chapter:

4

>> Consumer and Producer Surplus

Krugman/Wells
Economics

WHAT YOU WILL LEARN IN THIS CHAPTER

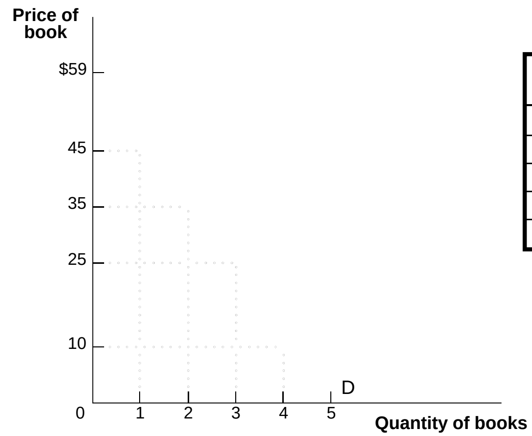
- How much benefit do producers and consumers receive from the existence of a market?
- How is the welfare of consumers and producers affected by changes in market prices?
- How are these concepts related to demand and supply curve?
  - Consumer Surplus
  - Producer Surplus
  - Cost
  - Market Failure

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
Ann	$59
Bob	45
Cindy	35
Danny	25
Emily	10

A consumer's willingness to pay for a good is
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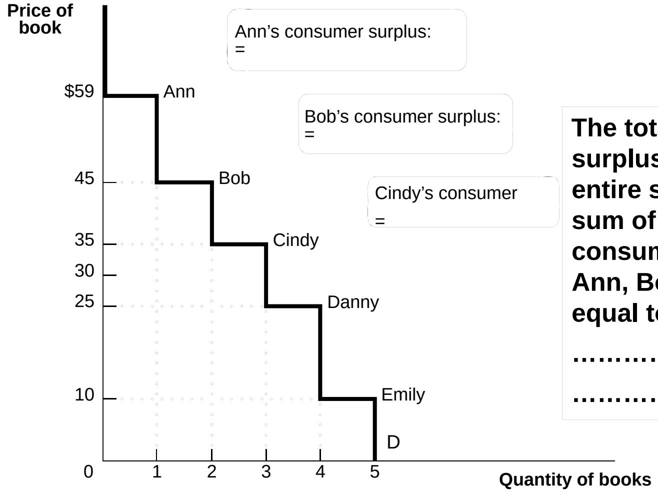
Willingness to Pay and Consumer Surplus

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 to 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 Ann, Bob, and Cindy – equal to

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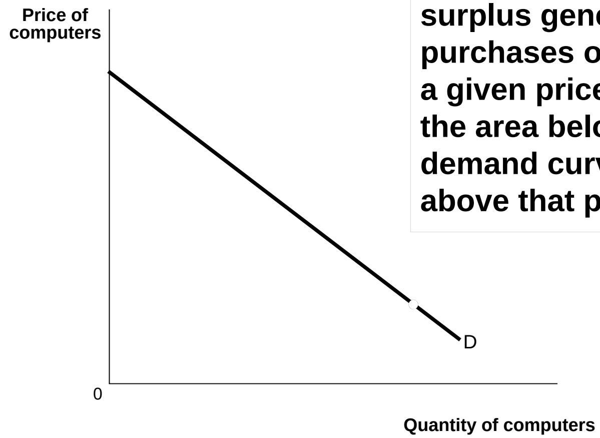
Consumer Surplus in the Used-Textbook Market

Consumer Surplus When the Price of a Used Textbook Is $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



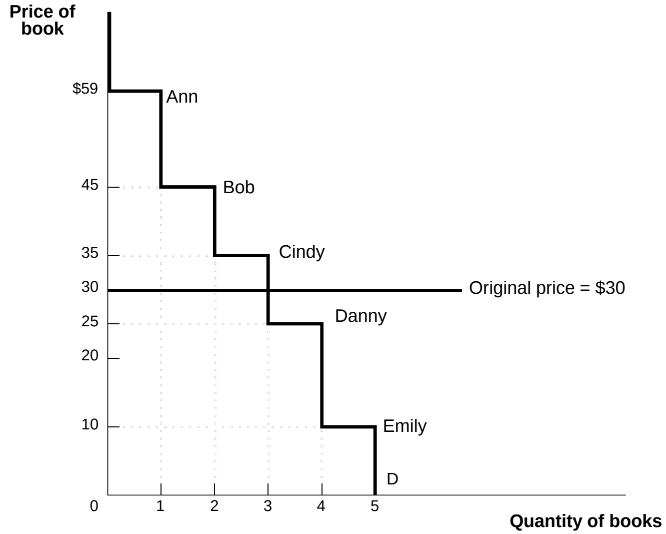
The total consumer surplus generated by purchases of a good at a given price is equal to the area below the demand curve but above that price.

