

# Section 1

# Understanding Supply

## Preview

### Objectives

After studying this section you will be able to:

1. Explain the law of supply.
2. Interpret a supply graph using a supply schedule.
3. Explain the relationship between elasticity of supply and time.

### Section Focus

The law of supply predicts that producers will offer more of a good as its price goes up. How strongly producers react to a change in price depends on their ability to raise or lower output.

### Key Terms

supply  
law of supply  
quantity supplied  
supply schedule  
variable  
market supply schedule  
supply curve  
market supply curve  
elasticity of supply

If you were running a business, what would you do if you discovered that customers were suddenly willing to pay twice as much for your product? If you were like most entrepreneurs, you would try to produce more in order to take advantage of the higher prices. Even if you used the higher prices as a way to work fewer hours while earning the same income, you could be sure that someone else would jump into the market and start selling the same good.

These two movements—individual firms changing their level of production and firms entering or exiting the market—combine to create the law of supply.

### Higher Production

If a firm is already earning a profit by selling a good, then an increase in the price—*ceteris paribus*—will increase the

supply the amount of goods available

law of supply tendency of suppliers to offer more of a good at a higher price

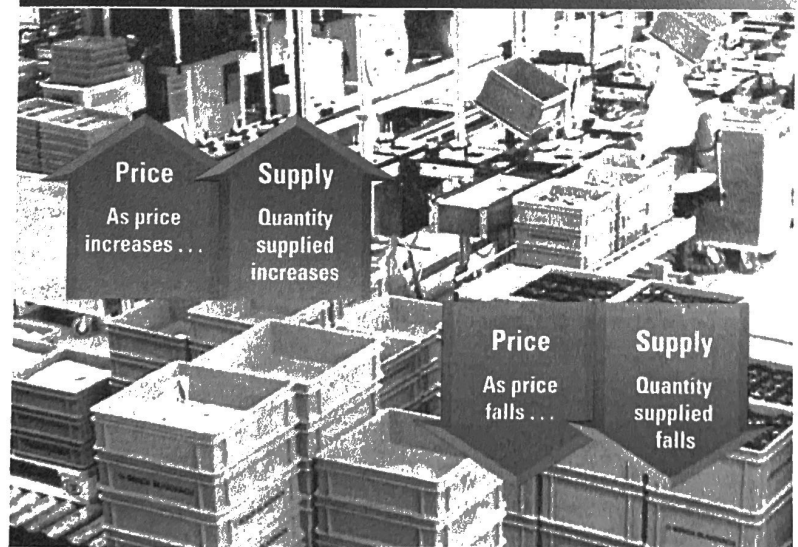
quantity supplied the amount a supplier is willing and able to supply at a certain price

## The Law of Supply

**Supply** is the amount of goods available. How do producers decide how much to supply? According to the **law of supply**, the higher the price, the larger the quantity produced. Economists use the term **quantity supplied** to describe how much of a good is offered for sale at a specific price.

The law of supply develops from the choices of both current and new producers of a good. As the price of a good rises, existing firms will produce more in order to earn additional revenue. At the same time, new firms will have an incentive to enter the market to earn a profit for themselves. If the price of a good falls, some firms will produce less, and others might drop out of the market.

Figure 5.1 Law of Supply



The law of supply predicts that higher prices lead to more production.  
**Supply and Demand** How is the law of supply different from the law of demand?

*In the News As this excerpt from a Wall Street Journal Classroom Edition article shows, it's a mistake to equate profit with greed, as sometimes happens in the popular imagination. On the contrary, when profits are generated and put to use, the economy benefits.*

"Truth is, profit has gotten a bum rap. More often than not it's a positive force in the economy. Profit supplies the money needed to build productive businesses and hire new employees, and hunger for profit spurs entrepreneurs to launch new ventures and inventors to turn ideas into reality."

firm's profits. The promise of higher revenues for each sale also encourages the firm to produce more. Consider the pizzeria you read about in Chapter 4. The pizzeria is probably making a reasonable profit by selling a certain number of slices a day at the market price. If the pizzeria weren't making a profit, the owner would soon try to raise the price or switch from pizzas to something more profitable.

If the price of pizza rises, but the firm's cost of making pizza stays the same, then the pizzeria will earn a higher profit on each slice of pizza. A sensible entrepreneur would try to produce and sell more pizza to take advantage of the higher prices.

Similarly, if the price of pizza goes down, the pizzeria will earn less profit per slice or even lose money. The owner will choose to sell less pizza and produce something else,

such as calzones or sandwiches, that will yield more profit.

In both cases, the search for profit drives the supplier's decision. When the price goes up, the supplier recognizes the chance to make more money and works harder to produce more pizza. When the price falls, the same entrepreneur is discouraged from producing as much as before.

