Module 2

Models and the Circular Flow

Module Objectives

Students will learn in this module:

- Why models are an important tool in the study of economics.
- How to interpret the circular-flow diagram of the economy.
- How individual decisions affect the larger economy.

Module Outline

Opening Example: The Wright Brothers created a wind tunnel to test models of airplanes. Testing models is cheaper and safer than building full-scale versions. Economists use models in the same way.

I. Models Take Flight in Economics

A. *Definition:* A **model** is a simplified representation of a real situation that is used to better understand real-life situations.

B. Models allow economists to see the effects of only one change at a time.

C. *Definition:* The **other things equal assumption** means that all other relevant factors remain unchanged.

D. Economic models make use of mathematical tools, especially graphs.

II. The Circular-Flow Diagram

A. *Definition:* The **circular-flow diagram** is a model that represents the transactions in an economy by flows around a circle.

B. *Definition:* A **household** is a person or a group of people who share their income.

C. *Definition:* A **firm** is an organization that produces goods and services for sale.

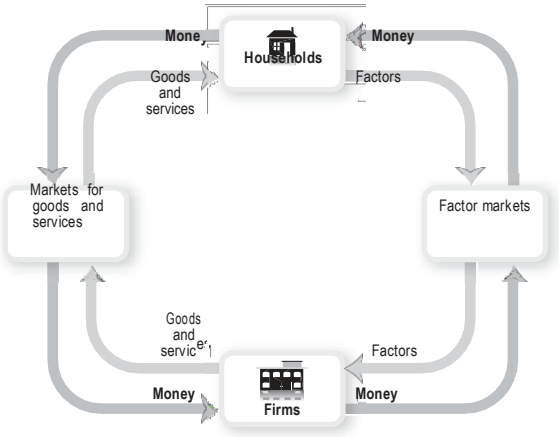
D. *Definition:* **Product markets** are where goods and services are bought and sold.

E. *Definition:* **Factor markets** are where resources, especially capital and labor, are bought and sold.

F. The circular-flow diagram is a simplified picture of an economy, as demon-

strated in text Figure 2-1, shown here.

Circular-Flow Diagram



G. The circular-flow diagram can help us understand how the economy manages to provide jobs for a growing population.

1. The number of jobs isn't fixed, because it depends on how much households spend; the amount households spend depends on how many people are working.

H. The circular flow diagram shows what goes around comes around. One person's spending is another person's income.

Teaching Tips

Models Take Flight in Economics

Creating Student Interest

Ask students why economists (and economics students) use simplified models. (Because the real world is too complex to consider everything at once. You want to use a more complicated model only if the benefits of added understanding exceed the costs of added difficulty and complexity).

Construct a paper airplane during class. When you are finished, ask the students what you have made. Give your airplane a test flight. Have the class identify the ways the paper airplane is like a real airplane (for instance, it has wings, it flew). If they have trouble, remind them that they knew what it was, so there must have been some things in common! Have the class identify the ways it is not like a real airplane (size, weight, other details, it did not fly). The paper airplane can help an aerodynamics student learn the basic principles of flight (without the complexity of a 747), just as economic models can help students learn about the basic principles of economics. As understanding increases, so can the complexity of the models used.

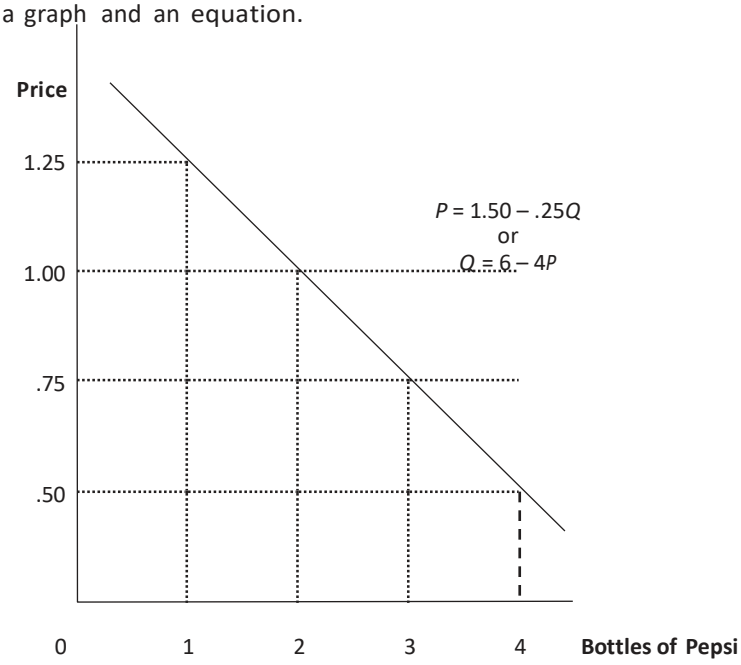
An alternative to the paper airplane example is a simple "smiley face" drawn on the board or an emoticon used in text messages, :) or ☺. Use these representations to have the same discussion with students. How is the image like a real smiling face and how is it different? Why is it so useful in text messaging? (It is simplified and we all know what it means.) How might the level of complexity be increased for the smiley face model? (Add ears, hair.)

Presenting the Material

After introducing the idea of a model as a simplified representation of reality (airplane or smiley face), segue into models in economics by asking students how they think economists represent reality. Try to get students to identify types of economic models. Help them by asking what representations they see when looking through their textbook. They should be able to identify tables, graphs, and equations as representations of economic models.

Explain that in later modules they will learn the law of demand. Ask them what happens to the amount of a good that they purchase when its price rises. Most students will know that people buy less when the price rises and buy more when the price falls. The concept will be easy for them to understand (they don't need an economics course to figure out the law of demand!). Tell the students that they already know an important economic "law." Show them how economists model (represent) the law of demand using a demand schedule, a graph and an equation.

Bottles of Pepsi	
Price	**Quantity Purchased**
\$0.50	4
\$0.75	3
\$1.00	2
\$1.25	1



The Circular-Flow Diagram

Creating Student Interest

Use the example of a dollar in your pocket. Explain where the dollar came from (it came from your bank account, it was put there by a direct deposit from your university). Consider where the dollar will go (you will buy lunch and leave it as a tip, it will become income for a waitress and then she will have money to spend). Ask students to think about the last dollar they spent. Where did it come from and where did it go?

Presenting the Material

Identify and define the two major components of the diagram first: households and firms. Then draw in the upper loop—the spending loop—of the circular-flow model. Use a concrete example of their spending money on clothes at a local store. Then add the bottom loop of the model, the factor market. Use a concrete example of their earning wages from a job.

Use your ample artistic skills to draw a house on the left side of the board and a factory on the right. Tell the class these represent *households* and *firms*. Create the circular-flow diagram by asking students the following series of questions. (It will help some students to see the step-by-step construction of the diagram in addition to the completed diagram in the text.)

What do households get from the firms (goods and services). Draw an arrow above the pictures from the firm to the households and label it "goods and services."

What do the firms get in exchange for the goods and services? (payment/money). Draw a line above the pictures back from the households to the firm and label it "$."

What do the households provide to the firms? (Workers/labor—add that they provide the other resources also.) Draw a line below the pictures from the household to the firm and label it "resources."

