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Chapter 2

DEMAND, SUPPLY, AND EQUILIBRIUM

IN THIS CHAPTER:

- ✓ *Demand*
- ✓ *Supply*
- ✓ *Equilibrium Price and Quantity*
- ✓ *Government and Price Determination*
- ✓ *Elasticity*
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Demand

The demand schedule for an individual specifies the units of a good or service that the individual is willing and able to purchase at alternative prices during a given period of time. The relationship between price and quantity demanded is inverse: more units are purchased at lower prices because of a substitution effect and an income effect. As a commodity's price falls, an individual normally purchases more of this good since he or she is like-



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ly to substitute it for other goods whose price has remained unchanged. Also, when a commodity's price falls, the purchasing power of an individual with a given income increases, allowing for greater purchases of the commodity. When graphed, the inverse relationship between price and quantity demanded appears as a negatively sloped demand curve. A market demand schedule specifies the units of a good or service all individuals in the market are willing and able to purchase at alternative prices, i.e., $Q_d = f(P)$.

Example 2.1

Table 2.1 gives an individual's demand and the market demand for a commodity. Column 2 shows one individual's demand for corn—the bushels of corn that one individual is willing and able to buy per month at alternative prices. We find, for example, that the individual buys 3.5 bushels of corn each month when the price is \$5 per bushel. If there are 1,000 individuals in the market, the market demand for corn is the sum of the quantities the 1,000 individuals will buy at each price. So for example, 1,000 individuals collectively are willing to purchase 3,500 bushels of corn each month at \$5 per bushel. The market demand is shown in the last column, which shows the typical relationship between quantity demanded and price, i.e., more units of a commodity are demanded at lower prices. The market demand for corn is plotted in Figure 2-1 and the curve is labeled D. Note that the demand curve is negatively sloped.

The market demand for a good or service is influenced not only by the commodity's price, but also by the price of other goods and services,

Table 2.1

Price (P) (\$ per bu)	Quantity Demanded (q) by One Individual (bu per month)	Quantity Demanded (Q) in the Market (1000 individuals) (bu per month)
5	3.5	3500
4	4.5	4500
3	6.0	6000
2	8.0	8000
1	11.0	11,000

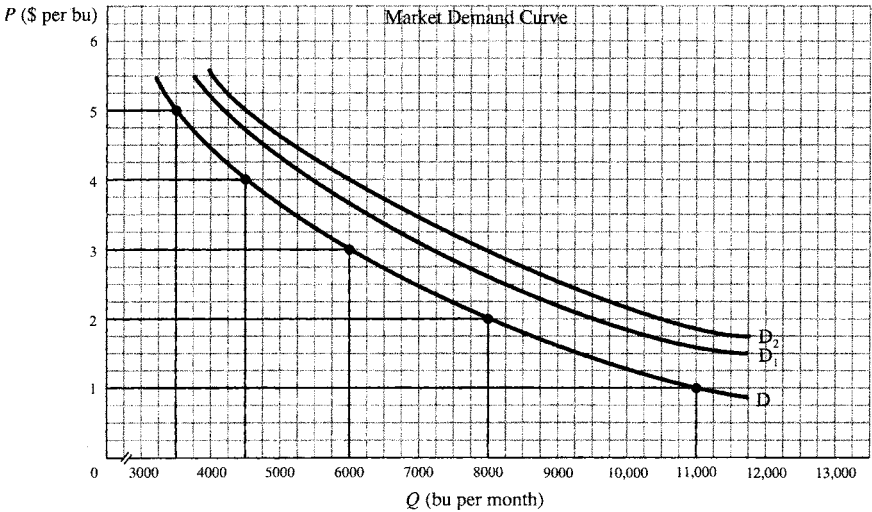


Figure 2-1

disposable income, wealth, tastes, and the size of the market. In presenting the market demand for corn of Table 2.1 and Figure 2-1, variables other than the commodity's price are held constant. This relationship is presented as $Q_d = f(P_{\text{corn}})$, *ceteris paribus*, where *ceteris paribus* indicates that variables other than the price of corn are unchanged. When one or more of these variables change, there is a change in demand and therefore a shift of the demand curve. For example, the market demand curve shifts up and to the right when there **is an increased preference for the commodity, when income increases, and when the price of a substitute commodity rises and/or the price of a complementary good declines**. A substitute good can be used instead of the good considered (wheat for corn), and a complementary good is used together with the good considered (butter with corn).

A common error made by the beginning economics student is failure to differentiate between a change in demand and a change in quantity demanded. A **change in demand** refers to a shift of the demand curve because a variable other than price has changed. A **change in quantity demanded** occurs when there is a change in the commodity's price, resulting in a movement along an existing demand curve.

Remember

There is a distinct difference between demand and quantity demanded, and the two must not be confused.



