

# Section 1

# Combining Supply and Demand

## Preview

### Objectives

After studying this section you will be able to:

1. **Explain** how supply and demand create balance in the marketplace.
2. **Compare** a market in equilibrium with a market in disequilibrium.
3. **Identify** how the government sometimes intervenes in markets to control prices.
4. **Analyze** the effects of price ceilings and price floors.

### Section Focus

In an uncontrolled market, the price of a good and quantity sold will settle at a point where the quantity supplied equals the quantity demanded. The government can set a maximum or minimum price, but that can lead to an imbalance between supply and demand.

### Key Terms

**equilibrium**  
**disequilibrium**  
**excess demand**  
**excess supply**  
**price ceiling**  
**price floor**  
**rent control**  
**minimum wage**

The market system makes certain that consumers can buy the products they want, that sellers make enough profit to stay in business, and that sellers respond to changing needs and tastes of consumers. Other economic systems have been tried—most notably, central planning—and have been judged by most observers to be less successful than the market system.

In this section we will combine our tools for studying demand and supply to learn how markets operate and how markets can turn competing interests into a positive outcome for both sides. In the process we will discover that free markets usually produce some of their best outcomes when they are left alone, without government intervention.

## Balancing the Market

Just as buyers and sellers come together in a market, the study of demand and supply will come together in this section. We begin by looking at the supply and demand schedules. As you will recall, a demand schedule shows how much consumers are willing to buy at various prices. A supply schedule shows how much sellers are willing to sell at various prices. Comparing these schedules should allow us to find common ground for the two sides of the market.

The combined supply and demand schedule in Figure 6.1 combines the market demand and supply schedules for pizza slices that you saw in Chapters 4 and 5. For each price, this schedule lists both the number of slices that consumers are willing to buy and the number of slices that pizzerias are willing to supply.

### Defining Equilibrium

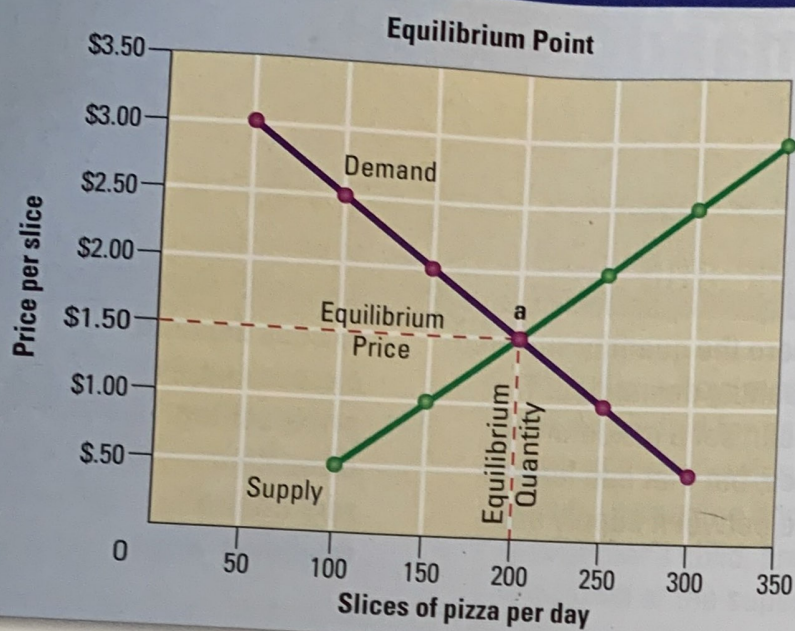
The point where demand and supply come together at the same number of slices is called the **equilibrium**. Equilibrium is the point of balance between price and quantity. At equilibrium, the market for a good is stable.

**equilibrium** the point at which quantity demanded and quantity supplied are equal

▼ In the market equilibrium, prices adjust to make the quantity supplied equal to the quantity demanded.



Figure 6.1 Finding Equilibrium



Combined Supply and Demand Schedule

Price of a slice of pizza	Quantity demanded	Quantity supplied	Result
\$.50	300	100	Shortage from excess demand
\$1.00	250	150	
\$1.50	200	200	Equilibrium
\$2.00	150	250	Surplus from excess supply
\$2.50	100	300	
\$3.00	50	350	



Market equilibrium will be found at the price at which the quantity demanded is equal to the quantity supplied. **Markets and Prices** How many slices are sold at \$2.50 a slice? How many slices are sold at equilibrium?

To find the equilibrium price and equilibrium quantity, simply look for the price at which the quantity supplied equals the quantity demanded. Do you see that in Figure 6.1 this occurs at a price of \$1.50 per slice? At that price, and only at that price, the quantity demanded and the quantity supplied are equal, at 200 slices per day. This is the market equilibrium.

