

1.3 — Review of Economics & Efficiency

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Outline



Efficiency.

Common Law Tradition vs. Civil Law Tradition

Legal Institutions in the U.S.

The Legal Process: A Summary.

The Two Major Models of Economics as a “Science”



Optimization

- Agents have **objectives** they value
- Agents face **constraints**
- Make **tradeoffs** to maximize objectives within constraints

Equilibrium

- Agents **compete** with others over **scarce** resources
- Agents **adjust** behaviors based on prices
- **Stable outcomes** when adjustments stop

Modeling Individual Choice



- The **consumer's utility maximization problem**:
 1. **Choose:** < a consumption bundle >
 2. **In order to maximize:** < utility >
 3. **Subject to:** < income and market prices >



Modeling Firm's Choice



- 1st Stage: **firm's profit maximization problem:**

1. **Choose:** < output >

2. **In order to maximize:** < profits >

- 2nd Stage: **firm's cost minimization problem:**

1. **Choose:** < inputs >

2. **In order to minimize:** < cost >

3. **Subject to:** < producing the optimal output >



What Does "Efficiency" Mean?



- Regular sense of the word:
- Achieving a **specified goal** with as **few resources as possible**
- **Examples:**
 - driving
 - carrying groceries
 - producing pencils

Problem: What Goal for Society?



- We will ruminate more on this next class
- **Society, government, law, etc. has no single, universally agreed-upon goal**
- “Society” is not a choosing agent



Social Problems



- **Problem 1:** Resources are scarce, and have multiple, rivalrous uses
- **Problem 2:** Different people have different subjective valuations for uses of resources

The Origins of Exchange I



- Why do we trade?
- **Resources are in the wrong place!**
- People have *better* uses of resources than they are currently being used!



The Origins of Exchange II



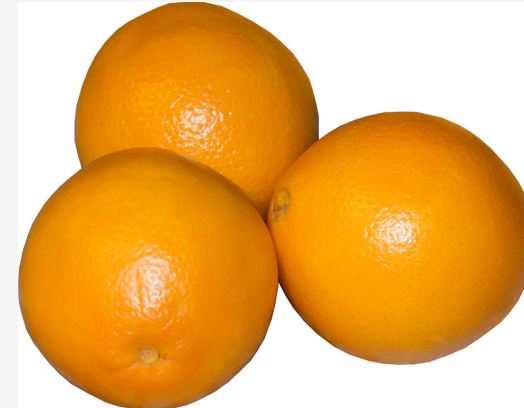
- *Why* are resources in the wrong place?
- **We have the same stuff but different preferences**



The Origins of Exchange III



- *Why* are resources in the wrong place?
- **We have different stuff and different preferences**

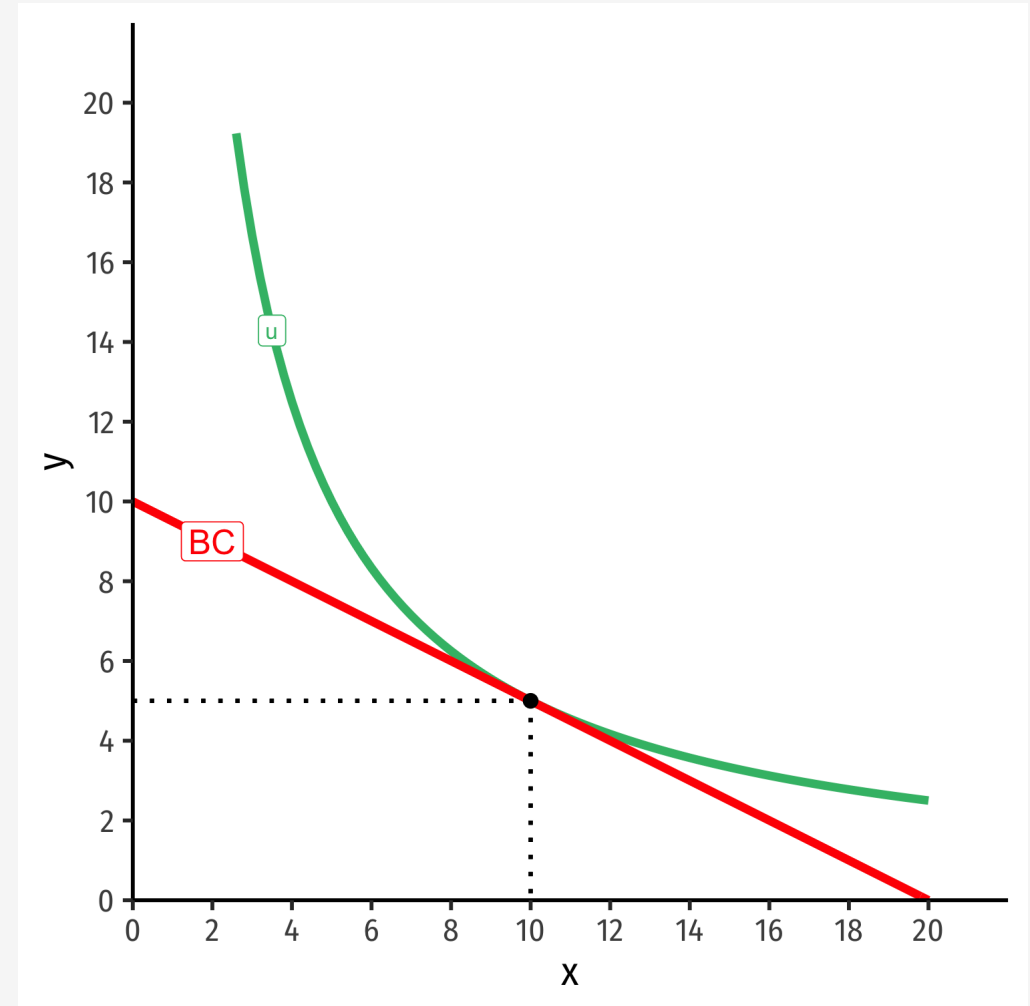


Economic Efficiency: First Pass



Economic efficiency: degree to which as many people as possible get as much as possible of what they want

- degree of **preference satisfaction**
- How do we measure this?
 - Expanding budget set \implies satisfying more goals
 - Income is a main constraint \implies maximize incomes
 - GDP per capita: market value of what is produced \iff incomes



The Economic Point of View



- Preferences are **subjective**
 - **Egalitarianism**: Nobody's preferences are dismissed
- **Higher incomes + freedom of choice = greater preference satisfaction**
- Harder to directly evaluate outcomes, better to look at basic processes/mechanisms (especially exchange)



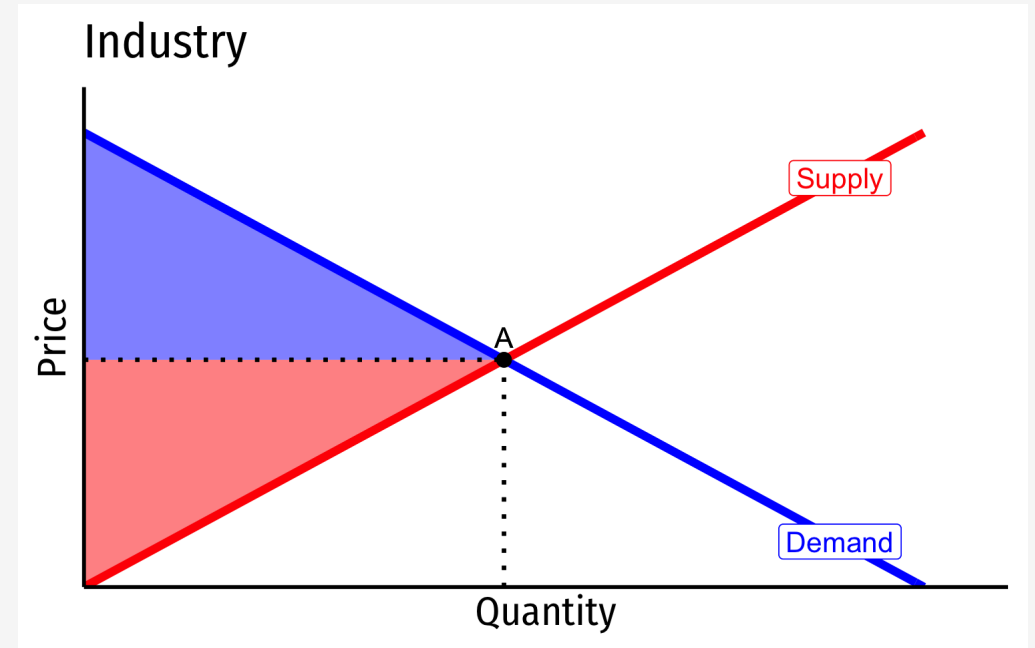
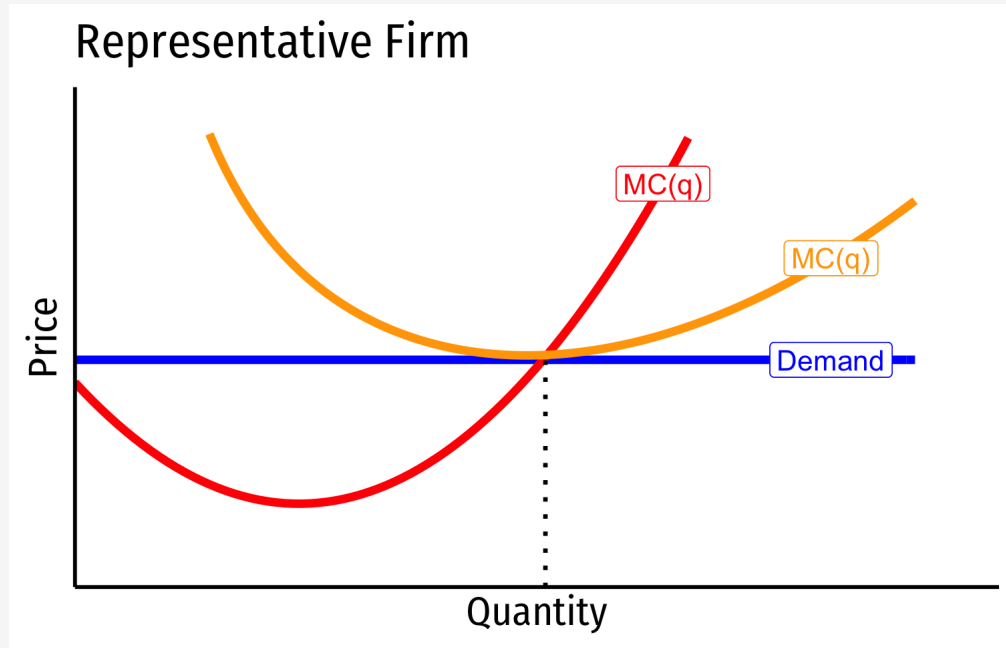
Exchange, Markets, and Efficiency

