Demand and Supply

5.1 Introduction

In late 2005, a new album release made a big splash in the music world—and sent a small ripple through the economy. The release was Some Hearts, country singer Carrie Underwood’s first CD. Some Hearts was reported to be the fastest-selling debut country album in history. It started out at number 2 on Billboard’s chart of the top-selling 200 albums. Within three weeks of its appearance in stores, fans had bought nearly 315,000 copies. For the next three years, Some Hearts would be the best-selling country music album by a female singer. By 2008, Underwood had sold more than 6 million Some Hearts CDs in the United States alone.

For Underwood, the rise to stardom came suddenly. In high school she had dreamed of becoming a singer but set that dream aside to go to college. She continued to sing for family and friends, and performed during summers in a country music show. But demand for her talents was limited to a small, local market.

In her senior year, Underwood read a news story about upcoming auditions for American Idol, a television show in which singers compete to become the next big music star. She was chosen to be contestant in the summer of 2004 and, in 2005, won the competition.

In a matter of months, Underwood went from being an unknown to being a star. After completing her college degree and releasing her first album, she began a concert tour. In 2006, she performed in more than 150 shows, including holiday shows for U.S. troops in Kuwait and Iraq. The following year, she released her second best-selling album, Carnival Ride.

As avid consumers of music, teenagers contribute to the demand for new musical groups and CDs.

Speaking of Economics

demand
The quantity of a good or service that consumers are both willing and able to buy at various prices.

law of demand
An economic law stating that as the price of a good or service increases, the quantity demanded decreases, and vice versa. Generally, consumers are happier to buy goods and services at lower prices than at higher prices.

substitute good
A product that satisfies the same basic want as another product. Substitute goods may be used in place of one another.

complementary good
A product that is used or consumed jointly with another product. Such a good usually has more value when paired with its complement than when used separately.

supply
The quantity of a good or service that producers are willing and able to offer for sale at various prices.

law of supply
An economic law stating that as the price of a good or service increases, the quantity supplied increases, and vice versa. Generally, producers are happier to offer goods and services at higher prices than at lower prices.

revenue
The amount of money a firm receives in the course of doing business. Revenue is calculated by multiplying the quantity sold by the price.

elasticity
A measure of the degree to which the quantity demanded or supplied of a good or service changes in response to a change in price.
Millions of Americans watched as country singer Carrie Underwood learned she had won the American Idol competition in 2005. After that win, demand for her vocal talents soared. Fans flocked to her concerts and bought millions of her CDs.

How much would you have been willing to pay to see Carrie Underwood perform when she was still an unknown? Not a lot, certainly. Perhaps $5 if a friend had given her show a rave review.

Now assume that after her appearances on American Idol, you became a fan. How much would you have been willing to pay then? In 2008, tickets to Carrie Underwood concerts cost around $45 and up. Thousands of people paid this much and more to see her perform. The demand for Underwood’s singing had clearly increased since her American Idol victory.

Carrie Underwood’s rise to stardom is more than just a country music success story. From an economist’s point of view, it is also an illustration of demand and of how demand can change. In this chapter, you will read more about demand and its partner, supply. You will explore how price and other factors influence what consumers demand and what producers are willing to supply.

### 5.2 How Do Demand and Price Interact?

Most people’s understanding of demand comes from their own experience as consumers. Consumers, after all, are the ones who decide what to buy and how much to spend. Demand, in this everyday sense, is whatever consumers decide they want. But how do consumers—how do we—make those decisions?

Consider this scenario. You are shopping for CDs. You see Some Hearts for sale for $15. Do you buy it? Would you be more likely to buy it if it were priced at $11? What about if it were priced at $18? If you respond the way economists expect you to, the lower the price, the more likely you would be to buy the CD. This is a key idea in understanding the relationship between demand and price.

**Demand: What We Are Willing and Able to Buy at Various Prices**

Anyone who has ever gone shopping knows that making a purchase depends on two things. You have to be willing to buy the item in question, and you have to be able to pay for it.

