

Supply and Demand

Learning Objectives

After reading this chapter you should be able to:

- L01 Illustrate and explain the economic model of supply and demand.
- L02 Define many terms, including supply, demand, quantity supplied, and quantity demanded.
- L03 Utilize the intuition behind the supply and demand relationships as well as the variables that can change these relationships to manipulate the supply and demand model.

Chapter Outline

- Supply and Demand Defined
- The Supply and Demand Model
- All about Demand
- All about Supply
- Determinants of Demand
- Determinants of Supply
- The Effect of Changes in Price Expectations on the Supply and Demand Model
- Kick It Up a Notch: Why the New Equilibrium?
- Summary

This is the make-or-break chapter of the book: You cannot understand economics without understanding supply and demand. Only if you understand this topic will you be able to read the issue chapters with a good level of comprehension.

You probably are familiar with the words “supply and demand” through television, newspapers, or conversation. The phrase frequently is used by people in a way an economist would not use it. This chapter is intended to show you what economists mean when they use the phrase and how they use the model behind the phrase so you understand the supply and demand model enough that you will be able to use both the model and the jargon correctly when we discuss a variety of economic issues.

Arriving at that level of understanding will take some time. We begin by setting out some of the language we will be using. It may be tempting for you to read too fast, to skim through, figuring that you have heard all the words before. Don't. As we discussed in Chapter 1, the language has precise meaning to economists, and it is not necessarily the same as the meaning you have associated with it before.

Our next move is laying out the supply and demand model itself, starting with brief explanations of the term “demand” and then the term “supply.” We then put them together on one graph to form our first look at the model and our first look at what economists call equilibrium. We then step back a moment to examine in detail demand and then supply.

With a rudimentary understanding of the supply and demand model, we explore what happens in it when demand changes and then explore what happens in it when supply changes. Our last step shows why supply or demand changes require a change in the equilibrium.

Supply and Demand Defined

supply and demand

The name of the most important model in all of economics.

price

The amount of money that must be paid for a unit of output.

output

The good or service produced for sale.

market

Any mechanism by which buyers and sellers negotiate an exchange.

consumers

People in a market who want to exchange money for goods or services.

producers

People in a market who want to exchange goods or services for money.

equilibrium price

The price at which no consumers wish they could have purchased more goods at the price; no producers wish that they could have sold more.

equilibrium quantity

The amount of output exchanged at the equilibrium price.

quantity demanded

The amount consumers are willing and able to buy at a particular price during a particular period of time.

Markets

Supply and demand is the name of the most important model in all of economics. Economists use it to provide insight into the movements in **price** and **output**. Remember from Chapter 1 that a model is a simplification of a complicated real-life phenomenon. This model assumes that there is a **market** where buyers and sellers get together to trade. **Consumers** are assumed to bring money to the market, whereas **producers** are assumed to bring goods or services to the market. Consumers want to exchange their money for goods or services while producers want to exchange the goods or services they have for money.

It is important that you understand that the word “market” has a very specific meaning to economists and that it is very different from the business idea of “marketing.” A market exists anywhere that buyers and sellers negotiate price and perform an exchange. Therefore, they have to be able to communicate and they have to be able to exchange. Take, as an example, the market for used midsized sedans. There are people who are looking to buy them and people who are looking to sell them. Prior to the Internet, most of the communication was geographically constrained. Buyers went to used-car lots or read ads in the newspaper. People who wanted to unload a car advertised by word of mouth, by newspaper, or sold to a dealer. With the Internet, the market is greatly expanded because communication (autotrader.com; ebay.com, etc.) is easier, but you still are unlikely to buy a car in Seattle if you live in Miami because the cost of getting the car from Seattle is prohibitive. Finally, “marketing” is what the used-car sales staff does to convince you to buy their cars. Try not to confuse the two.

The supply and demand model assumes that there are many consumers and producers, so that no one of them can dictate price. There is a price at which neither consumers nor producers leave with less value than they came with; no consumers wish they could have purchased more goods at the price; no producers wish they could have sold more at that price—in short, everyone is better off for participating. Economists call such a price an **equilibrium price** and the amount that consumers buy from producers an **equilibrium quantity**. The nuts and bolts of this model are the supply and demand curves. The demand curve shows the relationship between the price consumers have to pay and how much they “want to buy,” whereas the supply curve shows the relationship between the price firms receive and how much producers “want to sell.” Economists refer to the amount that consumers want to buy at any particular price as the *quantity demanded* and the amount that firms want to sell at any particular price as *quantity supplied*.

People participate in markets because markets make their participants better off. Markets evolved because our ancestors recognized that self-sufficiency, though possible, did not allow people to take advantage of their particular skills. A social creation of humans, markets have been shaped by humankind to bring people together to exchange goods and services and, because these exchanges have always been voluntary, participants have always left them content that they have gained from the market’s existence. Thus markets have endured as a useful social institution because they continue to advance our individual and societal standard of living.

Quantity Demanded and Quantity Supplied

This is one place where everything you have read, heard, or seen in newspapers, on radio, or on TV will confuse you because economists use these terms very differently from the way they are used outside of economics. Economists insist on highlighting the difference between demand and **quantity demanded**. If you look carefully at the paragraph that is two

MARKETS BOX

capitalist economy

An economic system where markets, in particular markets for financial resources, are free.

socialist economy

An economic system where a significant part (but not all) of the decisions regarding the allocation of financial resources is made by a governmental authority.

communist economy

An economic system where governmental authorities determine the allocation, use, and distribution of financial resources.

Markets exist whether the underlying economic system is **capitalist**, **socialist**, or **communist**.

A capitalist economy is so-named because in addition to there being free markets in most goods and services, there are free markets in financial capital. Whether people have money to lend because they have saved it or inherited it, in a capitalist system they control it. The profit that the capital generates goes to the owner of the capital. In a communist system, capital and the profit that it generates are controlled by a government authority. The government authority decides how the money is used. In a socialist system, a significant part of the profit generated by financial capital goes to the government in the form of taxes. The government then uses the tax money

to counter the wealth impacts of the distribution of profit. No country is completely capitalist and few (possibly North Korea) are completely communist. Each country exists along a spectrum. The politically conservative Heritage Foundation, in conjunction with the *The Wall Street Journal*, developed an Index of Economic Freedom that measures the degree to which countries have free capital flows, minimal government regulation of business and labor, minimal limits on trade, and a legal system conducive to business. Selected countries are listed in the table below.

It is also worth noting that this is the first, but certainly not the last time that this text will use a source with a political agenda. That usage, however, will be balanced.

