



Chapter 5: Demand and Supply

Demand, Supply, and Prices: Basic Concepts

Learning Objectives (LO)

After studying this chapter, you should be able to

- 5.1** Describe the market process and distinguish between demand and quantity demanded
- 5.2** State the law of demand and explain the shape of the demand curve
- 5.3** Identify the factors affecting quantity demanded
- 5.4** Distinguish between a change in demand and a change in quantity demanded
- 5.5** Distinguish between supply and quantity supplied
- 5.6** State the law of supply and explain the shape of the supply curve
- 5.7** Identify the factors affecting quantity supplied
- 5.8** Distinguish between a change in supply and a change in quantity supplied
- 5.9** Explain market price determination and the effects of changes in demand and supply

Assess Your Knowledge

Answers to these questions can be found on...

1. A large segment of the population wants electric cars. Does this constitute a demand for electric cars?
2. Indicate whether the following statement is true or false: “The lower the price of an item, the greater the quantity that sellers will offer for sale.”
5. Which of the following factors will affect the quantity of an item that people will buy?
 - a. The cost of producing the item
 - b. The average income of the buyers
 - c. The technology used to produce the item
 - d. All of the above
4. What is a shortage?
5. If the demand for an item increases and nothing else changes, then we can expect
 - a. A fall in the price
 - b. An increase in the price

The Market

LO 5.1 Describe the market and distinguish the difference between demand and quantity demanded.

In Chapter 5, we defined a market as a mechanism that facilitates the exchange of goods and services between buyers and sellers. For a market to exist, the following conditions must be present:

- At least one buyer
- At least one seller
- A product (good or service)
- A price

The interaction between buyers and sellers takes place in markets. The interactions of buyers and sellers reflect their decision-making processes. This chapter examines behavior in competitive markets, where the large number of participants prevents any single buyer or seller from affecting prices. Buyers and sellers trade goods and services. In a free enterprise system, prices guide the movement of goods and services between parties. The concepts of demand and supply are essential to understanding market dynamics.

What is *demand*?

Imagine an item for which you're willing to pay a large sum. Your demand for this item is high. On the other hand, if you're not willing to spend money on a particular item, your demand for it is nonexistent. For example, you might want a luxury car but lack the funds to buy it. This shows that it's possible to want something without creating actual demand. The concept of demand explains consumer behavior from the buyer's perspective in the market.

The difference between demand and want

The distinction between "want" and "demand" is crucial. No matter how much you want something, if you're unable to buy it, your wants do not become demand. In economics, "demand" has a specific definition: it refers to the quantities of a good or service that people are willing and able to purchase at different prices over a given period.

demand *the various quantities of a good or service that people are willing and able to buy at various prices during a specific period*

We should note the following points in this definition.

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1. Demand is not a particular *quantity* that people will buy at a specific price. Rather, it is a series of quantities with their associated prices.
2. Demand is a *flow* rather than a stock concept. It has a time dimension.
5. Demand requires both the willingness and the ability to buy, not just the desire.

Demand as a functional relationship between price and quantity

In economics, demand reflects the relationship between the potential prices of an item and the quantities people are willing to buy. This relationship is shown in a **demand schedule**, which illustrates the inverse link between price and quantity demanded. The schedule presents how much of a good or service individuals are willing and able to purchase at various prices over a specific period.

demand schedule *a table showing the inverse relationship between price and quantity demanded*

Table 5.1 shows the various quantities of smartphones per week that people will be willing and able to buy at various prices. Demand is not a specific quantity that people will be willing and able to buy at a specific price. It is all the quantities with their associated prices—the entire schedule.

The distinction between demand and quantity demanded

The quantity of a product that people are willing and able to buy at a particular price is known as the quantity demanded. For instance, at a price of \$1000, the quantity demanded of a specific smartphone might be 40,000 units, whereas at a price of \$900, the quantity demanded could increase to 50,000 units. This example underscores the critical distinction between demand and quantity demanded, a point we'll revisit repeatedly. The timeframe is a crucial element in discussions about demand. For example, saying "50,000 smartphones are demanded at a price of \$900 per week" clarifies the context significantly. Buying 50,000 smartphones at \$900 each within a single week is quite different from purchasing the same number of smartphones at the same price spread out over a year. Thus, the quantities demanded at

various prices are always specified in terms of a time unit, whether it's per week, per month, and per year.

quantity demanded the quantity that people will be willing and able to buy at a specific price

Table 5.1 A Hypothetical Demand Schedule for Smartphones

Price of smartphones	Quantity demanded per week
1000	40
900	50
800	60
700	70
600	80
500	90
400	100

Individual demand and market demand

THE DISTINCTION BETWEEN INDIVIDUAL DEMAND AND MARKET DEMAND IS ESSENTIAL. HERE, THE FOCUS IS ON MARKET DEMAND FOR A GOOD OR SERVICE, WHICH INCLUDES ALL BUYERS INTERESTED IN THAT GOOD OR SERVICE. IN CONTRAST, THE DEMAND FROM AN INDIVIDUAL

BUSINESS SITUATION 5.1

An entrepreneur observed an increase in the number of people buying laptop computers. He concluded that this was evidence of an increase in demand for laptop computers and so thought of increasing his stock of laptops. His economic consultant cautioned that he could be mistaken. What might the consultant have had in mind?

CONSUMER IS A KEY TOPIC IN MICROECONOMICS. UNDERSTANDING THIS DISTINCTION HELPS CLARIFY HOW INDIVIDUAL PREFERENCES COMBINE TO CREATE OVERALL MARKET DEMAND.

Reading Comprehension

The answers to these questions can be found on...

1. List the four elements that must be present for a market to exist.
2. What is the market process?
5. What is the difference between demand and want?
4. "There can be want without demand, but there cannot be demand without want." Discuss briefly.
5. What is the difference between demand and quantity demanded?

The Law of Demand

LO 5.2 State the law of demand and explain the shape of the demand curve

That a greater quantity is

demand at a lower price is so universal that it is called the **law of demand** and can be stated as follows:

The law of demand the inverse relationship between price and quantity demanded

The law of demand states that if the price falls and nothing else changes (other things being equal), the quantity demanded will rise, and vice versa. However, if the price of an item falls while consumers' incomes also fall, they may not buy more of the item. This doesn't violate the law of demand, because other factors changed. It's essential to remember that the law assumes other things remain constant. The law also suggests that price serves a rationing function, as higher prices discourage people from consuming scarce goods and services.

The inverse relationship between price and quantity demanded (as price increases, quantity demanded decreases) can be explained by three factors: (1) the market-size effect, (2) the

As the price of a good or service decreases, all else being equal, the quantity demanded increases. Conversely, as the price increases, all

income effect, and (3) the substitution effect. The key question is: Why do people buy more USB flash drives as the price drops? Let's explore each explanation.

The Market-Size Effect At a price of \$10 per flash drive, some people would not buy any. But as the price of flash drives falls to \$9, some of those people will enter the market and purchase some flash drives at the lower price. Thus, as the price falls, more and more people are drawn into the market. In other words, as the price falls, the size of the market increases, thus the quantity of flash drives demanded increases. More people buy the item as its price falls. We can call this the **market-size effect**, a term first introduced in 1994 by one of your authors, Elijah James (1938–).

market-size effect the effect on quantity demanded caused by a change in the number of buyers in the market as a result of a change in price.

The Real Income Effect Suppose you have \$20 to buy flash drives this week. Suppose also that the price of a flash drive is \$10. You will be able to buy two of them with your \$20. If the price of flash drives falls to \$5, you can now buy four instead of two. Your purchasing power (or **real income**) has increased. Even if you still have only \$20, it can now buy more flash drives. When the price of an item falls, other things being equal, the people who buy that item experience an increase in purchasing power or real income, so they buy more—people buy more of the item as its price falls. This increase in quantity demanded resulting from an increase in the buyers' real income is referred to as the real income effect.

real income *purchasing power*

The real income effect also works in reverse. When prices rise, other things being equal, peoples' real income falls, so they buy a smaller quantity of the item whose price has risen. The real income effect, which is also called the **income effect**, is the effect on quantity demanded caused by the change in purchasing power resulting from a change in price.

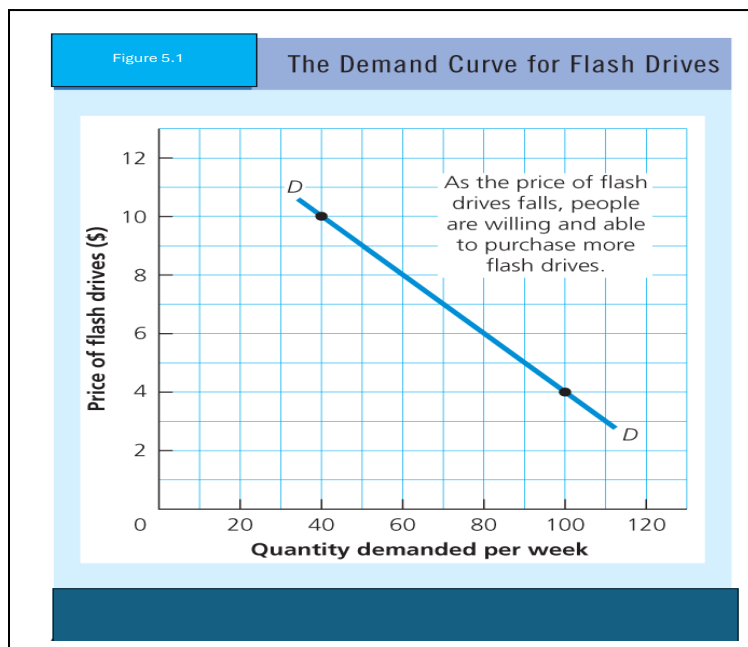
income effect *the effect on quantity demanded caused by the change in purchasing power resulting from a change in price*

The Substitution Effect When the price of flash drives falls, some people will switch from other items (perhaps external hard drives) that they were previously purchasing but that have now

become relatively more expensive. That is, some people will substitute the cheaper flash drive for some other data storage device. This change in quantity demanded caused by people switching to or from a product as its price changes is often referred to as the **substitution effect**.

substitution effect the effect on quantity demanded caused by people switching to or from a product as its price changes.

Figure 5.1 The Demand Curve for Flash Drives



For three reasons—the market-size effect, the real income effect, and the substitution effect—buyers tend to purchase a greater quantity of a good or service when its price falls, or less when its price increases, assuming other conditions remain constant.

The demand curve

Normally, the dependent variable is placed on the Y axis and the independent variable is placed on the X axis. And when we say

quantity demand is a function of price, we are saying that the dependent variable is quantity demanded and the independent variable is price, but it has become common practice in economics to measure price on the vertical axis and quantity demanded per unit of time on the horizontal axis. The information in the demand schedule (Table 5.1) is plotted on a graph shown as Figure 5.1. Economists refer to this curve as a **demand curve**, a downward-sloping curve that shows the inverse relationship between price and quantity demanded, or the various quantities of a good or service that people will be willing and able to buy at various prices.

demand curve a downward-sloping curve showing the inverse relationship between price and quantity demanded.

Table 5.1

A Hypothetical Demand Schedule for USB Flash Drives

Price of USB Flash Drives (\$)	Quantity demanded per week (000 packs)
10	40
9	50
8	60
7	70
6	80
5	90
4	100

It is the inverse relationship between price and quantity demanded (the law of demand) that causes the demand curve to slope downward and to the right, as shown by *DD* in Figure 5.1.

