

PART 2

How Markets Function

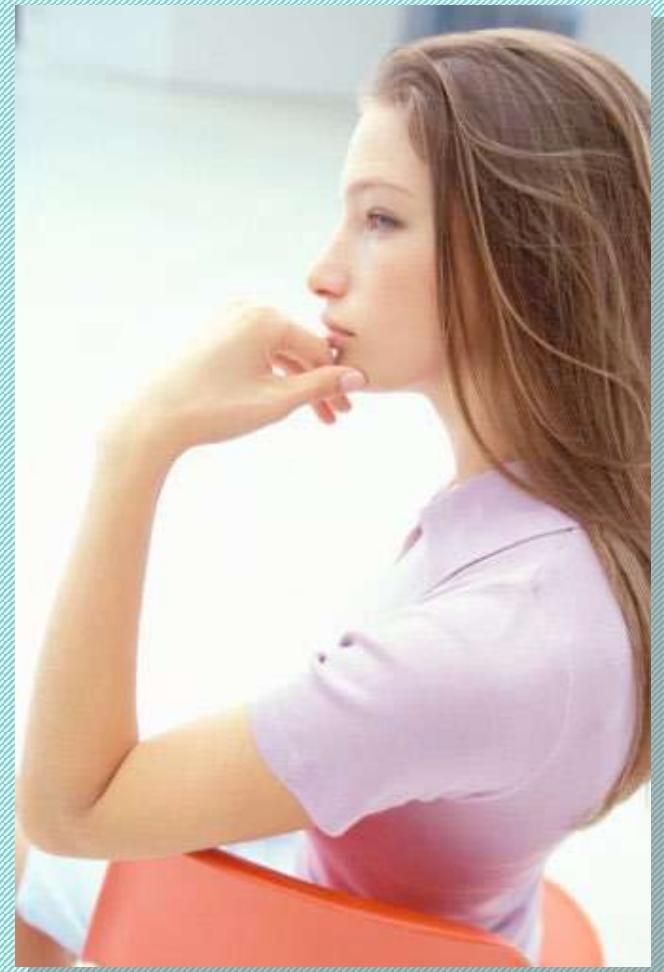
PRINCIPLES OF

Microeconomics

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Chapter 6: Supply and Demand in Markets



Chapter 6: Supply and Demand in Markets

- Supply and demand are the two terms most frequently used by economists.
- Supply and demand are the driving forces in a market economy, determining the quantity produced and sale price of every good.
- Therefore, to understand how an event or policy will affect the economy, we must consider its impact on both supply and demand.

Chapter 6: Supply and Demand in Markets

- **Markets and Competition**
- **Demand**
- **Supply**
- **The Combination of Supply and Demand**

Market, competition, and perfect competition

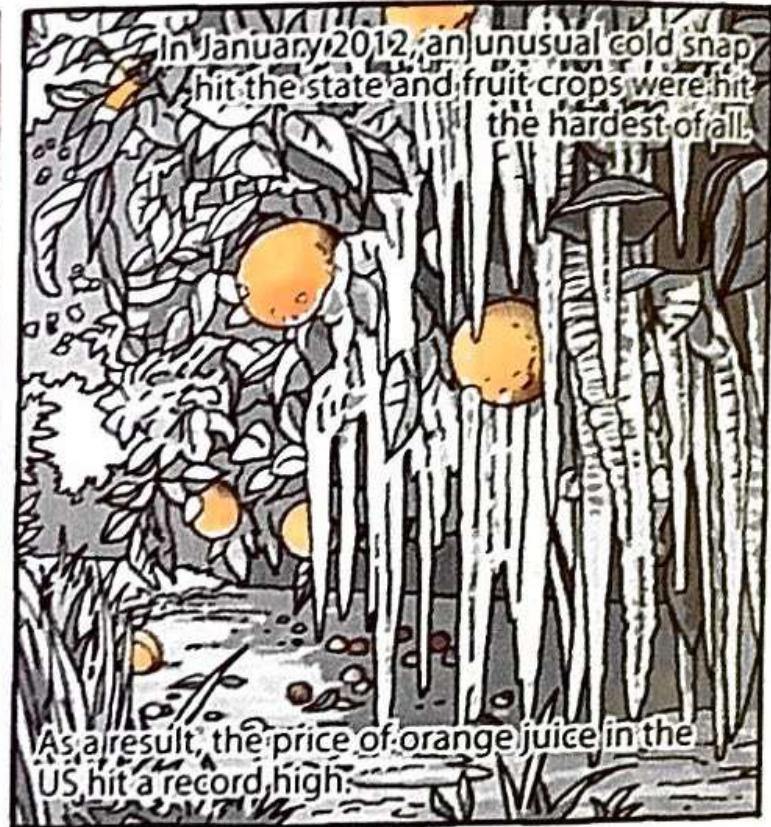
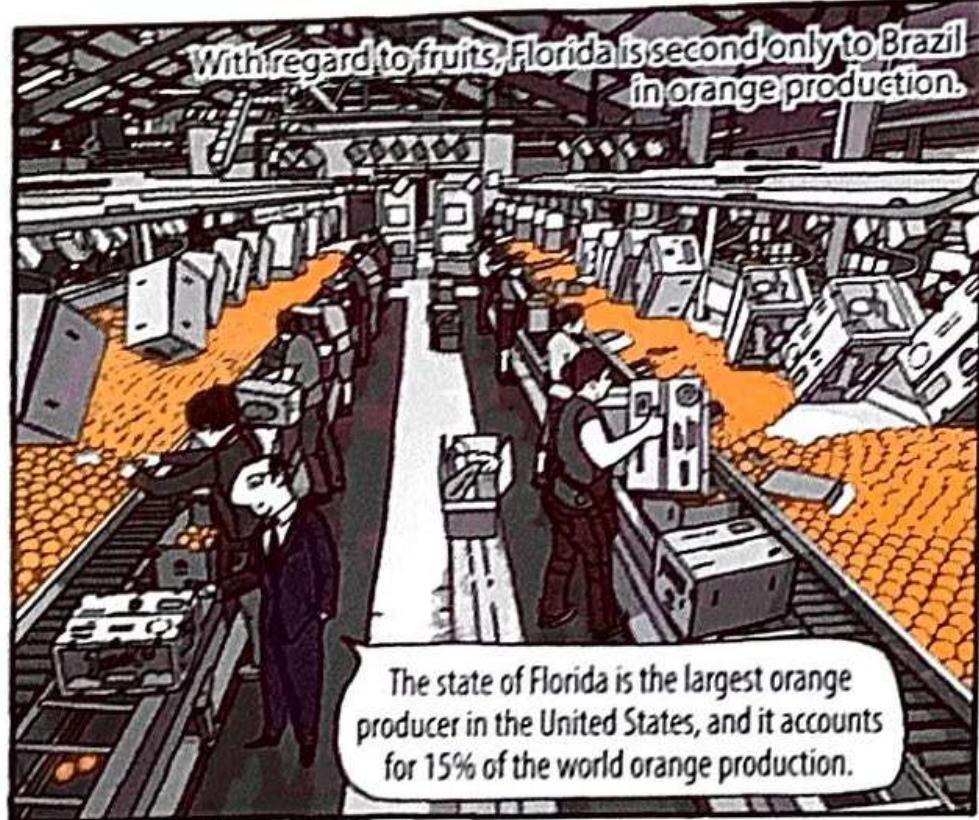
Market, Competition, and Perfect Competition

The state of Florida, located in the southern part of America, is also called the "Sunshine State" for its warm and bright sunlight.

It hardly goes below 20°C even in the winter. The warm weather with strong sunlight allows the rich harvest of various fruits.



Market, competition, and perfect competition



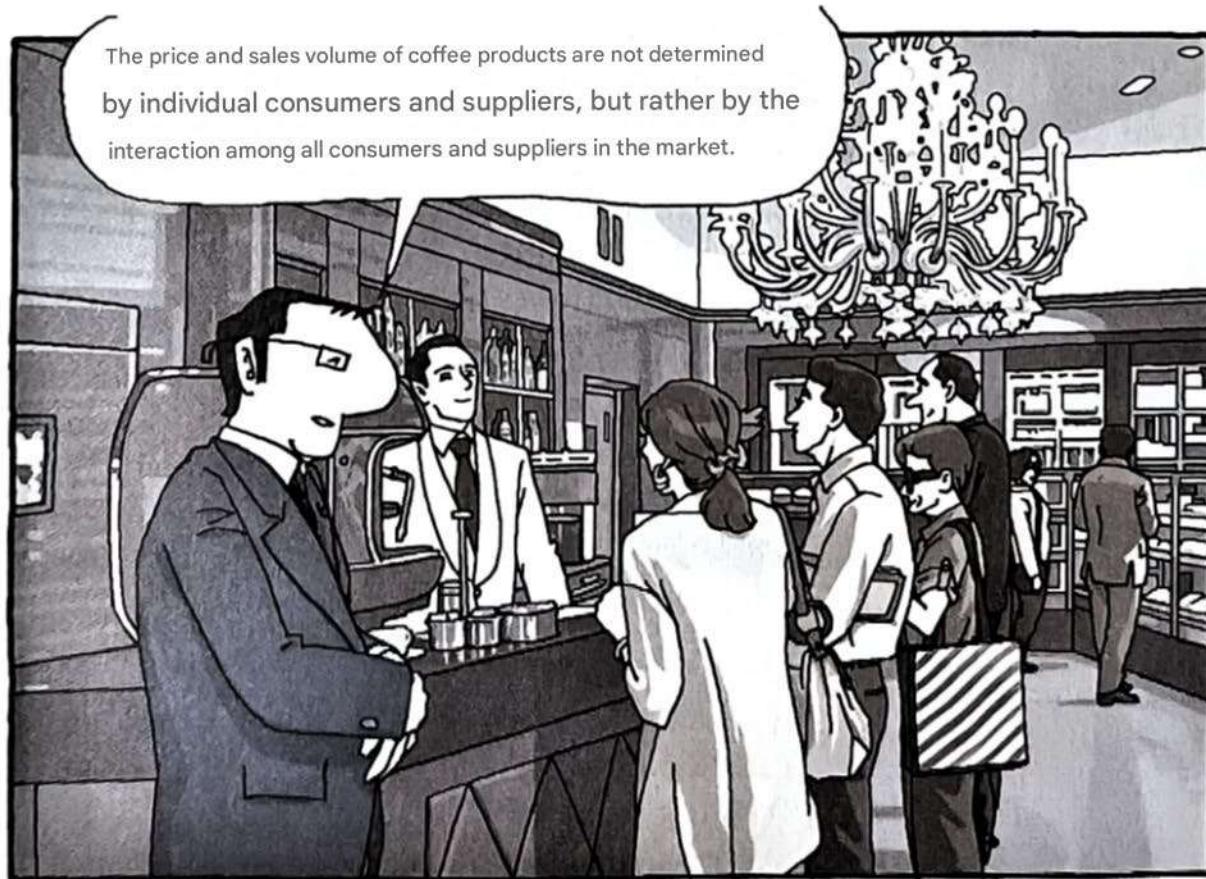
The example of oranges is a perfect illustration of how markets work.

Market, competition, and perfect competition

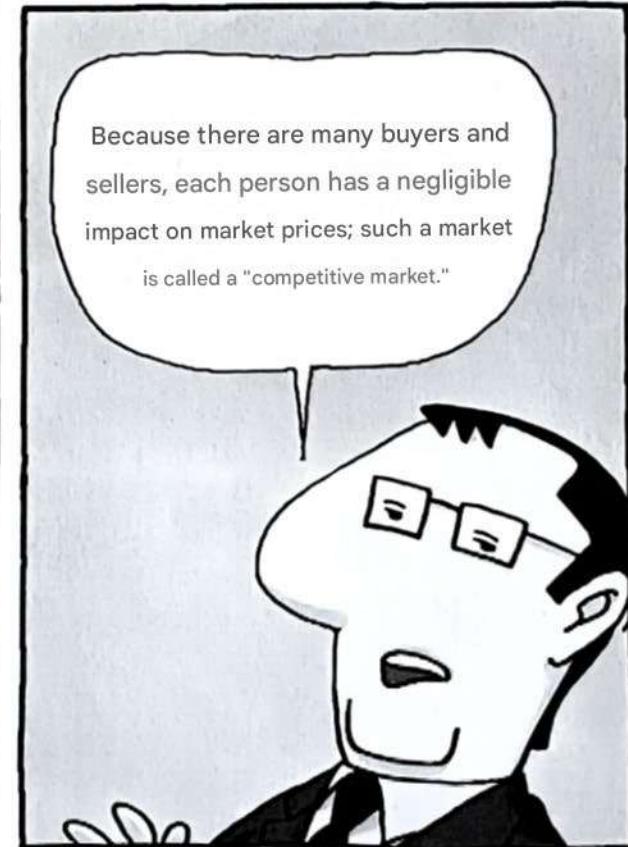


Market, competition, and perfect competition

The price and sales volume of coffee products are not determined by individual consumers and suppliers, but rather by the interaction among all consumers and suppliers in the market.



Because there are many buyers and sellers, each person has a negligible impact on market prices; such a market is called a "competitive market."



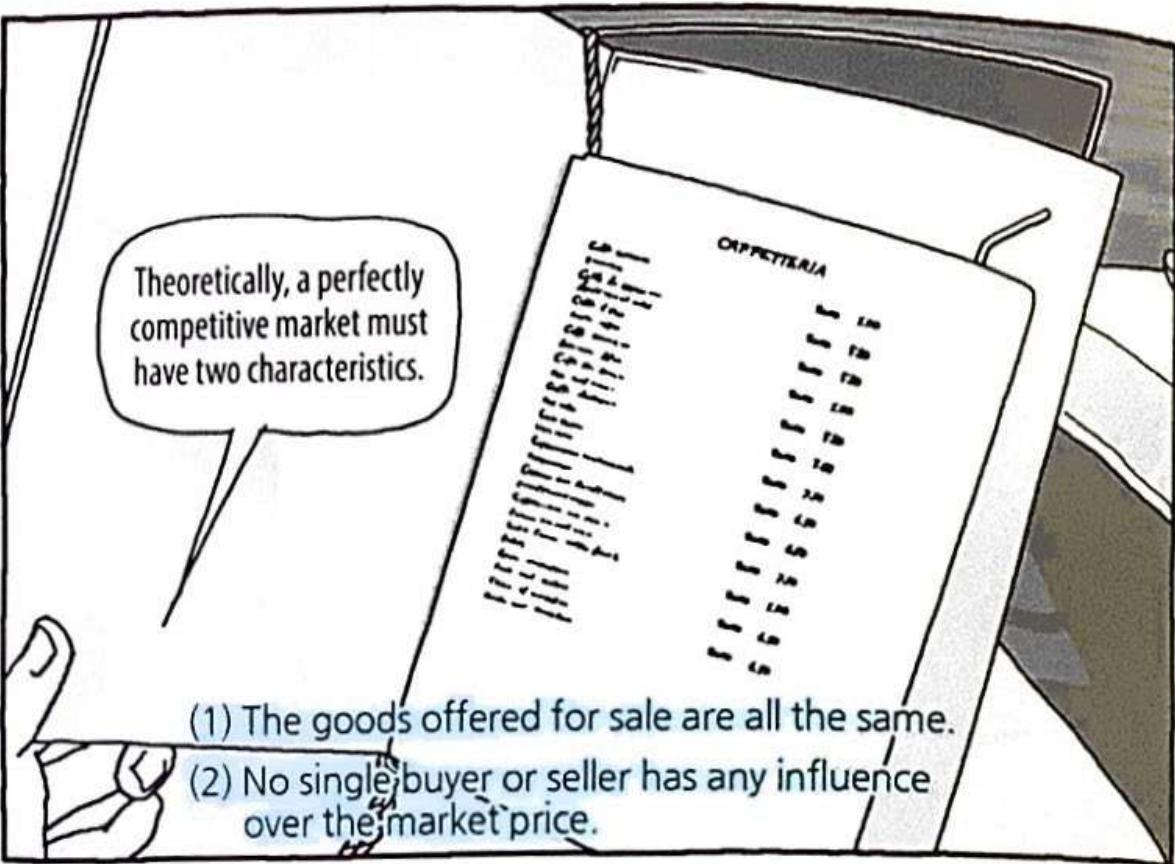
Market, competition, and perfect competition

Then, how does a market where competition is at its greatest possible level look like? A market in which competition is at its greatest possible level is called a "perfectly competitive market."



Theoretically, a perfectly competitive market must have two characteristics.

- (1) The goods offered for sale are all the same.
- (2) No single buyer or seller has any influence over the market price.



Market, competition, and perfect competition



In a perfectly competitive market, buyers and sellers must accept the market-determined price, and market participants are considered price takers.



Of course, finding perfect competition in the real world is extremely difficult. However, the perfect competition assumption is a useful simplification for studying economics.