What do the households get from the firm in return for their labor/resources? (Payments—wages, rent, interest, profit.) Draw a line below the pictures back from the firm to the households and label it "wages, rent, interest, profit."

Point out that the top flow is the *product market* (market for products) and the bottom flow is the *factor market* (market for factors of production). You may want to link changes in the size of the flows to the business cycle discussed in Module 1. During expansions, the flow increases; during recessions, it decreases.

Case Studies in the Text

Economics in Action

The Model that Ate the Economy—This EIA discusses a financial model that incorrectly calculated the risk associated with purchasing mortgage-backed securities and contributed to the financial meltdown during 2008–2009.

Activities

Tracing the Circular Flow (5–10 minutes)

Pair students and tell them they will trace the following events through the circular flow: (a) the introduction of a new technology which boosts productivity; (b) the decision of consumers to save more money; and (c) an increase in government spending.

Simulating the Circular Flow (15–30 minutes)

In a lecture, add banks, government, and exports and imports to the circular flow. Divide the class into the following groups: households, firms, workers, sellers of raw materials, sellers of capital goods, banks, exporters, and importers. Introduce an event into this hypothetical economy: consumers decide to spend more money and save less. Give this event card to the household group. Have this group write down how it will affect them and pass it on to the next group they feel will be most immediately affected. The next group writes down its impact on them and passes it on. Make sure the event passes to each group. Have one group use the circular-flow diagram to illustrate on the board how the event affected the economy.

section 2

Supply and Demand

1. A survey indicated that chocolate ice cream is America's favorite ice-cream flavor. For each of the following, indicate the possible effects on the demand and/or supply, equilibrium price, and equilibrium quantity of chocolate ice cream.

a. A severe drought in the Midwest causes dairy farmers to reduce the number of milk-producing cows in their herds by a third. These dairy farmers supply cream that is used to manufacture chocolate ice cream.

b. A new report by the American Medical Association reveals that chocolate does, in fact, have significant health benefits.

c. The discovery of cheaper synthetic vanilla flavoring lowers the price of vanilla ice cream.

d. New technology for mixing and freezing ice cream lowers manufacturers' costs of producing chocolate ice cream.

Solution

1. a. By reducing their herds, dairy farmers reduce the supply of cream, a leftward shift of the supply curve for cream. As a result, the market price of cream rises, raising the cost of producing a unit of chocolate ice cream. This results in a leftward shift of the supply curve for chocolate ice cream as ice-cream producers reduce the quantity of chocolate ice cream supplied at any given price. Ultimately, this leads to a rise in the equilibrium price and a fall in the equilibrium quantity of chocolate ice cream.

b. Consumers will now demand more chocolate ice cream at any given price, represented by a rightward shift of the demand curve. As a result, both equilibrium price and quantity rise.

c. The price of a substitute (vanilla ice cream) has fallen, leading consumers to substitute it for chocolate ice cream. The demand for chocolate ice cream decreases, represented by a leftward shift of the demand curve. Both equilibrium price and quantity fall.

d. Because the cost of producing ice cream falls, manufacturers are willing to supply more units of chocolate ice cream at any given price. This is represented by a rightward shift of the supply curve and results in a fall in the equilibrium price and a rise in the equilibrium quantity of chocolate ice cream.

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2. In a supply and demand diagram, draw the change in demand for hamburgers in your hometown due to the following events. In each case show the effect on equilibrium price and quantity.

a. The price of tacos increases.

b. All hamburger sellers raise the price of their french fries.

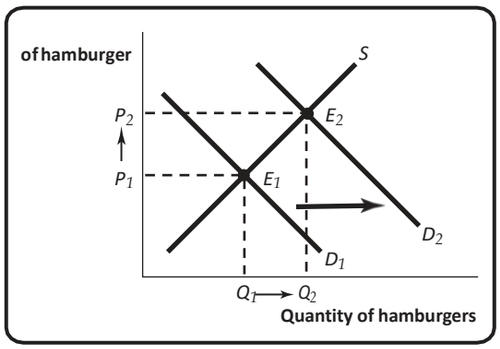
c. Income falls in town. Assume that hamburgers are a normal good for most people.

d. Income falls in town. Assume that hamburgers are an inferior good for most people.

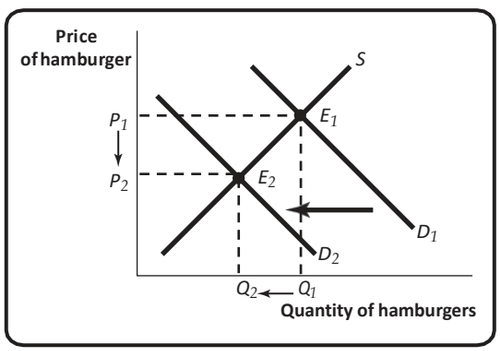
e. Hot dog stands cut the price of hot dogs.

Solution

2. **a.** A rise in the price of a substitute (tacos) causes the demand for hamburgers to increase. This represents a rightward shift of the demand curve from D_1 to D_2 and results in a rise in the equilibrium price and quantity as the equilibrium changes from E_1 to E_2.

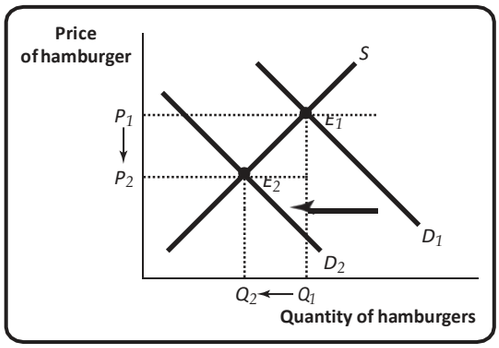


b. A rise in the price of a complement (french fries) causes the demand for hamburgers to decrease. This represents a leftward shift of the demand curve from D_1 to D_2 and results in a fall in the equilibrium price and quantity as the equilibrium changes from E_1 to E_2.

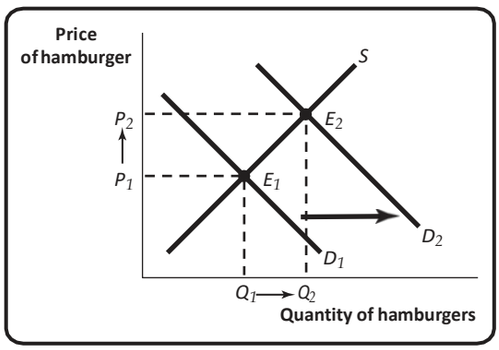


SUPPLY AND DEMAND **SECTION 2** S-13

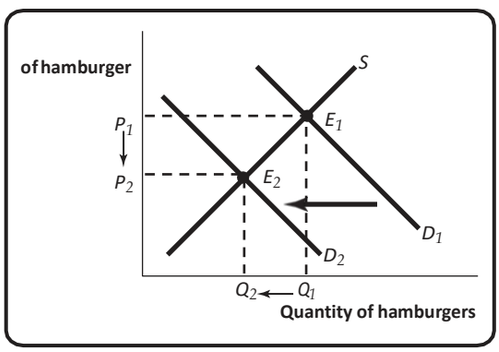
c. A fall in income causes the demand for a normal good (hamburgers) to decrease. This represents a leftward shift of the demand curve from D_1 to D_2 and results in a fall in the equilibrium price and quantity as the equilibrium changes from E_1 to E_2.



d. A fall in income causes the demand for an inferior good (hamburgers) to increase. This represents a rightward shift of the demand curve from D_1 to D_2 and results in a rise in the equilibrium price and quantity as the equilibrium changes from E_1 to E_2.



e. A fall in the price of a substitute (hot dogs) causes demand for hamburgers to decrease. This is represented by a leftward shift of the demand curve from D_1 to D_2 and results in a fall in the equilibrium price and quantity as the equilibrium changes from E_1 to E_2.