The concept of demand can be

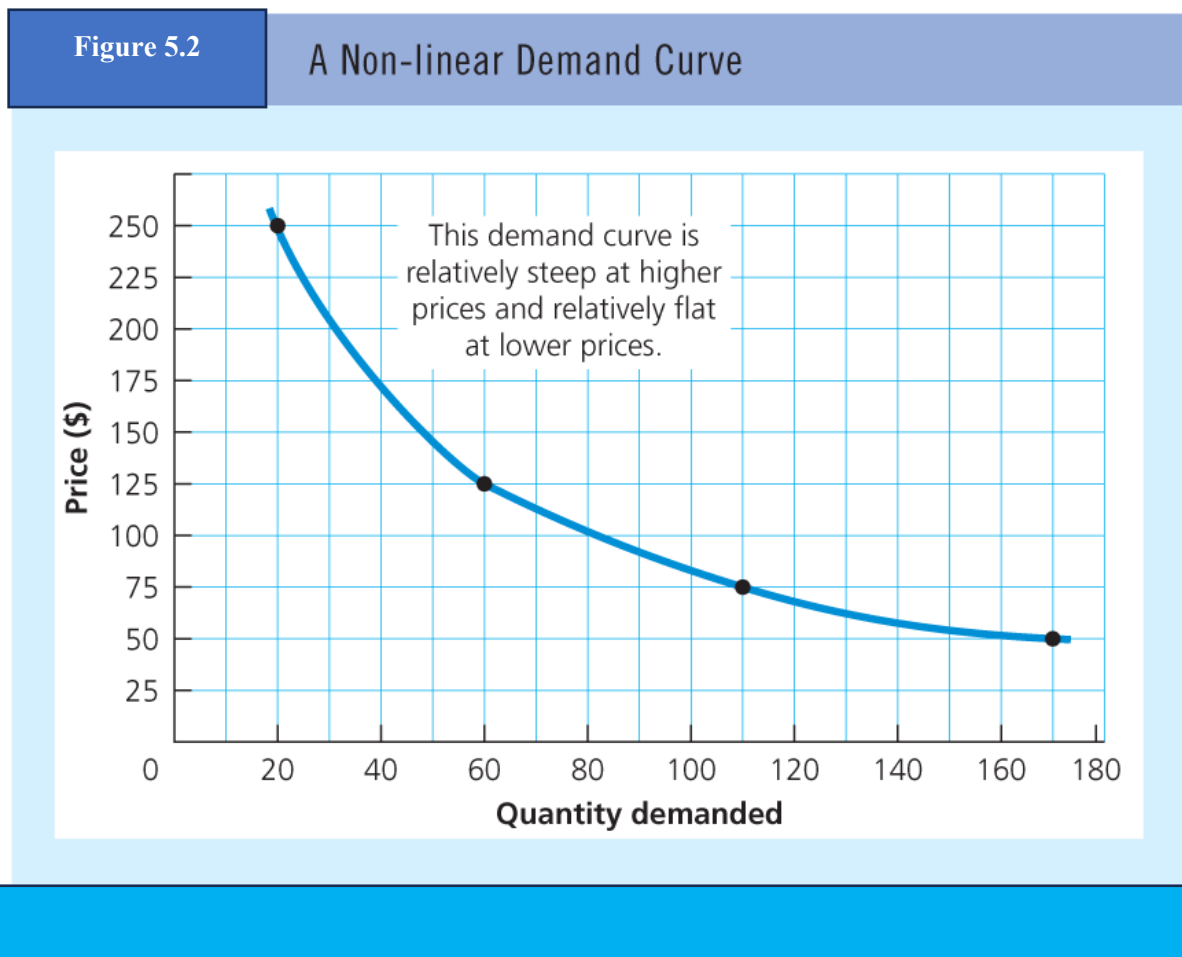
illustrated graphically by a demand curve.

The difference between demand and quantity demanded

When we discussed the demand schedule earlier, we indicated that a particular quantity that people are willing and able to buy at a particular price is called quantity demanded, while the entire schedule represents demand. Now, let's look at Figure 5.1. At a price of \$10 per flash drive, people are willing and able to buy 40,000. This 40,000 is a quantity demanded at a price of \$10. It is a point on the demand curve. Similarly, at a price of \$4 per flash drive, the quantity demanded is 100,000. This 100,000 is a quantity demanded at a price of \$4 and is another point on the demand curve. We can conclude that quantity demanded is represented by a point on the demand curve, while demand is represented by the entire demand curve.

Are demand curves always linear?

Figure 5.3 A Non-linear Demand Curve



Demand curves are not always linear. The linear relationship is used for simplicity, but demand curves are often nonlinear. People don't always adjust their purchases in a constant proportion to price changes. Let's consider the demand for smartphones as an example. In Figure 5.2, you can see a non-linear demand curve for smartphones. When the price of a smartphone is \$800, people might be willing to buy 20 phones. As the price drops to \$500, the quantity demanded increases significantly to 60 phones. And when the price falls even further to \$300, the quantity

demand surges to 170 phones. The crucial point to grasp here is that the shape of the demand curve is typically downward-sloping, indicating that as prices decrease, the quantity demanded tends to increase.

Reading Comprehension

The answers to these questions can be found on...

1. "A greater quantity of an item will be demanded at a lower price?" Is anything wrong with that statement of the law of demand? If something is wrong with it, restate it so that it is true.
2. Briefly explain each of the following:
 - a) The market-size effect
 - b) The real income effect
 - c) The substitution effect
5. Why does a fall in price increase real income?
4. Why is the typical demand curve downward sloping?

- Expectations
- Population
- The network effect

Factors Affecting Demand

L0 5.3 Identify the factors affecting quantity demanded

We have observed that when the price of a good or service changes, all else being equal, the quantity demanded also changes. This principle is known as the law of demand. However, several other factors can also influence the demand for a good or service. They are as follows:

- Income
- Prices of related goods
- Tastes and preferences

The factors mentioned earlier, excluding the price of the product or service, are categorized as non-price *determinants* of demand. The term "non-price" refers to factors unrelated to the price of the item being considered. Consequently, the prices of related goods also fall under the non-price determinants category, as they influence demand externally to the specific item

being analyzed. This classification aids in understanding how various elements, apart from price, can affect consumer demand for a product or service.

Consumer Income

Consumers' Income When consumers' incomes rise, they typically buy more goods and services than they did before. For instance, consider how an increase in income might affect the demand for cellphones. Suppose initially, people were purchasing 3,000 smartphones each week at a price of \$450 per smartphone. With an increase in income, they might now afford 3,500 smartphones at the same price without reducing their expenditure on other items. In such scenarios, assuming all other factors remain constant, individuals tend to purchase more of a specific item at the same price. This trend is observed with most goods and services, leading economists to classify goods whose demand increases as income increases as "**normal goods**." For college students, examples of normal goods might include laptop computers, streaming service subscriptions, and healthier food options, all of which might see increased demand as students' financial situations improve.

***normal goods** good for which demand increases as income increases and for which demand falls as income falls.*

Non-normal goods

While most goods are considered normal goods, there are certain exceptions where an increase in income does not lead to increased consumption. In some cases, higher income levels might even result in reduced purchases of certain items. For example, consider regular ground beef priced at \$10.50 per kilogram. At any given income level, consumers purchase a certain quantity each week. However, as their incomes rise, they might opt for higher-quality meats such as steaks or lean ground beef, which reduces their consumption of regular ground beef. Therefore, with an increase in income, the demand for regular ground beef might actually decrease. Goods for which demand decreases as income increases, and conversely, demand increases as income decreases, are termed as **inferior goods**. For college students, examples of inferior goods might include instant noodles, generic brand groceries, and used textbooks, which may see decreased demand as students' financial situations improve.

***inferior goods:** goods for which demand decreases as income increases and for which demand increases as income falls.*

Normal goods and inferior goods

The classification of goods as "normal" or "inferior" doesn't suggest that normal goods are superior in quality to inferior goods. This distinction is merely an economic terminology used to describe consumer behavior in response to changes in income, rather than a judgment on the quality of the goods themselves. It's more accurate to view these terms as part of an economist's lexicon for analyzing how buyers adjust their purchasing habits when their financial circumstances change, rather than as labels that reflect the inherent value or desirability of the goods.

Prices of Related Goods

Goods and services can be related in two principal ways: as substitutes or as complements. Substitutes are goods or services that can satisfy the same needs or desires, allowing consumers to use one in place of the other. Examples of substitutes include lemons and limes, sugar and honey, butter and margarine, tea and coffee, and choosing between taking an Uber or taking the bus. These options offer alternative means to fulfill a specific requirement or preference.

On the other hand, complements are goods or services that are used together, where the consumption of one typically leads to the consumption of the other. If you buy more of one, you're likely to buy more of the other as well. Examples of complementary goods include automobiles and gasoline, printers and printer paper, flashlights and batteries, and coffee and cream. These pairs demonstrate how certain products are naturally paired in consumption, enhancing the use or value of each other when used in conjunction.

Substitute: *a good that can be used in place of another*

Complements: *goods that are consumed (used) together*

Consider goods that serve as substitutes, such as Pepsi and Coke. If the price of Pepsi rises, consumers tend to shift towards Coke. Consequently, the demand for Coke increases. In a broader sense, when the price of a product increases, the demand for its substitute typically increases.

Let us now consider the case of complements and think of cars and gasoline. If the price of cars falls, people will buy more cars and, consequently, the demand for gasoline will increase. In general, if the price of a produce falls, the demand its complement increases.

Are all products related?

Not all goods are related. While it might seem intuitive to link them, some goods neither act as substitutes nor complements. For instance, there's no direct connection between automobiles and oranges, computers and winter jackets, or cellphones and baseball bats. These are called **independent goods** because their demand is not influenced by price changes in unrelated goods. So, if the price of cellphones goes up, it wouldn't affect how many baseball bats people buy.

independent goods: *goods that are not related.*

BUSINESS SITUATION 5.2

An office supply store sells computers and USB flash drives. One of the store's suppliers of computers has offered the store a large quantity of computers at a 30% discount on the regular cost. How might this store use its inexpensive computers to boost its sales of flash drives?

Tastes and Preferences

Tastes and preferences refer to what people enjoy or prefer. For instance, if people start liking exercise more, they're likely to engage in it more often. Similarly, if concerns over meat consumption led people to prefer vegetables, demand for vegetables will rise. Companies invest heavily in advertising to sway people's tastes towards their products, to boost demand for their products.

Expectations *Expectations about the future, particularly concerning prices and income, can significantly influence current demand for goods and services.*

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Price Expectations

If consumers anticipate that the price of a product will increase, they're more likely to buy it in the present to avoid higher costs later. This behavior might even lead to stockpiling the item to delay facing the expected price rise. On the other hand, if consumers expect the price level to decrease in the future, they tend to postpone their purchases to benefit from the lower prices ahead.

Income Expectations

People's expectations about future income changes directly influence their current demand for goods and services. When people expect significant salary increases in the near future, they typically start buying more goods and services even before their income actually rises. On the flip side, when people foresee a decrease in their income, possibly due to potential unemployment, they tend to spend less. Therefore, individuals increase their demand for items when they expect their income to rise and decrease their demand when they expect their income to fall.

Population

The quantity of an item people purchase hinges on the number of buyers in the market for that item. Holding other factors constant, it's reasonable to expect that the demand for oranges in Toronto, Ontario, would be significantly higher than in Corner Brook, Newfoundland and Labrador, simply because Toronto has a larger population of potential buyers. Therefore, when

Reading Comprehension

1. List the main factors that are likely to affect the quantity of home movies rented in a month.
2. What are normal goods? Give three specific examples of normal goods.
3. What are inferior goods? Give three specific examples of inferior goods.
4. What is the difference between substitutes and complements in

the number of buyers rises, the demand for an item will also increase.

