GLOBAL EDITION

Foundations of Microeconomics

EIGHTH EDITION

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Pearson

FOUNDATIONS OF MICROECONOMICS

delivers a complete, hands-on learning system designed around active learning.

A Learning-by-Doing Approach

The **Checklist** that begins each chapter highlights the key topics covered and the chapter is divided into sections that directly correlate to the Checklist.

The **Checkpoint** that ends each section provides a full page of practice problems to encourage students to review the material while it is fresh in their minds.

Each chapter opens with a question about a central issue that sets the stage for the material.

Why did the price of coffee rise in 2014?

4

Demand and Supply

CHAPTER CHECKLIST

When you have completed your study of this chapter, you will be able to

1 Distinguish between quantity demanded and demand, and explain what determines demand.

2 Distinguish between quantity supplied and supply, and explain what determines supply.

3 Explain how demand and supply determine price and quantity in a market, and explain the effects of changes in demand and supply.

MyLab Economics Big Picture Video

CHECKPOINT 4.1

MyLab Economics Study Plan 4.1
Key Terms Quiz
Solutions Video

Distinguish between quantity demanded and demand, and explain what determines demand.

Practice Problems

The following events occur one at a time in the market for smartphones:

- The price of a smartphone falls.
- Producers announce that the price of a smartphone will fall next month.
- The price of a call made from a smartphone falls.
- The price of a call made from a land-line phone increases.
- An increase in memory makes smartphones more popular.

1. Explain the effect of each event on the demand for smartphones.
2. Use a graph to illustrate the effect of each event.
3. Does any event (or events) illustrate the law of demand?

In the News

South Korea: Cigarette sales plummet after price hike

EYE on the PRICE OF COFFEE

MyLab Economics Critical Thinking Exercise

Why Did the Price of Coffee Rise in 2014?

When a fungus called coffee rust swept through Brazil and other countries of South America in 2014, world coffee production decreased and the price of coffee beans increased.

The table below provides some data on the quantity and price of coffee in 2013 and 2014. What does the data table tell us?

It tells us that the quantity of coffee

You can answer this question from the information provided. You know that an increase in demand brings a rise in the price and an increase in the quantity bought, while a decrease in supply brings a rise in the price and a decrease in the quantity bought.

Because the quantity of coffee decreased and the price increased, there must have been a decrease in the sup-

The figure illustrates the global market for coffee in 2013 and 2014. The demand curve D shows the demand for coffee, which we will assume was the same in both years.

In 2013, the supply curve was S_{2013}, the equilibrium price was $1.04 per pound and the equilibrium quantity traded was 19.4 billion pounds.

In 2014, decreased coffee produc-

Eye On boxes apply theory to important issues and problems that shape our global society and individual decisions.

Confidence-Building Graphs

use color to show the direction of shifts and detailed, numbered captions guide students step-by-step through the action.

100% of the figures are animated in MyLab Economics, with step-by-step audio narration.

FIGURE 4.4

Change in Quantity Demanded Versus Change in Demand

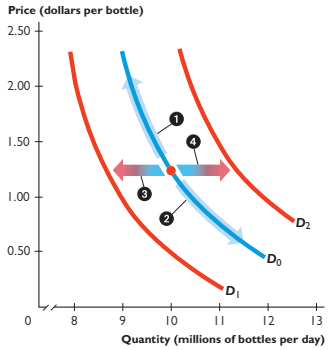
MyLab Economics Animation

1 A decrease in the quantity demanded
The quantity demanded decreases and there is a movement up along the demand curve D_0 if the price of the good rises and other things remain the same.

3 A decrease in demand
Demand decreases and the demand curve shifts leftward (from D_0 to D_1) if

- The price of a substitute falls or the price of a complement rises.
- The price of the good is expected to fall.
- Income decreases.*
- Expected future income or credit decreases.
- The number of buyers decreases.

* Bottled water is a normal good.



2 An increase in the quantity demanded
The quantity demanded increases and there is a movement down along the demand curve D_0 if the price of the good falls and other things remain the same.

4 An increase in demand
Demand increases and the demand curve shifts rightward (from D_0 to D_2) if

- The price of a substitute rises or the price of a complement falls.
- The price of the good is expected to rise.
- Income increases.
- Expected future income or credit increases.
- The number of buyers increases.

to the first to arrive at the on-ramp. If too many vehicles enter the freeway, the speed slows and people, in effect, wait in line for a bit of the "freeway" to become free!

First-come, first-served works best when, as in the above examples, a scarce resource can serve just one user at a time in a sequence. By serving the user who arrives first, this method minimizes the time spent waiting in line for the resource to become free.

