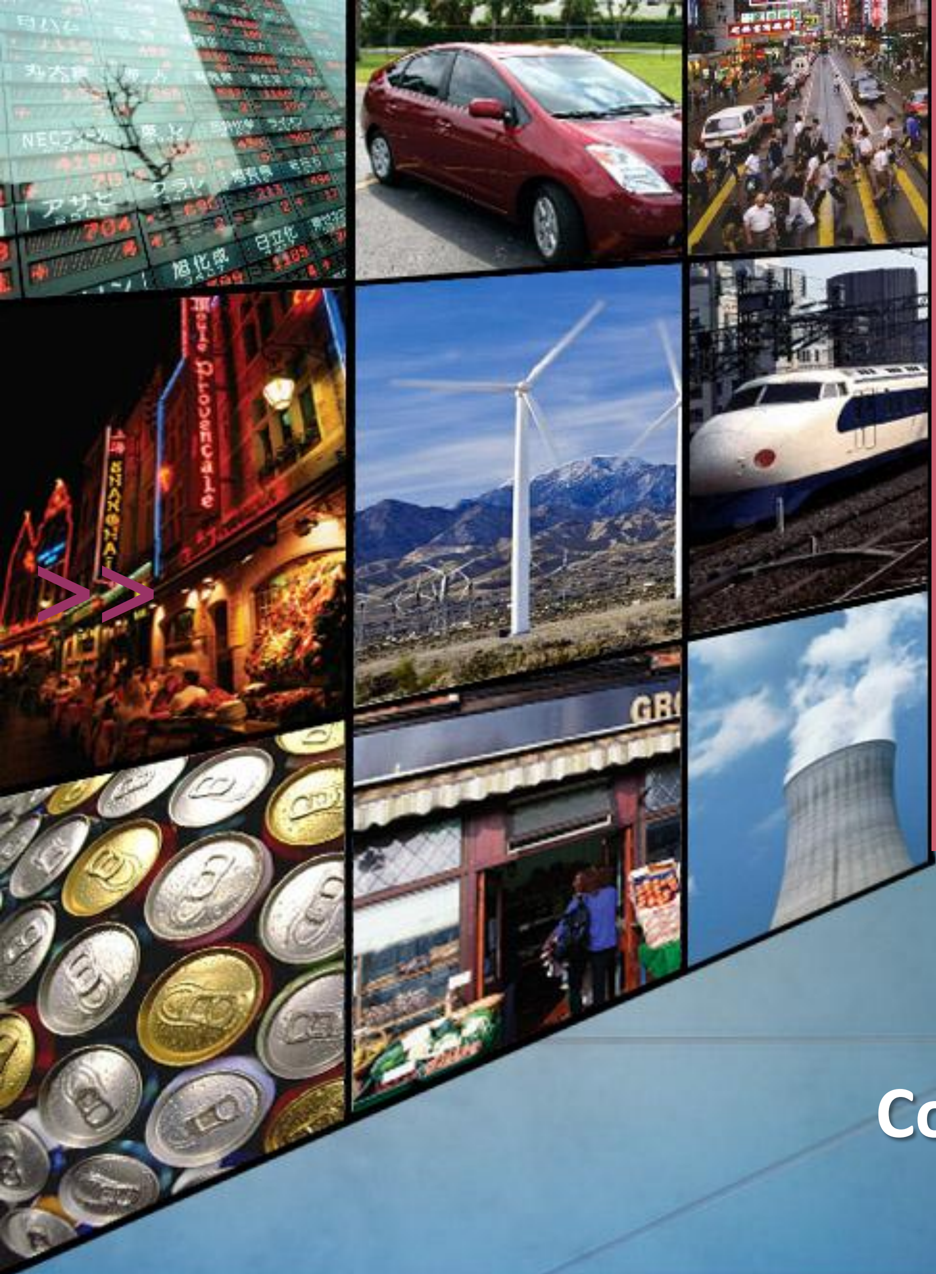


THIRD EDITION

ECONOMICS and MICROECONOMICS

Paul Krugman | Robin Wells

Chapter 4
Consumer and Producer Surplus

WHAT YOU WILL LEARN IN THIS CHAPTER

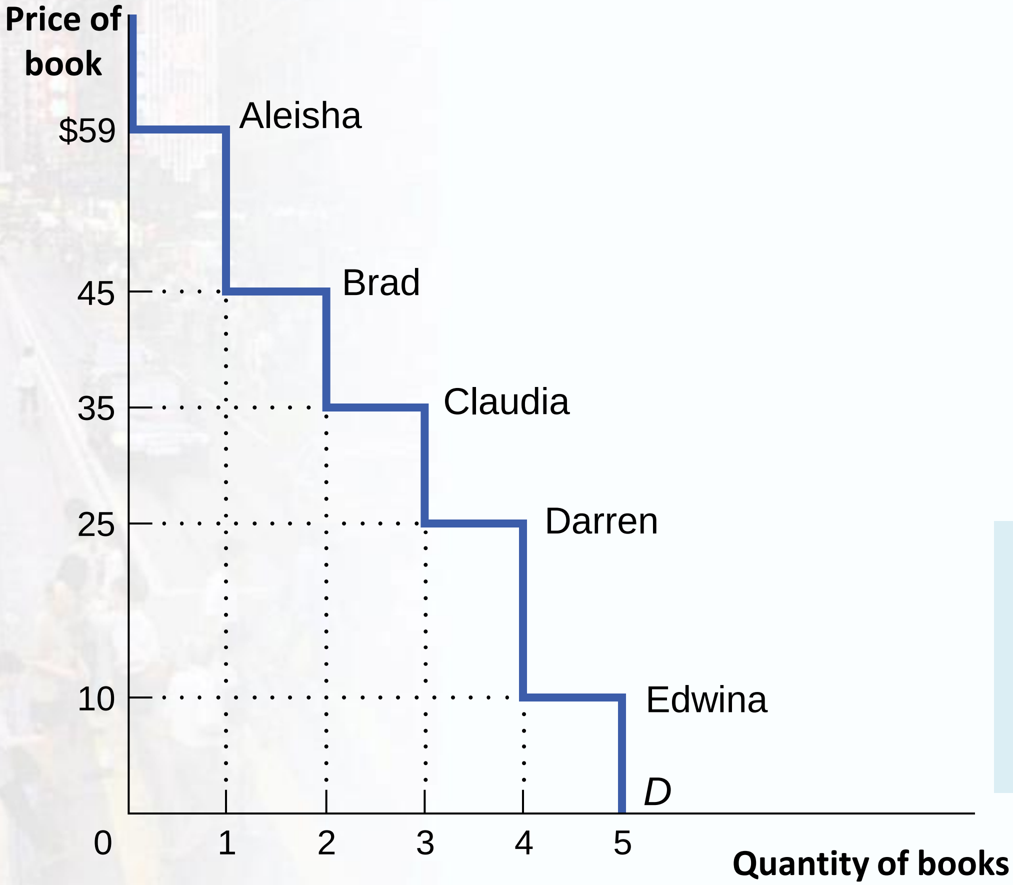
- What **consumer surplus** is and its relationship to the demand curve
- What **producer surplus** is and its relationship to the supply curve
- What **total surplus** is and how it can be used both to measure the gains from trade and to illustrate why markets work so well
- Why **property rights** and prices as **economic signals** are critical to smooth functioning of a market
- Why markets typically lead to efficient outcomes despite the fact that they sometimes fail

Consumer Surplus and the Demand Curve

- A consumer’s **willingness to pay** for a good is the maximum price at which he or she would buy that good.
- **Individual consumer surplus** is the net gain to an individual buyer from the purchase of a good.

  It is equal to the difference between the buyer’s willingness to pay and the price paid.