A Change in Demand versus a Change in Quantity Demanded

LO 5.4 Distinguish between a change in demand and a change in quantity demanded.

A change in demand and change in quantity demanded

Understanding the difference between a change in demand and a change in quantity demanded is crucial, as these terms represent distinct concepts in economics.

"Demand" refers to the entire demand curve or schedule. Graphically, a change in demand results in a shift of the entire demand curve, altering its position on the graph. For instance, if the demand for flash drives, as depicted in the first two columns of Table 5.2, increases due to a government initiative that makes computer ownership more affordable, this scenario exemplifies a change in demand rather than merely a change in the quantity demanded.

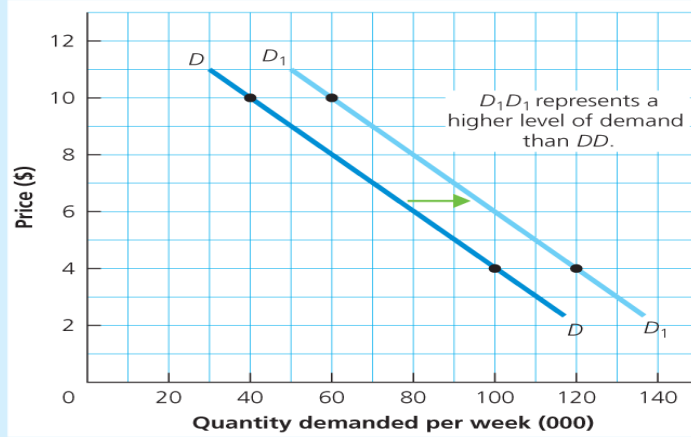
Table 5.2 A Demand Schedule Showing an Increase in Demand

Price of Flash Drives (\$)	Original Quantity Demanded per Week (000 packs)	New Quantity Demanded per Week (000)
10	40	60
9	50	70
8	60	80
7	70	90
6	80	100
5	90	110
4	100	120

Figure 5.3 An Increase in Demand

Figure 5.3

An Increase in Demand

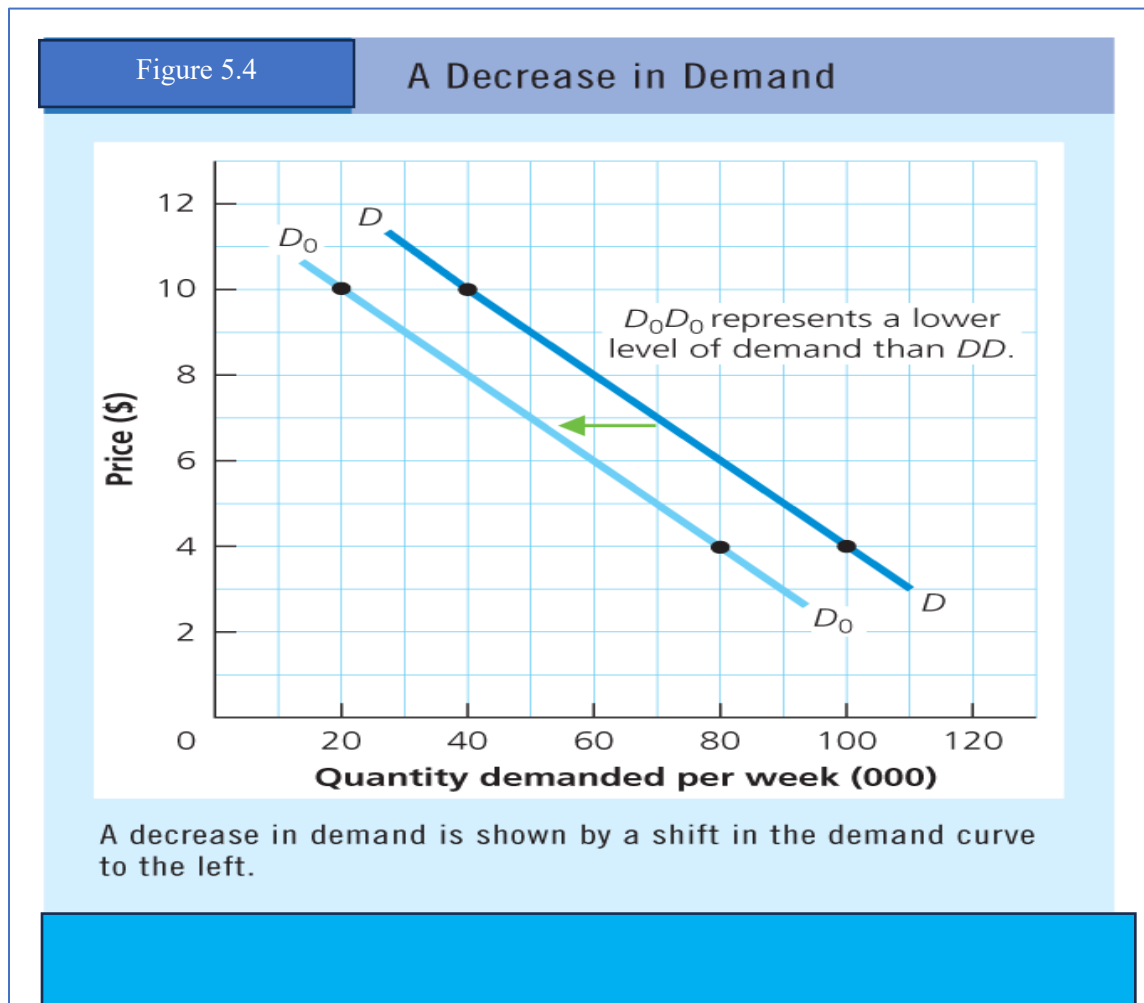


An increase in demand is shown by a shift in the demand curve to the right.

An increase in demand is shown by a shift in the demand curve to the right.

Due to the government's program, a new demand schedule emerges; it shows that more flash drives will be bought at every price level. These updated quantities are detailed in the right-hand column of Table 5.2. It's important to note that the increased purchases of flash drives are not the result of a price drop for the flash drives themselves, but rather because more

Figure 5.4 A Decrease in Demand



computers are being bought. This scenario represents an increase in the demand for flash drives.

A change in demand: shown graphically

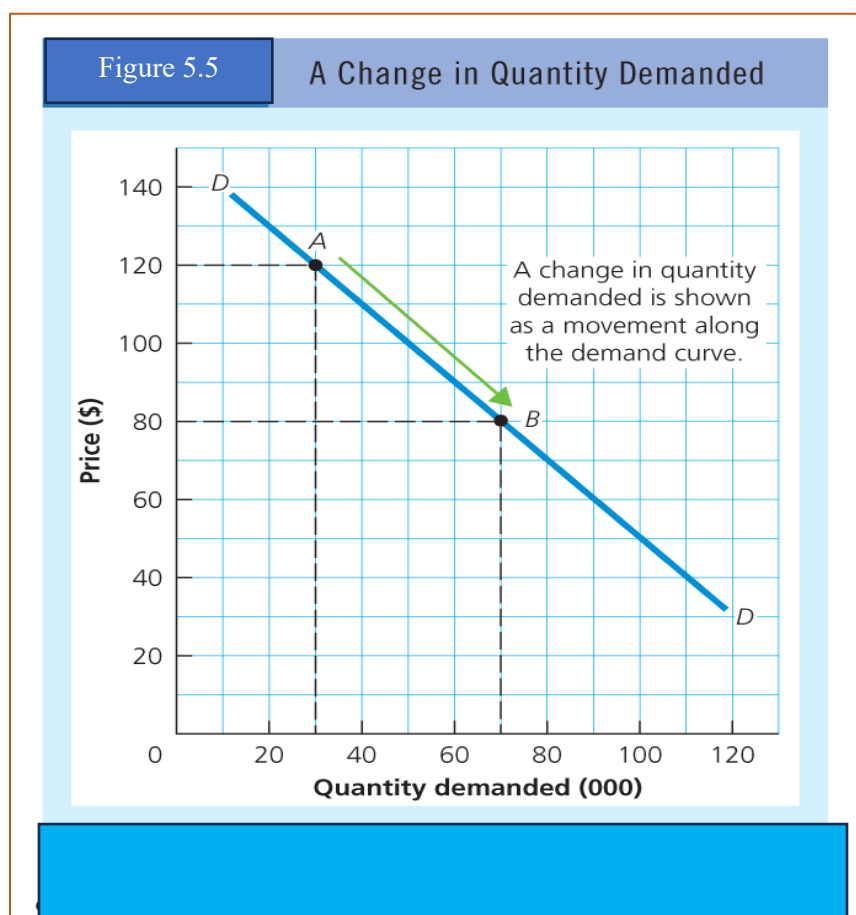
We can plot these two demand schedules on the same graph to illustrate the shift in demand brought about by the government's program. Figure 5.3 shows this.

An increase in demand is shown by a shift in the demand curve to the right

DD represents the original demand curve, and D_1D_1 symbolizes the new demand curve. The shift of the entire demand curve to the right from DD to D_1D_1 demonstrates an increase in

demand. This shift indicates that the position of the demand curve has changed, resulting in a higher quantity being purchased at any given price. Conversely, a decrease in demand for flash drives, possibly due to the advent of a superior data storage solution, would lead to a smaller quantity of flash drives being bought at any given price. Such a decrease in demand would be

Figure 5.5 A change in quantity demanded.



depicted graphically as a leftward shift in the demand curve, moving from DD to D0D0, as illustrated in Figure 5.4.

A decrease in demand is shown by a shift in the demand curve to the left.

So, a change in demand is shown by shifting the entire demand curve, either to the right (for an increase) or to the left (for a decrease).

A change in quantity demanded: shown graphically

A change in quantity demanded refers to the change in the quantity that would be bought as a result of a change in price. Let us examine the demand curve for cellphones shown in Figure 5.5.

At a price of \$500 for cellphones, the quantity demanded is 30 000 per week. If the price falls to \$400, a quantity of 70 000 per week will be demanded. This change in quantity demanded is

represented by a movement along the same demand curve from point *A* to point *B* in Figure 5.5.

