Collective Decision Making in the Large and in the Small

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What are Collective Decisions?

in the large: decisions for (not by) many people

- criminal and civil laws
- taxes, trade policy
- public goods: expenditures on defense, judiciary, law enforcement, infrastructure
- transfers: welfare, pensions, social insurance
- environmental policy
- war

differential effects on different people

How are Collective Decisions Made?

by contest

- voting
- lobbying by buying influence with politicians or bureaucrats
- violence

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Who Are These Contests Between?

not between individuals

between groups
- farmers or bankers lobbying for subsidies or bailouts
- political parties
- armies or gangs
- geographical regions

Collective Decisions in the Small

groups competing for power are made of up diverse individuals

each group faces in the small the same type of collective decision problem faced in the large

- how much money should farmers or bankers contribute to lobbying efforts?
- how many voters should be turned out at the polls?
- how much money and how many lives should be expended in civil war?

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Two Issues in Collective Decision Making

- consistency of choice

- free-riding

consistency of choice: Arrow impossibility theorem, median voter theorem

two observations:

- often the result of a political contest is a short-term dictator so the impossibility theorem does not matter

- collective decision making in the small is easier because there is less heterogeneity of preferences

- not really going to worry much about this in this lecture

Free Riding

individuals involved in collective decision face a free-rider problem: better that other people lobby, vote or fight on your behalf

- every paper it seems proposes a new way of dealing with this issue
- there is no agreed upon solution
- what we do not need are more models proposing different and "better" solutions

A Simple Public Good Model

simplify by assuming that nobody has any private incentive to contribute

$i = 1, 2, \ldots, N$ group members

each chooses effort level $\alpha^i \in [0, 1]$

receives utility $u^i(\alpha) = g^i(\alpha^{-i}) - c^i(\alpha^i)$

benefit $g^i(\alpha^{-i})$ continuous

cost $c^i(\alpha^i)$ continuous and strictly increasing with $c^i(0) = 0$

group objective $U(\alpha) = \sum_i u^i(\alpha)$

The Simple Public Good

- $g^i(\alpha^{-i})$ no individual benefits from own effort

- reasonable approximation where the benefits are spread over a large group

- example: g^i proportional to probability of winning the political contest – so effort of any single individual makes little difference

- similar to the coconut production model of Diamond or the gift-giving model of Levine-Pesendorfer: each group member provides effort which is useful only to other group members – representing a "gift" to those other members

An Individualistic Model of Group Behavior

a social norm $a \in [0, 1]$ is an effort level "target"

each individual chooses the the social norm that is best for the group and implements their part of it

$$\alpha^i = \arg\max_a U(a)$$

pray that this is unique

Many Names for the Same Thing

rule-consequentialism: Harsanyi 1977, Coate and Conlin 2004, Roemer 2010, Hooker 2011

ethical voter model: Riker and Ordeshook 1968, Fedderson and Sandroni 2006, Li and Majumdar 2010, Ali and Lin 2013

- duty or social obligation of voting – it is unethical to free ride

small group versions, view large group made up of small groups that behave this way

false belief in consequentiality: (Quattrone and Tversky 1988, Black 1948)

- you believe that you are everyone

distributed effectivity: (Gintis 2015)

- you act as if you have a false belief in consequentiality even though you do not

The Debate

- whose deep philosophy of human behavior is best?

- who cares?

- these models have a practical problem

all or nothing: you are ethical or you are not, you are not "somewhat ethical"

Fedderson and Sandroni 2006 deal with a mix of ethical and "selfish" types

Partial Altruism – a Happy Medium?

a happy medium that does not completely eliminate the free-rider problem yet generates positive effort levels

Schram and Sonnemans 1996, Fowler 2006, Fowler and Kam 2007, Edlin et al. 2007, Faravelli and Walsh 2011, Evren 2012, Jankowski 2011 – this version based on Esteban, Mayoral and Ray 2012

individual utility is altruistic:
$$(1 - \lambda)U(\alpha) + \lambda u^i(\alpha) = (1 - \lambda)U(\alpha) - \lambda c^i(\alpha^i) + \lambda g^i(\alpha^{-i})$$

equivalent to maximizing
$$v^i(\alpha) = (1 - \lambda)U(\alpha) - \lambda c^i(\alpha^i)$$

