7

Welfare Economics: Evaluating Market Efficiency and Market Failure

1. Evaluating Public Policies
2. Measuring Economic Surplus
3. Market Efficiency
4. Market Failure and Deadweight Loss
5. Beyond Economic Efficiency

Chapter 7 (1 of 6)

Define and differentiate **positive** and **normative** analysis

Efficiency and **Equity**: how big is the economic pie and how is it sliced

1. **Evaluating Public Policies**
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Positive versus Normative Policy Analysis

Positive Analysis: Describes what **is** happening, explaining why, or predicting what will happen.

- What is going to happen if we adopt this policy?
  - Objective analysis that describes and forecasts the effect of the policy.

Normative Analysis: Prescribes what **should** happen, which involves value judgments.

- Which is the better outcome, and what policy should the government adopt?
  - Each person reaches their own conclusion based on their set of values. In your opinion, do the benefits of this policy

Positive Analysis:

Minimum Wage

Question: What are the consequences of raising minimum wage?

Use the supply-and-demand framework to **forecast**…

- the number of people who will get a pay raise.
- how much their pay will increase.
- how businesses' profitability will change.
- how many jobs employers will eliminate due to higher wages.

Normative Analysis: Minimum Wage

Question: Should minimum wage be raised or not? Is the policy worth enacting?

Use your values to weigh the benefits and the costs of the policy:

- Do the gains to some people outweigh the losses to others?
  - This answer will differ depending on who you ask because people have different values.

Concept Check: Positive versus Normative

Which of the following statements are **positive** statements, and which are **normative** statements?

1. College tuition should be lower so that more people can attend.
2. Lower college tuition will lead to more children from poor families attending college.
3. Income taxes are too high, and the federal government should cut them.
4. The United States should increase tariffs on goods from Mexico.

Efficiency: A way of evaluating policies

We want a way to determine how a policy affects people's *welfare*.

- People's happiness, well-being, or prosperity.

Economic efficiency: An outcome is more economically efficient if it **yields more economic surplus.**

RECALL economic surplus: The **total benefits minus total costs** flowing from a decision.

- It measures how much a decision has improved your well-being.

Efficiency outcome: The efficiency outcome yields the **largest possible economic surplus.**

- Economic surplus measures the **size of the economic pie.**
- Efficiency outcome yields the **largest economic pie.**

Efficiency and Equity: Assess the size of the economic pie, and how it's sliced!

Not everyone will be happy with an efficient outcome.

- Economic efficiency merely assesses whether economic surplus rises overall.
  - Most policies help some people but harm others, and the **people who are harmed will not be happy**.

Uber Example: The laws that allow Uber to operate in your city likely **raise economic surplus** because the **benefits** to Uber drivers and passengers **outweigh** the **harm** suffered by taxi drivers.

- But the **taxi drivers are still upset** with this outcome.

Efficient outcomes hold the **potential** to make **everyone better off.**

- Those who benefit could **compensate** those who were harmed (rarely done in practice).

Chapter 7 (2 of 6)

Define and differentiate **positive** and **normative** analysis

Efficiency and **Equity**: how big is the economic pie and how is it sliced

1. Evaluating Public Policies
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Key Definition (1 of 4)

Consumer surplus: The economic surplus you get from buying something.

Consumer surplus = marginal benefit – price

RECALL: Your **marginal benefit** is your willingness to pay for that item.

Consumer surplus describes the **gain** from buying something at a **price below** the **highest price you were willing to pay.**

Diving into the Definition

Shopping Scenario: You see a sweater you like so you try it on, and think about **how much you are willing to pay for the sweater.**

- Suppose you are **willing to pay $40.**

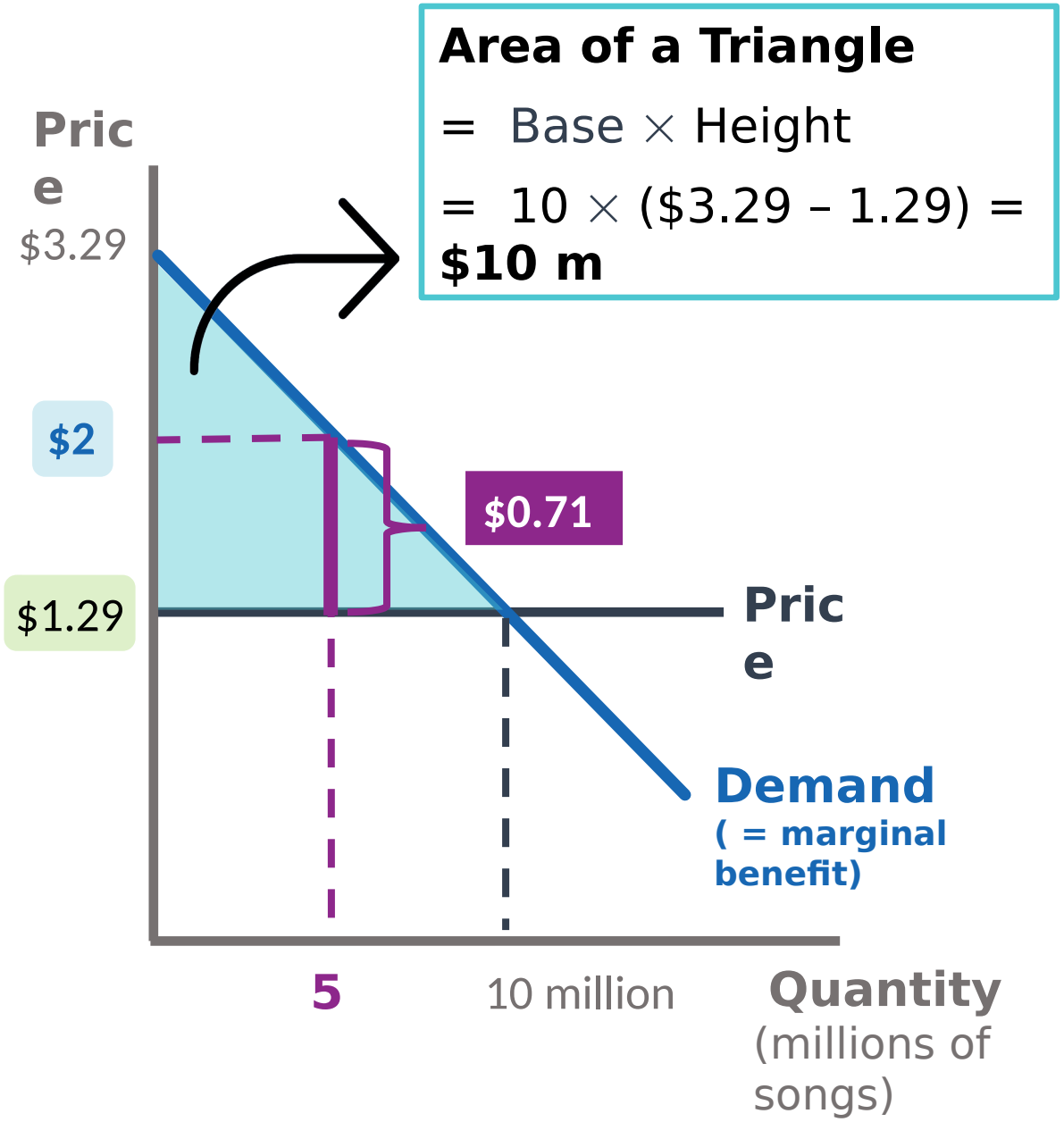
You check the **price tag: $35**

- Yay! The price is below what you were willing to pay.

Consumer surplus = marginal benefit – price

Consumer surplus = $40 - $35 = **$5**

Consumer Surplus of Rihanna's Song "Work"



Consumer surplus for a single transaction:

Suppose you are the **5**th million person to buy her song. Suppose you were willing to pay up to **$2** for the song. Your consumer surplus is **$0.71**, the difference between your marginal benefit and the price:

Consumer surplus for your unit = $2 – $1.29 = **$0.71**

Total consumer surplus across **all transactions** in the market is the **triangular area** under the demand curve and above the price, **$10 million.**

Consumer surplus and the Rational Rule for Buyers

RECALL: the **Rational Rule for Buyers** says you should keep buying something until the marginal benefit of that last unit is equal to the price of that unit.

Sock Scenario: Suppose you want to buy socks, and the price is $1.00 per pair.