We can summarize the discussion about a change in demand versus a change in quantity

A change in the price of the product or service itself does not alter the demand for that product or service; rather, it results in a change in the quantity demanded, represented as a movement along the demand curve. Only a change in a non-price determinant can lead to a change in demand for the product or service. Factors such as changes in income, tastes, population, the price of related goods, or expectations about the future will cause the entire demand curve to shift. These elements affect demand, distinguishing between a mere change in quantity demanded and a fundamental shift in demand itself.

demanded as follows

Table 5.3 presents a convenient list of the major factors that cause the demand curve to shift. These non-price factors that shift the demand curve are called demand shifters.

demand shifters *the non-price determinants that shift the demand curve.*

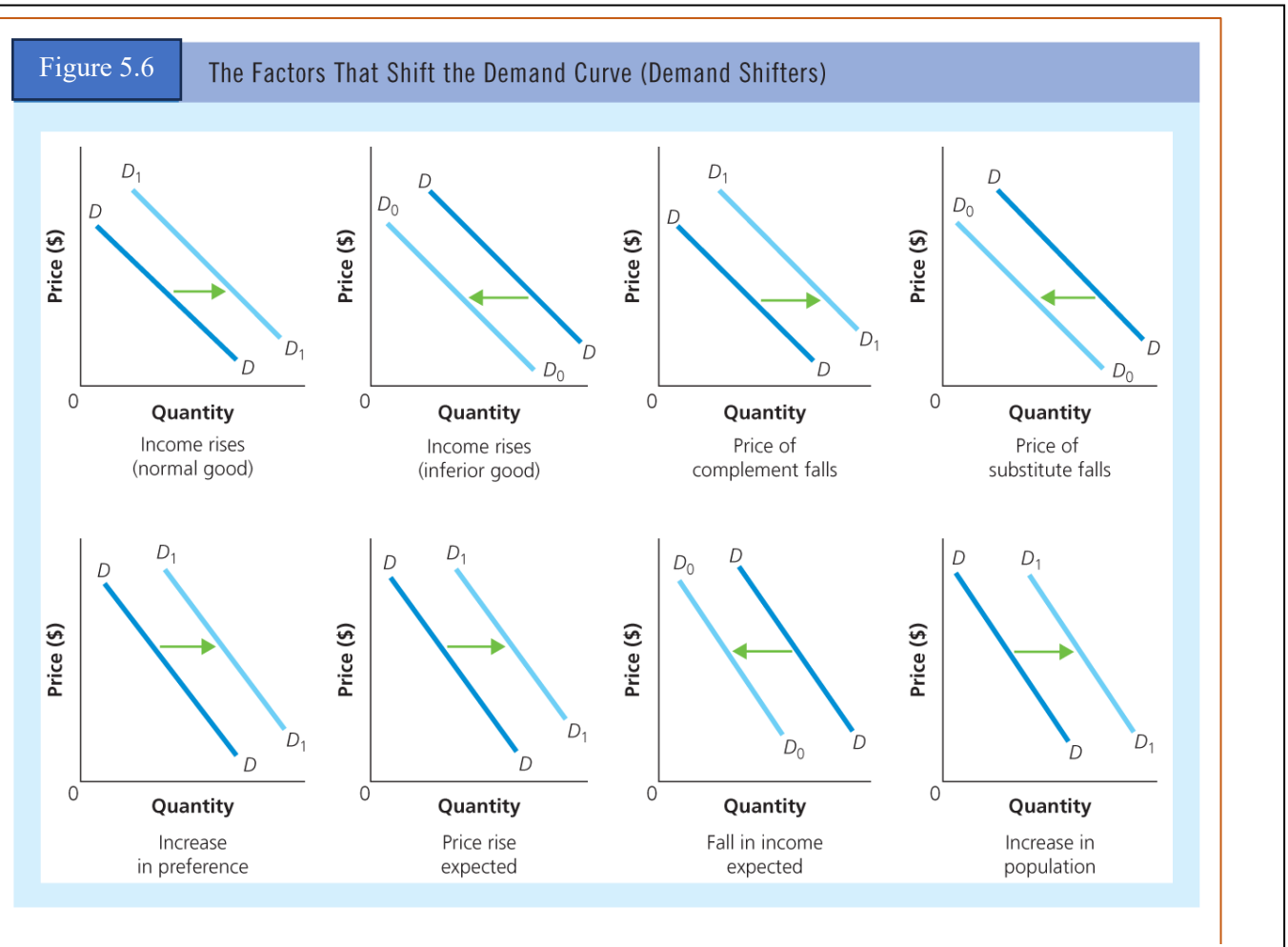
Table 5.3 **Demand Shifters: Non-price Factors That Change the Location of the Demand Curve**

Demand Shifters	Illustrative Examples
1. A change in income	An increase in income increases purchasing power. The demand for most goods (normal goods) will increase, but the demand for inferior goods (used tires, for example) will decrease.
2. A change in the prices of related goods	When the price of a substitute increases, the demand for the product in question also increases, as consumers look for more cost-effective alternatives. Similarly, a decrease in the price of a complement boosts the demand for the product, as the lower cost of the complementary good makes the combined purchase more attractive.

5. A change in tastes and preferences	A successful advertising campaign increases product demand by shifting consumer preferences to favor the product.
4. A change in expectations	If people anticipate that the price of the product will rise in the future, or if they expect their income to increase, the demand for the product will also increase in the present.
5. A change in population	If a country experiences an increase in population increase, for example because of immigration, the demand for the product will also rise.
5. A change in network	The network effect occurs when the demand for a product or service increases as more people use it. For example, as more individuals adopt a software platform, its utility improves due to enhanced features, shared knowledge, and community support, leading to increased demand for the platform.

Showing graphically the effects of some of the demand shifters

Figure 5.6 The Factors That Shift the Demand Curve (Demand Shifters)



Supply

LO 5.5 Distinguish between supply and quantity supplied

Definition

In economics, the term "supply" holds a specific meaning, just like "demand." Producers are driven to sell goods and services based on the price they can get. The higher the price, the more they're willing to produce and sell. Similar to demand, supply is about the relationship between

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Reading Comprehension

1. With the help of an appropriate diagram, explain the difference between a change in demand and a change in quantity demanded.
2. How is an increase in demand illustrated on a graph? How is a decrease in demand illustrated on a graph?
5. Other things being equal, people buy more of an item as its price falls. Is this an increase in demand? Explain briefly.
4. List three factors that will shift the demand curve to the left.

price and quantity. We can define **supply** as the different quantities of a good or service that sellers are willing and able to offer for sale at different prices during a specific period.

supply the various quantities of a good or service that sellers are willing and able to offer for sale (place on the market) at various prices during a specific period.

As in the case of demand, supply refers not to a specific quantity that will be sold at some particular price, but to a series of quantities and a range of associated prices.

The relationship between price and quantity supplied

Yes, that is right. Let's construct such a table right now. Of course, you know what such a table is called.

Table 5.4 A Hypothetical Supply Schedule for USB Flash Drives

Price of Flash Drives (\$)	Quantity Supplied per Week (000)
10	80
9	70
8	60
7	50
6	40
5	30
4	20

Table 5.4 shows a supply schedule for USB flash drives.

We can define a **supply schedule** as a table showing the direct relationship between price and quantity supplied. It shows the various quantities of a good or service that producers will be willing and able to sell at various prices during a specific period, and is a tabular representation of supply.

supply schedule a table showing the direct relationship between price and quantity supplied.

Reading Comprehension

1. What do economists mean by supply?
2. What is the difference between supply and quantity supplied?
5. What is a supply schedule?

The Law of Supply

LO 5.6 State the law of supply and explain the shape of the supply curve.

Table 5.4 shows that at a price of \$10 per flash drive, producers will be willing to offer 80 000 of them for sale. As the price falls, they are willing to offer smaller

quantities. Note that price and quantity supplied move in the same direction, that is, a direct relationship exists between them. This direct relationship between price and quantity supplied is called the **law of supply** and is stated as follows:

law of supply a statement of the direct relationship between price and quantity supplied.

As the price of a good or service falls, other things being equal, the quantity supplied decreases; conversely, as the price of a good or service rises, other things being equal, the quantity supplied increases.

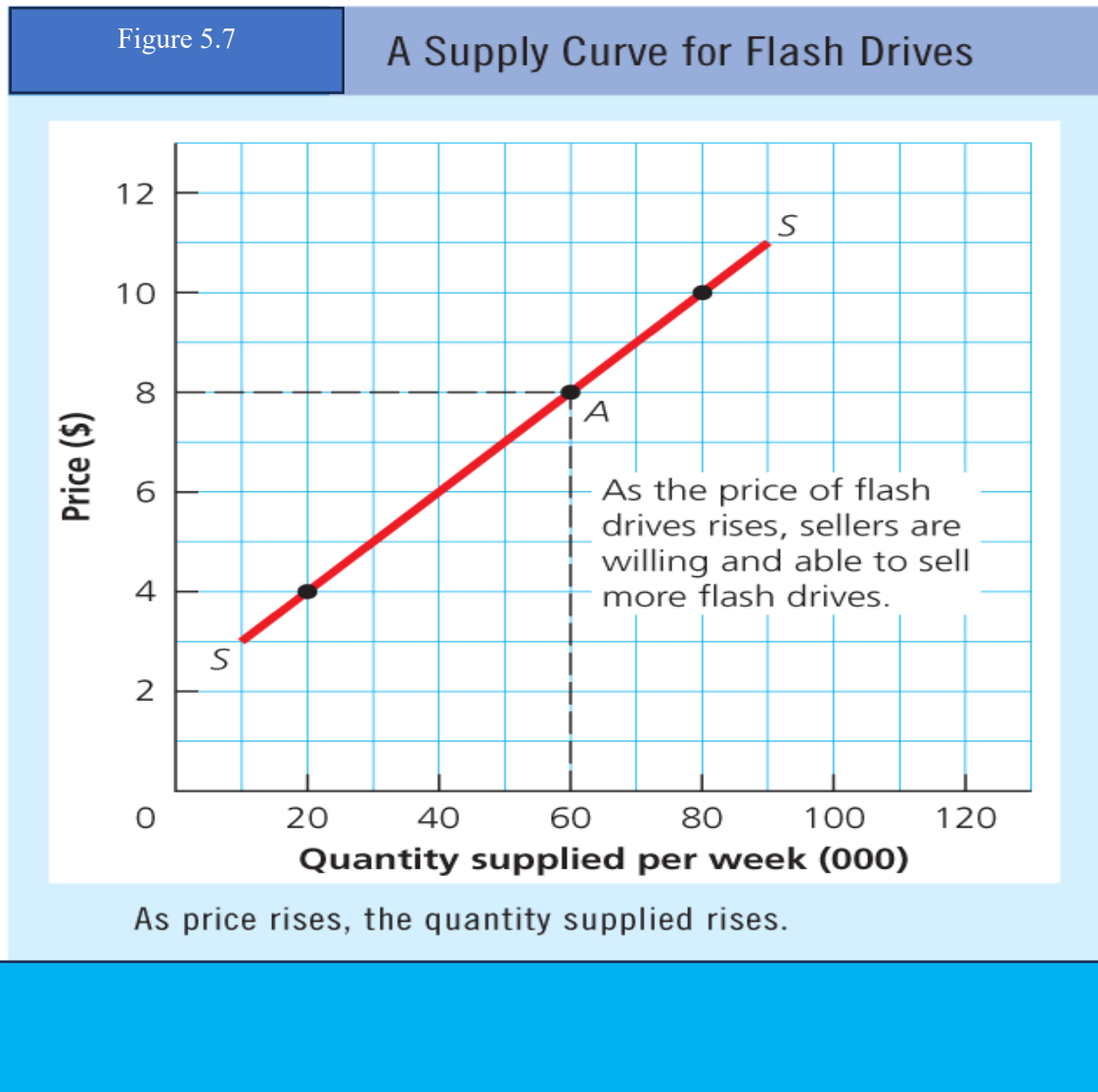
According to the law of supply then, there is a direct relationship between the price of a product and the quantity supplied.

Price and quantity supplied

Producers are motivated by profit. The main reason that producers will be willing to offer more for sale at a higher price is that higher prices serve as an incentive for producers to offer greater quantities and thus earn more profit. This is the function of price as a production motivator. Increases in price can also entice new producers into the market.

The following example will help to explain how producers respond to an increase in price. Suppose farmers have a certain amount of land on which they produce wheat and corn. If the price of wheat increases, farmers will find it profitable to shift land out of corn production and into wheat production. Also, it is conceivable that some farmers who were not previously producing wheat will now become wheat farmers. Hence, the quantity of wheat produced increases.