Example 2.2

The market demand for corn from Table 2.1 was plotted in Figure 2-1 and labeled D. The market demand shifts up and to the right from D to D_1 when the market size increases—for example, when the number of individuals in this market increases from 1,000 to 1,200. Should the price of wheat then increase—and individuals substitute corn for wheat in their diets—the market demand curve for corn again shifts up and to the right, this time from D_1 to D_2 .

Supply

A supply schedule specifies the units of a good or service that a producer is willing to supply (Q_s) at alternative prices over a given period of time, i.e., $Q_s = f(P)$. The supply curve normally has a positive (upward) slope, indicating that the producer must receive a higher price for increased output due to the principle of increasing costs. (Review Chapter 1). A market supply curve is derived by summing the units each individual producer is willing to supply at alternative prices. A typical market supply curve (labeled S) is plotted in Figure 2-2.

The market supply curve shifts when the number and/or size of producers changes, factor prices (wages, interest, and/or rent paid to economic resources) change, the cost of materials changes, technological progress occurs, and/or the government subsidizes or taxes output.

The market supply curve shifts down and to the right with more producers entering the market, decreases in factor or materials prices, improvement in technology, and government subsidization. A change in supply thereby denotes a shift of the supply curve. A change in quantity

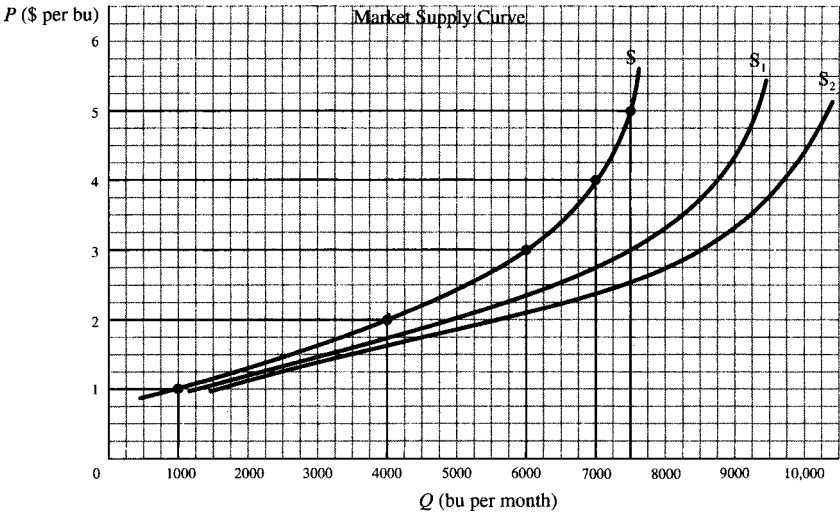


Figure 2-2

supplied indicates a change in the commodity's price and therefore a movement along an existing supply curve. In Figure 2-2, if the number of producers increases, the market supply curve shifts down and to the right from S to S₁. If a technological improvement in corn production also develops, the market supply curve shifts further downward from S₁ to S₂.

Equilibrium Price and Quantity

Equilibrium occurs at the **intersection** of the market supply and market demand curves. At this intersection, quantity demanded equals quantity supplied, i.e., the quantity that individuals are willing to purchase exactly equals the quantity producers are willing to supply. **A surplus exists at prices higher than the equilibrium price since the quantity demanded falls short of the quantity supplied. At prices lower than the equilibrium price, there is a shortage of output since quantity demanded exceeds quantity supplied.** Once achieved, the equilibrium price and quantity persist until there is a change in demand and/or supply.

You Need to Know ✓

Economists spend much time and effort in analyzing where and how market equilibrium is achieved. Its importance cannot be overstated.

Equilibrium price and/or equilibrium quantity change when the market demand and/or market supply curves shift. Equilibrium price and equilibrium quantity both rise when there is an increase in market demand with no change in the market supply curve. Equilibrium price falls while equilibrium quantity increases when market supply increases and demand is unchanged.

Government and Price Determination

The government may intervene in the market and mandate a **maximum price (price ceiling) or minimum price (price floor) for a good or service.**

For example, some city governments in the U.S. legislate the maximum price that a landlord can charge a tenant for rent. Such rent-control policies, though well-intentioned, result in a disequilibrium in the housing market since, at the government-mandated price ceiling, the quantity of housing supplied falls short of the quantity of housing demanded. An example of minimum prices (price floors) in the U.S. is the minimum wage. Price floors result in market disequilibrium in that quantity supplied at the mandated price exceeds quantity demanded.



The government can alter an equilibrium price by changing market demand and/or market supply. The government can restrict demand by rationing a good, as occurred for many items during World War II. Equilibrium price can be altered by shifting the market supply curve. A tax on a good raises its supply price—shifts the market supply curve up and to the left—and causes the equilibrium price to increase and the equilibrium quantity to fall. A subsidy to the producer will do the opposite and lower equilibrium price and raise equilibrium quantity.