The Demand Curve for Used Textbooks



Potential buyers	Willingness to pay
Aleisha	$59
Brad	45
Claudia	35
Darren	25
Edwina	10

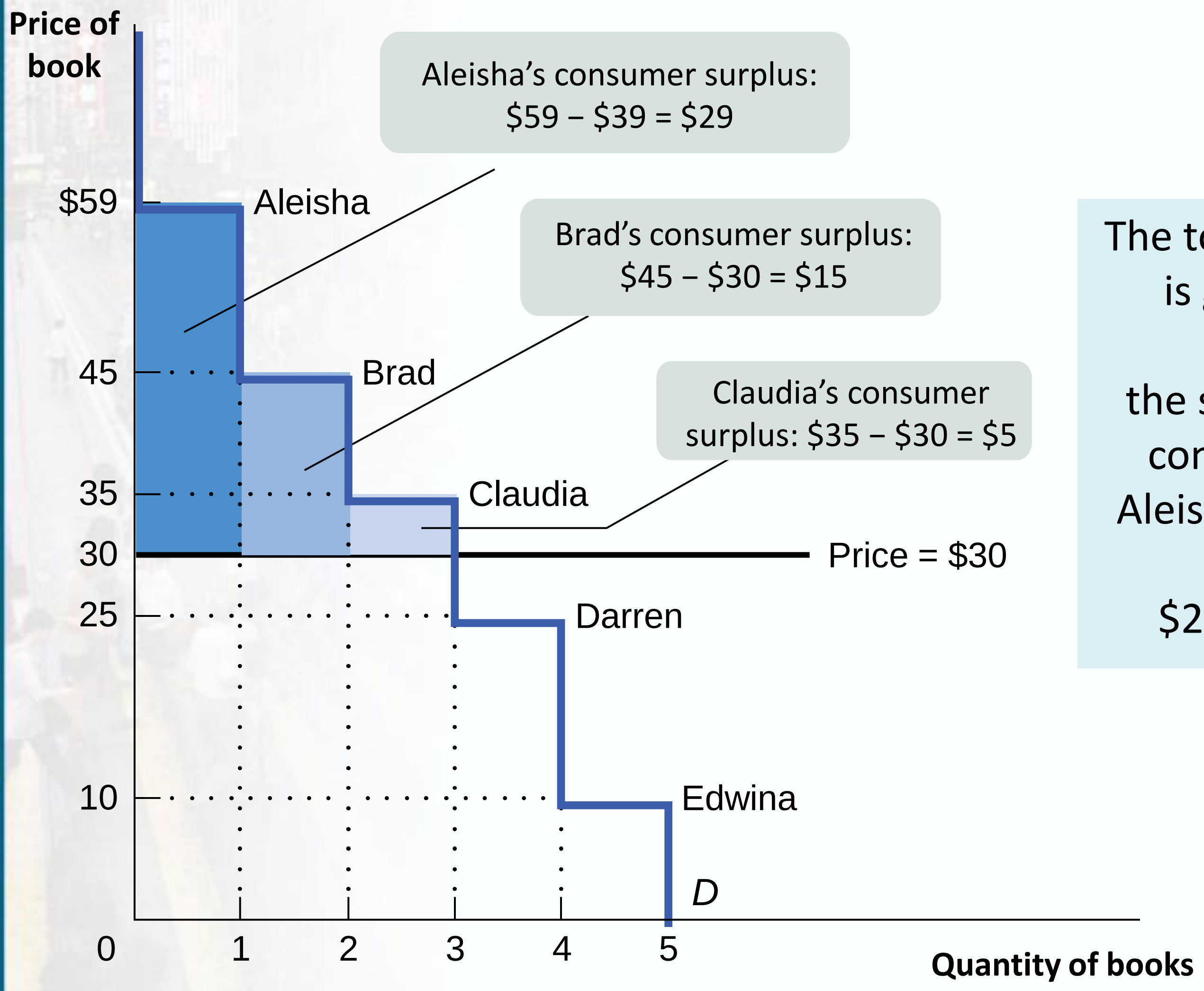
A consumer's willingness to pay for a good is the maximum price at which he or she would buy that good.

Willingness to Pay and Consumer Surplus

- **Total consumer surplus** is the sum of the individual consumer surpluses of all the buyers of a good.

- The term **consumer surplus** is often used to refer to both individual and total consumer surplus.

Consumer Surplus in the Used Textbook Market



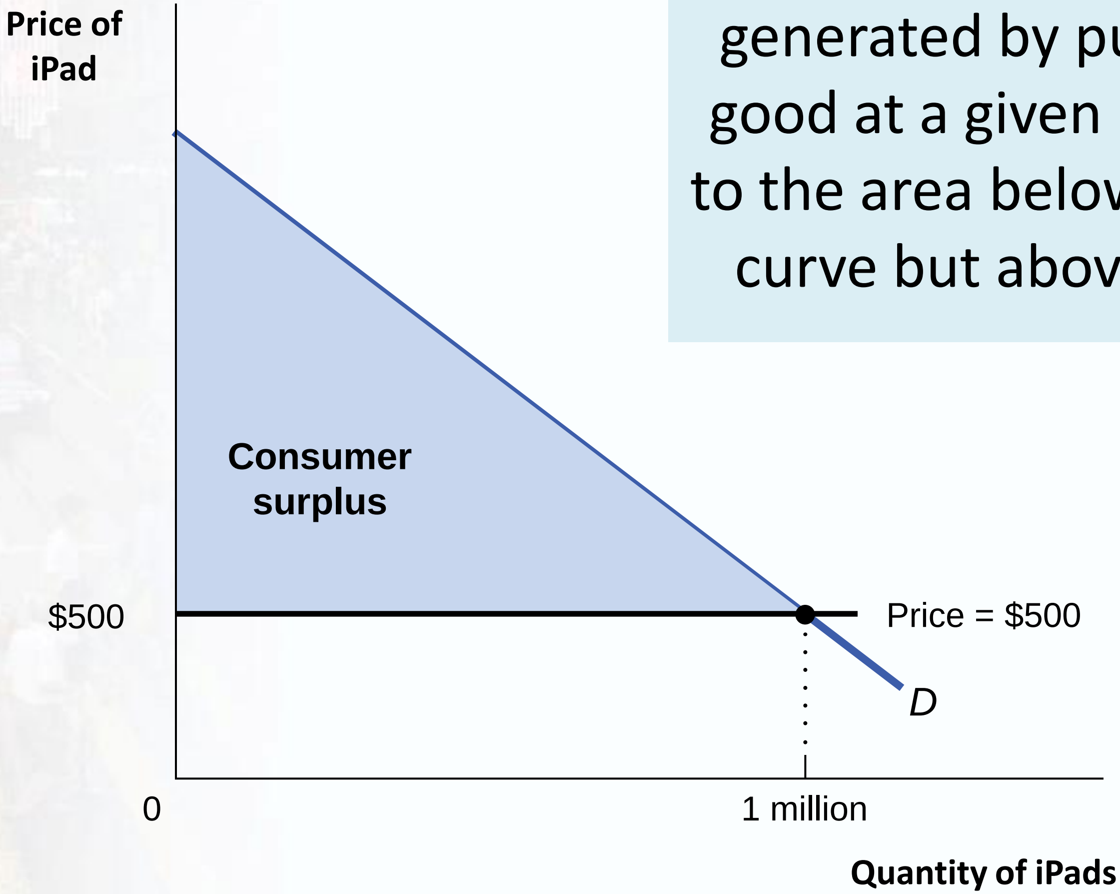
The total consumer surplus is given by the entire shaded area — the sum of the individual consumer surpluses of Aleisha, Brad, and Claudia — equal to $29 + $15 + $5 = $49.

Consumer Surplus in the Used Textbook Market

TABLE 4-1 Consumer Surplus If Price of Used Textbook = $30

Potential buyer	Willingness to pay	Price paid	Individual consumer surplus = Willingness to pay − Price paid
Aleisha	$59	$30	$29
Brad	45	30	15
Claudia	35	30	5
Darren	25	—	—
Edwina	10	—	—
All buyers			**Total consumer surplus = $49**