Figure 5.7 A Supply Curve for Flash Drives



The concept of supply can be illustrated graphically by a supply curve

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As price rises, the quantity supplied rises.

Plotting the data in Table 5.4 on a graph

Plotting the data in Table 5.4 on a graph produces Figure 5.7. The graph is called a **supply curve**, which is an upward-sloping curve showing the direct relationship between price and quantity supplied. It shows the various quantities of a good or service that producers are willing and able to offer for sale at various prices.

supply curve an upward-sloping curve showing the direct relationship between price and quantity supplied.

It is the direct relationship between price and quantity supplied that causes the supply curve to slope upward, as shown by SS in Figure 5.7.

The difference between supply and quantity supplied graphically

The entire supply curve represents supply, while a point on the supply curve represents quantity supplied at some specific price. In Figure 5.7, for example, the quantity supplied at a price of \$8 is 60 000, represented by point A on the supply curve. The supply is represented by the entire supply curve.

Reading Comprehension

1. State the law of supply.
2. Explain how price serves as a production motivator.
5. What is a supply curve?

Factors Affecting Supply

LO 5.7 Identify the factors affecting quantity supplied

The main factors affecting

supply

We have seen that the quantity of a good or service that producers are willing and able to offer for sale depends on the price of the good or service. In other words, the price of a good or service affects the *quantity supplied*. The main factors that affect the supply of a good or service are

- Number of producers
- Prices of related products
- Technology
- Expectations
- Cost of inputs

How does each of these factors affect supply?

Let's examine each one in turn.

Number of Producers

The number of producers selling a product obviously affects the total market supply of that product. This is because the market supply of a good or service is the sum of the quantities offered for sale by all individual sellers of that good or service. As the number of sellers increases, we can expect the market supply to increase, and vice versa. However, if each producer significantly increases their average output, the total market supply can still grow even if the number of producers declines.

Prices of Related Products

The price of related products also affects supply. You may recall our previous discussion on substitutes and complements in relation to demand. Similarly, goods can serve as substitutes or complements in production. Goods act as substitutes in production, or production substitutes, when they are produced as alternatives to each other. For instance, lettuce and tomatoes are substitutes in production since a farmer can choose to cultivate either on the same piece of land. Similarly, leather bags and belts are substitutes in production as both can be manufactured using the same type of resources. On the other hand, goods function as complements in production, or joint products, when their production is intertwined; the production of one implies the production of the other. A classic example of goods that are complements in production are beef and hides.

substitutes (in production) goods that are produced as alternatives to each other.

complements (in production) or joint products goods such that the production of one implies the production of the other.

A change in the price of a substitute in production

Let us consider the case of lettuce and tomatoes. If the price of lettuce increases, the supply of tomatoes will decrease as producers shift from tomato production to lettuce production. In general, if the price of a substitute in production increases, producers will tend to reduce the supply of the item in question.

A change in the price of a complement in production

Let's examine complements in production, using beef and hides as an example. If the price of beef increases, the quantity of beef supplied will rise, and so will the quantity of hides, as more cattle are slaughtered. In general, if the price of a complement in production rises, all else being equal, the supply of the related good will increase. Conversely, if the price of a complement in production falls, the supply of the related good will also decrease.

Improvement in technology

Technology Producers use inputs, known as factors of production, to create goods and services. Technological advancements play a crucial role in production process by enhancing the productivity of existing factors (inputs) and introducing more efficient types of inputs. Therefore, improvements in technology result in an increase in supply.

Expectations

If producers anticipate a future increase in the price of a certain item, they may opt to expand their productive capacity and increase their current output levels of that item. This is especially true for products that are not easily storable. However, it's also plausible that expectations of a higher future price could prompt producers to build up stocks now, aiming to sell a larger quantity at the anticipated higher price in the future. Such actions would naturally decrease current supply to the market. Hence, it's important to avoid generalizations about the effect of expected price changes on supply.

Cost of Inputs The cost of production also plays a crucial role in determining supply. Payments for factor inputs constitute a substantial portion of production costs. When the prices of these

inputs increase, the costs of production rise as well, leading to a reduction in output. For instance, if wages increase, all else being equal, businesses' ability to produce an item diminishes, resulting in a decrease in supply. Conversely, a decrease in input prices will naturally lead to an increase in supply.

Reading Comprehension

1. List three factors that will cause an increase in supply.
2. Give three examples of production substitutes.
5. What are joint products? Give two examples of joint products.
4. Explain how expectations can influence the quantity of an item offered for sale.

quantity supplied.

A Change in Supply versus a Change in Quantity Supplied

LO 5.8 Distinguish between a change in supply and a change in

Just as with demand, it's important to distinguish between a change in supply and a change in quantity supplied. This differentiation aids in understanding the distinction between the two. When we discuss supply, we're referring to the entire supply curve or schedule. Consequently, if there's a change in supply, the entire supply curve will shift. Earlier in this chapter, we examined a hypothetical supply schedule for flash drives. We'll revisit that supply schedule, reproduced in the first two columns of Table 5.5. Now, let's assume that the supply of flash drives increases due to a reduction in production costs. This results in a new supply schedule, indicating that a greater quantity of flash drives will be supplied at each price point. The updated quantities supplied are displayed in the right column of Table 5.5.

Table 5.5 A Hypothetical Supply Schedule for Flash Drives

Price of Flash Drives Supplied (\$)	Original Quantity Supplied (000)	New Quantity Supplied (000)
10	80	100
9	70	90
8	60	80
7	50	70
6	40	60
5	30	50
4	20	40

Changes in supply schedules shown graphically

We can illustrate changes in supply graphically. Let's visualize them. In Figure 5.8, SS represents the original supply curve, while S1S1 depicts the new supply curve. The increase in supply is demonstrated by shifting the entire supply curve to the right of its original position. Notably, the curve's location has changed. It's evident that at any given price of flash drives, a greater quantity is supplied. Conversely, a decrease in supply would mean that at any given price of flash drives, a smaller quantity would be supplied, represented by a leftward shift in the supply curve, as shown in Figure 5.9. The supply curve shifts from SS to S0S0.

Figure 5.8 An increase in supply

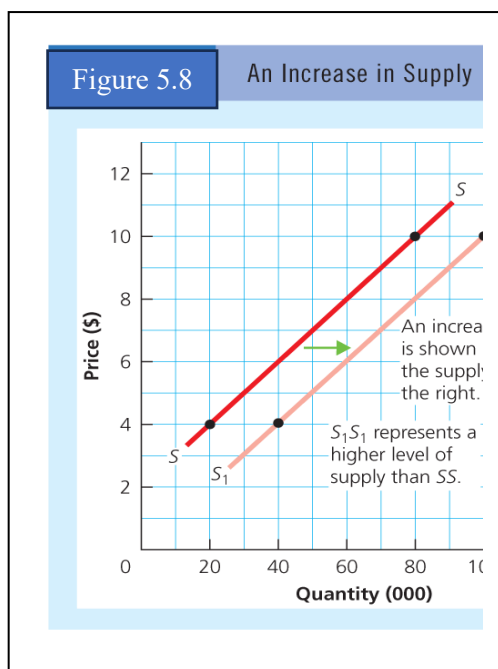
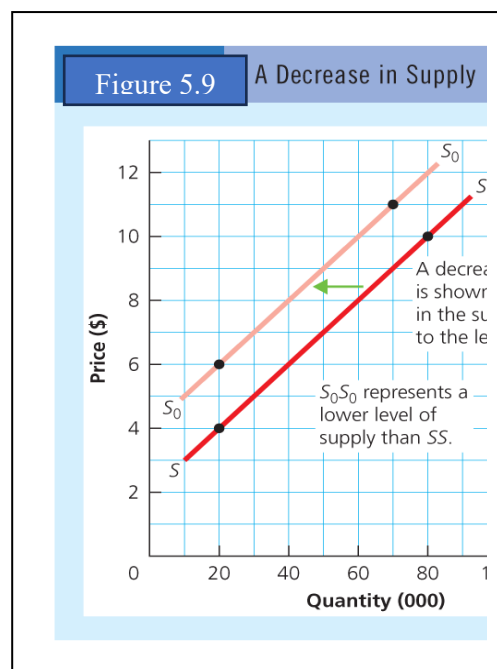


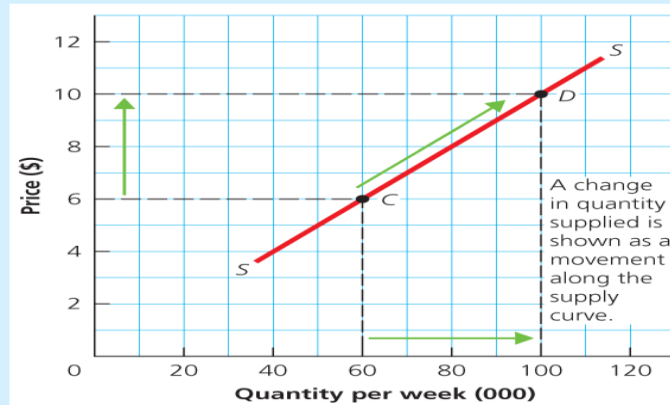
Figure 5.9 A decrease in supply



A change in quantity supplied shown graphically

Figure 5.10 A Movement Along the Supply Curve Caused by a Change in Price.

Figure 5.10

A Movement Along the Supply Curve
Caused by a Change in Price

Graphically, a change in quantity supplied is depicted by a movement along the supply curve. This change refers to the change in the quantity that would be offered for sale due to a change in price. Let's analyze the supply curve presented in Figure 5.10.

At a price of \$6 for this item, producers will be willing and able to sell 60 000 units of this item per week. If the price rises to \$10, a quantity of 100 000 units per week will be supplied. This change in quantity supplied is represented by a movement along the same supply curve from point C to point D in Figure 5.10.

In summary, a change in the price of the product being considered does not result in a change in the supply of the commodity; rather, it leads to a change in quantity supplied. Only changes in non-price determinants can bring about a change in the supply of that commodity. Factors such as changes in the number of producers, variations in the price of related goods, advancements in technology, changes in expectations, or fluctuations in input prices will cause a change in supply—that is, they will prompt the supply curve to shift.

The major factors that cause the supply curve to shift are conveniently collected in a list in Table 5.5. These non-price factors that shift the supply curve are sometimes referred to as **supply shifters**.

supply shifters the non-price determinants that shift the supply curve.

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Table 5.6 **Supply Shifters: Non-price Factors That Change the Location of the Supply Curve**

Supply Shifters	Illustrative Examples
1. A change in the number of producers	An increase in the number of suppliers of the product in the market, would increase the supply of the product
2. A change in the prices of related goods	A decrease in the price of the substitute product in production will increase the supply of the product, while an increase in the price of the complementary product in production will also increase the supply of the product.
5. A change in technology	Improvement in the technology of producing the product will naturally increase the supply of the product.
4. A change in expectations	If suppliers anticipate a decrease in the price level in the immediate future, they will indeed supply more in the current period.
5. A change in the price of inputs	If the cost of production decreases, meaning the cost of purchasing inputs decreases, the supply of the product increases.

Reading Comprehension

1. What is the difference between a change in supply and a change in quantity supplied?
2. What effect will an increase in the price of an item have on the supply of that item?
5. Mention three factors that will shift the supply curve to the right.
4. How is an increase in supply shown on a graph? How is a decrease in supply shown?