Social Problems that Markets Solve Well



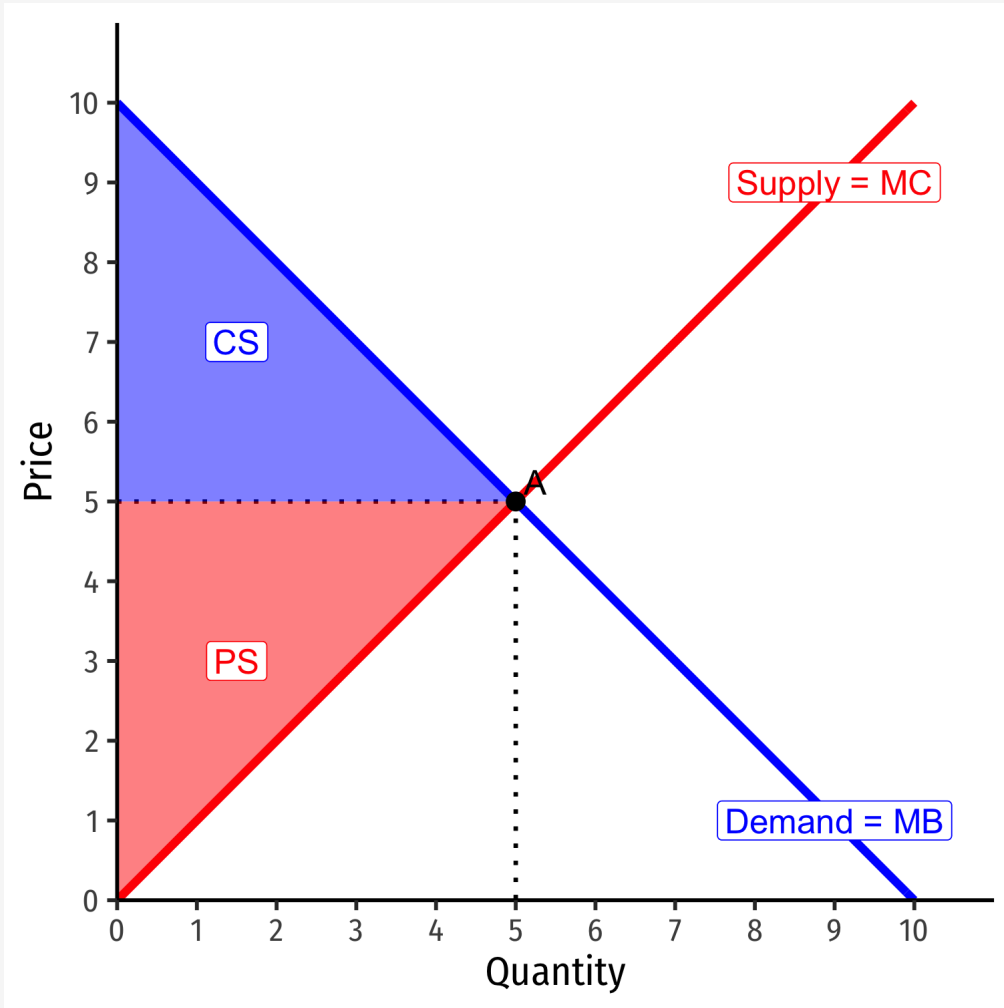
- **Solution:** Prices in a functioning market accurately measure **opportunity cost** of using resources in a particular way
- **The price of a resource is the amount someone else is willing to pay to acquire it from its current use/owner**

Perfectly Competitive Market



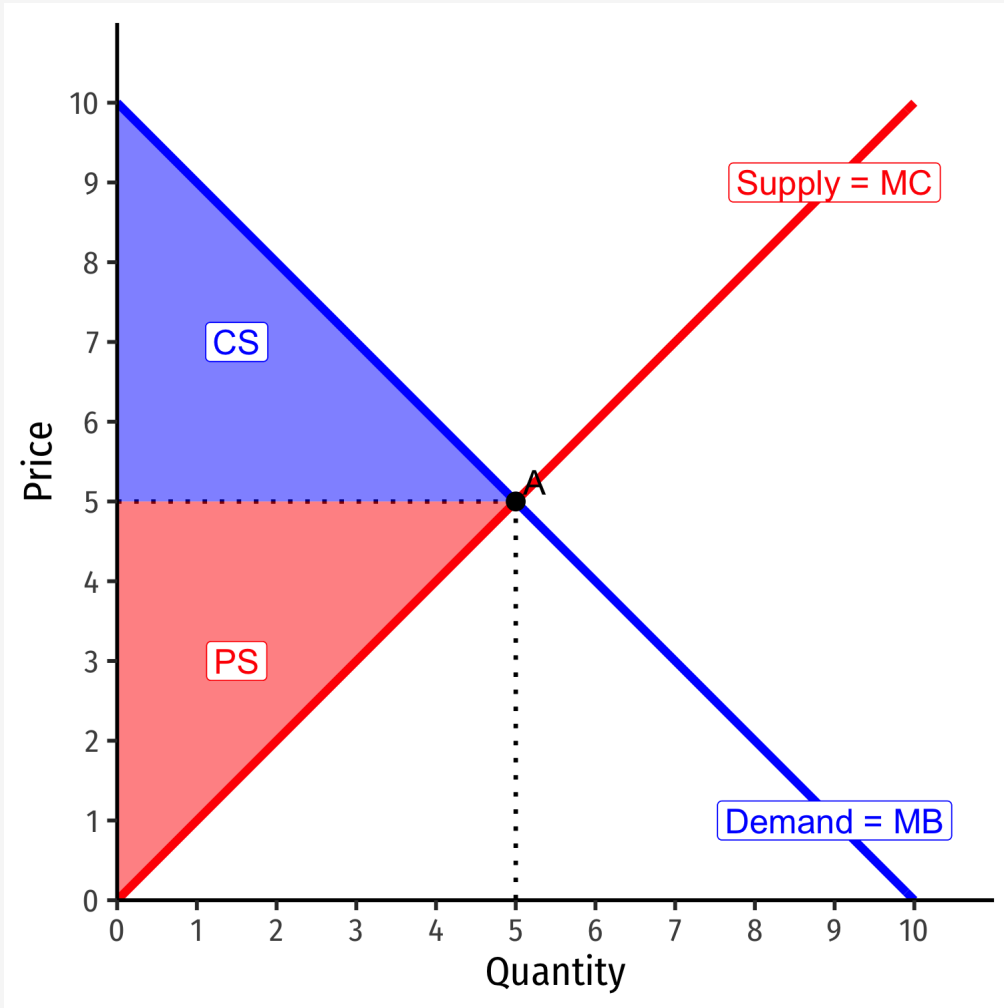
- In a **competitive market** in **long run equilibrium**:
 - **Economic profit** is driven to \$0; resources (factors of production) optimally allocated
 - **Allocatively efficient**: $p = MC(q)$, maximized **CS** + **PS**
 - **Productively efficient**: $p = AC(q)_{min}$ (otherwise firms would enter/exit)

Allocative Efficiency in Competitive Equilibrium I



- **Allocative efficiency:** resources are allocated to highest-valued uses
 - Goods are produced up to the point where **marginal benefit = marginal costs**

Allocative Efficiency in Competitive Equilibrium II

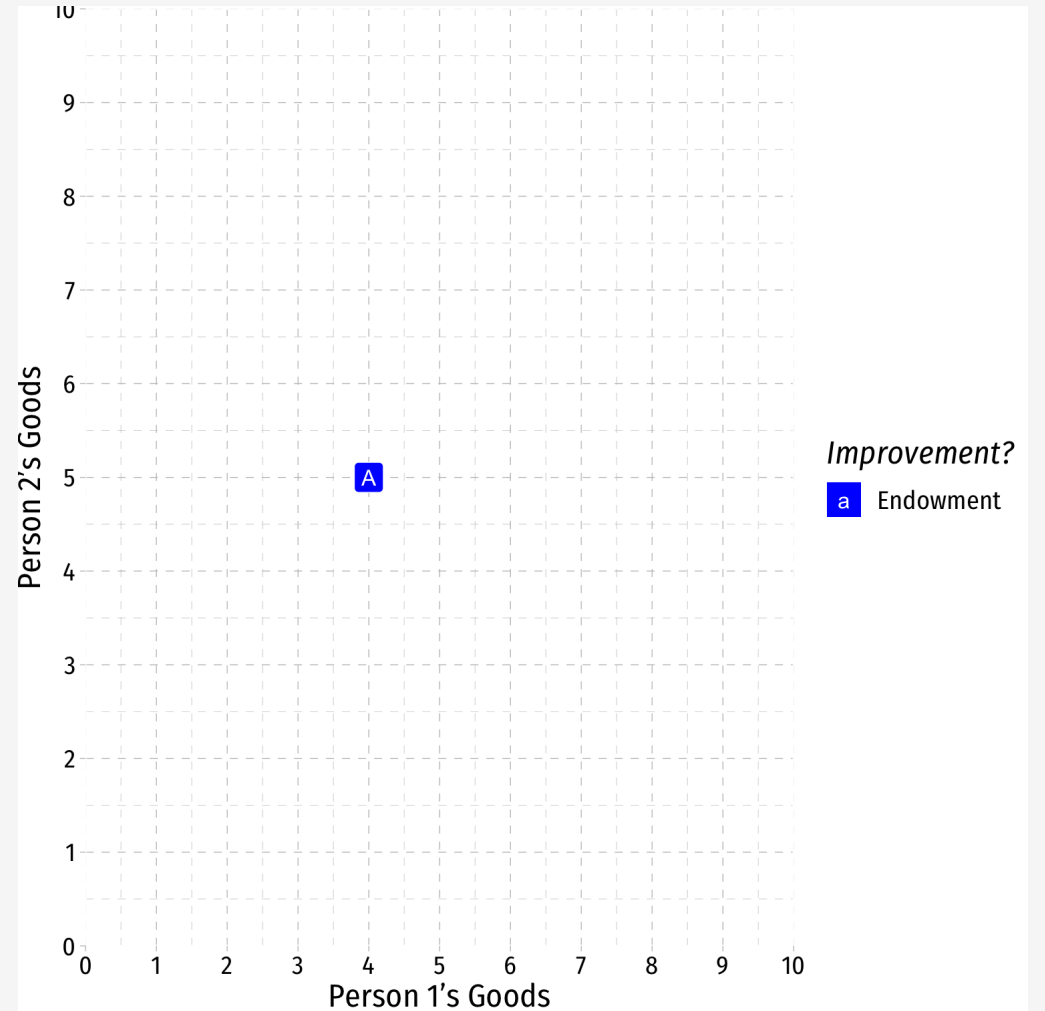


- **Economic surplus** = Consumer surplus + Producer surplus
- Maximized in competitive equilibrium
- Resources flow away from those who value them the lowest (min WTA) to those that value them the highest (max WTP)
 - creating PS and CS
- **The social value of resources is maximized by allocating them to their highest valued uses!**