In the market for pizza, as in any market, quantities supplied and demanded will be equal at only one price and one quantity. At this equilibrium price, buyers will purchase exactly as much of the product as firms are willing to sell. Buyers who are willing to purchase the goods at the equilibrium price will find ample supplies on store shelves. Firms that are willing to sell at the equilibrium price will find enough buyers for their goods.

### Graphing Equilibrium

We can also illustrate equilibrium with a supply and demand graph. In Figure 6.1, we have plotted on the same graph the market supply curve and the market demand curve for slices of pizza. The equilibrium price and quantity can be found where quantity supplied equals quantity

demanded, or the point where the supply curve crosses the demand curve. On the graph, this is point a.

### Disequilibrium

If the market price or quantity supplied anywhere but at the equilibrium, the market is in a state that economists call **disequilibrium**. Disequilibrium occurs when the quantity supplied is not equal to quantity demanded in a market. In the above example, disequilibrium will occur with any price other than \$1.50 per slice or any quantity other than 200 slices. Disequilibrium can produce one of two outcomes, excess demand or excess supply.

### Excess Demand

The problem of **excess demand** occurs when the quantity demanded is more than quantity supplied. When the actual price in the market is below the equilibrium price, you have excess demand, because a low price encourages buyers and discourages sellers.

For example, in Figure 6.1, a price of \$1.00 per slice of pizza will lead to a quantity demanded of 250 slices per day and a quantity supplied of only 150 slices

**Equilibrium** is any price or quantity at which quantity demanded is equal to quantity supplied. When the market price is above the equilibrium price, there is excess supply. When the market price is below the equilibrium price, there is excess demand.

Prices

per day. At this price, there is excess demand of 100 slices per day.

When customers want to buy 100 more slices of pizza than restaurants are prepared to sell, these customers will have to wait in long lines for their pizza, and some will have to do without. In Figure 6.2, below, we have illustrated the excess demand at \$1.00 per slice by drawing a dotted line across the graph at that price. As you can see, at \$1.00 a slice, the quantity demanded is 250 slices, and the quantity supplied is 150 slices.

If you were running the pizzeria, and you noticed long lines of customers waiting to buy your pizza at \$1.00 per slice, what would you do? Assuming that you like to earn profits, you would probably raise the price. As you increased the price of pizza, you would be willing to work harder and bake more, because you would know you could earn more money for each slice you sell.

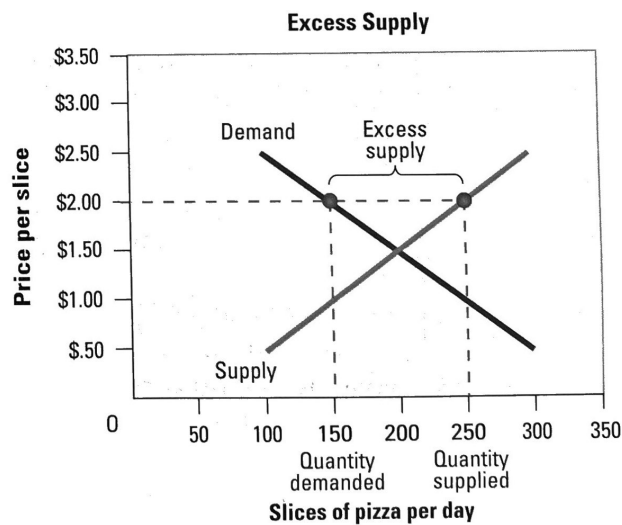
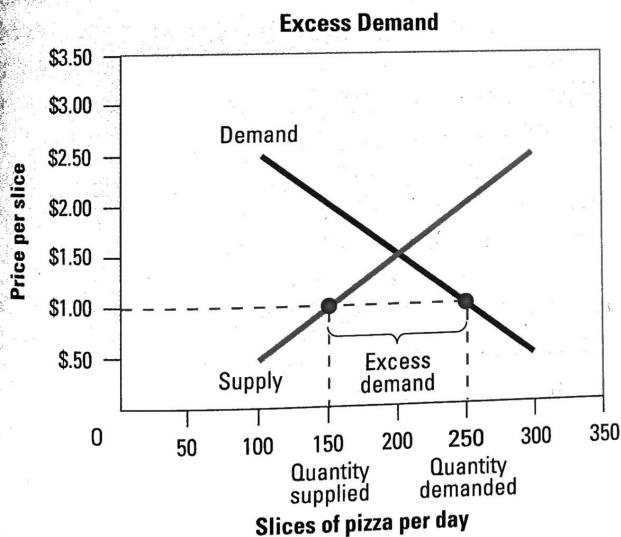
Of course, as the price rises, customers will buy less pizza, since it is becoming relatively more expensive. When the price reaches \$1.50 per slice, you will find that you are earning more profits and can keep up with demand, but the lines are much shorter. Some days you may throw out a few leftover slices, and other days you have to throw an extra pizza or two in the oven to keep up with customers, but on the whole, you are meeting the needs of your customers. In other words, the market is now at equilibrium.