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3. The market for many goods changes in predictable ways according to the time of year, in response to events such as holidays, vacation times, seasonal changes in production, and so on. Using supply and demand, explain the change in price in each of the following cases. Note that supply and demand may shift simultaneously.

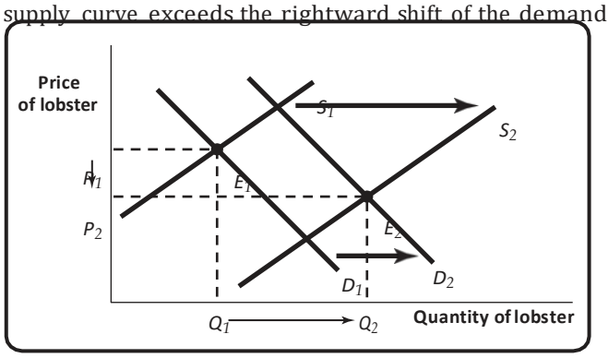
a. Lobster prices usually fall during the summer peak harvest season, despite the fact that people like to eat lobster during the summer months more than during any other time of year.

b. The price of a Christmas tree is lower after Christmas than before and fewer trees are sold.

c. The price of a round-trip ticket to Paris on Air France falls by more than $200 after the end of school vacation in September. This happens despite the fact that generally worsening weather increases the cost of operating flights to Paris, and Air France therefore reduces the number of flights to Paris at any given price.

Solution

3. **a.** There is a rightward shift of the demand curve from D_1 to D_2 during the summer, as consumers prefer to eat more lobster during the summer than at other times of the year. All other things being equal, this leads to a rise in the price of lobster. Simultaneously, lobster fishermen produce more lobster during the summer peak harvest time, when it is cheaper to harvest lobster, representing a rightward shift of the supply curve of lobster from S_1 to S_2. All other things being equal, this leads to a fall in the price of lobster. Given the simultaneous rightward shifts of both the demand and supply curves, the equilibrium changes from E_1 to E_2. The fall in price indicates that the rightward shift of the supply curve exceeds the rightward shift of the demand curve.



b. There is a leftward shift of the demand curve for Christmas trees after Christmas from D_1 to D_2, as fewer consumers want Christmas trees at any given price. The reduction in the quantity of trees supplied is a movement

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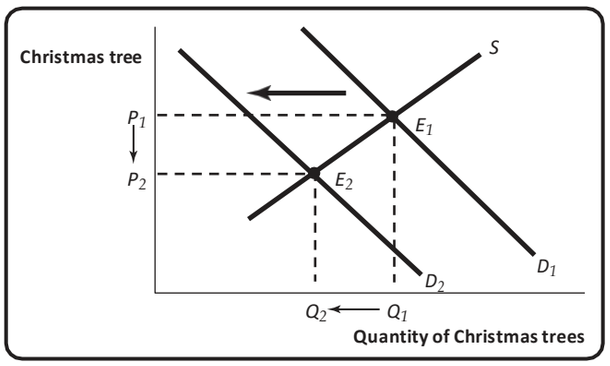
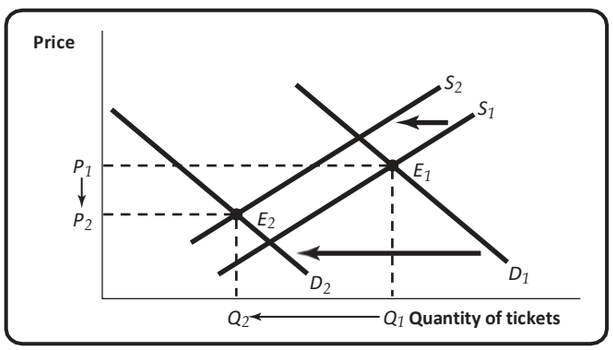
along the supply curve. This leads to a fall in the equilibrium price and quantity, as the equilibrium changes from E_1 to E_2.



c. There is a leftward shift of the demand curve for tickets to Paris in September, after the end of school vacation, from D_1 to D_2. All other things being equal, this leads to a fall in the price of tickets. At the same time, as the cost of operating flights increases, Air France decreases the number of flights, shifting the supply curve leftward from S_1 to S_2. All other things being equal, this leads to a rise in price. Given the simultaneous leftward shifts of both the demand and supply curves, the equilibrium changes from E_1 to E_2. The fall in price indicates that the leftward shift of the demand curve exceeds the leftward shift of the supply curve.



4. Show in a diagram the effect on the demand curve, the supply curve, the equilibrium price, and the equilibrium quantity of each of the following events on the designated market.

a. the market for newspapers in your town

Case 1: The salaries of journalists go up.

Case 2: There is a big news event in your town, which is reported in the newspapers, and residents want to learn more about it.

b. the market for St. Louis Rams cotton T-shirts

Case 1: The Rams win the championship.

Case 2: The price of cotton increases.

c. the market for bagels

Case 1: People realize how fattening bagels are.

Case 2: People have less time to make themselves a cooked breakfast.

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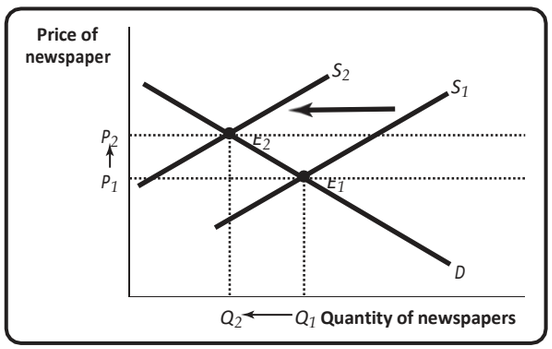
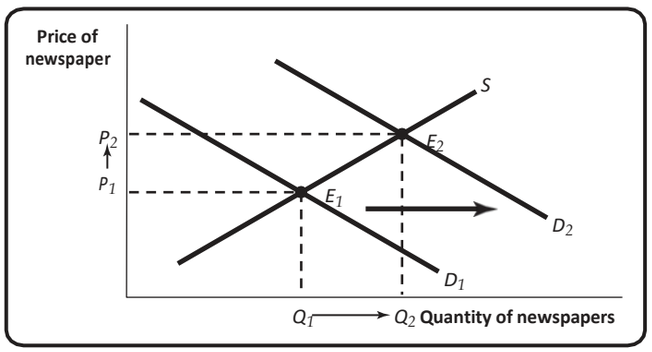
Solution

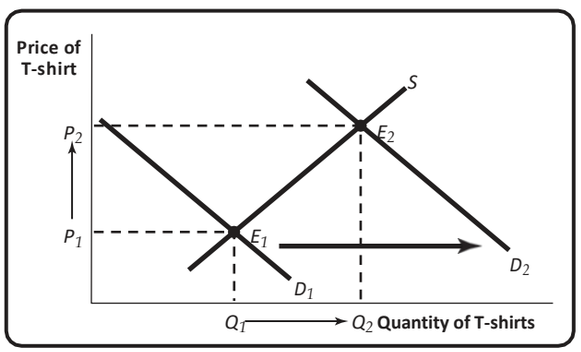
4. **a.** Case 1: Journalists are an input in the production of newspapers; an increase in their salaries will cause newspaper publishers to reduce the quantity supplied at any given price. This represents a leftward shift of the supply curve from S_1 to S_2 and results in a rise in the equilibrium price and a fall in the equilibrium quantity as the equilibrium changes from E_1 to E_2.