Markets and Pareto Efficiency



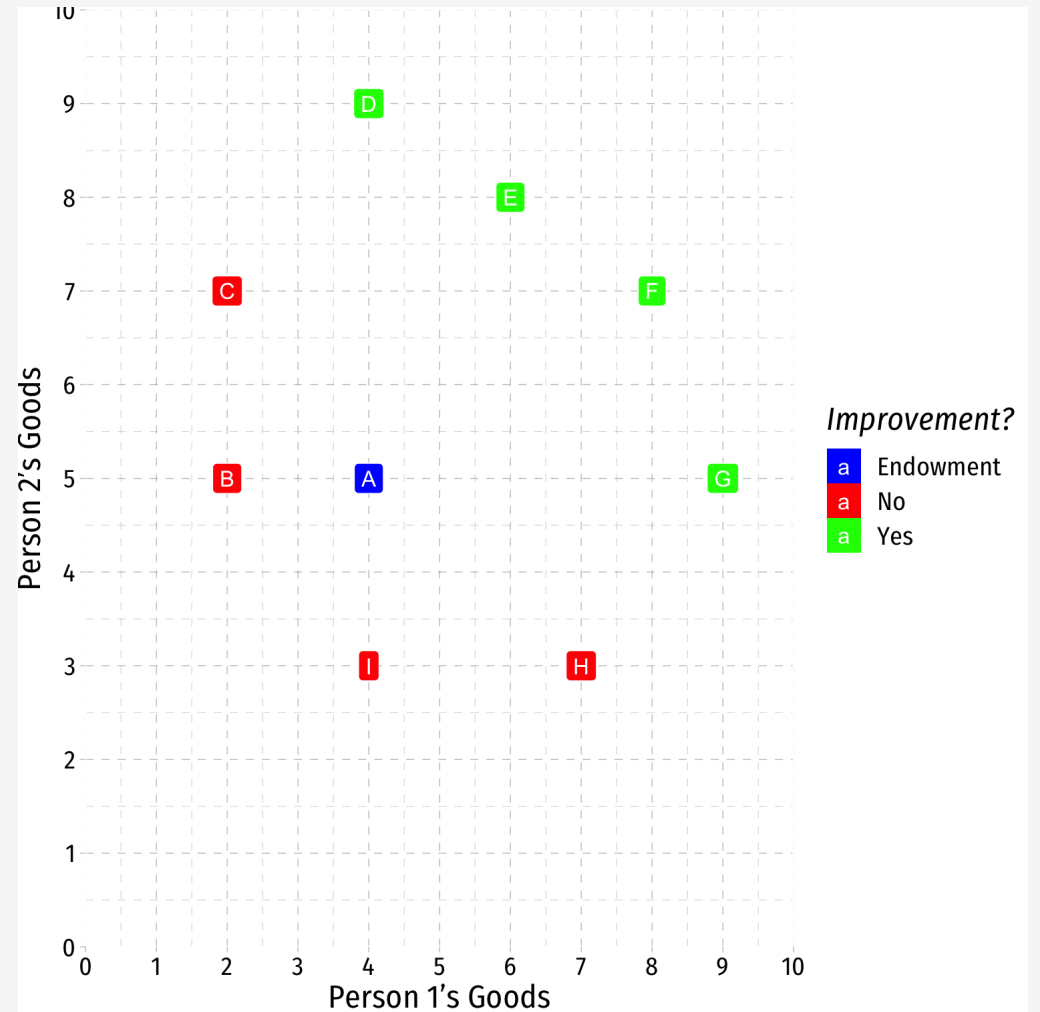
- Suppose we start from some initial allocation (A)



Markets and Pareto Efficiency



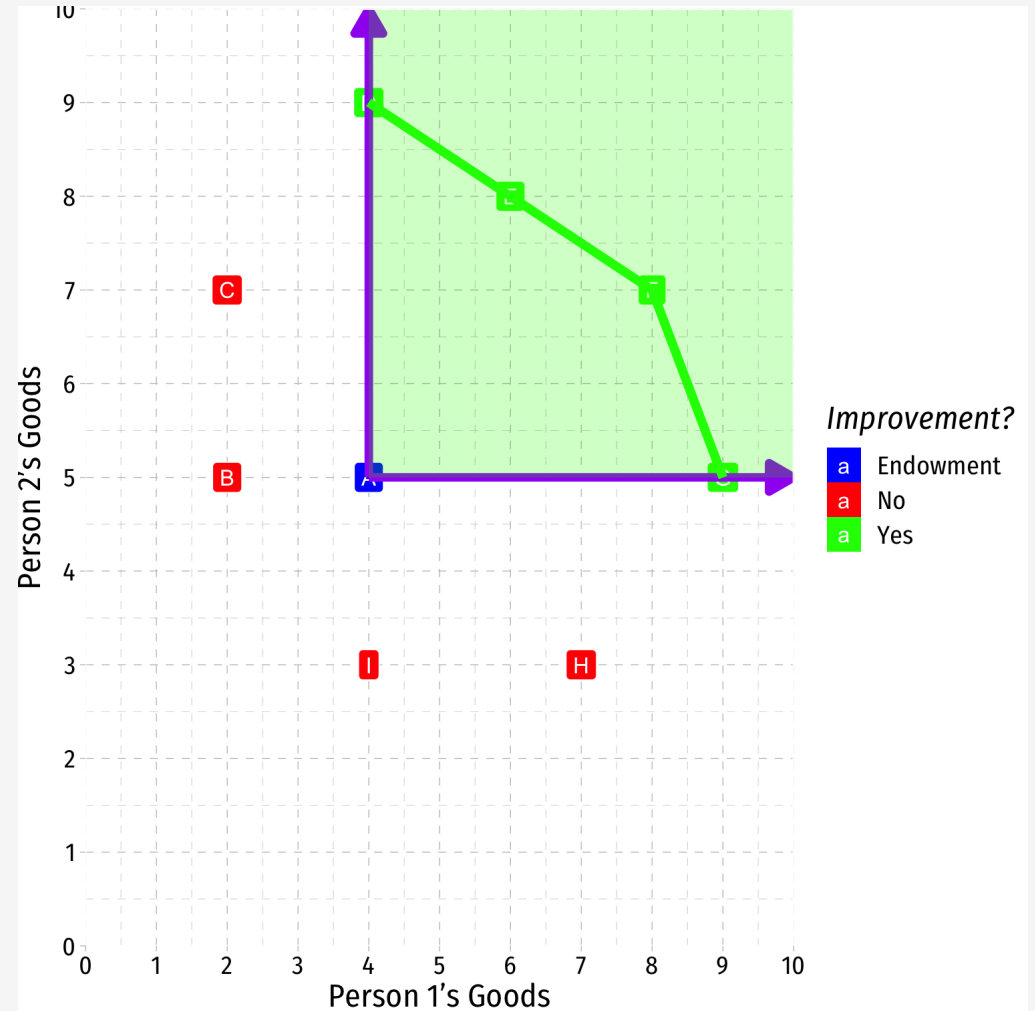
- Suppose we start from some initial allocation (A)
- **Pareto Improvement**: at least one party is better off, and no party is worse off
 - D, E, F, G are improvements
 - B, C, H, I are not



Markets and Pareto Efficiency



- Suppose we start from some initial allocation (A)
- **Pareto Improvement**: at least one party is better off, and no party is worse off
 - D, E, F, G are improvements
 - B, C, H, I are not
- **Pareto optimal/efficient**: no possible Pareto improvements
 - Set of Pareto efficient points often called the **Pareto frontier**[†]
 - Many possible efficient points!



[†]I'm simplifying...for full details, see [class 1.8 appendix](#) about applying consumer theory!

Markets and Pareto Efficiency



- Voluntary exchange in markets is a **Pareto improvement**
- *In equilibrium*, markets are **Pareto efficient**: there are no more possible Pareto improvements
 - all gains from trade exhausted, $q_S = q_D$, no pressure for change
- Note Pareto efficiency contains a normative claim about **equity**
 - It might be possible to improve the *total* welfare of *society*
 - But if this comes *at the expense of even 1 individual*, it's not a Pareto improvement!



Markets and Pareto Efficiency



- Pareto efficiency is conceptual gold standard: allow all welfare-improving exchanges so long as nobody gets harmed
- In practice: Pareto efficiency is a *first best* solution
 - only takes one holdout to disapprove to violate Pareto efficiency



Markets and Kaldor-Hicks Efficiency



- **Kaldor-Hicks Improvement:** an action improves efficiency its generates more social gains than losses
 - those made better off could in principle compensate those made worse off
- **Kaldor-Hicks efficiency:** no potential Kaldor-Hicks improvements exist
- Keeps intuitive appeal of Pareto but more practical
 - Every Pareto improvement is a KH-improvement (but not the other way around!)

Pareto vs. Kaldor-Hicks Efficiency



- **Example: “eminent domain”**
- The “takings clause” of the 5th Amendment to the U.S. Constitution:

“No person shall...be deprived of life, liberty, or property, without due process of law; nor shall private property be taken for public use, without just compensation.”

- What is a “public use”? What is “just compensation”?
- *Kelo v. City of New London*, 545 U.S. 469 (2005)



Welfare Economics



- The **1st Fundamental Welfare Theorem**: markets in competitive equilibrium maximize allocative efficiency of resources and are Pareto efficient
 - initial endowments does not affect efficiency but does affect final distribution
- The **2nd Fundamental Welfare Theorem**: any desired Pareto efficient distribution can be achieved with a lump-sum tax & transfer scheme, and then allowing markets to work freely
 - allows a targetted (re)-distribution to be achieved without sacrificing efficiency

Welfare Economics



- **Markets are great when:**
 1. They are **Competitive**: many buyers and many sellers
 2. They each **equilibrium (prices are free to adjust)**: absence of transactions costs or policies *preventing prices from adjusting* to meet supply and demand
 3. **There are no externalities[†]** are present: costs and benefits are fully internalized by the parties to transactions
- If any of these conditions are not met, we have **market failure**
 - May be a role for governments, other institutions, or entrepreneurs to fix

[†] Or public goods, or asymmetric information. But in essence, I am treating these as special cases of more common externalities.

