Endogenous Preference and Coalition Formation

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Preference

- In most of economic theory, and in game theory, preferences are given as data.
- However, empirical evidence suggests, on the contrary, that preferences adapt, e.g. to income, deprivation, marriage, and in some cases regulation.
- The implications of this will be explored, mostly with examples.

Apologia 1

- The framework is a small literature in game theory.
- Recall, game theory is better described as "interactive decision theory."
- Most of this theory assumes
  1. Noncooperation
  2. Money payoffs are proportional to utility.

Apologia 2

- However, a small literature assumes
  1. Coalitions may form to coordinate strategies (i.e. cooperation.)
  2. Outcomes of joint action may be complex and nondenumerable.
- This is “effectivity theory.”

Apologia 3

- This theory follows neoclassical economics in assuming that preferences (over outcomes) are given.
- Proposal: to model endogenous preferences, make the preferences dimensions of the outcomes.
- For the presentation I will proceed mainly by examples.

The Rendezvous Game 1

- This example will illustrate effectivity analysis with *given* preferences.
- Agents A and B would like to get together.
- They can choose between two destinations for their rendezvous: North or South.
- Agent C wants to prevent them from getting together.
- Agent C can block one destination or the other, but not both.

The Rendezvous Game 2

- Outcomes: rendezvous, no rendezvous
- Strategies: North, South
- Preferences:
  - A and B prefer rendezvous to no rendezvous
  - C prefers no rendezvous to rendezvous

The Rendezvous Game 3

		C			
		North		South	
		B		B	
		North	South	North	South
A	North	no rendezvous	no rendezvous	rendezvous	no rendezvous
	South	no rendezvous	rendezvous	no rendezvous	no rendezvous

Coalition

- A and B can form a coalition and coordinate their strategies.
- We ask whether they are *effective* for the preferred outcome, rendezvous.
- It turns out that this is an ambiguous question!

α-effectivity

- Ask: are there strategies available to {A,B} that will assure them of rendezvous?
- The answer is no – whichever direction they choose, it is possible that C will block that direction.
- They are not α-effective for rendezvous.
- (But they are α-effective for no rendezvous.)

β-effectivity

- Ask: Given the strategies of nonmembers (i.e. agent C) are there strategies available to {A,B} that will yield rendezvous?
- The answer is yes – whichever destination C blocks, they can choose the other.
- They are β-effective for rendezvous.
- The grand coalition is effective for any outcome in either sense.

Dominance and the Core

- Given outcome M, if there is a coalition C that is effective for a different outcome M', and M' is Pareto-preferred to M, then M is dominated by M' via C.
- The core is the set of all undominated outcomes.
- But now there are two senses.

Rendezvous Core

- Since neither {A,B} nor {C} is α-effective for their preferred outcome, neither outcome is α-dominated and both are in the α-core.
- Since both {A,B} and {C} are β-effective for their preferred outcome, both outcomes are β-dominated the β-core is the null set.

Opportunity Game 1

- There are (oversimplifying) 3 agents, A. B, and C, who are of a particular social category.
- There is a social norm that holds that some kinds of opportunities are inappropriate for people of that category.

Opportunity Game 2

- Nevertheless,
  1. If an agent of this category seeks the opportunities, they will be realized.
  2. If enough agents seek the opportunities, the social norm loses its credibility.

Strategies and Outcomes

- Thus the strategies are “seek” and “don’t seek.”
- There are three outcomes:
  1. ω – none seek, norm credible
  2. θ – some but not all seek, norm credible
  3. ϕ – all seek, norm not credible

		C			
		Seek		Seek	
		B		B	
		Seek	Don't	Seek	Don't
A	Seek	ϕ	θ	θ	θ
	Don't	θ	θ	θ	ω

	ω	θ	ϕ
A	$\omega\mathcal{P}_{A\omega}\theta,$ $\omega\mathcal{P}_{A\omega}\phi,$ $\theta\mathcal{P}_{A\omega}\phi$	$\omega\mathcal{P}_{A\theta}\theta,$ $\phi\mathcal{P}_{A\theta}\theta,$ $\phi\mathcal{P}_{A\theta}\omega$	$\phi\mathcal{P}_{A\phi}\theta,$ $\phi\mathcal{P}_{A\phi}\omega,$ $\theta\mathcal{P}_{A\phi}\omega$
B	$\omega\mathcal{P}_{B\omega}\theta,$ $\omega\mathcal{P}_{B\omega}\phi,$ $\theta\mathcal{P}_{B\omega}\phi$	$\omega\mathcal{P}_{B\theta}\theta,$ $\phi\mathcal{P}_{B\theta}\theta,$ $\phi\mathcal{P}_{B\theta}\omega$	$\phi\mathcal{P}_{A\phi}\theta,$ $\phi\mathcal{P}_{A\phi}\omega,$ $\theta\mathcal{P}_{A\phi}\omega$
C	$\omega\mathcal{P}_{C\omega}\theta,$ $\omega\mathcal{P}_{C\omega}\phi,$ $\theta\mathcal{P}_{C\omega}\phi$	$\omega\mathcal{P}_{C\theta}\theta,$ $\phi\mathcal{P}_{C\theta}\theta,$ $\phi\mathcal{P}_{C\theta}\omega$	$\phi\mathcal{P}_{C\phi}\theta,$ $\phi\mathcal{P}_{C\phi}\omega,$ $\theta\mathcal{P}_{C\phi}\omega$

Shortsighted Preference

- {A,B,C} is effective for any outcome, and in particular for ϕ.
- Does ϕ dominate ω?
- If we think of ω as the status quo, the preferences that are relevant would seem to be those at ω.
- Therefore, no: ω is undominated.

Foresight

- Agents might anticipate that, if ϕ is realized, then they would prefer it to the other outcomes.
- Is that reason enough to choose ϕ?
- If people are farsighted then it is at least possible to apply the preferences at the target outcome.
- But does that make sense?

Foresight, again

- Suppose A is farsighted and wants to bring about ϕ.
- $\{A\}$ is effective for $\{\phi,\theta\}$ (i.e. one or the other.)
- If θ is realized, then ϕ becomes first preference and ϕ dominates θ and ω.
- Creating a role model.

Lessons

1. Endogenous preferences raise questions about the role of foresight.
2. If people are shortsighted then endogenous preferences may stabilize outcomes that, from some reasonable points of view, seem inferior.

Education Game

- Here, rising average incomes reverse the preference of the privileged from preference for higher absolute to higher relative incomes.
- Choice cycles result.

Mobility Game

- People prefer to live where they are – both before and after a move.
- In this case shortsighted preferences may seem more reasonable – in that the subjective costs of relocation can be realized more than once.

Concluding Summary

- The first is the observation that endogenous preferences can be modeled in effectivity cooperative game theory by making the preference system one of the components of the outcome of the interaction.
- However, questions arise about farsight with respect to preference change.