As long as there is excess demand, and the quantity demanded exceeds the quantity supplied, suppliers will keep raising the price. When the price has risen enough to close the gap, suppliers will have found the

### FAST FACT

Excess supply was a major problem for the tourism industry in the last months of 1999. Hotels, restaurants, and cruise lines assumed that people would be willing to pay a very high price to celebrate the start of the year 2000, and doubled or tripled their usual rates for special "millennium" travel packages. Unfortunately, many people decided not to travel around January 1, 2000, and many who did travel refused to pay thousands of dollars for dinner or one night in a hotel. High prices and the large number of choices led to a problem of excess supply.

Figure 6.2 Excess Demand and Excess Supply



Excess demand and excess supply both lead to a market with fewer sales than at equilibrium.

**Supply and Demand** Why are sales lower at \$1.00 a slice than at \$2.00 a slice?



▼ How much would you be willing to pay to live in one of these apartments?



highest price that the market will bear. They will continue to sell at that price until one of the factors described in Chapter 4 or 5 changes the demand or supply curve and creates new pressures to raise or lower prices, and eventually, a new equilibrium.

### Excess Supply

If the price is too high, then the market will face a problem of excess supply. **Excess supply** occurs when quantity supplied exceeds quantity demanded. For example, at a price of \$2.00 per slice of pizza, the quantity supplied of 250 slices per day is much greater than the quantity demanded of 150 slices per day. This means that pizzeria owners will be making 100 more slices of pizza each day than they can sell at that price. The relatively high price encourages pizzeria owners to work hard and bake lots of pizza, but it discourages customers from buying pizza, since it is relatively more expensive than

**excess supply** when quantity supplied is more than quantity demanded

**price ceiling** a maximum price that can be legally charged for a good or service

**price floor** a minimum price for a good or service

other menu items. Some customers will buy one slice instead of two, while others will eat elsewhere. The problem is shown graphically in Figure 6.2. At the end of the day, it is likely that 100 slices will have to be thrown out.

After a short time, pizzeria owners will get tired of throwing out unsold pizza at closing time and will cut their prices. As the price falls, the quantity demanded will rise, and more customers will buy more pizza. At the same time, pizzeria owners will prepare fewer pizzas. As the price of pizza falls, the quantity demanded rises and the quantity supplied falls. This process will continue until the price reaches \$1.50 per slice. At that price, the amount of pizza that pizzeria owners are willing to sell is exactly equal to the amount that their customers are willing to buy.

Whenever the market is in disequilibrium and prices are flexible, market forces will push the market toward the equilibrium.

✱ Sellers do not like to waste their resources on excess supply, particularly when the goods cannot be stored for long, like pizza. And when there is excess demand, profit-seeking sellers realize that they can raise prices to earn more profits. In this way, market prices move toward the equilibrium level.

## Government Intervention

Markets tend toward equilibrium, but in some cases the government steps in to control prices. The government can impose a **price ceiling**, or a maximum price that can be legally charged for a good. In other cases, the government can create a **price floor**, or a minimum price for a good or service.

### Price Ceilings

A price ceiling is a maximum price, set by law, that sellers can charge for a good or service. The government places price ceilings on some goods that are considered “essential” and might become too expensive for some consumers. For example, some local governments, notably New York City, have

experimented with ceiling rents, called **rent control**, introduced to prevent a housing crisis in the other cities imposed rent control by a desire to help control their housing costs. They live in neighborhoods otherwise not afford. A control reduces the quantity demanded, so it helps some, but harms others, including neighbors. If the ceiling is established, the equilibrium price, the result is shown in Figure 6.3 below. In this market, the supply curve for two-bedroom apartments at the equilibrium shows graph B. At this point, the market is in equilibrium for a month. Consumers will rent apartments and suppliers will supply apartments for rent. Suppose that the city goes a law that limits the rent to \$600 per month. At this price, the quantity of apartments demanded is 40,000 (point b), and the quantity supplied is 20,000 (point a). At this price, apartments seem in short supply. Many people will try to rent, but only 20,000 will be able to. Instead of living with the market price, many will be investing in their own houses.

Figure 6.3 The Effects of Price Control