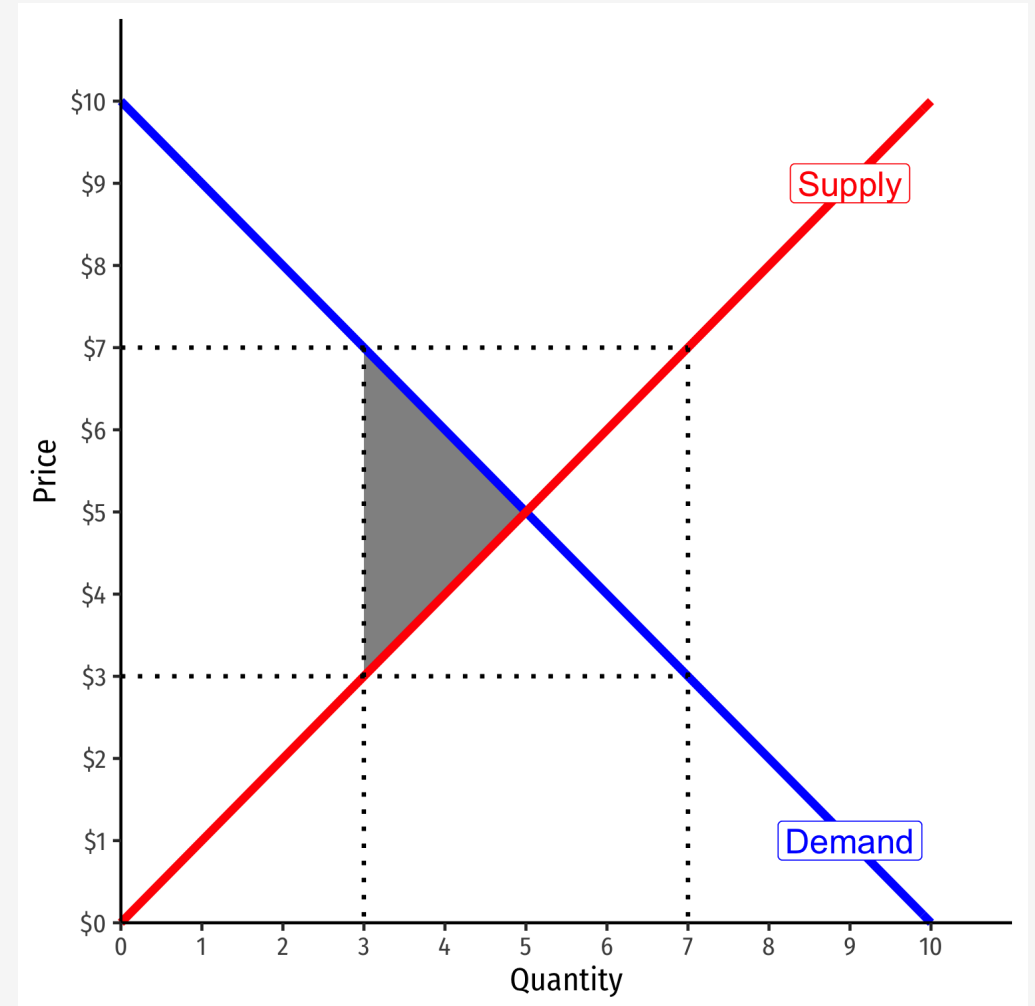


Problem: Transaction Costs

Dis-equilibrated Markets



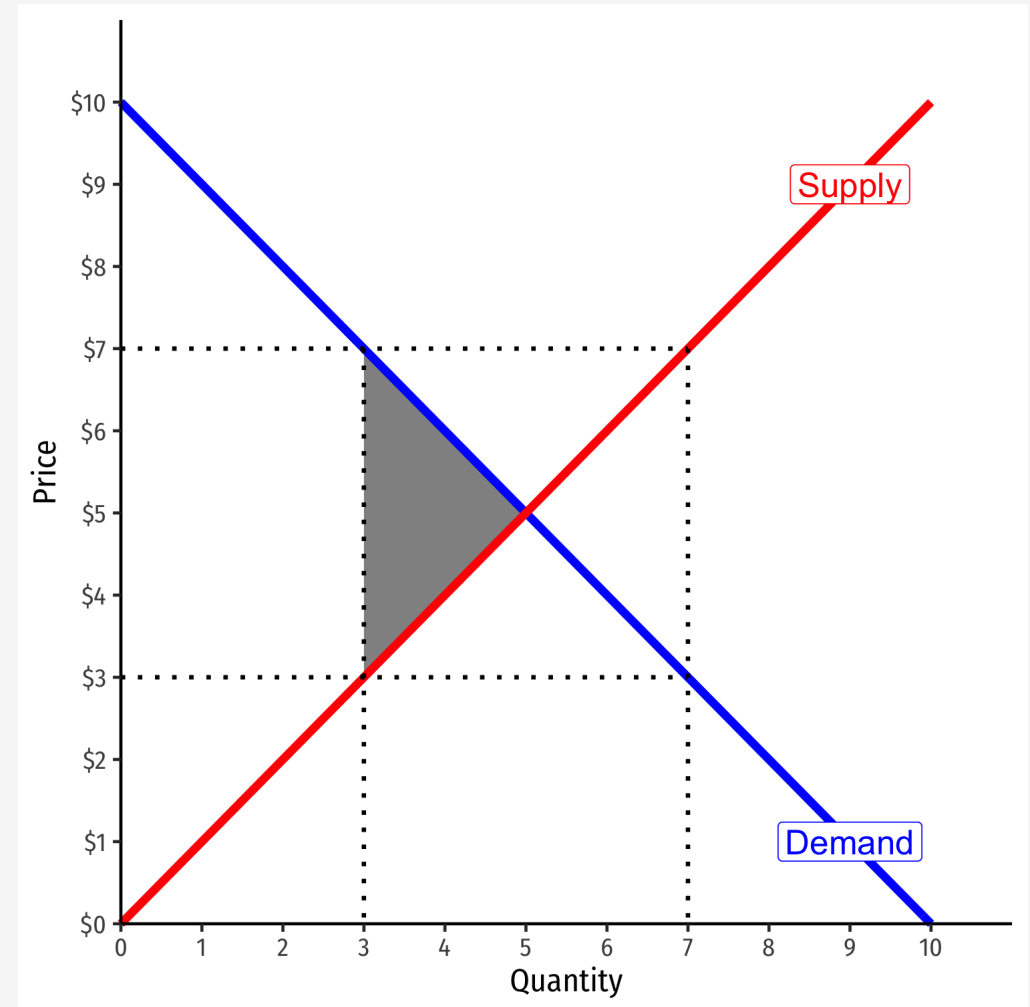
- To *reach* equilibrium, market prices need to be able to adjust
 - Shortage: price needs to rise
 - Surplus: price needs to fall
- There are ***unrealized gains from trade*** that exist in disequilibrium (shaded)
 - Buyers & sellers both can be made better off if they can adjust the price



Dis-equilibrated Markets



- If market prices are *prevented* from adjusting, shortage/surplus becomes *permanent*
- Lost **CS** and/or **PS**: **Deadweight loss (DWL)**
 - **inefficiency** created by (permanent) diseq.
- Various government policies can prevent markets from equilibrating & create DWL:
 - **Price regulations** (price ceiling like rent control, price floor like minimum wage)
 - **Taxes, subsidies, tariffs, quotas**[†]
 - These should have been covered in Principles

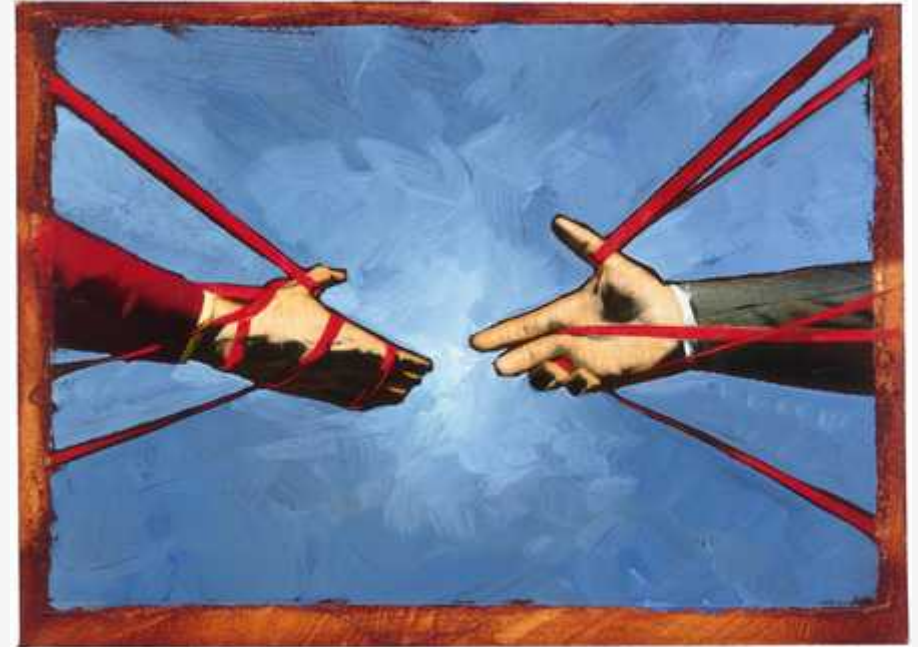


[†] Some may be necessary (taxes fund government), but create market inefficiencies.

Transaction Costs and Exchange I



- **Transaction costs:**
 - **Search costs:** cost of finding trading partners
 - **Bargaining costs:** cost of reaching an agreement
 - **Enforcement costs:** **trust** between parties, cost of upholding agreement, dealing with unforeseen contingencies, punishing defection, using police and courts



Transaction Costs and Exchange II



- With high transaction costs, resources *cannot* be traded
- Resources *cannot* be switched to higher-valued uses
- If others value goods higher than their current owners, resources are *inefficiently* allocated!