Index of Economic Freedom Table

Top 20	Bottom 20	Other Countries and their Rank	
Hong Kong	Angola	Iceland	23
Singapore	Ecuador	Austria	25
Australia	Argentina	Norway	31
New Zealand	Ukraine	South Korea	34
Switzerland	Uzbekistan	Uruguay	36
Canada	Kiribati	Colombia	37
Chile	Chad	Belgium	40
Mauritius	Solomon Islands	Peru	44
Denmark	Timor-Leste	Spain	46
United States	Congo, Rep.	Mexico	50
Ireland	Iran	Israel	51
Bahrain	Turkmenistan	France	62
Estonia	Equatorial Guinea	Saudi Arabia	82
United Kingdom	Congo, Dem. Rep.	Italy	83
Luxembourg	Burma	Brazil	100
Finland	Eritrea	Greece	117
Netherlands	Venezuela	India	119
Sweden	Zimbabwe	China	136
Germany	Cuba	Russia	139
Taiwan	North Korea		

www.heritage.org/index/Ranking

quantity supplied

Amount firms are willing and able to sell at a particular price during a particular period of time.

above, paying particular attention to the last sentence, the quantity demanded is how much consumers are willing and able to buy at a particular price during a particular period of time. Demand, on the other hand, shows how much consumers want to buy at all prices. Demand is a relationship, whereas quantity demanded is a particular point on that relationship. An identical distinction exists with supply. **Quantity supplied** is how much firms are willing and able to sell at a particular price during a particular period of time, whereas supply alone shows how much firms want to sell at all prices.

Ceteris Paribus

Social scientists in general, and economists in particular, believe in something called the “scientific method,” one aspect of which suggests that to isolate the effect of one variable on another you have to separate out the impacts of everything else. Unlike chemistry or biology, though, economists are rarely able to put their subjects (people) into a lab and experiment on them. For instance, economists cannot create a capitalist system in one area of town, a socialist system in another, and a communist system in a third so as to test which economic system serves society best. Economists have to observe in the context of their models. So, even though life does not progress one change at a time, our model allows us to focus on one change at a time. This brings us to the Latin most commonly used by economists: **ceteris paribus**, which means “other things equal.” This phrase, when added to a definition or a conclusion, means that though there are many other factors that could affect a phenomenon in real life, this is focusing on the impact of one while holding those other factors constant.

ceteris paribus

Latin for other things equal.

Demand and Supply

For our demand curve we want to know what the relationship is between price and quantity demanded. Determining this relationship is difficult because the relationship depends on such things as whether people are rich or poor, whether the good is in or out of fashion, or how much rival goods cost. To get around this we assume we are looking at the relationship between price and quantity demanded in such a way that none of the other things are changing. Thus, **demand** is the relationship between price and quantity demanded, ceteris paribus.

demand

The relationship between price and quantity demanded, ceteris paribus.

supply

The relationship between price and quantity supplied, ceteris paribus.

Precisely the same logic applies to supply. There are many things upon which the relationship between price and quantity supplied depends: how much workers must be paid, the cost of materials, or the availability of technology. Again we assume these things do not change, so **supply** is the relationship between price and quantity supplied, ceteris paribus.

The Supply and Demand Model

Demand

We have put it off long enough—let’s look at the model. To plot a demand curve, let’s first tell ourselves a reasonable story and put the relevant information in a table. In many city downtown areas, there are vendors selling food and drink from stands. To simplify the issue, let’s suppose we are looking at the market for bottled orange juice sold by these street vendors and that the customers buy the bottles of orange juice from those vendors and consume the juice throughout the day in their downtown offices. There are obviously lots of things that will affect the supply and demand for these bottles of orange juice, but for the moment we are going to assume they are held constant.

We start this inquiry with the price of a bottle of orange juice at zero and ask how many will be wanted. Probably a lot, but not as many as you might think. People get tired of drinking the same thing over and over again and even if they were going to get a bunch to save for later, they still have to carry it to their offices. Suppose, for mathematical simplicity, that there are only 10,000 people in this downtown area and that at a price of zero each person wants only five bottles per day. That would mean that, at a price of zero, there would be a quantity demanded of 50,000 drinks.

Suppose the price were raised to 50 cents per bottle. Each individual would have to weigh whether they wanted a bottle of orange juice or 50 cents. Let’s say the average person decides to buy only four per day at that price. As a result of the price increase, the quantity demanded for the market would be 40,000. Suppose another 50-cent increase would decrease the amount

TABLE 2.1

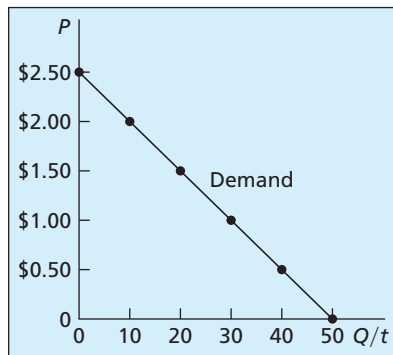
Demand schedule for bottles of orange juice.

Price (\$)	Individual Quantity Demanded	Market Quantity Demanded (10,000 people)*
0	5	50,000
0.50	4	40,000
1.00	3	30,000
1.50	2	20,000
2.00	1	10,000
2.50	0	0

*This is ceteris paribus at work, holding the number and type of people constant.

FIGURE 2.1

The demand curve.

**demand schedule**

Presentation, in tabular form, of the price and quantity demanded for a good.

wanted by the average person to three. Quantity demanded in the market would fall to 30,000. Without belaboring the point further, price increases would decrease the amount the average person would buy until at \$2 per bottle the average person wanted only one, and at \$2.50 the average person would buy none. Table 2.1 depicts the options we have just suggested in the form of what is called a **demand schedule**. A demand schedule presents the price and quantity demanded for a good in a tabular form.

This information can also be displayed on a graph. As a matter of fact, that is how you will nearly always

see it from now on. Figure 2.1 is a graph of a demand curve. Note that the vertical axis is labeled P for price per unit and the horizontal axis is labeled Q/t for quantity per unit time. You probably anticipated the first label, but the second may require a short explanation. Quantity per unit time is that number of orange juice bottles that the 10,000 people will want per day. There always has to be a time reference for quantities demanded and for quantities supplied. The dark dots represent the points from our demand schedule, and when we connect the dots we have a demand curve.

Supply

Now, using the same example, let's think about the sellers of orange juice bottles. Suppose for the sake of this example that there are 10 completely independent street vendors selling orange juice bottles, and that there aren't any brand names of the vendors or for the orange juice. Now ask yourself how many orange juice bottles a business would attempt to sell at various prices. Obviously they would not want to give any away, so at a price of zero, quantity supplied would be zero. Even at a very low price, such as 50 cents a bottle, they might not want to sell any because the cost to the vendor of either buying or filling the bottle might be more than the 50 cents per bottle they would get. As prices go up, they would probably be willing to put forth more and more effort to make more and more money. For the sake of this example, we will assume that at \$1.00 per bottle each business will sell a bottle to anyone who would come up to them but won't go out of their way to sell more than that. They will station themselves where there are a lot of people and simply sell to them.

Suppose that as the price people are willing to pay rises, the vendors hire people to hawk the orange juice bottles to drum up sales. Let's say that at \$1.50 they will each want to hire enough hawkers to sell 2,000 bottles per day and that at \$2.00, they will hire enough to sell

TABLE 2.2 Supply schedule for bottles of orange juice.