You are willing to pay…	
$3 for the first pair →	Buy it! The marginal benefit **exceeds** the price, and you get $2 of consumer surplus.
$2 for the second pair →	Buy it! The marginal benefit **exceeds** the price, and you get $1 of consumer surplus.
$1 for the third pair →	Buy it! The marginal benefit **equals** the price, and you don't get any consumer surplus.

Take-away: You earn consumer surplus on **all but your last** purchase.

Key Definition (2 of 4)

Producer surplus: The economic surplus you get from selling something.

Producer surplus = price – marginal cost

RECALL: Marginal cost is the extra cost from one extra unit.

Producer surplus describes the **gain** from selling something at a **price above** the **marginal cost you incur** from producing that good or service.

Diving into the Definition

Tutoring Scenario: The student you are tutoring asks for another hour of your time. What is the **marginal cost of providing your services for another hour**?

- What do you give up if you spend another hour tutoring? You conclude you need at least **$25** in return for this extra hour.

The student offers to pay **$35.**

- Yay! The price is above what you were minimally willing to accept.

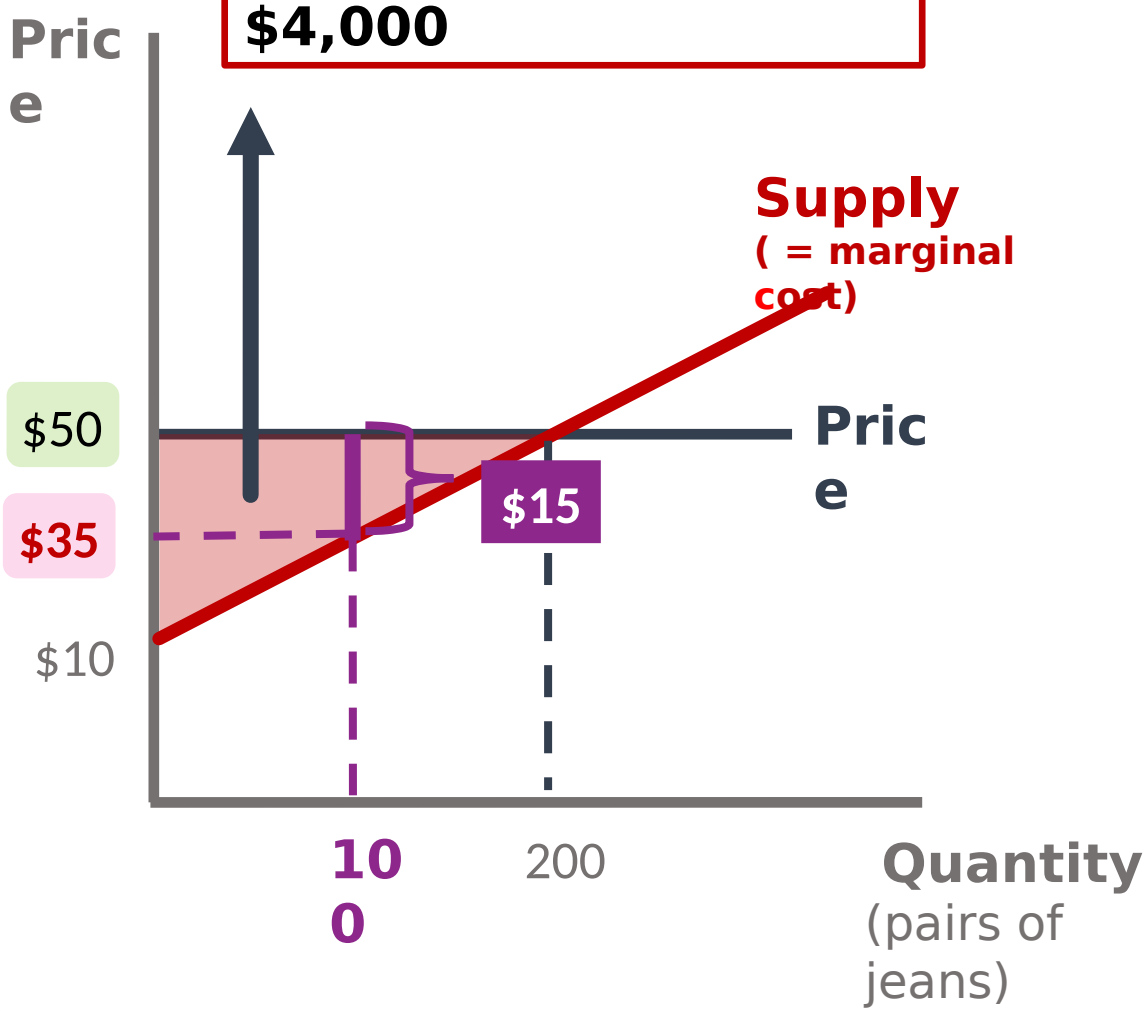
Producer surplus = price – marginal cost
Producer surplus = $35 – $25 = **$10**

Producer Surplus of Levi's Jeans

Area of a Triangle

= Base × Height

= 200 × ($50 – $10) = **$4,000**



Producer surplus for a single transaction:

Suppose you are selling your **100**th pair of jeans. The marginal cost of producing that pair of jeans is **$35**, reflecting the additional material and labor costs. Your producer surplus is **$15**, the difference between the price and the marginal cost:

Producer surplus for this unit = $50 – $35 = **$15**

Total producer surplus across **all transactions** in the market is the **triangular area** under the price and above the supply curve, **$4,000.**

Producer surplus and the Rational Rule for Sellers

RECALL: the **Rational Rule for Sellers** in a competitive market says you should keep selling until the marginal cost equals the price.

Sock Scenario: Suppose you are selling socks, and the price is $1.00 per pair.

You are willing to sell socks for a minimum of...

$0.25 for the first pair → Sell it! The price **exceeds** the marginal cost, and you get $0.75 of producer surplus.

$0.75 for the second pair → Sell it! The price **exceeds** the marginal cost, and you get $0.25 of producer surplus.

$1 for the third pair → Sell it! The price **equals** the marginal cost, and you don't get any producer surplus.

Take-away: You earn producer surplus on **all but your last** sale.

Key Definition (3 of 4)

Voluntary exchange: Buyers and sellers exchange money for goods only if they **both want to**.

Trade is a **win-win situation** that creates **both** consumer and producer surplus

(or at least neither is made worse off).

- **Both buyers and sellers gain** from trade.

Voluntary exchange **does not guarantee** that buyers and sellers **share equally** in the gains from trade.

Diving into the Definition

Sock Scenario Revisited: Recall the price of a pair of socks was $1.00.
For the first pair of socks…

Consumer Perspective:

- Willing to pay $3 for the first pair.
- Consumer surplus = **$2** for first pair.

Supplier Perspective:

- Minimally willing to accept $0.25 for the first pair.
- Producer surplus = **$0.75** for first pair.

Take-away: Buyers and sellers **both gain** from this exchange!

Understanding economic surplus

The **economic surplus** generated by a transaction is the sum of the **consumer surplus** enjoyed by the buyer **and** the **producer surplus** enjoyed by the seller.