Those two characteristics of consumers—willingness and ability—both matter to economists. You may want the Underwood CD, for example, but if you don’t have $15, you can’t buy it. You see a Rolling Stones CD priced at $9, but you don’t like the Rolling Stones enough to spend the money. For you to contribute to the demand for either CD, you have to be both willing and able to buy.

What does it mean to contribute to the demand for something? Let’s say that you do, after all, buy a copy of Some Hearts for $15. That one copy, at that one price, is what an economist would call your quantity demanded. **Quantity demanded** is the amount of a good or service that consumers are willing and able to buy at a specific price. If a different store were to charge $11 for Some Hearts, and consumers bought
30 copies, then that amount at that price—30 copies at $11—would be the quantity demanded.

When the quantities demanded at all the various prices at which a good is sold are added together, the result is demand. **Demand** is the amount of a good or service that consumers are willing and able to buy at all prices in a given period.

Demand is expressed in terms of a time frame, such as “per day” or “per week.” To say that consumers bought 315,000 copies of *Some Hearts* does not, to an economist, convey demand. But 315,000 copies purchased in three weeks is demand. Enormous demand, in fact. And every consumer who bought *Some Hearts* during that period, at any price, contributed to it.

**Using a Demand Schedule to Determine One Consumer’s Willingness and Ability to Buy**

Price is obviously important to consumers. How important? A simplified model of a market can show us how prices influence consumers’ buying decisions.

Suppose that Tyler is the sole consumer in a market with one product, tacos. Assume that the tacos sold in this market are all exactly alike. This is the *ceteris paribus*, or other-things-being-equal, assumption. Also assume that price is Tyler’s only consideration. All other influences on Tyler’s buying—and there could be many—are held constant.

Tyler eats tacos several times a week at a taqueria owned by Jasmine. One day Jasmine conducts a customer survey to find out how Tyler might react to a price change. The survey asks how many tacos per week Tyler would be willing and able to buy at various prices.

The results of Jasmine’s survey are shown in the table in Figure 5.2A. Economists call this kind of table a **demand schedule**. An individual demand schedule lists the quantities of a good that one person will buy at various prices. Tyler’s demand schedule shows that at a price of $1.00, his quantity demanded is nine tacos. That is, he can be expected to buy nine tacos per week when the price is $1.00. Notice that as the price increases, the quantity of tacos that Tyler is willing and able to buy decreases.

The data from Tyler’s demand schedule are plotted on the graph in Figure 5.2A. Each pair of variables in the demand schedule—quantity and price—is a pair of coordinates marking a point on the graph. The line that is formed by connecting the points is called a demand curve. A **demand curve** shows the relationship between price and the quantity that buyers are willing and able to buy. Put another way, it shows how price influences the quantity demanded. As the price changes, the quantity demanded moves up or down along the demand curve.

Notice that this demand curve happens to be a straight line. Demand curves can be straight or curved. As you might expect, this demand curve shows that Tyler is able and willing to buy a lot more tacos at $0.50 apiece than at $3.00 apiece.
Graphing Market Demand

Market demand is the sum of the individual quantities demanded in a market. In this case, the market is made up of the four consumers listed on the demand schedule.

- When plotted on a graph, the data from the schedule form a demand curve for Jasmine’s tacos.
- Point A on the curve represents 30 tacos (7 + 7 + 5 + 10) demanded at $1.50 per taco. At this price, Jasmine can expect to sell 30 tacos a week.

<table>
<thead>
<tr>
<th>Price (per taco)</th>
<th>Tyler</th>
<th>Amber</th>
<th>Kayla</th>
<th>Luis</th>
<th>MARKET</th>
</tr>
</thead>
<tbody>
<tr>
<td>$0.50</td>
<td>11</td>
<td>10</td>
<td>11</td>
<td>13</td>
<td>45</td>
</tr>
<tr>
<td>1.00</td>
<td>9</td>
<td>9</td>
<td>8</td>
<td>11</td>
<td>37</td>
</tr>
<tr>
<td>1.50</td>
<td>7</td>
<td>7</td>
<td>6</td>
<td>10</td>
<td>30</td>
</tr>
<tr>
<td>2.00</td>
<td>5</td>
<td>6</td>
<td>5</td>
<td>7</td>
<td>23</td>
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<tr>
<td>2.50</td>
<td>3</td>
<td>4</td>
<td>4</td>
<td>6</td>
<td>17</td>
</tr>
<tr>
<td>3.00</td>
<td>1</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>13</td>
</tr>
</tbody>
</table>