Sharing allocates resources by mutual agreement.

Sharing Equally

When a resource is shared equally, everyone gets the same amount of it. You perhaps use this method to share dessert at a restaurant. People sometimes jointly own a vacation apartment and share its use equally.

To make equal shares work, people must agree on how to use the resource and must make an arrangement to implement the agreement. Sharing equally can work for small groups who share a set of common goals and ideals.

A lottery allocates resources to the one who draws the winning number.

Lottery

Lotteries allocate resources to those who pick the winning number, draw the lucky cards, or come up lucky on some other gaming system. State lotteries and casinos reallocate millions of dollars' worth of goods and services every year.

But lotteries are far more widespread than state jackpots and roulette wheels in casinos. They are used in a variety of situations to allocate scarce resources. For example, the Lawn Tennis Association operates ballots and draws to allocate Wimbledon tickets and some airports use them to allocate landing slots to airlines.

Lotteries work well when there is no effective way to distinguish among potential users of a scarce resource.

Personal characteristics allocate resources based on whom we like.

Personal Characteristics

When resources are allocated on the basis of personal characteristics, people with the "right" characteristics get the resources. Some of the resources that matter most to you are allocated in this way. The people you like are the ones you spend the most time with. You try to avoid having to spend time with people you don't like. People choose marriage partners on the basis of personal characteristics. The use of personal characteristics to allocate resources is regarded as completely natural and acceptable.

But this method also gets used in unacceptable ways. Allocating the best jobs to white, Anglo-Saxon males and discriminating against minorities and women is an example.

Force protects the rule of law and facilitates economic activity.

Force

Force plays a crucial role, for both good and ill, in allocating scarce resources. Let's start with the ill.

War, the use of military force by one nation against another, has played an enormous role historically in allocating resources. The economic supremacy of European settlers in the Americas and Australia owes much to the use of this method.

Theft, the taking of the property of others without their consent, also plays a large role. Both large-scale organized crime and small-scale petty crime collectively allocate billions of dollars' worth of resources annually. A large amount of

theft today is conducted by using sophisticated electronic methods that move resources from banks and also from thousands of innocent people.

But force plays a crucial positive role in allocating resources. It provides an effective method for the government to transfer wealth from the rich to the poor and is the legal framework in which voluntary exchange in markets takes place.

Most income and wealth redistribution in modern societies occurs through a taxation and benefits system that is enforced by the power of the state. We vote for taxes and benefits—a majority vote allocation—but we use the power of the state to ensure that everyone complies with the rules and pays their allotted share.

A legal system is the foundation on which our market economy functions. Without courts to enforce contracts, it would be difficult to do business. But the courts could not enforce contracts without the ability to apply force if necessary. The state provides the ultimate force that enables the courts to do their work.

More broadly, the force of the state is essential to uphold the principle of the *rule of law.* This principle is the bedrock of civilized economic (and social and political) life. With the rule of law upheld, people can go about their daily economic lives with the assurance that their property will be protected—that they can sue for violations of their property (and be sued if they violate the property of others).

Free from the burden of protecting their property and confident in the knowledge that those with whom they trade will honor their agreements, people can get on with focusing on the activity at which they have a comparative advantage and trading for mutual gain.

In the next sections of this chapter, we're going to see how a market achieves an efficient use of resources, examine obstacles to efficiency, and see how sometimes, an alternative method might improve on the market. But first we need to be clear about the meaning of efficiency. What are the characteristics of an efficient allocation of resources?

Using Resources Efficiently

MyLab Economics Concept Video

In everyday language, *efficiency* means getting the most out of something. An efficient automobile is one that gets the best possible gas mileage; an efficient furnace is one that uses as little fuel as possible to deliver its heat. In economics, efficiency means getting the most out of the entire economy.

Efficiency and the *PPF*

The *production possibilities frontier* (*PPF*) is the boundary between the combinations of goods and services that can be produced and those that cannot be produced given the available factors of production and state of technology (p. 98). Production is efficient when the economy is *on* its *PPF* (Chapter 3, pp. 100–101). Production at a point *inside* the *PPF* is *inefficient.*

Allocative efficiency is achieved when the quantities of goods and services produced are those that people *value most highly.* To put it another way, resources are allocated efficiently when we cannot produce more of one thing without giving up something else *that people value more highly.* If we can give up some units of one good to get more of something that is *valued more highly*, we haven't achieved the most valued point on the *PPF*.

Allocative efficiency
A situation in which the quantities of goods and services produced are those that people *value most highly*—it is not possible to produce more of a good or service without giving up some of another good that people *value more highly*.