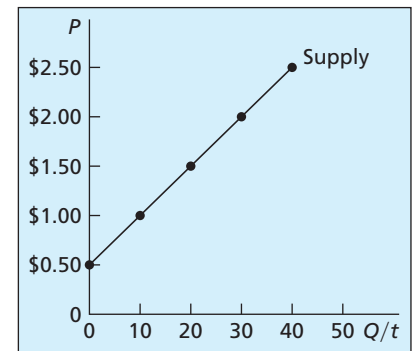
Price (\$)	One Vendor's Quantity Supplied	The Market's Quantity Supplied (all 10 concession vendors)
0	0	0
0.50	0	0
1.00	1,000	10,000
1.50	2,000	20,000
2.00	3,000	30,000
2.50	4,000	40,000

supply schedule
Presentation, in tabular form, of the price and quantity supplied for a good.

3,000 per day. Finally, suppose that at \$2.50 per bottle, they will hire enough hawkers to sell 4,000 per day. Table 2.2 displays this information in what is called a **supply schedule**, which presents in tabular form the price and quantity supplied for a good.

This information can also be displayed on a graph. Figure 2.2 shows the supply curve with the axes labeled the same as Figure 2.1: price and quantity over time. Here the dark dots represent the points from our supply schedule. When we connect the dots we have a supply curve.

FIGURE 2.2 The supply curve.



Equilibrium

Table 2.3 combines the supply schedule and the demand schedule into a single schedule, and Figure 2.3 combines the supply curve and demand curve on one diagram. They both show us that at prices below \$1.50 consumers want more orange juice bottles than vendors are willing to provide and that at prices above \$1.50 they want fewer bottles than vendors are willing to sell. Where the supply and demand curves cross, the amount that consumers want to buy and the amount firms want to sell are the same. This is called an **equilibrium**.

equilibrium
The point where the amount that consumers want to buy and the amount firms want to sell are the same. This occurs where the supply curve and the demand curve cross.

FIGURE 2.3 The supply and demand model and equilibrium price and quantity.

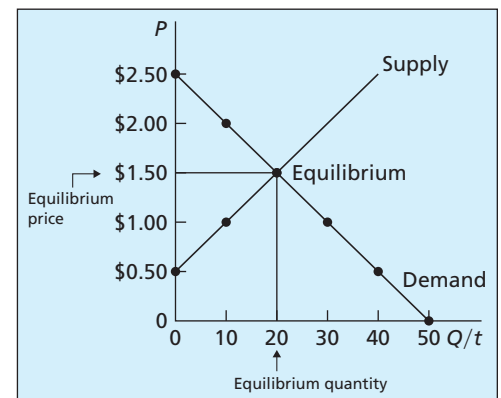


TABLE 2.3 Supply and demand schedules with shortage and surplus.

Price (\$)	Individual Quantity Demanded	Market Quantity Demanded	One Vendor's Quantity Supplied	Market Quantity Supplied	Shortage (excess demand)	Surplus (excess supply)
0	5	50,000	0	0	50,000	
0.50	4	40,000	0	0	40,000	
1.00	3	30,000	1,000	10,000	20,000	
1.50	2	20,000	2,000	20,000		
2.00	1	10,000	3,000	30,000		20,000
2.50	0	0	4,000	40,000		40,000

shortage

The condition where firms do not want to sell as many goods as consumers want to buy.

surplus

The condition where firms want to sell more goods than consumers want to buy.

excess demand

Another term for shortage.

excess supply

Another term for surplus.

Shortages and Surpluses

When the price is too low we have a **shortage**. Firms do not want to sell as many goods as consumers want to buy. When the price is too high we have a **surplus**. Firms want to sell more goods than consumers want to buy.

Imagine that the vendors start to run out of bottled orange juice. There is an obvious shortage. According to the model of supply and demand, this will have occurred because the price was too low. With long lines of people wanting to buy bottles in front of them, the vendors will see that in the face of a shortage, or **excess demand**, they can raise the price and still sell their product. The opposite will occur if there is a surplus, or **excess supply**. If the price is too high, the vendors will want to sell more bottles than consumers will want. Instead of long lines, there will be excess inventory and firms will see that in the face of a surplus they should lower the price to get rid of it.

With self-interested sellers, shortages and surpluses are short-lived. Firms react to changes in inventories by changing the price they charge. They react to shortages with price increases and surpluses with price cuts, and as a result either situation is temporary.

All about Demand

law of demand

The statement that the relationship between price and quantity demanded is a negative or inverse one.

The Law of Demand

We know from this chapter's section on definitions that demand is the relationship between price and quantity demanded, *ceteris paribus*, and we followed a reasonably believable story about soft drinks at a football game. That story implied that there was a negative relationship between price and quantity demanded. Because of the relationship, the demand curve we drew was downward sloping. The negative relationship between price and quantity demanded is called the **law of demand**. This "law" is not really a law but is common sense applied to the following rather constant observation: When prices are higher, we tend to buy less.

Why Does the Law of Demand Make Sense?

Why do we see this negative relationship so often? There are three distinct reasons. First, when you go to the store and find that the good you want is highly priced, you search for an acceptable substitute that costs less. If you buy something else, you are substituting another good for the one that you originally wanted because its price was too high. Economists say that this is a **substitution effect**. You buy less of what you originally wanted when its price is high because you use something else instead.

Second, suppose you cannot find an acceptable substitute. In this case, you are stuck buying less of the good because you cannot afford as much. What has happened is that your real buying power has fallen (even though the money you have in your wallet is the same) because prices have risen. This does not necessarily work for all goods (especially basic necessities like water), but generally economists call this a **real-balances effect** because when a price increases, it decreases your buying power, causing you to buy less.

The third reason we see a negative relationship between price and quantity demanded can be explained with either great detail, or a useful, though not always completely accurate, shortcut. You are in this course and your professor has chosen this book because you do not need the great detail, so you will get the shortcut. It starts from the premise that what you are willing to pay for something depends on how many you have recently had. With this in mind, consider the following very silly but illustrative example. Suppose I give you \$10 and I want to know how much you would pay for pizza slices at lunch. Suppose further that as part of this experiment you are given truth serum so you have to

substitution effect

Purchase of less of a product than originally wanted when its price is high because a lower priced product is available.

real-balances effect

When a price increases, your buying power is decreased, causing you to buy less.

honestly tell me two things: (1) on a scale from 1 to 10, how happy your belly is; and (2) how much you valued each slice in terms of money. Starting hungry at a belly happiness index of 1, suppose that you eat one slice and tell me that it was worth \$3 and rated a 5 on the belly happiness index. Now you eat another slice and tell me it wasn't worth as much because you were not as hungry, so you say it was worth \$2 and your belly happiness index rose to 8. You eat the third slice and tell me that, because you were somewhat full at the time you ate the third slice, your belly happiness index only rose to 9 and the slice was only worth \$1.

In this scenario, each time you consume a slice, the value you place on the next slice falls. This means that the value you place on a good depends on how many you have already had. Economists refer to the amount of extra happiness¹ that people get from an additional unit of consumption as **marginal utility** and say that it decreases as you consume more. This **law of diminishing marginal utility** suggests that the amount of additional happiness that you get from an additional unit of consumption falls with each additional unit. Stated more simply, because each additional slice increases your happiness less than the previous slice, the most you would be willing to pay for each additional slice is less than before. The third reason why a demand curve is downward sloping, then, is that for most goods there is diminishing marginal utility.