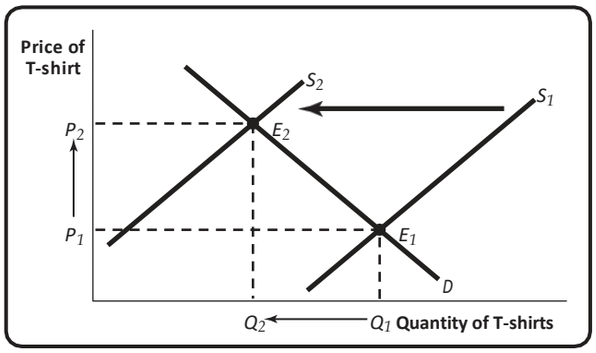
Case 2: Townspeople will wish to purchase more newspapers at any given price. This represents a rightward shift of the demand curve from D_1 to D_2 and leads to a rise in both the equilibrium price and quantity as the equilibrium changes from E_1 to E_2.



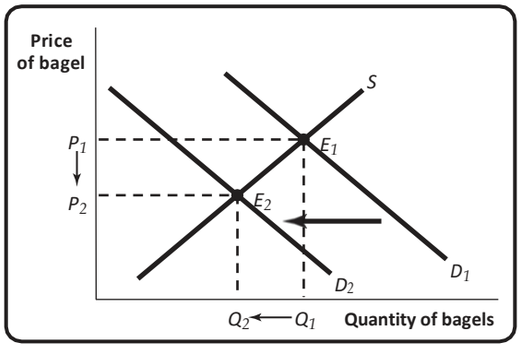
b. Case 1: Fans will demand more St. Louis Rams memorabilia at any given price. This represents a rightward shift of the demand curve from D_1 to D_2 and leads to a rise in both the equilibrium price and quantity as the equilibrium changes from E_1 to E_2.



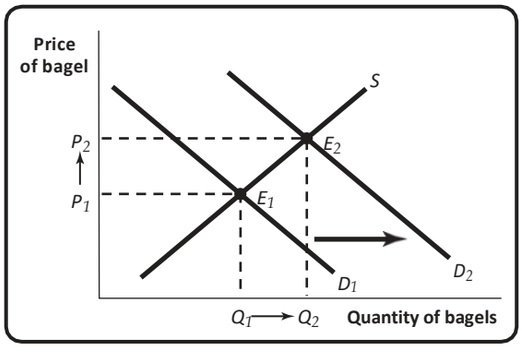
Case 2: Cotton is an input into T-shirts; an increase in its price will cause T-shirt manufacturers to reduce the quantity supplied at any given price, representing a leftward shift of the supply curve from S_1 to S_2. This leads to a rise in the equilibrium price and a fall in the equilibrium quantity as the equilibrium changes from E_1 to E_2.



c. Case 1: Consumers will demand fewer bagels at any given price. This represents a leftward shift of the demand curve from D_1 to D_2 and leads to a fall in both the equilibrium price and quantity as the equilibrium changes from E_1 to E_2.



Case 2: Consumers will demand more bagels (a substitute for cooked breakfasts) at any given price. This represents a rightward shift of the demand curve from D_1 to D_2 and leads to a rise in both the equilibrium price and quantity as the equilibrium changes from E_1 to E_2.



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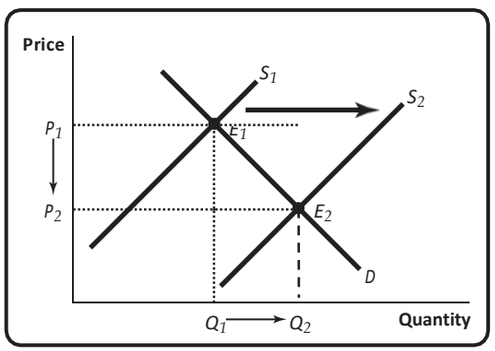
5. Find the flaws in reasoning in the following statements, paying particular attention to the distinction between changes in and movements along the supply and demand curves. Draw a diagram to illustrate what actually happens in each situation.

a. "A technological innovation that lowers the cost of producing a good might seem at first to result in a reduction in the price of the good to consumers. But a fall in price will increase demand for the good, and higher demand will send the price up again. It is not certain, therefore, that an innovation will really reduce price in the end."

b. "A study shows that eating a clove of garlic a day can help prevent heart disease, causing many consumers to demand more garlic. This increase in demand results in a rise in the price of garlic. Consumers, seeing that the price of garlic has gone up, reduce their demand for garlic. This causes the demand for garlic to decrease and the price of garlic to fall. Therefore, the ultimate effect of the study on the price of garlic is uncertain."

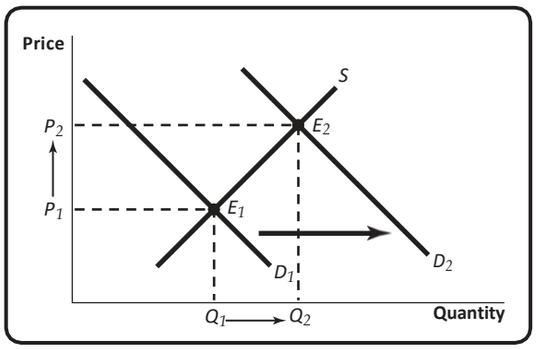
Solution

5. **a.** This statement confuses a shift of a curve with a movement along a curve. A technological innovation lowers the cost of producing the good, leading producers to offer more of the good at any given price. This is represented by a rightward shift of the supply curve from S_1 to S_2. As a result, the equilibrium price falls and the equilibrium quantity rises, as shown by the change from E_1 to E_2. The statement "but a fall in price will increase demand for the good, and higher demand will send the price up again" is wrong for the following reasons. A fall in price does increase the quantity demanded and leads to an increase in the equilibrium quantity as one moves down along the demand curve. But it does not lead to an increase in demand—a rightward shift of the demand curve—and therefore does not cause the price to go up again.



b. This statement also confuses a shift of a curve with a movement along a curve. The health report generates an increase in demand—a rightward shift of the demand curve from D_1 to D_2. This leads to a higher equilibrium price and quantity as we move up along the supply curve, and the equilibrium changes from E_1 to E_2. The following statements are wrong: "Consumers, seeing that

the price of garlic has gone up, reduce their demand for garlic. This causes the demand for garlic to decrease and the price of garlic to fall." They are wrong because they imply that the rise in the equilibrium price causes the demand for garlic to decrease—a leftward shift of the demand curve. But a rise in the equilibrium price via a movement along the supply curve does not cause the demand curve to shift leftward.