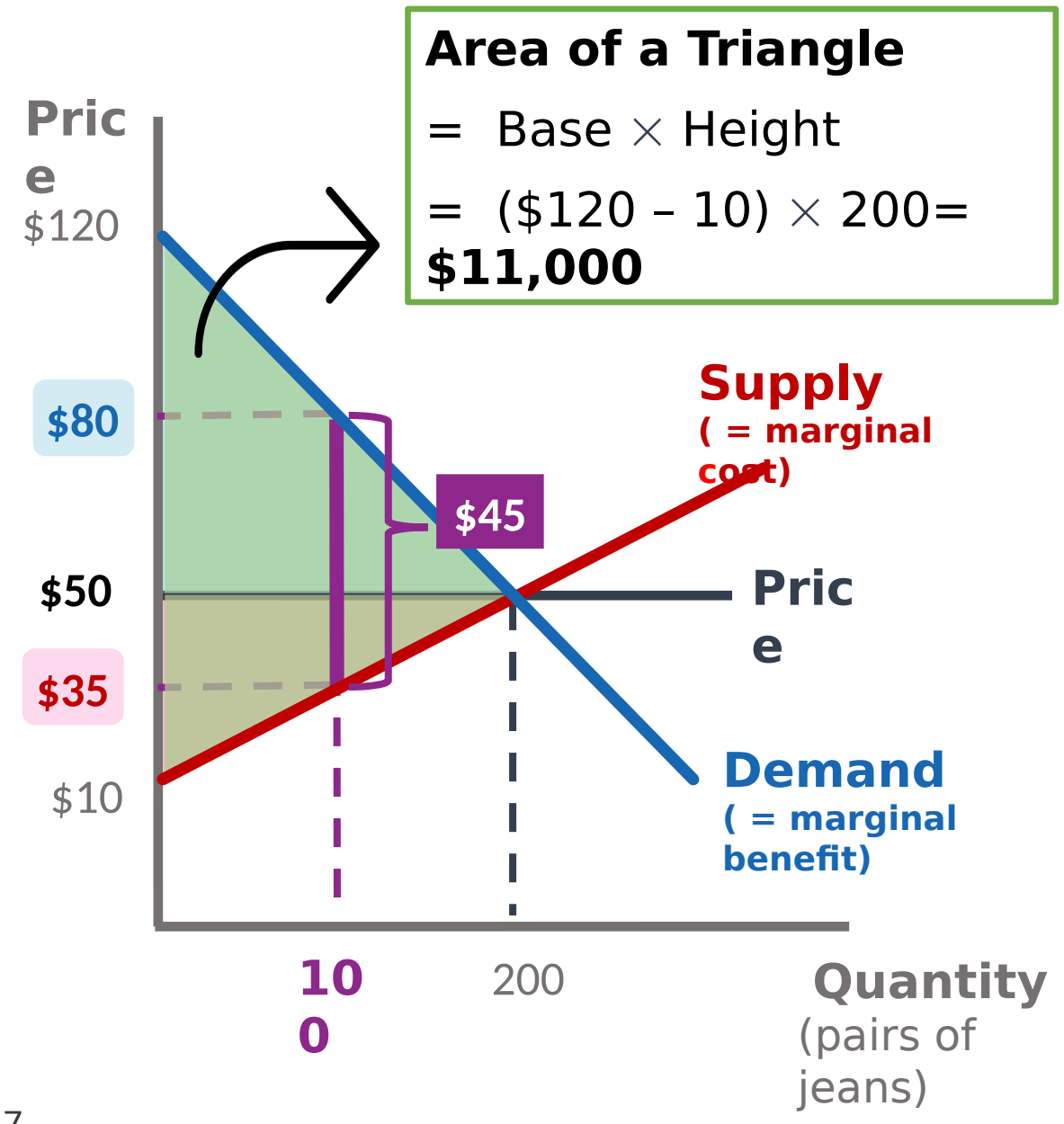
- Bring everything together!

Economic surplus = consumer surplus + producer surplus

= marginal benefit – price + price – marginal benefit

= marginal benefit – marginal benefit

Economic Surplus of Levi's Jeans

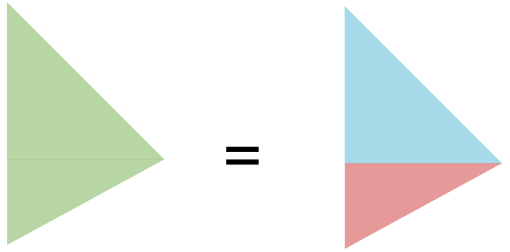


Economic surplus for a single transaction:

Let's examine the 100th pair of jeans. Economic surplus is the marginal benefit less the marginal cost.

Economics surplus for 100th unit = **$80** - **$35** = $45

Total economic surplus across **all transactions** in the market is the **triangular area** under the demand curve and above the supply curve, **$11,000.**



Consumer surplus

+

Producer surplus

Key take-aways: Economic surplus

Consumer Surplus

The economic surplus you get from **buying** something when your **marginal benefit** is **above** the **price.**

Producer Surplus

The economic surplus you get from **selling** something when the **price** is **above** the **marginal cost.**

Economic Surplus

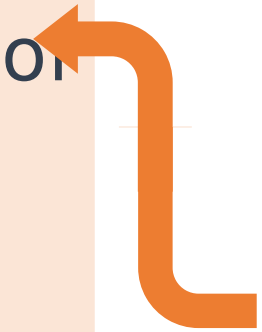
The consumer surplus and producer surplus **added together**.

- The difference between marginal benefit and marginal cost

Chapter 7 (3 of 6)

Assess the efficiency of markets:

1. Who makes what?
2. Who gets what?
3. How much is bought and sold?



1. Evaluating Public Policies
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Market Efficiency (1 of 3)

Recall, an **efficient outcome** yields the largest possible economic surplus.

Market-based economics yield more efficient outcomes than centrally planned economies.

Markets determine...

1. Who makes what?
2. Who gets what?
3. How much gets bought and sold?

Efficient production: Producing a given quantity of output at the *lowest possible cost*.

- Requires producing each unit at the lowest marginal cost.

1. Who makes what? (1 of 3)

Scenario A

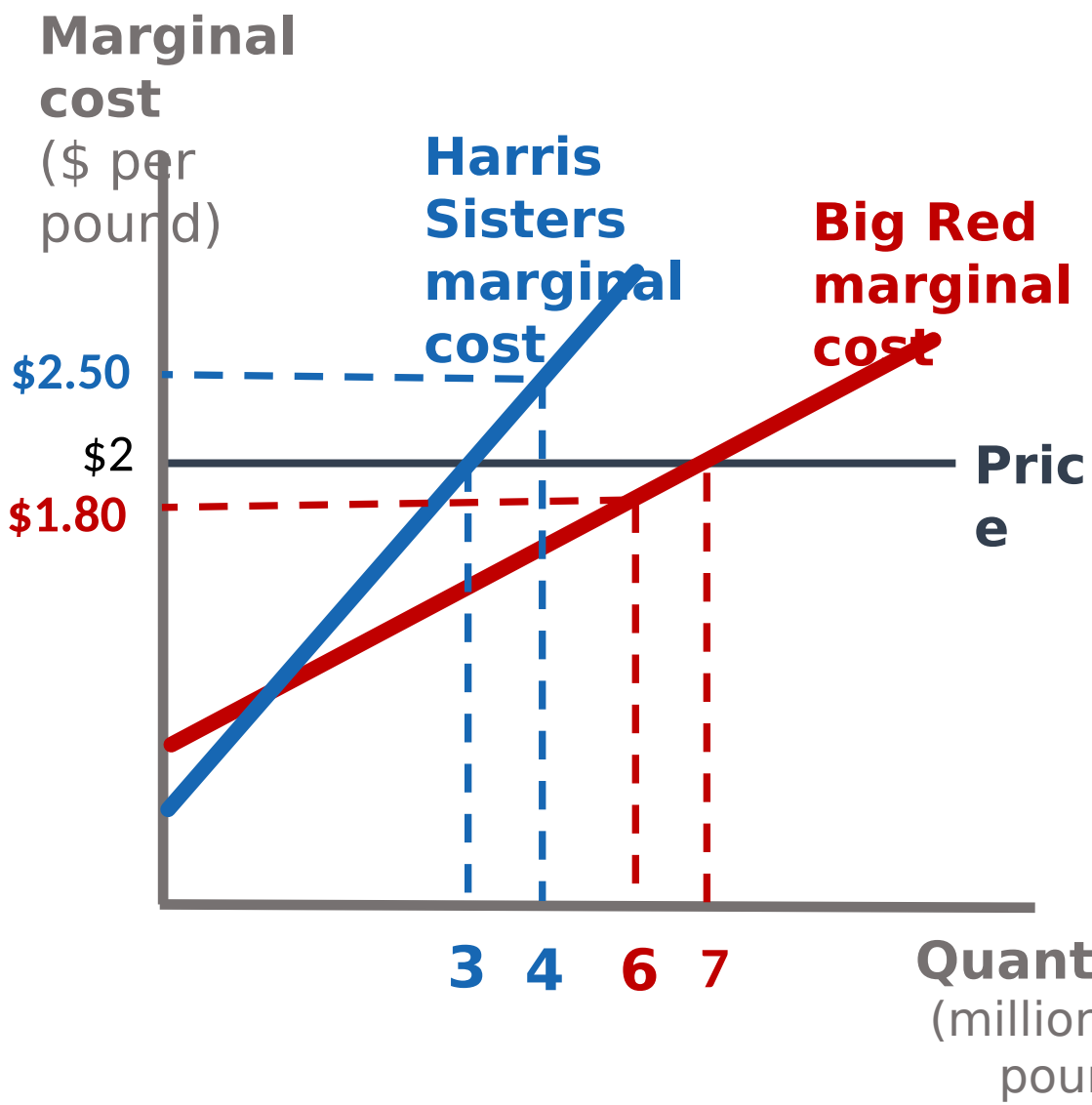
When the price is $2,

- Harris Sisters supplies **3 million pounds**
- Big Red supplies **7 million pounds**.