It is often helpful to view the demand curve as more than a way of finding how much of a good a person wants at a particular price. In addition, you can use it to find out how much a person is "willing to pay" for a particular amount of the good. Whenever you come across this phrase, think "the most they would be willing to pay." Of course you would always want to pay less, but looked at this way the demand curve also represents the most you would be willing to pay for different amounts of the good, *ceteris paribus*.

marginal utility

The amount of extra happiness that people get from an additional unit of consumption.

law of diminishing marginal utility

The amount of additional happiness that you get from an additional unit of consumption falls with each additional unit.

All about Supply

The Law of Supply

We also know from our section on definitions that supply is the relationship between price and quantity supplied, *ceteris paribus*, and we followed an equally reasonably believable story about how many orange juice bottles a vendor would want to sell in a city. That story implied that there was a positive relationship between price and quantity supplied. Because of that the supply curve we drew was upward sloping. The positive relationship between price and quantity supplied is called the **law of supply**. Like all other laws in economics, this one isn't a law either but is more like a hypothesis that is supported by nearly all the evidence nearly all the time. Stated more simply: When prices are higher, firms tend to want to sell more.

Why Does the Law of Supply Make Sense?

Although believable intuitively, the technical reason that a supply curve is upward sloping takes up much of Chapters 4 and 5. What follows is a simplified (though probably not simple) explanation that will be repeated and expanded in Chapters 4 and 5.

Suppose the downtown area where the vendors are selling orange juice bottles has varying areas of population density. It is relatively easy to sell where there are more people, like at a subway exit, and progressively more difficult to sell as you get away from those population centers. As a result, even if vendors hire hawkers to go out and sell orange juice bottles, it is

¹ This is why this discussion has been an intellectual shortcut. Most economists do not believe that you can measure happiness in the same way that you measure distance or temperature. This means that though you can say you are happier in one circumstance than in another, you cannot say how much happier you are. All is not lost, though, because we can get the same idea through the concept of indifference. The reason no one-semester course textbooks explain the downward-sloping nature of demand using the concept of indifference is that it takes too long and gets you no further in your understanding than the last two paragraphs have. Thus the shortcut of marginal utility nets the same result in a lot less time and is judged by most teachers of one-semester economics courses as useful.

law of supply

The statement that there is a positive relationship between price and quantity supplied.

going to get harder and harder to sell a lot when they spread out. Even though it is harder to sell, as the price rises, it is still possible and even likely that it would be worth it for vendors to hire hawkers. So even when the last hawkers sent out sell far fewer bottles than the ones sent out originally, the vendors hire them because they make money doing so. So when the price is low, the high-cost sales methods aren't worth it and when the price is high, they are worth it. There might even be a price high enough that the vendors would be willing to deliver individual bottles to individual offices. While this would be very inefficient relative to simply standing at a subway exit, if the vendors have sold all they can this way and the price is high enough, it could still be profitable to the vendors to do so.

What this means, and what Chapters 4 and 5 attempt to demonstrate in detail, is that the reason the supply curve is upward sloping is that it costs more per unit to sell more units. In this example, the orange juice bottles were not any more expensive, but the cost of hawking them or transporting them was higher when we sold to more remote areas.

In addition, when firms decide which good to produce, they will want to produce the one that makes them the most money. Suppose our orange juice vendors have only so much space in the coolers in their carts. In this case, the vendors do not care whether they sell orange juice or water; they simply want to make a profit. If consumers are willing to pay more for bottled water, the vendors will stock their carts with bottled water. What this means is that relative to water, when orange juice prices are higher, the vendor is willing to take water out of the cart and replace it with orange juice. When orange juice prices are lower, the vendor does the opposite.

Determinants of Demand

In the previous section we talked about holding other things constant. Now is the time to consider what happens when things change. As we alluded to in the section on definitions, there are many things that affect the demand relationship for a good. These include how much the good is liked, how much income people have, how much other goods cost, the population of potential buyers, and the expectations of the price in the future. These variables will change how much of the good is wanted as well as how much someone is willing to pay for it. Again “willing to pay” is shorthand for the most someone is willing to pay. If people want more of the good, this also translates into willingness to pay prices that they would not have paid before.

DETERMINANTS OF DEMAND

Taste

Determinant of whether the good is in fashion or whether conditions are right for many people to want the good.

Income

Inferior goods: You buy less of a good when you have more income.

Normal goods: You buy more of a good when you have more income.

Price of other goods

Substitute: Goods used instead of one another.

Complement: Goods that are used together.

Population of potential buyers

The number of people potentially interested in a product.

Expected price

The price that you expect will exist in the future.

Excise taxes

A per unit or percentage tax on a good or service that must be paid by consumers.

Subsidies

A per unit or percentage subsidy for a good or service that is granted to consumers.

Taste

Taste is the word that economists use to describe whether the good is in fashion or whether conditions are right for many people to want the good. A high level of taste means that the good is in fashion or highly desired; a low level of taste means that few people want it. It works on demand in an obvious way: The more people like the good (the higher the taste for the good), the more they are willing to pay higher prices for any particular amount and the more of it they will want. Going back to the orange juice example, the taste for orange juice would rise during cold and flu season as people were trying to boost their immune systems believing that orange juice would aid in keeping viruses at bay.

Income

For most goods, an increase in income will lead to an increase in the amount that consumers want. In cases where you buy more of a good when you have more income, economists call the good normal. If the good is normal and your income rises, you are able to buy more and you want to buy more of the good and you are willing to pay more for it.

How much income people have to buy the good also matters but not always in a positive way. Consider a couple of staples in the college diet, instant ramen noodles and macaroni and cheese. No matter which of these you eat, you can fill your belly for under 50 cents. Now ask yourself how many pouches, boxes, or bags of this stuff you would buy if your grandmother died and left you \$25,000. Answer: not many, particularly if you have been eating them because you could not afford other things to eat. This example shows you that it is not always the case that the more you make, the more you buy. In cases where you buy less of a good when you have more income, economists call the good inferior. If the good is inferior and your income rises, you are able to buy more, but you want to buy less of the good and you will need lower prices to induce you to buy any particular quantity.

Returning to our orange juice example, if people consume more bottles of orange juice as their incomes rise, then orange juice is a normal good. If they consume fewer bottles of orange juice when their incomes rise, it is an inferior good.

Price of Other Goods

Similarly, there is no straightforward answer to the question of how you will change your willingness to purchase a good if the price of another good rises. It is possible that if the price of a good like Pepsi rises, you will switch to Coke. In that case, you would be willing to pay more for Coke and want to buy more of it. Likewise, if the price of hot dogs increases, you will decide to buy fewer of them. Since hot dog buns have little good use other than to surround hot dogs, you will need fewer of these too. Economists say that goods used instead of one another (e.g., Coke and Pepsi) are substitutes and that goods that are used together (e.g., hot dogs and hot dog buns) are complements.

Examples of substitutes and complements abound. Peanut butter and jelly are often considered complements because they are typically used together to produce sandwiches. Pepperoni and sausage might be considered substitutes because they are alternative meats for a pizza. To confuse matters, though, goods can be substitutes to some and complements to others. My father-in-law considers peanut butter and jelly to be equally good bagel spreads, so to him they are substitutes. The Meat Lover's Pizza by Pizza Hut includes both sausage and pepperoni, so to people who like this pizza the two may be complements.