How Changing Prices Affect Consumer Surplus

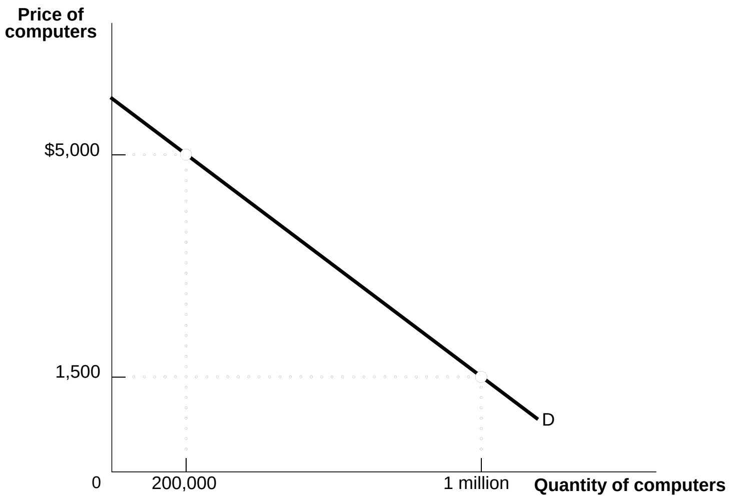
A fall in the price of a good increases consumer surplus through two channels:

- A gain to consumers who would have bought at the original price and
- 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 guidelines, a donated kidney goes to the person who has waited the longest regardless of their age.
- 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, because the consumer typically pays a price less than his willingness to pay for the good.
- Most of the time we don't think about the value associated with the right to buy a good.
- During World War II, government officials created a system of rationing goods where coupons gave one 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.

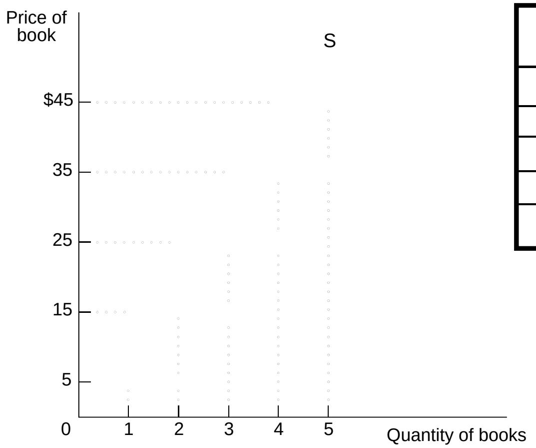
Producer Surplus and the Supply Curve

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.

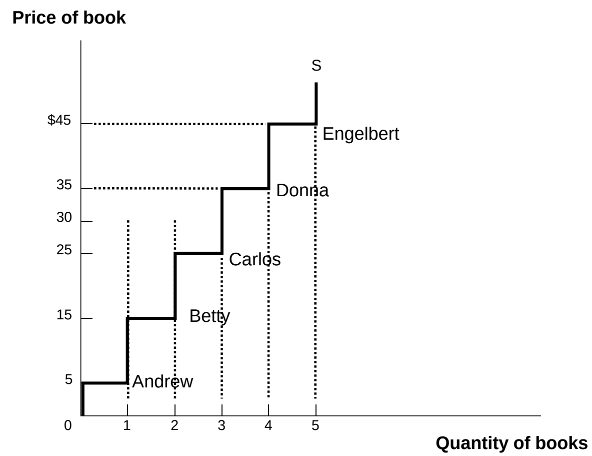
Total producer surplus in a market is the sum of the individual producer surpluses of all the sellers of a good.

