An Introduction to Economics

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September 16, 2021

Another approach

- Agents failing to consider externalities $\Rightarrow$ Inefficient outcomes
- Want agents to internalize their externalities
- Idea: Allow agents to settle on an outcome via negotiations

Motivating Example

A manufacturing plant in northeast Ohio is able to dispose of its industrial waste into a local river at a very low cost. Over time, this waste begins to severely damage the water quality in the river. This leads to, among other things, destruction of the local ecosystem and a complete inability to use the river as a form of irrigation for local farmers.

Motivating Example (2)

- We saw in the previous lecture that taxes can assist with negative externalities such as this.
- Do the farmers have any recourse in this setting?
- Let us now suppose that the local farmers officially own the section of the river that is being polluted. What can they do in this situation?
- What would happen if the manufacturing plant owns the river?

Economics, Social Norms, and The Rule of Law

- Legal ownership of goods, land and ideas can serve as a strong foundation for an economy.
- Legal restrictions allow agents to confidently participate in exchange
- Social norms can also serve a similar role as the Rule of Law
- In some instances: social norms can achieve what property rights are unable to

Coase Theorem

Theorem

When costs of negotiation are low, inefficiencies resulting from externalities can be resolved by establishing property rights and allowing the private agents involved to bargain.

Coase Theorem: Drawbacks

There are a number of assumptions implicit in this idea:

- Low negotiation costs
- Well-defined rights or ownership
- Functional legal protections
- Overcoming coordination failures (more on this later)

Coase Theorem: Returning to the Example

- Negative externality generates an amount of waste which is above socially optimal level.
- Farmers own: Manufacturing plant should incur the cost of cleaning the river or proper dispoal of waste
- Plant owns: Farmers pay the manufacturing plant to reduce waste
- In each case: The amount of waste in the river will be reduced

A Small-Scale Example

- You live in an apartment complex with very thin walls. Every evening, your neighbor hosts rowdy parties that end long after midnight.
- The loss of peaceful sleep has started to affect your productivity at work/school.
- You find that this negative externality only grows with each additional party your neighbor hosts.
- Your neighbor's marginal benefit of a party is also decreasing with the parties that they hose.
- Is there room to reach a deal with your neighbor?

An Example (2)

- Suppose that the apartment management has a noise policy. How do you expect a socially efficient amount of noise to be reached?

- Suppose instead that there is no such noise policy. What then?

Public Goods: Motivating Example

Due to years of use, the roads in a small town have degraded to a point where they can no longer be used without the risk of damaging any vehicles on them. The people of the town all value paved roads differently and there is considerable variation in household income in the town. These folks do, however, have the ability to communicate with one another.

- Do you expect a decentralized solution to the problem of funding this transportation infrastructure to succeed?
- How do you propose that these townsfolk approach the problem?

Nonrival in Consumption

Definition

A good is **nonrival** in consumption if its consumption by one agent does not prevent others from consumng it as well.

These goods are typically characterized by minimal marginal costs of production:

- Public spaces
- Software and broadcasting
- Clean Air
- Public health and safety

Nonexcludable in Consumption

Definition

A good is **nonexcludable** in consumption if agents cannot be prevented from enjoying the benefits of a good.

These goods are typically characterized by freedom of access in some form:

- Public Spaces
- Clean Air
- Accessible natural resources (wood, fish)
- Un-tolled roads

Types of Goods

	Excludable	Nonexcludable
Rival	Private Goods	Common Resources
Nonrival	Club Goods	Public Goods

Private Goods

Both rival and excludable

- Groceries and food
- Clothing
- Durable goods
- Medication

Common Resources

Rival and nonexcludable

- Local supply of fish
- Reservoir of drinking water
- Grazing pastures for livestock
- Timber and wood in forests

Club Goods

Nonrival and excludable

- Software licenses
- Toll roads
- Cable TV
- Memberships

Public Goods

Nonrival and nonexcludable

- Public parks
- Public health and safety
- National defense
- Knowledge and information

Public Goods: Problems with Provision

- Agents acting separately and without communication would do little to contribute to a public good
- Each agent's contribution is relatively small compared to what's needed
- May require large-scale coordination to achieve provision
- Each agent's value for the public good is their private information
- Agents have an incentive to reap the benefits without paying the associated costs (free-rider problem)

Solutions?

- Raise and spend revenue from taxation
- Hold votes to determine whether agents value provision
- Large private contributions
- Impose exclusion
- Altruistic and deontological social norms

A Simplified Model of Provision

- Suppose that two individuals are considering their contributions to a local park.
- Contribution costs \$4
- Each contribution yields a benefit of \$3 for each person that uses the park
- Can we expect both individuals to contribute?

A Prisoner's Dilemma

		Player 2	
		C	F
Player 1	C	$(2, 2)$	$(-1, 3)$
	F	$(3, -1)$	$(0, 0)$

Common Resources

- Recall that common resources are goods which are rival and nonexcludable
- This combination can lead to serious problems of overuse
- Examples:
  - Overfishing of local waters
  - Deforestation
  - Overgrazing of pastures
  - Congestion of roadways and resources
- Agents with low costs have the ability to deplete a resource, providing no benefits to those that may value it highly

The Tragedy of the Commons

- The **tragedy of the commons** refers to the tendency of common resources to be overused due to nonexcludability.
- An instance of market quantity far exceeding the socially efficient level (negative externalities)
- Contributing factors:
  - Ease of use
  - Order of use
  - Strength of social norms

Resolving the Tragedy?

Potential solutions may vary in each situation:

- Regulation
- Privatization
- Governing the order of use
- Enforcing social sanctions
- Taxing usage of the resource