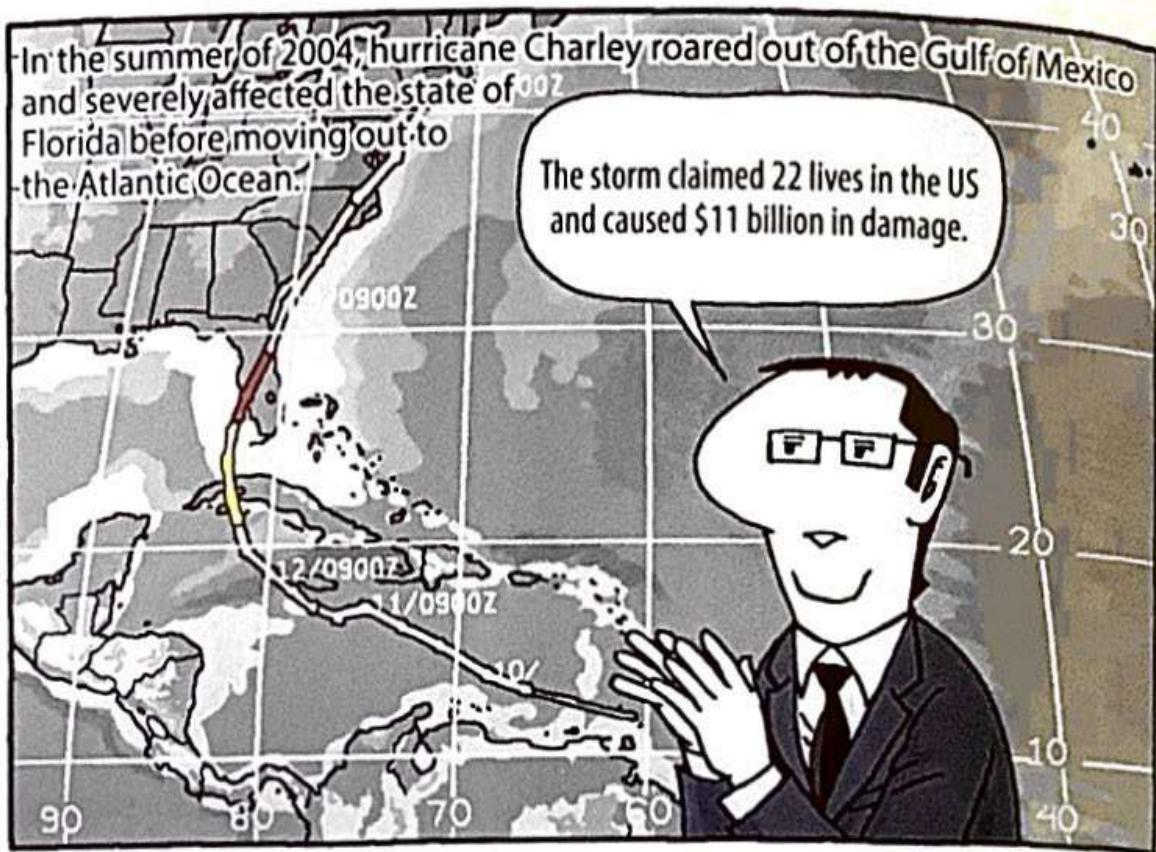
perfectly competitive
market

Market, competition, and perfect competition

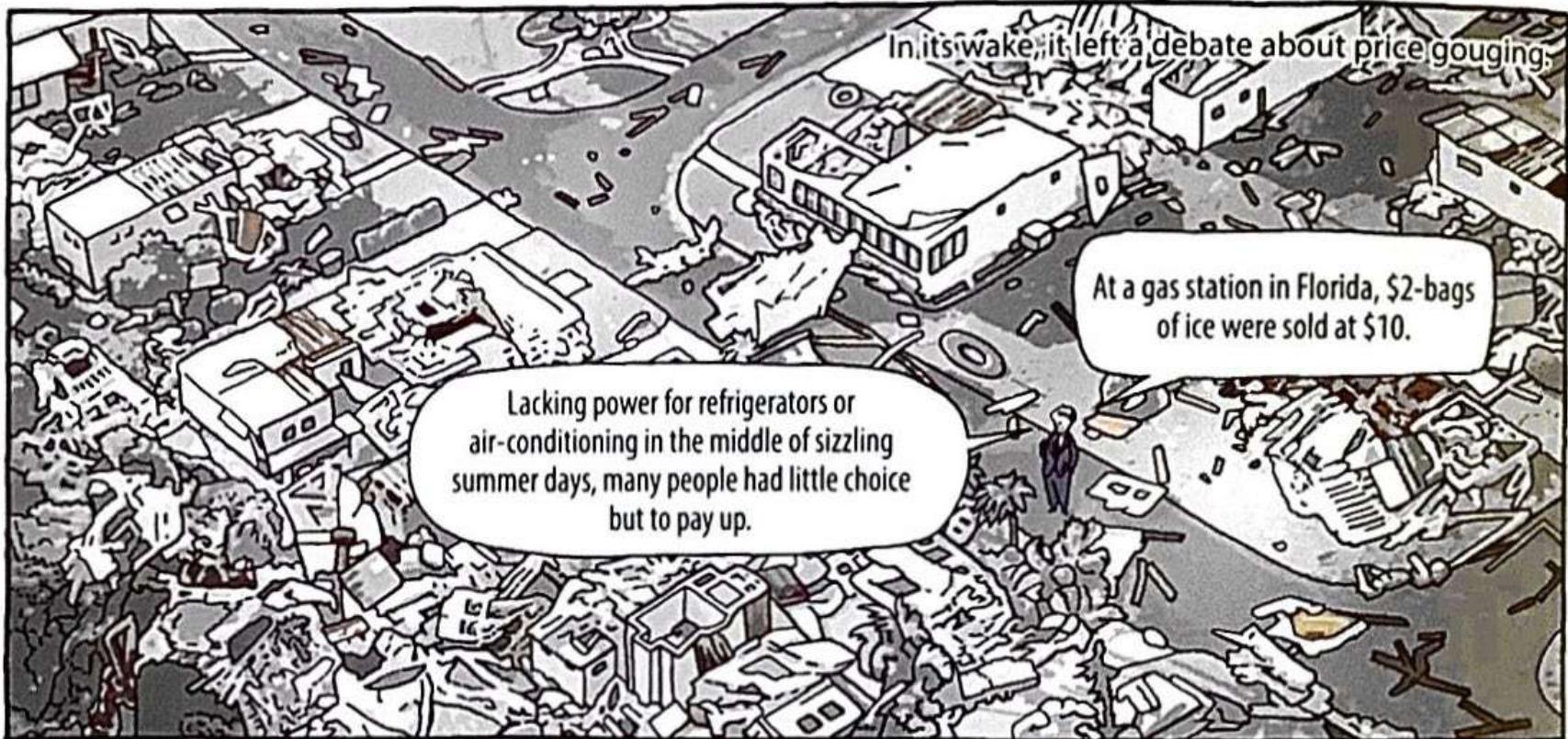


Disasters and Price Gouging

Disasters and Price Gouging



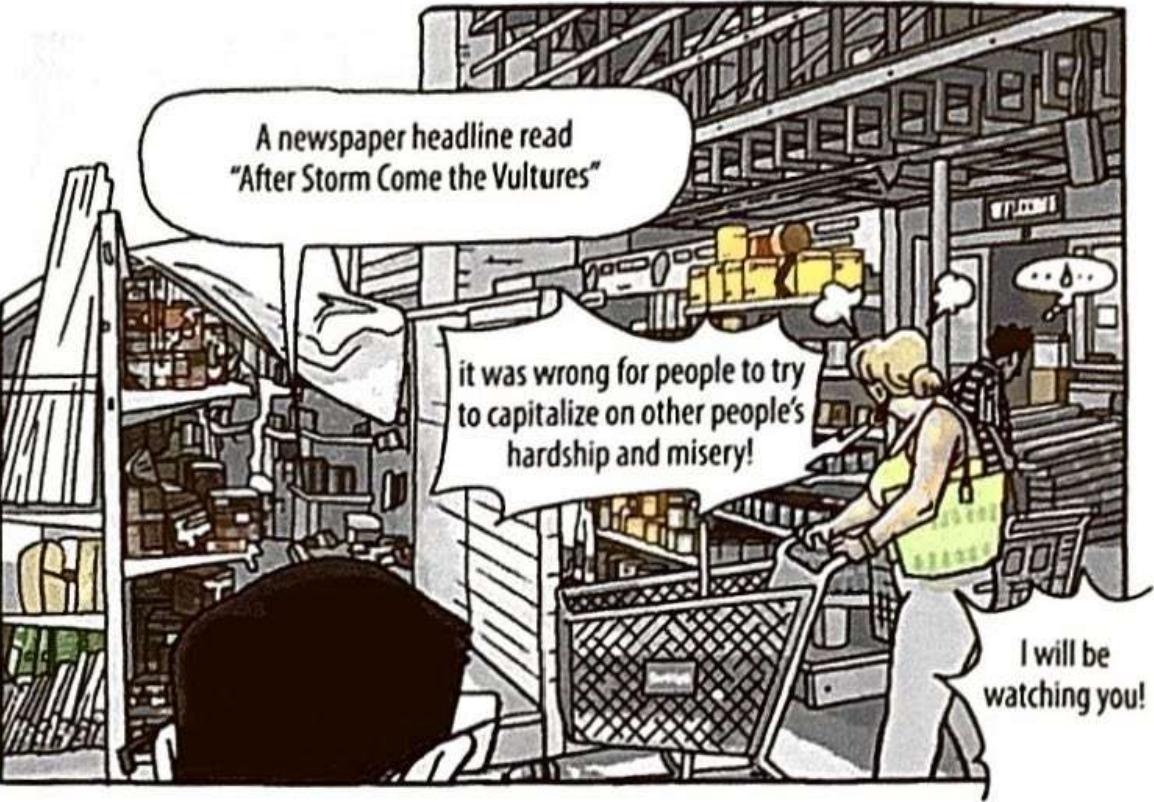
Disasters and Price Gouging



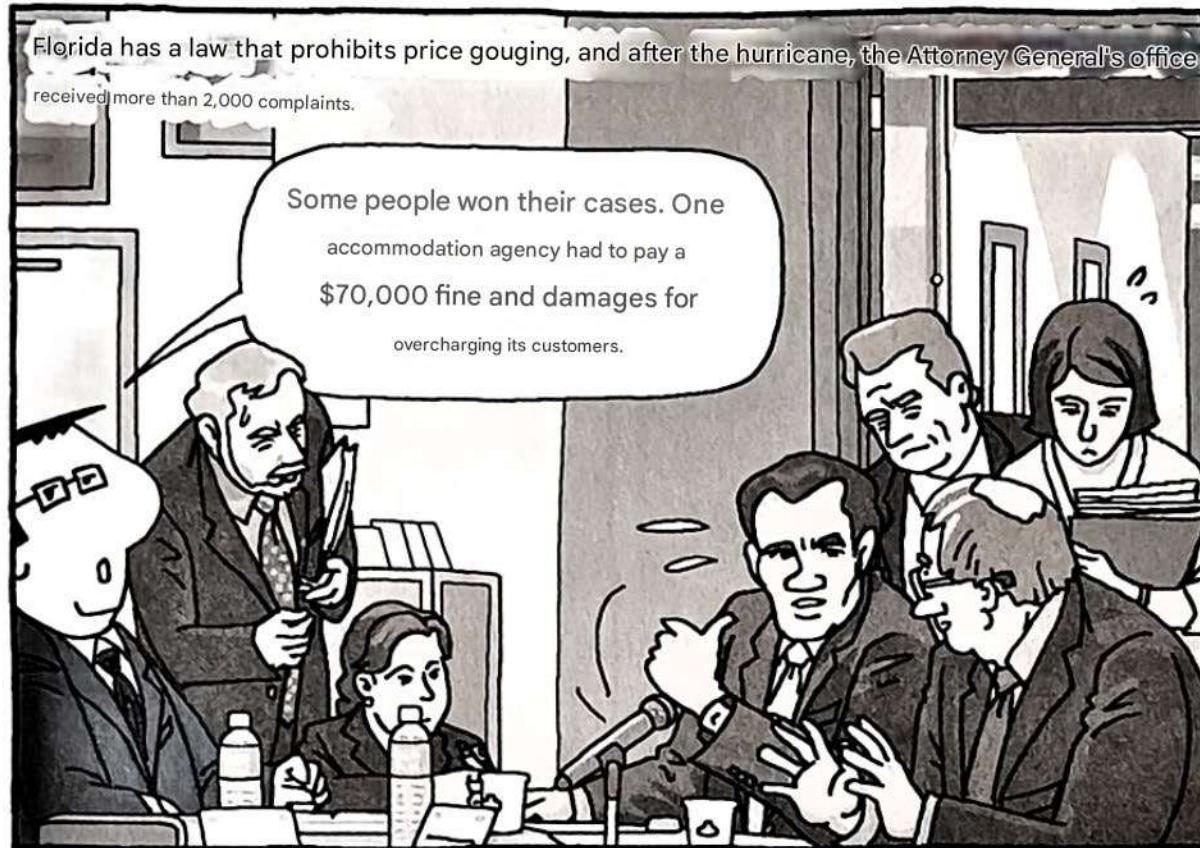
Disasters and Price Gouging



Disasters and Price Gouging

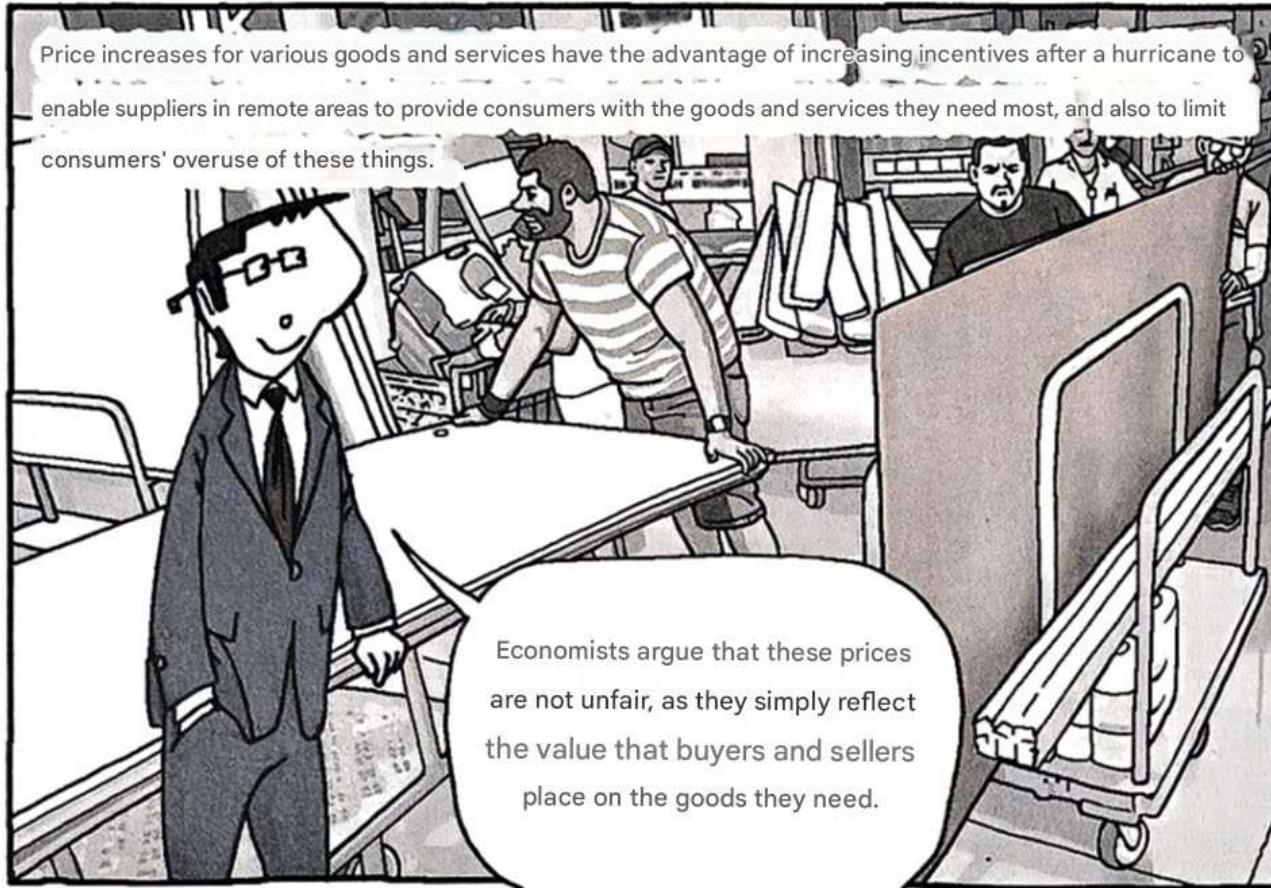


Disasters and Price Gouging

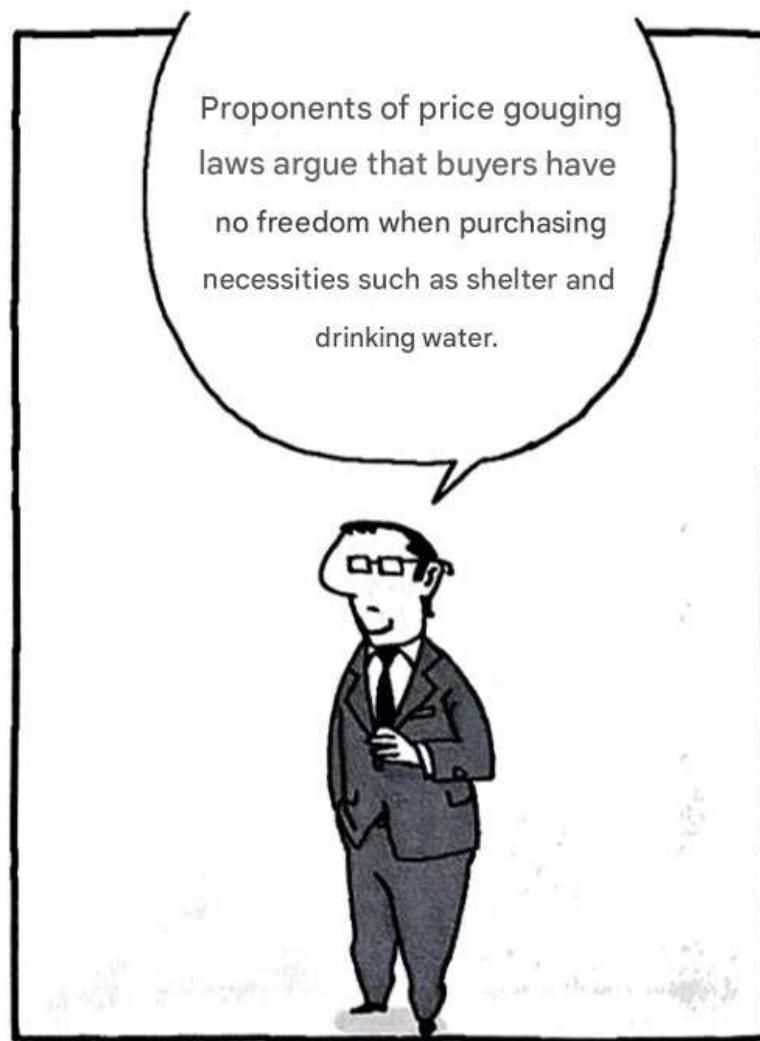


From an economic perspective, market prices are determined by supply and demand, and there is no such thing as a "fair price".

Disasters and Price Gouging



Disasters and Price Gouging



Disasters and Price Gouging



SUMMARY



- A competitive market is one with many buyers and sellers, where each individual has a negligible impact on the market price.
 - Like most markets in the economy, the ice cream market is highly competitive. Each ice cream seller has limited control over the price because other sellers are offering similar products.
 - Sellers have little reason to set prices below the prevailing market price, and if one charges more, buyers will purchase from elsewhere. Similarly, no single ice cream buyer can influence the price of ice cream, as each buyer purchases only a small quantity relative to the size of the market.

SUMMARY



- A perfectly competitive market must have two characteristics:
 - The goods available for sale are identical.
 - No single buyer or seller can influence the market price.
 - Because buyers and sellers in a perfectly competitive market must accept the price determined by the market, they are referred to as price takers. At the market price, buyers can purchase all they want, and sellers can sell all they wish.
- In some markets, the assumption of perfect competition holds completely, but this is relatively rare. Some markets have only one seller, and this seller determines the price; such a seller is called a monopolist. Other markets fall between the two extremes of perfect competition and monopoly.

SUMMARY



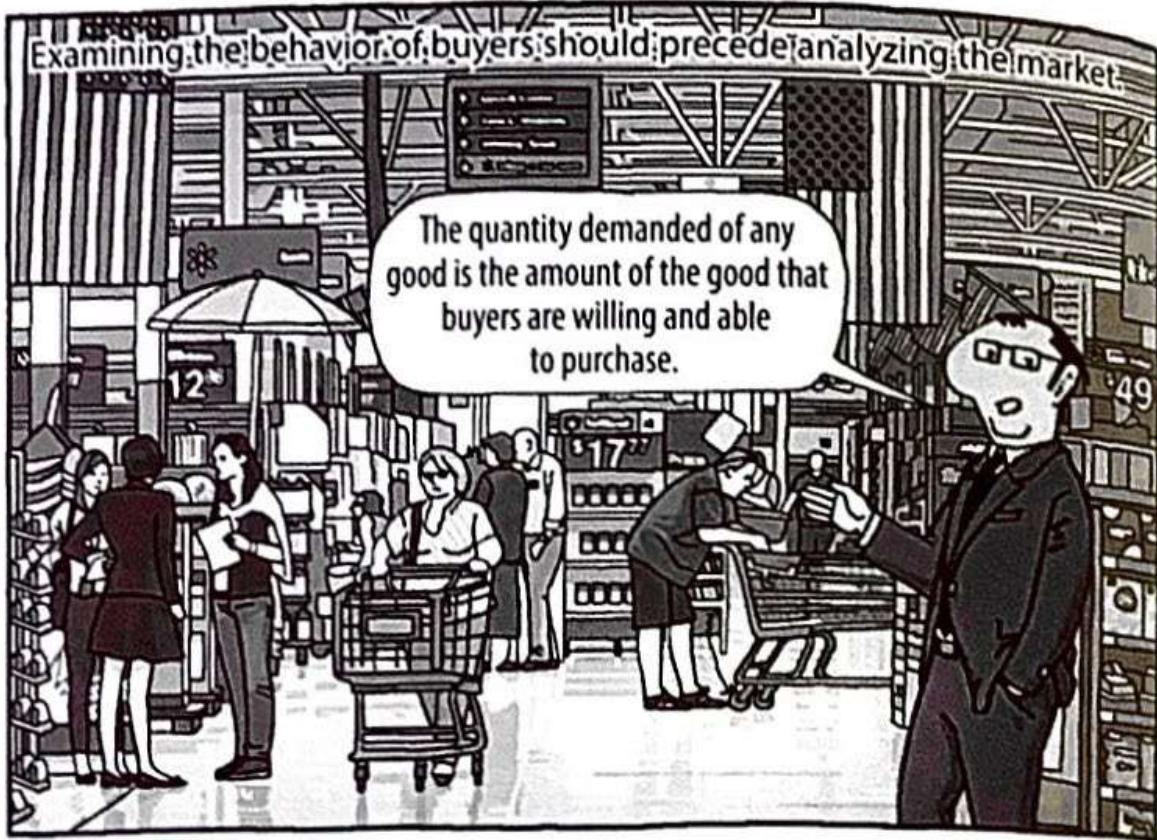
- Although the types of markets we observe in the world are diverse, the assumption of perfect competition serves as a useful simplification. Therefore, our analysis of how markets function naturally begins from this starting point.
- Perfectly competitive markets are the easiest to analyze because every market participant accepts the price determined by market conditions. Moreover, since most markets possess some degree of competition, many of the insights we gain from studying supply and demand under perfect competition also apply to more complex markets.

Chapter 6: Supply and Demand in Markets

- Markets and Competition
- Demand
- Supply
- The Combination of Supply and Demand

The Law of Demand and the Shift of the Demand Curve

The Law of Demand and Shifts in the Demand Curve



The Law of Demand and the Shift of the Demand Curve

Many factors determine the demand for any good, but the price of that good plays the most important role.

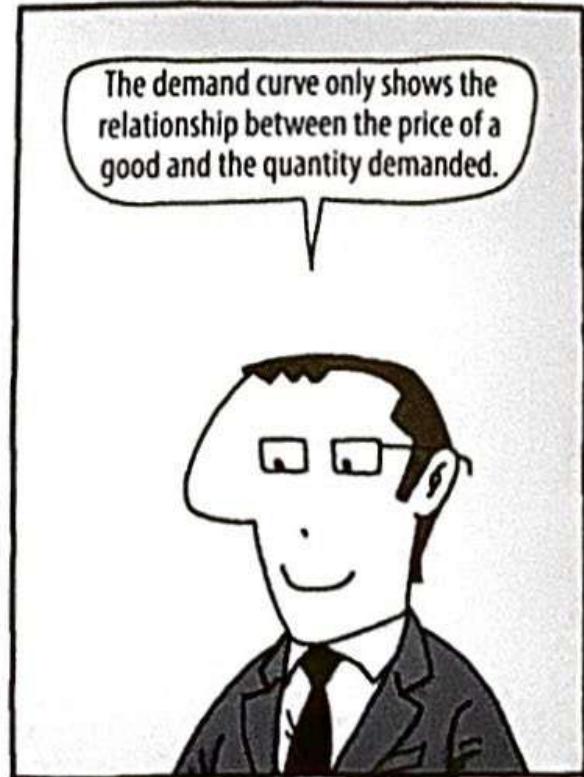
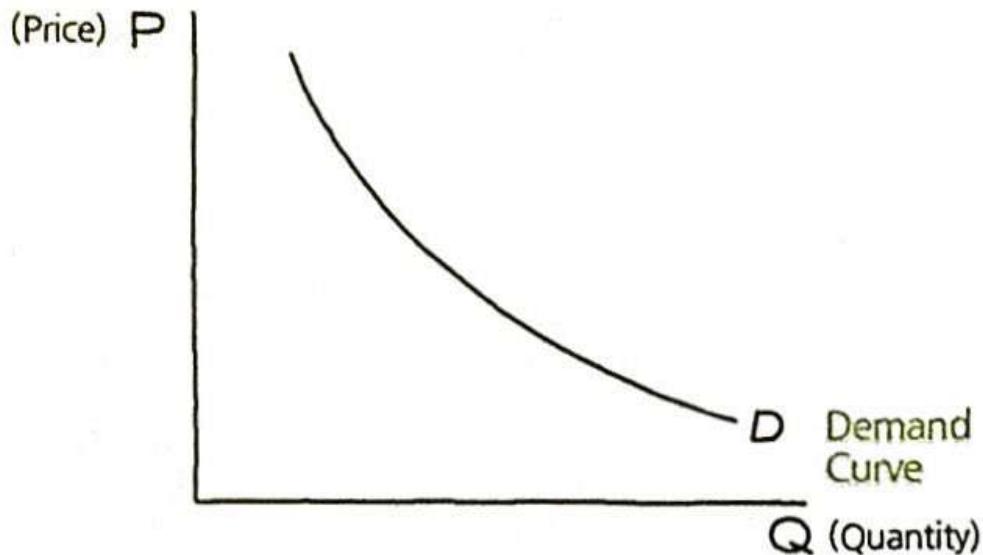


The Law of Demand and the Shift of the Demand Curve



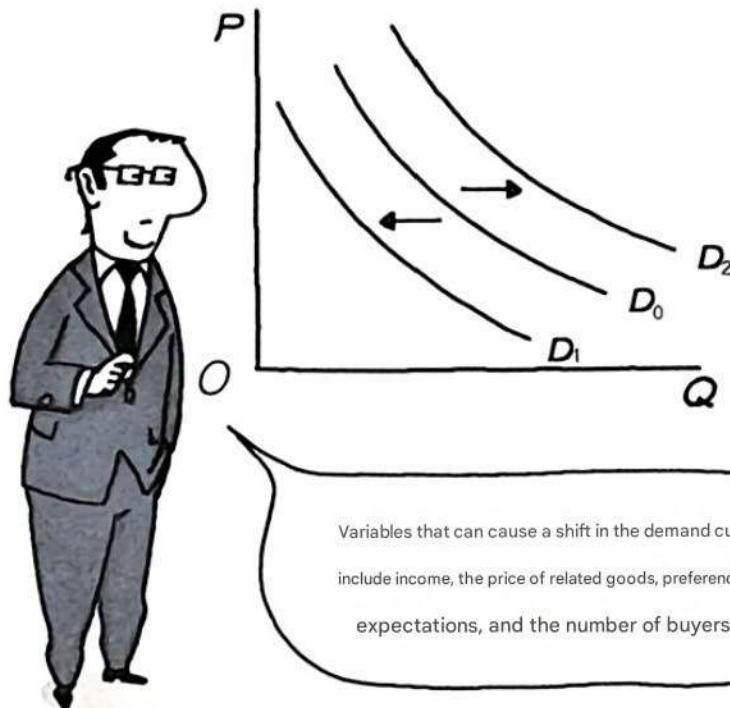
The Law of Demand and the Shift of the Demand Curve

The line that illustrates the negative correlation between price and quantity demanded is called "the demand curve". By convention, the price is on the vertical axis, and the quantity demanded is on the horizontal axis.