6. In *Rolling Stone* magazine, several fans and rock stars, including Pearl Jam, were bemoaning the high price of concert tickets. One superstar argued, "It just isn't worth $75 to see me play. No one should have to pay that much to go to a concert." Assume this star sold out arenas around the country at an average ticket price of $75.

a. How would you evaluate the argument that ticket prices are too high?

b. Suppose that due to this star's protests, ticket prices were lowered to $50. In what sense is this price too low? Draw a diagram using supply and demand curves to support your argument.

c. Suppose Pearl Jam really wanted to bring down ticket prices. Since the band controls the supply of its services, what do you recommend they do? Explain using a supply and demand diagram.

d. Suppose the band's next CD was a total dud. Do you think they would still have to worry about ticket prices being too high? Why or why not? Draw a supply and demand diagram to support your argument.

e. Suppose the group announced their next tour was going to be their last. What effect would this likely have on the demand for and price of tickets? Illustrate with a supply and demand diagram.

Solution

6. **a.** If markets are competitive, the ticket price is simply the equilibrium price: the price at which quantity supplied is equal to quantity demanded. No one is "made" to pay $75 to go to a concert: a potential concert-goer will pay $75 if going to the concert seems worth that amount and will choose to do something else if it isn't.

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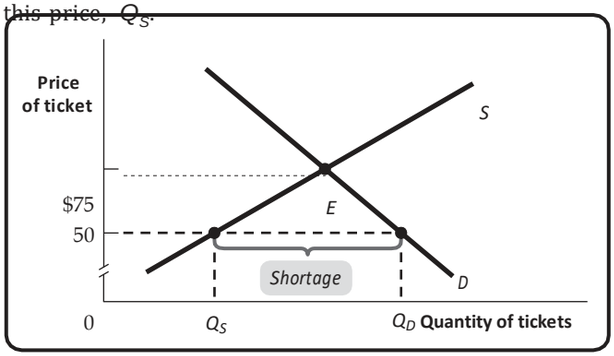
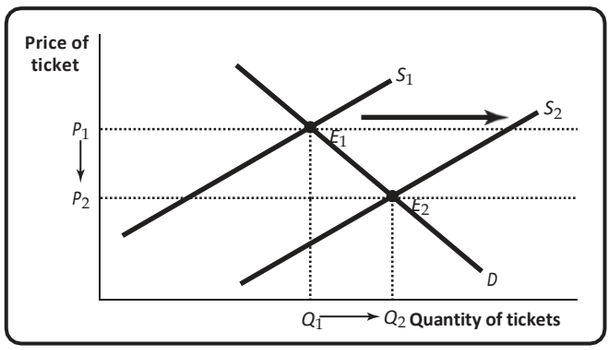
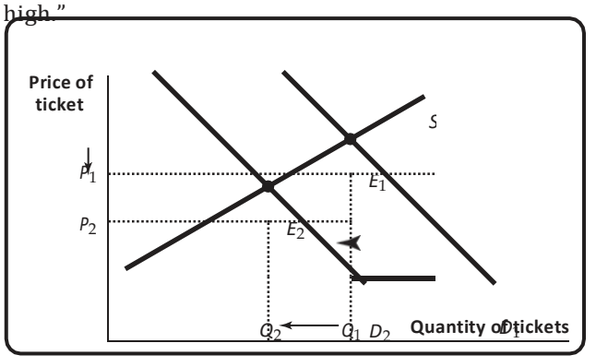
b. At \$50 each, the quantity of tickets demanded exceeds the quantity of tickets supplied. There is a shortage of tickets at this price, shown by the difference between the quantity demanded at this price, Q_D, and the quantity supplied at this price, Q_S.



c. The band can lower the average price of a ticket by increasing supply: give more concerts. This is shown as a rightward shift of the supply curve from S_1 to S_2, resulting in a lower equilibrium price and a higher equilibrium quantity, shown by the change of the equilibrium from E_1 to E_2.



d. If the band's CD is a total dud, the demand for concert tickets is likely to decrease. This represents a leftward shift of the demand curve from D_1 to D_2, resulting in a lower equilibrium price and quantity as the equilibrium changes from E_1 to E_2. This is likely to eliminate the worry that ticket prices are "too high."



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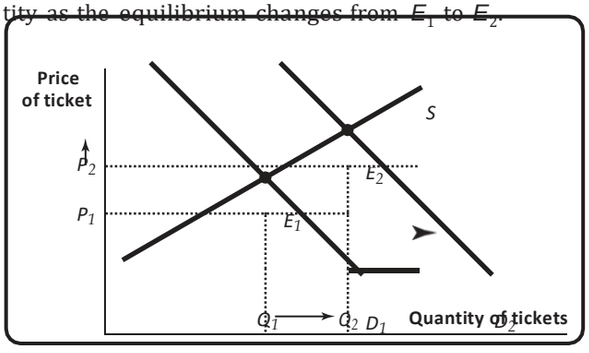
e. The announcement that this is the group's last tour causes the demand for tickets to increase. This is represented by a rightward shift of the demand curve from D_1 to D_2, resulting in an increase in both the equilibrium price and quantity as the equilibrium changes from E_1 to E_2.



7. After several years of decline, the market for handmade acoustic guitars is making a comeback. These guitars, which are normal goods, are usually made in small workshops employing relatively few highly skilled luthiers. Assess the impact on the equilibrium price and quantity of handmade acoustic guitars as a result of each of the following events. In your answers, indicate which curve(s) shift(s) and in which direction.

a. Environmentalists succeed in having the use of Brazilian rosewood banned in the United States, forcing luthiers to seek out alternative, more costly woods.

b. A foreign producer reengineers the guitar-making process and floods the market with identical guitars.

c. Music featuring handmade acoustic guitars makes a comeback as audiences tire of heavy metal and grunge music.

d. The country goes into a deep recession and the income of the average American falls sharply.

Solution

7. **a.** The cost of producing handmade acoustic guitars rises as more costly woods are used to construct them. This reduces supply, as luthiers offer fewer guitars at any given price. This is represented by a leftward shift of the supply curve and results in a rise in the equilibrium price and a fall in the equilibrium quantity.

b. This represents a rightward shift of the supply curve, resulting in a fall in the equilibrium price and a rise in the equilibrium quantity.

c. As more people demand music played on acoustic guitars, the demand for these guitars by musicians increases as well. (Acoustic guitars are an input into the production of this music.) This represents a rightward shift of the demand curve, leading to a higher equilibrium price and quantity.

d. If average American income falls sharply, then the demand for handmade acoustic guitars will decrease sharply as well because they are a normal good. This is represented by a leftward shift of the demand curve, leading to a lower equilibrium price and quantity.