Jasmine again uses a survey to determine the demand for her tacos. A schedule of the data is shown in Figure 5.2B. It shows the sum of the quantities demanded at each price by each of the four consumers. This sum is the market demand for Jasmine’s tacos.

The accompanying graph shows the same market demand data. Each point on the curve represents the quantity of tacos demanded at a particular price. At first, you might expect, there is a clear relationship between price and demand for Jasmine’s tacos.

Market Demand: The Sum of All Consumers’ Willingness and Ability to Buy

In the real world, of course, Jasmine would need more than one customer to stay in business. Suppose she opens the doors of her taco stand to the general public, a move that gains her three more customers: Amber, Kayla, and Luis. She now needs to consider the market demand for her tacos. Market demand is the sum of all the individual quantities demanded in a market. When economists refer to demand, they are usually talking about market demand.

Knowing market demand helps businesses make plans because it tells them how many goods all consumers will buy at various prices. To determine that broader demand, a business might track sales of a product at various prices. Or a business owner might conduct a survey.

The Law of Demand: As Price Increases, Quantity Demanded Decreases

One thing is clear from both of the demand graphs you just looked at. As the price of tacos increases, the quantity demanded decreases. As the price decreases, the quantity demanded increases. Price
and quantity demanded move in opposite directions. This inverse relationship between price and quantity demanded is so strong that economists refer to it as the **law of demand**. Economist David Henderson calls the law of demand the “most famous law in economics, and the one that economists are most sure of.”

Why do price and quantity demanded move in opposite directions? The answer can be found in three factors that affect consumers’ spending behavior.

**The law of diminishing marginal utility.** Sometimes a consumer has to decide whether or not to buy something, like a music CD at a particular price. Other times, however, as the thinking-at-the-margin principle tells us, consumers are faced with the choice not of whether to buy, but of how much to buy. This raises the question of marginal utility.

How much utility, or satisfaction, is there in consuming “just one more”? The law of diminishing marginal utility tells us that with most goods and services, the more we have already consumed, the less satisfaction we are likely to get from consuming yet another additional unit. This explains why each helping of food you eat at an all-you-can-eat buffet is less enjoyable than the one before. Does this mean that people will not buy ever-larger quantities of a good or service? No. But it does imply that they will do so only if the price is low enough.

**The income effect.** Because of scarcity, people's incomes are limited. They have only so much money to spend. If the price of a good or service increases, they will not be able to continue to buy the same quantity as they did at the original price.

**The substitution effect.** Sometimes two different goods can satisfy the same want. Such products are called **substitute goods**. Rubber flip-flops, for example, can satisfy the same want as leather sandals for many people. What happens if the price of sandals increases relative to the price of flip-flops? At some point, people will substitute the cheaper good for the relatively more expensive one.

All three factors cause consumers to react in predictable ways to a change in the price of a good or service. As consumers buy more in response to a decrease in price—or less in response to an increase in price—the quantity demanded is said to “move along the demand curve.” Economists call this movement along the curve a **change in quantity demanded.** Only a change in price causes a change in quantity demanded.

### 5.3 What Can Cause Demand to Change?

As the law of demand recognizes, price is key when people are deciding what and how much to buy. But other factors can influence demand as well. Suppose, for example, that a street fair were held on the block where Jasmine's taqueria is located. She might be mobbed with customers. The demand for her tacos would certainly increase. Or suppose a blizzard brought the city to a halt. Jasmine would have very few customers for a day or two, and the demand for tacos at all prices would decrease. How would these changes in demand be reflected on a graph?