Alternative way to produce 10 million pounds of tomatoes:

Scenario B

- Harris Sisters supplies **4 million pounds**
  - It costs Harris Sisters **MORE than $2** per pound to produce those extra tomatoes.
- Big Red supplies **6 million pounds**.
  - It costs Big Red **LESS than $2** per pound to produce those extra tomatoes.



1. Who makes what? (2 of 3)

Scenario A

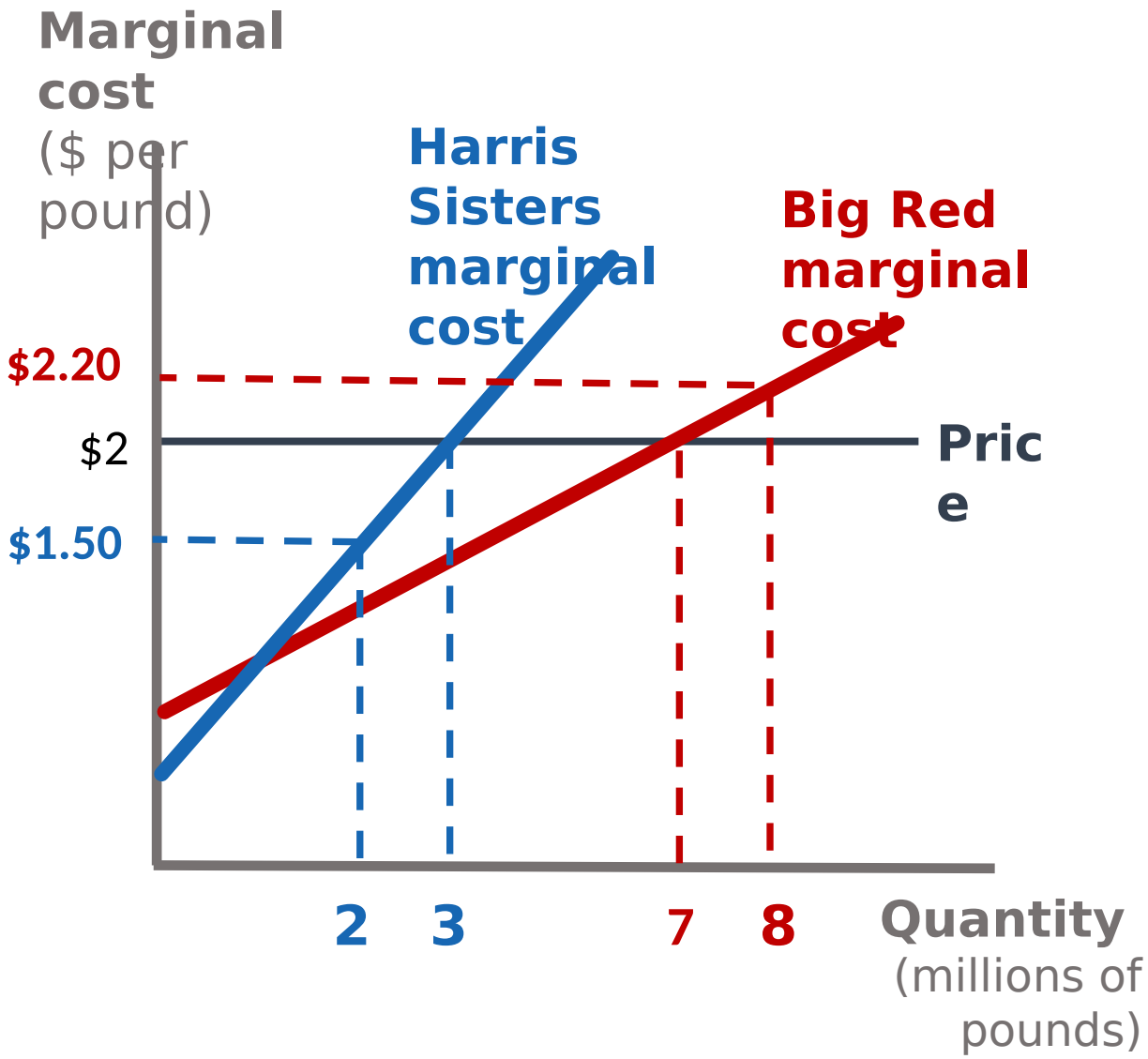
When the price is $2,

- Harris Sisters supplies **3 million pounds**
- Big Red supplies **7 million pounds**.

Alternative way to produce 10 million pounds of tomatoes:

Scenario C

- Harris Sisters supplies **2 million pounds**
  - It costs Harris Sisters **LESS than $2** per pound to produce those extra tomatoes.
- Big Red supplies **8 million pounds**.
  - It costs Big Red **MORE than $2**



1. Who makes what? (3 of 3)

Scenario A

When the price is $2,

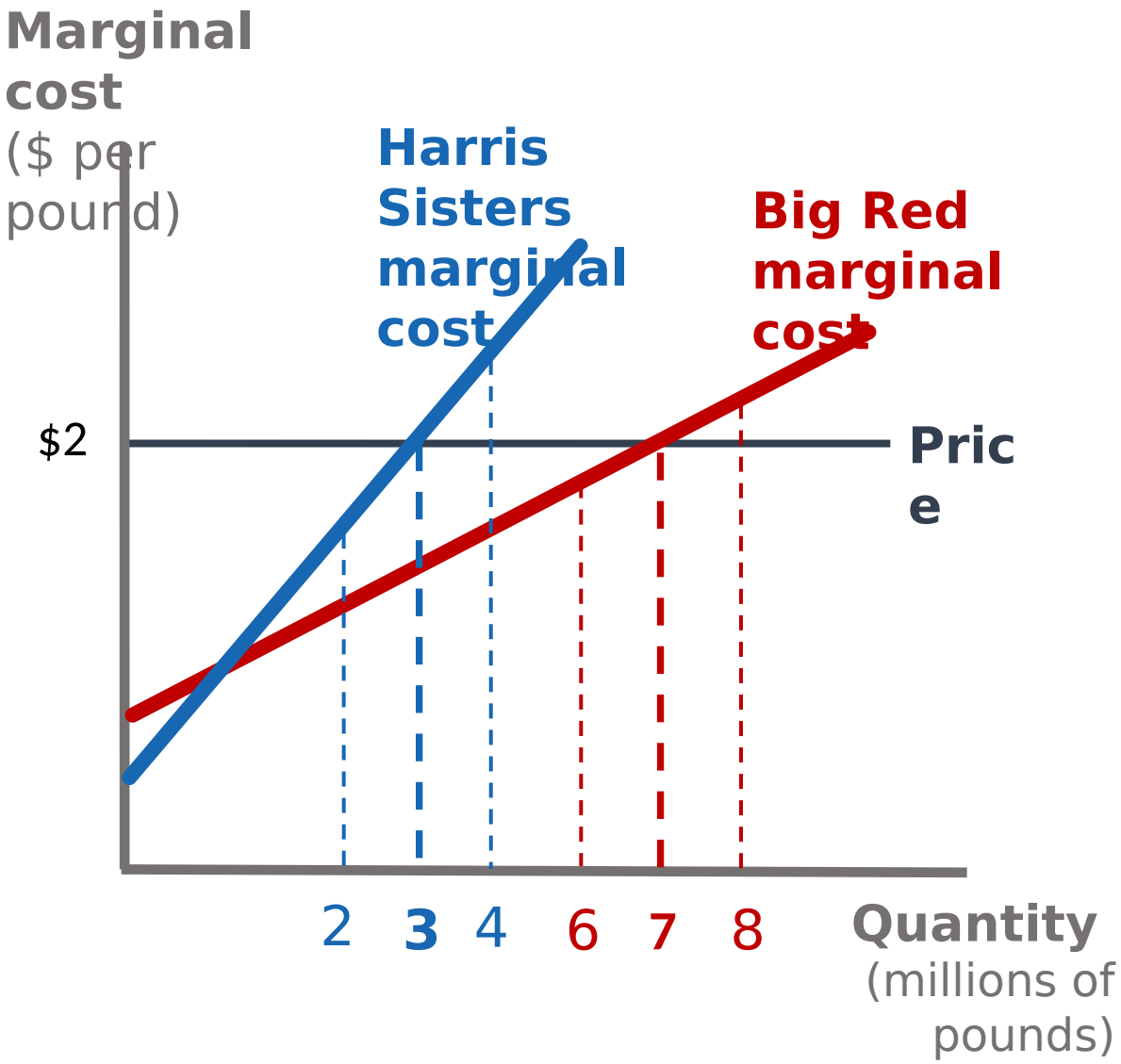
- Harris Sisters supplies **3 million pounds**
- Big Red supplies **7 million pounds**.