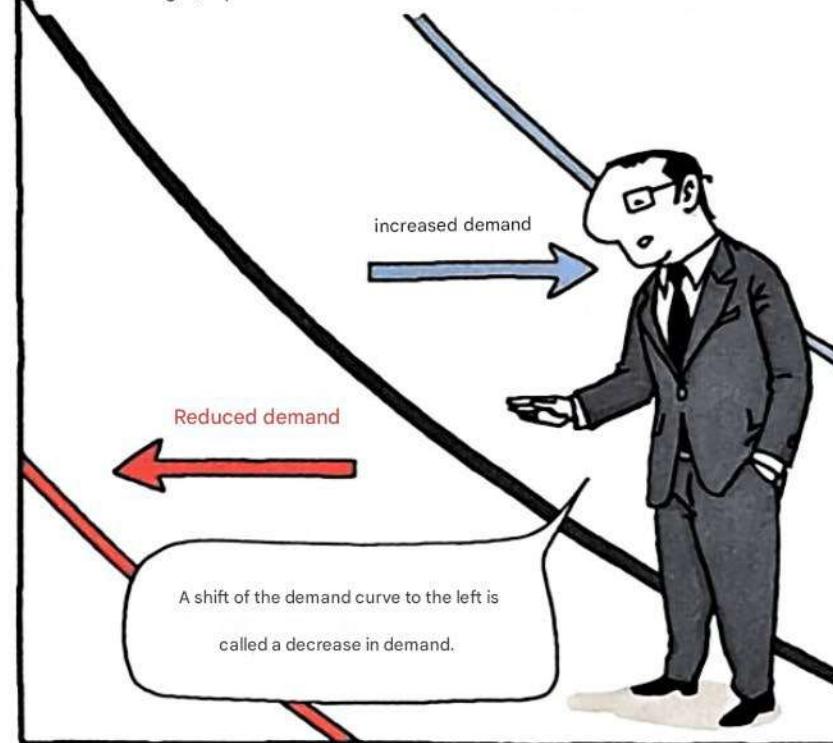


The Law of Demand and the Shift of the Demand Curve

Therefore, apart from price, any change in a variable that affects how much consumers demand for a good will cause a shift in the demand curve.



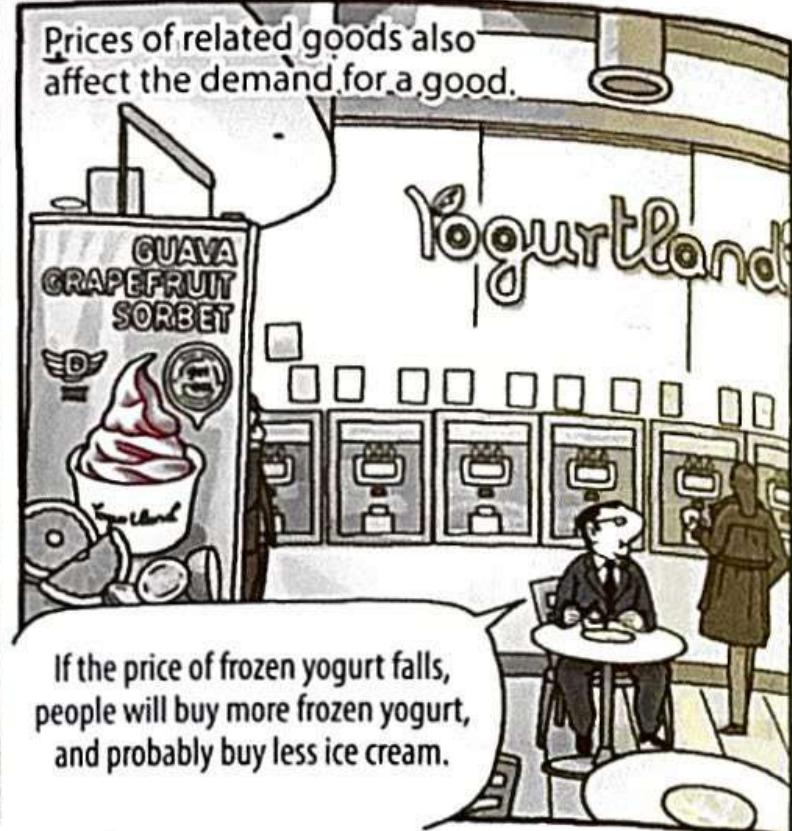
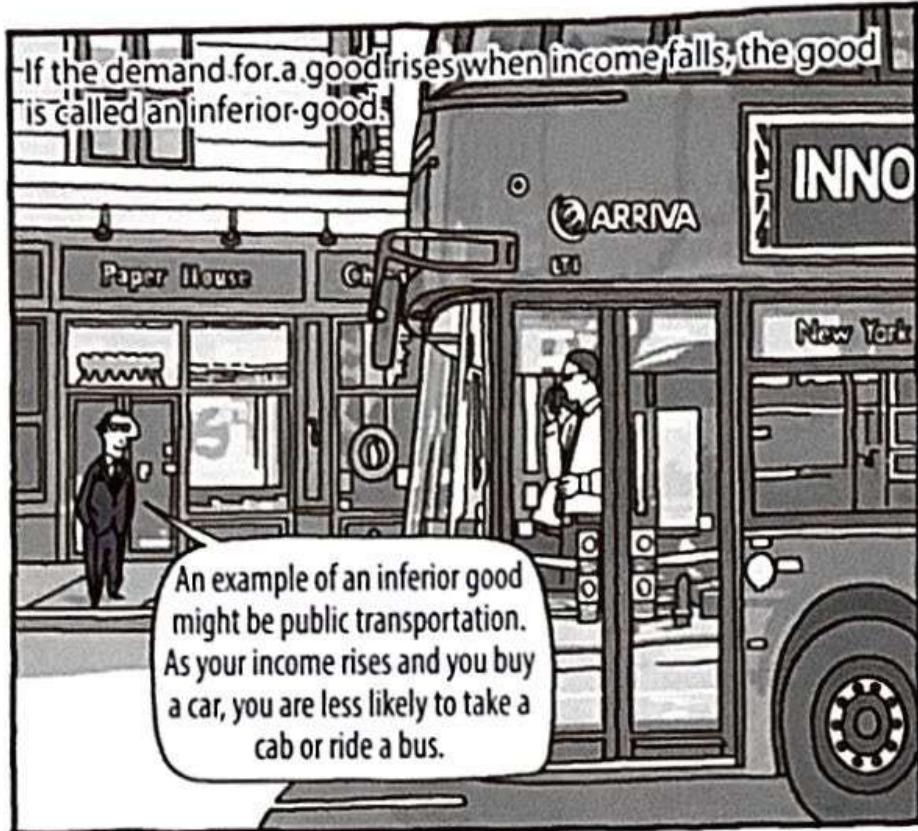
At any price level, any change in the quantity demanded will shift the demand curve to the right, a phenomenon known as an increase in demand.



The Law of Demand and the Shift of the Demand Curve



The Law of Demand and the Shift of the Demand Curve



The Law of Demand and the Shift of the Demand Curve

When a fall in the price of one good reduces the demand for another good, the two goods are called substitutes.

Substitutes



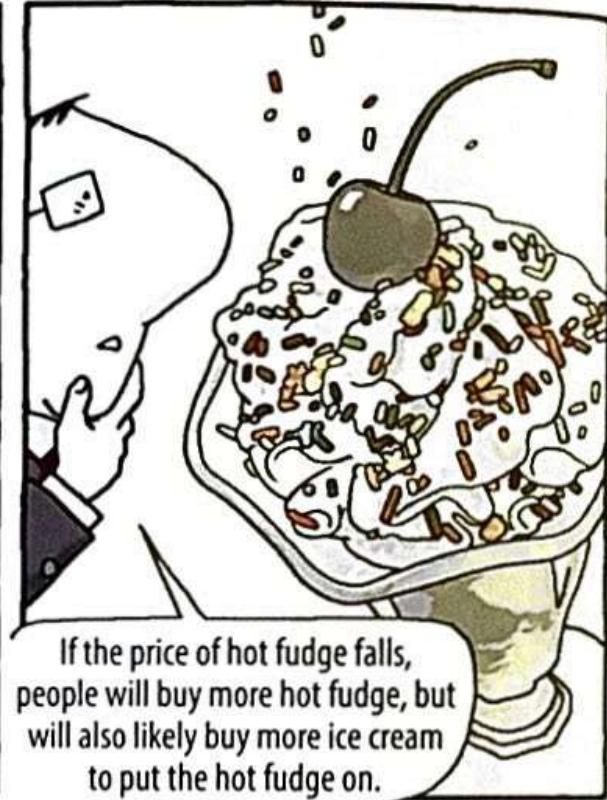
Hot dogs \longleftrightarrow Hamburgers



Sweater \longleftrightarrow Shirt



Movie ticket \longleftrightarrow DVD rentals



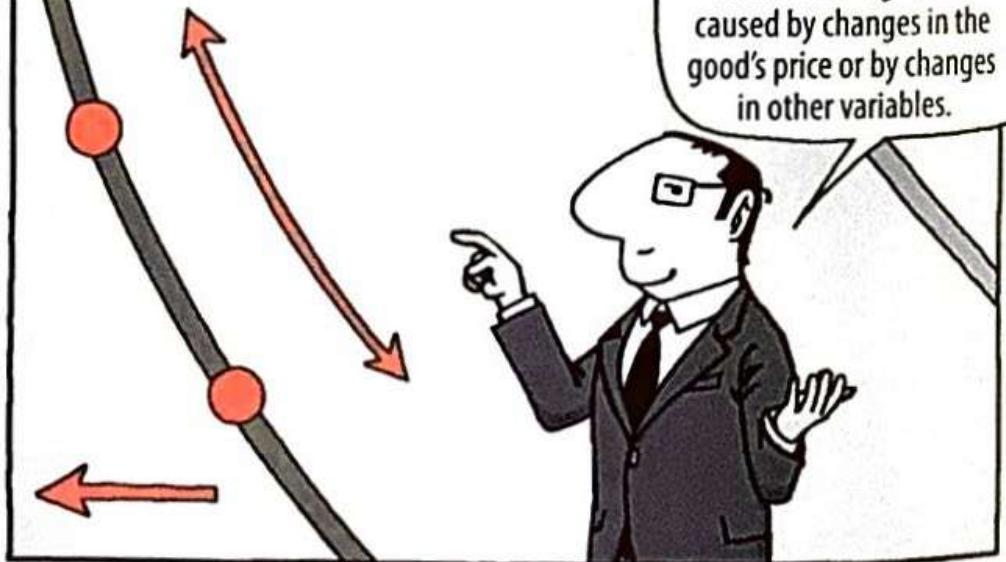
The Law of Demand and the Shift of the Demand Curve

When a fall in the price of one good raises the demand for another good, the two goods are called complements.



In analyzing consumer behavior, it is critical to distinguish between a movement along a given demand curve and a shift in the demand curve.

We need to figure out first whether changes in the demand for a good are caused by changes in the good's price or by changes in other variables.



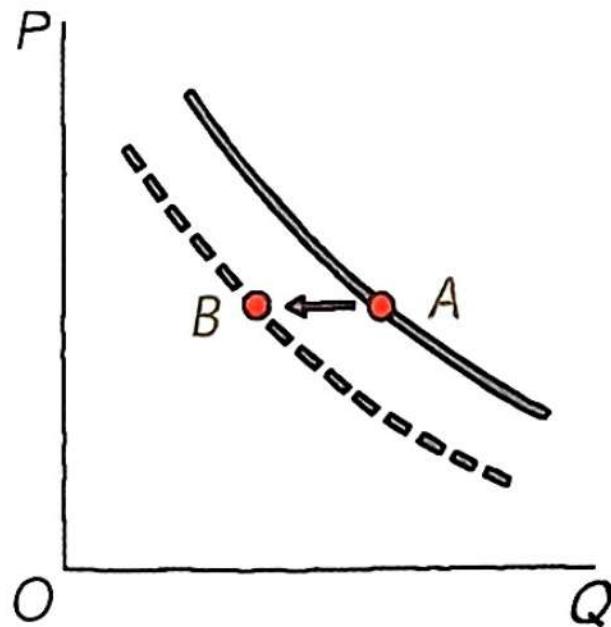
Two ways to reduce cigarette demand

Two ways to
Reduce the Quantity
of Cigarettes
Demanded



Two ways to reduce cigarette demand

The first approach is to shift the demand curve for cigarettes and other tobacco products to the left.

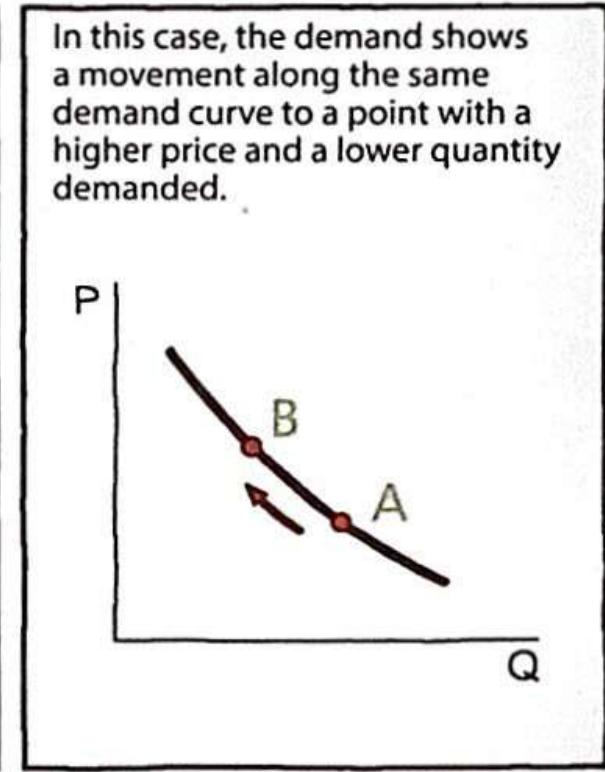
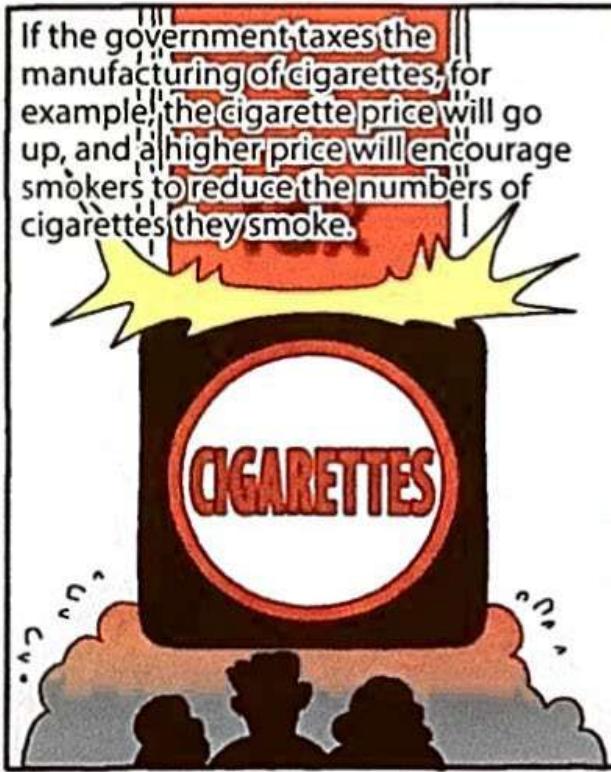


Public service advertisements and mandatory health warnings on cigarette packs are both policies aimed at reducing the demand for cigarettes.

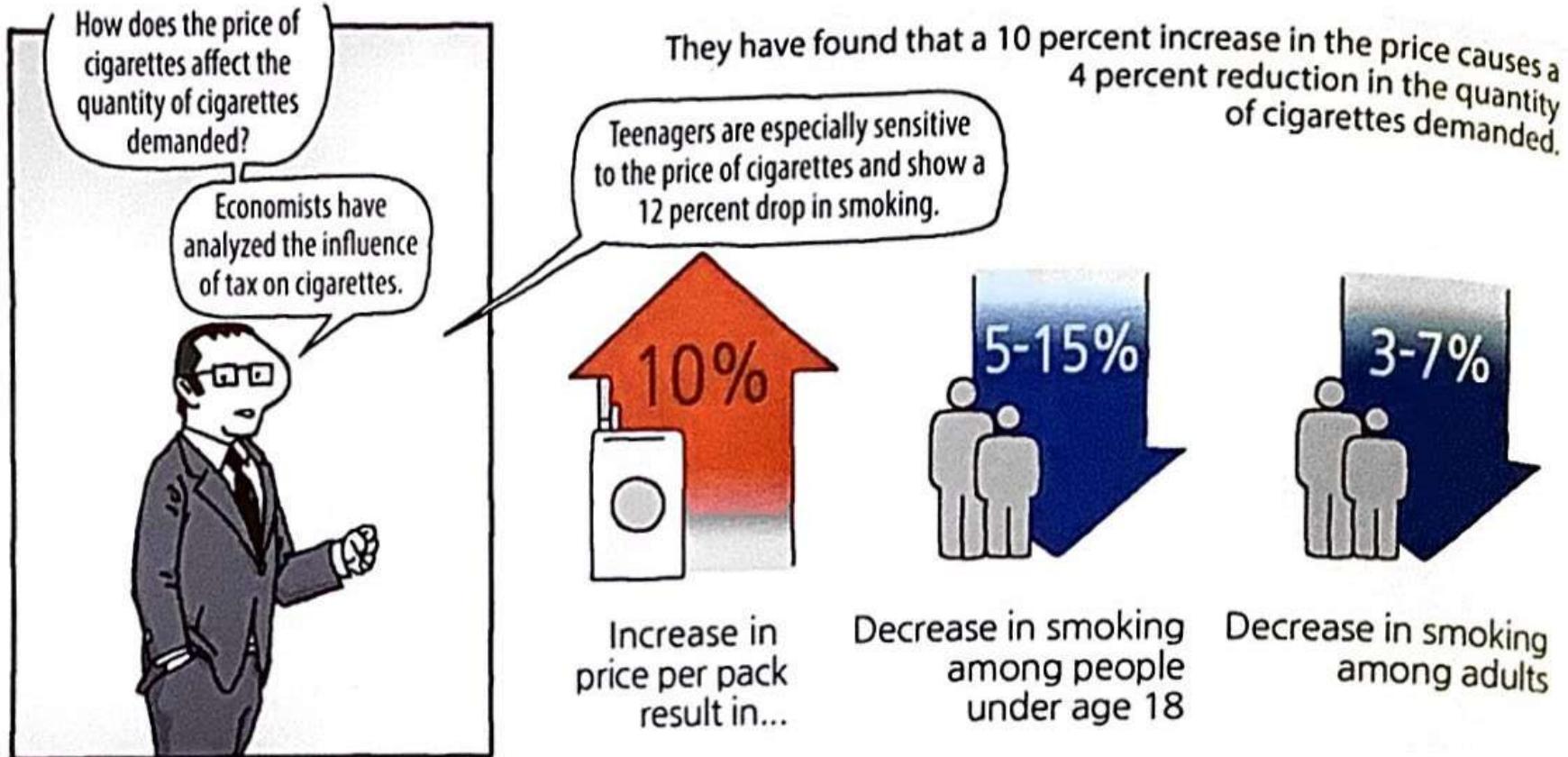


If successful, these policies will reduce the demand for cigarettes at every price level and shift the demand curve for cigarettes to the left.

Two ways to reduce cigarette demand



Two ways to reduce cigarette demand

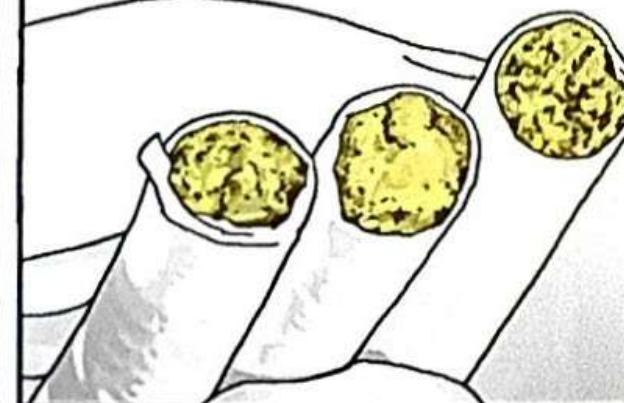


Two ways to reduce cigarette demand

Opponents of cigarette taxes argue that the price of cigarettes affects the demand for illicit drugs, such as marijuana.



Opponents of cigarette taxes often argue that tobacco and marijuana are substitutes, such that high cigarette prices encourage marijuana use.



Two ways to reduce cigarette demand

By contrast, many experts on substance abuse view tobacco as a "gateway drug" leading the young to experiment with other harmful substances.



According to studies, however, lower cigarette prices are associated with GREATER, not less, use of marijuana.



Lipstick effect

During the Great Depression of the 1930s, economists discovered an interesting phenomenon.

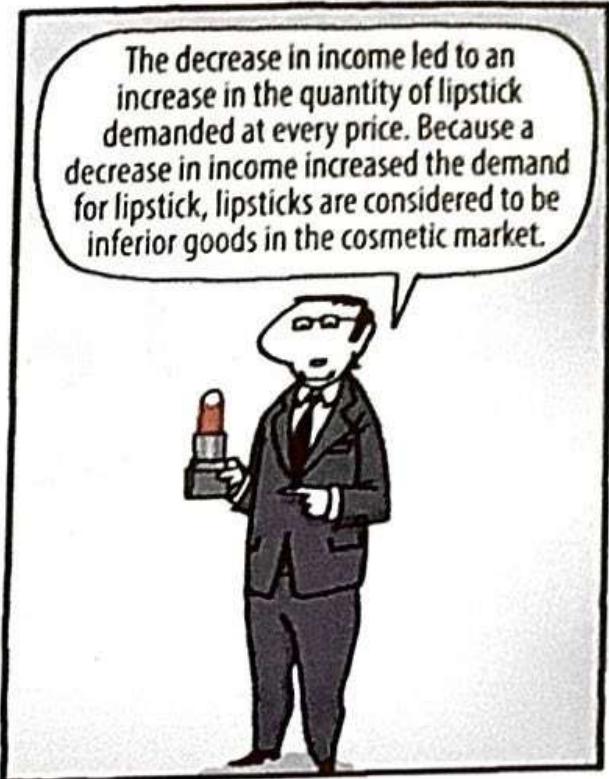
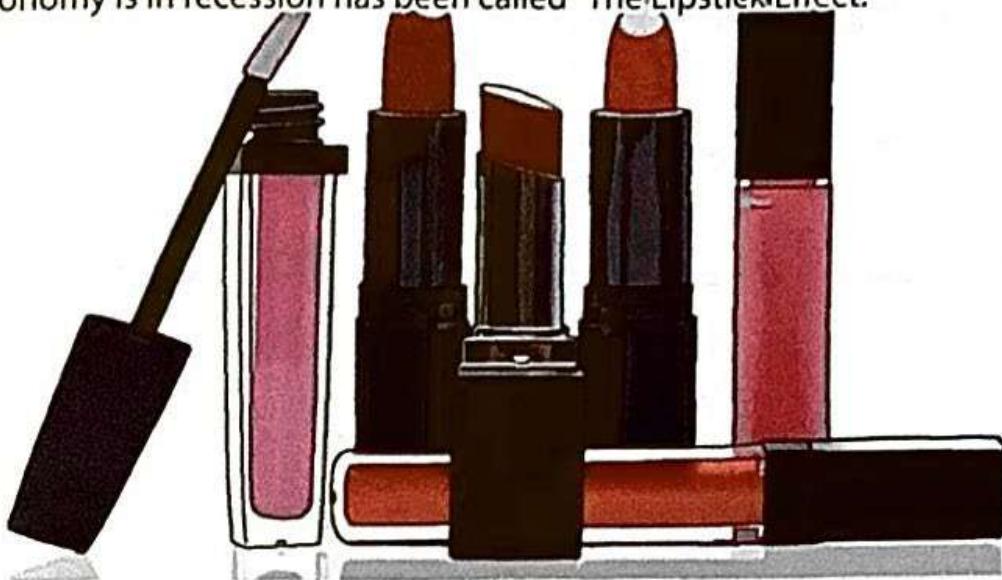


During times of economic hardship, lipstick sales rose, while other economic sectors experienced record sales declines.