**Market Entry**

Profits appeal both to producers already in the market and people who may decide to join the market. As you have seen, when the price of pizza rises, a pizzeria stands out as a good opportunity to make money. If you were considering opening a restaurant of your own, a pizzeria would look like a safe bet. In this way, rising prices draw new firms into a market and add to the quantity supplied of the good.

Consider the market for music. In the late 1970s, disco music became popular among young people. The music industry quickly recognized the popularity of disco and more and more groups began releasing disco recordings. Even some groups that once performed soul music and rhythm and blues chose to record disco albums. New entrants crowded the market to take advantage of the potential for profit. Disco, however, proved to be a short-lived fad. By the early 1980s, disco music was gone from the radio, and stores couldn't sell the albums on their shelves.



► The music industry illustrates how profit drives suppliers' decisions. As different musical styles become popular, new groups make recordings to profit from the current fad.



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that will... This pattern of sharp increases and decreases in supply occurs again and again in the music industry. In the early 1990s, "grunge" music emerged from Seattle to become widely popular among high school and college students across the country. How did the market react? Record labels soon hired many grunge groups. Music stores devoted more and more space to this style of music. Within a few years, however, grunge lost its appeal, and many groups disbanded or moved on to new styles. Swing music enjoyed a smaller peak in popularity in the late 1990s. In each of the examples above, many musicians joined the market for a particular style of music to profit from a trend. Their actions reflected the law of supply, which says that the output or quantity supplied of a good increases as the price of the good increases.

c. In the popular industry of disc releases, groups that follow a rhythmic album release schedule to fit disc stores' and fads have gone from sell

## The Supply Schedule

Similar to a demand schedule, a **supply schedule** shows the relationship between price and quantity supplied for a specific good. The pizzeria discussed earlier might have a supply schedule that looks like the one in Figure 5.2. This table compares two **variables**, or factors that can change. These variables are the price of a slice and the number of slices supplied by a pizzeria. We would collect this information by asking the pizzeria owner how many slices she is willing and able to make at different prices, or we could look at records to see how the quantity supplied has varied as the price has changed. We will almost certainly find that at higher prices, the pizzeria owner is willing to make more pizza. At a lower price she prefers to make less pizza and to devote her limited resources to other, more profitable, items.

Like a demand schedule, a supply schedule lists supply for a very specific set of conditions. The schedule shows how the price of pizza, and only the price of pizza, affects the pizzeria's output. All of the other factors that could change the restaurant's output decisions, such as the costs of

Figure 5.2 Supply Schedule

Price per slice of pizza	Slices supplied per day
\$ .50	100
\$1.00	150
\$1.50	200
\$2.00	250
\$2.50	300
\$3.00	350



This supply schedule lists how many slices of pizza one pizzeria will offer at different prices. **Incentives** What does this chart tell you about the pizzeria owner's decisions?

tomato sauce, labor, and rent, are assumed to remain constant.

## A Change in the Quantity Supplied

Economists use the word *supply* to refer to the relationship between price and quantity supplied, as shown in the supply schedule. The pizzeria's supply of pizza includes all possible combinations of price and output. According to this supply schedule, the pizzeria's supply is 100 slices at \$ .50 a slice, 150 slices at \$1.00 a slice, 200 slices at \$1.50 a slice, and so on. The number of slices that the pizzeria offers at a specific price is called the quantity supplied at that price. At \$2.50 per slice, the pizzeria's quantity supplied is 300 slices per day.

A rise or fall in the price of pizza will cause the quantity supplied to change, but not the supply schedule. In other words, a change in a good's price moves the seller from one row to another in the same supply schedule, but does not change the supply schedule itself. When a factor other than the price of pizza affects output, we have to build a whole new supply schedule for the new market conditions.

## Market Supply Schedule

All of the supply schedules of individual firms in a market can be added up to create a **market supply schedule**. A market supply schedule shows the relationship between prices and the total quantity supplied by all

**supply schedule** a chart that lists how much of a good a supplier will offer at different prices

**variable** a factor that can change

**market supply schedule** a chart that lists how much of a good all suppliers will offer at different prices

**Figure 5.3 Market Supply Schedule**

Price per slice of pizza	Slices supplied per day
\$.50	1,000
\$1.00	1,500
\$1.50	2,000
\$2.00	2,500
\$2.50	3,000
\$3.00	3,500



A market supply schedule represents all suppliers in a market. **Supply and Demand How does this market supply schedule compare to the individual supply schedule?**

**supply curve** a graph of the quantity supplied of a good at different prices

**market supply curve** a graph of the quantity supplied of a good by all suppliers at different prices

**elasticity of supply** a measure of the way quantity supplied reacts to a change in price

firms in a particular market. The information in a market supply schedule becomes important when we want to determine the total supply of pizza at a certain price in a large area, like a city.