Consumer Surplus

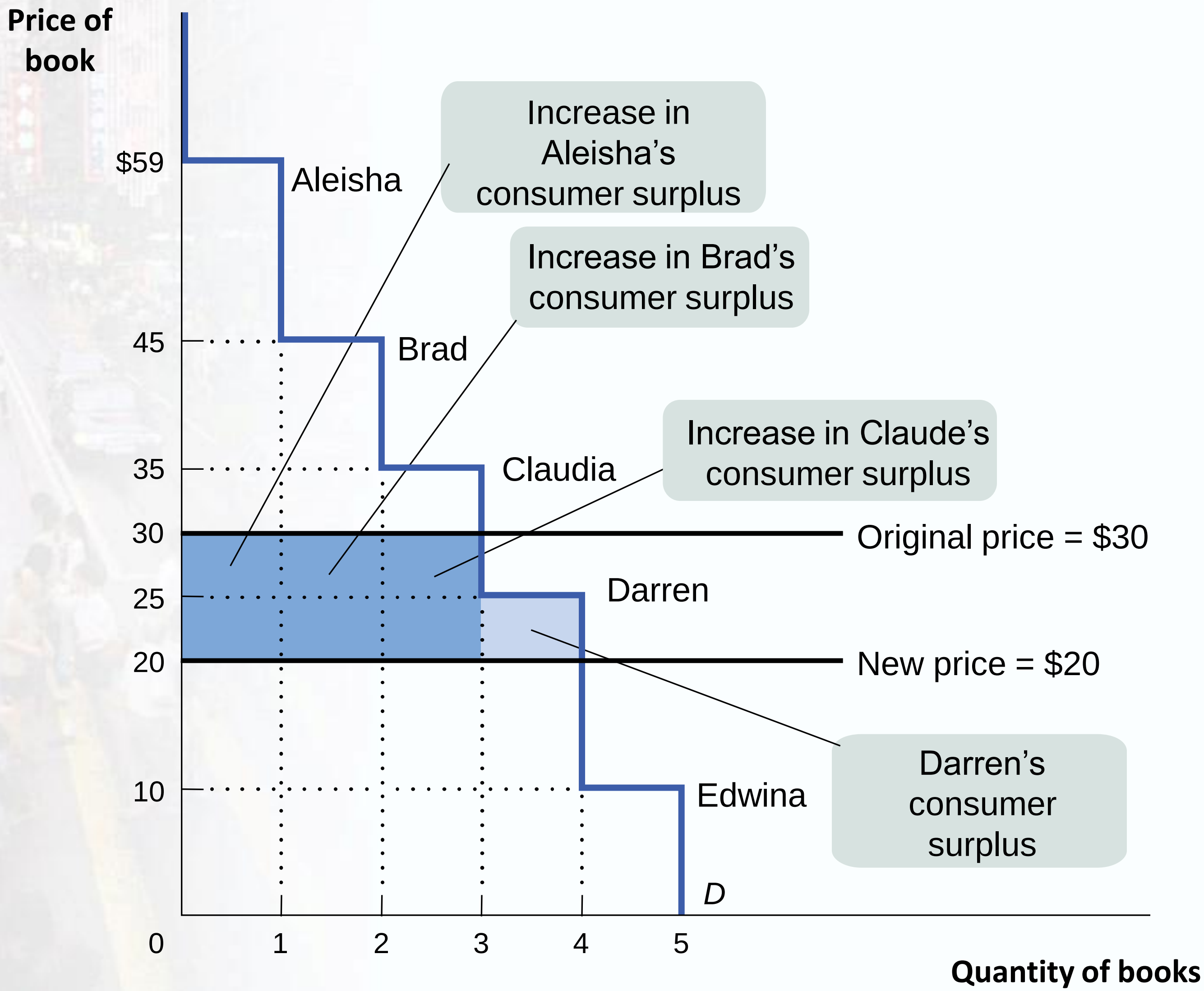


The total consumer surplus generated by purchases of a good at a given price is equal to the area below the demand curve but above that price.

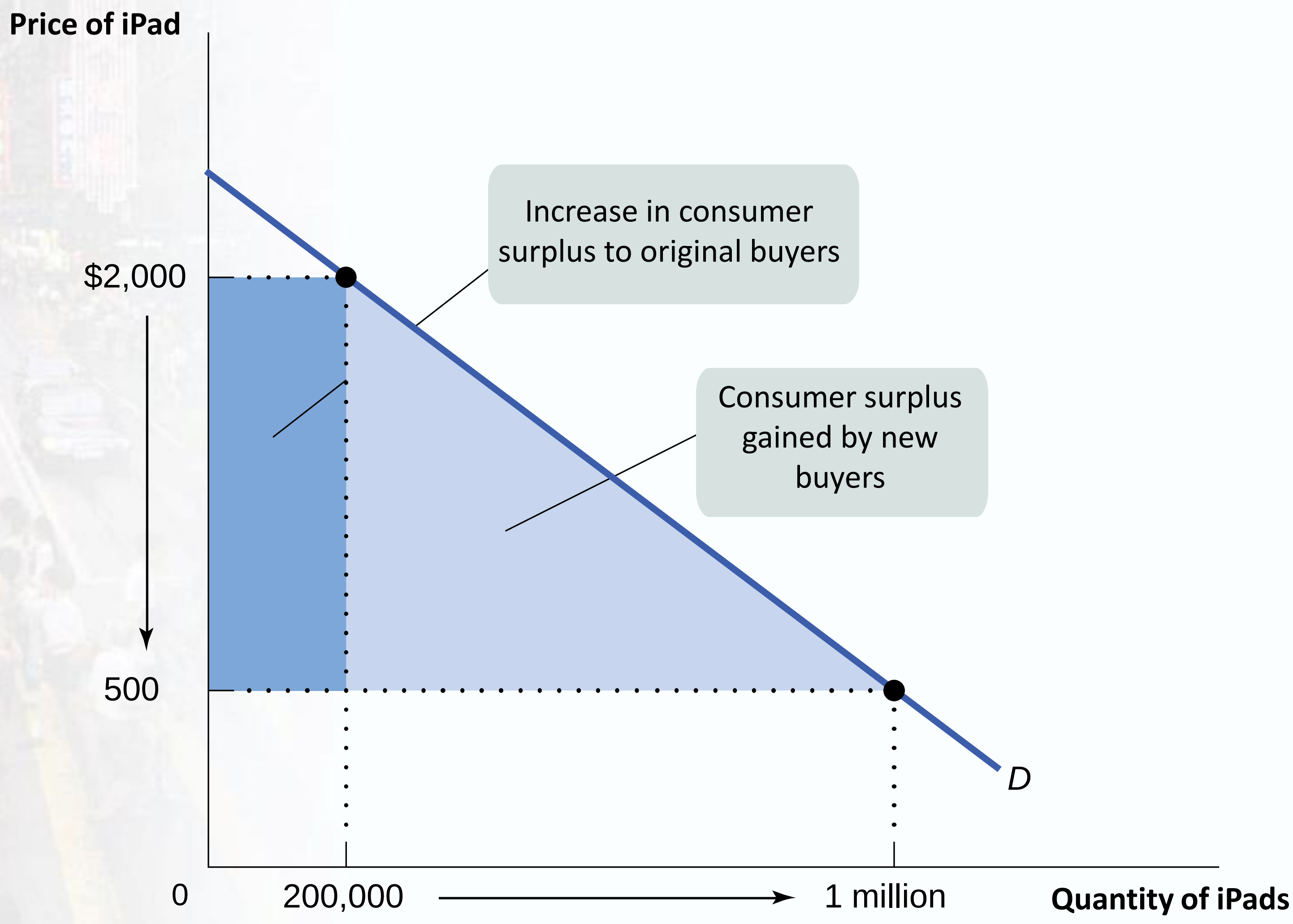
How Changing Prices Affect Consumer Surplus

- A fall in the price of a good increases consumer surplus through two channels:
  1. a gain to consumers who would have bought at the original price
  2. a gain to consumers who are persuaded to buy by the lower price

Consumer Surplus and a Fall in the Price of Used Textbooks



A Fall in the Market Price Increases Consumer Surplus



FOR INQUIRING MINDS

A Matter of Life and Death

- Each year, about 4,000 people in the United States die while waiting for a kidney transplant.
- According to the current United Network for Organ Sharing (UNOS) guidelines, a donated kidney goes to the person who has waited the longest regardless of their age.

FOR INQUIRING MINDS

A Matter of Life and Death

- The UNOS is now devising a new set of guidelines where kidneys would be allocated on the basis of who will receive the greatest net benefit, where net benefit is measured as the increase in lifespan from the transplant.
- This would increase the recipients’ extra years by 11,000.
- The “net benefit” concept is like consumer surplus: the individual consumer surplus generated from getting a new kidney.

ECONOMICS IN ACTION

When Money Isn't Enough

- The key insight we get from the concept of consumer surplus is that purchases yield a net benefit to the consumer. The consumer typically pays a price less than his or her willingness to pay.
- Most of the time we don't think about the value associated with the right to buy a good.

ECONOMICS IN ACTION

When Money Isn't Enough

- During World War II, governments in many countries created a system of rationing goods where coupons gave individuals the right to buy goods at the government-regulated price.
- As a result, illegal markets in meat stamps and gas coupons emerged. Also, criminals began stealing and counterfeiting coupons.
- People who bought ration coupons on the illegal market were paying for the right to get some consumer surplus.