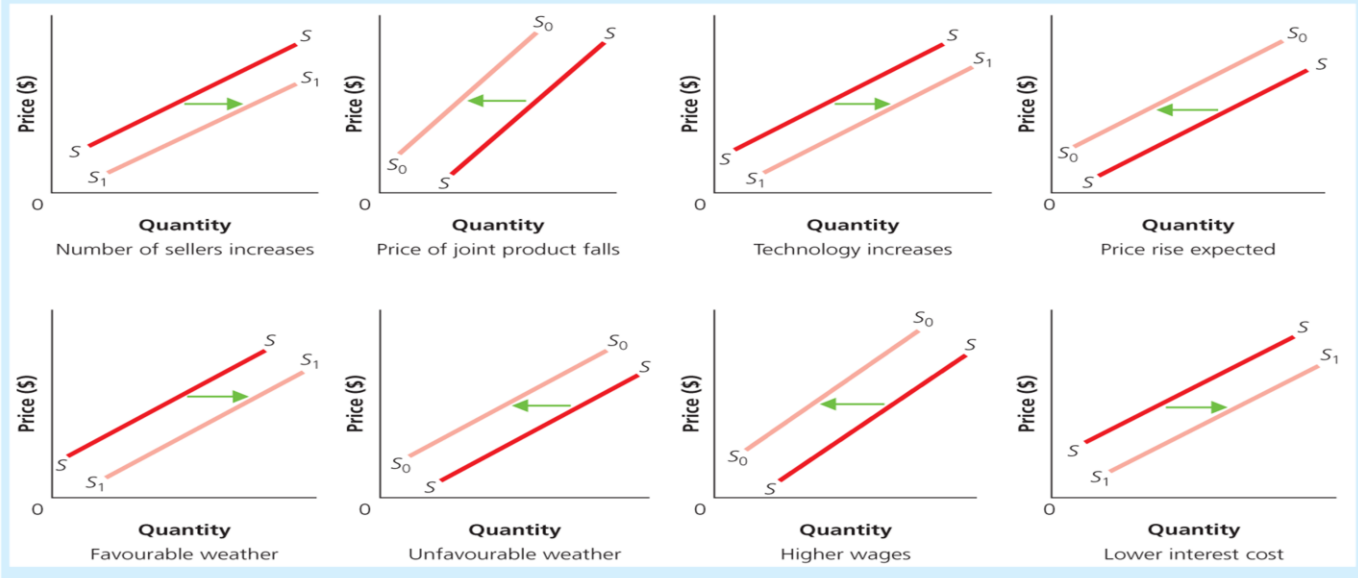
**The effects of
supply shifters
shown graphically**

Figure 5.11 The
Factors That Shift the

Supply Curve (Supply Shifters)

Figure 5.11

The Factors That Shift the Supply Curve (Supply Shifters)



Determination of Equilibrium Price

LO 5.9 Explain market price determination and the effects of changes in demand and supply.

Bringing demand and supply together

To understand the equilibrium price and equilibrium quantity of a product in a market, we must consider both supply and demand. By examining how market forces interact, we can grasp how the price of a good or service is determined. To aid in this explanation, Table 5.7 reproduces the hypothetical demand and supply schedules presented in Tables 5.1 and 5.4 (pages 71 and 82) respectively. We also illustrate the market conditions at each price-quantity combination and the resulting effect on price. What do you mean by market condition?

Market conditions describe the situation of the market concerning the relationship between the quantity demanded and the quantity supplied. If the quantity demanded (QD) exceeds the quantity supplied (QS), a shortage (or excess quantity demanded) exists in the market.

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Conversely, if the quantity supplied exceeds the quantity demanded, a surplus (or excess quantity supplied) exists in the market. When the quantity demanded equals the quantity supplied, the market has neither a shortage nor a surplus. In this state, the market is said to be in equilibrium.

market condition the relationship between quantity demanded and quantity supplied.

shortage or excess quantity demanded a situation in which quantity demanded exceeds quantity supplied.

surplus or excess quantity supplied a situation in which quantity supplied exceeds quantity demanded.

We can summarize market conditions as follows:

1. If $Q_D > Q_S$, a shortage exists.
2. If $Q_D < Q_S$, a surplus exists.
5. If $Q_D = Q_S$, the market is in equilibrium.

Table 5.7 illustrates market conditions

Table 5.7 Hypothetical Demand and Supply Schedules for USB, and Market Price Determination

Price of USB Disks (\$)	Quantity Demanded (000 packs)	Quantity Supplied (000)	Market Condition	Pressure on Price	
10	40	80	Surplus	Downward	↓
9	50	70	Surplus	Downward	↓
8	60	60	Equilibrium	None	—
7	70	50	Shortage	Upward	↑
6	80	40	Shortage	Upward	↑

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5	90	30	Shortage	Upward	↑
4	100	20	Shortage	Upward	↑

We can use the hypothetical data in Table 5.7 to illustrate market conditions. Let's start with the scenario where the price is \$4. At this price point, buyers are willing and able to purchase 100,000 USB flash drives per week, but producers are only willing and able to offer 20,000 for sale. Consequently, there will be a shortage of 80,000 flash drives. Now, consider a price of \$9. At this price, buyers are willing and able to purchase only 50,000 flash drives per week, while sellers are willing to offer 70,000. Thus, there will be a surplus of 20,000 flash drives in the market. Next, let's examine a price of \$8. At this price, buyers are willing to purchase 60,000 flash drives per week, and sellers are willing to offer 60,000 for sale. At this price point, there is neither a surplus nor a shortage in the market.

A surplus or a shortage

At any price other than \$8, market forces are set in motion to raise or lower the price. Consider a price of \$10. At this price, according to the supply schedule, sellers are willing to put 80,000 on the market, but buyers are willing to buy only 40,000. Consequently, a surplus or excess quantity supplied will result. Sellers will then attempt to dispose of this surplus by lowering the price. As the price falls, a greater quantity will be demanded. The price will settle at \$8 because, at this price, the market will be cleared.

Whenever a surplus exists in the market, it will exert a downward pressure on the price. If the price happens to be \$6, buyers will be willing to purchase 80,000 flash drives, but sellers will be willing to offer only 40,000 for sale. A price of \$6 results in a shortage or excess quantity demanded. Unhappy with the shortage and wanting more flash drives, buyers will bid up the price. Sellers will then offer greater quantities at the higher prices. The price will again settle at \$8 because, at this price, the quantity demanded equals the quantity supplied.

Whenever a shortage exists in the market, it will exert an upward pressure on the price.

Note that the price of \$8 is the only price that will prevail in the market. There will be no tendency for this price to change.

Equilibrium price

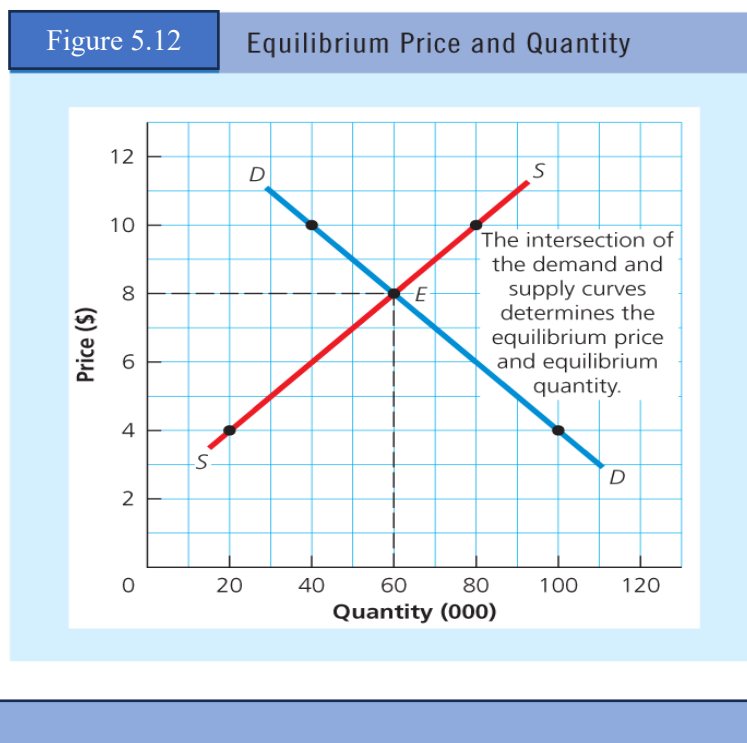
We have special names for the stable price and stable quantity exchanged in the market. The price at which quantity demanded equals quantity supplied is referred to as **equilibrium price**, and the quantity traded (exchanged) at this price is called **equilibrium quantity**.

equilibrium price the price at which quantity demanded equals quantity supplied; there is no tendency for this price to change.

equilibrium quantity the quantity traded (bought and sold) at the equilibrium price.

Competitive market equilibrium occurs when the quantity of the product demanded equals the quantity supplied at a specific price.

Figure 5.12 **Equilibrium Price and Quantity**



Market equilibrium graphically

Equilibrium price and equilibrium quantity can be demonstrated graphically. The market equilibrium condition is illustrated graphically in Figure 5.12. The demand curve DD and the supply curve SS are drawn from the schedules in Table 5.7. The two curves intersect at E to give an equilibrium price of \$8 and an equilibrium quantity of 60 000.

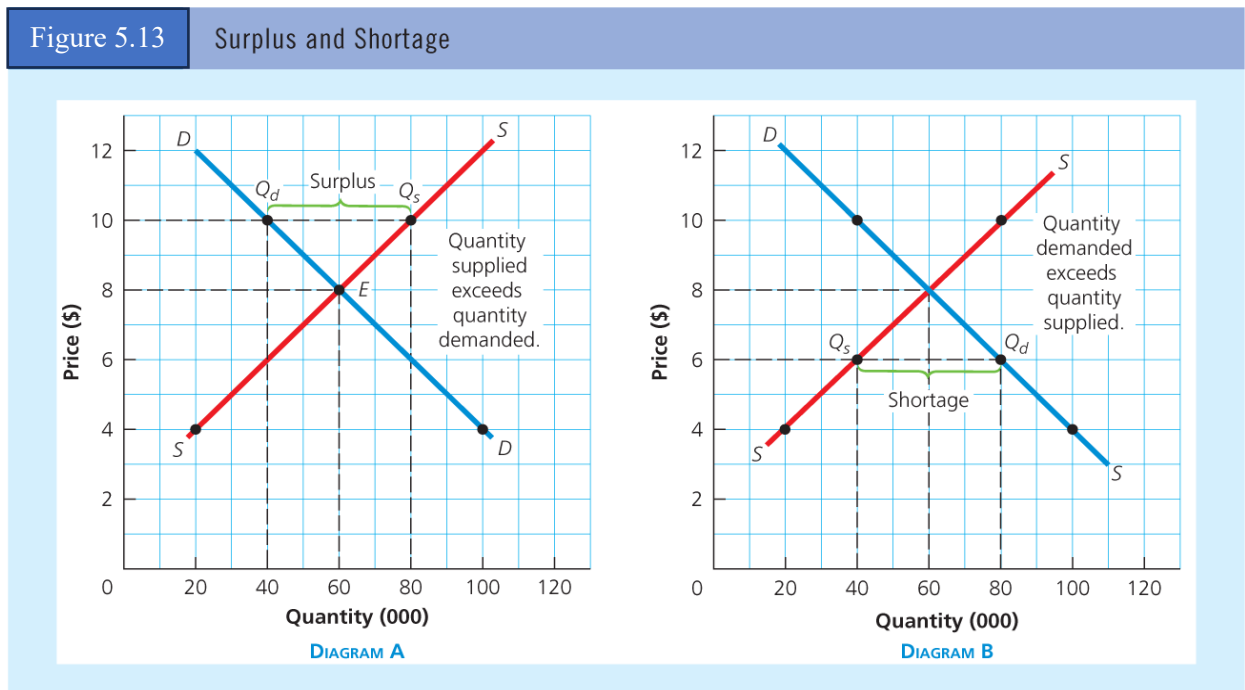
Feelings towards the equilibrium price

Does the equilibrium price make both consumers and suppliers happy? This is a popular, but false, conclusion. It is more likely that neither buyers nor sellers will be completely satisfied with the equilibrium price. Buyers would prefer to pay a lower price for their flash drives, while sellers would prefer to sell their flash drives at a higher price. However, buyers are purchasing all they want to buy at that price, and producers are selling all they want to sell at that price.