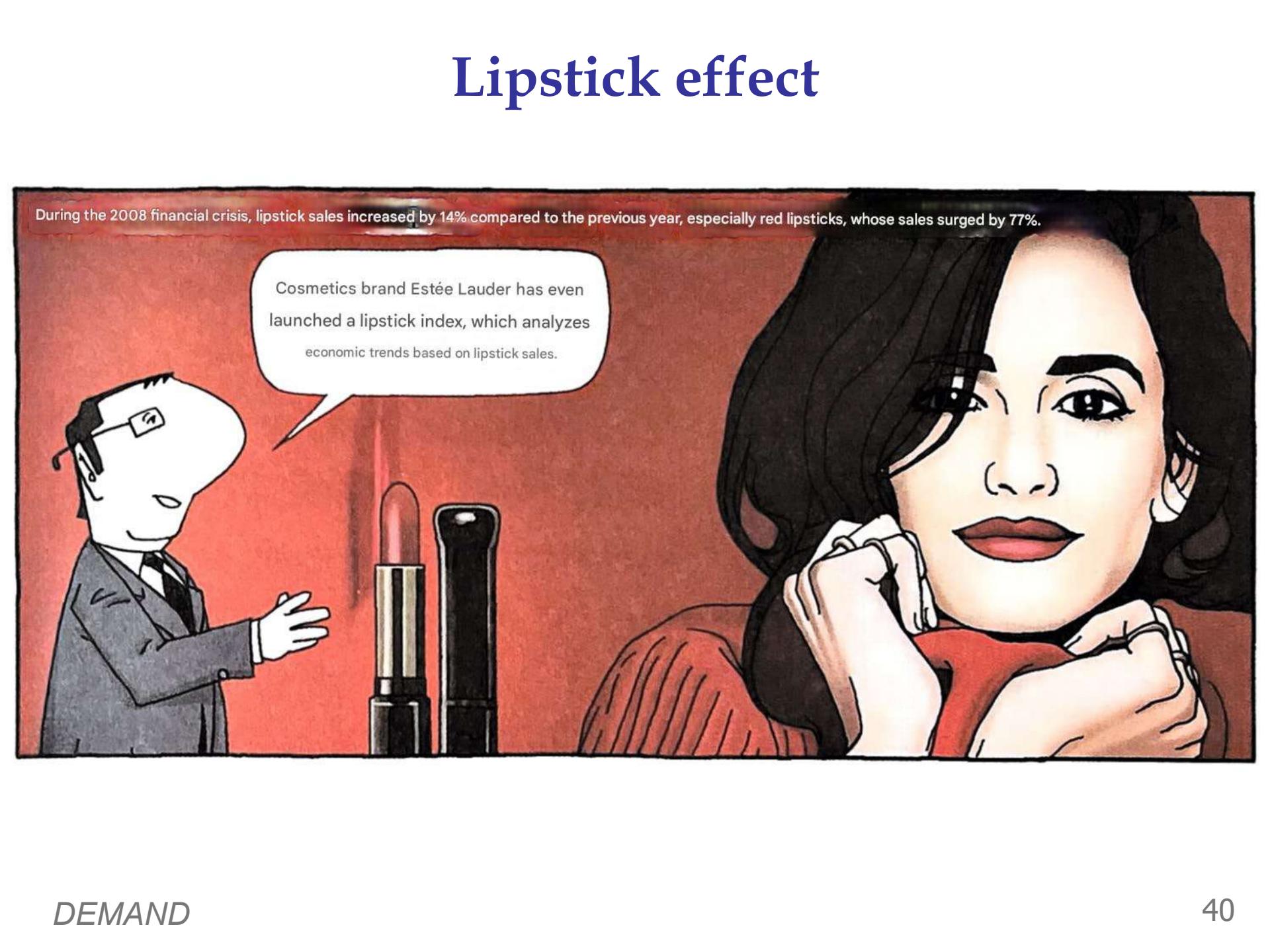
Lipstick effect

During the Great Depression, many women could not fulfill their needs for beauty due to a decrease in income, and they purchased cheaper items like lipsticks for vicarious pleasure. Since then, the phenomenon, which shows a rise in the sale of less expensive goods when the economy is in recession has been called "The Lipstick Effect."



Lipstick effect

During the 2008 financial crisis, lipstick sales increased by 14% compared to the previous year, especially red lipsticks, whose sales surged by 77%.

A stylized illustration featuring a man in a grey suit and glasses on the left, gesturing towards three lipsticks standing upright. A woman with dark hair and a red dress is on the right, applying red lipstick to her lips. The background is a solid reddish-orange color.

Cosmetics brand Estée Lauder has even
launched a lipstick index, which analyzes
economic trends based on lipstick sales.

Lipstick effect



SUMMARY



- The quantity demanded of any good is the amount of that good that buyers are willing and able to purchase at a given price level.
- The quantity demanded of any good is determined by many factors, with the price of the good being the primary one.
 - When all other factors are held constant, if the price of a good rises, the quantity demanded for that good decreases; if the price of a good falls, the quantity demanded increases. Economists refer to this as the "law of demand."

SUMMARY



- The demand curve shows how the quantity demanded of a good changes when its price changes, assuming all other determinants of demand remain unchanged.
- However, if any determinant of demand other than the good's price changes, the demand curve will shift.
 - Any change that increases the quantity demanded at every price level shifts the demand curve to the right.
 - Any change that decreases the quantity demanded at every price level shifts the demand curve to the left.

SUMMARY



- There are many variables that can cause the demand curve to shift. The following are some of the most important ones:
- Income
 - If a decrease in income leads to a decrease in the demand for a good, that good is called a normal good.
 - If a decrease in income leads to an increase in the demand for a good, that good is called an inferior good.
- Prices of related goods
 - When a fall in the price of one good leads to a decrease in the demand for another good, the two goods are called substitutes.
 - When a fall in the price of one good leads to an increase in the demand for another good, the two goods are called complements.

SUMMARY



■ Tastes

- People's tastes are shaped by historical and psychological forces that extend beyond the field of economics. However, what happens when people's tastes change is a subject of economic analysis.

■ Expectations

- Expectations about the future can affect the current demand for a good or service.

■ Number of buyers

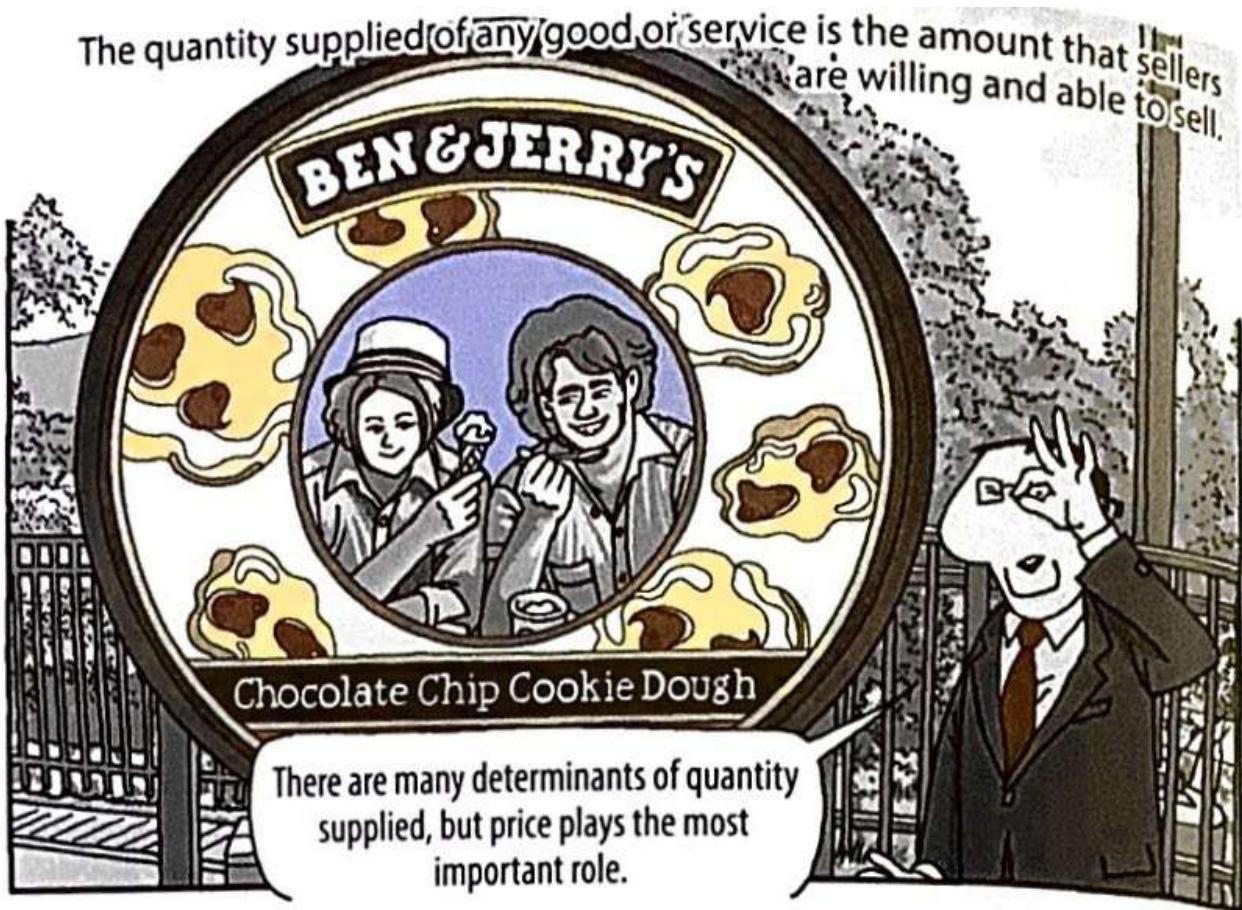
- If the number of buyers increases (decreases), the demand curve will shift to the right (left).

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The Law of Supply and Shifts in the Supply Curve

The Law of Supply
and Shifts in the
Supply Curve



The Law of Supply and Shifts in the Supply Curve



The Law of Supply and Shifts in the Supply Curve

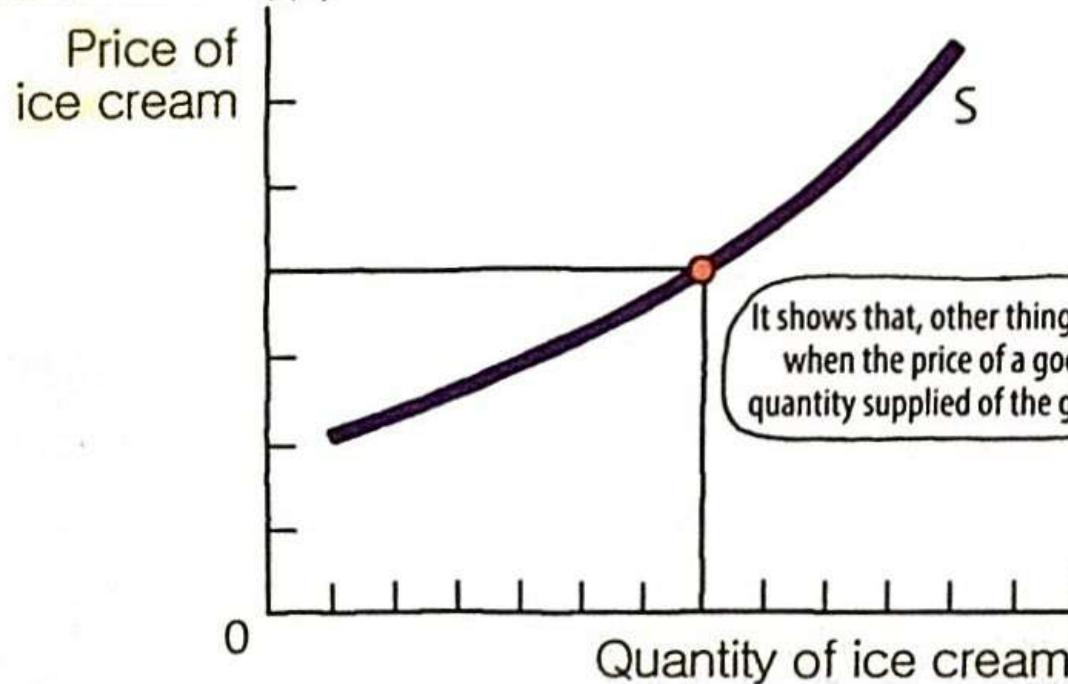


If the price of ice cream goes below a certain level, some sellers may choose to shut down temporarily until market conditions improve, or shut down permanently and exit the market all together.



The Law of Supply and Shifts in the Supply Curve

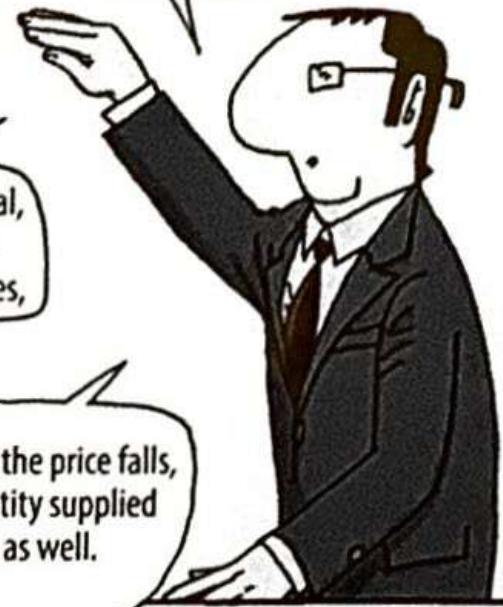
The relationship between the price of a good and the quantity supplied is called the law of supply.



It shows that, other things being equal, when the price of a good rises, the quantity supplied of the good also rises,

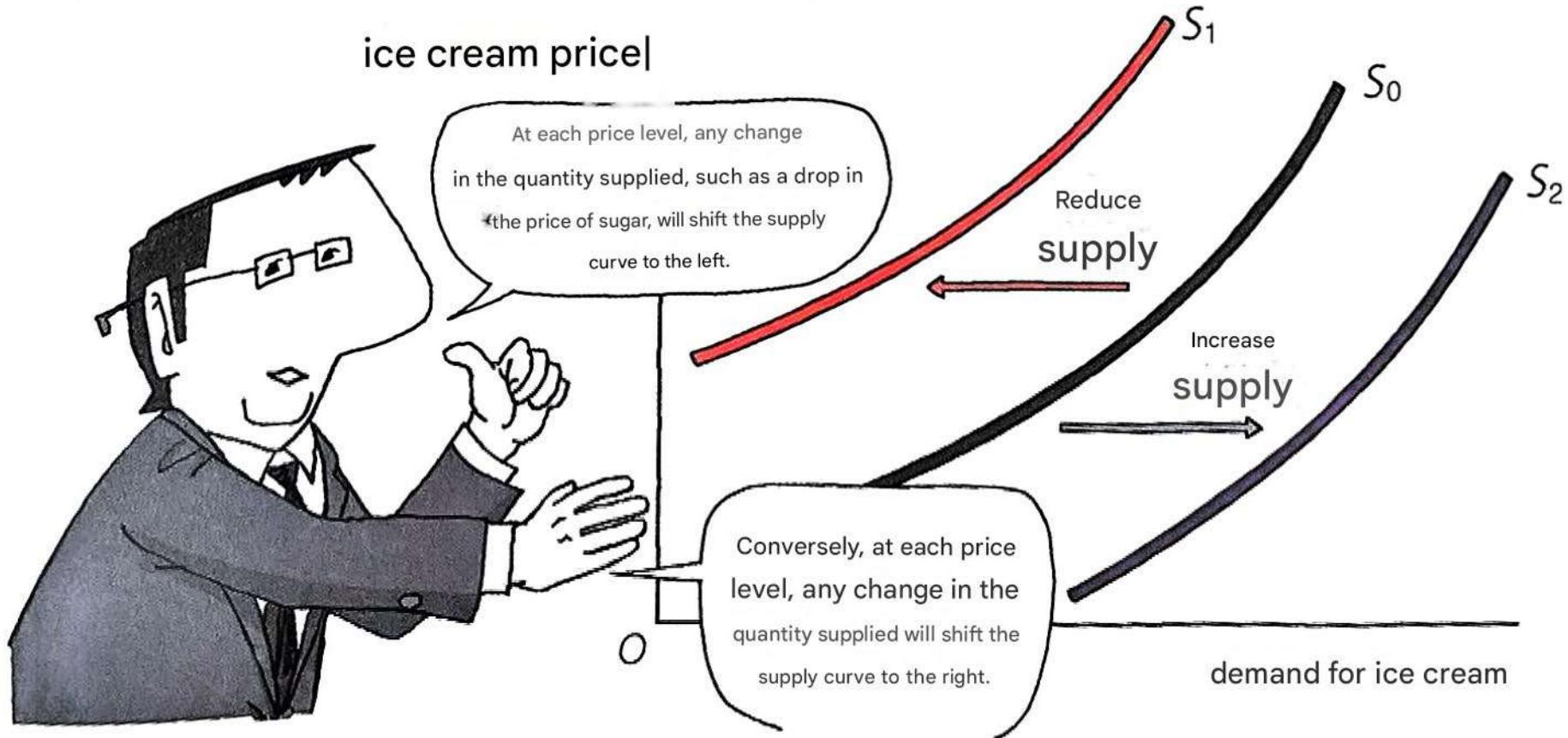
The supply curve shows the law of supply.

and when the price falls, the quantity supplied falls as well.



The Law of Supply and Shifts in the Supply Curve

The supply curve shifts when any factor other than price changes.



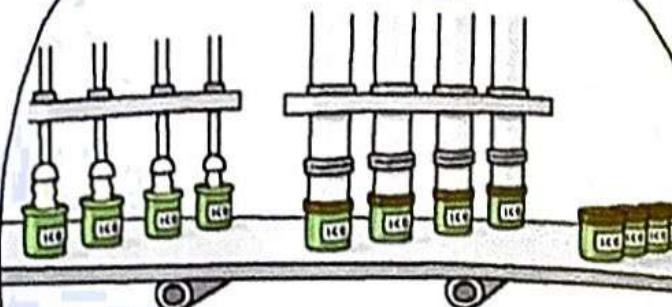
There are many variables that can shift the supply curve. Here are some of the most important ones.

Input price



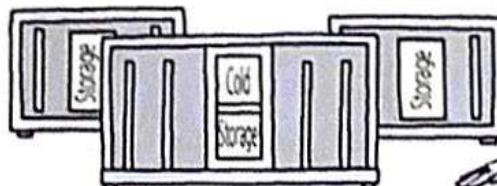
The price of the inputs, such as cream, sugar, flavoring, ice cream machines, the ice cream shop building, and labor, is negatively correlated to the supply of a good.

Technology



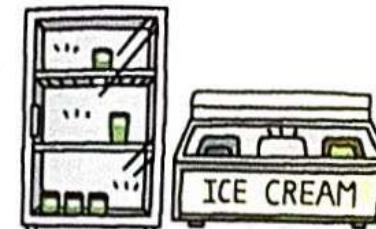
The invention of the mechanized ice-cream machine reduces the amount of labor necessary to make ice cream and the firm's cost, and raises the supply of ice cream.

Expectations



If a firm expects the price of ice cream to rise in the future, it will put some of its current production into storage and supply less to the market today.

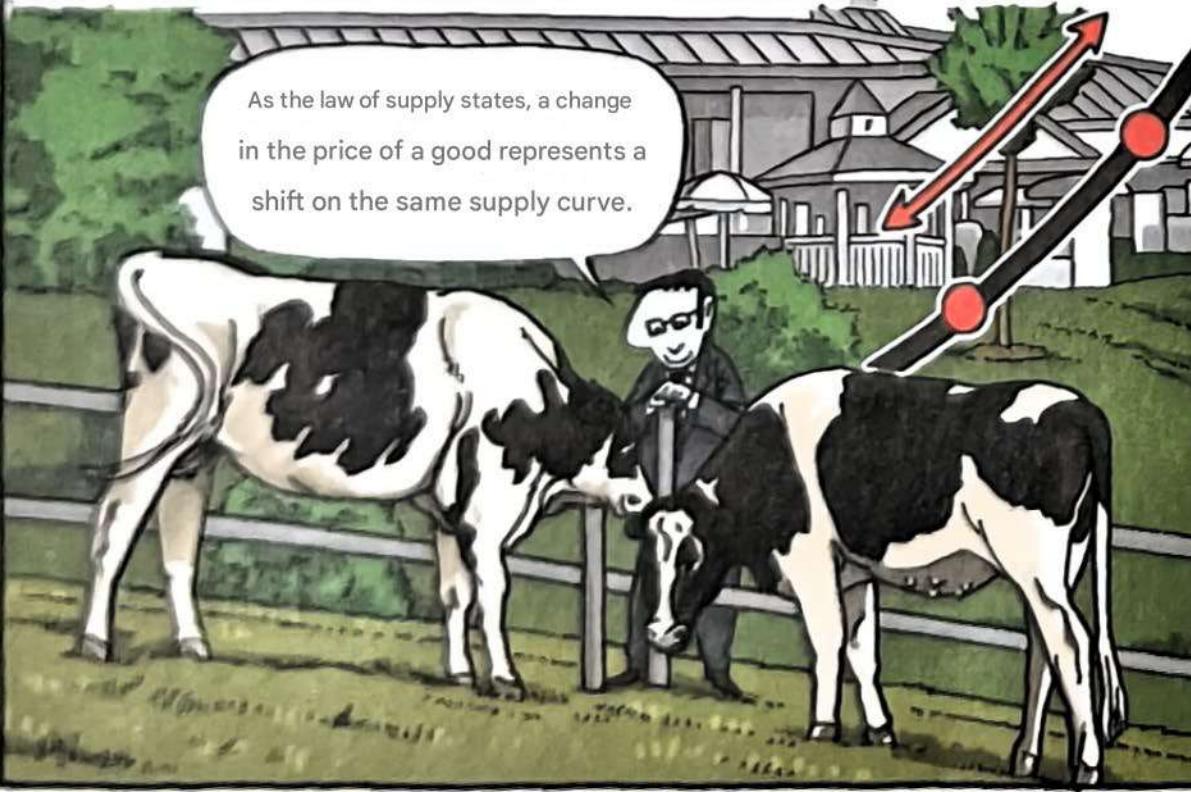
Number of sellers



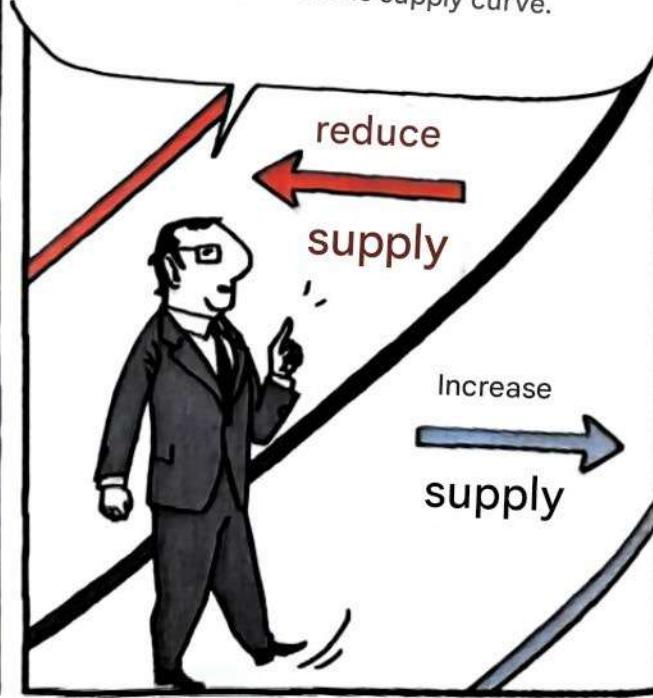
If the number of sellers decreases, the supply in the market will fall.