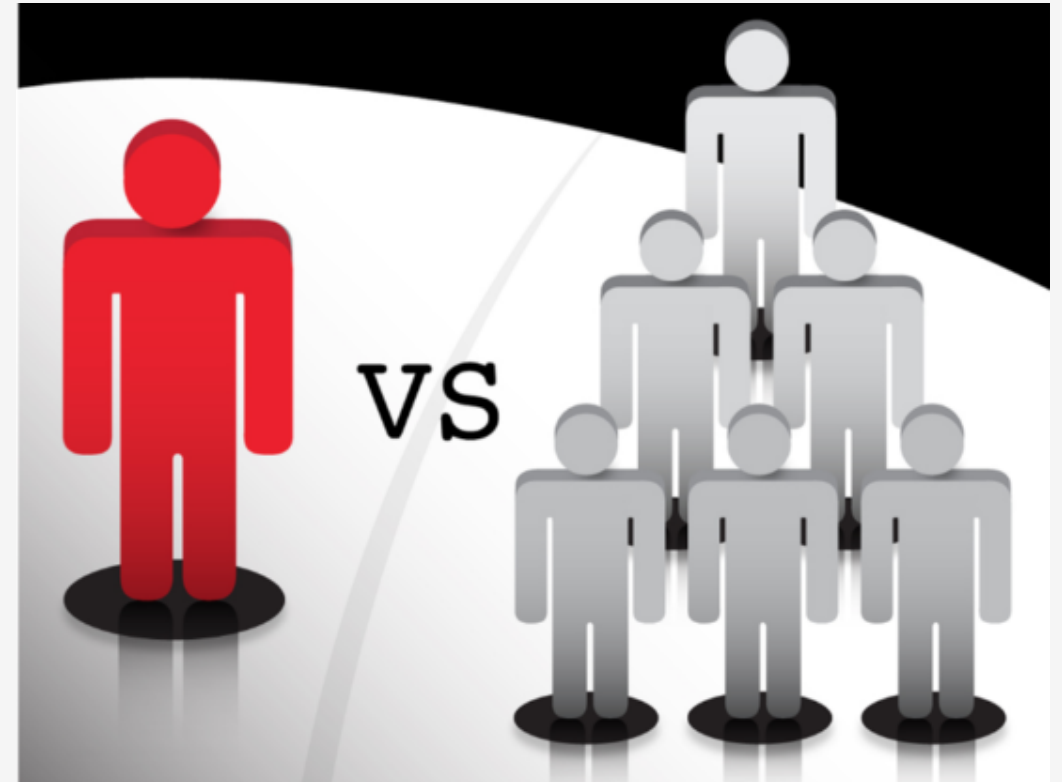


Problem: Collective Action

Generalizing: Collective Action Problems



- **Collective action problem:** situation where an individual's interest and a group's interest may conflict
- Benefits (or costs) of outcome are **nonrival** and flow to *all members* of the group
- Decisions & costs need to be incurred by individuals
- **Individual preferences** need to aggregate into a **single decision/outcome**



Collective Action Problem: Examples I



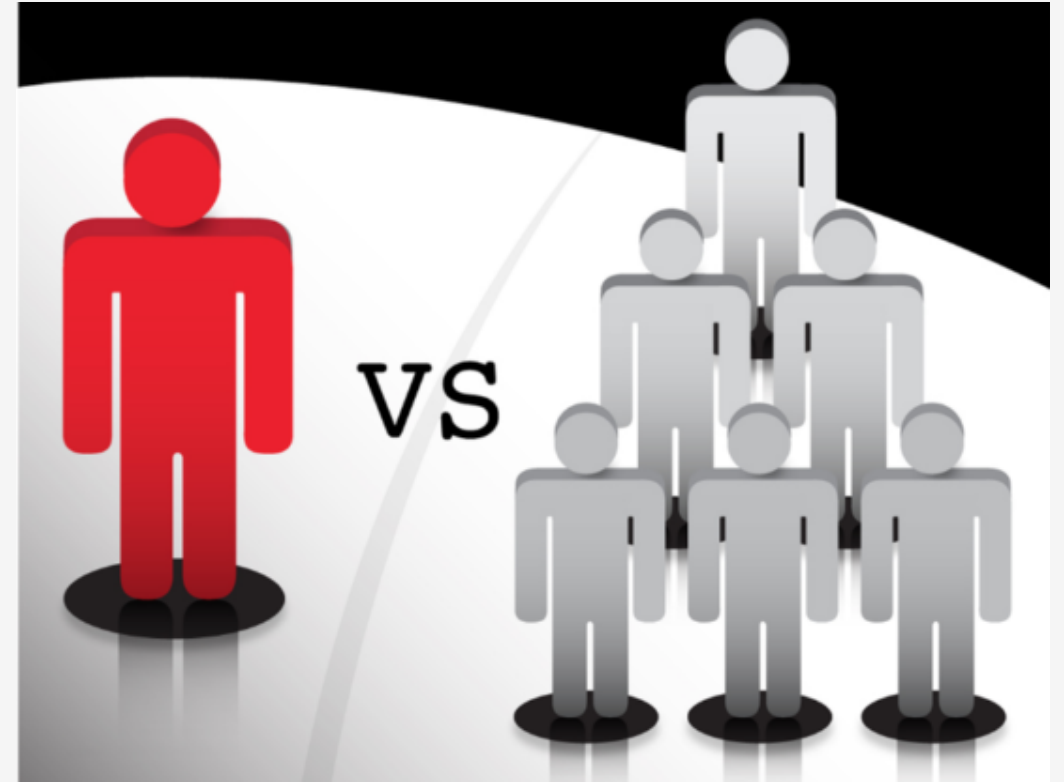
Collective Action Problem: Examples II



Collective Action Costs I



- Groups may share a **common interest**
- But **composed of individuals with their own preferences**
 - Individuals bear the personal cost of contributing
 - Individuals gain a small share of the benefits of group action
- Additionally, **cost of bargaining** to get a group to agree on decision





Problem: Public Goods

A Classic Economic Problem



- **Public Good**: a good that is **non-rival** and **non-excludable**
- **Rivalry**: one use of a resource removes it from other uses
- **Excludability**: ability or right to prevent others from using it (ownership)

The Free Rider Problem



- Individual bears a **private cost to contribute**, but only gets a **small fraction of the (dispersed) benefit** of a good
- If individuals can gain **access** to the good (nonexcludable) **without paying**, may lead to...
- **Free riding**: individuals consume the good without paying for it



Examples?



Market Failure from Public Goods



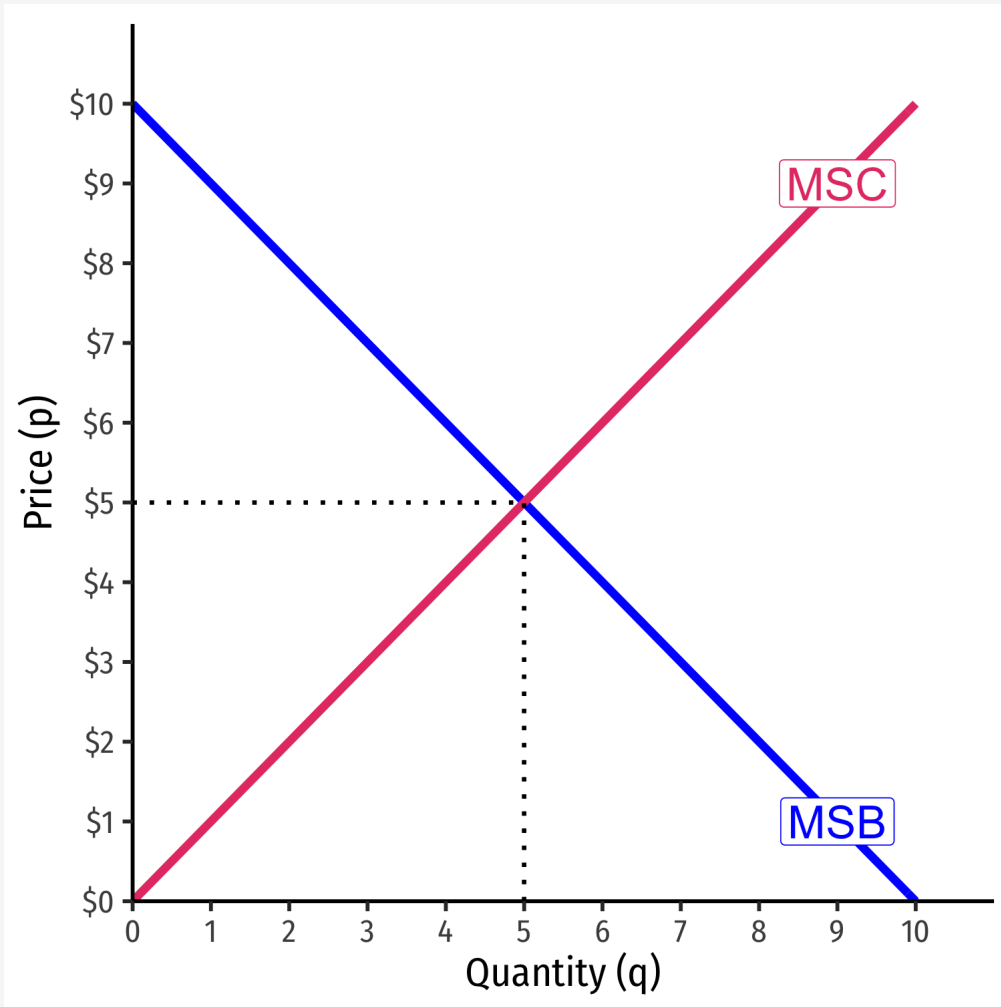
- No incentive for people to contribute and pay for the good
- If enough people obtain the benefits without incurring the costs...
- **Not profitable** for private market actors to supply it