SUPPLY AND DEMAND **SECTION 2** S-22

8. Will Shakespeare is a struggling playwright in sixteenth-century London. As the price he receives for writing a play increases, he is willing to write more plays. For the following situations, use a diagram to illustrate how each event affects the equilibrium price and quantity in the market for Shakespeare's plays.

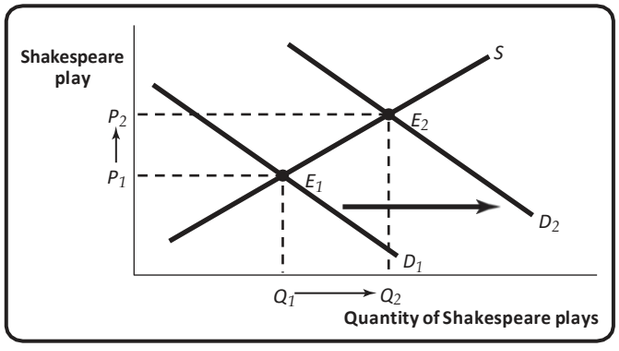
a. The playwright Christopher Marlowe, Shakespeare's chief rival, is killed in a bar brawl.

b. The bubonic plague, a deadly infectious disease, breaks out in London.

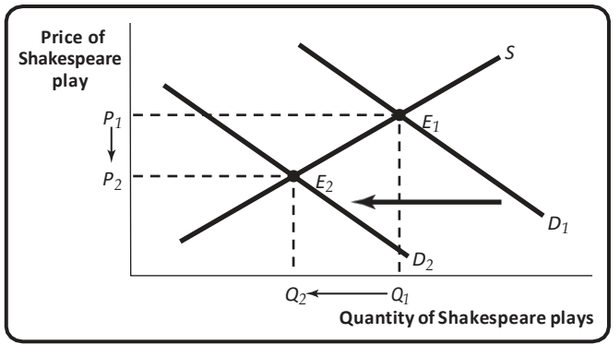
c. To celebrate the defeat of the Spanish Armada, Queen Elizabeth declares several weeks of festivities, which involves commissioning new plays.

Solution

8. **a.** The death of Marlowe means that the supply of a substitute good (Marlowe's plays) has decreased, and so the price of Marlowe's plays will rise. As a result, the demand for Shakespeare's plays will increase, inducing a rightward shift of the demand curve in the market for Shakespeare's plays from D_1 to D_2. As a result, equilibrium price and quantity will rise as the equilibrium changes from E_1 to E_2.

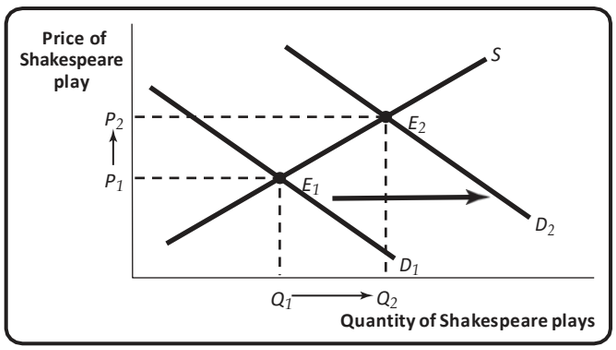


b. After the outbreak of the plague, fewer Londoners will wish to see Shakespeare's plays to avoid contracting the illness, inducing a leftward shift of the demand curve from D_1 to D_2. Equilibrium price and quantity will fall as the equilibrium changes from E_1 to E_2.



SUPPLY AND DEMAND **SECTION 2** S-23

c. Queen Elizabeth's commissions result in a greater quantity of Shakespeare's plays demanded at any given price. This represents a rightward shift of the demand curve from D_1 to D_2, resulting in a higher equilibrium price and quantity as the equilibrium changes from E_1 to E_2.



9. The small town of Middling experiences a sudden doubling of the birth rate. After three years, the birth rate returns to normal. Use a diagram to illustrate the effect of these events on the following:

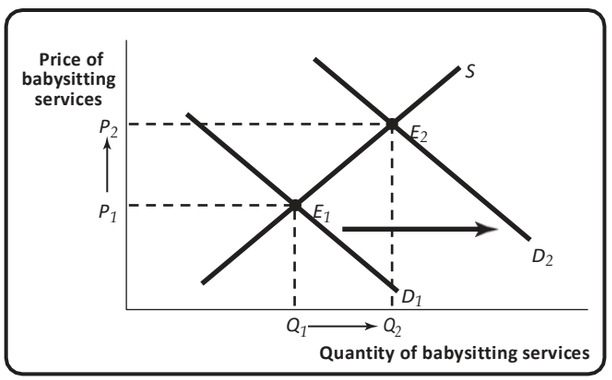
a. the market for an hour of babysitting services in Middling today

b. the market for an hour of babysitting services 14 years into the future, after the birth rate has returned to normal, by which time children born today are old enough to work as babysitters

c. the market for an hour of babysitting services 30 years into the future, when children born today are likely to be having children of their own

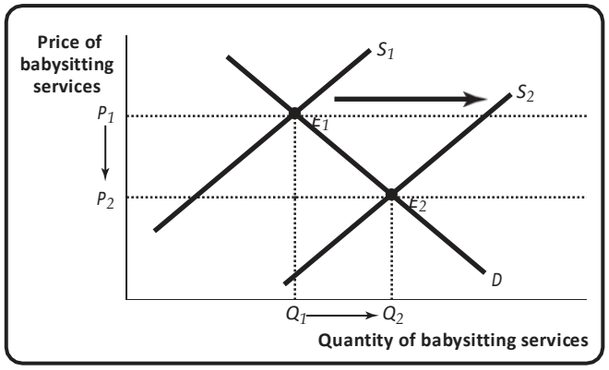
Solution

9. a. There are more babies today, so the demand for an hour of babysitting services has increased. This produces a rightward shift of the demand curve for babysitting services from D_1 to D_2, resulting in a rise in the equilibrium price and quantity as the equilibrium changes from E_1 to E_2.

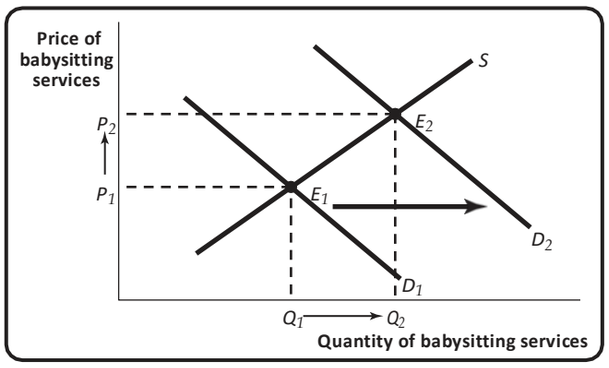


SUPPLY AND DEMAND **SECTION 2** S-24

b. The children born today will cause an increase in the supply of babysitters available 14 years from now, when there will be a rightward shift of the supply curve for babysitting services from S_1 to S_2. This will result in a lower equilibrium price and a higher equilibrium quantity as the equilibrium changes from E_1 to E_2.



c. It is likely that there will be an increase in the birth rate 30 years from now. Therefore, there will be an increase in the demand for babysitting services, shifting the demand curve rightward from D_1 to D_2. This will result in a higher equilibrium quantity and price as the equilibrium changes from E_1 to E_2.