Once again, returning to orange juice bottles: Orange juice and grapefruit juice are likely substitutes for one another while orange juice and vodka are likely to be complements because people (of legal drinking age) may mix them together to form a "screwdriver."

Population of Potential Buyers

The number of people potentially interested in a product will clearly have an impact on the demand for the product. So, as the downtown population rises, more are potentially interested in buying bottles of orange juice. Clearly the larger the city, the more people come downtown to work and shop, and the more people will buy orange juice. Or, for instance, in the dark ages of the 1970s, when there were only a few computer-literate people, only a few people were interested in buying computers. Then schoolchildren, and especially college students, began to rely on computers for their schoolwork, creating a group of potentially interested customers when they graduated. Economists shorten this concept of the number of people potentially interested in a product to call it the population.

Expected Price

When the expected price of a good rises, this induces a stock-up effect. Let's suppose that a winter freeze destroys a large number of the orange groves. Forward-thinking consumers will see the impending increase in orange juice prices and be motivated to stock up now before the price increase takes hold. Similarly, smokers stock up on cigarettes when a tax increase is expected. Frugal drivers buy gas on Wednesdays, before the nearly universal weekend price increase. If there is an expectation that an increase in price is imminent, consumers will be willing to pay more and they will want to buy now rather than later.

Excise Taxes

Sometimes governments want to discourage the consumption of a good and will place a tax on that good. Such a tax would mean that consumers would have to pay more per unit than they otherwise would have to and as a result would decrease the amount that they wished to purchase. Suppose that a city wanted to encourage the recycling of plastic bottles and that consumers had to pay \$1 extra per orange juice bottle that they purchased. That would mean that the new demand curve would be \$1 lower at every quantity than the old one.

Subsidies

Sometimes governments want to encourage the consumption of a good and will create a subsidy for that good. Such a subsidy would mean that consumers would have to pay less per unit than they otherwise would have to and as a result would increase the amount that they wished to purchase. Suppose that a city in Florida wanted its citizens to be seen by tourists drinking Florida orange juice. To encourage consumers to do so it would allow them to pay \$1 less per orange juice bottle that they purchased. That would mean that the new demand curve would be \$1 higher at every quantity than the old one.

The Effect of Changes in the Determinants of Demand on the Supply and Demand Model

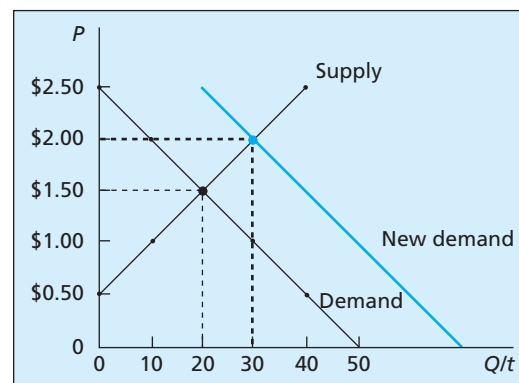
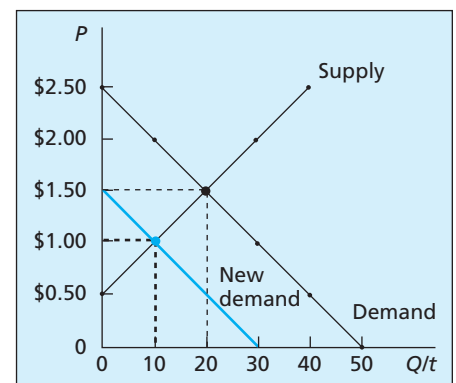
Tables 2.4 and 2.5 summarize how the determinants of demand work on the supply and demand diagram. Table 2.4 indicates the impact of increases in the variables listed above, whereas Table 2.5 indicates the impact of decreases in those variables. The final column of each table refers to the figure corresponding to the change. Figure 2.4 shows the impact of an increase in demand while Figure 2.5 shows the impact of a decrease in demand. In each figure, the original supply and demand curves are shown in black and the new demand curve is shown in the gold color. The original equilibrium is shown with the big black dot, and the new equilibrium is shown with the big gold-colored dot.

TABLE 2.4 Movements in the demand curve: increases in the values of the determinants.

An Increase in	Causes Demand to	Causes the Demand Curve to Move to the	And Is Shown in Figure
Taste	Increase	Right	2.4
Income, normal good	Increase	Right	2.4
Income, inferior good	Decrease	Left	2.5
Price of other goods, complement	Decrease	Left	2.5
Price of other goods, substitute	Increase	Right	2.4
Population	Increase	Right	2.4
Expected future price	Increase	Right	2.4
Excise Tax	Decrease	Left	2.5
Subsidy	Increase	Right	2.4

TABLE 2.5 Movements in the demand curve: decreases in the values of the determinants.

A Decrease in	Causes Demand to	Causes the Demand Curve to Move to the	And Is Shown in Figure
Taste	Decrease	Left	2.5
Income, normal good	Decrease	Left	2.5
Income, inferior good	Increase	Right	2.4
Price of other goods, complement	Increase	Right	2.4
Price of other goods, substitute	Decrease	Left	2.5
Population	Decrease	Left	2.5
Expected future price	Decrease	Left	2.5
Excise Tax	Increase	Right	2.4
Subsidy	Decrease	Left	2.5

FIGURE 2.4 The effect of an increase in demand on the supply and demand model.**FIGURE 2.5** The effect of a decrease in demand on the supply and demand model.

Tables 2.4 and 2.5 as they apply to Figures 2.4 and 2.5 may seduce you into thinking the best way of using this information is to memorize it. As the verb *seduce* suggests, that is a very bad learning strategy. The best use of these tables and figures is to use them as a check against your economic intuition. As an example, suppose you are tasked with drawing a supply and demand diagram for hot dog buns showing the impact of an increase in the price of hot dogs. First, you would recognize hot dogs and hot dog buns as complements and that when

the price of a complement rises, you will consume fewer hot dogs (because the demand for hot dogs is downward sloping) and so you would need fewer hot dog buns. Second, you would recognize that as a decrease in the demand for hot dog buns. Third, you would draw a supply and demand diagram for hot dog buns showing a leftward movement in demand for hot dog buns because a decrease in demand shows up as demand shifting to the left. You would then check that against the information in Table 2.4 (because it is an increase in the price of hot dogs impacting hot dog buns); look down to the “Price of other goods, complement” row, then across to see that your intuition that demand should move left was correct and that the drawing of a figure like Figure 2.5 is correct.

Determinants of Supply

Again, the definitions section alluded to the types of things that can change the supply relationship. They include changes in the price of inputs, technology, price of other potential output, the number of sellers, and expected future price. Again we are assuming that other things are held constant.

Price of Inputs

The price of inputs refers to the costs to firms of all the things necessary to produce output. If an input is used to make a product, then the input costs money and therefore has a price even though its name may change. Obvious examples of inputs are raw material, labor, and equipment. The price of a raw material is simply its price. (Though this sounds like a circular definition, think about our orange juice bottles example. The bottles, the orange juice itself, and coolers to keep the bottles in each have a price.) The price of labor is the wage + benefit cost to employers associated with hiring a person. (Everything that employers pay for that is not paid directly to workers—health insurance, unemployment insurance, worker’s compensation, and so on—is defined as benefits.) The price of equipment can affect supply, but just as often, what matters is the rental cost of leased equipment or the interest + depreciation rates that must be paid on the equipment bought with borrowed money. (Interest is the price of borrowed money, and depreciation is the rate at which machines lose value owing to wear and tear.)