The Supply Curve for Used Textbooks

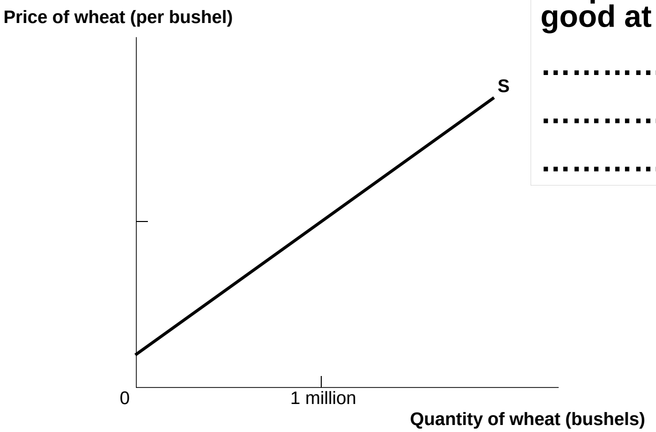


Potential sellers	Cost
Engelbert	$5
Donna	15
Carlos	25
Betty	35
Andrew	45

Producer Surplus in the Used-Textbook Market



Producer Surplus



The total producer surplus from sales of a good at a given price is

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Changes in Producer Surplus

When the price of a good rises, producer surplus increases through two channels:

- The gains of those who would have supplied the good even at the original, lower price and
- The gains of those who are induced to supply the good by the higher price.

A Rise in the Price Increases Producer Surplus

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"When the Corn is High"

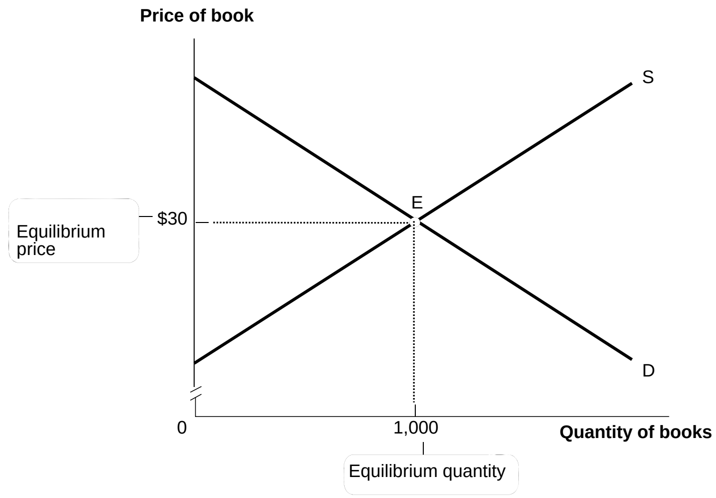
- The average value of farmland in Iowa hit a record high in 2006 and a lot of people wanted to be Iowa farmers so that they could grow corn which can be turned into ethanol.
- The government encouraged the use of gasoline that contains a percentage of ethanol in order to fight air pollution and to reduce US dependence on foreign oil.
- One result of the shift to ethanol fuel has been a rise in the demand for corn leading to a surge in corn prices, which rose from $1.85 a bushel in late 2005 to about $4 a bushel in early 2007.
- A person who buys a farm in Iowa buys the producer surplus that farm generates. And higher prices for corn, which raise the producer surplus of Iowa farmers, make Iowa farmland more valuable.

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.

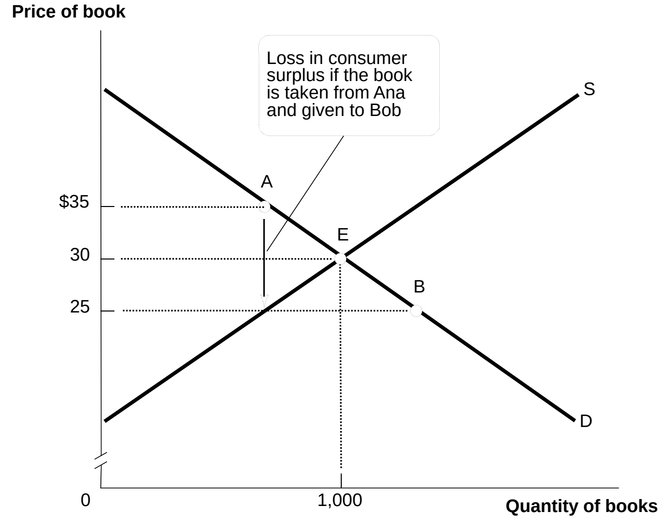
Three ways in which you might try to increase the total surplus

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.