Scenario A represents **efficient production**.

- There is no way to produce 10 million pounds of tomatoes at a lower cost.

Take-away: Markets distribute production across firms in a way that **minimizes costs.**

- Competitive markets ensure **each unit** is being **produced by the supplier** who can do so at the **lowest possible marginal cost**.



Market Efficiency (2 of 3)

Recall, an **efficient outcome** yields the largest possible economic surplus.

Market-based economics yield more efficient outcomes than centrally planned economies.

Markets determine...

1. Who makes what?
2. Who gets what?
3. How much gets bought and sold?

Efficient allocation: Allocating goods to create the *largest economic surplus*.

- Requires that each good goes to the person who will get the highest marginal benefit from it.

2. Who gets what? (1 of 3)

Scenario A

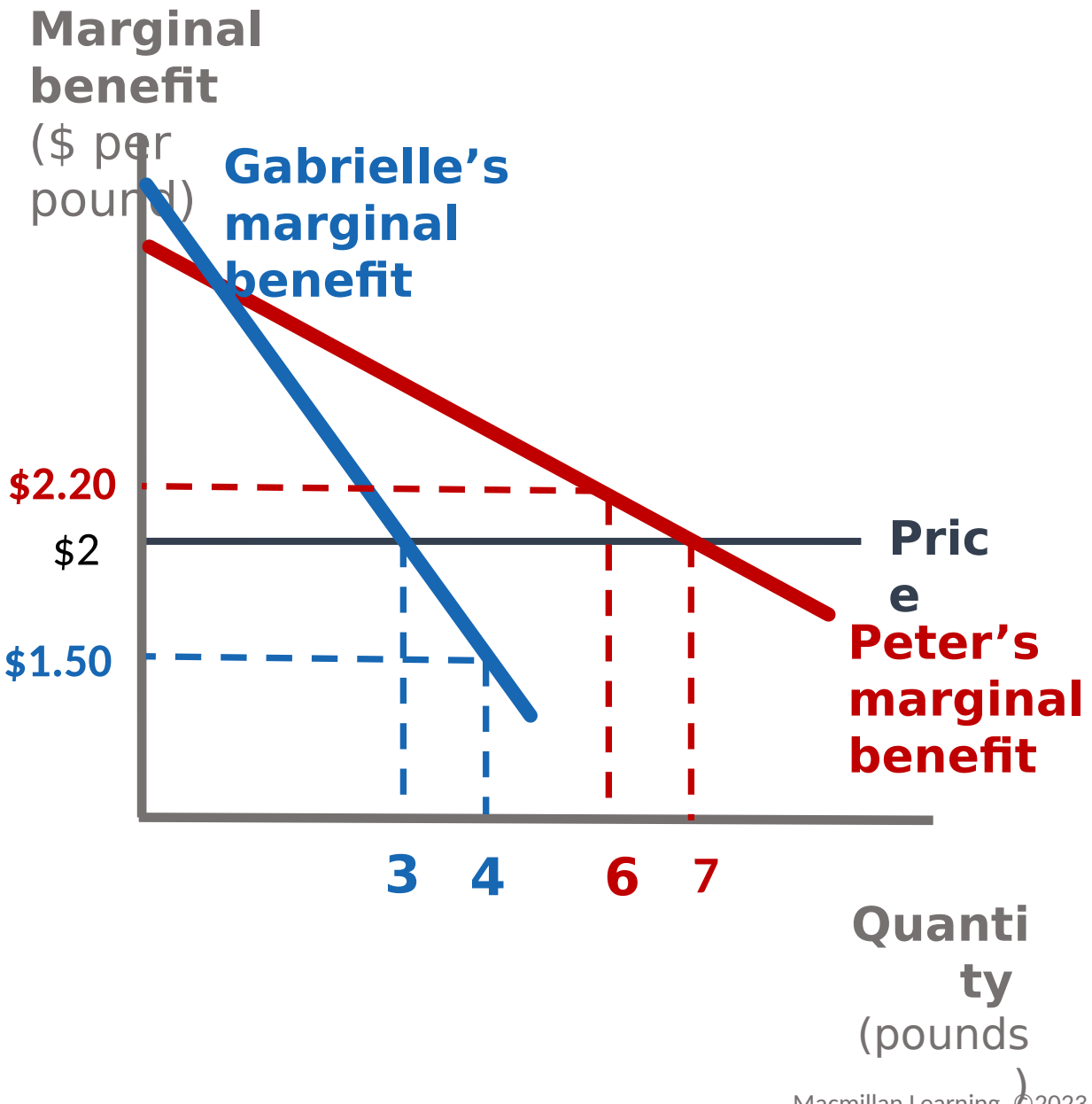
When the price is $2,

- Gabrielle buys **3 pounds** of tomatoes.
- Peter buys **7 pounds** of tomatoes.

Alternative way to allocate 10 pounds of tomatoes.

Scenario B ☾ give Gabrielle some of Peter's tomatoes.

- Gabrielle gets **4 pounds**
  - Her marginal benefit from the extra tomatoes is **LESS than $2.**
- Peter gets only **6 pounds**.
  - He forgoes tomatoes from which he gets a marginal benefit of **MORE than $2.**



2. Who gets what? (2 of 3)

Scenario A

When the price is $2,

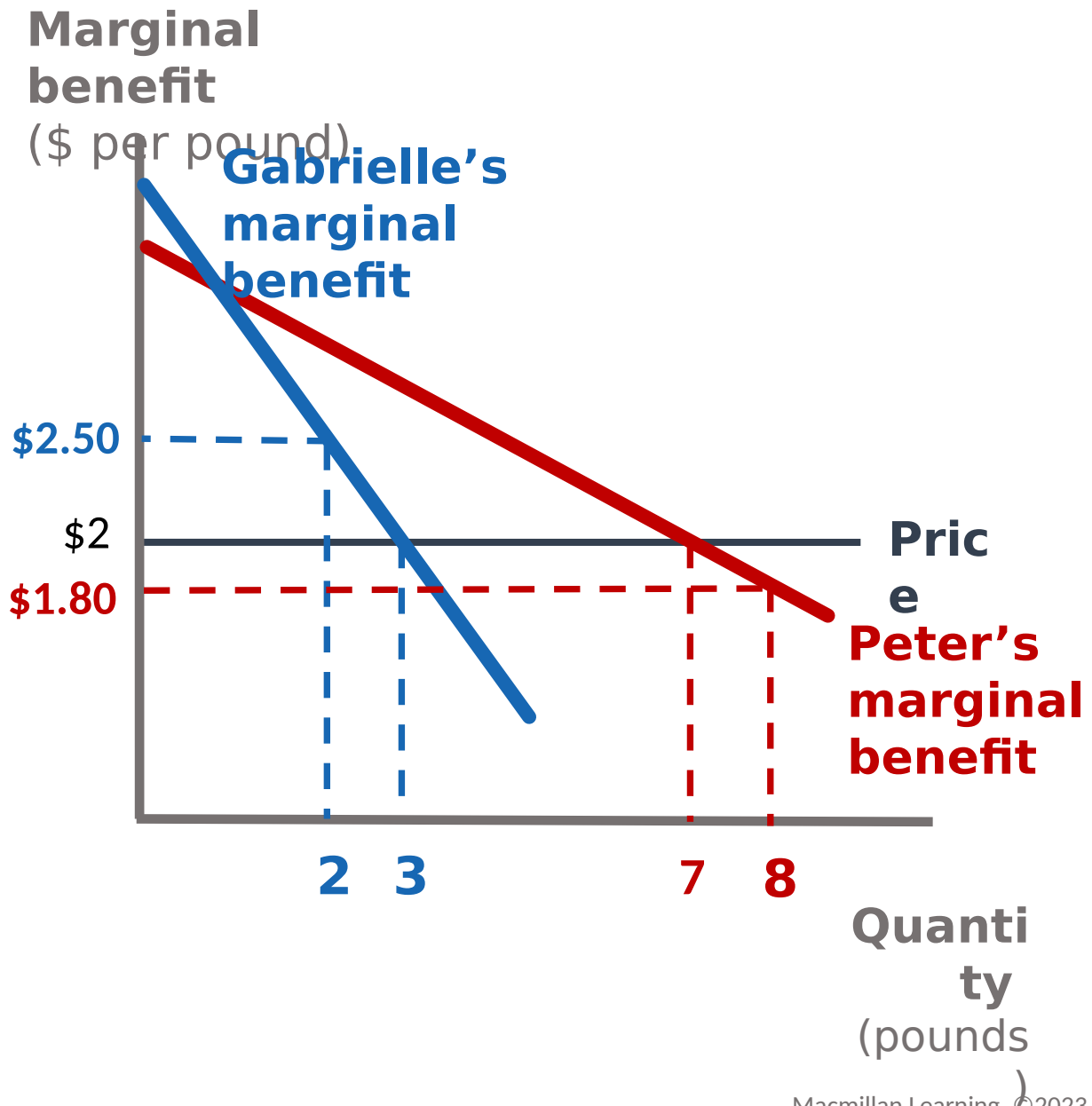
- Gabrielle buys **3 pounds** of tomatoes.
- Peter buys **7 pounds** of tomatoes.

