PS 0500: Institutions

William Spaniel

https://williamspaniel.com/classes/ir2021
Outline

• Goods
• Monitoring
• Collective Action Problems
• Hegemonic Provision of Public Goods
• Issue Linkage
• Unintended Consequences
• Justice Dilemma
Excludability

- A good is *excludable* if its provider can effectively deny you access to it
  - Example: Your math textbook versus national defense
Rivalrous

- A good is *rival* if consumption by one individual interferes with another individual’s consumption
  - Example: The pen you are using versus the lecture you are currently attending
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RIVAL

NON-EXCLUDABLE

FISHERIES

NON-RIVAL

CLEAN AIR, SAFE SEAS,
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RIVAL

NON-EXCLUDABLE

FISHERIES
Overfishing

• Overfishing is a big problem in Lake Ontario
• This leads disrupts reproduction and will eventually deplete the entire population
Overfishing

• Suppose New York passes a law to cap fish hauls
• Will this solve the problem?
Harsh Realities

- Canadian fish are super polite but have no respect for international borders
The Treaty

- Suppose the long-term optimal cap on fish is 1,000,000 per year
- Then the treaty should limit the sides to 500,000 each (or something that adds up to 1,000,000)
Enforcement

• Both sides could play a grim trigger strategy
  – Start by capturing 500,000 this year
  – If at any point anyone has exceeded that limit, capture as many fish as you can
  – Continue capturing 500,000 each year otherwise
Monitoring Problem

- Actors need the ability to observe past actions to play grim trigger strategies
- If I don’t see what you did in the past, I cannot properly punish you for deviation
Externalities

• Without monitoring, evil Canadians might be tempted to capture 600,000 fish
  – Depletes the jointly optimal long-run cap
  – But Canada imposes a negative externality on the United States
• Enjoys the benefits while only suffering part of the consequences
• Rest of consequences paid by U.S. (the externality)
Solution

• Create monitoring institutions (bureaucracy)
  – Bad news: bureaucracy is costly to maintain
  – But they can flag violations of the agreement and allow states to correctly sanction violators
  – Alternative is no cooperation at all
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The Situation

- 100 countries
- Each individually decides to provide a benefit or not
  - Example: Force domestic industry to go green
Payoffs

• Everyone who provides the benefit produces 300 units of goods, distributed equally among the states
  – Costs $c > 0$ to provide
Payoffs

• Free riding costs nothing but produces no benefits for anyone
Question: Should you provide the public good?
Payoff for Providing

- You receive $300/100 – c for providing
- You also receive $n(300)/100$ from other countries, where $n$ is the number of other countries that provided
Payoff for Providing

• You receive $300/100 - c$ for providing
• You also receive $n(300)/100$ from other countries, where $n$ is the number of other countries that provided
• Total: $3(n + 1) - c$
Payoff for Free Riding

• You receive nothing from yourself but pay no cost
• You still receive $n(300)/100$ from other countries, where $n$ is the number of other countries that provided
• Total: $3n$
When Should You Provide?

• $3(n + 1) - c > 3n$
• $c < 3$
When Should You Provide?

- $3(n + 1) - c > 3n$
- $c < 3$
- So if the costs are very small, you should provide
  - But if they are anything above 3, free riding is better
Inefficiency

- Suppose $c = 5$ for everyone
- Outcome: No one provides, everyone earns 0
  - Sum of all payoffs: 0
Inefficiency

• Suppose $c = 5$ for everyone
• Better outcome: Everyone provides and earns $3(n + 1) - c = 300 - 5 = 295$
  – Sum of all payoffs: $295 \times 100 = 29,500$
  – 29,500 units of productivity are lost!
Collective Action Problem

- Everyone wants [something]
- But producing [something] is costly, and the benefits are dispersed to many (non-rival, non-excludable)
- So people do not produce [something] and hope others will
- But everyone is thinking like this, so [something] never gets produced
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The Situation

- 100 countries
- Each individually can create a public good or not
  - Example: Clear the waters of Somali pirates
Payoffs

• If at least one country provides the public good, everyone receives 10 units of value
  – Costs $10 < c < 100$ to provide
Payoffs

- Free riding costs nothing but relies on someone else to provide the benefit
Payoffs

- Provide: $10 - c$
- Not provide:
  - 10 if someone else provides
  - 0 if no one else provides
Payoffs

• Provide: 10 – c
• Not provide:
  • 10 if someone else provides
  • 0 if no one else provides
• Since c > 10, providing provides a negative payoff; not providing gives at least 0
Payoffs

• Provide: $10 - c$
• Not provide:
  • 10 if someone else provides
  • 0 if no one else provides
• Since $c > 10$, providing provides a negative payoff; not providing gives at least 0
  • So no one provides
  • 1000 units lost
The Situation

• 101 countries
• 100 countries are the same as before
  – 101\textsuperscript{st} receives 100 for providing the good
  – Intuition: A hegemon uses the good more than anyone else
Hegemon’s Strategy

• Quick inference: no other country will provide the public good
Hegemon’s Strategy

• Quick inference: no other country will provide the public good
• Provide: $100 - c > 0$
• Not provide: 0
  – Thus, the hegemon provides the public good
Hegemons Are Helpful!