The *PPF* tells us what it is *possible* to produce but it doesn't tell us about the *value* of what we produce. To find the *highest-valued* point on the *PPF*, we need some information about value. *Marginal benefit* provides that information.

Marginal Benefit

Marginal benefit is the benefit that people receive from consuming *one more unit* of a good or service. People's *preferences* determine marginal benefit and we can measure the marginal benefit from a good or service by what people *are willing to* give up to get *one more* unit of it.

The more we have of any good or service, the smaller is our marginal benefit from it—*the principle of decreasing marginal benefit*. Think about your own marginal benefit from pizza. You really enjoy the first slice. A second slice is fine, too, but not quite as satisfying as the first one. But eat three, four, five, six, and more slices, and each additional slice is less enjoyable than the previous one. You get diminishing marginal benefit from pizza. The more pizza you have, the less of some other good or service you are willing to give up to get one more slice.

Figure 6.1 illustrates the economy's marginal benefit schedule and marginal benefit curve for pizza. The schedule and curve show the same information. In the schedule and on the curve, the quantity of other goods that people *are willing to give up* to get one more pizza *decreases* as the quantity of pizza available *increases*.

Marginal Cost

To achieve allocative efficiency, we must compare the marginal benefit from pizza with its marginal cost. *Marginal cost* is the opportunity cost of producing one more unit of a good or service (see p. 48) and is measured by the slope of the production possibilities frontier (see pp. 104–105). The marginal cost of a good increases as the quantity produced of that good increases.

FIGURE 6.1

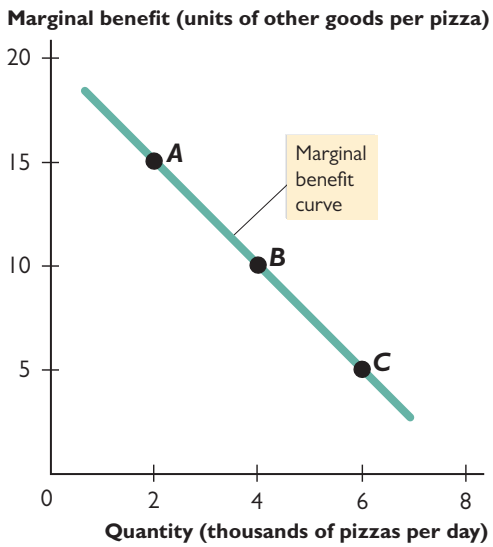
Marginal Benefit from Pizza

MyLab Economics Animation

The table and the graph show the marginal benefit from pizza.

Possibility *A* and point *A* tell us that if 2,000 pizzas a day are produced, people are willing to give up 15 units of other goods for a pizza. Each point *A*, *B*, and *C* on the graph represents the possibility in the table identified by the same letter.

The line passing through these points is the marginal benefit curve. The marginal benefit from pizza decreases as the quantity of pizza available increases.



Quantity (thousands of pizzas per day)	2	4	6
Willingness to give up (units of other goods per pizza)	15	10	5
Possibility	*A*	*B*	*C*

Figure 6.2 illustrates the economy's marginal cost schedule and marginal cost curve. In the schedule and along the curve, which show the same information, the quantity of other goods that people *must give up* to get one more pizza *increases* as the quantity of pizza produced *increases*.

We can now use the concepts of marginal benefit and marginal cost to discover the efficient quantity of pizza to produce.

Efficient Allocation

The efficient allocation is the highest-valued allocation. To find this allocation, we compare marginal benefit and marginal cost.

If the marginal benefit from pizza exceeds its marginal cost, we're producing too little pizza (and too many units of other goods). If we increase the quantity of pizza produced, we incur a cost but receive a larger benefit from the additional pizza. Our allocation of resources becomes more efficient.

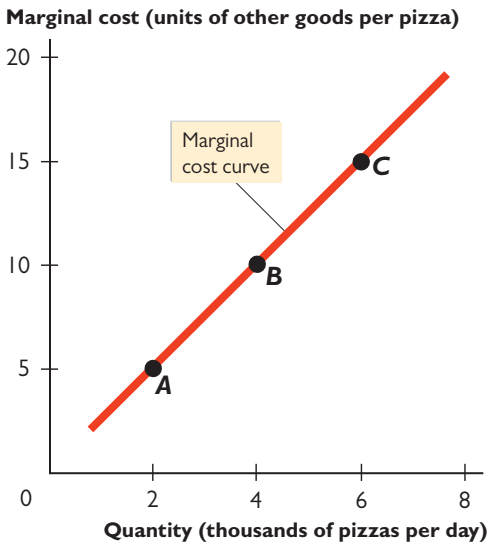
If the marginal cost of pizza exceeds its marginal benefit, we're producing too much pizza (and too little of other goods). Now if we decrease the quantity of pizza produced, we receive a smaller benefit from pizza but save an even greater cost of pizza. Again, our allocation of resources becomes more efficient.