DETERMINANTS OF SUPPLY

Price of inputs

Costs to firms of all the things necessary to produce output.

Technology

The ability to turn input into output.

Price of other potential output

When firms have to decide which good to produce, they will want to produce the one that makes them the most money.

Number of sellers

The number of firms competing in the same market.

Expected future price

Firms want to hold back sales to wait for higher prices and unload inventory before prices fall.

Excise taxes

A per unit or percentage tax on a good or service that must be paid by producers.

Subsidies

A per unit or percentage subsidy for a good or service that is granted to producers.

Technology

Within economics, the word *technology* refers to the ability to turn input into output. In our previous example of selling bottles of orange juice in a city, a technological advance that would allow vendors to keep the bottles fresh without ice or refrigeration would reduce costs. This technology would increase output and lower costs. As we are using it here, the technology variable can change because of increases in the ability of employees to work harder and smarter, or it can change because new devices make employees more efficient.

Another example of how increases in technology change markets can be seen in the *very illegal* term-paper business. If you wanted to buy term papers in the 1960s, you would have had to pay people to go to the library to look stuff up in card catalogs of alphabetized index cards and indices of periodicals to find source material. Because access to copy machines was limited, they would have then had to read the material in the library. Finally, they would have had to type the paper on a typewriter, and they would have been able to fix mistakes only with a pasty liquid called Wite-Out®. Paying people to do this would have been expensive.

In the 1970s, all the steps were the same except copy machines would have allowed the people you hired to read source material in their homes. In the 1980s, primitive computers would have allowed them to gather limited quantities of source material on a computer and to write the paper using a hard-to-use, not very flexible word processor. By the 1990s, writers of term papers could look up material on the Internet, print it, read it, and write the paper, all from the comfort of their own bedrooms. In each of these periods, producers of such contraband had to find a way to sell their papers. Often informal networks had to be created and payment had to be in cash. Today, you can go to any number of term-paper sites on the Internet and download a paper by simply entering a credit card number. You, of course, would never do this because your college can easily catch you and throw you out of school. But because it is easier to produce papers in less time than used to be the case, sellers of term papers can charge lower prices and produce more papers.

Price of Other Potential Outputs

The price of other potential output refers to the same idea that we referenced when indicating why the supply curve is upward sloping, except now we focus on what happens to the existing supply curve when the price of the other good changes. As we said, vendors have only so much space in the coolers in their carts. During a hot summer's day they may discover that they sell out of bottles of water and have plenty of leftover bottles of orange juice. If consumers are willing to pay more for bottled water, the vendors will stock their carts with bottled water. They will stock those carts with the combination of water and orange juice that makes them the most money. As the price of water rises, the supply of orange juice will fall because vendors want to stock water.

Number of Sellers

The number of sellers, that is, the number of firms competing in the same market, is important because the more firms there are, the greater is total market production. Using the orange juice example, we assumed that there were 10 different vendors. If these vendors are all making a significant profit, it is likely that other entrepreneurs will want to set up their competing stands. This raises total market supply. Similarly, if there were losses, some of those vendors may quit the business, reducing total market supply.

Expected Price

The expected future price should sound familiar because it is also something that will change demand. In the context of supply, it refers to a firm's desire to hold back sales to wait for

higher prices and its desire to sell its goods and thus lower its inventory before prices fall. Firms want to sell their goods when they can make the most money regardless of when that time is. A warning that a hurricane is coming will bid up the current price of gas-powered generators because firms will want to retain those they have in stock to sell at high prices after the hurricane hits. Conversely, if firms figure that the goods they hold will be out of fashion soon, they will want to get rid of them now.

Let's return to the example of the freeze that decimated the orange groves. Not only will buyers of orange juice be motivated to stock up to avoid the increase in price, sellers will know that a price increase is coming and will want to hold on to what they have. As a result, the expected future price not only changes demand for a good, it changes supply as well. Of course, it also works in the other direction. If a bumper orange crop is expected, orange juice prices will be expected to fall and those currently holding orange juice will be motivated to sell their current inventories before the price falls too much.

Excise Taxes

As we indicated in the context of demand, sometimes a government wants to discourage the consumption of a good. In so doing it can tax producers or consumers. If it wants the tax to be collected on the production side, it will place a tax on that good and compel firms to pay the tax. It should be noted here that it doesn't matter whether the tax is on the demand side or the supply side; the impact will be the same and will depend on the Chapter 3 concept of elasticity, not the intention of policy makers. In any event, this tax is modeled by moving the supply curve vertically higher by the amount of the tax. So a city can encourage recycling of plastic bottles by charging firms \$1 extra per orange juice bottle that they sell. That would mean that the new supply curve would be \$1 higher at every quantity than the old one.

Subsidies

Similarly, subsidies can be applied to the firm producing the good rather than the consumer. A \$1 subsidy would be modeled with the new supply curve \$1 lower at every quantity than the old one.

The Effect of Changes in the Determinants of Supply on the Supply and Demand Model

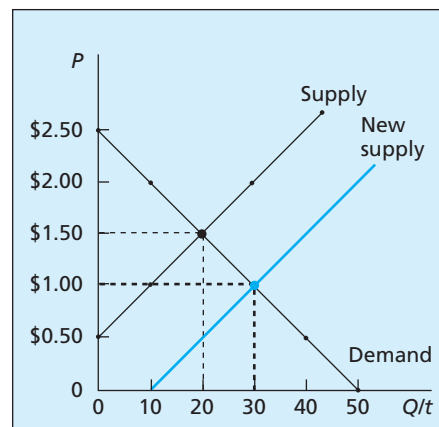
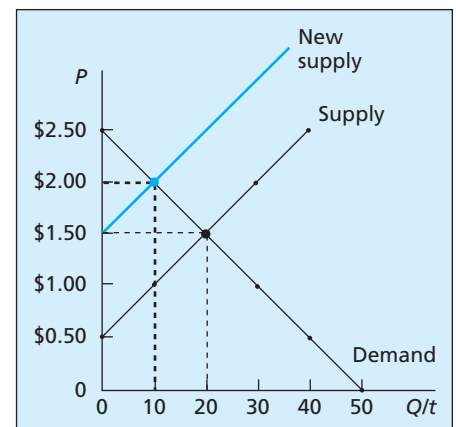
Tables 2.6 and 2.7 summarize how determinants of supply work on a supply and demand model. Table 2.6 indicates the impact of increases in the variables listed above, whereas Table 2.7 indicates the impact of decreases in those variables. It is important to understand that on the supply side, an increase in supply is shown by a movement to the right in the supply curve and that a decrease in supply is shown by a movement to the left in the supply curve. As with

TABLE 2.6 Movements in the supply curve: increases in the values of the determinants.

