY AN INDIVIDUAL SUPPLIES?

Price Because the quantity supplied rises as the price rises and falls as the price falls, we say that the quantity supplied is *positively related* to the price of the good. This relationship between price and quantity supplied is called the **law of supply**: Other things equal, when the price of a good rises, the quantity supplied of the good also rises.

Input Prices When the price of one or more of these inputs rises, producing ice cream is less profitable, and your firm supplies less ice cream. If input prices rise substantially, you might shut down your firm and supply no ice cream at all. Thus, the supply of a good is negatively related to the price of the inputs used to make the good.

Technology The invention of the mechanized ice-cream machine, for example, reduced the amount of labor necessary to make ice cream. By reducing firms' costs, the advance in technology raised the supply of ice cream.

Expectations The amount of ice cream you supply today may depend on your expectations of the future. For example, if you expect the price of ice cream to rise in the future, you will put some of your current production into storage and supply less to the market today.

THE SUPPLY SCHEDULE AND THE SUPPLY CURVE

Supply schedule is a table that shows the relationship between the price of a good and the quantity supplied.

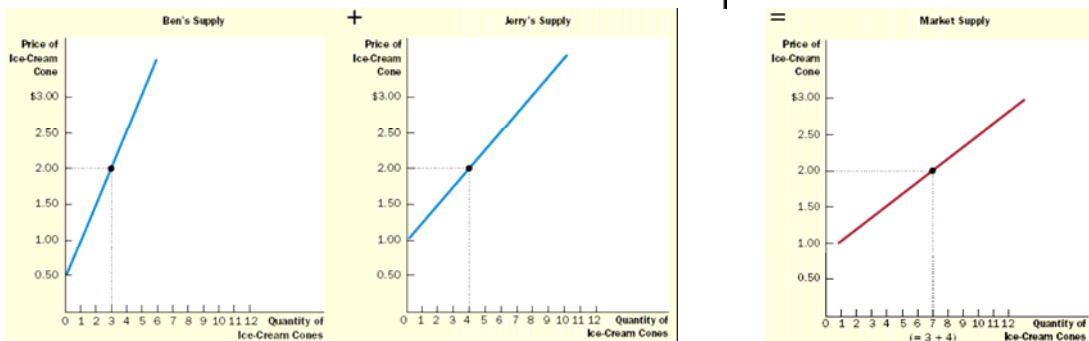
Supply curve is a graph of the relationship between the price of a good and the quantity supplied. The curve relating price and quantity supplied is called the **supply curve**. The supply curve slopes upward because, *ceteris paribus*, a higher price means a greater quantity supplied.

MARKET SUPPLY VERSUS INDIVIDUAL SUPPLY

Market supply is the sum of the supplies of all sellers. Market supply depends on all those factors that influence the supply of individual sellers, such as the prices of inputs used to produce the good, the available technology, and expectations. In addition, the supply in a market depends on the number of sellers.

As with demand curves, we sum the individual supply curves *horizontally* to obtain the market supply curve. That is, to find the total quantity supplied at any price, we add the individual quantities found on the horizontal axis of the individual supply curves.

PRICE OF ICE-CREAM CONE	BEN		JERRY		MARKET
\$0.00	0	+	0	=	0
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 market supply curve shows how the total quantity supplied varies as the price of the good varies.

SHIFTS IN THE SUPPLY CURVE

Whenever there is a change in any determinant of supply, other than the good's price, the supply curve shifts. Any change that raises quantity supplied at every price shifts the supply curve to the right. Similarly, any change that reduces the quantity supplied at every price shifts the supply curve to the left.

Because price is on the vertical axis when we graph a supply curve, a change in price does not shift the curve but represents a movement along it. By contrast, when there is a change in input prices, technology, expectations, or the number of sellers, the quantity supplied at each price changes; this is represented by a shift in the supply curve.

In summary, the supply curve shows what happens to the quantity supplied of a good when its price varies, holding constant all other determinants of quantity supplied. When one of these other determinants changes, the supply curve shifts.

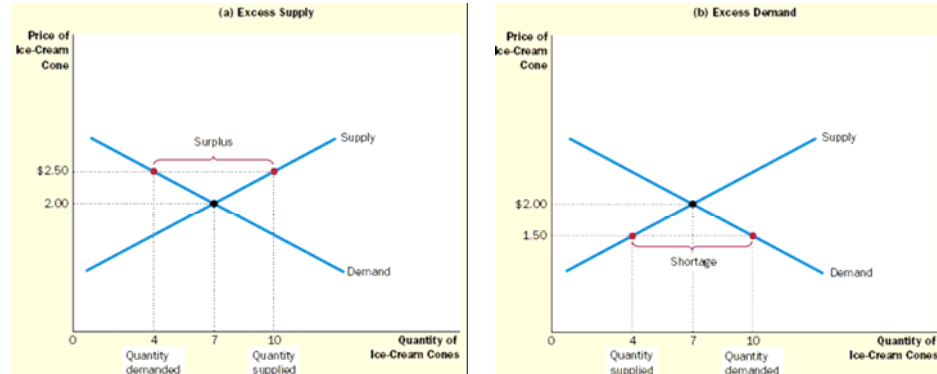
SUPPLY AND DEMAND TOGETHER

Supply and demand together determine the quantity of a good sold in a market and its price.

EQUILIBRIUM

There is one point at which the supply and demand curves intersect; this point is called the market's **equilibrium**. The price at which these two curves cross is called the **equilibrium price**, and the quantity is called the **equilibrium quantity**.

The dictionary defines the word *equilibrium* as a situation in which various forces are in balance—and this also describes a market's equilibrium. At the equilibrium price, the quantity of the good that buyers are willing and able to buy exactly balances the quantity that sellers are willing and able to sell. The equilibrium price is sometimes called the market-clearing price because, at this price, everyone in the market has been satisfied: Buyers have bought all they want to buy, and sellers have sold all they want to sell.



The actions of buyers and sellers naturally move markets toward the equilibrium of supply and demand. To see why, consider what happens when the market price is not equal to the equilibrium price.

Suppose first that the market price is above the equilibrium price. The quantity of the good supplied exceeds the quantity demanded. There is a **surplus** of the good: Suppliers are unable to sell all they want at the going price. They respond to the surplus by cutting their prices. Prices continue to fall until the market reaches the equilibrium.

Suppose now that the market price is below the equilibrium price. In this case the quantity of the good demanded exceeds the quantity supplied. There is a **shortage** of the good: Demanders are unable to buy all they want at the going price. With too many buyers chasing too few goods, sellers can respond to the shortage by raising their prices without losing sales. As prices rise, the market once again moves toward the equilibrium.

Thus, the activities of the many buyers and sellers automatically push the market price toward the equilibrium price. Once the market reaches its equilibrium, all buyers and sellers are satisfied,

and there is no upward or downward pressure on the price. How quickly equilibrium is reached varies from market to market, depending on how quickly prices adjust. In most free markets, however, surpluses and shortages are only temporary because prices eventually move toward their equilibrium levels. This phenomenon is called the **law of supply and demand**: The price of any good adjusts to bring the supply and demand for that good into balance.