10. Use a diagram to illustrate how each of the following events affects the equilibrium price and quantity of pizza.

a. The price of mozzarella cheese rises.

b. The health hazards of hamburgers are widely publicized.

c. The price of tomato sauce falls.

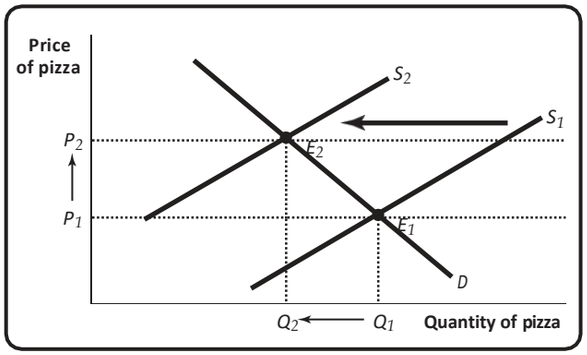
d. The incomes of consumers rise and pizza is an inferior good.

e. Consumers expect the price of pizza to fall next week.

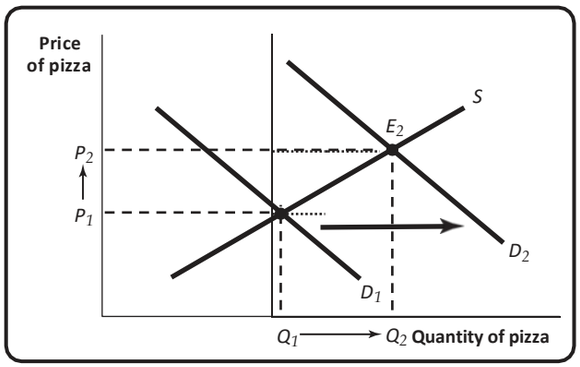
SUPPLY AND DEMAND **SECTION 2** S-25

Solution

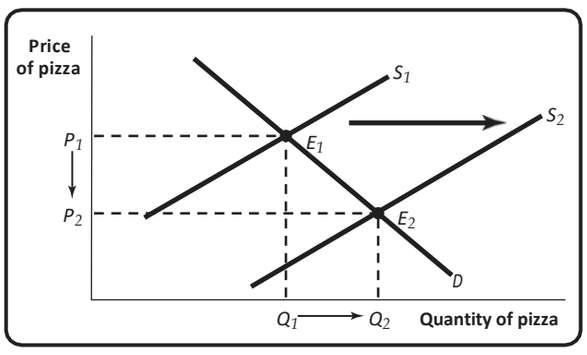
10. a. Mozzarella is an input in the production of pizza. Since the cost of an input has risen, pizza producers will reduce the quantity supplied at any given price, a leftward shift of the supply curve from S_1 to S_2. As a result, the equilibrium price of pizza will rise and the equilibrium quantity will fall as the equilibrium changes from E_1 to E_2.



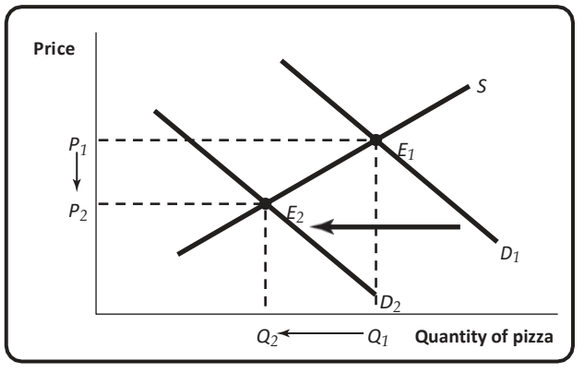
b. Consumers will substitute pizza in place of hamburgers, resulting in an increased demand for pizza at any given price. This generates a rightward shift of the demand curve from D_1 to D_2, leading to a rise in the equilibrium price and quantity as the equilibrium changes from E_1 to E_2.



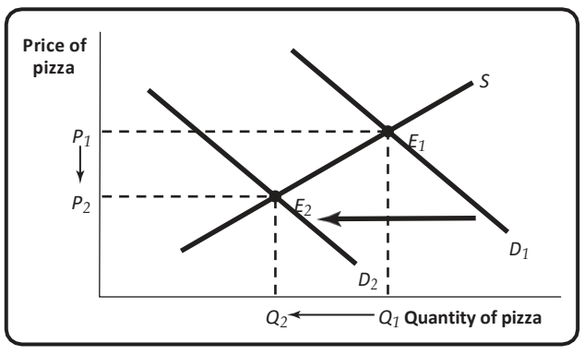
c. Tomato sauce is an input in the production of pizza. Since the cost of an input has fallen, pizza producers will increase the quantity supplied at any given price, a rightward shift of the supply curve from S_1 to S_2. As a result, the equilibrium price of pizza will fall and the equilibrium quantity will rise as the equilibrium changes from E_1 to E_2.



d. The demand for an inferior good decreases when the incomes of consumers rise. So a rise in consumer incomes produces a leftward shift of the demand curve from D_1 to D_2, resulting in a lower equilibrium price and quantity as the equilibrium changes from E_1 to E_2.



e. Consumers will delay their purchases of pizza today in anticipation of consuming more pizza next week. As a result, the demand curve shifts leftward from D_1 to D_2, resulting in a lower equilibrium price and quantity as the equilibrium changes from E_1 to E_2.



11. Although he was a prolific artist, Pablo Picasso painted only 1,000 canvases during his "Blue Period." Picasso is now dead, and all of his Blue Period works are currently on display in museums and private galleries throughout Europe and the United States.

a. Draw a supply curve for Picasso Blue Period works. Why is this supply curve different from ones you have seen?

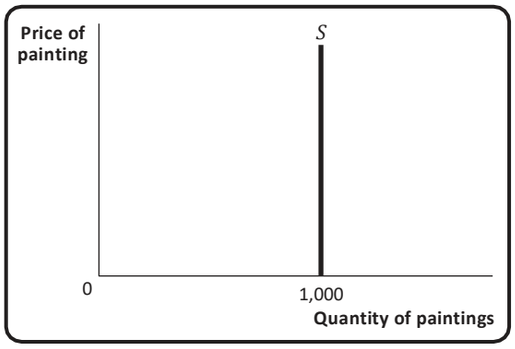
b. Given the supply curve from part a, the price of a Picasso Blue Period work will be entirely dependent on what factor(s)? Draw a diagram showing how the equilibrium price of such a work is determined.

c. Suppose that rich art collectors decide that it is essential to acquire Picasso Blue Period art for their collections. Show the impact of this on the market for these paintings.