Surpluses and shortages illustrated graphically

Surpluses and shortages can be represented graphically. Let's look at Figure 5.15. In Diagram A we see that at a price of \$10, the quantity supplied is 80 000, while the quantity demanded is 40 000. A surplus of $(80\,000 - 40\,000) = 40\,000$ exists, as indicated in Diagram A. This surplus will cause the price to fall to the equilibrium level of \$8. Look at Diagram B. At a price of \$6, the quantity demanded is 80 000, while the quantity supplied is 40 000. A shortage of $(80\,000 - 40\,000) = 40\,000$ exists, as indicated in Diagram B. This shortage causes the price to rise to its equilibrium level of \$8.

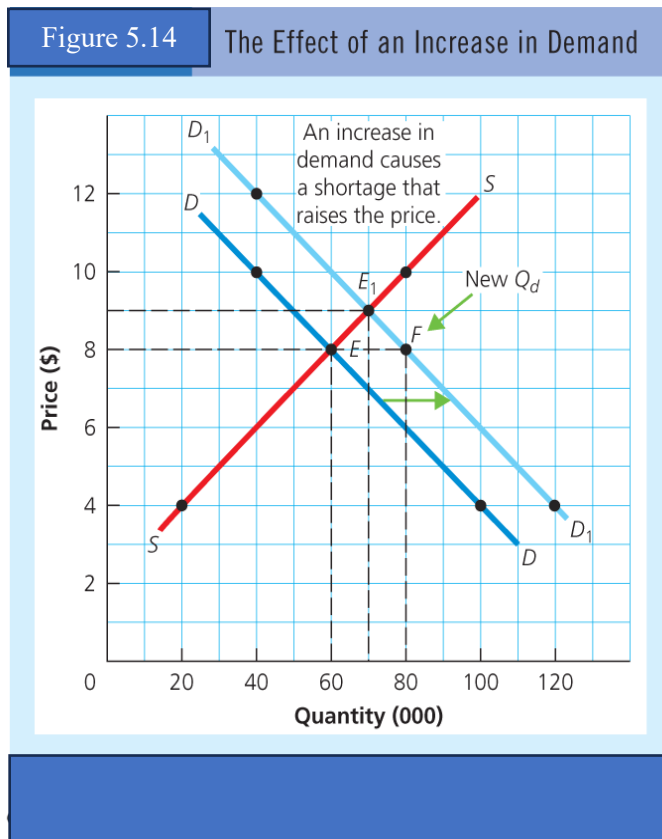
Figure 5.13 Surplus and Shortage



A change in demand, other things being equal, shifts the demand curve and changes the equilibrium price and quantity.

An increase in demand affects the equilibrium price and quantity of a product. Let's assume that the demand for flash drives increases because more people own computers and therefore require flash drives. We can analyze this situation with the help of Figure 5.14.

Figure 5.14 The Effect of an Increase in Demand

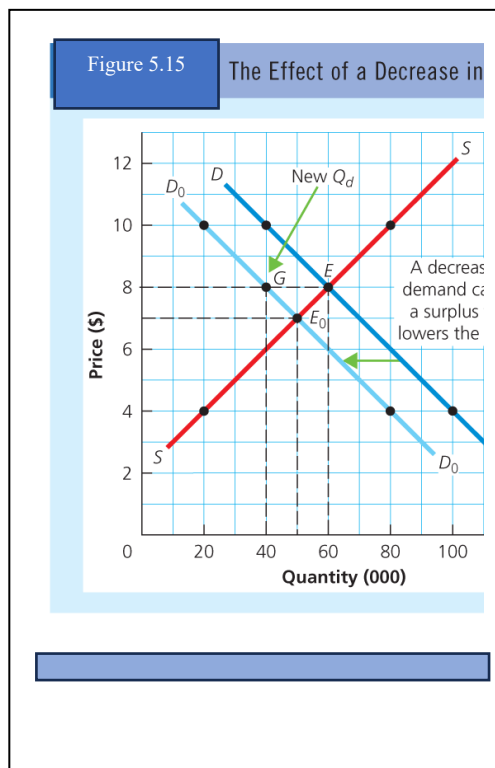


The original demand and supply curves in this figure are DD and SS , respectively, and the equilibrium price and quantity are \$8 and 60 000, respectively. An increase in demand is shown by a shift in the demand curve from DD to D_1D_1 . With this new higher demand, and with the initial price of \$8, the new quantity demanded is 80 000 (point F), while the quantity supplied remains at 60 000 (point E). There is therefore a shortage (excess quantity demanded) of 20 000 flash drives. The shortage will exert upward pressure on the price. The market establishes a new equilibrium price of \$9 and a new equilibrium quantity of 70 000. The result can be stated by the following proposition:

Note that although the quantity bought and sold increases, supply does not increase; the location of the supply curve remains the same. There is, however, a movement along the supply curve SS , from point E to point E_1 —an increase in quantity supplied.

An increase in demand, other things being equal, will cause the equilibrium price and quantity to increase.

Figure 5.15 The Effect of a Decrease in Demand



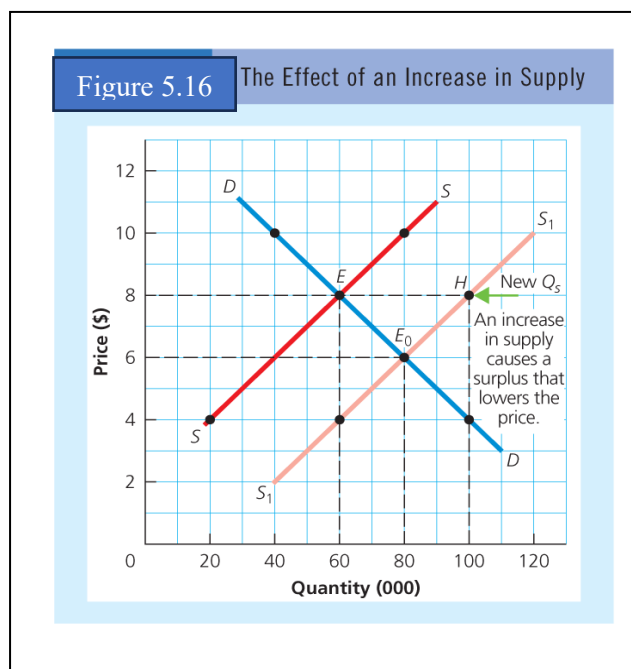
Let's analyze how a decrease in demand affects equilibrium price and quantity. In Figure 5.15, we start with the original demand and supply curves denoted as DD and SS, respectively. The equilibrium price is \$8, and the quantity is 60,000 units. Now, let's consider a scenario where the demand for flash drives declines due to the introduction of a new data storage device. This decline shifts the demand curve to the left, from DD to D₀D₀. With this reduced demand and an initial price of \$8, the new quantity demanded falls to 40,000 units (point G), while the quantity supplied remains unchanged at 60,000 units (point E). Consequently, there's an excess quantity supplied, leading to a surplus of 20,000 flash drives. This surplus puts downward pressure on the price. To address it, the market responds by lowering the price. Eventually, a new equilibrium is reached with

a lower price of \$7 and a new equilibrium quantity of 50,000 units. In summary, a decrease in demand causes the equilibrium price to drop from \$8 to \$7, while the equilibrium quantity decreases from 60,000 to 50,000 units. The result can be stated by the following proposition:

A decrease in demand, other things being equal, will cause the equilibrium price and quantity to

Note again that although the quantity demanded and supplied fall, supply does not decrease; the location of the supply curve remains the same. There is, however, a movement along the supply curve SS , from point E to point E_0 .

Figure 5.16 The Effect of an Increase in Supply



Let's explore how an increase in supply influences equilibrium price and quantity. Using Figure 5.16, we'll illustrate this change. Initially, the demand and supply curves are denoted as DD and SS , respectively, with an equilibrium price of \$8 and a quantity of 60,000 units. Now, let's envision a scenario where the supply of flash drives increases due to technological advancements in production. This increase in supply is depicted by shifting the supply curve to the right, from SS to S_1S_1 . At the original price of \$8, the new quantity supplied rises to 100,000 units (point H), while the quantity demanded remains at 60,000 units. Consequently, a surplus of flash drives

emerges in the market.

This surplus prompts sellers to compete by lowering prices, exerting downward pressure on the price. Eventually, a new equilibrium is established with a reduced price of \$6 and an increased equilibrium quantity of 80,000 flash drives. In summary, an increase in supply leads to a lower equilibrium price (\$8 to \$6) and a higher equilibrium quantity (60,000 to 80,000 units). We can now state the following proposition:

An increase in supply, other things being equal, will cause the price to fall and the quantity to rise.

A change in supply, other things being equal, shifts the supply curve and changes the equilibrium price and quantity.

Note again that although the quantity demanded has increased, demand has not; the location of the demand curve has not changed. Instead, there has been a movement along the demand curve, from E to E_0 . The effect of a fall in supply is left as an exercise for you.

When demand and supply both change, equilibrium price and quantity can be affected in a variety of ways.

Simultaneous increases in demand and supply

Let's consider the scenario of simultaneous increases in demand and supply for a product. It's not guaranteed that equilibrium price and quantity won't change. The outcome depends on the magnitude and direction of these changes relative to each other. When demand and supply change concurrently, various outcomes are possible, contingent on the scale and direction of these changes. Let's examine six potential outcomes, aided by the analysis provided in Figure 5.17. Initially, DD and SS represent the demand and supply curves, respectively, with equilibrium price set at \$8 and equilibrium quantity at 60,000 flash drives.

Figure 5.17 The Effects of Changes in Demand and Supply

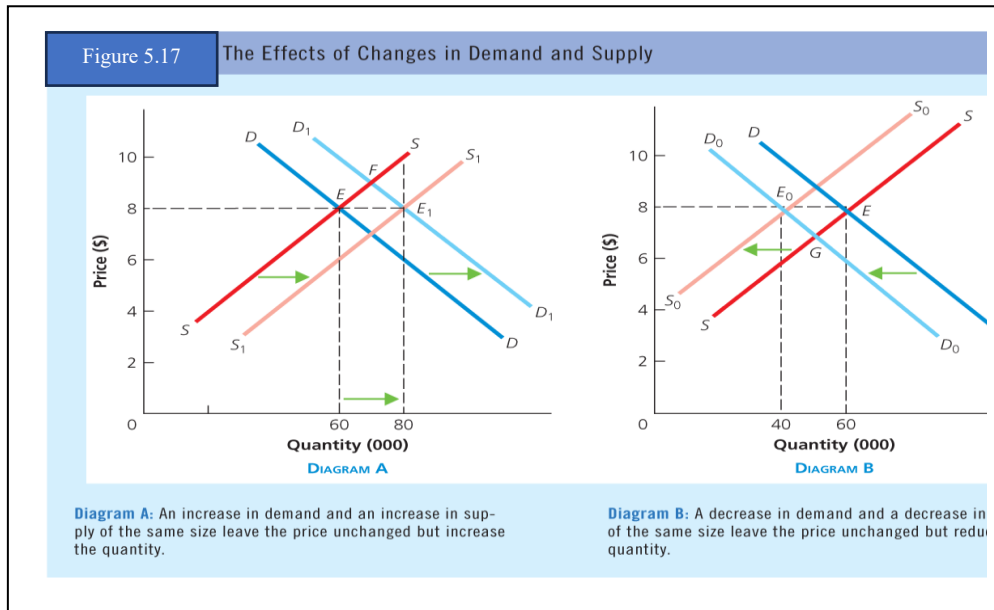


Diagram A: An increase in demand and an increase in supply of the same size leave the price unchanged but increase the quantity.