The Law of Supply and Shifts in the Supply Curve

Just like with market demand, when a change in a determinant causes a change in the quantity supplied, it is important to determine whether it will cause a shift in the supply curve or a shift along the same supply curve.



As the law of supply states, a change in the price of a good represents a shift on the same supply curve.



Any change in any variable other than price will alter the quantity supplied at each price level and shift the supply curve.

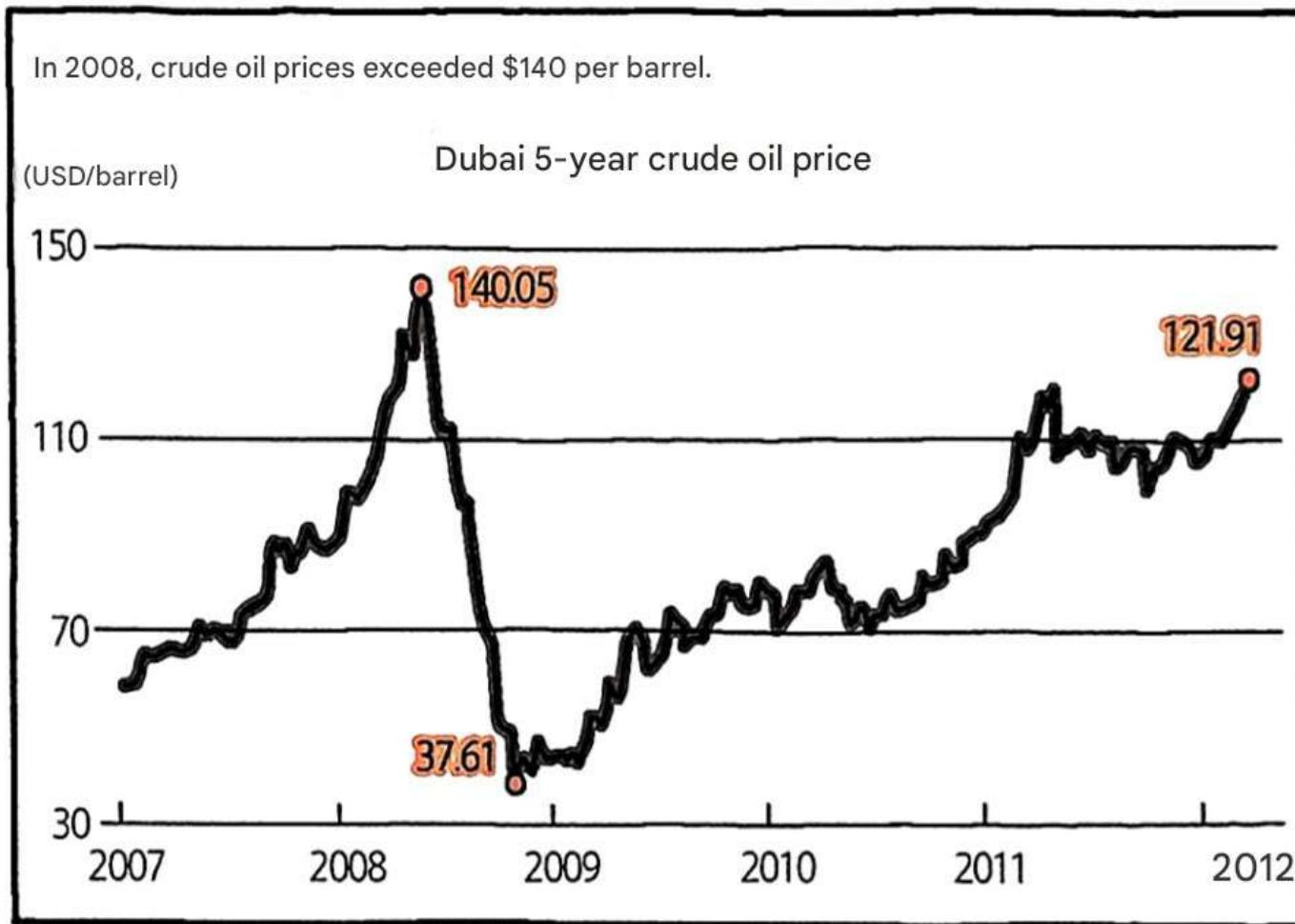
High oil prices and flight routes

High oil prices and routes

The rapid economic growth of China and India in the 21st century has led to increased demand for crude oil. The failure of OPEC member countries to expand oil production facilities to meet this growing demand has resulted in a severe imbalance between crude oil supply and demand.



High oil prices and flight routes

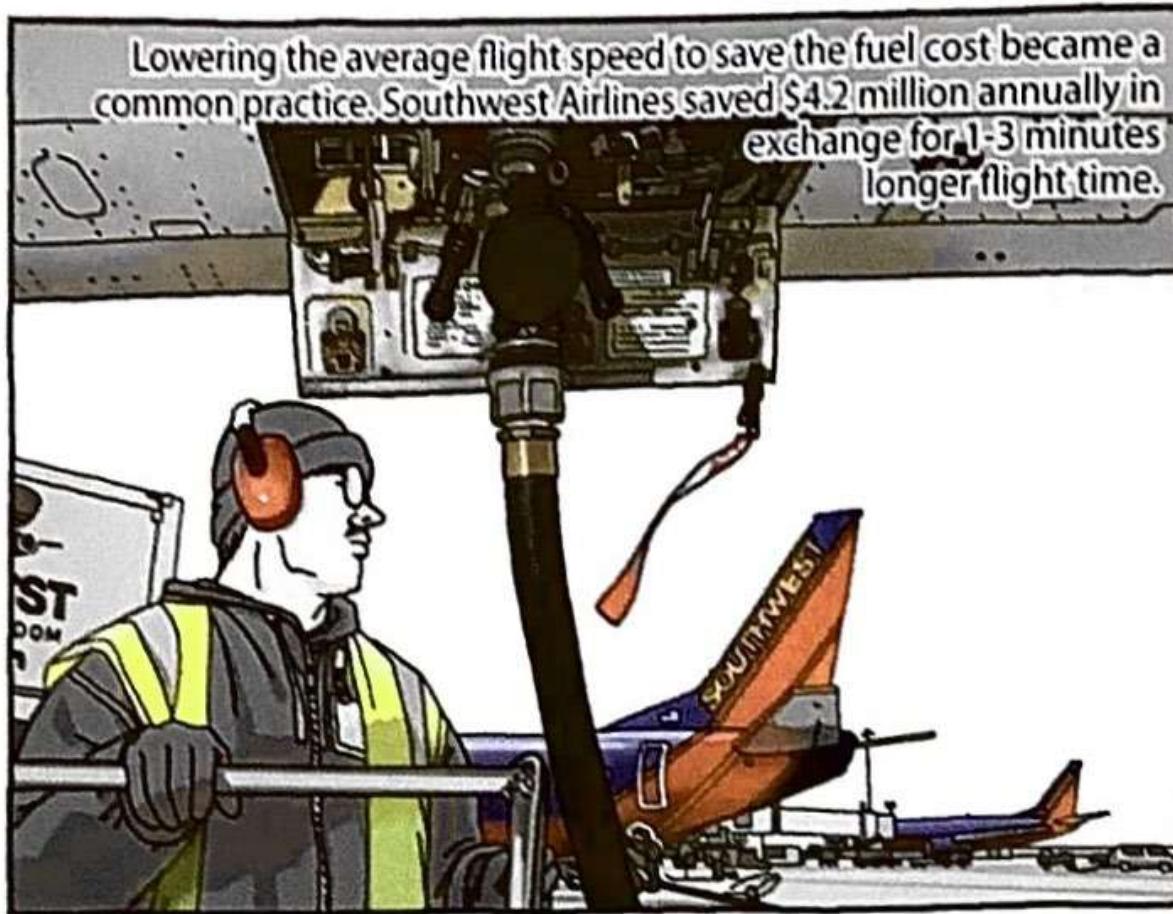


High oil prices and flight routes

With crude oil prices hitting record highs in 2008, many airlines around the world faced financial risks. They closed some routes and reduced their workforce. To cut fuel costs, they reduced aircraft speeds and charged extra for baggage.

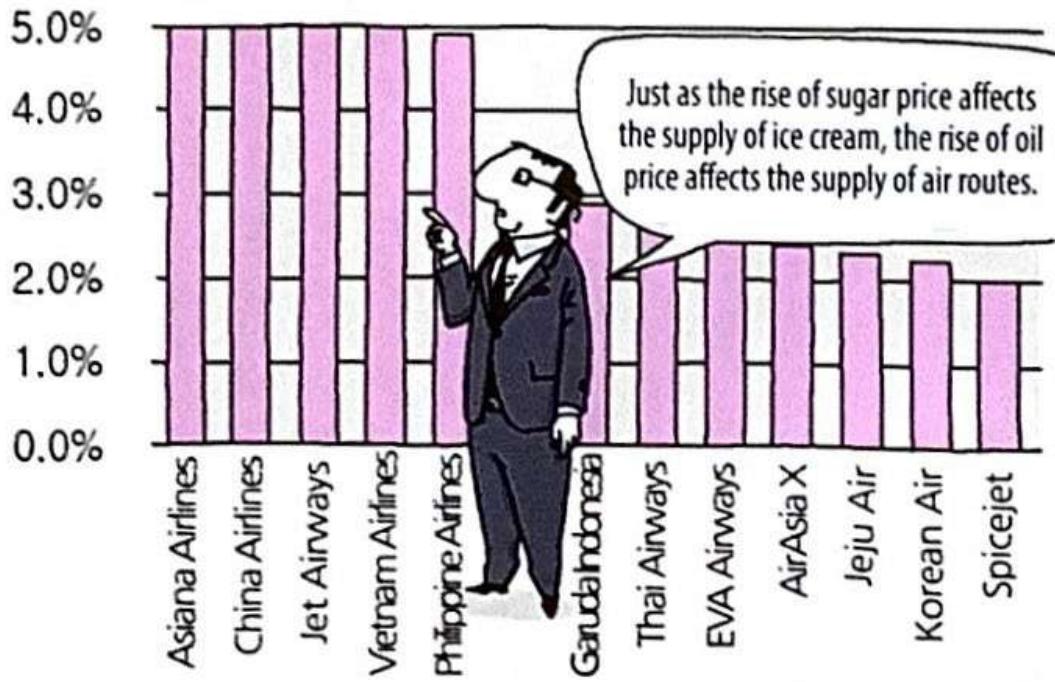


High oil prices and flight routes



High oil prices and flight routes

Net profit (loss) impact for every 1% rise in jet fuel price on an annual basis



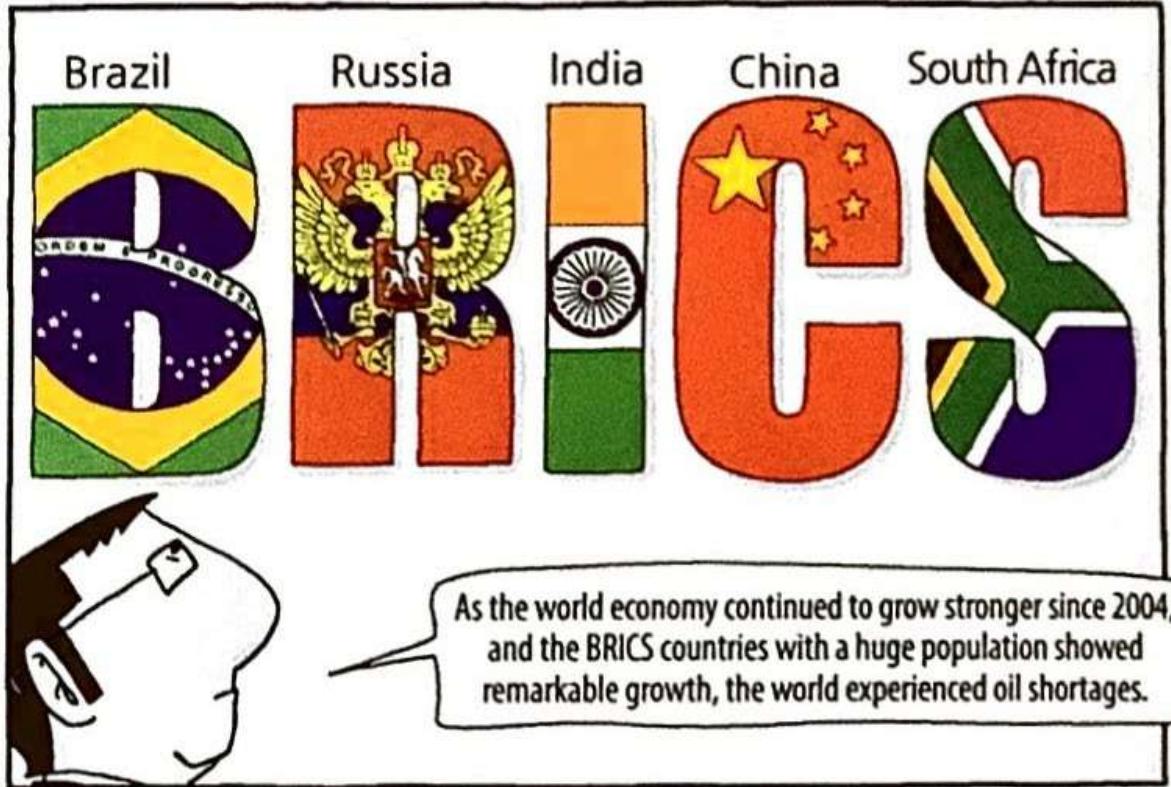
Just as the rise of sugar price affects the supply of ice cream, the rise of oil price affects the supply of air routes.

In the real world, leftward shifts in the supply curve can be observed in different forms.



Shale Oil in the United States

Shale Oil in the
United States



Shale Oil in the United States

Between 2004 and 2008, oil prices soared from \$20 per barrel to over \$100 per barrel.

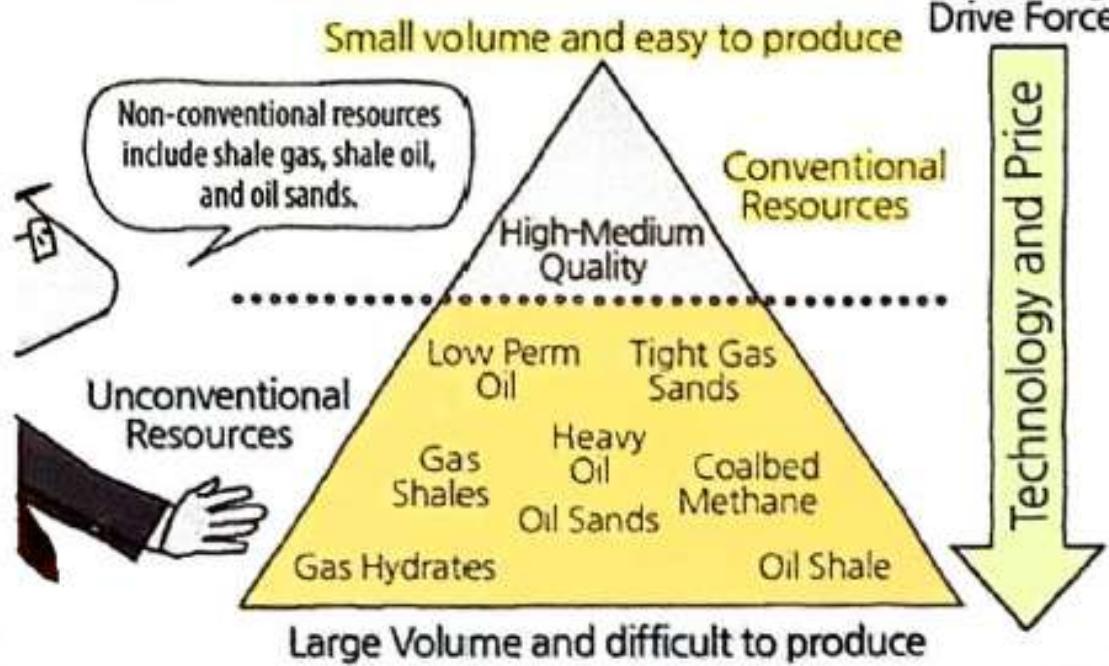
As oil-producing countries regard oil as a strategic resource, the United States, European countries, and many Asian countries have expanded their territories into deep-sea or Arctic regions to secure oil supplies.



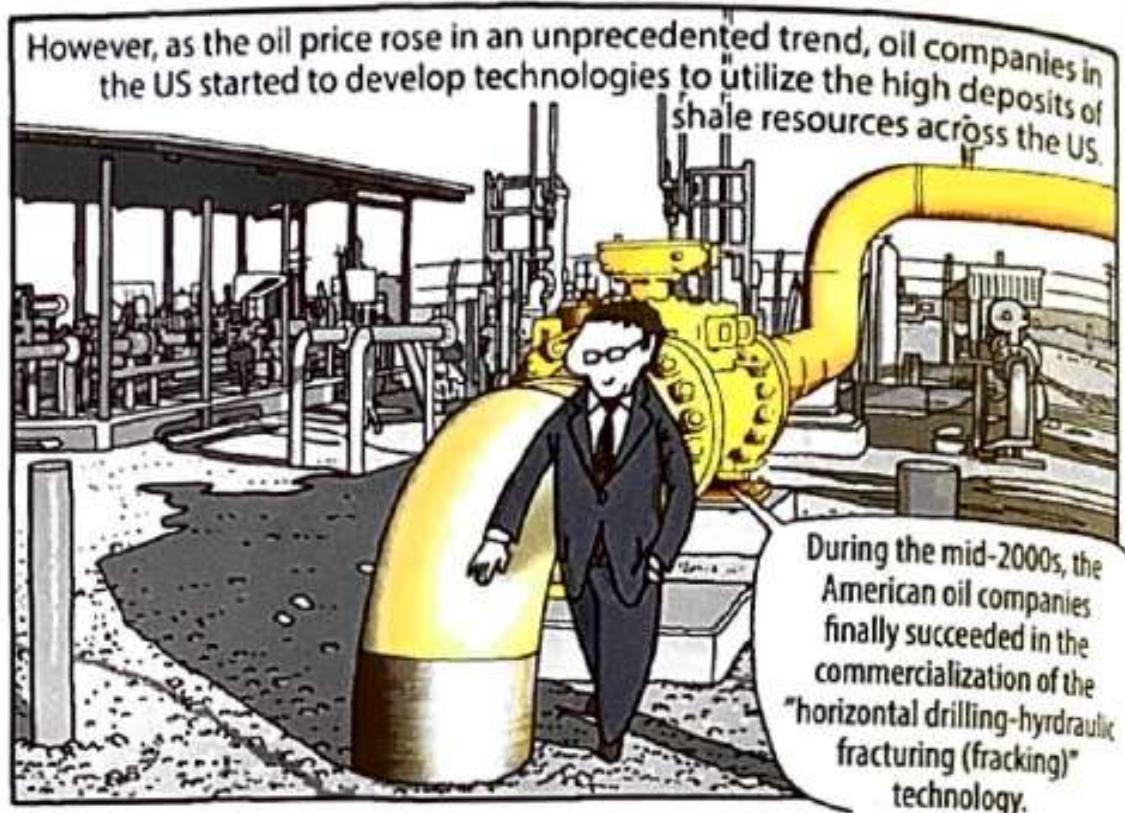
Shale Oil in the United States



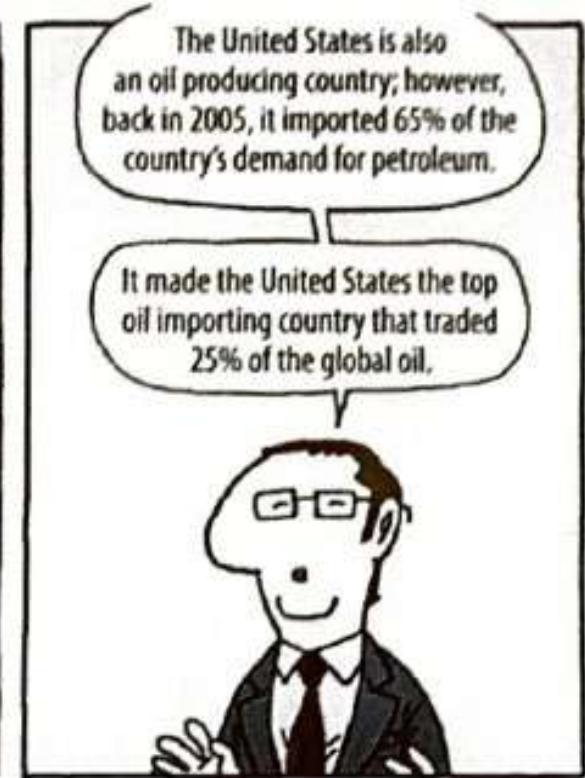
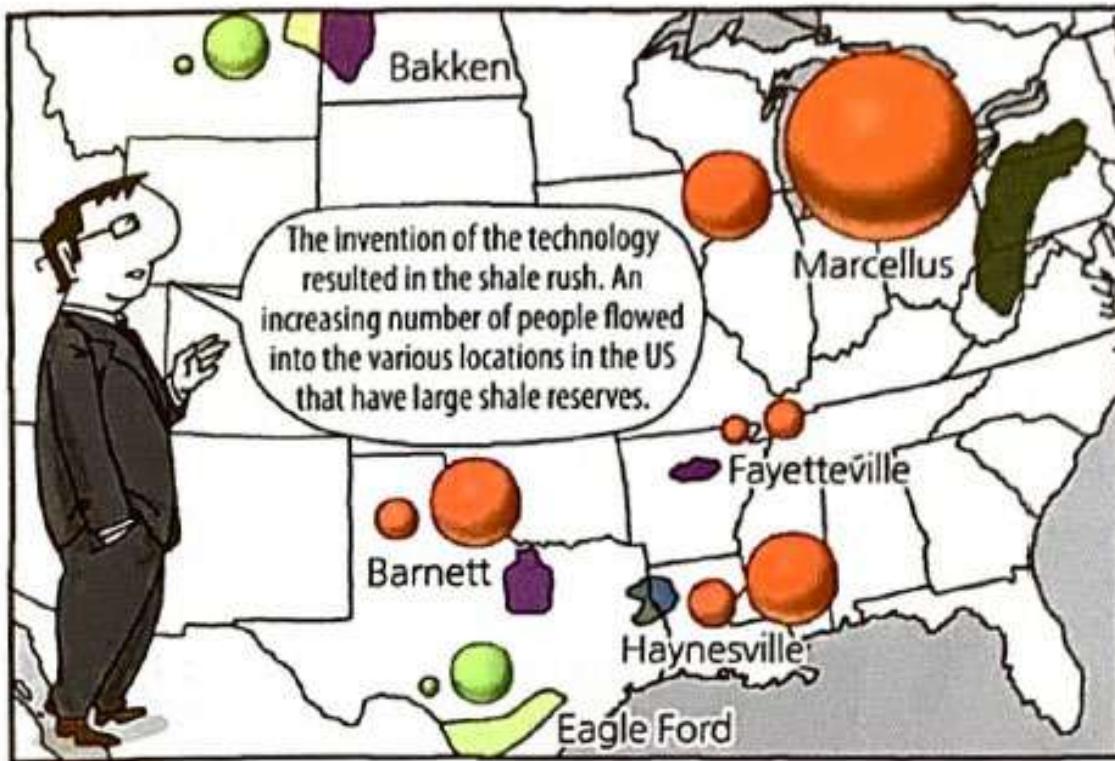
Non-conventional energy resources are the sources of energy that cannot be produced by conventional mining process due to geological formations around the resources that are different from conventional oil or gas.