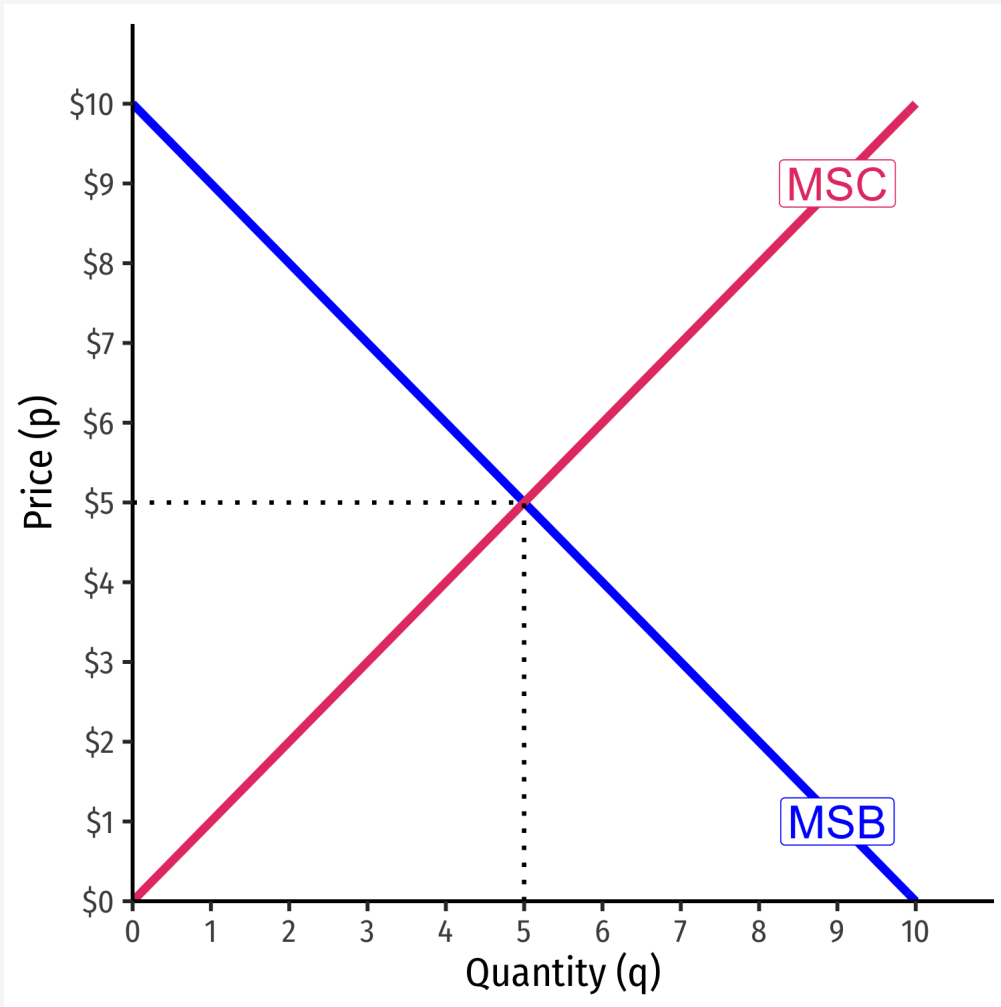
Problem: Externalities

Supply and Demand: Social Costs & Benefits



- **Demand: marginal social benefit (MSB)**
 - value to consumers of consuming output
- **Supply: marginal social cost (MSC)**
 - opportunity cost of pulling resources out of other uses
- **Equilibrium: $MSB = MSC$**
 - using resources efficiently, no *better* alternative uses

Supply and Demand: Social Costs & Benefits



- **Price system** mitigates costs and benefits of people's actions
- People using scarce resources must **account for consequences:**
 - Pay to pull scarce resources out of other uses in society
 - Compensated for producing something valuable for others

Externality



- **Externality**: an action that incurs a cost or a benefit not compensated via prices
- Often interpreted as an action that affects (benefits or harms) a third party not privy to the action



Externality



- The real problem is that it is **external** to the price system!
- People base decisions off of their preferences and opportunity costs of resources for society (captured in prices)
- Prices properly negotiate the opportunity costs and provide information to people
- But without price, decisions do not **internalize** those effects!



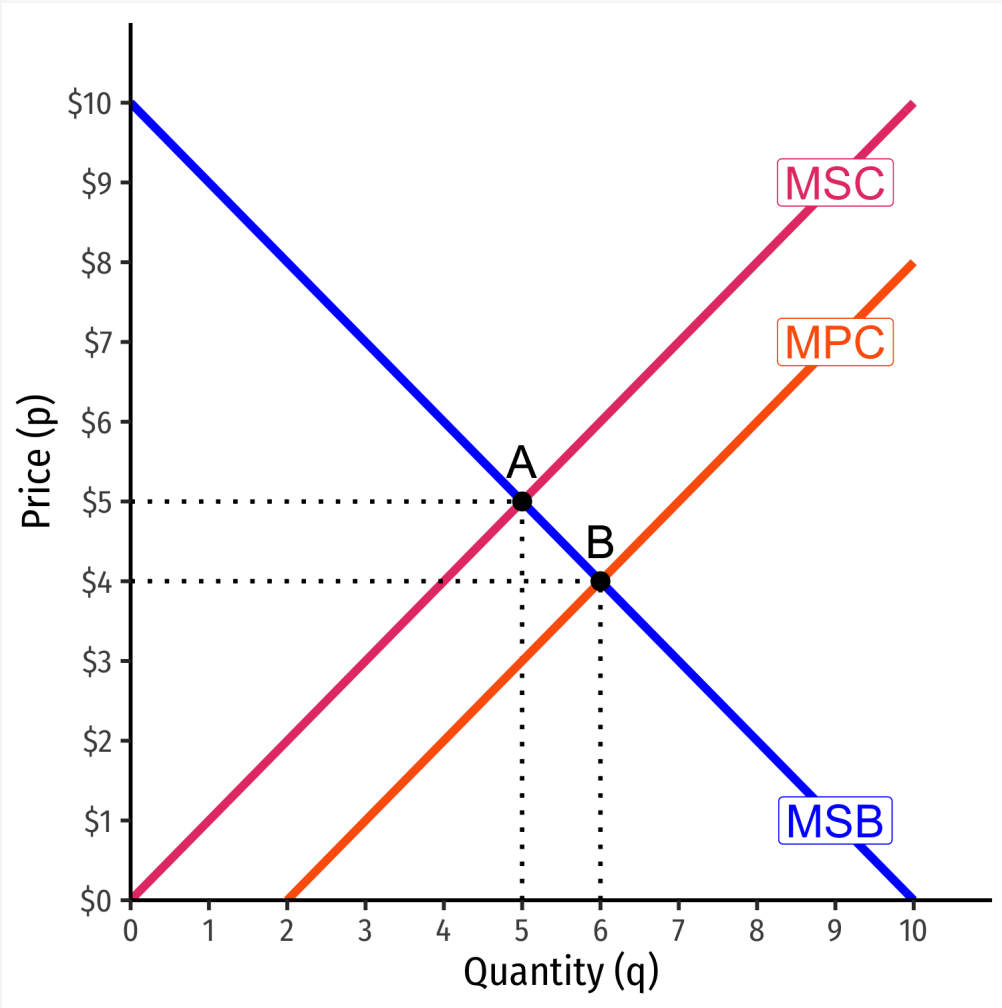
Pigouvian Solutions



A.C. Pigou

- 1920, *The Economics of Welfare*
- Principle of **"payment in accordance with product"**
- People should pay average externality of their actions
 - Markets make you do this automatically
 - If markets fail, policy can force the market to work again
- **Problem with externality is that there is a missing price!**

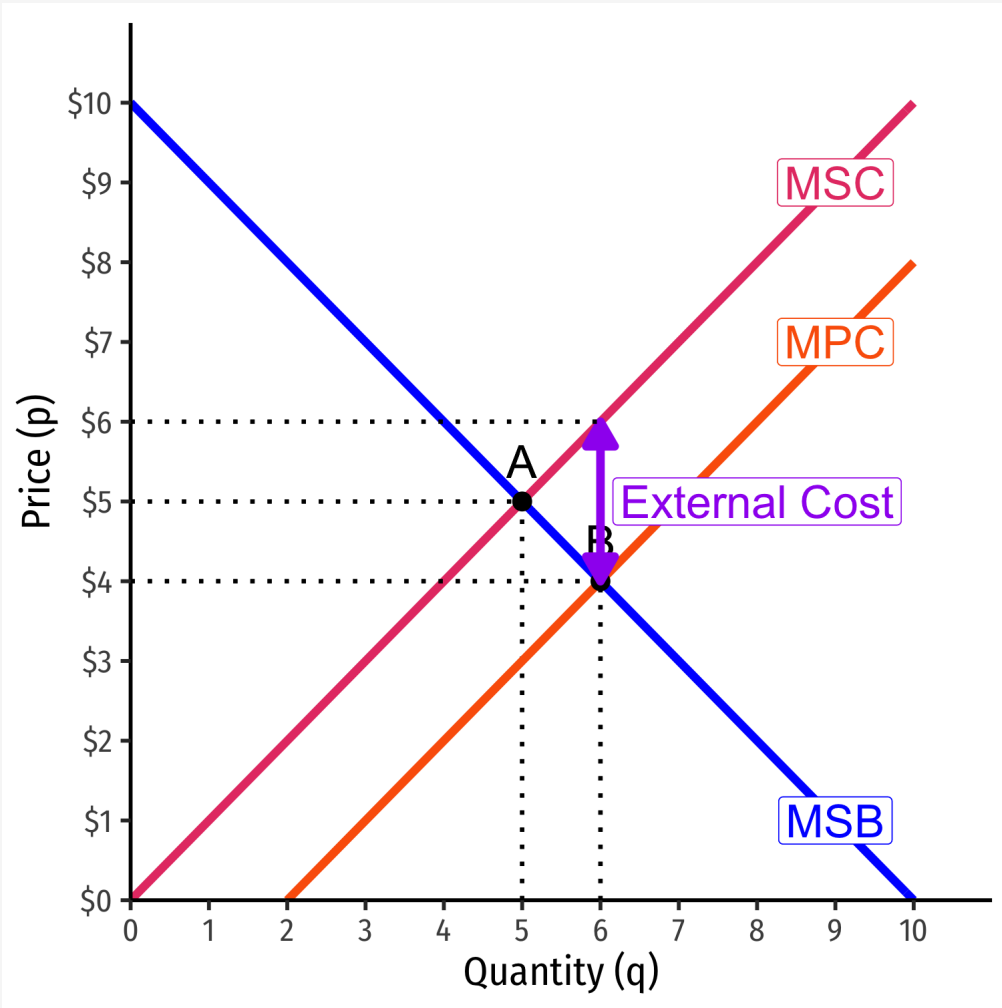
Negative Externality



Marginal Private Cost to producer is less than **Marginal Social Cost** to society

Market Equilibrium (B) too much q at too low p compared to **Social Optimum (A)**