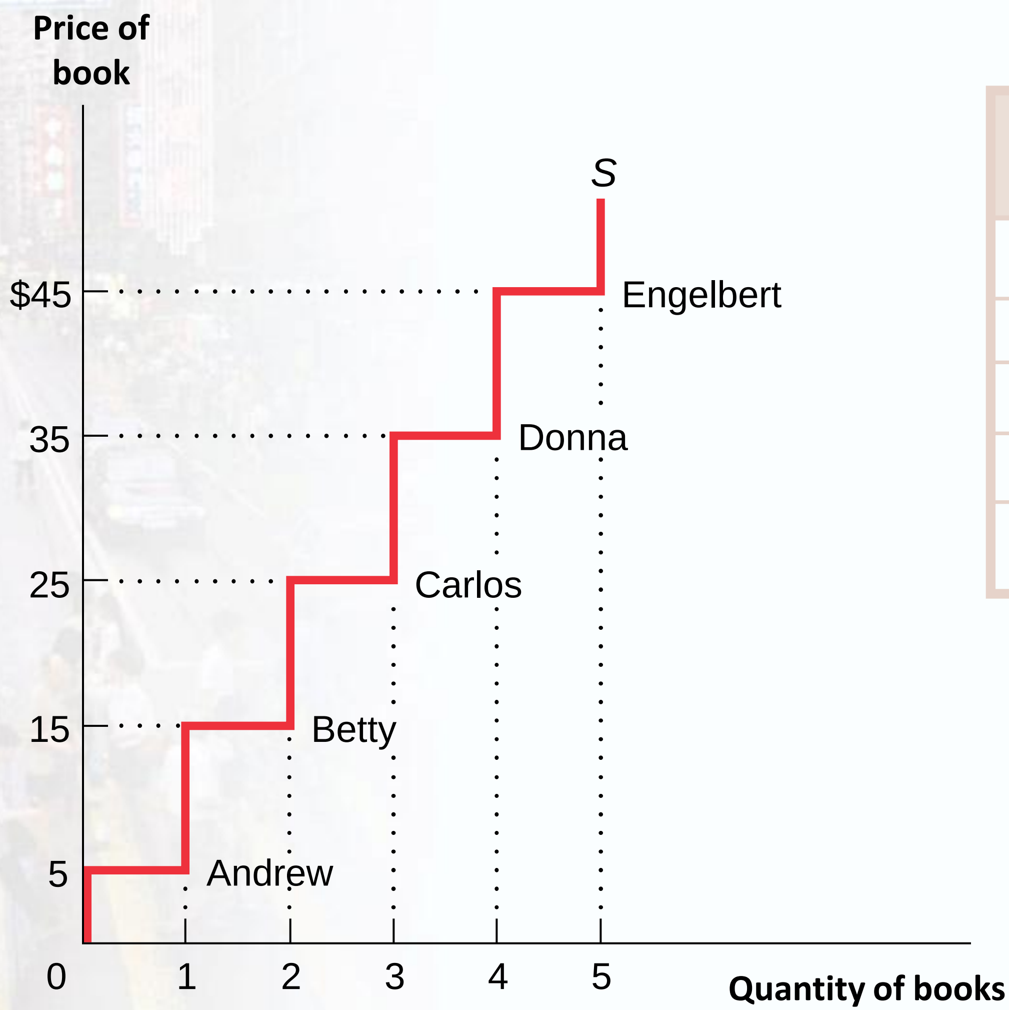
Producer Surplus and the Supply Curve

- A potential seller's **cost** is the lowest price at which he or she is willing to sell a good.

- **Individual producer surplus** is the net gain to a seller from selling a good. It is equal to the difference between the price received and the seller's cost.

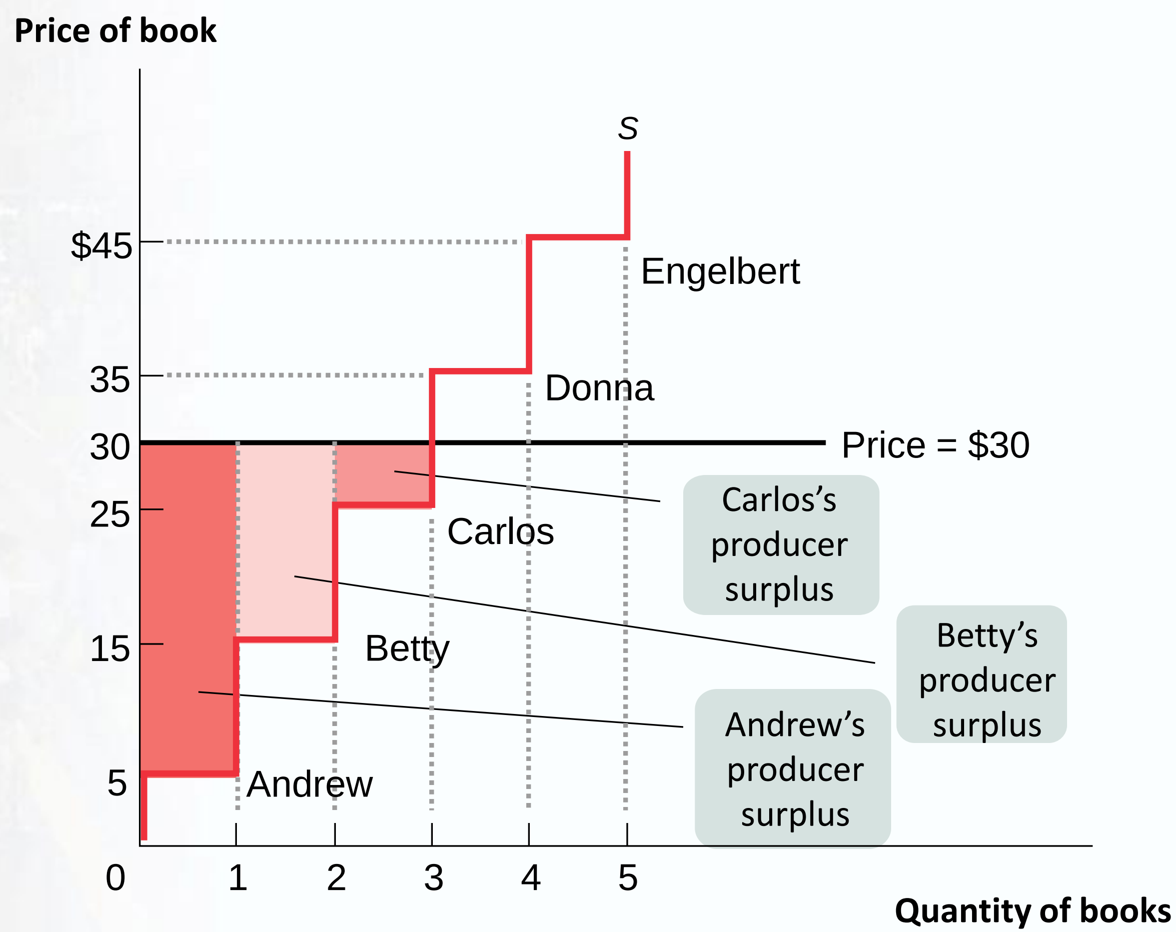
- **Total producer surplus** in a market is the sum of the individual producer surpluses of all the sellers of a good.