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If the price of leather sandals were to rise, consumers might decide they don’t need them after all if a cheaper substitute is available. This would cause the quantity of leather sandals demanded to decrease.
### Key Concept

**Demand Shifters**
All but one of the factors listed here are demand shifters. These shifters can cause an increase or a decrease in demand at every point along a demand curve.

<table>
<thead>
<tr>
<th>A change in . . .</th>
<th>A change in . . .</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Consumer income</strong></td>
<td><strong>Price</strong></td>
</tr>
<tr>
<td>The number of consumers</td>
<td>Movement along the demand curve</td>
</tr>
<tr>
<td>Consumer tastes and preferences</td>
<td></td>
</tr>
<tr>
<td>Consumer expectations</td>
<td></td>
</tr>
<tr>
<td>The price of substitute goods</td>
<td></td>
</tr>
<tr>
<td>The price of complimentary goods</td>
<td></td>
</tr>
</tbody>
</table>

**Can lead to . . .**
- A shift in the demand curve
- Or

**Can lead to . . .**
- Movement along the demand curve

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example, you probably go to more movies when you are working and earning money than when you are not. When the economy is growing and jobs are being created, more people earn more income. The demand for many goods and services increases at all prices. That is, their demand curves shift to the right. The opposite also holds true. In an economic downturn, incomes—and demand—can decrease. The demand curves for many goods and services shift to the left.

**Changes in the number of consumers.** A change in the number of consumers can cause market demand to shift. You saw this effect in the taco stand scenario, when the street fair brought in more customers and the blizzard prevented customers from coming. In some markets, this effect is seasonal. In a summer resort town, for example, market demand for hotels and restaurants increases when summer brings an influx of consumers. When summer ends and the tourists leave town, demand decreases sharply.

**Changes in consumer tastes and preferences.** Consumers do not necessarily buy the same products year after year. Thirty years ago, only a small number of Americans ate sushi, and they did so mainly at Japanese restaurants. Today sushi is so popular that it is sold in many supermarkets. This change in consumer tastes has caused an increase in demand for sushi. The demand curve for sushi has steadily shifted to the right.

Advertising can play a powerful role in shaping consumer preferences. Suppose, for example, that a producer of sunglasses were to launch an advertising campaign with celebrity endorsements. At all price levels, quantity demanded would likely increase. The demand curve would shift to the right.

**Changes in consumer expectations.** Prices don’t actually have to rise or fall to cause consumers to change their behavior. Consumers may decide to buy or not to buy based on the expectation of a price change. Let’s say you go into a store with the intention of buying a particular video game. You find the game, which is priced at $39.99. A salesperson informs you that this game will go on sale next week for $29.99. You put the video game back. The expectation that the price will soon go down has, for the moment, lessened your demand.

**Changes in the price of substitute goods.** A change in the price of one product in a pair of substitute goods can cause the demand curve for the other good to shift. Take burritos and tacos, for example. If the price of burritos were to increase, the law of demand tells us that people would buy fewer burritos. (This would cause movement along the demand curve for burritos.) At the same time, assuming that the price of tacos did not change, consumers would tend to buy more tacos. Market demand for tacos would increase, and the demand curve for tacos would shift.
to the right. Other pairs of substitute goods include fish and chicken, sweatshirts and jackets, and movie tickets and DVD rentals.

**Changes in the price of complementary goods.** A complementary good is a product that is consumed along with some other product. Tennis rackets and tennis balls are complementary goods. So are hamburgers and buns. Demand for one complementary good increases and decreases along with demand for the other. So, for example, if the price of printers were to decrease, the quantity of printers demanded would increase. As a result, demand for the ink cartridges that go with the printers would also increase. Assuming the price of the cartridges remains unchanged, the demand curve for cartridges would shift to the right.

## 5.4 How Do Supply and Price Interact?

Opposite every consumer in a market exchange is a producer. Producers supply the goods and services that consumers demand. They decide what to supply and how much to produce. How do they make those decisions?