Comparison of Ethical Voter and Altruistic Modeling

take $\lambda = 0$ in the partial altruism modeling

altruism: i maximizes $U(\alpha^i, \alpha^{-i})$ with respect to α^i

ethical voter: i maximizes $U(\alpha)$ with respect to α then chooses a^i accordingly

the ethical voter problem solves the altruism problems

the converse may not be true

An Example

take $c^i(\alpha^i) = \alpha^i$, $g^i(\alpha^{-i}) = 2\min\alpha^{-i}$ at least three players

[stag-hunt game]

$U(\alpha) \geq 2N\min\alpha - \sum\alpha^i$ so optimum is $\alpha^i = 1$

but if $\alpha^i = a$ for all i then $\alpha^i = a$ maximizes $U(\alpha^i, \alpha^{-i})$ with respect to α^i

- if you raise α^i you raise your cost but do not raise the benefit to anyone
- if you lower α^i you lower the public benefit much more than you save in cost

altruists cannot solve coordination problems

ethical voters and rule consequentialists can

do we believe that tightly knit groups fail to solve coordination problems?

Two Oddities

1. in the large we understand that the collective decision is enforced with incentives – rewards, punishments or coercion

- taxes are not collected because tax payers are altruistic or ethical
- public employees are paid

in the small dealing with the strategic aspects of collective decision making within groups we typically ignore the fact that lobbies, unions, political parties and armies are all able to provide incentives against and punishments for free-riding

2. in models and empirical work analyzing social incentives within groups - "social capital" the rationale for incentives and social norms are not studied

Social Capital

people vote to get approval from social network

Abrams et al 2011, Knack 1992,Harbaugh 1996,Gerber et al. 2008, Gerber and Rogers 2009, Fosco et al. 2011, Ben-Bassat and Dahan 2012, Aytimur et al. 2014

lots of evidence on this

Woman who ran over husband for not voting pleads guilty. USA Today April 21, 2015

but nothing strategic here

Costly Enforcement of Collusion

basically integrate all three (Levine and Modica, Dutta, Levine and Modica, Levine and Mattozzi, Galleoti, Levine and Mattozzi)

it is a better model because it is the *same* as others, not because it is different

group colludes in an effort to maximize $U(\alpha) = \sum_i u^i(\alpha)$

group members must be coerced if they do not contribute

group agrees on a social norm $a \in [0, 1]$ and has a monitoring technology generating noisy signal of whether or not a member complies with the norm

Simple Signal Technology

signal is $z^i \in \{0, 1\}$

0 means "good, followed the social norm"

1 means "bad, did not follow the social norm"

violate the social norm by choosing $\alpha^i \neq a^i$ signal is 1

adhered to social norm choosing $\alpha^i = a^i$ signal is 1 with probability π

bad signal results in punishment P^i

exclusion from social benefit, social disapproval, more serious punishments or denial of rewards

Incentive Compatibility

incentive compatiblility of norm: $-\pi P^i \geq c^i(a^i) - P$ or

$$P^i \geq c^i(a^i)/(1 - \pi)$$

on the equilibrium path cost is πP^i

group minimizes this cost choosing $\pi P^i = c^i(a^i)\pi/(1 - \pi)$

Group Objective

define $C(a) = \sum_i c^i(a^i)$

the group objective accounting for costs is equivalent to

$$V(a) = (1 - \pi)U(a) - \pi C(a)$$

that is, the group colludes to maximize this: utility net of monitoring cost

necessary to maximize with respect to each a^i

equivalent to maximizing $(1 - \pi)U(\alpha) - \pi c^i(\alpha^i)$

which is the partial altruism model with $\lambda = \pi$

but coordination problems are solved

when enforcement costs are zero it is the ethical voter model

Discussion

- altruism and ethicality: empirically not very strong forces, could be important in voting

- costly enforcement: richer model

    - allows "self enforcement" or internalization of norm, so compatible with ethicality

    - allows for strong punishments in non-voting models where participation cost is high

    - allows for consideration of monitoring, network structure and so forth

    - don't have to throw out Esteban-Mayoral-Ray conflict analysis

Social Capital

sociologists: Granovetter 1985, Coleman 1988

social capital: honesty, trust, network density, good monitoring, internalization of social norms

interpret this as: things that lower enforcement costs

$$V(a, g) = (1 - \pi)U(a) - \pi C(a, g)$$

where a is a social norm ("public good") and g is social capital

and we can also consider investment problem where the production of social capital is itself a public good

Breakdown of Social Order

- economic or political crises can lead to the breakdown of social order

- tend to ignore this in studying economic institutions

- breakdown of social order results in destruction of social capital