The Supply Curve for Used Textbooks

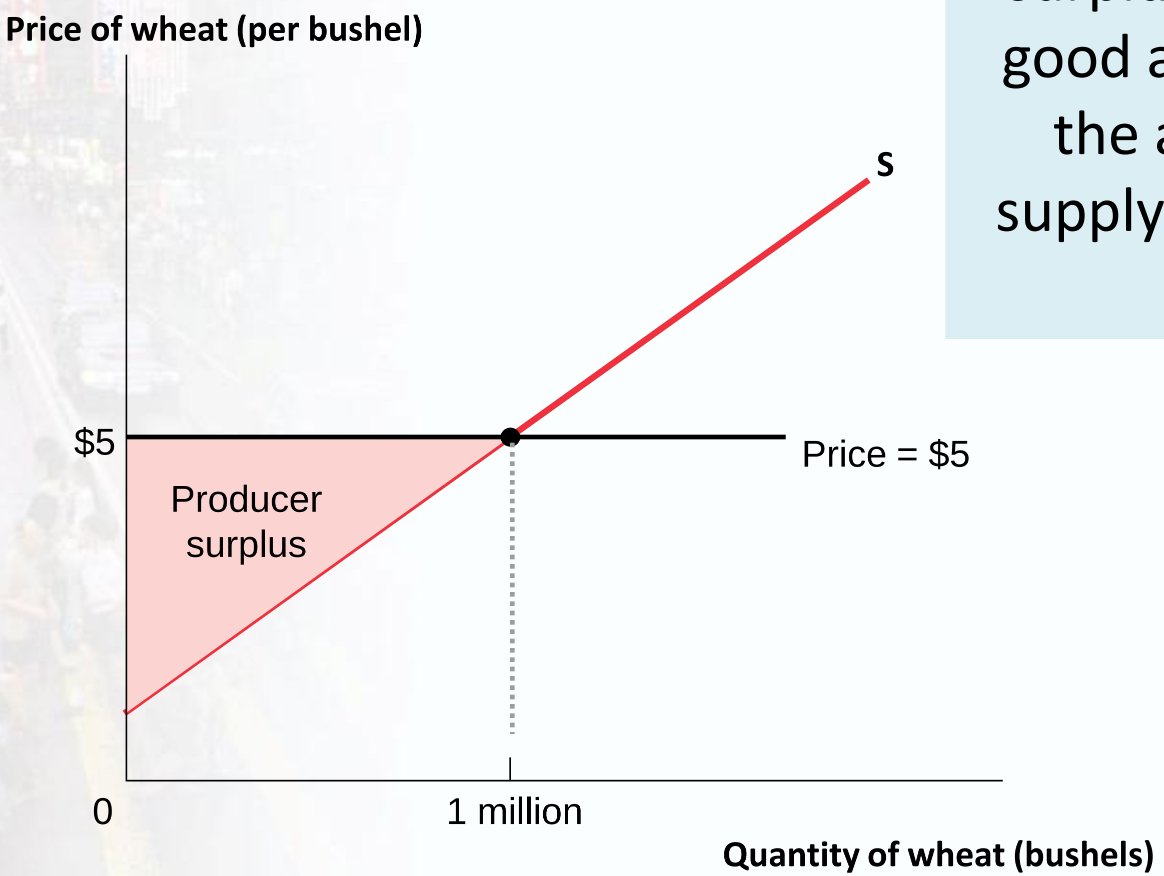


Potential sellers	Cost
Engelbert	$5
Donna	15
Carlos	25
Betty	35
Andrew	45

Producer Surplus in the Used Textbook Market



Producer Surplus

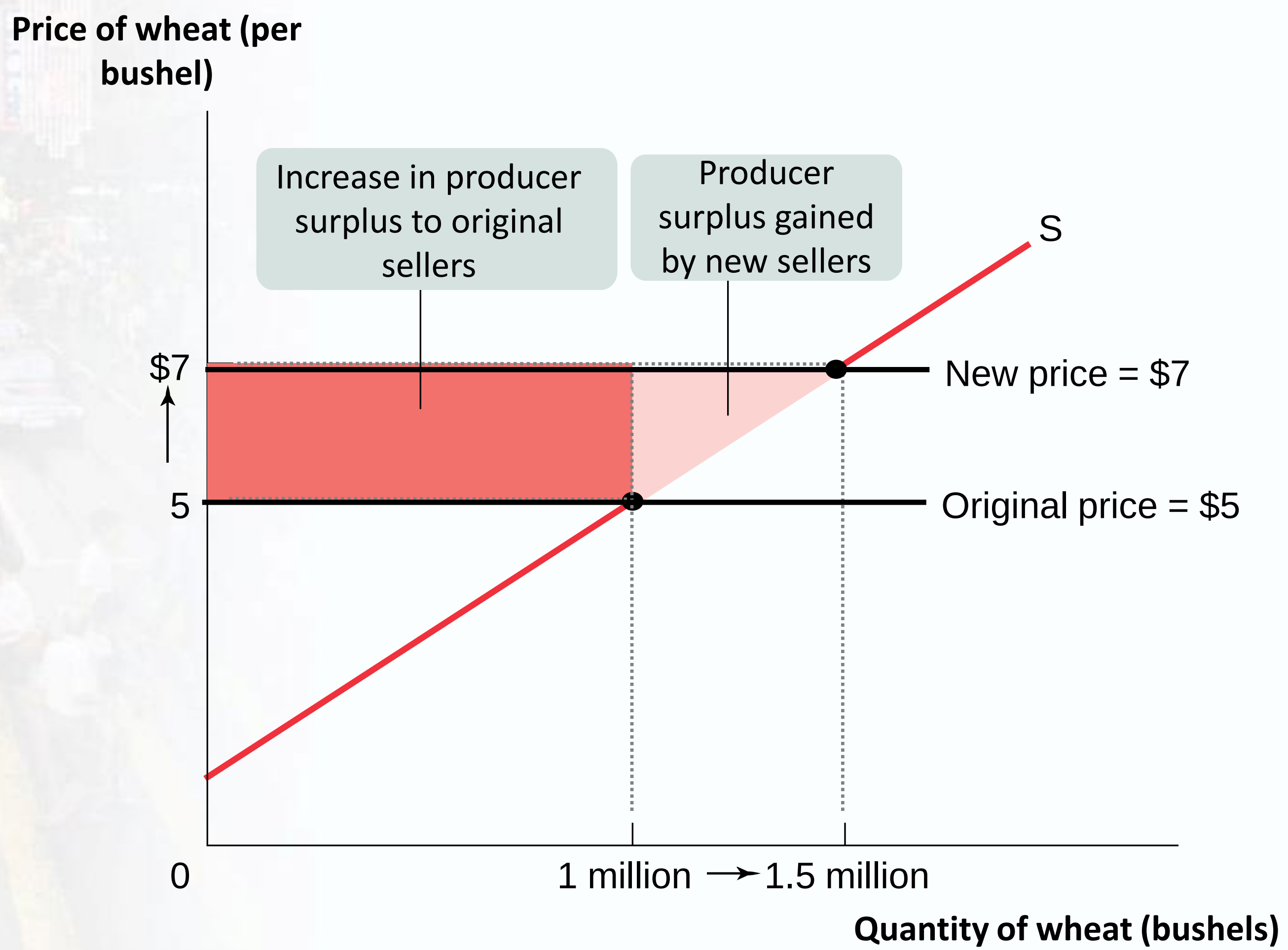


The total producer surplus from sales of a good at a given price is the area above the supply curve but below that price.

Changes in Producer Surplus

- When the price of a good rises, producer surplus increases through two channels:
    1. the gains of those who would have supplied the good even at the original, lower price
    2. the gains of those who are induced to supply the good by the higher price

A Rise in the Price Increases Producer Surplus



ECONOMICS IN ACTION

High Times Down on the Farm

- The government encouraged the use of gasoline that contains a percentage of ethanol in order to fight air pollution and to reduce U.S. dependence on foreign oil.
- The average value of farmland in Iowa hit a record high in 2010.

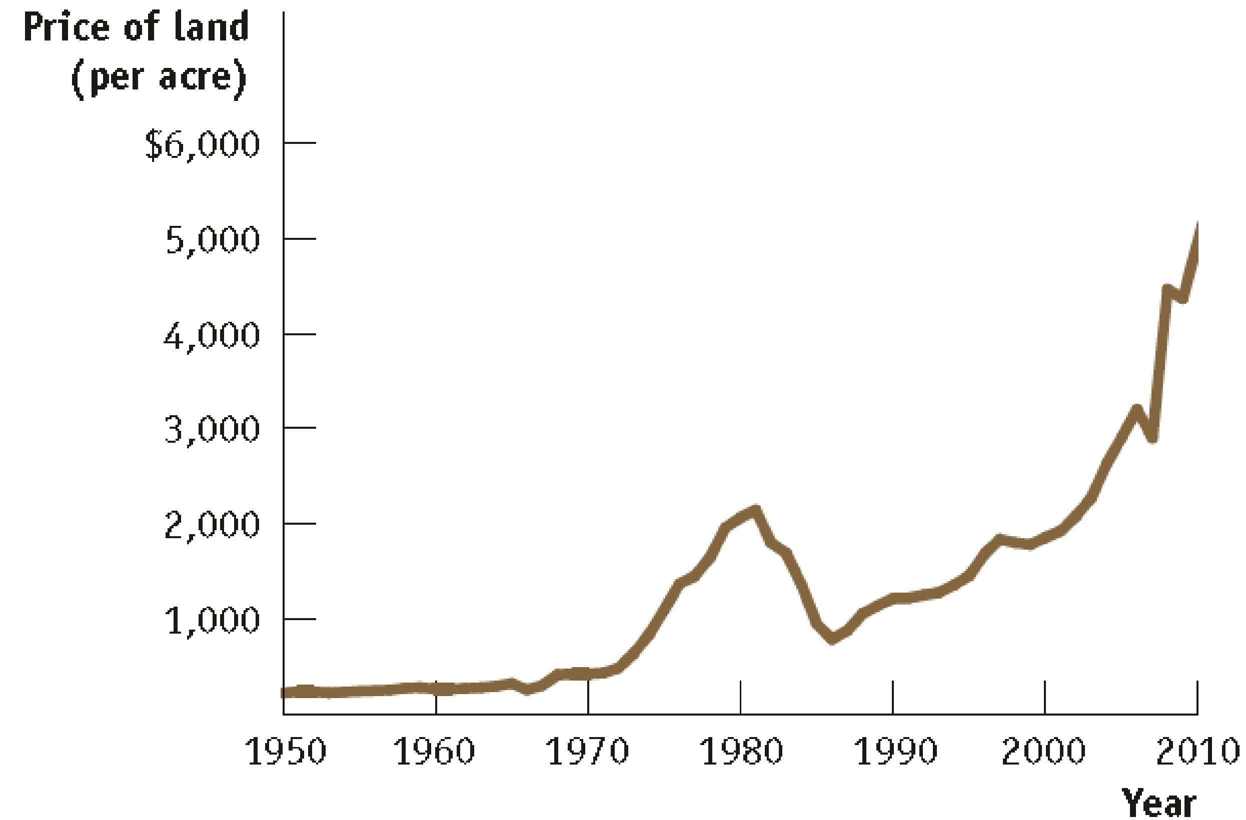
ECONOMICS IN ACTION

High Times Down on the Farm

- One result of the shift to ethanol fuel has been a rise in the demand for corn, leading to a surge in corn prices. In 2010, the price of corn jumped by 52%.
- A person who buys a farm in Iowa buys the producer surplus that farm generates. Higher prices for corn, which raised the producer surplus of Iowa farmers, made Iowa farmland more valuable.

