Giving Advice vs. Making Decisions: Transparency, Information, and Delegation

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May 16, 2013
The Question

How does the interaction of information-pooling and power-sharing affect policymaking?

Decentralized Decision-making:

1. Multiple agents with private information,
2. Partial delegation of decision-making authority,
3. Sequential decisions/information revelation, and
4. Policy decisions jointly affect all agents.
The Point(s)

- Transparency can hinder information aggregation,
- Wider spans of control (*i.e.*, larger numbers of agents reporting to a common principal) intensify the effect of preference divergence on information transmission/aggregation, and
- Delegated discretionary authority ameliorates both, but eliminates neither, of these effects.
Advice, Subdelegation, & Transparency: Three Examples from the Federal Executive Branch

1. Advice in the Executive Branch: Federal Advisory Committees.
   - Described in the Federal Advisory Committee Act of 1972.
   - FACs are common—there were 1,077 such committees in 2012, according to the GSA.
   - Have potentially large policy effects (e.g., Balla & Wright (2001), Steinbrook (2004), Yackee (2006), Yackee & Yackee (2006), Lavertu & David (2011)).
2. Subdelegation in the Executive Branch: “Czars” and Special Masters.

- When one agent of a principal hands over part or all of authority to another agent
- A common feature of policy-making organizations.
- Constitutionality in the US federal context is murky (Grundstein (1944), Schubert (1950,1951), and Bady (2010)).

Example: Kenneth R. Feinberg, Special Master for TARP Executive Compensation, referred to as the “Pay Czar” or “Compensation Czar.”
3. Top-Down Transparency & Governance.

- The observability of the superior’s information by the agent when the agent is deciding what message to send to the superior and/or what policy to choose.

- Similar, but opposite “direction,” of whistleblowing (Ting (2008)) or stovepiping (Gailmard & Patty (2013))

- Emerging concerns about transparency in “quasi-public” governance authorities (e.g., Camara & Gowder (2006)).

- Examples: the Federal Reserve Board, public utilities, educational institutions, private corrections facilities, healthcare providers
Primitives

- 2 players: $N = \{P, A\}$ (Principal and Agent),
- State of nature, $\theta \in [0, 1]$,
- Player $i \in N$’s private information (signal): $s_i \in \{0, 1\}$,
- Player $i \in N$’s policy decision: $y_i \in \mathbb{R}$,
- Player $i \in N$’s policy preference (bias): $\beta_i \in \mathbb{R}$.
- Player $i \in N$’s discretionary authority, $\alpha_i \geq 0$ $(\alpha_P + \alpha_A = 1)$

Agent $i$’s payoff:

$$u_i(y, \theta; \beta) = - \sum_{j=1}^{n} \alpha_A(y_A - \theta - \beta_P)^2,$$
Sequence of Play

1. State of nature, $\theta$, drawn from Uniform[0, 1] distribution.
2. Agent $A$’s information:
   - “Top-Down Transparency”: Agent $A$ observes $s_A$ and $s_P$.
   - Otherwise, Agent $A$ observes only $s_A$.
3. Agent $A$ chooses policy $y_A \in \mathbb{R}$.
4. Principal $P$ observes $y_A$ and $s_P$ and chooses $y_P$.
5. Players receive their payoffs.

Related Models
Information and Policymaking

$s_i = 0$ interpreted as a failure, $s_i = 1$ as a success.

A player’s posterior beliefs after $m$ trials and $k$ successes (i.e., $k$ occurrences of $s = 1$ and $m - k$ occurrences of $s = 0$) are characterized by a Beta$(k + 1, m - k + 1)$ distribution, so that

$$E(\theta|k, m) = \frac{k + 1}{m + 2}, \text{ and}$$

$$V(\theta|k, m) = \frac{(k + 1)(m - k + 1)}{(m + 2)^2(m + 3)}.$$

Player $i$’s optimal policy choice, $y_i^*$, given $k$ successes and $m - k$ failures:

$$y_i^*(k, m) = \frac{k + 1}{m + 2} + \beta_i.$$
Equilibrium Analysis

We analyze pure strategy Perfect Bayesian Equilibria.

We are interested in truthful ("separating") equilibria.

In such equilibria, the Agent reveals his signal to the Principal.

This greatly simplifies analysis... and represents the optimal behavior from an *ex ante* expected social welfare standpoint.
Pure Cheap-talk Advice

Suppose first that the Agent’s role is purely advisory:

$$\alpha_A = 0 \text{ and } \alpha_P = 1.$$ 

and suppose that $P$ is known to have observed $m$ signals.

**Proposition 1.** *Suppose that there are two players, a principal $P$ with preference bias $\beta_P$ who independently observes $m \geq 0$ signals and an agent $A$ with preference bias $\beta_A$ who observes a single signal. Then a perfectly informative equilibrium exists if and only if*

$$|\beta_P - \beta_A| \leq \frac{1}{2m + 6}.$$

The RHS is decreasing in $m \Rightarrow$ truthful communication *harder* to sustain when $P$ has more information.
Top-Down Transparency with Cheap Talk

The incentive compatibility conditions for truthful cheap-talk revelation are invariant to top-down transparency.

This is true only when $\alpha_A = 0$ (cheap-talk messaging).