Shale Oil in the United States



Shale Oil in the United States

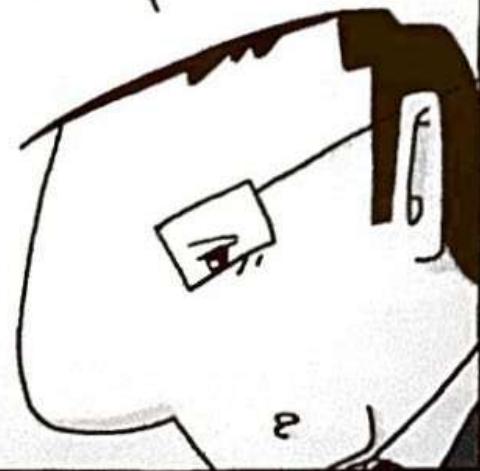


Shale Oil in the United States

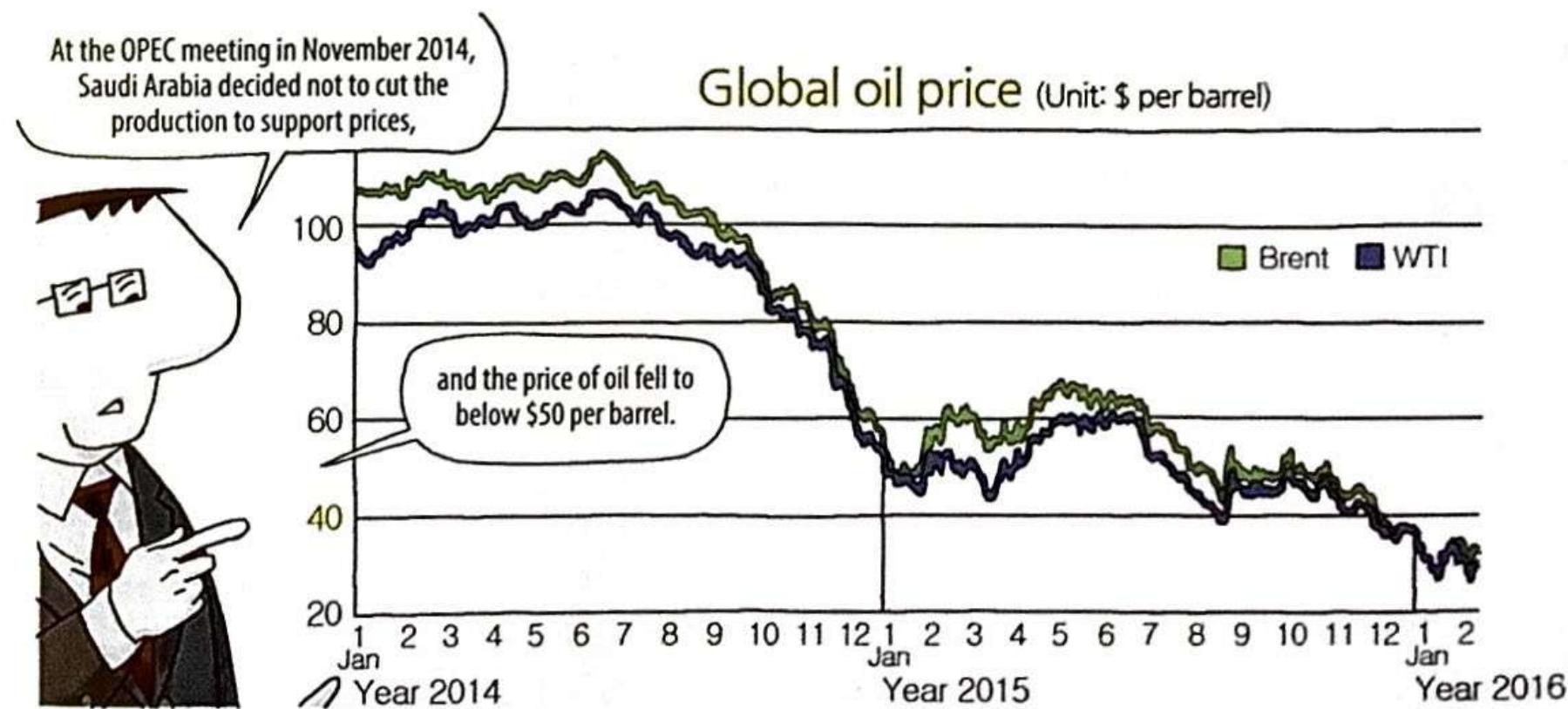
The massive investment wave in the US shale oil industry led to a substantial increase in US oil production. In 2005, seven million barrels were produced daily.



As the global economic growth slowed down while oil surplus was increasing, the oil price started to decline from the second half of 2014.

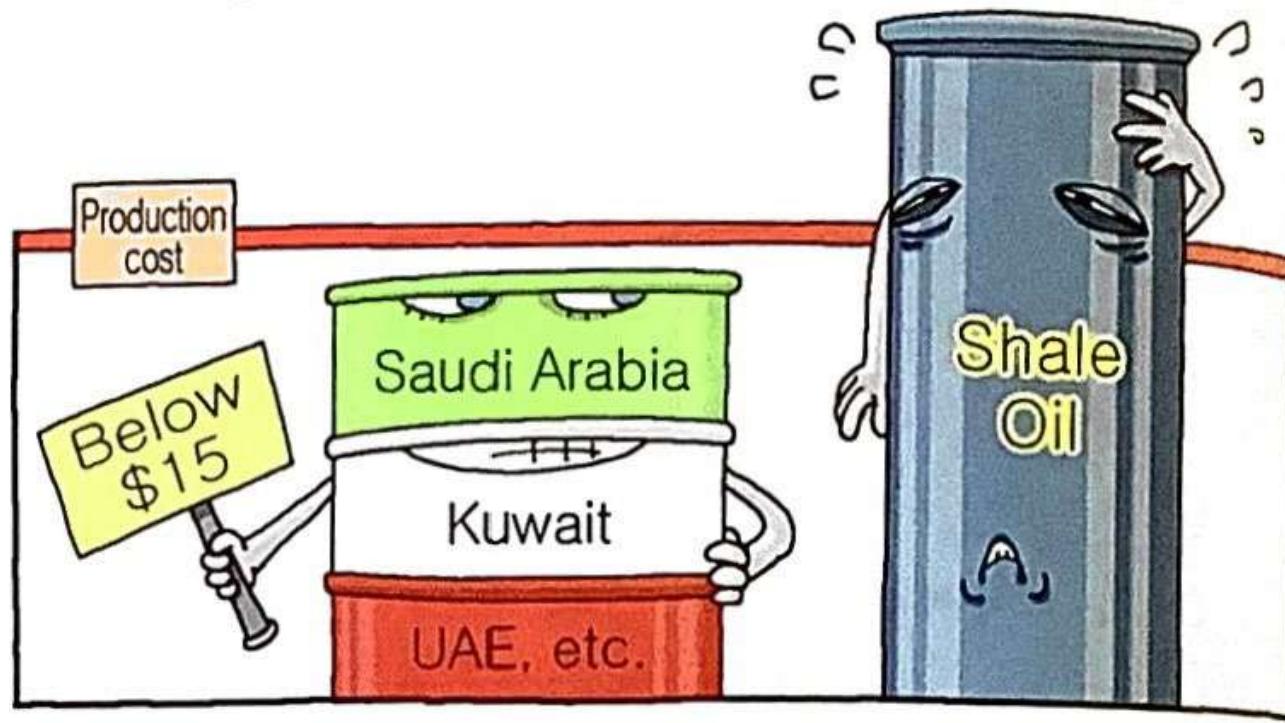


Shale Oil in the United States



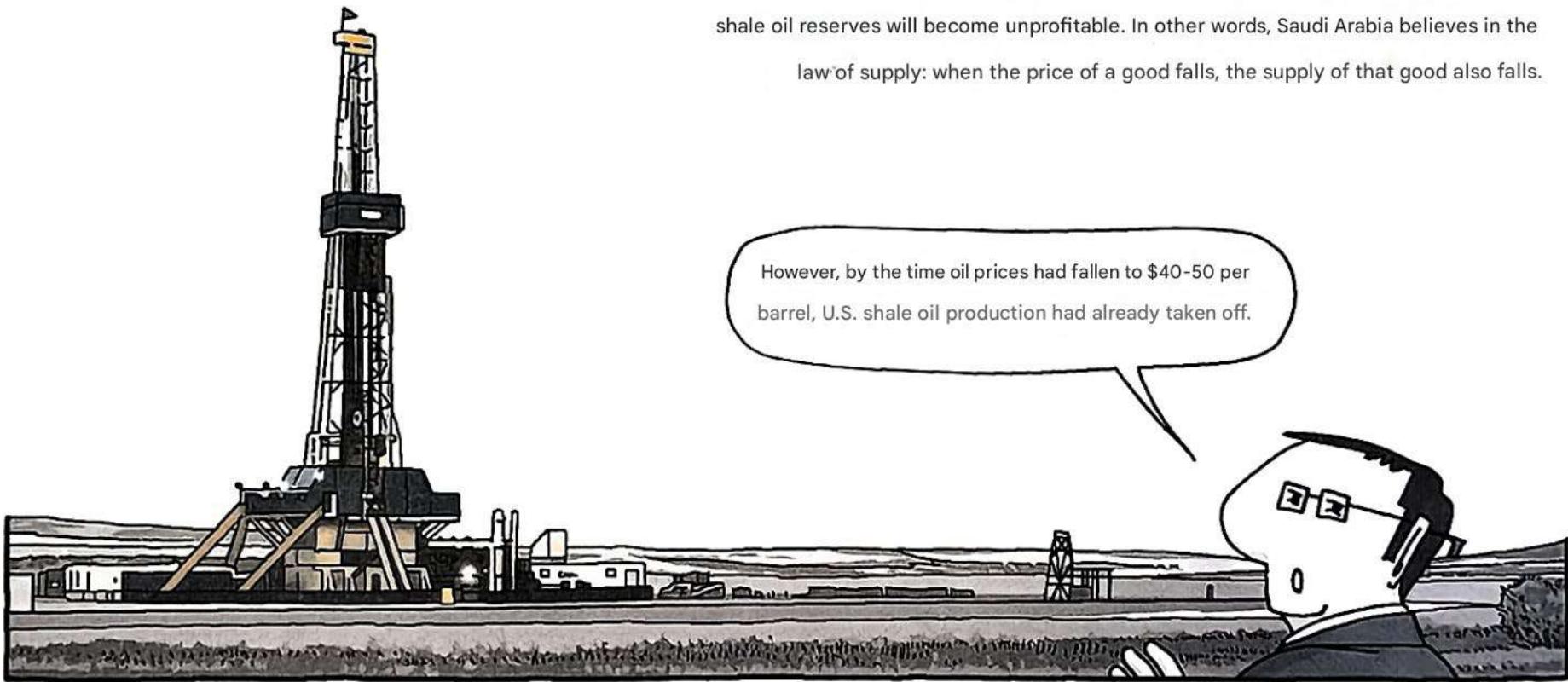
Shale Oil in the United States

Therefore, focusing on price competition seemed more effective in forcing the US shale players to exit the market. Because, OPEC countries' oil production cost was \$15 per barrel, while the production cost of shale oil was multiple times higher.

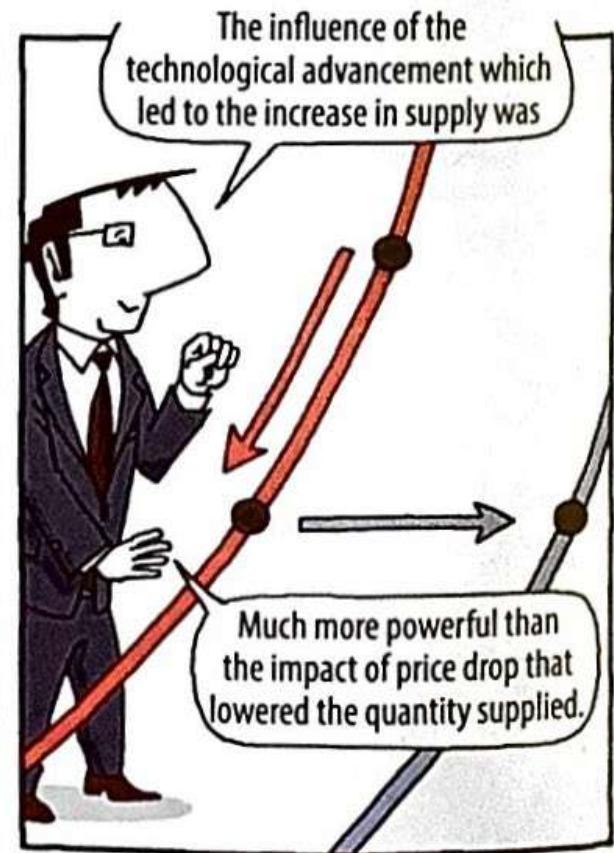
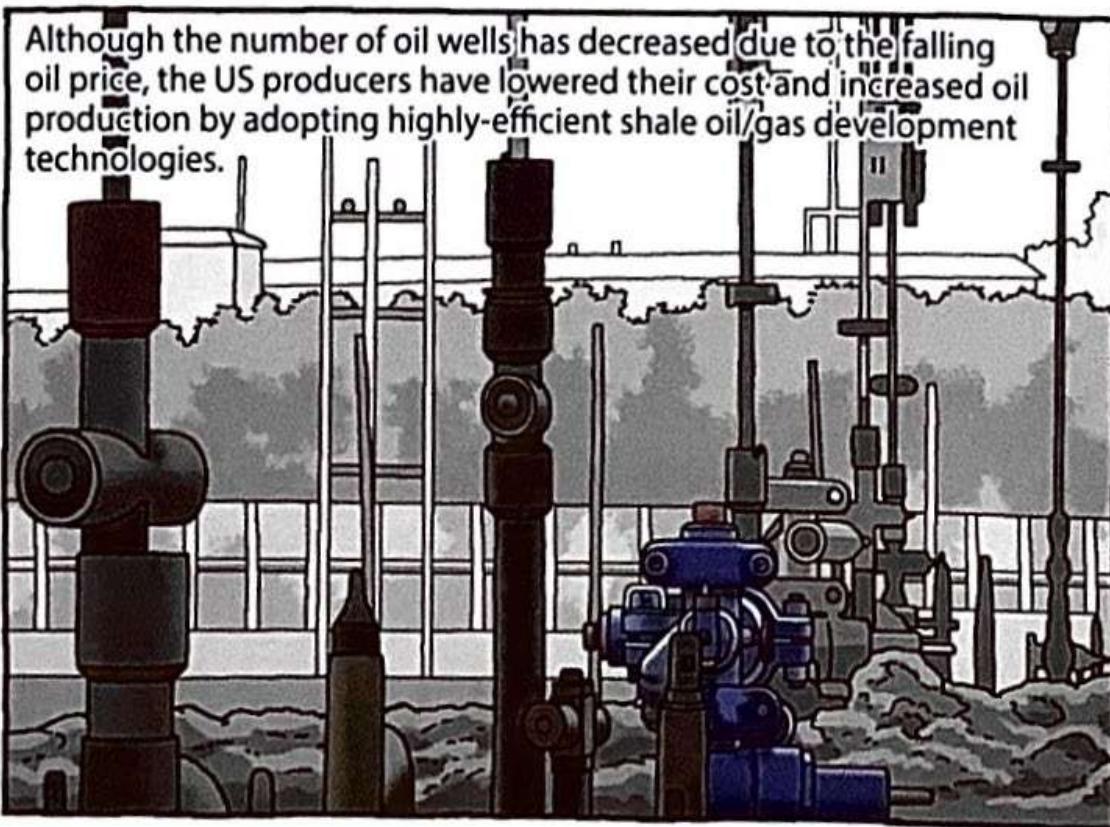


Shale Oil in the United States

US economic analysts suggest that when global oil prices reach \$60 per barrel, half of the US shale oil reserves will become unprofitable. In other words, Saudi Arabia believes in the law of supply: when the price of a good falls, the supply of that good also falls.



Shale Oil in the United States



SUMMARY



- The quantity supplied of any good or service refers to the amount that sellers are willing and able to sell.
- There are many determinants of quantity supplied, but price plays the most significant role. The relationship between the price of a good and its quantity supplied is known as the law of supply.
 - It states that, all else being equal, when the price of a good rises, the quantity supplied of that good also rises; when the price falls, the quantity supplied falls as well.

SUMMARY



- Changes in any other factors that affect producers determine the quantity sold. However, when any factor other than the price of the good changes, the supply curve shifts.
 - Any change that reduces the quantity supplied at every price level, such as a decrease in the price of sugar, will shift the supply curve to the left.
 - Conversely, any change that increases the quantity supplied at every price level will shift the supply curve to the right.

SUMMARY



- There are several variables that can cause the supply curve to shift. The following are some of the most important ones:
 - **Input Prices:** When the price of one or more inputs rises, firms will reduce their supply. If input prices increase significantly, companies may even shut down production lines. Therefore, the quantity supplied of a good is negatively related to the price of the inputs used to produce it.
 - **Technology:** If advancements in production technology reduce the amount of labor required, firms' costs will decrease, and the supply of the good (e.g., ice cream) will increase.
 - **Expectations:** The current quantity supplied may depend on expectations about the future market. For example, if a firm expects the price of its product to rise in the future, it may store some of its current output, thereby reducing the current market supply.
 - **Number of Sellers:** If the number of sellers in the market decreases, market supply will also decrease.

Chapter 6: Supply and Demand in Markets

- Markets and Competition
- Demand
- Supply
- The Combination of Supply and Demand

Equilibrium

Equilibrium

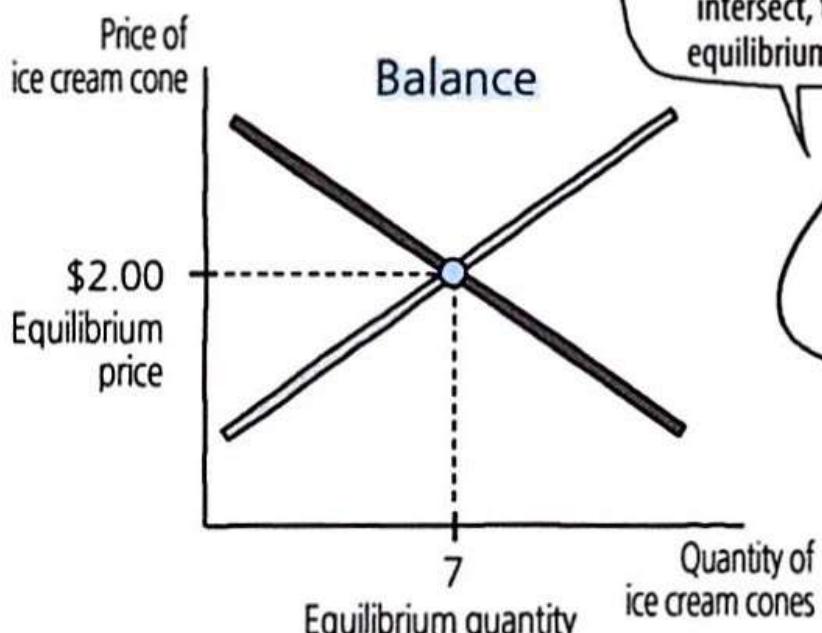
So far, we have analyzed supply and demand separately,

but now, we will combine them to see how they determine the price and quantity of a good sold in a market.

Demand

Supply

Equilibrium



At the point where the supply and demand curves intersect, the market's equilibrium is achieved.

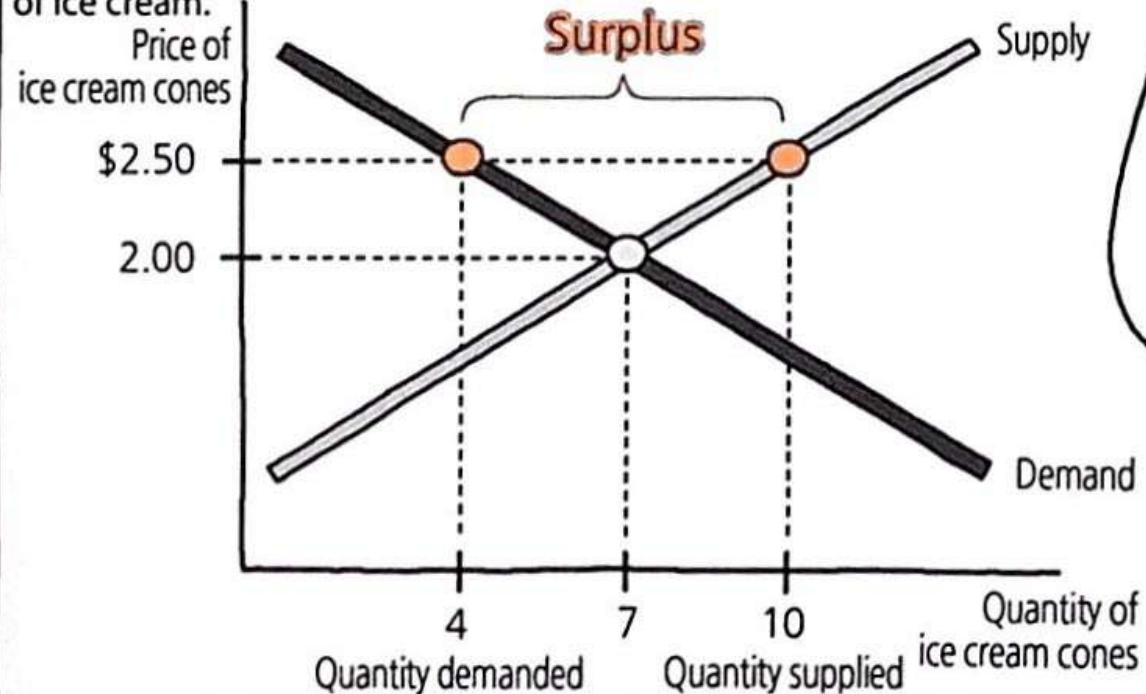
Let us suppose the ice cream market's equilibrium is achieved as in the graph above: at a price of \$2.00 per cone, suppliers will supply 7 cones and consumers will buy 7 cones.

The actions of buyers and sellers naturally move markets toward the equilibrium of supply and demand. Let's see what happens when the market price is not equal to the equilibrium price.



Equilibrium

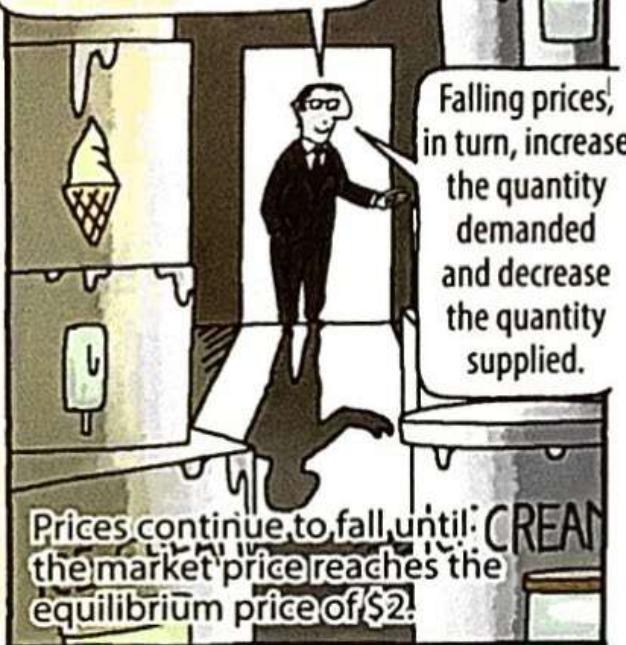
If the market price is above the equilibrium price, like when the price of ice cream is \$2.50, the quantity of the good supplied is 10 cones which exceeds the quantity demanded of 4 cones. Thus, there will be a surplus of ice cream.