An Increase in	Causes Supply to	Causes the Supply Curve to Move to the	And Is Shown in Figure
Price of inputs	Decrease	Left	2.7
Technology	Increase	Right	2.6
Price of other potential outputs	Decrease	Left	2.7
Number of sellers	Increase	Right	2.6
Expected future price	Decrease	Left	2.7
Excise Tax	Decrease	Left	2.7
Subsidy	Increase	Right	2.6

TABLE 2.7 Movements in the supply curve: decreases in the values of the determinants.

An Decrease in	Causes Supply to	Causes the Supply Curve to Move to the	And Is Shown in Figure
Price of inputs	Increase	Right	2.6
Technology	Decrease	Left	2.7
Price of other potential outputs	Increase	Right	2.6
Number of sellers	Decrease	Left	2.7
Expected price	Increase	Right	2.6
Excise Tax	Increase	Right	2.6
Subsidy	Decrease	Left	2.7

FIGURE 2.6 The effect of an increase in supply on the supply and demand model.**FIGURE 2.7** The effect of a decrease in supply on the supply and demand model.

Tables 2.4 and 2.5 the final columns of Tables 2.6 and 2.7 refer to the figures corresponding to the changes. Figure 2.6 shows the impact of an increase in supply while Figure 2.7 shows the impact of a decrease in supply. Just as it was for Tables 2.4 and 2.5 and Figures 2.4 and 2.5, the original supply and demand curves are shown in black and the original equilibrium is shown with the big black dot. This time the new supply curve is shown in the gold color with the new equilibrium shown with the big gold-colored dot.

After having read the admonition against memorizing regarding the demand shifts, you can guess what's next: Don't try to memorize Tables 2.6 and 2.7 as they apply to Figures 2.6 and 2.7. The best use of these tables and figures is to use them as a check against your economic intuition. As an example, suppose you are tasked with drawing a supply and demand diagram for gasoline showing the impact of an increase in the price of crude oil. First, you would recognize that crude oil is the primary input to gasoline so that, when crude oil prices rise, refineries would have to increase their gasoline prices to make up for those higher production costs. Second, you would recognize that as a decrease in the supply of gasoline. Third, you would draw a supply and demand diagram for gasoline showing a leftward movement in supply for gasoline because a decrease in supply shows up as supply shifting to the left. You would then check that against the information in Table 2.6 (because it is an increase in the price of crude impacting gasoline); look down to the "Price of inputs" row, then across to see that your intuition that supply should move left was correct and that the drawing of a figure like Figure 2.7 is correct.

The Effect of Changes in Price Expectations on the Supply and Demand Model

If you have not already noticed, expected future price shows up in both the determinants of demand and the determinants of supply. This means that if the expected future price changes, both the supply and demand curves change as well. If the expected future price rises, consumers will want to stock up, thereby increasing demand. Firms, on the other hand, will want to hold back their inventory to wait for the price increase, thereby decreasing supply. In this case, we do not know what will happen to equilibrium quantity because the demand shift will, by itself, increase quantity, whereas the supply shift will, by itself, decrease quantity. Whether there is a net increase or decrease in equilibrium quantity depends on which shift is greater. On the other hand, the effect on price is known, and it amounts to a self-fulfilling prophecy because a credible prediction of a future price increase will lead to an actual current price increase.

When expected prices rise, we know that the current price will rise, but we do not know what will happen to the quantity. This is because we do not know whether firms' desire to wait for price increases will be stronger than consumers' desire to stock up. When the price is expected to fall, firms will want to get rid of their inventory and consumers will want to wait for the new lower prices.

When expected prices fall we know that the current price will fall, but we again, do not know what will happen to the quantity. This is because we do not know whether firms' desire to unload inventory will be stronger than consumers' desire to wait for lower prices.

Kick It Up a Notch

WHY THE NEW EQUILIBRIUM?

When either the supply curve or the demand curve shifts, the equilibrium has to change. If it does not, one of two things will happen: There will be a shortage where consumers want to buy more than firms want to sell, or there will be a surplus where firms want to sell more than consumers want to buy.

To show that this is the case, imagine that there is an increase in the demand for a good and firms do not increase the price. As shown in Figure 2.8, keeping the price at the old equilibrium would set up a situation where consumers would want more (40) than firms would be willing to sell (20). The resulting shortage would not be eliminated unless there was an increase in the price.

A somewhat different problem would happen if firms did not lower their price in the face of decreased demand. Figure 2.9 shows that keeping the price at the old equilibrium with a decrease in demand would set up a situation where consumers would want fewer (0) than firms would be willing to sell (20). The resulting surplus would not be eliminated unless there was a decrease in the price.

Just as we needed a new equilibrium when there was a change in demand, we need one when there is a change in supply. Figure 2.10 shows that keeping the price at the old equilibrium when supply increases sets up a situation where consumers want fewer (20) than firms are willing to sell (40). The resulting surplus will not be eliminated unless there is a decrease in the price.

Finally, if firms do not raise their prices in the face of decreased supply, there will be a shortage. Figure 2.11 shows that keeping the price at the old equilibrium in the face of decreased supply sets up a situation where consumers want more (20) than firms are willing to sell (0). The resulting shortage will be eliminated unless there is an increase in the price.

FIGURE 2.8 The shortage that is created when demand increases if price and quantity do not.

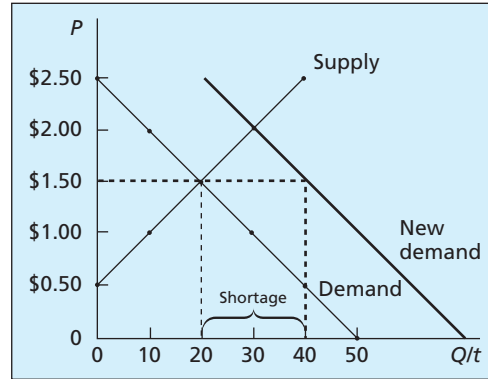


FIGURE 2.9 The surplus that is created when demand decreases if price and quantity do not.

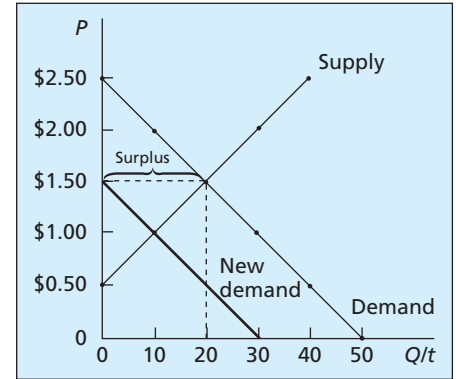


FIGURE 2.10 The surplus that is created when supply increases if price and quantity do not.