The market supply schedule for pizza resembles the supply schedule at a single pizzeria, but the quantities are much larger. Figure 5.3 shows the supply of pizza for a hypothetical city.

This market supply schedule lists the same prices as those in the supply schedule for the single pizzeria, since all restaurants will charge prices within the same range. The quantities supplied are much larger because there are many pizzerias in the community. Like the individual supply schedule, this market supply schedule reflects the law of supply. Pizzerias supply more pizza at higher prices.

## The Supply Graph

When the data points in the supply schedule are graphed, they create a **supply curve**. A supply curve is very similar to a demand curve, except that the horizontal axis now measures the quantity of the good supplied, not the quantity demanded. Figure 5.4 shows a supply curve for one pizzeria and a **market supply curve** for all the pizzerias in the city. The data used to draw the two curves are from the supply schedules in Figures 5.2 and 5.3. The prices

shown along the vertical axes are the same in both graphs. However, the quantities of pizza supplied at each price are much larger in the market supply curve.

The key feature of the supply curve is that it always rises from left to right. As your finger traces the curve from left to right, it moves toward higher and higher output levels (on the horizontal axis) and higher and higher prices (on the vertical axis). This illustrates the law of supply, which says that a higher price leads to higher output.

## Supply and Elasticity

In Chapter 4, you learned that elasticity of demand measures how consumers will react to a change in price. **Elasticity of supply** is based on the same concept. Elasticity of supply is a measure of the way suppliers respond to a change in price.

Elasticity of supply tells how firms will respond to changes in the price of a good. The labels *elastic*, *inelastic*, and *unitary elastic* represent the same values of elasticity of supply as those of elasticity of demand. When elasticity is greater than one, supply is very sensitive to changes in price and is considered elastic. If supply is not very responsive to changes in price, and elasticity is less than one, supply is considered inelastic. When a percentage change in price is perfectly matched by an equal percentage change in quantity supplied, elasticity is exactly one, and supply is unitary elastic.

## Elasticity of Supply and Time

What determines whether the supply of a good will be elastic or inelastic? The key factor is time. In the short run, a firm cannot easily change its output level, so supply is inelastic. In the long run, firms are more flexible, so supply is more elastic.

## Elasticity of Supply in the Short Run

An orange grove is one example of a business that has difficulty adjusting to a change in price in the short term. Orange trees take several years to mature and grow

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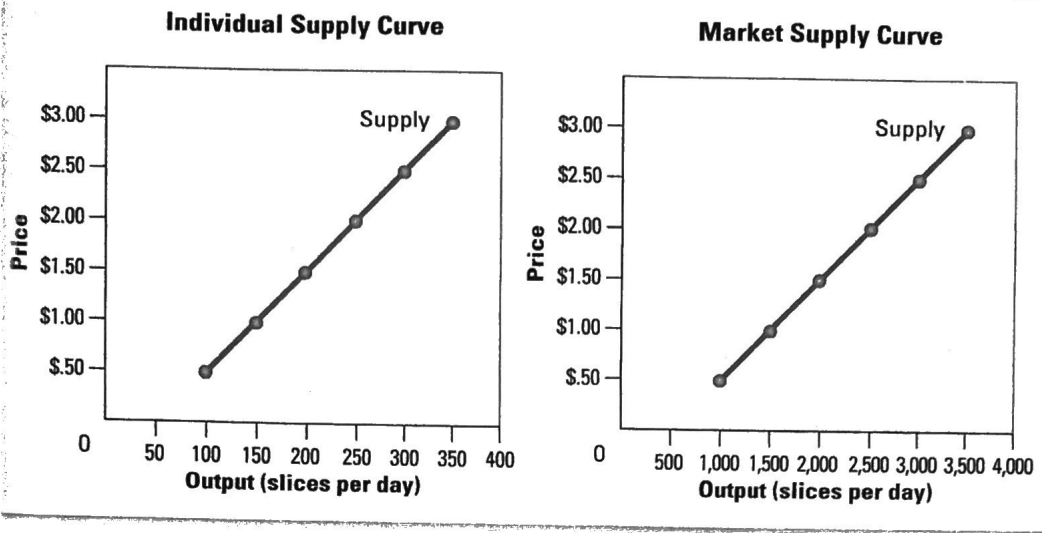
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Figure 5.4 Supply Curves



Supply curves always rise from left to right, as predicted by the law of supply. As price increases, so does the quantity supplied.