Alternative way to allocate 10 pounds of tomatoes.

Scenario C ☾ give Peter some of Gabrielle's tomatoes.

- Gabrielle gets **2 pounds**
  - She forgoes tomatoes from which she gets a marginal benefit of **MORE than $2.**
- Peter gets only **8 pounds**.
  - His marginal benefit from the extra tomatoes is **LESS than $2.**

Scenario C is NOT an efficient



2. Who gets what? (3 of 3)

Scenario A

When the price is $2,

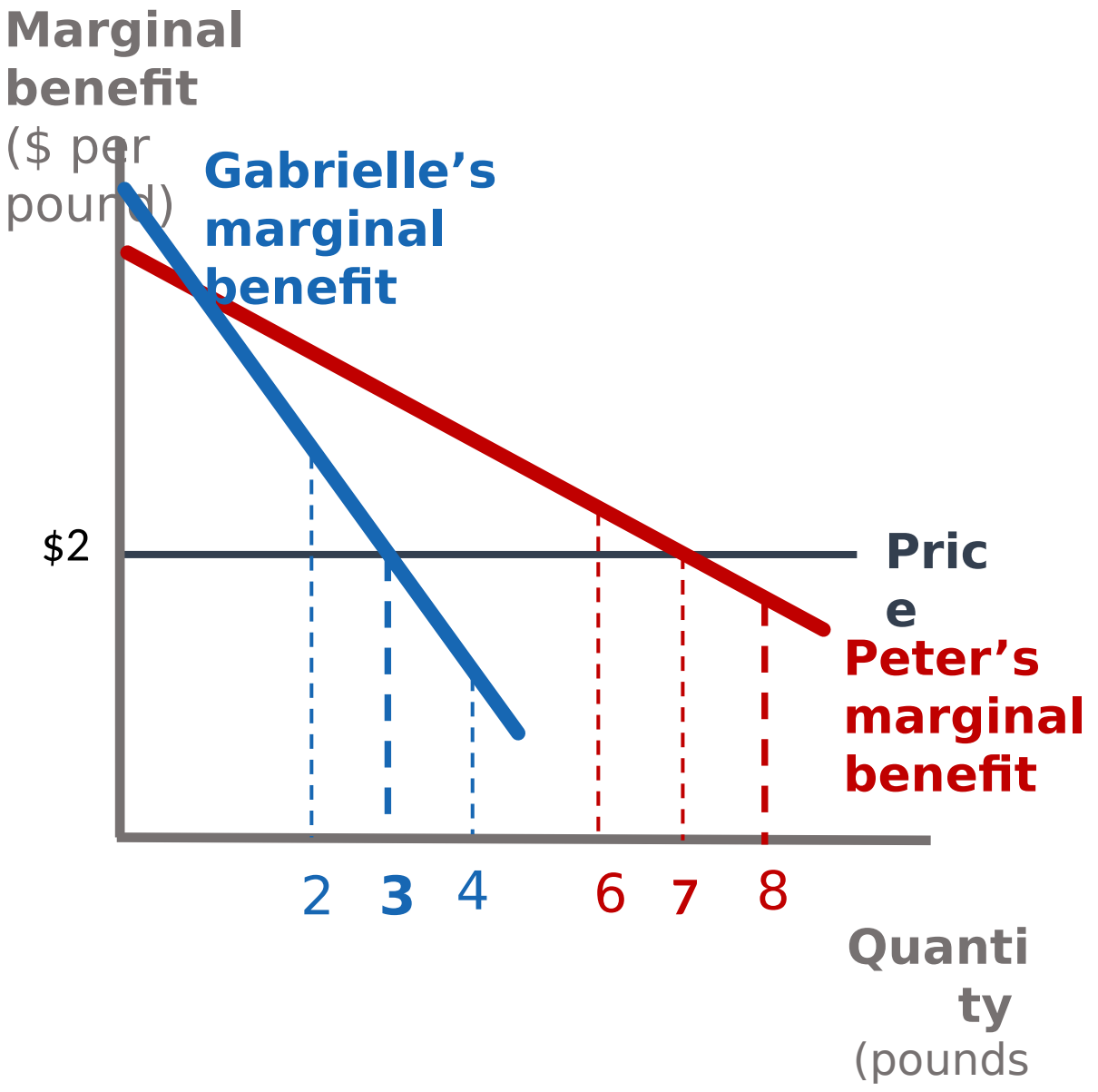
- Gabrielle buys **3 pounds** of tomatoes.
- Peter buys **7 pounds** of tomatoes.

Scenario A is an **efficient allocation**.

- Each tomato ends up being sold to the person who gets the highest marginal benefit from it.

Take-away: Markets allocate goods to those with the highest marginal benefit.

- This ensures the market allocates tomatoes in such a way as to generate the largest economic surplus.



Market Efficiency (3 of 3)

Recall, an **efficient outcome** yields the largest possible economic surplus.

Market-based economics yield more efficient outcomes than centrally planned economies.

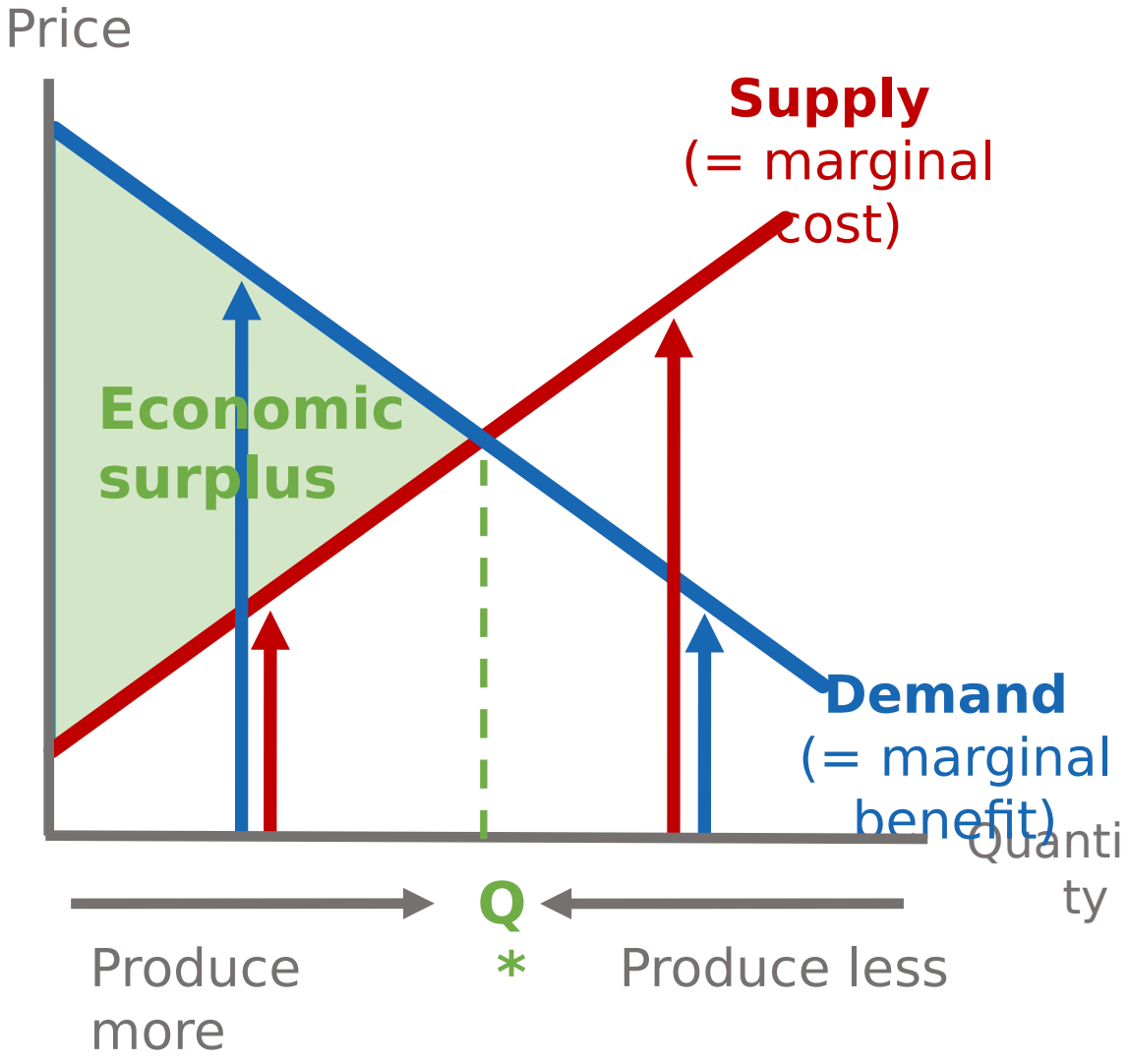
Markets determine...