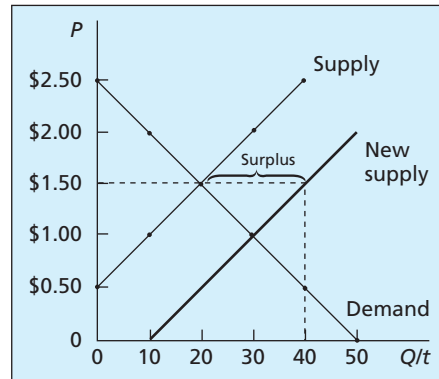
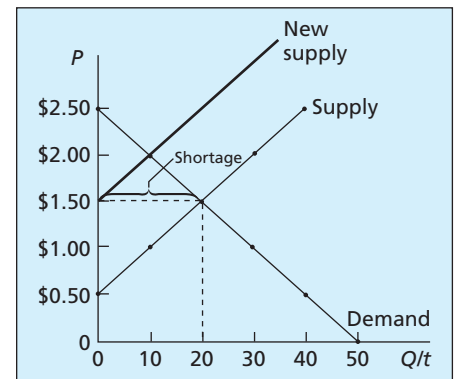


FIGURE 2.11 The shortage that is created when supply decreases if price and quantity do not.



What lesson can you draw from all of this? A change in either the supply or demand curve will change the price at which the quantity consumers want to buy equals the quantity that firms want to sell. If the price does not change, either a surplus or a shortage will ensue.

There are circumstances when a new equilibrium will not be achieved. For instance, **price gouging** is the name given to the situation in which a rapid increase in demand is followed by a rapid increase in price. When demand increases, firms do not have to raise prices to cover costs; they raise prices because they can. Laws preventing price gouging are relatively common.

If you sell ice and have a freezerful to sell, in many states you are not allowed to raise the price of it more than a specified percentage if your community loses electrical power. Economists call the maximum price allowed by law a **price ceiling**. Once the price hits that level, it cannot rise further and you have a shortage for that good. Other examples of price ceilings involve rent control and laws that prevent ticket scalping.

Similarly, equilibrium will not be achieved if there is a **price floor**. This exists when a price may not fall below a certain legally proscribed level. In that circumstance, there is a surplus of the good. Examples of this include farm price supports and the existence of the minimum wage.

Detailed descriptions of the effects of price ceilings and floors are left to their applications in the chapters on rent control, ticket scalping, farm price supports, and the minimum wage.

price gouging

The pejorative term applied to the circumstance when firms raise prices substantially when demand increases unexpectedly.

price ceiling

The level above which a price may not rise.

price floor

Price below which a commodity may not sell.

Summary

The supply and demand model is the single most important model in economics. More than half the issues that you deal with in the latter part of this book will rely on your ability to put an economics problem into the context of this model. In the course of this chapter we explained the supply and demand model by providing all of the language up front. We explained both supply and demand in isolation and then put them together in the form of a coherent model. We then talked about what variables might change demand and then which ones might change supply. We showed that prices and quantities sold would have to change to maintain an equilibrium.

Key Terms

capitalist economy, 20	law of demand, 24	producers, 19
ceteris paribus, 21	law of diminishing marginal utility, 25	quantity demanded, 19
communist economy, 20	law of supply, 25	quantity supplied, 20
consumers, 19	marginal utility, 25	real-balances effect, 24
demand, 21	market, 19	shortage, 24
demand schedule, 22	output, 19	socialist economy, 20
equilibrium, 23	price, 19	substitution effect, 24
equilibrium price, 19	price ceiling, 35	supply, 21
equilibrium quantity, 19	price floor, 35	supply and demand, 19
excess demand, 24	price gouging, 35	supply schedule, 23
excess supply, 24		surplus, 24

Issues Chapters You Are Ready for Now

International Finance and Exchange Rates, 209	The Economics of Race and Sex Discrimination, 305
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Quiz Yourself

- The supply and demand model examines how prices and quantities are determined
 - in markets.
 - by governments.
 - by churches.
 - by monopolists.
- A change in the price of eggs will impact
 - the demand for eggs.
 - the supply of eggs.
 - the quantity demanded and quantity supplied of eggs but neither demand nor supply.
 - both the supply and demand for eggs.
- When an economics student draws a supply and demand diagram to model an increase in the income, she is assuming this change happens
 - semper fidelis*.
 - ceteris paribus*.
 - ipso facto*.
 - de facto*.

4. If the supply and demand curves cross at a price of \$2, at any price above that there will be
 - a. an equilibrium.
 - b. a surplus.
 - c. a shortage.
 - d. a crisis.

5. If the supply and demand curves cross at a quantity of 100, then the price necessary to get firms to sell more than that will have to be _____ equilibrium.
 - a. above
 - b. at
 - c. below
 - d. within 10 percent either way of

6. An increase in which of the following determinants of demand will have an ambiguous (uncertain) effect on price?
 - a. Taste
 - b. Price of a complement
 - c. Income
 - d. Price of a substitute

7. Which of the following will impact both supply and demand?
 - a. A change in price
 - b. A change in quantity
 - c. A change in expected future price
 - d. A change in income

8. An increase in the income of consumers will cause the
 - a. supply of all goods to rise.
 - b. demand for all goods to rise.
 - c. supply of all goods to fall.
 - d. the demand for some goods to rise and for others to fall.

9. Without an increase in price, an increase in demand will lead to
 - a. a shortage.
 - b. a surplus.
 - c. socialism.
 - d. equilibrium.

10. The underlying reason for the upward-sloping nature of the supply curve is that
 - a. the production of most goods comes with increasing marginal benefits.
 - b. the production of most goods comes with increasing marginal costs.
 - c. the consumption of most goods comes with decreasing marginal utility.
 - d. the consumption of most goods comes with increasing marginal utility.

11. If Midwestern grain farmers can plant either soybeans or corn on their land with equal profitability and there is an increase in the price of soybeans, which of the following will result?
 - a. A movement to the right in the demand for corn
 - b. A movement to the left in the demand for corn
 - c. A movement to the right in the supply of corn
 - d. A movement to the left in the supply of corn

12. Part of the Patient Protection and Affordable Care Act involved a tax on indoor tanning that tanning salons are required to collect from tanners and send to the federal government. Which of the following would be the predicted result?
 - a. A movement to the right in the demand for tanning
 - b. A movement to the left in the demand for tanning
 - c. A movement to the right in the supply of tanning
 - d. A movement to the left in the supply of tanning
13. As the baby boom generation (born between 1946 and 1964) ages, which of the following is a likely outcome?
 - a. A movement to the left in the demand for nursing home beds
 - b. A movement to the left in the supply of nursing home beds
 - c. A movement to the right in the supply of nursing home beds
 - d. A movement to the right in the demand for nursing home beds

Short Answer Questions

1. Use your own demand for pizza to illustrate the notion of diminishing marginal utility. Explain why that concept means your demand for pizza-by-the-slice is downward sloping.
2. Suppose you have been given money by your friends and sent to get beverages for a party. Use your demand for those beverages to illustrate why the concept of the “real balance effect” will mean your demand is downward sloping.
3. If there is an alteration to the price of a complement to a good, why is that a change in *demand* when an alteration in the price of the good itself is a change in the *quantity demanded*?
4. If there is an alteration in the price of an input used to produce a good, why is that a change in *supply* when an alteration in the price of the good itself is a change in the *quantity supplied*?

Think about This

Using simple supply and demand analysis, think about the system of allocating human kidneys. The law that forbids the sale of human organs, but allows their voluntary donation, means that there is a bigger shortage of kidneys than there otherwise would be. Does this fact alter your view of the law forbidding the sale of human organs? How about blood?

Talk about This

Are markets always right? List some markets that you think get the production or price of a good wrong. What do these goods have in common?