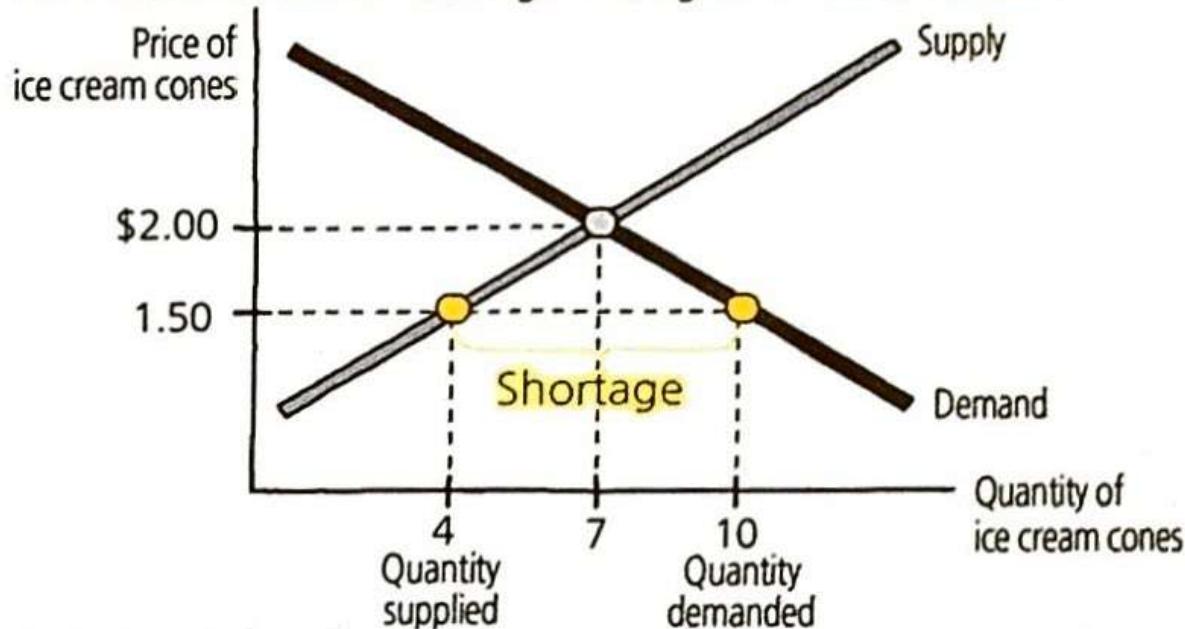
This situation is called a "surplus" of the good, or "excess supply."

Equilibrium

Sellers respond to the surplus by cutting their prices.



Let us suppose now that the market price is below the equilibrium price. When the price of ice cream cones is \$1.50, the quantity of the cones supplied is 4 and the quantity demanded is 10. Thus, the quantity demanded exceeds the quantity supplied, and there will be a shortage of ice cream. This situation is called a "shortage" of the good or "excess demand".

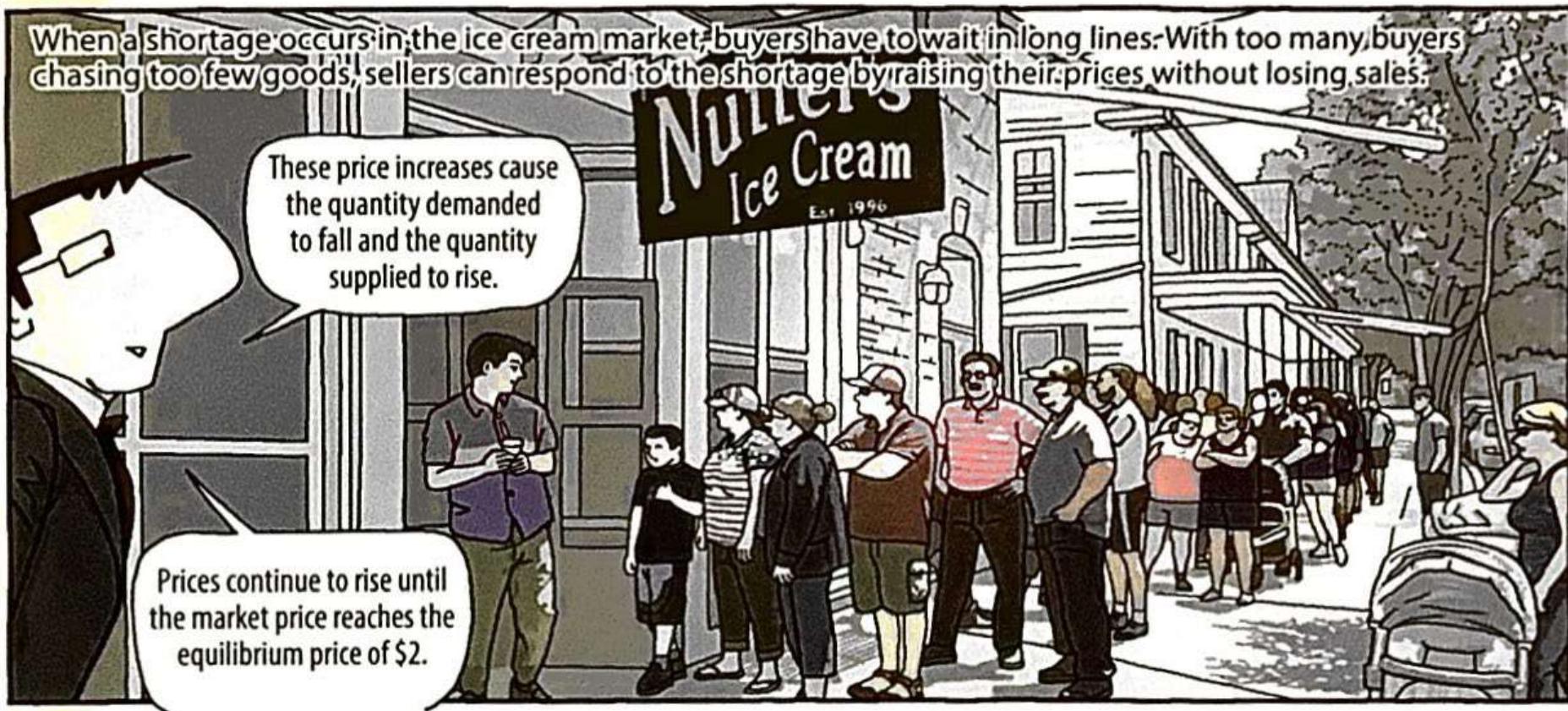


Equilibrium

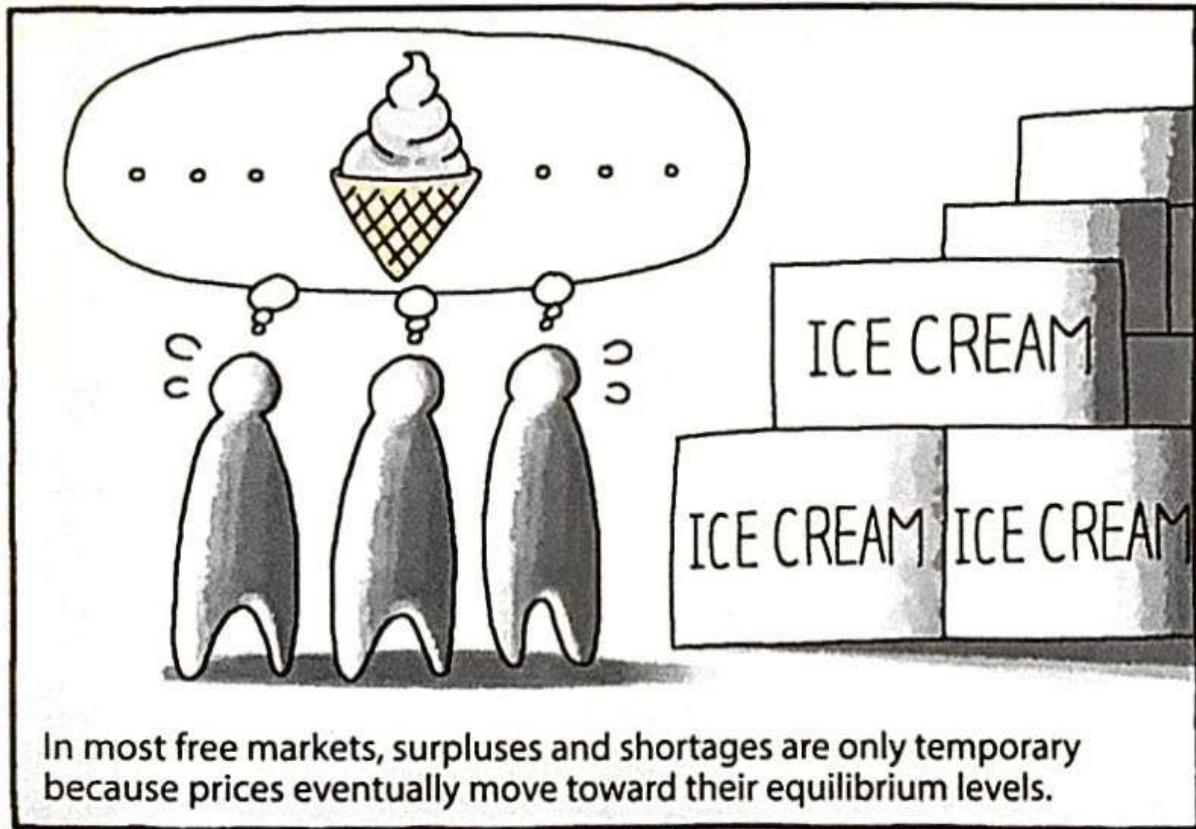
When a shortage occurs in the ice cream market, buyers have to wait in long lines. With too many buyers chasing too few goods, sellers can respond to the shortage by raising their prices without losing sales.

These price increases cause the quantity demanded to fall and the quantity supplied to rise.

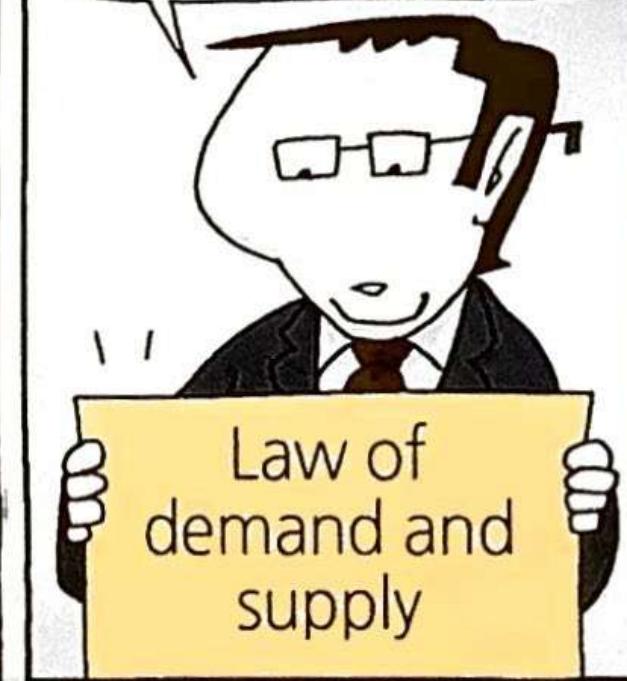
Prices continue to rise until the market price reaches the equilibrium price of \$2.



Equilibrium

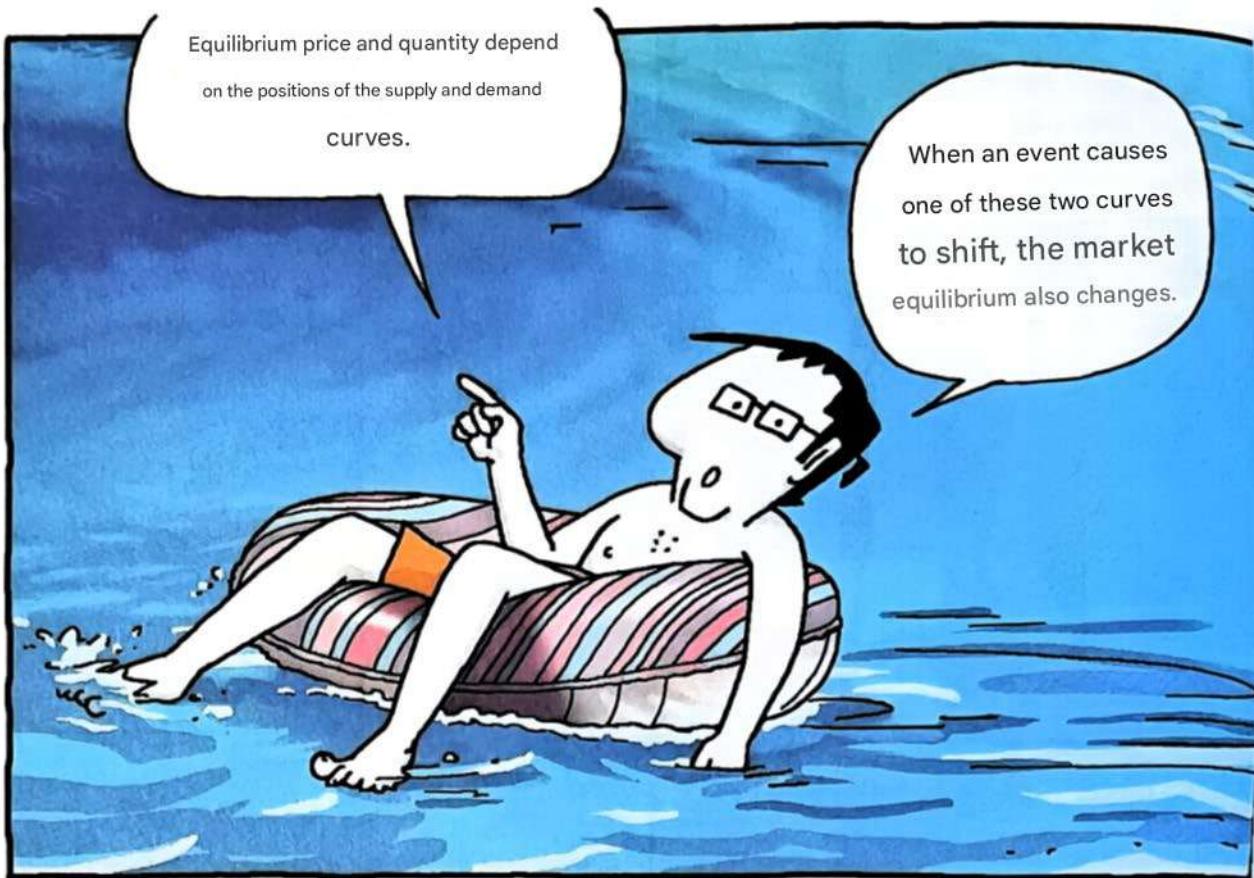


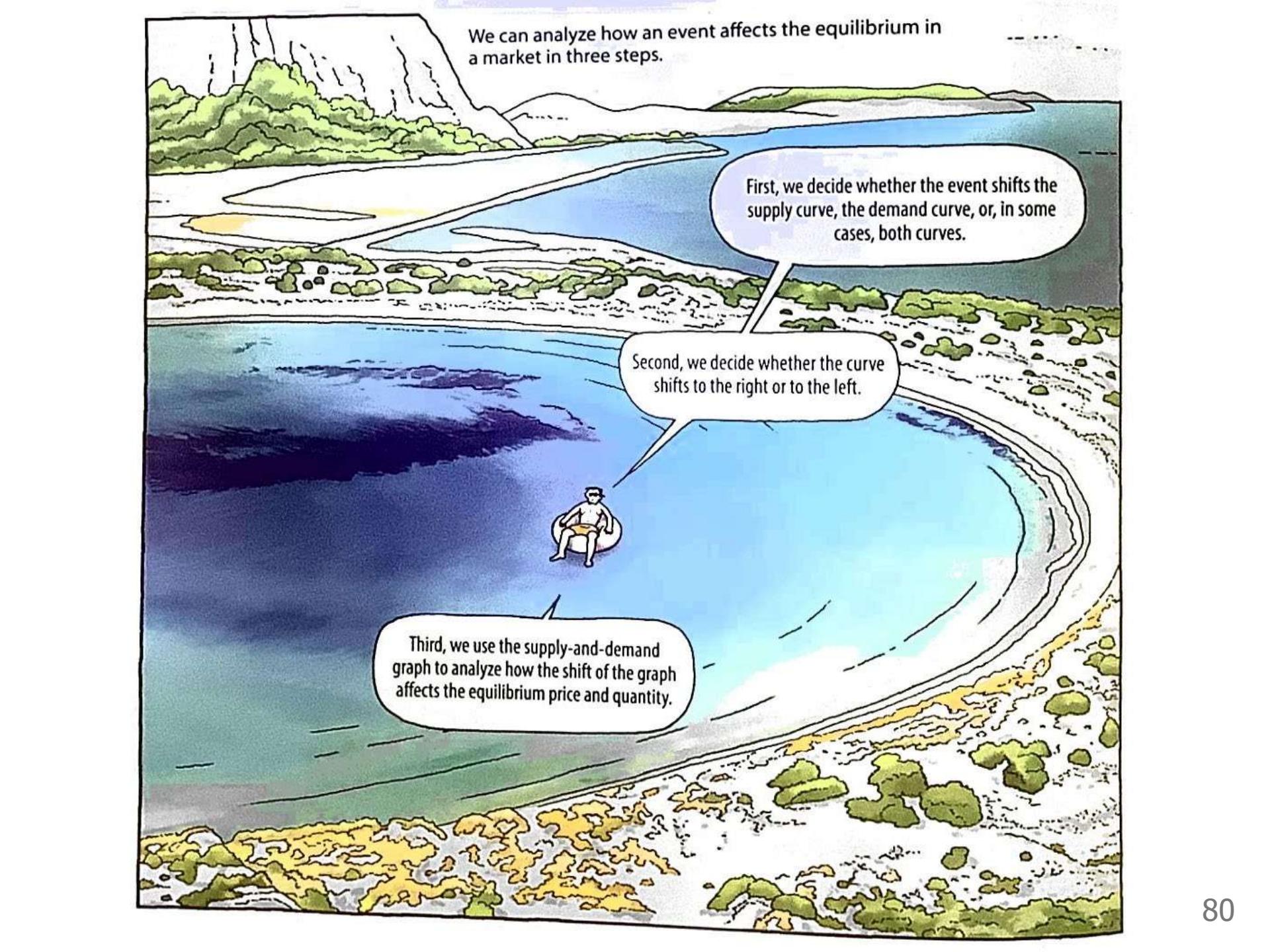
In a market, the price of a good is always the variable that brings the quantity supplied and quantity demanded for that good into balance.



Three steps to analyze equilibrium changes

Three steps to analyze equilibrium
changes





We can analyze how an event affects the equilibrium in a market in three steps.

First, we decide whether the event shifts the supply curve, the demand curve, or, in some cases, both curves.

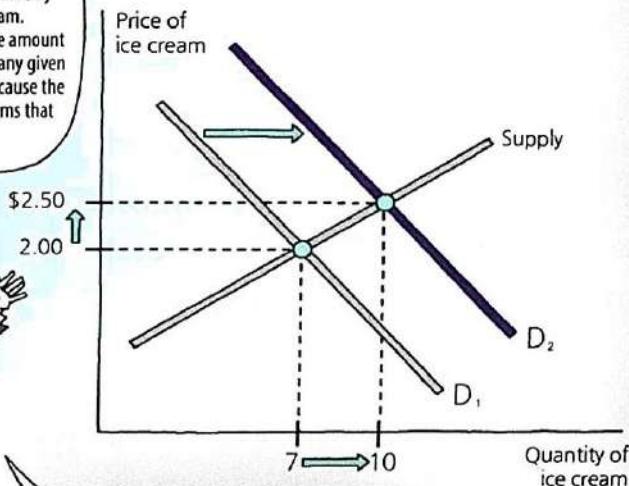
Second, we decide whether the curve shifts to the right or to the left.

Third, we use the supply-and-demand graph to analyze how the shift of the graph affects the equilibrium price and quantity.

Suppose that one summer the weather is very hot. How does this event affect the market for ice cream?
To answer this question, let's follow the three steps.

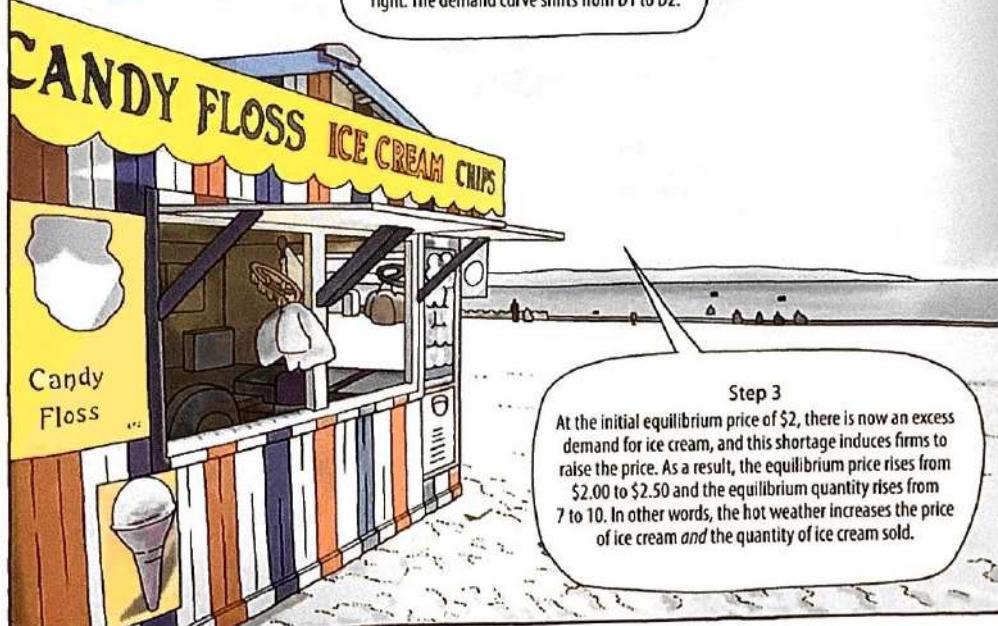
Step 1

The hot weather affects the demand curve by changing people's taste for ice cream. In other words, the weather changes the amount of ice cream that people want to buy at any given price. The supply curve is unchanged because the weather does not directly affect the firms that sell ice cream.