1. Who makes what?
2. Who gets what?
3. How much gets bought and

Efficient quantity: The quantity that produces the largest possible economic surplus.

Rational rule for markets: Produce more of a good if its *marginal benefit* is greater than (or equal to) the *marginal cost*.

3. How much gets bought and sold?



When production is…

less than the equilibrium quantity, the marginal benefit exceeds the marginal cost.

- Increase economic surplus by ↑ Q

more than the equilibrium quantity, the marginal cost exceeds the marginal benefit.

- Increase economic surplus by ↓ Q

Take-away: The supply-equals-demand equilibrium, **Q***, produces the **surplus-maximizing quantity**

- where **marginal benefit equals marginal cost.**

Key take-aways: Market efficiency

1. Who makes what?

The forces of the competitive market ensure **efficient production**.

- Each unit of output is produced at the lowest possible cost.

2. Who gets what?

The forces of the competitive market ensure **efficient allocation.**

- Each unit goes to the buyer who will get the highest marginal benefit.

3. How much gets bought and sold?

The supply-equals-demand quantity is the **efficient**

Chapter 7 (4 of 6)

Measuring the costs of market failure:

- Deadweight loss from **underproduction**
- Deadweight loss from **overproduction**
- **Government** failure

1. Evaluating Public Policies
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Market Failure

Thus far, **competitive markets** have led to **efficient production** and **efficient allocation.**

But what if…

- supply and demand curves do **NOT** represent **well-informed** buyers and sellers?
- we do **NOT** have a **well-functioning** market?
- we do **NOT** have **perfect competition**?

Result ☾ We will NOT have an efficient outcome.

Market failure: When market forces of supply and demand lead to an **inefficient outcome**.

Five main sources of market failure:

1. Market power
2. Externalities
3. Information problems
4. Irrationality
5. Government regulations

Five Main Sources of Market Failure (1 of 5)

1. Market power
2. Externalities
3. Information problems
4. Irrationality
5. Government regulations

Market power undermines competitive pressure.

If a market does NOT have many sellers, selling identical products then…

- sellers can exploit the limited competition by charging higher prices.
  - Consumers buy smaller quantities.

Overall result: Less than the efficient quantity is produced (i.e., underproduction).

  - How much less depends on how much market power they have.

Five Main Sources of Market Failure (2 of 5)

1. Market power
2. Externalities
3. Information problems
4. Irrationality
5. Government regulations

Externalities create side effects.

Externalities arise whenever the choices that buyers and sellers make have **side effects on others.**

Example: If **someone decides to smoke a cigarette** near you, then you experience the annoying side effect of **second-hand smoke**.

When these negative side effects are not taken into consideration, **more than the efficient quantity** ends up getting bought and sold (i.e., overproduction).

Five Main Sources of Market Failure (3 of 5)

1. Market power
2. Externalities
3. Information problems
4. Irrationality
5. Government regulations

Information problems undermine trust.

Private information: Information that one party has but the other does not.

Example: If a seller knows more about the quality of a **used car** than you do, you might wonder why they're selling it.

Your **concerns about what might be wrong** with it could lead you to **not buy the car** even if there is nothing wrong with it.

Five Main Sources of Market Failure (4 of 5)

1. Market power
2. Externalities
3. Information problems
4. Irrationality
5. Government regulations

Irrationality leads to bad decisions.

Sometimes people make decisions that are not in their best interests.

- If buyers don't follow the **Rational Rule for Buyers**…
  - then their demand may no longer reflect their marginal benefits.
  - Result: unlikely to achieve efficient allocation
- If sellers don't follow the **Rational Rule for Sellers…**
  - then their supply decisions may not be driven by their marginal costs.
  - Result: unlikely to achieve efficient production

Five Main Sources of Market Failure (5 of 5)

1. Market power
2. Externalities
3. Information problems
4. Irrationality
5. Government regulations

Governments can impede market forces.

Taxes lead to lower quantities being bought and sold.

Price ceilings and **price floors** can also lead to lower quantities being bought and sold.

Quantity regulations change the quantity being bought and sold.

Sometimes these government regulations:

- correct a market failure.
- other times, they create their own market failure.

Key Definition (4 of 4)

Deadweight loss: How far economic surplus falls below the efficient outcome.

- Deadweight loss abbreviated DWL

DWL = economic surplus at efficient outcome **-** actual economic surplus

Deadweight loss allows us to measure the extent of the market failure, and the associated costs.

- How far away are we from the efficient point?

Diving into the Definition

Deadweight loss arises **anytime** we are **not at the efficient quantity.**

- Overproduction generates DWL.
- Underproduction generates DWL.

Deadweight loss essentially measures how far off the “efficient mark” we find ourselves.

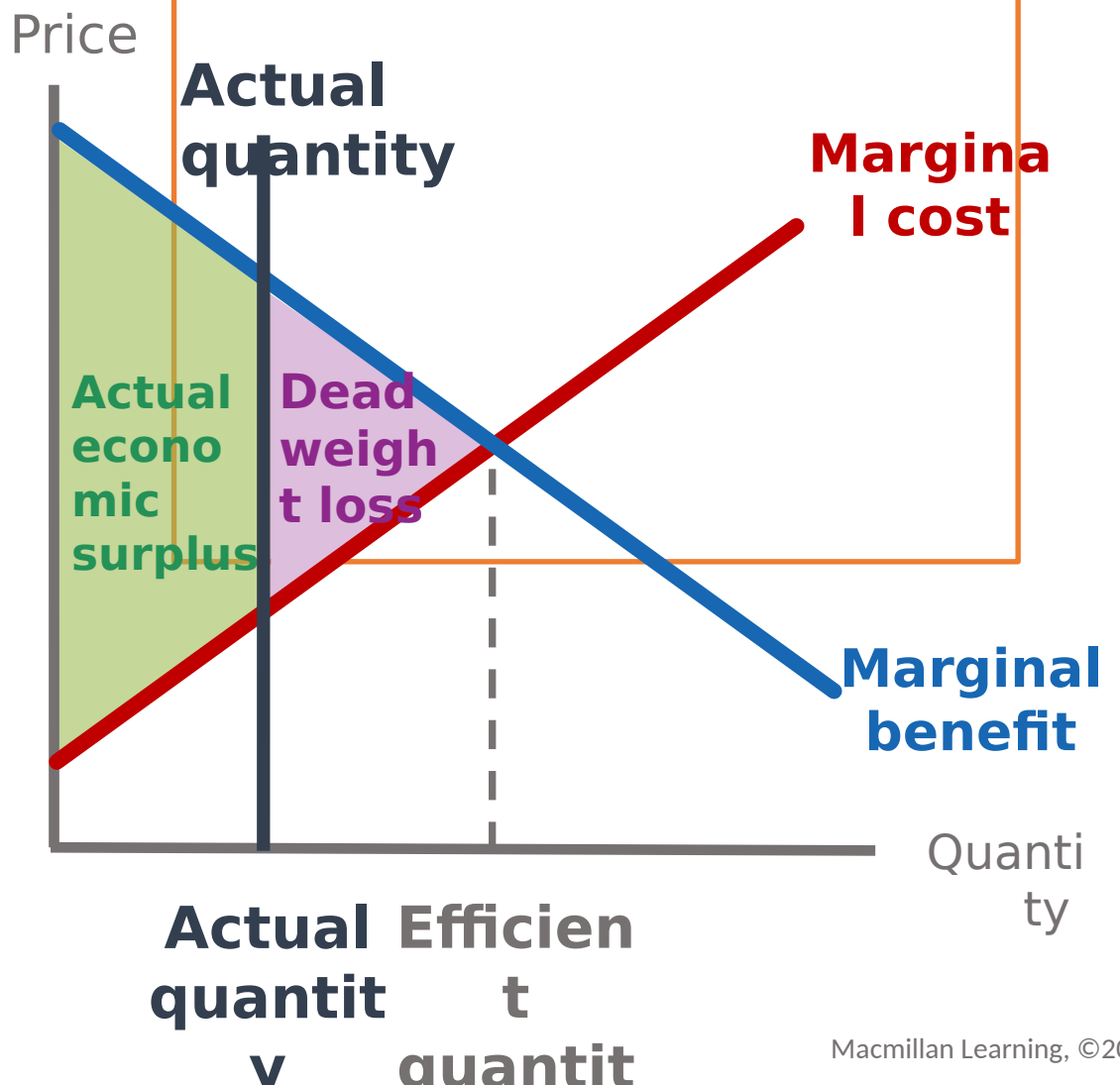
Producing **less** than the efficient quantity creates deadweight loss