Only when the marginal benefit and marginal cost of pizza are equal are we allocating resources efficiently. Figure 6.3 on the next page illustrates this efficient allocation and provides a graphical summary of the above description of allocative efficiency.

FIGURE 6.2

Marginal Cost of Pizza

MyLab Economics Animation



Quantity (thousands of pizzas per day)	2	4	6
Must give up (units of other goods per pizza)	5	10	15
Possibility	*A*	*B*	*C*

The table and the graph show the marginal cost of a pizza. Marginal cost is the opportunity cost of producing one more unit. It is derived from the *PPF* and is measured by the slope of the *PPF*.

Points *A*, *B*, and *C* on the graph represent the possibilities in the table. The marginal cost curve shows that the marginal cost of a pizza increases as the quantity of pizza produced increases.

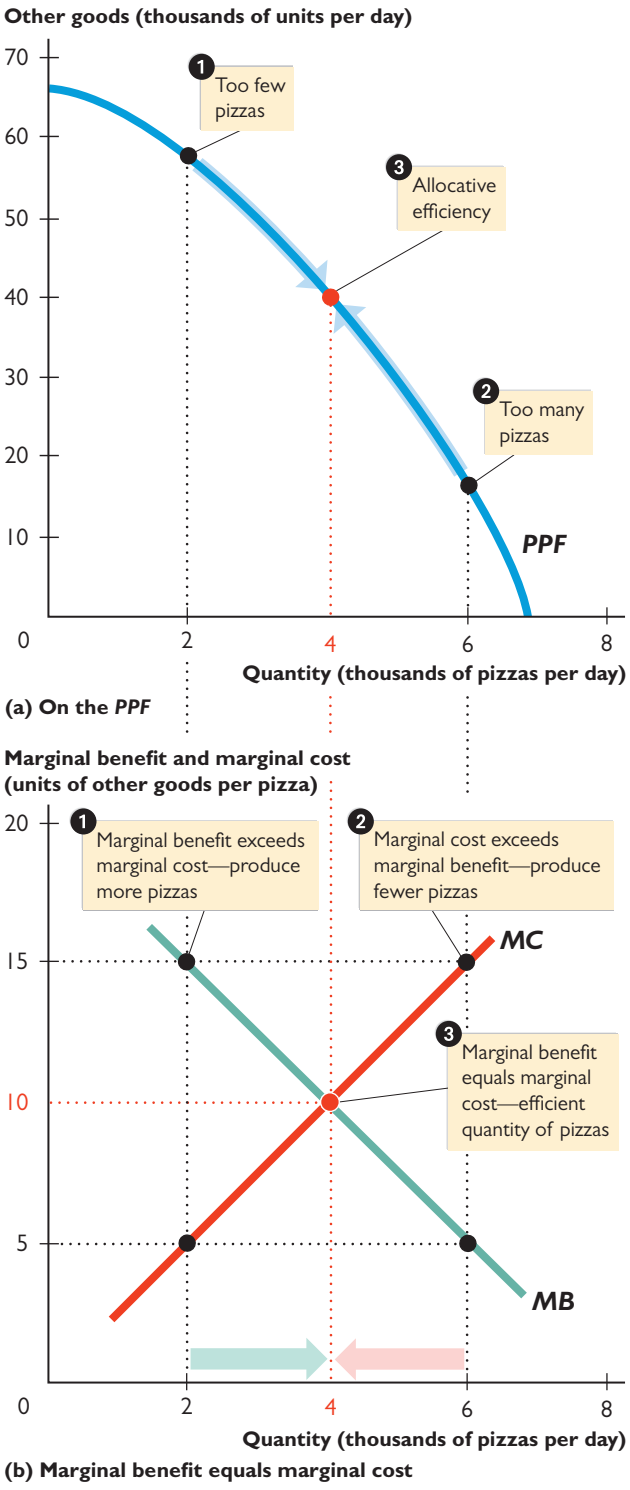
FIGURE 6.3

The Efficient Quantity of Pizza

MyLab Economics Animation

Production efficiency occurs at all points on the *PPF*, but *allocative efficiency* occurs at only one point on the *PPF*.