**Corollary 1.** *Suppose that agent A can observe principal P’s information prior to signaling A’s information to P. It is incentive compatible for agent A with bias $\beta_A$ to reveal his or her information truthfully to principal P if and only if it is also incentive compatible for agent A to reveal his or her information truthfully to principal P without knowledge of principal P’s information.*
Delegated Authority

When $A$ has independent discretionary authority ($\alpha_A > 0$), $A$’s “message” to $P$ has direct costs to $A$.

We now extend the game form to allow $P$ to set $\alpha_A$ (reducing $\alpha_P$: $\alpha_P + \alpha_A = 1$) prior to observing any signals.

Off-the-equilibrium-path beliefs: we consider equilibria in which the agent chooses “naively sequentially rational” policy choices.
Transparent Case: Agent Observes Superior’s Information

**Top-down transparency:** A observes $s_P$ before choosing $y_A$:

In equilibrium, $A$ has three policy choices ($s_A + s_P \in \{0, 1, 2\}$):

$$y_A \in \left\{ \frac{1}{4} + \beta_A, \frac{1}{2} + \beta_A, \frac{3}{4} + \beta_A \right\}.$$

With top-down transparency, truthful revelation is IC if:

$$\alpha_A \geq 1 - \frac{1}{8|\beta_P - \beta_A|}.$$

More authority $\Rightarrow$ truthfulness is IC with greater preference divergence
Delegation of positive authority \((\alpha_A > 0)\) is in \(P\)'s interest only if

\[ |\beta_P - \beta_A| \leq \frac{3 + \sqrt{41}}{48} \approx 0.196. \]

Because 0.196 > 1/8, \(P\) will sometimes delegate positive authority to \(A\) to induce truthful reporting.
Opaque Case: Superior’s Information Hidden from Agent.

If $s_P$ is not observed by $A$, then two policy choices will be observed:

$$y_A \in \left\{ \frac{1}{3} + \beta_A, \frac{2}{3} + \beta_A \right\}.$$

The incentive compatibility condition in this case reduces to

$$\alpha_A \geq \frac{8|\beta_P - \beta_A| - 1}{7/9 + 8|\beta_P - \beta_A|} < 1 - \frac{1}{8|\beta_P - \beta_A|},$$

$P$ must give more authority to $A$ when $s_P$ is transparent. Delegation of positive authority to $A$ is in $P$’s interest in this case only if

$$|\beta_P - \beta_A| \leq \rho^* \approx 0.201$$
Comparing the Two Cases: The Effect of Transparency.

Note that

1. Truthful communication is “cheaper” (smaller $\alpha_A$) without top-down transparency and
2. The principal will delegate to more extreme agents without top-down transparency.

Why is this?

When the principal’s information is transparent, the agent does not need to set policy as far away from the true conditional expected value of $\theta$ in order to manipulate the superior’s beliefs.

The agent can credibly signal that his or her signal was the opposite of what he or she actually observed only by “biasing” his or her own policy choice by $\frac{1}{4}$ as opposed to $\frac{1}{3}$.
Comparing the Two Cases: The Effect of Transparency.

Note two countervailing effects of top-down transparency on principal’s payoff:

1. Top-down transparency decreases “noisiness” of agent’s policy choice (good),

2. Top-down transparency increases bias of policy toward agent’s preference (bad).

Thus, the incentives under the principal’s calculations are a subtle version of the classical “mean-variance” tradeoff.
Comparing the Two Cases: The Effect of Transparency.

Figure: The Effect of Transparency on Delegation of Authority
### Summary of Theoretical Results

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<th>No Authority Delegated</th>
<th>Some Authority Delegated</th>
<th>No Authority Delegated</th>
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<tr>
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<td>\beta_i - \beta_j</td>
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Multiple Agents

- **Cheap-Talk with Multiple Agents.** There is a finite upper bound on the number of truthful agents (Patty (2013))

- **Delegated Discretion with Multiple Agents.** Delegating discretion to one agent reduces the principal’s sway over policy, affecting IC calculations for other agents.

- **Transparency with Multiple Agents.** Do agents observe each others’ choices in sequence? (Patty & Penn (2013))

In short, there’s a lot of directions to take this framework.
Conclusions

- Transparency can hinder information aggregation,
- Wider spans of control increase the adverse effects of preference heterogeneity on information aggregation, and
- Delegated discretionary authority ameliorates both, but eliminates neither, of these effects.
Picturing Incentive Compatibility: Uninformed Principal

\[ \beta_i = \beta_j \]
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\[ \beta_i = \beta_j \]

\[ y_i^*(0) \]

\[ y_i^*(1) \]

\[ u_j^*(x,s_j=0) \]

\[ u_j^*(x,s_j=1) \]

\[ 1/3 \]
Picturing Incentive Compatibility: Uninformed Principal

\[ \beta_i = \beta_j + 1/6 \]
Picturing Incentive Compatibility: Uninformed Principal

\[ \beta_i > \beta_j + 1/6 \]
Picturing Incentive Compatibility, More Informed Principal

\[ \beta_i = \beta_j \]
Picturing Incentive Compatibility, More Informed Principal

\[ \beta_i = \beta_j \]

\[ y_i^*(0) \quad y_i^*(1) \]

\[ u_j^*(x, s_j=0) \quad u_j^*(x, s_j=1) \]
$\beta_i = \beta_j + 1/6$

$y_i^*(0)$

$y_i^*(1)$

$1/4$

$u_j^*(x,s_j=0)$

$u_j^*(x,s_j=1)$