ECONOMICS IN ACTION

FIGURE 4-10 The Price of Iowa Farmland, 1950–2010



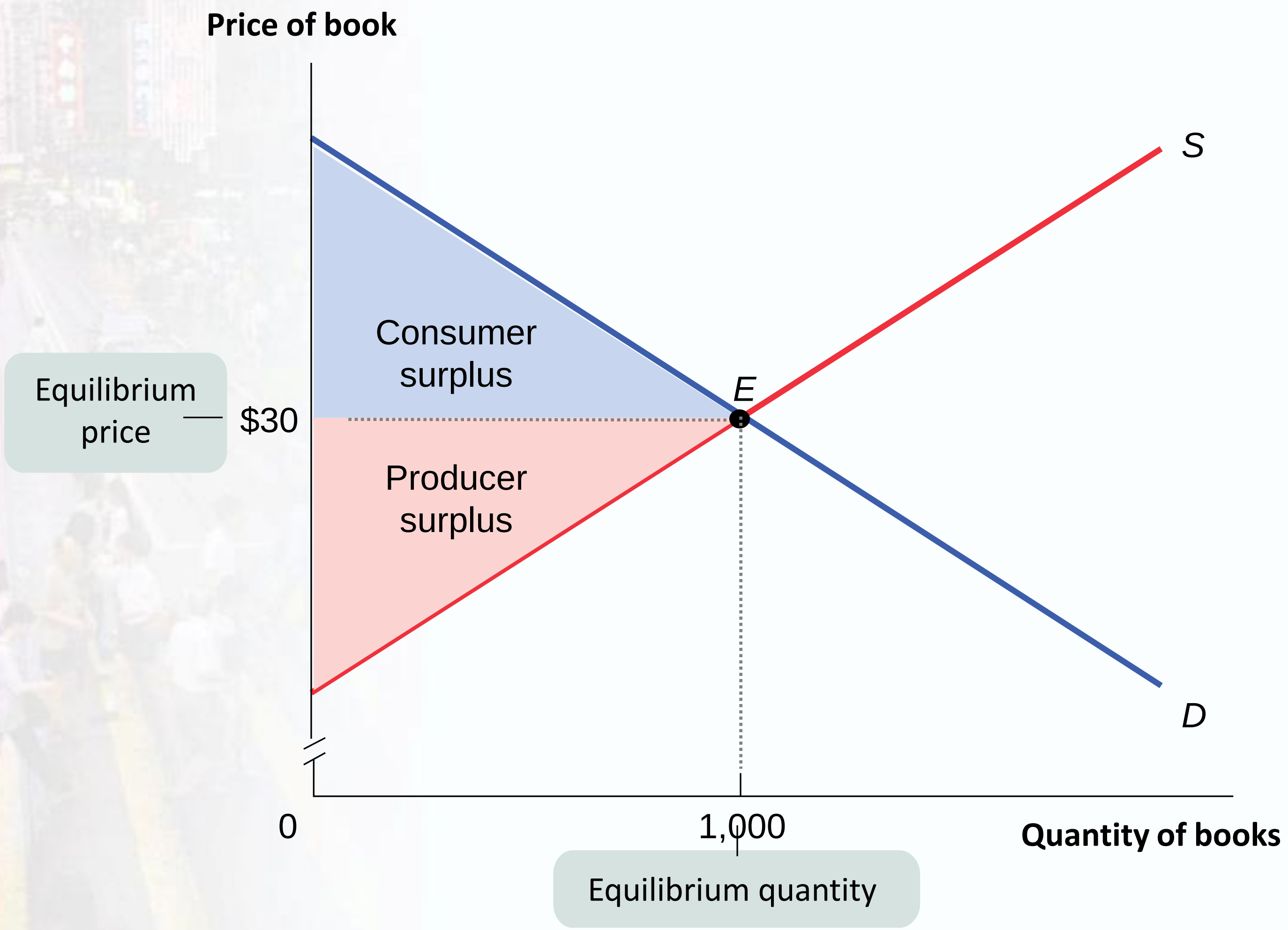
Source: Iowa State University Iowa Land Value Survey.

Putting It Together: Total Surplus

- The **total surplus** generated in a market is the total net gain to consumers and producers from trading in the market. It is the sum of the producer and the consumer surplus.

- The concepts of consumer surplus and producer surplus can help us understand why markets are an effective way to organize economic activity.

Total Surplus



Consumer Surplus, Producer Surplus, and the Gains from Trade

- The previous graph shows that both consumers and producers are better off because there is a market in this good; i.e., there are *gains from trade*.
- These gains from trade are the reason everyone is better off participating in a market economy than they would be if each individual tried to be self-sufficient.
- But are we as well off as we could be? This brings us to the question of the efficiency of markets.

The Efficiency of Markets: A Preliminary View

- **Claim**: The maximum possible total surplus is achieved at market equilibrium.
- The market equilibrium allocates the consumption of the good among potential consumers and sales of the good among potential sellers in a way that achieves the highest possible gain to society.
- By comparing the total surplus generated by the consumption and production choices in the market equilibrium to the surplus generated by a different set of production and consumption choices, we can show that any change from the market equilibrium reduces total surplus.

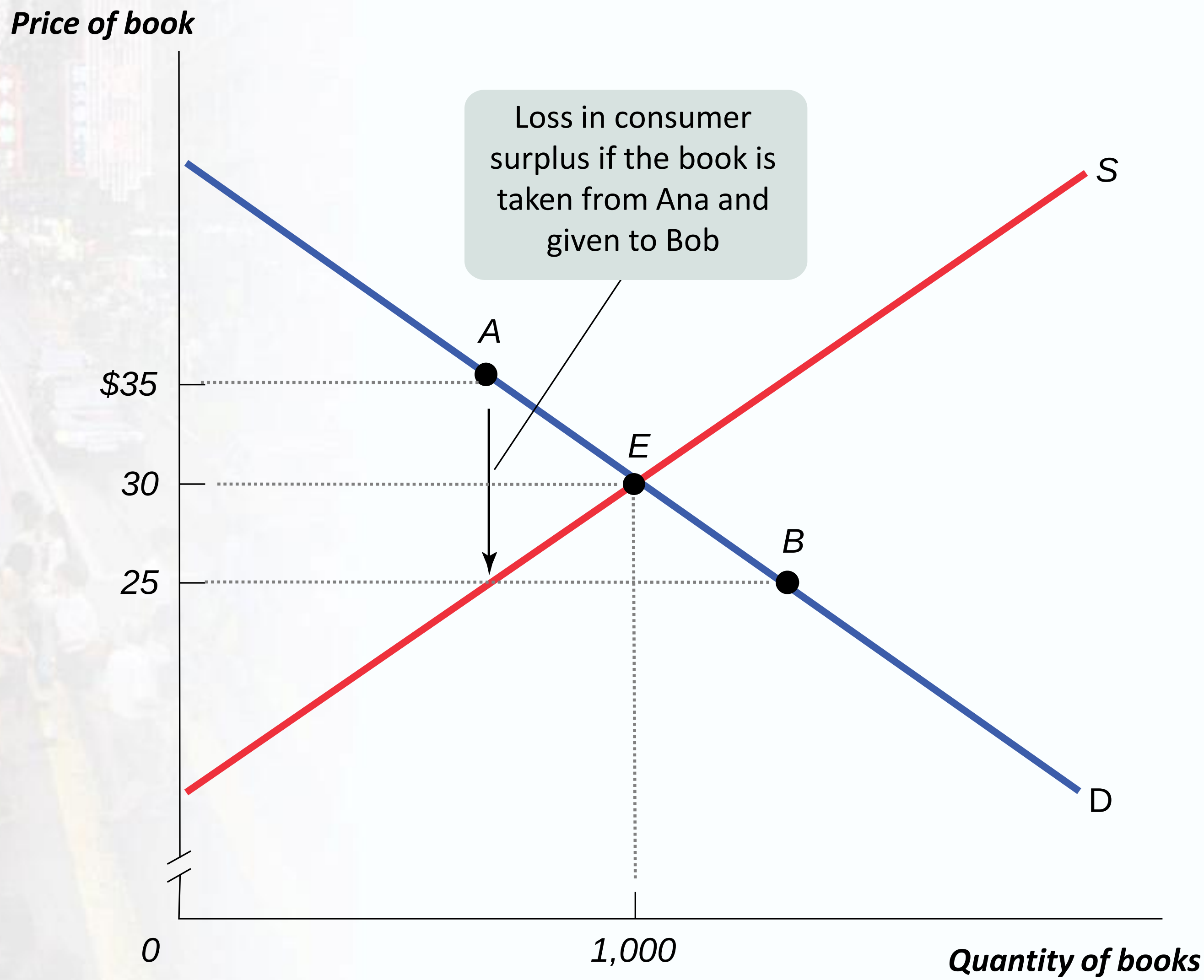
Three ways in which you might try to increase the total surplus

1. *Reallocate consumption among consumers*—take the good away from buyers who would have purchased the good in the market equilibrium, and give it to potential consumers who wouldn't have bought it in equilibrium