Negative Externality

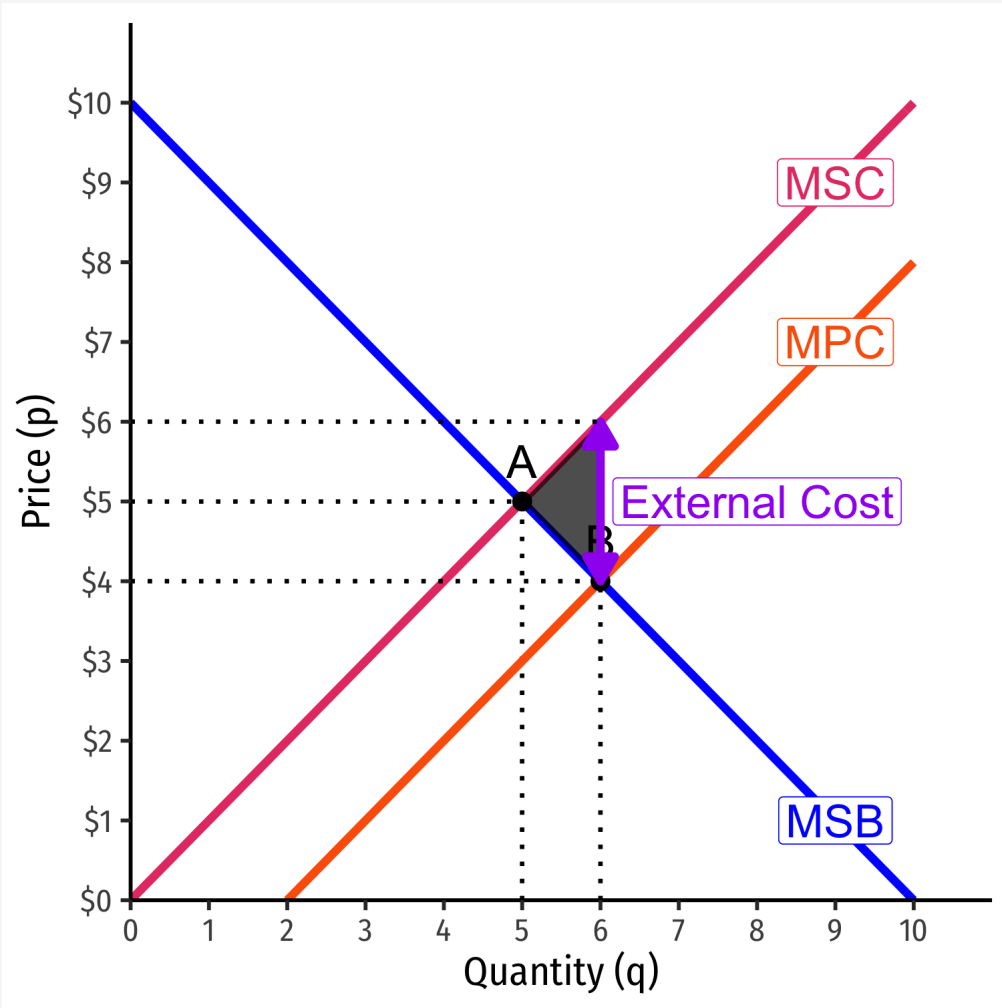


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- Overproduction due to external cost

Negative Externality



Marginal Private Cost to producer is less than **Marginal Social Cost** to society

Market Equilibrium (B) too much q at too low p compared to **Social Optimum (A)**

- Overproduction due to external cost
- A **deadweight loss** from overproduction

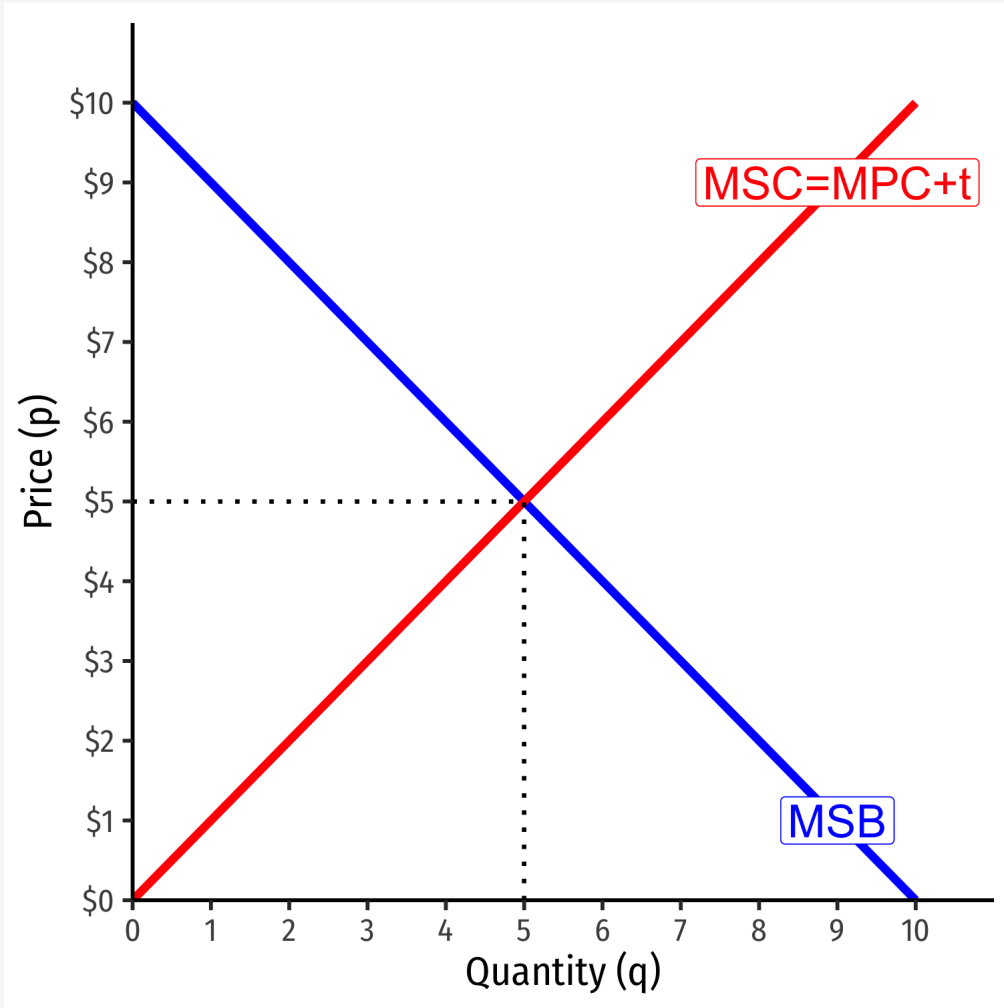
Negative Externality: Pigouvian Solution



A.C. Pigou

- Policy solutions to externalities should **focus on the missing price**
 - Narrowly tailor policy to create or modify price
- "Pigouvian" tax or subsidy

Negative Externality: Pigouvian Solution



- Set a specific tax

$$t = MSC - MPC$$

- Eliminates the DWL
- **Internalizes the externality** into the price system
- Producers (and consumers) now consider the true cost to society
 - MPC (with tax) = MSC

Another Classic Economic Problem



- **Tragedy of the commons:** multiple people have unrestricted access to the same **rivalrous** resource
- **Rivalry:** one use of a resource removes it from other uses

Hardin, Garrett, 1968, "The Tragedy of the Commons," *Science* 162(3859):1243-1248

Another Classic Economic Problem

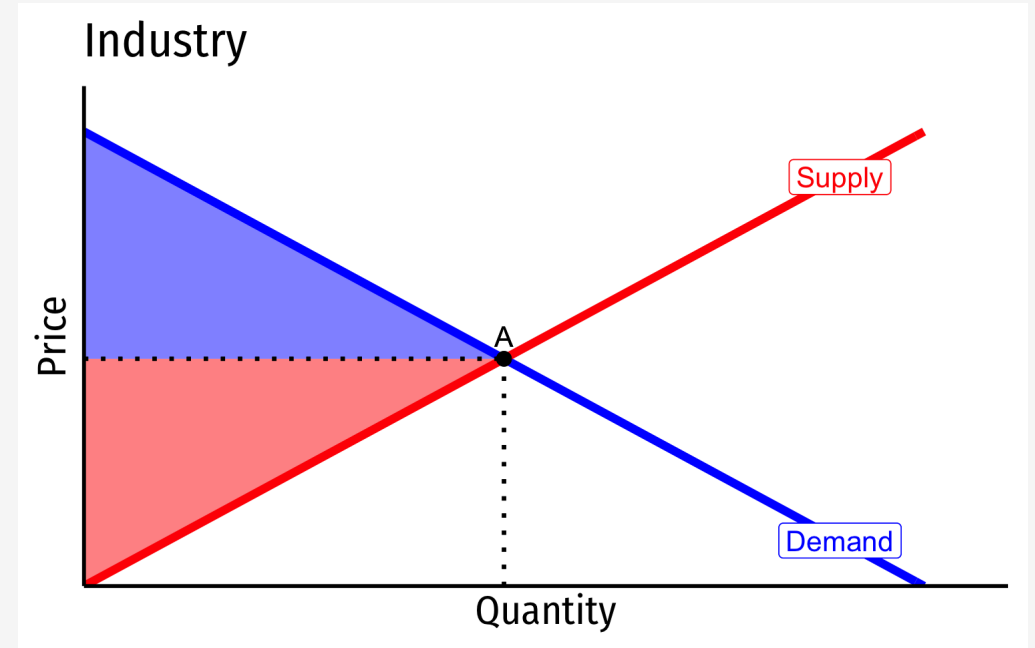
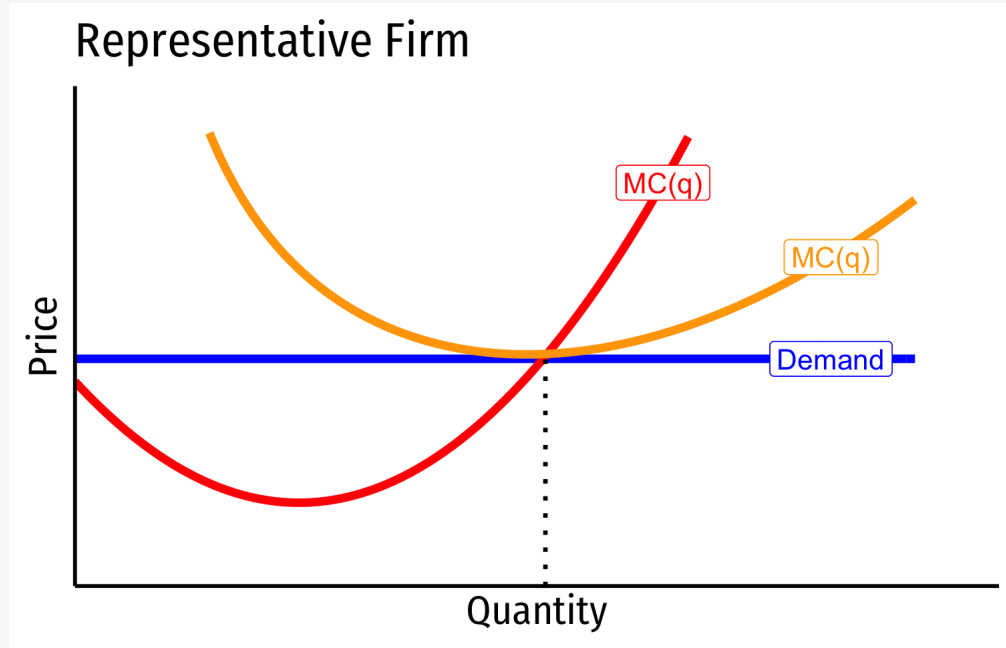