Price plays a critical role for producers, just as it does for consumers. Jasmine, for example, might be willing to sell a certain quantity of tacos for $2.00 apiece. But would she be willing to sell the same quantity at $1.00 apiece? Economists can safely predict that her answer would be no. The lower the price, the fewer tacos Jasmine would be willing to sell. This is a key idea in understanding the interaction between supply and price.

### Supply: What Producers Are Willing and Able to Sell at Various Prices

When we look at the supply side of the market, we find that the same concepts and terms that apply to consumers also apply to producers. The same *ceteris paribus* assumptions apply as well. All tacos are the same—and price, for now, is Jasmine’s only consideration. All other variables that might influence supply, including the cost of ingredients, are held constant.

Suppose, then, that a customer wants to buy as many tacos as Jasmine is willing to supply in a week. How much will she be willing to supply if the price is $0.50 per taco? How many tacos will she produce at $1.00 per taco? The supply schedule shows Jasmine’s supply schedule.

<table>
<thead>
<tr>
<th>Price (per taco)</th>
<th>Quantity (tacos per week)</th>
</tr>
</thead>
<tbody>
<tr>
<td>$0.50</td>
<td>250</td>
</tr>
<tr>
<td>1.00</td>
<td>300</td>
</tr>
<tr>
<td>1.50</td>
<td>350</td>
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<tr>
<td>2.00</td>
<td>400</td>
</tr>
<tr>
<td>2.50</td>
<td>450</td>
</tr>
<tr>
<td>3.00</td>
<td>500</td>
</tr>
</tbody>
</table>

*Figure 5.4A*

**Graphing Individual Supply**

A supply schedule and graph show how much producers of a good or service are able and willing to supply at various prices. In this case, the market has just one producer, Jasmine. When plotted on a graph, the data from Jasmine’s supply schedule form a supply curve.

- Each point on the supply curve shows the relationship between price (on the vertical axis) and quantity supplied (on the horizontal axis).
- At any point below the supply curve, Jasmine’s profit is so low that she has little motivation to increase her production.
for a big party. Jasmine is only willing to supply 300 tacos at $1.00 apiece. Her profit at that price is so low that she is not interested in producing more. At a price of $3.00, however, she is willing to supply 500 tacos to the party giver. Each of these amounts is a quantity supplied. Quantity supplied is the amount of a good or service that producers are willing and able to offer for sale at a specific price.

When we add up the quantities that Jasmine and all other taco producers are willing and able to sell at all prices, the result is supply. Supply is the amount of a good or service that producers are willing and able to offer for sale at all prices in a given period. Like demand, supply is always expressed in terms of a specific time period, such as weeks or months.

**Using a Supply Schedule to Determine One Producer’s Willingness and Ability to Sell**

A look at Jasmine’s supply schedule can help us understand how price and supply interact. A supply schedule is a table that shows the quantities supplied at different prices in a market. The individual supply schedule in Figure 5.4A shows the quantities that Jasmine will supply at different prices. At a price of $2.00, for example, Jasmine’s quantity supplied is 400 tacos. In other words, she is willing and able to offer 400 tacos for sale per week at that price. Notice that as the price increases, the quantity of tacos that Jasmine is willing and able to offer for sale also increases.

The data from Jasmine’s supply schedule are plotted on the accompanying graph. Each pair of variables from the schedule—quantity and price—is a pair of coordinates marking a point on the graph. The line formed by connecting the points is a supply curve. A supply curve shows the relationship between the price and the quantity that producers are willing and able to supply. This supply curve shows that Jasmine will offer many more tacos for sale at a price of $3.00 each than she will at a price of $0.50 each.

**Market Supply: The Sum of All Producers’ Willingness and Ability to Supply**

Jasmine’s taqueria has thus far been operating in an imaginary one-producer market. A more realistic scenario would be a market with multiple producers, each one contributing to the market supply of tacos. Market supply is the sum of all the individual quantities supplied. When economists refer to supply, they are usually talking about market supply.

Economists studying markets have several methods of determining market supply. One is to keep track of production figures—how many goods each firm in a market is producing. Another is to survey firms to find out their quantities supplied at different prices.