**Supply and Demand**  
How many slices will one pizzeria produce at \$2.00 a slice?

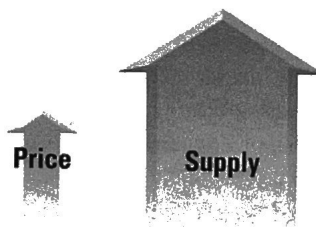
fruit. If the price of oranges goes up, an orange grower can buy and plant more trees, but he will have to wait several years for his investment to pay off. In the short term, the grower could take smaller steps to increase output. For example, he could use a more effective pesticide. While this step might increase his output somewhat, it would probably not increase the number of oranges by very much. Economists would say that his supply is inelastic, because he cannot easily change his output. The same factors that prevent the owner of the orange grove from expanding his supply will also prevent new growers from entering the market and supplying oranges in the short term.

In the short run, supply is inelastic whether the price increases or decreases. If the price of a crate of oranges falls, the grove owner has few ways to cut his supply. The grove he invested years ago in land and trees, and the grove will provide oranges no matter what the price is. Even if the price drops drastically, the grove owner will probably pack and sell nearly as many oranges as before. The grove owner's competitors have also invested heavily in land and trees and won't drop out of the market if they can survive. In this case, supply is inelastic whether prices rise or fall.

While orange groves illustrate a business in which supply is inelastic, other businesses benefit from more elastic supply. For example, a business that provides a service, such as a haircut, is highly elastic. Unlike oranges, the supply of haircuts is easily expanded or reduced. If the price of a haircut rises, barber shops and salons can hire new workers quickly. In addition,

Figure 5.5 Elastic Supply

# SUPPLY

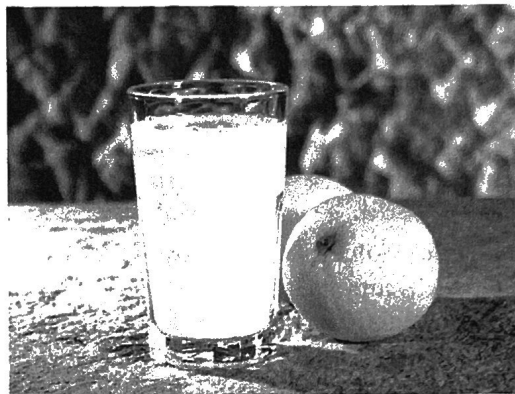


When supply is elastic, a small increase in price has a big effect on supply.



When supply is elastic, it reacts strongly to changes in price.  
**Supply and Demand** If supply is inelastic, how will supply react to a small increase in price?

► While the supply of oranges is inelastic, the supply of goods made from oranges is elastic. For example, producers can choose whether to produce more or less orange juice from the oranges.



new barber shops and salons will open, and existing businesses might stay open later in the evening. This means that a small increase in price will cause a large

increase in quantity supplied, even in the short term.

If the price of a haircut drops, some barbers will close their shops earlier in the day, and others will leave the market for jobs elsewhere. Quantity supplied will fall quickly. Because haircut suppliers can quickly change their operations, the supply of haircuts is elastic.

### Elasticity in the Long Run

Like demand, supply can become more elastic over time. Consider the example of the orange grower who could not increase his output much when the price of oranges rose. Over time, he could plant more trees to increase his supply of oranges. These changes will become more effective over time as trees grow and bear fruit. After several years, he will be able to sell many more oranges at the high market price.

If the price drops and stays low for several years, orange growers who survived the first two or three years of losses might decide to give up and grow something else. Given five years to respond instead of six weeks, the supply of oranges will be far more elastic. Just like demand, supply becomes more elastic if the supplier has a long time to respond to a price change.

## Section 1 Assessment

### Key Terms and Main Ideas

1. Explain the **law of supply** in your own words.
2. What is the difference between supply and **quantity supplied**?
3. How does the quantity supplied of a good with a large **elasticity of supply** react to a price change?

### Applying Economic Concepts

4. **Problem Solving** If the price of oil rises around the world, what will happen to oil production in Texas? Explain your answer.

5. **Decision Making** Explain whether you think the supply of the following goods is elastic or inelastic, and why. (a) hotel rooms (b) taxi rides (c) photographs
6. **Critical Thinking** When the price of a good rises, total supply in the market will rise, but some entrepreneurs might actually choose to work less. Why might they make this choice?



**Take It to the NET**

Scarcity can influence the elasticity of the supply of a good or service. Investigate two of our sources of energy (petroleum, natural gas, hydropower, nuclear, geothermal), and determine whether supply is elastic or inelastic. Use the links provided in the Social Studies area at the following Web site for help in completing this activity. [www.phschool.com](http://www.phschool.com)