- Cannot exclude others
- No responsibility over outcome
- Incentive to **overexploit** and **deplete** resource (before others do)
- A negative externality on others



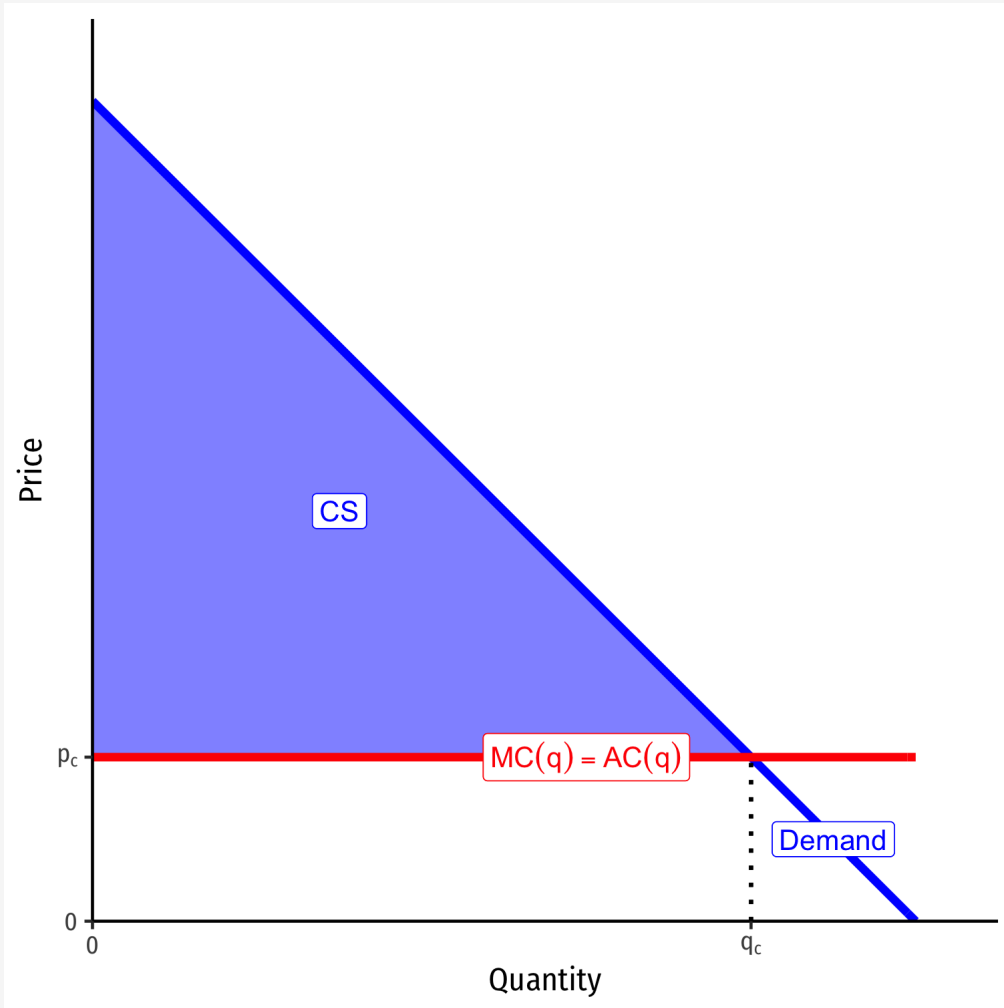
Problem: Market Power

Perfectly Competitive Market



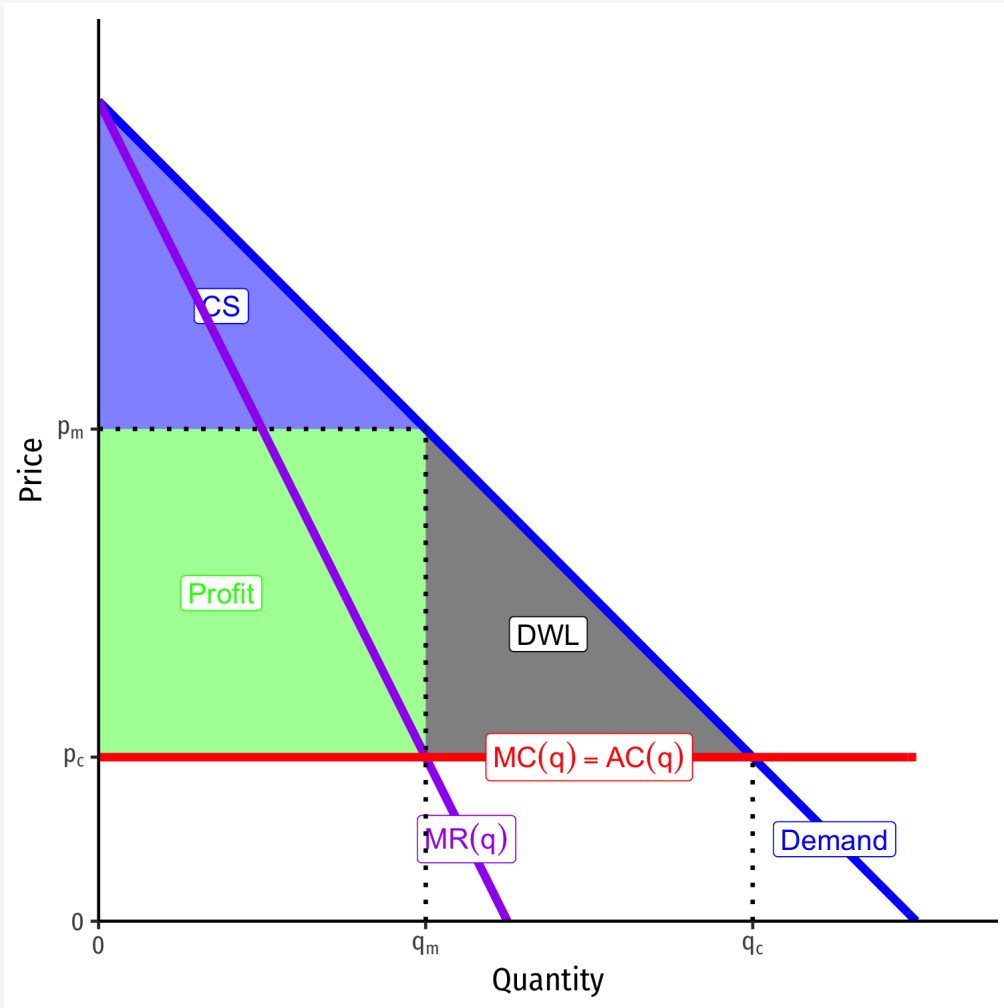
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Market Power



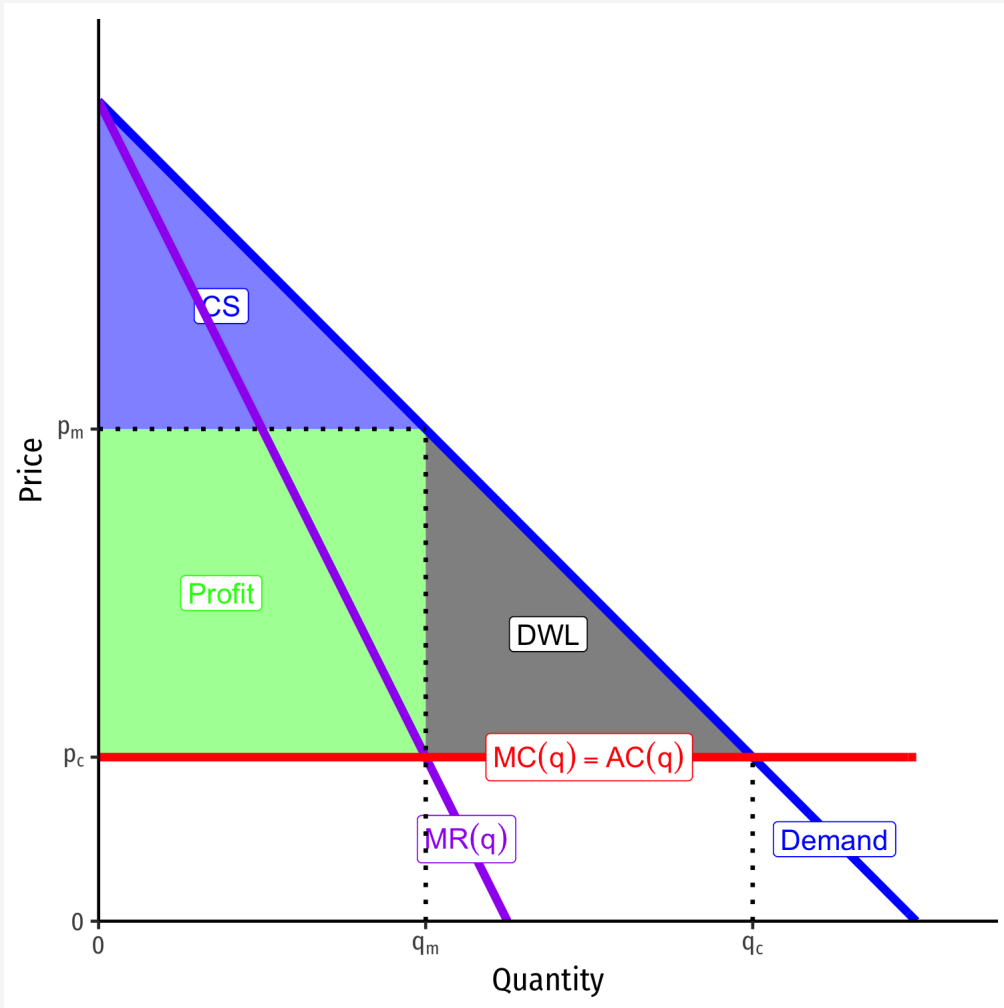
- Consider a market with some simplified cost assumptions:
 - No fixed costs, constant variable costs
 - implies $MC(q) = AC(q)$
- If this was a *competitive* market, firms would set $p_c = MC(q)$ and (collectively), industry would produce q_c
 - **Consumer surplus** maximized

Market Power



- A **monopolist** faces the *entire* market demand and sets (q_m, p_m) :
 - Sets $MR(q) = MC(q)$ at q_m
 - Raises price to **maximum consumers are WTP (Demand):** p_m
- **Restricts output and raises price,** compared to competitive market
- Earns **monopoly profits** ($p > AC$)
- Loss of **consumer surplus**

Market Power



- **Deadweight loss** of surplus destroyed from lost gains from trade
 - Consumers willing to buy more than q_m , if the monopolist would lower prices!
 - Monopolist *would* benefit by accepting lower prices to sell more, but this would yield *less* than maximum profits