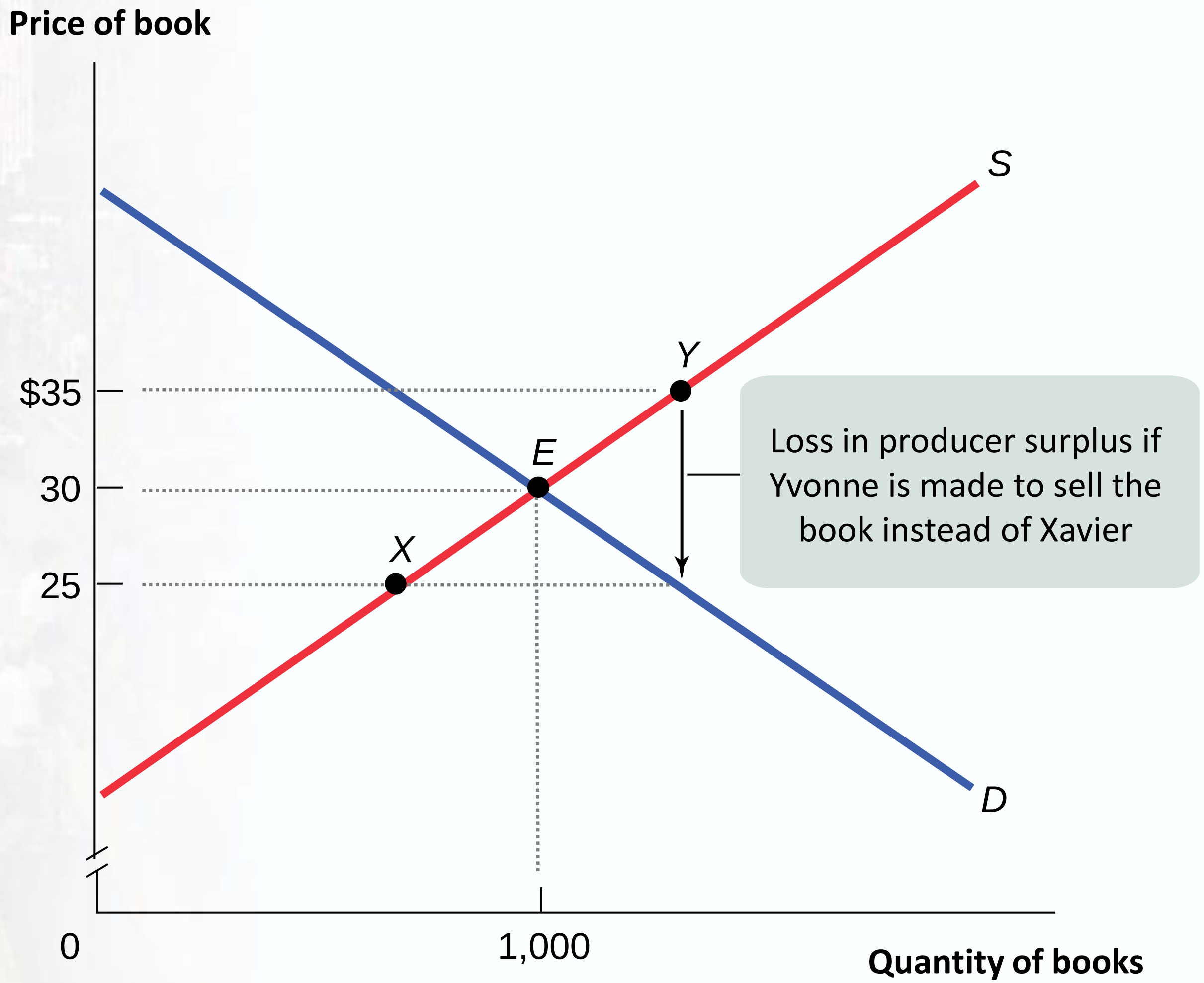
2. *Reallocate sales among sellers*—take sales away from sellers who would have sold the good in the market equilibrium, and instead compel potential sellers who would not have sold the good in equilibrium to sell it

3. *Change the quantity traded*—compel consumers and producers to transact either more or less than the equilibrium quantity

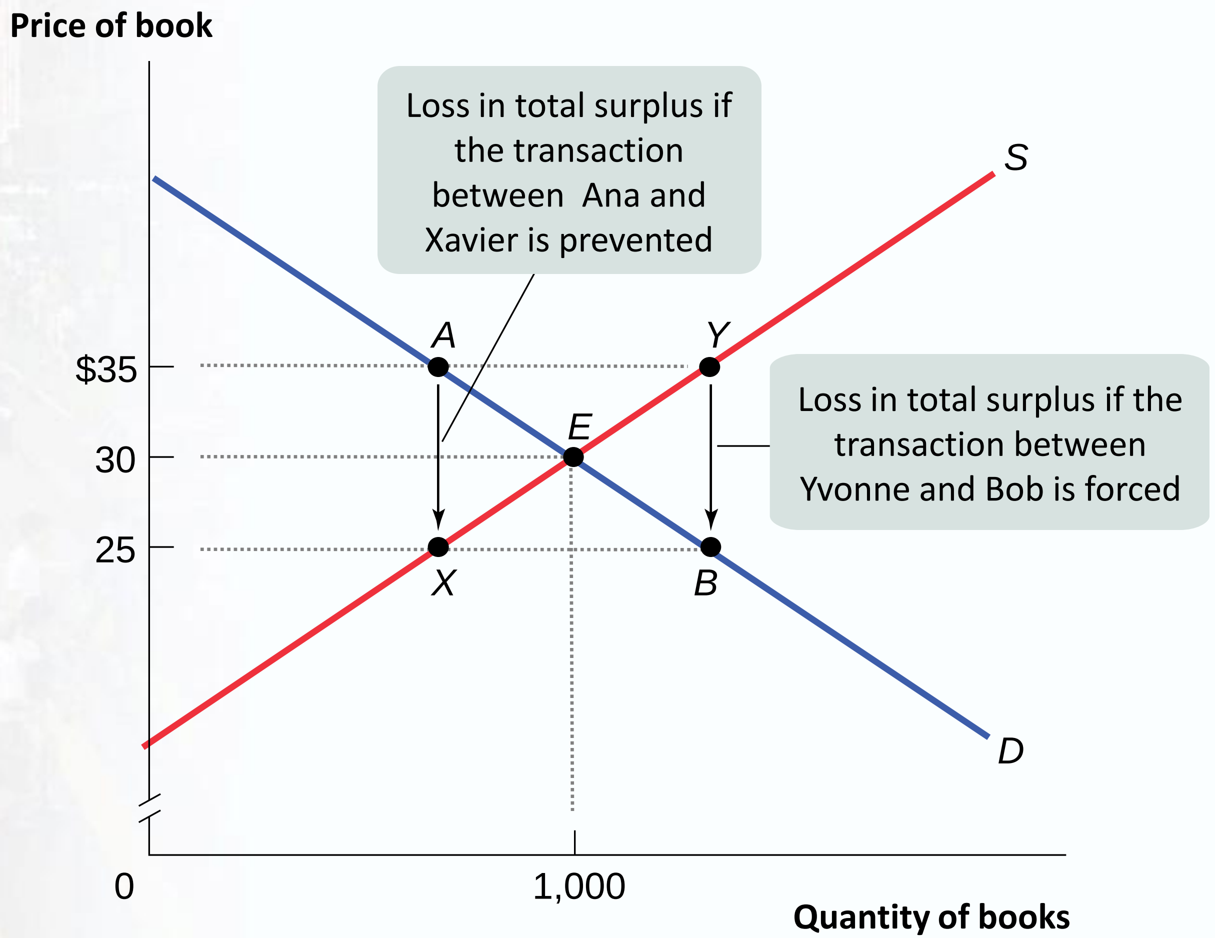
Reallocating Consumption Lowers Consumer Surplus



Reallocating Sales Lowers Producer Surplus



Changing the Quantity Lowers Total Surplus



ECONOMICS IN ACTION

eBay and Efficiency

- Garage sales are an old American tradition: they are a way for people to sell items they don’t want to others who have some use for them, to benefit both parties.
- However, many potential beneficial trades are missed because sellers and buyers may not be in position to meet one another because factors such as distance.