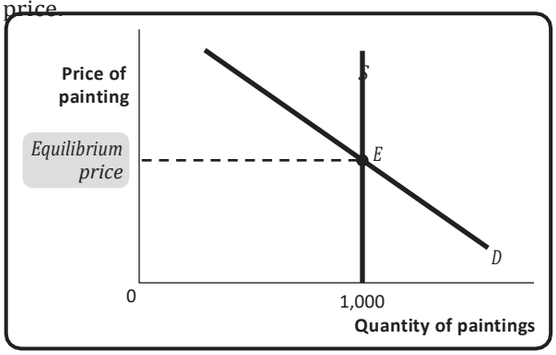
SUPPLY AND DEMAND **SECTION 2** S-27

Solution

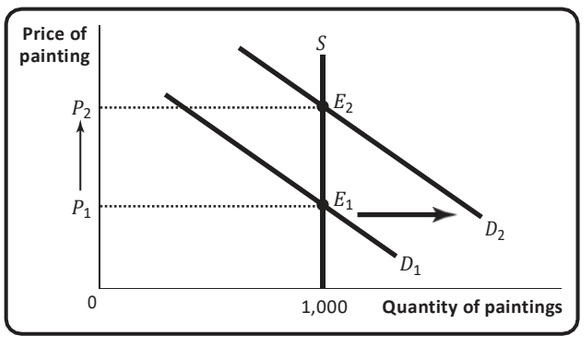
11. ***a.*** There are no more Picasso Blue Period works available. Hence the supply curve is a vertical line at the quantity 1,000.



b. Since supply is fixed, the price of a Picasso Blue Period work is entirely determined by demand. Any change in demand is fully reflected in a change in price.



c. This results in a rightward shift of the demand curve for these works from D_1 to D_2, and the equilibrium changes from E_1 to E_2. But since no more works are available, this increase in demand simply results in an increase in the equilibrium price.



SUGGESTED SOLUTIONS FOR BUSINESS CASE *QUESTIONS FOR THOUGHT*

These are suggested answers to the "Questions for Thought" that conclude each business case near the end of sections.

Section 1

1. What is the opportunity cost associated with having a worker wander across the factory floor from task to task or in search of tools and parts?

Suggested Solution

1. The opportunity cost of a worker wandering across the factory floor is forgone output—the output that worker could have produced in the time spent wandering around.

2. How does lean manufacturing improve the economy's efficiency in allocation?

Suggested Solution

2. Lean manufacturing improves the economy's efficiency in allocation because, for example, an automaker can more quickly switch to producing more of the types of cars that more consumers want and fewer of the types of cars that fewer consumers want.

3. How will the shift in the location of Toyota's production from Japan to the United States alter the pattern of comparative advantage in automaking between the two countries?

Suggested Solution

3. The shift in the location of Toyota's production from Japan to the United States means that it is likely that Japan will no longer have a clear comparative advantage in automaking vis-à-vis the United States.

Section 2

1. Why do you think it was profitable for Li & Fung to go beyond brokering exports to becoming a supply chain manager, breaking down the production process and sourcing the inputs from various suppliers across many countries?

Suggested Solution

1. By sourcing inputs from various suppliers across many countries, Li & Fung was able to allocate production to where it is most cost effective, namely to those economies that have a comparative advantage in producing a given input.

2. What principle do you think underlies Li & Fung's decisions on how to allocate production of a good's inputs and its final assembly among various countries?

Suggested Solution

2. Comparative advantage is the principle that underlies Li & Fung's decisions. Inputs that require more skill or are more capital-intensive can be produced in countries that have relatively higher-skilled workers or are relatively more abundant in capital, such as Hong Kong and Japan. Similarly, inputs that are more labor-intensive can be produced in countries that are relatively more abundant in labor, like mainland China and Thailand.

3. Why do you think a retailer prefers to have Li & Fung arrange international production of its jeans rather than purchase them directly from a jeans manufacturer in mainland China?

Suggested Solution

3. A retailer that purchased jeans directly from a manufacturer in mainland China would not benefit from the gains from trade that arise from sourcing inputs from different countries according to those countries' comparative advantage.

4. What is the source of Li & Fung's success? Is it based on human capital, on ownership of a natural resource, or on ownership of capital?

Suggested Solution

4. The source of Li & Fung's success is human capital. The company understands how to use the principle of comparative advantage to exploit gains from trade in the production process. In addition, it is skilled in providing quality control and logistics.

Section 3

1. Why do businesses care about GDP to such an extent that they want early estimates?

Suggested Solution

1. Businesses care about GDP because it's our prime indicator of the overall state of the economy. Macroeconomics tells us that the overall state of the economy matters a lot to individual firms: what's good or bad for the U.S. economy as a whole is generally good or bad for each individual company, too.

2. How do the methods of Macroeconomic Advisers and the Institute of Supply Management fit into the three different ways to calculate GDP?

Suggested Solution

2. Macroeconomic Advisers looks at purchases to estimate GDP; in effect, it's using the method of calculating GDP that derives the total value of output by adding up total spending on domestically produced goods and services. The Institute of Supply Management, by contrast, surveys producers to find out how much they're producing; it is, in

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Section 2

1. In Module 6 we mention how prices can vary in a tourist trap. Which market, St. Louis or Chicago, was more likely to behave like a tourist trap? Explain.

Suggested Solution

1. The St. Louis market was more likely to behave like a tourist trap. In a tourist trap, a buyer can't be sure that the price he or she sees for a good in one location is the same in other locations. This was like the situation in St. Louis, where buyers and sellers were dispersed around the city, and unlike Chicago, where buyers and sellers were located in one place, the Chicago pit.

2. What was the advantage to buyers from buying their wheat in the Chicago pit instead of in St. Louis? What was the advantage to sellers?

Suggested Solution

2. A buyer would know that he or she was getting the lowest price available by buying in the Chicago pit because everyone could see what the latest market price was, unlike in St. Louis. For example, if a seller appeared who was willing to sell for less than the current price, then the seller would call out a lower price, which the buyer could then see and accept. That way a buyer knew that he or she was getting the lowest available price. A seller would want to sell his or her wheat in the Chicago pit because he or she knew that was where the most buyers were. Hence, that is where a seller would get the highest possible price. If, for example, a buyer appeared who was willing to pay more than the current price, then the buyer would call out a higher price, which the seller could then see and accept. That way a seller knew that he or she was getting the highest price available.

3. Based on what you have learned from this case, explain why the online auction site eBay is like the Chicago pit. Why has it been so successful as a marketplace for second-hand items compared to a market composed of various flea markets and dealers?

Suggested Solution

3. eBay is a "virtual pit," where buyers and sellers meet online to trade. Buyers know that on eBay they are getting the lowest price possible compared to a dispersed market of flea markets and dealers. Similarly, sellers know they are getting the highest price possible.

Section 3

1. How would you describe the price elasticity of demand for airline flights given the information in this case? Explain.

Suggested Solution

1. The price elasticity of demand for airline flights is inelastic. We know this because airlines were able to increase their revenues by reducing the number of seats sold and increasing price.

2. Using the concept of elasticity, explain why airlines would create such great variations in the price of a ticket depending on when it is purchased and the day and time the flight departs. Assume that some people are willing to spend time shopping for deals as well as fly at inconvenient times, but others are not.

Suggested Solution

2. By creating such variations in prices, the airline industry is trying to appeal to customers who have a high price elasticity of demand as well as charge higher prices to those with a low price elasticity of demand. Customers with a high price elasticity of demand will shop for deals, buy their tickets midweek, and fly on cheaper early-morning flights. So by offering lower