Formal Analysis: Wrap up

Andy Eggers

Week 8 Session 2

Direct democracy application: two possible responses

Wittman model with uncertainty about median voter

In Gehlbach 2.2, policy-seeking parties choose policies on one dimension under uncertainty about location of median voter.

- In expectation, neither party is at the median. (This is true of any model that produces divergence.)
- Probability of median being located at either party's position: 0

If parties implement their policy position, there is a majority that would vote for a "median referendum".

Special interest politics

In Gehlbach 3.2, office-seeking parties choose policies on one dimension facing a partially informed electorate and a single lobby that will spend money to advance the interests of one group in society.

Parties adopt the same non-median position. (Given two groups, the median is the policy position of the larger group.)

If parties implement their policy position, there is a majority that would vote for a "median referendum".

Guidance on the essay

From the syllabus

*For the **written assignment**, students are asked to explicate and discuss a model that is not in the assigned textbooks but that you find interesting. The explication should include the main components of the model (actors, preferences, actions, timing, etc), perhaps in simplified form, and an explanation of the main results in non-technical language: what are the "findings" and why do they hold? The discussion should evaluate how well the model achieves whatever the author wanted it to achieve. What is interesting about it? How does it relate to anything else we studied in the course? Can you think of an extension that would show something interesting? Submissions should be no more than four pages single-spaced.*

Two options

- **Explication and discussion** of an existing model, as described on the syllabus
    - As if suggesting a new section of Gehlbach or Kydd
    - Ideally a model on an aspect of theory that is important for your thesis
- **Original model**, as discussed in class

Suggestions for model building

- **Start with an idea of what you want to show**: Some models *reveal* something interesting to the modeler, but it's best to start with something interesting you want to show with a model
- **One idea at a time, please**: there may be many interesting things going on, but start with one
- **Start simple, and probably end simple**: can you model your idea with two players, two types, two actions?
- **Build from a foundation**: if possible, extend a standard, "workhorse" model – e.g. bargaining model, cheap talk, Hotelling-Downs, probabilistic voting.
- **Expect failure**: it's hard.

Incomplete big-picture overview of the course

The starting point: 2-by-2 with fixed payoffs

Game of chicken

		Player 2	
		Swerve	Straight
Player 1	Swerve	3, 3	2, 4
	Straight	4, 2	1, 1

Payoffs as variables: certainty case

Under what conditions is {Don't attack, Don't attack} an equilibrium?
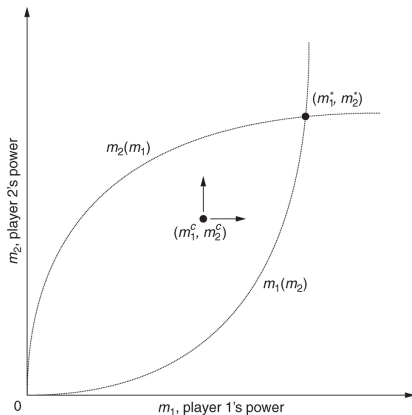
Pre-emptive war game

		Player 2	
		Don't attack	Attack
Player 1	Don't attack	s_1, s_2	w_1^s, w_2^f
	Attack	w_1^f, w_2^s	w_1, w_2

Continuous actions

Player i chooses spending m_i, producing expected utility

$$\frac{m_i}{m_i + m_j} - \gamma m_i$$

What is equilibrium spending?

Uncertainty about other side's payoffs

Now, $\Pr(s_i > w_i^f) = q_i$ for any player i. What is the equilibrium strategy for a player with $s_i > w_i^f$?

Pre-emptive war game with mistrust

Player 2

		Don't attack	Attack
Player 1	Don't attack	s_1, s_2	w_1^s, w_2^f
	Attack	w_1^f, w_2^s	w_1, w_2

Uncertainty about other side's payoffs (2)

Player 1 makes proposal x, knowing that player 2's cost of conflict are uniformly distributed between 0 and C, where $p_1 + C = s$. What is the optimal proposal?
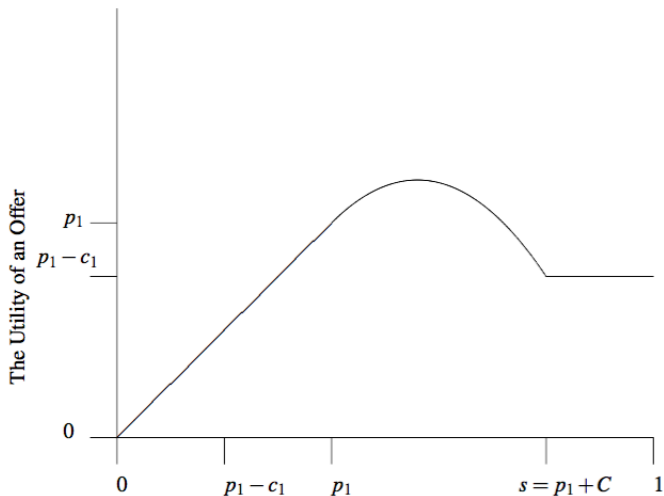
Party competition under certainty

- **Hotelling-Downs, Wittman**: parties take continuous actions; payoff a discontinuous function of distance from median
- **Citizen-candidate models**: candidates take binary actions (enter or not); all about characterizing possible equilibria

Party competition under uncertainty

- **"individual uncertainty"**: idiosyncratic non-policy preferences (partisanship) formed before policy choices are made; in multidimensional party competition with concave utility functions, produces smoothness in relationship between policy and vote share
- **aggregate uncertainty**: random shock **after** policy choices are made; along with party policy preferences
    - multidimensional transfer problem (2.1.2): does not affect equilibrium
    - Wittman model (policy-motivated parties) with uncertainty about location of median (2.2): produces divergence
    - campaign finance and policy choice (3.2): makes election probability "smooth" in policy, which makes the problem solveable
    - informative campaign finance (3.3): makes election probability "smooth" in parameters, which makes the problem solveable (otherwise, for any set of parameters, either elected or not)

Veto players

In crisis bargaining models (Kydd),

- Player 1 is "agenda-setter", Player 2 is "veto player"
- If unanimity not achieved (Player 2 rejects), war or status quo (depending on Player 2's action)
- "winset" is anything as good or better for 2 than war or status quo
- Player 1 proposes x from winset that is best for him

In legislative bargaining models (Gehlbach),

- may be majority rather than unanimity
- may be multidimensional
- players may have common interests

Cheap talk, costly signaling, tying hands: three very different meanings of signal

If there is uncertainty (about the world, about the players' type), is there scope for reducing this by communicating?

- a payoff-irrelevant message about the state of the world from an informed sender to a less informed receiver ("cheap talk")
- a costly action whose cost depends on sender's type, and that therefore affects receiver's belief about sender's cost ("sunk-cost signal", e.g. job market signaling)

Sometimes players would like to make threats that are not credible (not SPNE), but there is some action they can take that affects future payoffs to accomplish this ("tying-hands signal").