ECONOMICS IN ACTION

eBay and Efficiency

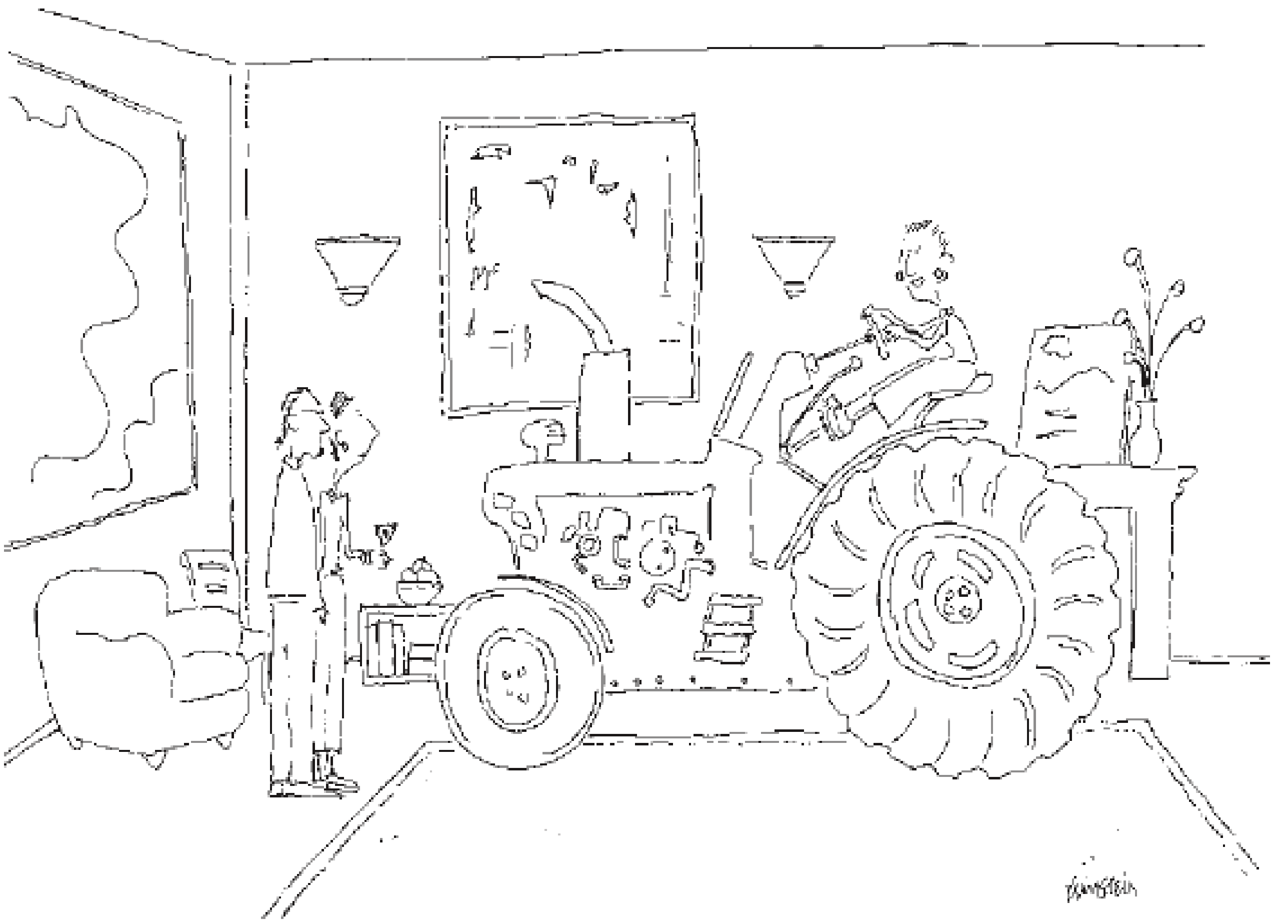
- eBay provides a way for would-be buyers and would-be sellers of unique or used items to find one another even if they don't live in the same neighborhood or city.
- The potential gains from trade were evidently large: in 2010, eBay reported $53.5 billion in goods were bought and sold on its websites.

ECONOMICS IN ACTION

Take the Keys, Please

- A Boston couple used the online matching website RelayRides to rent out their car that had been sitting around largely unused, earning enough to pay for its upkeep and insurance.
- The founder of RelayRides, Shelby Clark, reports that the average car renter on his website earns $250 per month.
- RelayRides and online matching companies like it are becoming more popular by helping individuals generate a little bit more surplus from their possessions.

ECONOMICS IN ACTION



"I got it from eBay"

Market Equilibrium Maximizes Total Surplus

1. Market equilibrium allocates consumption of the good to the potential buyers who value it the most, as indicated by the fact that they have the highest willingness to pay.

2. It allocates sales to the potential sellers who most value the right to sell the good, as indicated by the fact that they have the lowest cost.

Market Equilibrium Maximizes Total Surplus

3. It ensures that every consumer who makes a purchase values the good more than every seller who makes a sale, so that all transactions are mutually beneficial.

4. It ensures that every potential buyer who doesn't make a purchase values the good less than every potential seller who doesn't make a sale, so that no mutually beneficial transactions are missed.

Market Equilibrium Maximizes Total Surplus

- As a result of these four functions, ***any way of allocating the good other than the market equilibrium outcome lowers total surplus.***

Three Caveats

- First, although a market may be efficient, it isn't necessarily ***fair***. In fact, fairness, or ***equity***, is often in conflict with efficiency. Because society cares about equity, government intervention in a market that reduces efficiency while increasing equity can be justified.

- The second caveat is that markets sometimes ***fail***. Under some well-defined conditions, markets can fail to deliver efficiency. When this occurs, markets no longer maximize total surplus.

Three Caveats

- Third, even when the market equilibrium maximizes total surplus, this does not mean that it results in the best outcome for every ***individual*** consumer and producer.
  - For instance, a price floor that kept the price up would benefit some sellers.
  - But in the market equilibrium there is no way to make some people better off without making others worse off — and that's the definition of efficiency.

Why Markets Typically Work So Well

Economists have written volumes about why markets are an effective way to organize an economy. In the end, well-functioning markets owe their effectiveness to two powerful features: ***property rights*** and the role of prices as ***economic signals***.

- **Property rights** are the rights of owners of valuable items, whether resources or goods, to dispose of those items as they choose.

- An **economic signal** is any piece of information that helps people make better economic decisions.

A Few Words of Caution

- A market or an economy is **inefficient** if there are missed opportunities: some people could be made better off without making other people worse off.

- The three principal sources of ***market failure*** are:

  1. attempts to capture more resources that produce inefficiencies,
  2. side effects from certain transactions, and
  3. problems in the nature of the goods themselves.

ECONOMICS IN ACTION

A Great Leap — Backward

- Economies in which a central planner, rather than markets, makes consumption and production decisions are known as ***planned economies***.
  - ✓ Examples: Russia and many Eastern European countries

- Planned economies are notorious for their inefficiency, and what is probably the most compelling example is the so-called ***Great Leap Forward*** which was instituted in China in the late 1950s by Mao Zedong.

ECONOMICS IN ACTION

A Great Leap — Backward

- Its intention was to speed up the country’s industrialization by shifting from urban to rural manufacturing: farming villages were supposed to start producing heavy industrial goods such as steel.
- The plan backfired as food production fell and at the same time, industrial output declined because of inexperienced rural producers.
- The results were catastrophic as the following famine reduced China’s population by 30 million.

NEWS: From *The Economist*

- ***E pluribus tunum***: Uniform prices for online music are no way to maximize profit: http://www.economist.com/node/14699573

SUMMARY

SUMMARY

1. The **willingness to pay** of each individual consumer determines the demand curve.

   When price is less than or equal to the willingness to pay, the potential consumer purchases the good.

   The difference between willingness to pay and price is the net gain to the consumer, the **individual consumer surplus**.

2. **Total consumer surplus** in a market, the sum of all individual consumer surpluses in a market.

   A rise in the price of a good reduces consumer surplus; a fall in the price increases **consumer surplus**.

SUMMARY

SUMMARY

3. The **cost** of each potential producer, the lowest price at which he or she is willing to supply a unit of that good, determines the supply curve.

   If the price of a good is above a producer's cost, a sale generates a net gain to the producer, known as the **individual producer surplus**.

4. **Total producer surplus** in a market, the sum of the individual producer surpluses in a market, is equal to the area above the market supply curve but below the price.

SUMMARY

5. **Total surplus**, the total gain to society from the production and consumption of a good, is the sum of consumer and producer surplus.

6. Usually, markets are efficient and achieve the maximum total surplus.

   Any possible reallocation of consumption or sales, or a change in the quantity bought and sold, reduces total surplus.

   However, society also cares about equity. So government intervention in a market that reduces efficiency but increases equity can be a valid choice by society.

SUMMARY

SUMMARY

7. An economy composed of efficient markets is also efficient, although this is virtually impossible to achieve in reality.

   The keys to the efficiency of a market economy are **property rights** and the operation of prices as **economic signals**.

   Under certain conditions, **market failure** occurs, making a market **inefficient**.

   Three principal sources of market failure are attempts to capture more surplus that create inefficiencies, side effects of some transactions, and problems in the nature of the good.

KEY TERMS

- Willingness to pay
- Individual consumer surplus
- Total consumer surplus
- Consumer surplus
- Cost
- Individual producer surplus
- Total producer surplus
- Producer surplus
- Total surplus
- Property rights
- Economic signal
- Inefficient
- Market failure