Diagram B: A decrease in demand and a decrease in supply of the same size leave the price unchanged but reduce the quantity.

Diagram C: A relatively large increase in demand and a relatively small increase in supply raise both price and quantity.

Diagram D: A relatively large increase in supply and a relatively small increase in demand lower the price but increase the quantity.

Diagram E: An increase in demand and an equal decrease in supply raise the price but leave the quantity unchanged.

Diagram F: An increase in supply and an equal decrease in demand lower the price but leave the quantity unchanged.

The Increase in Demand Is Equal to the Increase in Supply

Figure 5.17 The Effects of Changes in Demand and Supply (*cont'd*)

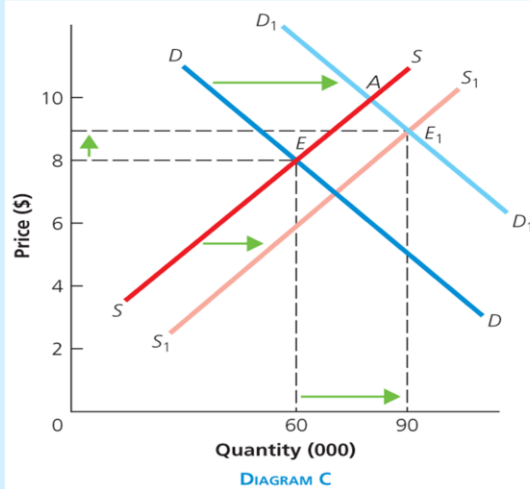


Diagram C: A relatively large increase in demand and a relatively small increase in supply raise both price and quantity.

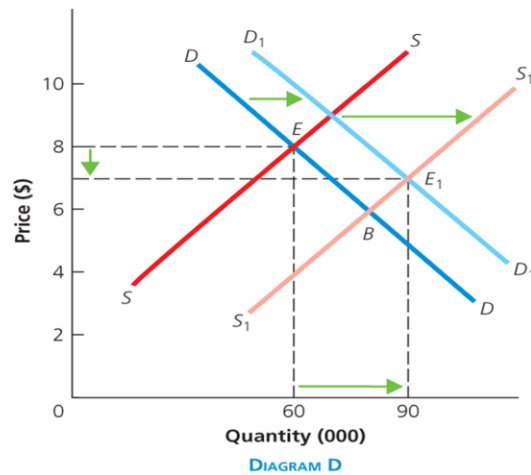


Diagram D: A relatively large increase in supply and a relatively small increase in demand lower the price but increase the quantity.

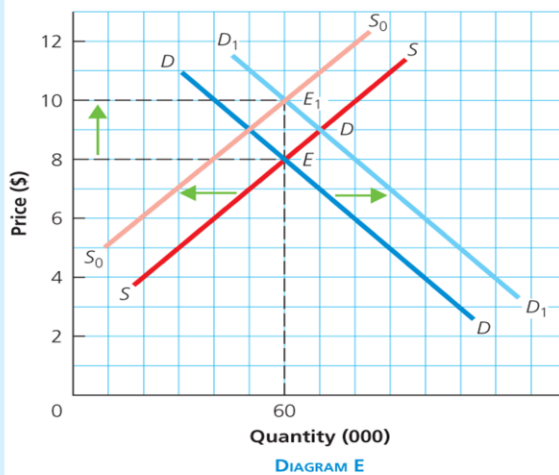


Diagram E: An increase in demand and an equal decrease in supply raise the price but leave the quantity unchanged.

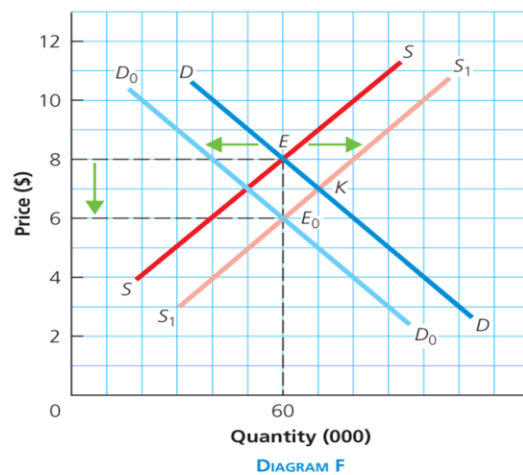


Diagram F: An increase in supply and an equal decrease in demand lower the price but leave the quantity unchanged.

In Diagram A of Figure 5.17, the increase in demand from DD to D_1D_1 raises the equilibrium price from \$8 to \$9 and increases the equilibrium quantity from 60 000 to 70 000 (point F). The increase in supply from SS to S_1S_1

lowers the price back to \$8 but increases the quantity from 70 000 to 80 000 (point E_1). We can conclude that price stays the same but quantity exchange increase.

The Fall in Demand Is Equal to the Fall in Supply In Diagram B, the decrease in demand from DD to D_0D_0 lowers the price from \$8 to \$7 and reduces the quantity from 60 000 to 50 000 (point G). The decrease in supply from SS to S_0S_0 raises the price back to \$8 but lowers the quantity even further to 40 000 (point E_0).

Reading Comprehension

1. Define the following terms:
 - a) Shortage
 - b) Surplus
2. What is the effect of a shortage on price? What is the effect of a surplus on price?
5. Define *equilibrium price* and *equilibrium quantity*.
4. The equilibrium price is the price at which demand and supply are equal. Is this statement correct?
5. What is the effect of an increase in demand on price, other things being equal?
5. What is the effect of a decrease in supply on price, other things being equal?

The Increase in Demand is Greater than the Increase in Supply

Diagram C shows that the relatively large increase in demand, from DD to D_1D_1 , raises the price from \$8 to \$10 and increases the quantity from 60 000 to 80 000 (point A). The increase in supply from SS to S_1S_1 lowers the price from \$10 to \$9 and increases the quantity further from 80 000 to 90 000 (point E_1).

The Increase in Supply is Greater than the Increase in Demand

Diagram D shows that a relatively large increase in supply, from SS to S_1S_1 , lowers the price from \$8 to \$6 and increases the quantity from 60 000 to 80 000 (point B). However, the relatively small increase in demand, from DD to D_1D_1 , raises the price from \$6 to \$7 and raises the quantity from 80 000 to 90 000 (point E_1).

An Increase in Demand and an Equal Decrease in Supply An increase in demand alone raises the price, and a decrease in supply alone also raises the price. In Diagram E, the increase in demand from DD to D_1D_1 raises the price from \$8 to \$9 and increases the quantity from 60 000 to 70 000 (point D). The decrease in supply from SS to S_0S_0 raises the price from \$9 to \$10 but reduces the quantity from 70 000 to 60 000 (point E_1).

An Increase in Supply and an Equal Decrease in Demand An increase in supply alone lowers the price, and a decrease in demand alone also lowers the price. In Diagram F, the increase in supply from SS to S_1S_1 lowers the price from \$8 to \$7 and increases the quantity from 60 000 to 70 000 (point K). The decrease in demand from DD to D_0D_0 lowers the price further to \$6 and reduces the quantity back to 60 000 (point E_0).

Here is a summary of what we have done so far in table 5.8

When demand and supply change simultaneously, the effect on equilibrium price can be uncertain. For example, if both demand and supply increase, the price might rise, stay the same, or fall, depending on the relative magnitude of the changes. However, the impact on quantity is clear: it will increase. In contrast, when demand rises and supply falls, the price will definitely increase, but the effect on quantity is less predictable—it could increase, remain unchanged, or decrease, based on the relative size of the shifts in demand and supply.

Table 5.8 The Effects of Simultaneous Changes in Demand and Supply

Change in Demand and Supply	Effect on Price and Quantity
1. Demand and supply both increase equally.	Price remains the same but quantity increases.
2. Demand and supply both decrease equally.	Price remains the same but quantity decreases.
5. The increase in demand is greater than the increase in supply.	Both price and quantity increase.
4. The increase in supply is greater than the increase in demand.	Price falls but quantity increases.
5. Demand increases and supply decreases	Price increases but quantity remains the same.

Review

1. Review the learning objectives listed at the beginning of the chapter.
2. Have you accomplished all the objectives? One way to determine this is to answer the Reading Comprehension questions at the end of each section. They will help you assess the extent to which you have accomplished the learning objectives.
5. If you have not accomplished an objective, review the relevant material before proceeding.

Key Points to Remember

1. **LO 5.1** Demand refers to the various quantities of a good or service that people are willing and able to buy at various prices during a specific period. Demand is a functional relationship between price and quantity demanded and can be represented by a table called a demand schedule or by a graph called a demand curve. Quantity demanded is the amount that will be demanded at a specific price.
2. **LO 5.2** The law of demand states that, other things being equal, as the price of an item rises, the quantity demanded will fall; and as the price falls, the quantity demanded will rise. Because of this inverse relationship between price and quantity demanded, the demand curve is downward sloping.
5. **LO 5.3** The main factors that affect the demand for a product are income, prices of substitutes and complements, tastes and preferences, buyers' expectations about future prices and future income, and the number of buyers.
4. **LO 5.4** A change in the price of a product will cause the quantity demanded of that product to change and is illustrated by a movement along the demand curve from one point to another. A change in a non-price determinant will cause demand to change—this is illustrated by a shift in the entire demand curve.

5. **LO 5.5, 5.8** Supply refers to the various quantities of a good or service that sellers (producers) are willing and able to offer for sale (i.e., place on the market) at various prices during a specific period. Supply can be represented by a supply schedule or by a supply curve. Quantity supplied is the amount that will be offered for sale at a specific price.
5. **LO 5.6** The law of supply states that as the price of an item rises, other things being equal, the quantity supplied will also rise; and as the price falls, the quantity supplied will fall. Because of this direct relationship between price and quantity supplied, the supply curve is upward sloping.
7. **LO 5.7** The factors affecting supply include the number of producers (sellers), the prices of related products, technology, sellers' expectations, and the prices of inputs (cost of production).
8. **LO 5.9** The equilibrium price is the price at which quantity demanded and quantity supplied are equal. The equilibrium quantity is the quantity that will be bought and sold (traded) at the equilibrium price. The intersection of the demand and supply curves determines the equilibrium price and quantity. The equilibrium price is not necessarily the best price for buyers or sellers.
9. **LO 5.9** A change in demand, other things being equal, will cause price and quantity to change in the same direction as the change in demand. A change in supply, other things being equal, will cause price to change in the opposite direction—and quantity to change in the same direction—as the change in supply.

Problems and Exercises

Basic

1. **LO 5.1** Use a demand curve to illustrate the difference between demand and quantity demanded.
2. **LO 5.3** Mention three factors that will increase the demand for a normal good.