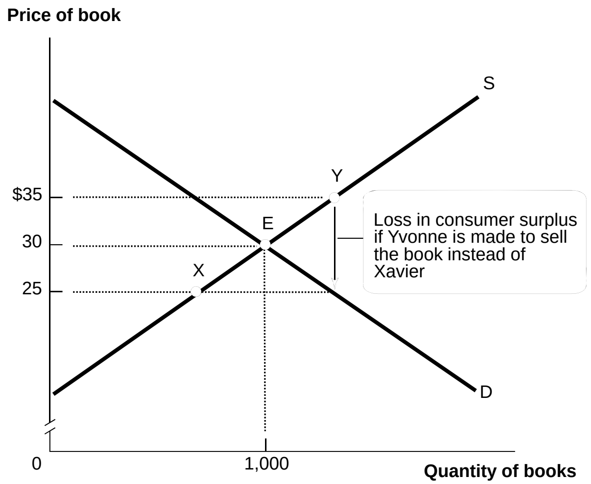
2. *Reallocate sales among sellers*—take sales away from sellers who would have sold the good in the market equilibrium, and instead compel potential sellers who would not have sold the good in equilibrium to sell it.

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

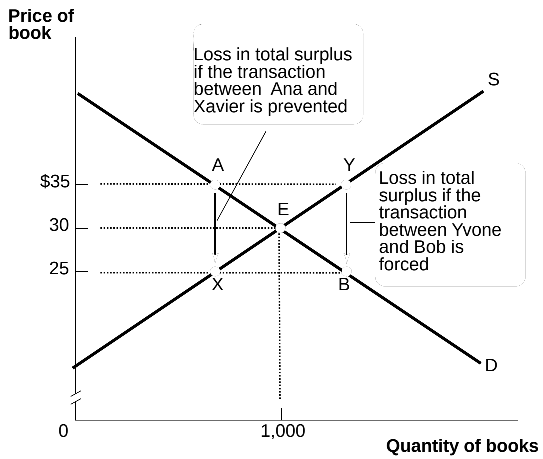
Reallocating Consumption Lowers Consumer Surplus



Reallocating Sales Lowers Producer Surplus



Changing the Quantity Lowers Total Surplus



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eBay and eFficiency

- eBay was founded in 1995 by Pierre Omidyar, a programmer whose fiancée was a collector of Pez candy dispensers and wanted a way to find potential sellers. The company, which says that its mission is "to help practically anyone trade practically anything on earth," provides a way for would-be buyers and would-be sellers of unique or used items to find each other, even if they don't live in the same neighborhood or even the same city.
- The potential gains from trade were evidently large: by late 2007, eBay had 83.2 million active users, and in 2007, $60 billion in goods were bought and sold using the service. The Omidyars now possess a large collection of Pez dispensers. They are also billionaires.

►*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 each other due to factors such as distance.
- eBay provides a way for would-be buyers and would be sellers of unique or used items to find each other even if they don't live in the same neighborhood or city.
- The potential gains from trade were evidently large: by late 2007, eBay had 83.2 million active users and in 2007, $60 billion in goods were bought and sold using the service.

►*ECONOMICS IN ACTION*

eBay and eFficiency

The market equilibrium maximizes total surplus

1. It 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.
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.

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 Caveat:

It's important to realize that although the market equilibrium maximizes the total surplus, this does not mean that it is 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.

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.

Under certain conditions, ***market failure*** occurs and the market produces an inefficient outcome.

The three principal sources are:

- attempts to capture more resources that produce inefficiencies,
- side effects from certain transactions, and
- 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*.
- Planned economies are notorious for their inefficiency, and what is probably the most compelling example is the Great Leap Forward which was instituted in China in the late 1950's by Mao Zedong.
- 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 due to inexperienced rural producers.
- The results were catastrophic as a famine that followed reduced China's population by 30 million.

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

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

SUMMARY

6. Usually, markets are efficient and achieve the maximum 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.
7. 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.