Step 2

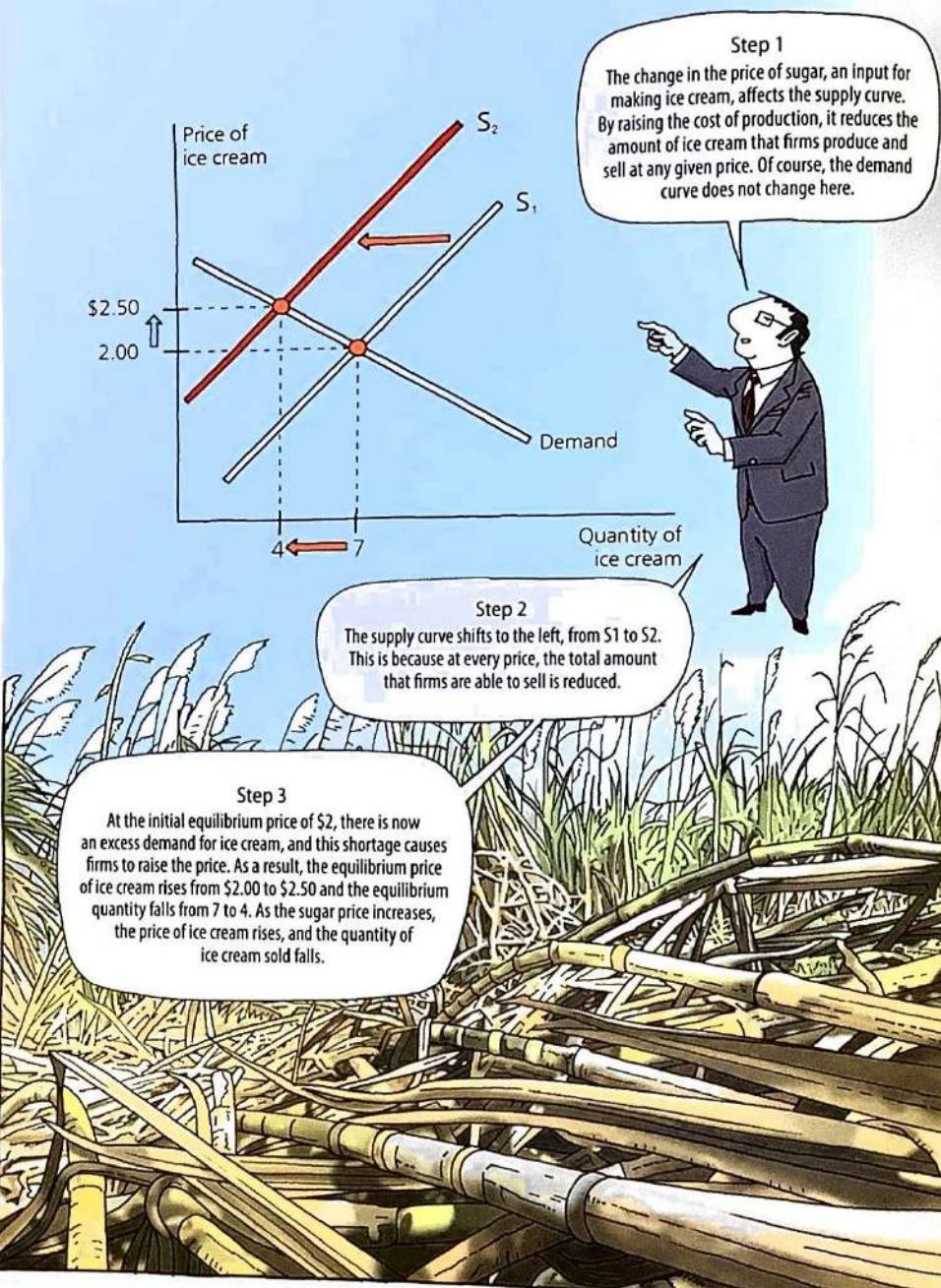
Because hot weather makes people want to eat more ice cream, the demand curve shifts to the right. The demand curve shifts from D1 to D2.



Step 3

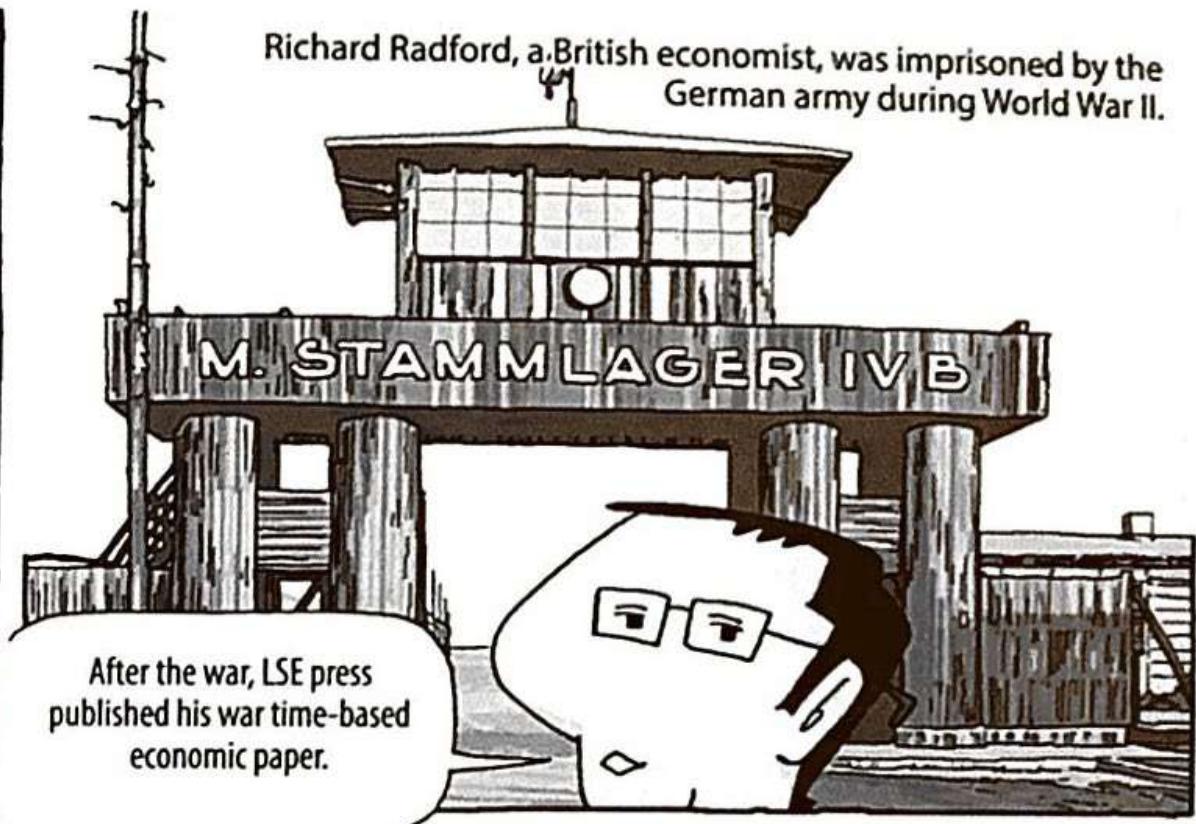
At the initial equilibrium price of \$2, there is now an excess demand for ice cream, and this shortage induces firms to raise the price. As a result, the equilibrium price rises from \$2.00 to \$2.50 and the equilibrium quantity rises from 7 to 10. In other words, the hot weather increases the price of ice cream and the quantity of ice cream sold.

Now, let us suppose that during another summer, a hurricane destroys sugarcane crop and drives up the price of sugar. How does this event affect the market for ice cream? Once again, we follow the three steps.



The Market Economy in a P.O.W. Camp

The Market
Economy in a
P.O.W. Camp



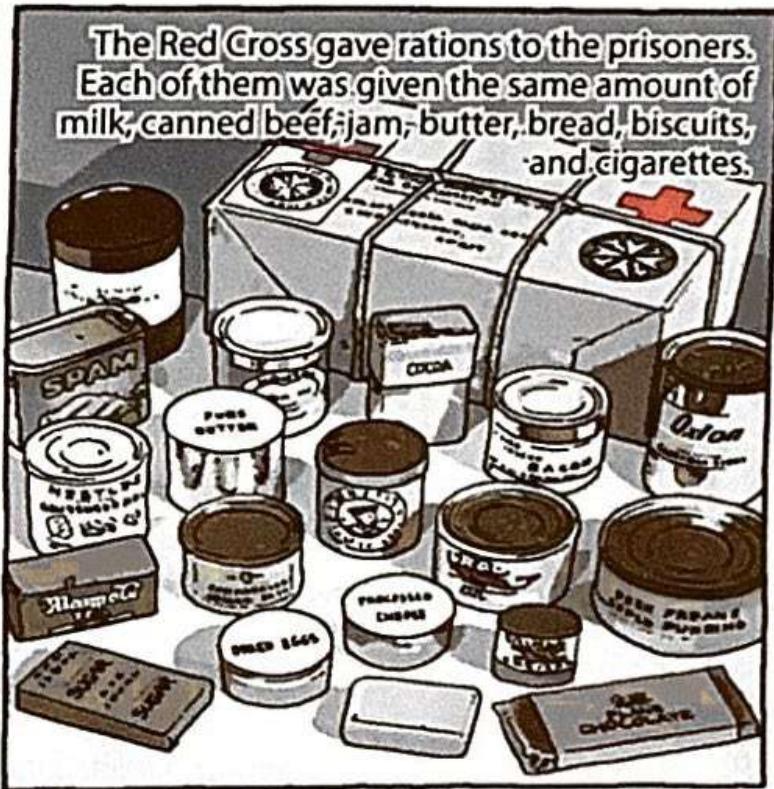
The Market Economy in a P.O.W. Camp

The Economic Organization of a P.O.W. Camp

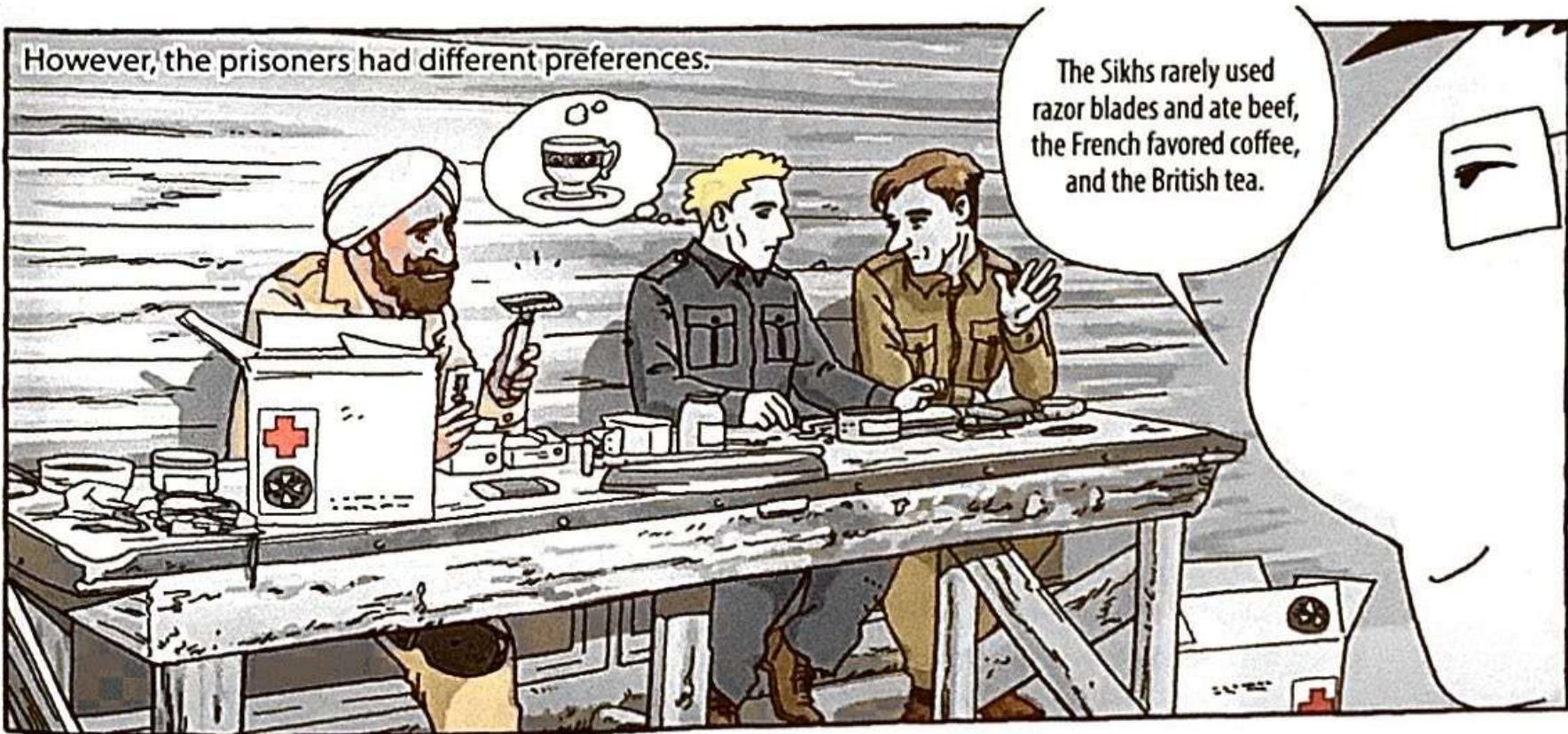
Richard Radford



The thesis entitled "The Economic Organization of a P.O.W. Camp" describes that even a prison camp with a ration system cannot escape the free market laws.



The Market Economy in a P.O.W. Camp

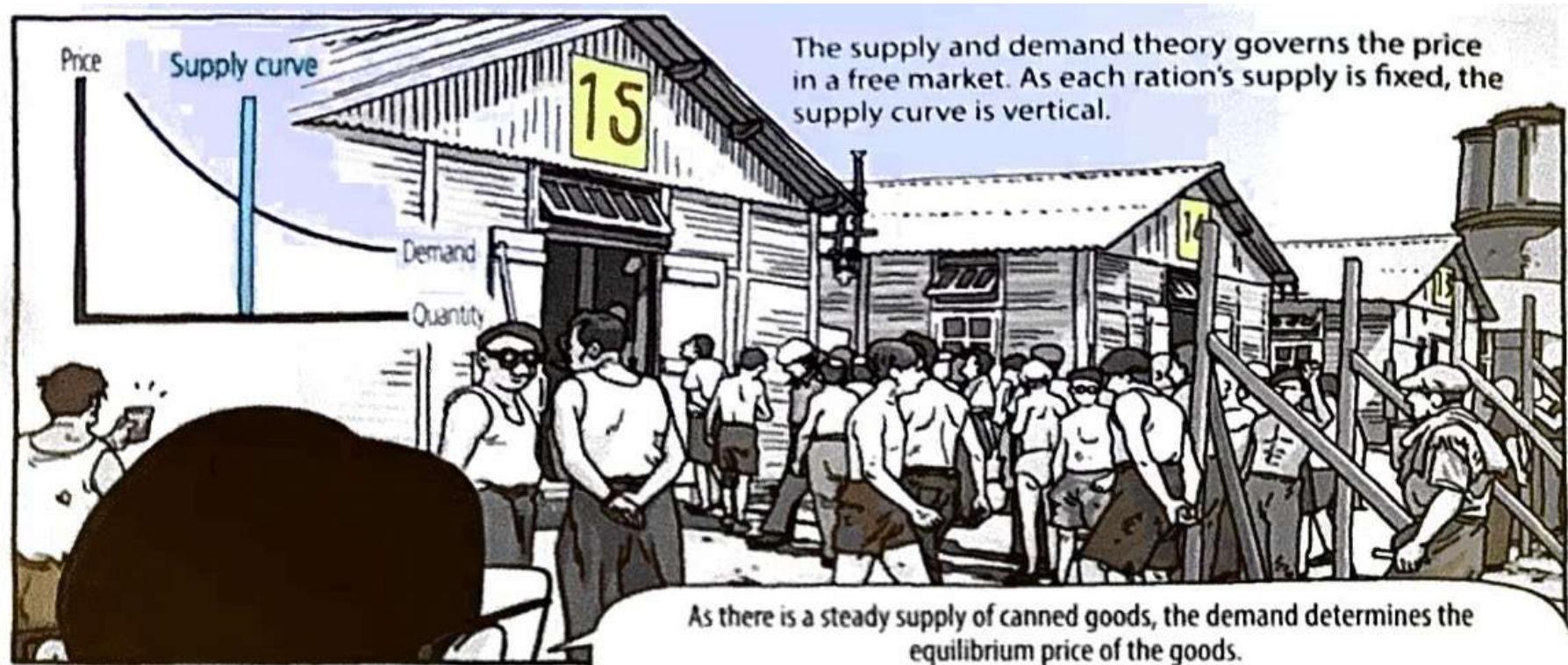


The Market Economy in a P.O.W. Camp

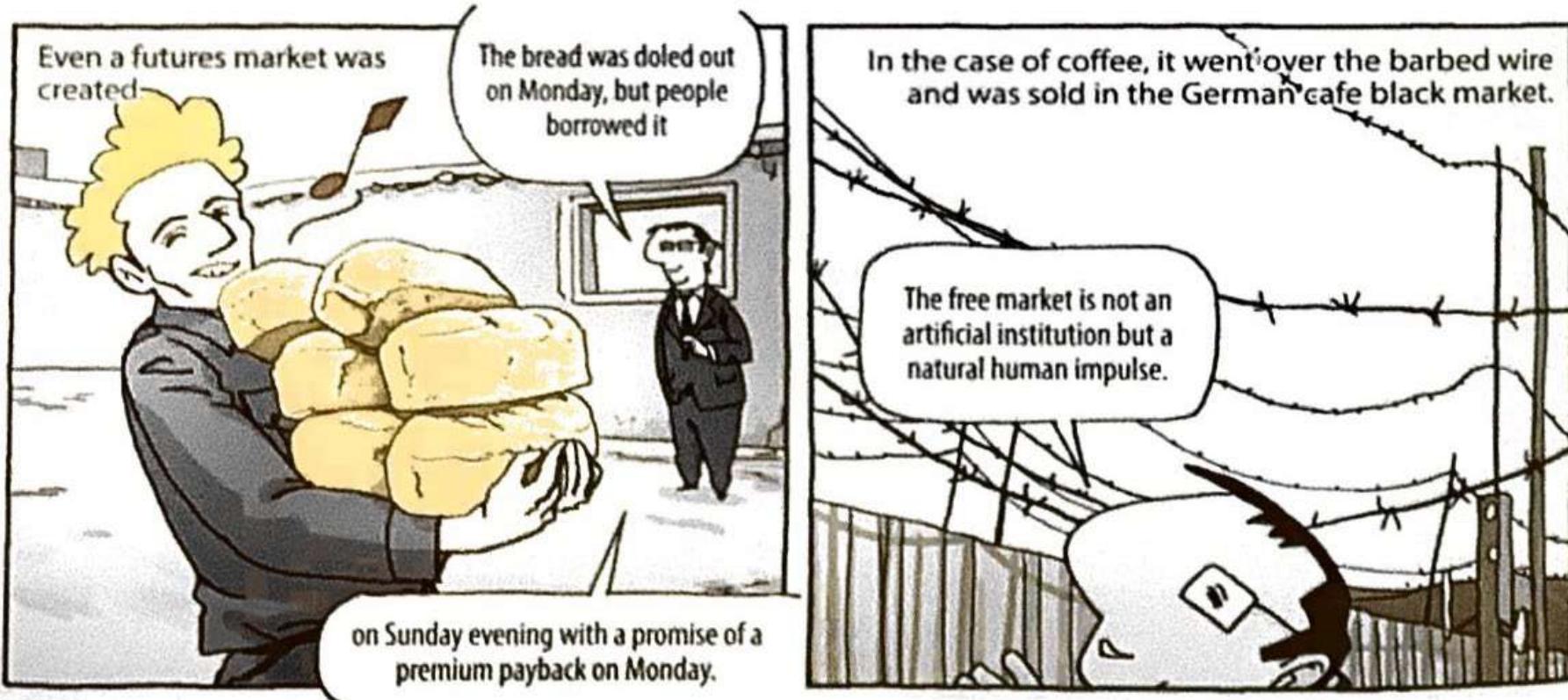
Soon, transactions that maximized economic efficiency occurred, and free markets began to form.



The Market Economy in a P.O.W. Camp



The Market Economy in a P.O.W. Camp



SUMMARY



- The point where the supply and demand curves intersect is called the market equilibrium.
 - The price at this intersection is referred to as the equilibrium price, and the corresponding quantity is known as the equilibrium quantity.
 - At the equilibrium price, the quantity supplied equals the quantity demanded.
- When the market price is higher than the equilibrium price, the quantity supplied exceeds the quantity demanded. This situation is referred to as a "surplus" or "excess supply."
- When a surplus occurs in the market, the price falls, which in turn increases the quantity demanded and reduces the quantity supplied. This process continues until the price reaches the equilibrium level.

SUMMARY



- When the market price is lower than the equilibrium price, the quantity demanded exceeds the quantity supplied. This situation is called a "shortage" or "excess demand."
- When a shortage occurs, buyers may have to wait in long lines, and sellers will raise prices. As the price increases, the quantity demanded decreases, and the quantity supplied rises until the market reaches equilibrium.
- These adjustments are reflected as movements along the supply and demand curves.

SUMMARY



- The adjustment of any good's price to balance the quantity supplied and quantity demanded is known as the law of supply and demand. The table below shows how price and quantity change when either supply or demand shifts.

	No Change in Supply	An Increase in Supply	A Decrease in Supply
No Change in Demand	P same Q same	P down Q up	P up Q down
An Increase in Demand	P up Q up	P ambiguous Q up	P up Q ambiguous
A Decrease in Demand	P down Q down	P down Q ambiguous	P ambiguous Q down

思考题

1. Which of the following changes will NOT shift the demand curve for hamburgers?
 - a. The price of hot dogs
 - b. The price of hamburgers
 - c. The price of hamburger desserts
 - d. The income of hamburger consumers

思考题

2. An increase in _____ will cause a shift along a given demand curve, known as a change in _____.
- a. Supply, Demand
 - b. Supply, Quantity Demanded
 - c. Demand, Supply
 - d. Demand, Quantity Supplied

思考题

3. Movie tickets and DVDs are substitutes. What will happen to the movie ticket market if the price of DVDs rises?
- a. The supply curve shifts to the left.
 - b. The supply curve shifts to the right.
 - c. The demand curve shifts to the left.
 - d. The demand curve shifts to the right.

思考题

4. The newly discovered large crude oil reserves will shift the gasoline price curve, leading to a price equilibrium that is _____.
- a. Supply, higher
 - b. Supply, lower
 - c. Demand, higher
 - d. Demand, lower

思考题

5. If the economy falls into recession and incomes decline, what will happen to the market for lower-end goods?
- a. Both prices and quantities will rise.
 - b. Both prices and quantities will fall.
 - c. Prices will rise, and quantities will fall.
 - d. Prices will fall, and quantities will increase.

思考题

6. Which of the following could lead to an increase in the equilibrium price of jelly and a decrease in its equilibrium quantity sold?
- a. An increase in the price of peanut butter, a complement to jam.
 - b. An increase in the price of marshmallows, a substitute for jam.
 - c. An increase in the price of grapes, a raw material for jam.
 - d. An increase in consumer income, provided jam is a normal good.

思考题

7. Is the statement "Increased demand for laptops will increase the quantity demanded, but will not increase the quantity supplied" true or false?

思考题

8. Ketchup and hot dogs are complementary products.
What would happen to the tomato, tomato juice, and
orange juice markets if the price of hot dogs increased?

思考题

9. Please explain: Over the past 30 years, technological advancements have reduced the cost of computer chips. How do you think this has affected the computer market? What about computer software? What about typewriters?