1. When 2,000 pizzas are produced in part (a), the marginal benefit from pizza exceeds its marginal cost in part (b). Too few pizzas are being produced. If more pizzas and fewer other goods are produced, the value of production increases and resources are used more efficiently.
2. When 6,000 pizzas are produced in part (a), the marginal cost of a pizza exceeds its marginal benefit in part (b). Too many pizzas are being produced. If fewer pizzas and more other goods are produced, the value of production increases and resources are used more efficiently.
3. When 4,000 pizzas a day are produced in part (a), the marginal cost of a pizza equals its marginal benefit in part (b). The efficient quantity of pizzas is being produced. It is not possible to get greater value from the economy's scarce resources. If one less pizza and more other goods are produced, the value of the lost pizza exceeds the value of the additional other goods, so total value falls. And if one more pizza and fewer other goods are produced, the value of the gained pizza is less than the value of the lost other goods, so again total value falls.



CHECKPOINT 6.1

MyLab Economics Study Plan 6.1
Key Terms Quiz
Solutions Video

Describe the alternative methods of allocating scarce resources, and define and explain the features of an efficient allocation.

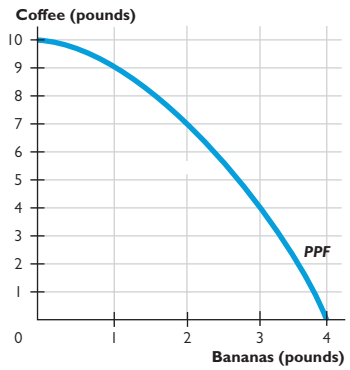
Practice Problems

1. Which method is used to allocate the following scarce resources?
   - Campus parking space between student areas and faculty areas
   - A spot in a restricted student parking area
   - Textbooks
   - Host city for the Olympic Games

Use Figure 1, which shows a nation's *PPF*, and Table 1, which shows its marginal benefit and marginal cost schedules, to work Problems **2** and **3**.

2. What is the marginal benefit from bananas when 1 pound of bananas is grown? What is the marginal cost of growing 1 pound of bananas?
3. On Figure 1, mark two points: Point *A* at which production is efficient but too much coffee is produced for allocative efficiency; and point *B*, the point of allocative efficiency.

FIGURE 1



In the News

Dismaland: First come-first served queue at Banksy show

Due to unprecedented demand, Dismaland was unable to process online tickets to a new Banksy show. Tickets for Saturday and Sunday, costing $3, would only be available on the door and to be purchased only on a first-come, first-served basis. According to the organizers, the site has capacity for 2,000 people, and after that is reached, it will be one in, one out.

Source: *BBC*, August 22, 2015

What methods were used to allocate Banksy show tickets? Suppose the people who get a ticket sell it at a higher price to someone else. Would the allocation be efficient?

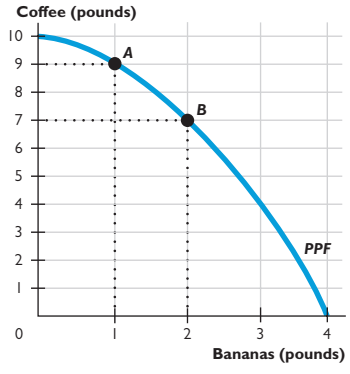
TABLE 1 MARGINAL BENEFIT AND MARGINAL COST

Bananas (pounds)	Willing to give up (pounds of coffee per pound of bananas)	Must give up (pounds of coffee per pound of bananas)
1	3	1
2	2	2
3	1	3

Solutions to Practice Problems

1. Campus parking is allocated by command. The spot in a restricted student parking area is allocated by first-come, first-served. Textbooks are allocated by market price. The Olympic Games' host city is allocated by contest.
2. The marginal benefit from 1 pound of bananas is 3 pounds of coffee. Marginal benefit is the amount of coffee that the nation is *willing to give up* to get *one additional* pound of bananas. The marginal cost of growing 1 pound of bananas is 1 pound of coffee. Marginal cost is the amount of coffee that the nation *must give up* to get *one additional* pound of bananas.
3. Point *A* on Figure 2 shows production efficiency (on the *PPF*) but not allocative efficiency because from Table 1 marginal benefit from bananas exceeds the marginal cost—too few bananas are produced. Point *B* is the point of allocative efficiency: It is on the *PPF* and marginal benefit equals marginal cost.

FIGURE 2



Solution to In the News

The first method used was market price. People who get the tickets are those who are willing and able to pay $3 for a ticket. The other allocation used was first-come, first-served at the revenue. Supposing people who gets a ticket sell it higher to someone else, the allocation wouldn't be efficient because the market price would be higher than the organizer's marginal cost. Only if the market price equals the organizer's marginal cost is the allocation of tickets efficient.