Cheap Talk and Committees

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MULTI-DIMENSIONAL INTUITIONS

Assume one Sender, first component of bias is 0.
S and R agree on one dimension and, assuming independence, full revelation along that dimension is possible.
In general, there is the possibility of a “dimension" of agreement.
With two senders, if the dimensions of agreement are different, full revelation is possible.

MANY DIMENSIONS, SINGLE SENDER

- Categorization.
- Trivial equilibria with large bias.

LARGE DIFFERENCE IN PREFERENCES

Gilat and Levy show that if preferences of Sender and Receiver are “far apart" then **generically** the only equilibrium outcome is babbling.

SURPRISING OR NOT?

- Similar to one dimensional result.
- In contrast to categorization result (genericity matters!)

INTUITION

Assume that S and R have lexicographic preference: Decision on first of two variables is infinitely more important than on the second.
Also assume that S and R have opposed interest along this dimension:
R wants the action to equal the (first component of the) state. S wants it to be large.

WHAT HAPPENS?

- All actions induced have (essentially) the same first component. (S always signals for the highest action available.)
- Suppose that there are two (or more) actions induced. Generically the information in S's signal will lead R to draw an inference that would cause different first components.

Note: The second property would not hold if dimensions of the state are independently distributed.
In general, when preferences differ greatly, all actions induced in equilibrium are approximately co-linear. Second step still holds.

QUESTION

What is the appropriate definition of conflict of interest in multi-dimensional models?

MODEL

1. Two players: proposer and chooser
2. Outcome set: The real line
3. Euclidean preferences over outcomes
4. Distinguished outcomes: 0, the proposer's favorite; 1, the status quo.
5. Uncertainty about chooser's ideal point.
6. Prior on chooser's ideal point. Say uniform over a compact interval that intersects $[0, 1]$

Matthew's makes somewhat more general assumptions on preferences.

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CHOOSER

For chooser:

- $\rho(m \mid t)$: rhetoric rule.
  The probability of message m given type t.
- $\alpha(x, t)$ acceptance rule
  The probability of accepting x.

PROPOSER

For proposer: $\pi(m)$.
Assume pure strategies.

EQUILIBRIUM

Chooser accepts if and only if x is closer to t than s is.
$\pi(m)$ maximizes $-x\beta(x \mid m) - (1 - \beta(x \mid m))$
Sends m that induces his favorite x.
where

$$\beta(x \mid m) = \frac{\int \alpha(x,t)\rho(m \mid t)dt}{\int \rho(m \mid t)dt}$$

is the conditional probability that x is accepted.

PROPOSER TYPES

Three types of chooser:

1. Accommodating: negative ideal points
2. Compromising: ideal points in $(0, 1)$
3. Recalcitrant: ideal points greater than 1.

Size One Equilibria

All messages induce the same action.

Size $n > 2$ Equilibria

There are no Equilibria with more than Two Actions
Key idea: If there were an equilibrium in which the chooser ever took two actions $x, y \in (0,1)$, with $x < y$, then the type indifferent between these actions would strictly prefer both to the status quo. Hence everyone who induces x would strictly prefer it to the status quo. Hence proposer is not optimizing.

Size Two Equilibria

If they exist:

- One message leads to 0. Sent by low ideal points.
- Other messages lead to $x \in (0, 1)$. Sent by higher ideal points.
- 0 never vetoed. x sometimes vetoed.

INFORMATION IN MESSAGES

1. It is possible to construct equilibria in which chooser uses one of (at most) two messages.
2. It is possible to include more information (the guys who veto do not care what they say).

WELFARE

1. Size Two Good for Proposer. Not clear for Chooser.
2. Changing Status Quo Point: Ambiguous Welfare Effect.

EXTENSIONS

1. Equilibrium Selection.
2. Multidimensional.
3. Ordering of Issues.

APPLICATION OF MULTI-SENDER MODEL

Think of a legislative committee decision making problem in three parts:

1. Two Committee Members
2. A Legislature (Decision Maker)

MODEL

- Committee members are Senders with bias b_i.
- Action $y = x + \theta$.
- Legislature is Receiver with bias 0, $U^R(y, \theta) = -x^2$.
- $U_i^S(y, \theta) = -(x - b_i)^2$.
- Senders know θ.
- $\theta \in [0, 1]$ uniformly distributed.
- $p_0 \in [-1, 0]$ is status quo.

COMPARE EFFICIENCY PROPERTIES OF RULES

- OPEN RULE: Standard Cheap-Talk, with “talk" interpreted as a proposed policy.
- CLOSED RULE: S_1 proposes; S_2 talks; R picks either status quo or S_1’s proposal.
- MODIFIED RULE: OPEN, but R must pick either status quo or one of two proposals.

If committee is homogeneous (equal biases), last two rules are equivalent.

OPEN RULE

Full revelation if biases are small by earlier result.

CLOSED RULE

S_1 can restrict outcome to status quo with appropriate proposal.
This will be optimal when the status quo is optimal for S_1:

$$p_0 + \theta = b_1$$

In fact, the most informative equilibrium involves:

- the status quo for θ near $b_1 - p_0$.
  (Both S_i like SQ.)
- Full information for θ extreme.
  (Both S_i prefer θ to $p_0 + \theta$).
- Compromise: Leaving both Sender types at least as well off as status quo.
  If S_i prefers status quo to R's ideal, then compromise will lead majority to be indifferent between SQ and ideal.

MODIFIED RULE

This works the same as Open Rule.
Reason: It is sufficient to use one of the senders' proposals as a punishment.

COMMENTS

Results suggest that Open and Modified Rules are better for efficiency.
US congressional committees use closed rules.
Why?

- Equilibrium Selection.
- Distributional concerns.
- Bad model.

VARIATIONS

- Noisy observations. (Full revelation is not robust.)
- Costly information acquisition. What happens in a proposal game in which sender's must decide whether to acquire information? How does this depend on the rule and the order of communication?
- Is the status quo safer? Alternative assumptions on modeling uncertainty.