• Without the big guy, no one receives the benefits
• With the big guy, everyone receives a value of 10 despite putting no effort into the game
  – Hegemon is happy to provide because it benefits from the good so much
Operation Ocean Shield

- 15 vessels: United States
- 5 vessels: India
- 3 vessels: Denmark and UK
- 2 vessels: Greece, Italy, Japan, Malaysia, Netherlands, Portugal, South Korea
- 1 vessel: Canada, China, Colombia, New Zealand, Norway, Pakistan, Spain, Turkey, Ukraine
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Public Goods

• A public good is non-rival, non-excludable
• Providing public goods is costly
• If the benefit is highly decentralized, no one has incentive to contribute
Public Goods

- Public goods provision is a large-n prisoner’s dilemma
- No cooperation possible in one-shot interactions
Public Goods

• Cooperation possible with repeated interaction
  – Threat of future punishment (grim trigger) incentivizes cooperation
Problems with Grim Trigger

• 100 countries play grim trigger strategies
• 99 provide the public good; one cheats
• Grim trigger: everyone should cheat for the rest of time
Problems with Grim Trigger

• But this completely destroys cooperation
  – 99 other states were properly providing
  – Why should 1 cheating cause everyone to stop providing the public good?
This Is Weird...

• Every country in the world agrees to stop polluting
• Only one country cheats...and this causes everyone to immediately begin polluting again?
Problems with Grim Trigger

• Grim trigger strategies are better when punishment can be targeted
• Hard to deny public goods
  – They are non-excludable
Solution

• Since we cannot specifically pollute the polluter’s country, we must link issues
• *Issue linkage* is tying commitment to one policy to commitment on another policy
Example

• Treaty: If you violate the pollution standard, we raise tariffs on your country
  – Punishment specifically targets the violator
  – Allows other states to maintain cooperation
Expectations

• States with more intertwined relationships are more likely to cooperate
  – Easier to link issues
Expectations

• The fewer states involved in the interaction, the more likely they are to cooperate
  – Easier to monitor the interaction
  – Fewer states means more interconnectivity
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Review

• Institutions have no enforcement mechanisms (anarchy)
The UN have a problem with that? You know you should do? You should sanction me—sanction me with your army.... Oh, wait a minute, you don’t have an army! I guess that means you need to [be quiet]. That’s what I’d do if I didn’t have an army. I would [be quiet]. [Be quiet], [be quiet], [be quiet].
Review

- Institutions have no enforcement mechanisms (anarchy)
- Compliance to international “rules” must be out of self-interest
IAEA: https://www.flickr.com/photos/iaea_imagebank/5765318454
Review

• Institutions have no enforcement mechanisms (anarchy)
• Can only alter behavior by changing incentives
  – Compliance to international “rules” must be out of self-interest
  – Spirit of the rule is less important than the rule itself
Fun Failures

- CFB helmets
- France’s no free Amazon shipping
- Minnesota public smoking ban
- Reading periods
- Pitt’s fried chicken incident
- All sorts of World Cup fun
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DON'T GO TO BED WITH A MALARIA MOSQUITO
★ SLEEP UNDER A NET! ★ KEEP IT REPAIRED! ★ TUCK IT IN!
BE SURE NO MOSQUITO IS INSIDE WAITING FOR YOU
FIGHT THE PERIL BEHIND THE LINES
Externalities

• Does the intended use of malaria nets have positive or negative externalities?
• Does using malaria nets to fish have positive or negative externalities?
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Role Play!

- You are a dictator
- You are culpable pre-1998
- A civil war breaks out in your country
- Are you more or less likely to give up power?
Role Play!

- You are a dictator
- You are not culpable pre-1998
- Do you commit atrocities following Pinochet’s arrest?
Culpability Game

Rebels

- Concede: -1, 5
  - Revolt
    - Leader
      - Fight: -2, 0
      - Exile: 3, ?
Culpability Game
Not Culpable or
No Universal
Jurisdiction

Rebels

Concede -1, 5

Revolt

Leader

Fight -2, 0

Exile 3, 2
Culpability Game
Not Culpable or
No Universal
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\text{Rebels} & \quad \text{Concede} & \quad -1, 5 \\
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\text{Leader} & \quad \text{Exile} & 3, 2
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Culpability Game
Culpable with
Universal Jurisdiction

Rebels

Concede
-1, 5

Revolt

Leader

Fight
-2, 0

Exile
3, -1
Culpability Game
Culpable with Universal Jurisdiction

Rebels

Concede -1, 5

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Exile 3, -1
Culpability Game
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Rebels

Revolt

Leader

Fight

Concede

-1, 5

-2, 0
Culpability Game
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Rebels  Concede  -1, 5
Culpability Game
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Leader

Fight  Exile

-2, 0  3, -1