Efficient quantity is where the **marginal benefit** and **marginal cost** curves **cross.**

The **actual quantity** is **less** than the efficient quantity due to a market failure.

Deadweight loss = Economic surplus at **efficient** quantity − Economic surplus at **actual** quantity

HELPFUL HINT: Deadweight loss is shaped like an arrow-head, pointing toward the efficient quantity.



Producing **more** than the efficient quantity creates deadweight loss

Efficient quantity is where the **marginal benefit** and **marginal cost** curves **cross.**

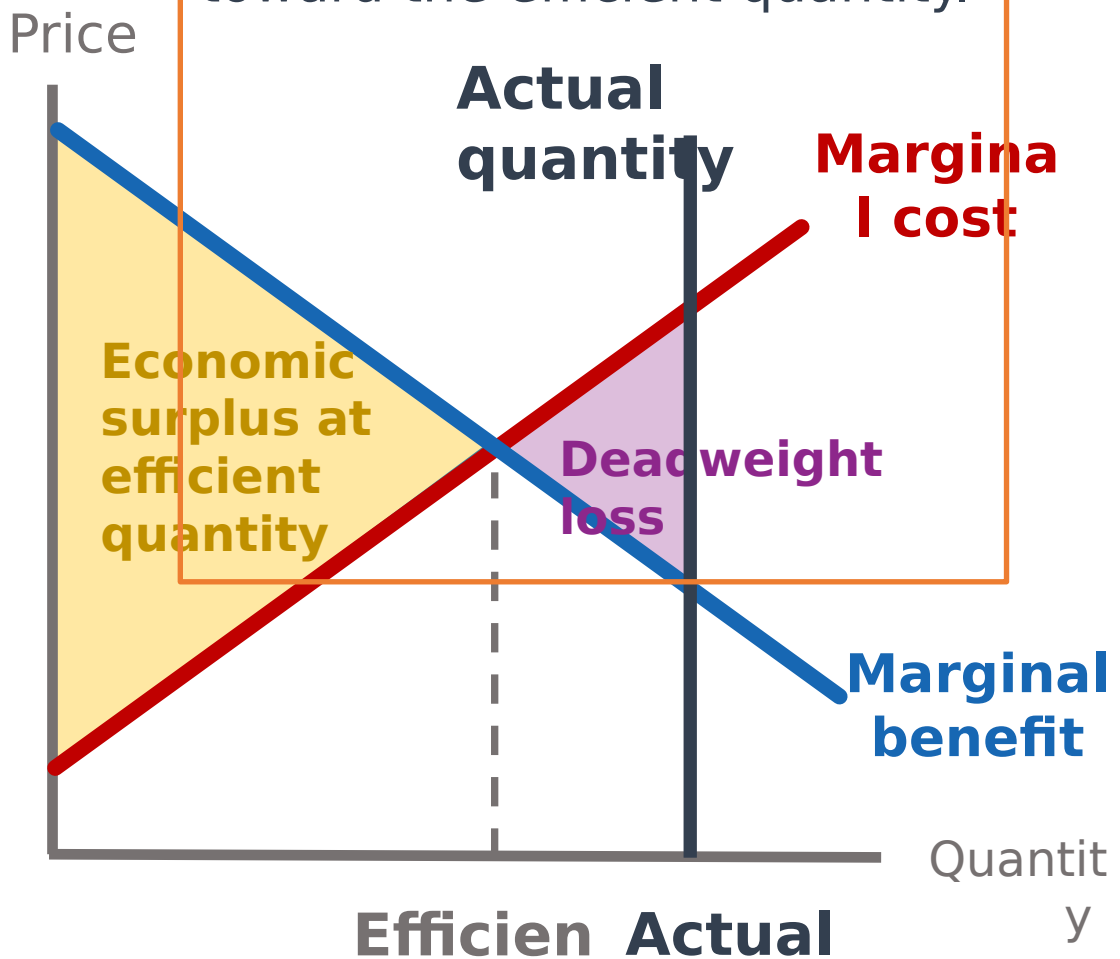
The **actual quantity** is **more** than the efficient quantity due to a market failure.

Once production exceeds the efficient quantity…

- **marginal cost exceeds marginal benefit**
  - NOT GOOD!
  - This extra production reduced economic surplus.

This **deadweight loss** is the measure of

HELPFUL HINT:
Deadweight loss is shaped like an arrow-head, pointing toward the efficient quantity.



Market Failures and the Government

Market failures point to a potentially **positive role for government.**

- A **well-designed policy** can **limit** or even **correct** the **market failure**, thereby reducing or eliminating deadweight loss.

  Examples: The government taxes smoking and subsidizes flu shots (and COVID shots!).

Government failures limit the extent to which we should rely on governments.

- **Government failures:** When the government policies lead to **worse outcomes.**
- Politicians and bureaucrats don't always act in the best interest of society.
  - Motivated by reelection, campaign donations, and are overly responsive to those who are politically organized.
  - Sprawling and bloating bureaucracy can fail to provide efficient services.

Key take-aways: Market failure and DWL

Market failures lead to inefficient outcomes.

- Five sources of market failure

Deadweight loss

- Occurs anytime we are NOT at the efficient outcome.
- A measure of how far economic surplus falls below the efficient outcome.

Government and market failures

- Governments have the potential to correct for market failures.
- But can also make things worse (i.e., a government failure).

Chapter 7 (5 of 6)

Evaluate the limitations of economic efficiency in policy analysis.

- Distributional consequences
- Ability to pay
- The ends and the means

1. Evaluating Public Policies
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Critiques of economic efficiency (1 of 3)

Economic efficiency tells us to **choose** the outcome that yields a **larger economic surplus**.

- Pick the largest possible pie.

BUT it's not just about the size of the pie, but **how that pie is sliced**.

We want to understand the **distributional consequences** of new policies.

- **Distributional consequences:** who gets what.
- Assess whether the outcome seems fair or equitable.

Critiques of economic efficiency (2 of 3)

Recall, **economic surplus** is the marginal benefits, less the marginal costs.

- **Maximizing economic surplus** means each good **goes to the person** with the **largest marginal benefit**.

BUT economists **equate marginal benefit** with a person's **willingness to pay.**

Your willingness to pay partly reflects…

- how much you like something
- and your **ability** to pay

The Kim Kardashian Problem:

Kim has so much money that her willingness to pay will likely surpass yours for many goods, but should she always get the good instead of you?

Critiques of economic efficiency (3 of 3)

Economics efficiency leads to a judgment **focused on the consequences of a policy**, rather than the process that led to that outcome.

Some people may think that the **process matters more than the outcome.**

Using the pie example once again…

- **Was the process** by which you decided how to slice the pie decided **democratic or dictatorial?**
- If **you** were the one that **made the pie**, do you **deserve a bigger slice?**
- If **everyone had the opportunity** to make a pie, should those who actually made it be forced to share a cut of that pie with others? (i.e., equality of opportunity rather than outcome)

Chapter 7 (6 of 6)

1. Positive versus normative, and economic efficiency
2. Consumer, producer, and economic surplus
3. Who makes what, gets what, and how much is made?
4. Market failure and deadweight loss
5. Critiques of economic efficiency

1. Evaluating Public Policies
2. Measuring Economic Surplus
3. Market Efficiency
4. Market Failure and Deadweight Loss
5. Beyond Economic Efficiency