Non-monotonic Disclosure in Policy Advice

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joint with Catherine Hafer (NYU) and Dimitri Landa (NYU)

2025

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Strategic communications between policymakers and bureaucratic agencies

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Disclosure Games

- Preference misalignment under verifiable information $\rightarrow$ full disclosure (Milgrom (1981), Grossman (1981))

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Disclosure Games

- Preference misalignment under verifiable information $\rightarrow$ full disclosure (Milgrom (1981), Grossman (1981))
  - monotonicity
  - greater state-dependence of the sender

Some Results

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2. Characterize conditions for
   - Unique Full Disclosure Equilibrium (FDE)
   - Multiplicity of Sequential Equilibria

3. Equilibria with contrary comparative statics
   - Higher ex-ante preference misalignment $\rightarrow$ **less** informative communication
     $\rightarrow$ not **belief-stable**
   - Higher ex-ante preference misalignment $\rightarrow$ **more** informative communication
     $\rightarrow$ **belief-stable**

Stylized Example

Consider the U.S. Food and Drug Administration (FDA) and Policymakers (PMs)

- FDA has private information about trials
- FDA $\rightarrow$
  - strict regulations $\rightarrow$ delay beneficial drugs;
  - loose regulations $\rightarrow$ introduce harming drugs.
- For PMs public/industry pressure requires rapid responses
- FDA has discretion over disclosure

More Examples

- Consumer Financial Protection Bureau
  - access to information that could be used contrary to its mission $\rightarrow$ re business regulations;
  - incentives to conceal.
- Internal Revenue Service
  - preferences for uniform enforcement;
  - private information re non-compliance statistical likelihood;
  - incentives to conceal from opposed policymaker.
- Central Intelligence Agency (Bay of Pigs)
  - information re conditional mission success;
  - incentives to conceal from more risk averse policymakers.
- USSR Ministry of Energy and Electrification (Chernobyl)
  - private information re nature of disaster(s);
  - incentives to limit information about disaster extent to avoid repercussions.

Our Contributions

- Full disclosure in games of verifiable advice:
  - **Milgrom** (1981), **Grossman** (1981), **Milgrom** (2008)
  - **Seidmann and Winter** (1997)
    - o.f. concave in action
    - sender's more state-dependent than receiver's
- Partial disclosure in games of verifiable advice
  - uninformed sender **Dye** (1985), **Jung and Kwon** (1988)
  - uncertainty about S's preferences **Wolinsky** (2003), **Dziuda** (2011)
  - multidimensional advice **Callander, Lambert and Matouschek** (2021)
  - disclosure reward **Denisenko, Hafer and Landa** (2024)
- Games of communication within hierarchy (cheap talk)
  - divergence in preferences $\rightarrow$ worse communication: seminal paper by **Crawford and Sobel** (1982), **Gilligan and Kreihbiel** (1987), **Austen-Smith** (1990, 1993)
  - **Callander** (2008)

Road Map

1. Introduction
2. Model
    - Game Structure
    - Equilibrium Characterization
    - Effects of Agency's Policy Preference
    - Belief-Stable Equilibria
3. Generalization
4. Agency's Vagueness
5. Summary

Actors and Timing

Two players: Agency (it) and Policymaker (she).

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(2)	Agency observes state (ω)	ω
(3)	Agency chooses message (m) to send to Policymaker	$m \in \{\omega, \varnothing\}$
(4)	Policymaker observes m and chooses policy (p)	$\mathsf{p} \in \mathbb{R}$

Payoffs and Solution Concept

- Agency:

$$u_A(p) = -(p - i)^2$$

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Solution Concept: Sequential Equilibrium.

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Equilibrium Characterization

In every equilibrium

Policymaker

- $p^*(m = \omega) = \omega$ when $m \neq \varnothing$;
- $p^*(m = \varnothing) = x^* \equiv E[\omega | m^*(\omega) = \varnothing]$, where $m^*(\omega)$ is A's eq. disclosure strategy.

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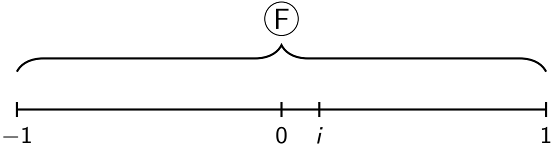
$i \geq 0 \rightarrow$ disclose $\omega \in [x^*, 2 \cdot i - x^*] \cap [-1, 1]$;
$i \leq 0 \rightarrow$ disclose $\omega \in [2 \cdot i - x^*, x^*] \cap [-1, 1]$.

Equilibrium Disclosure Strategies

There can be a *maximum* of three disclosure strategies supported in equilibrium

1. **Full disclosure (F)**

Disclosure intervals for some $i > 0$



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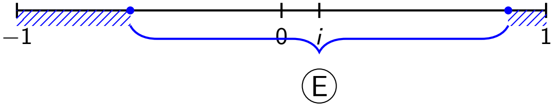

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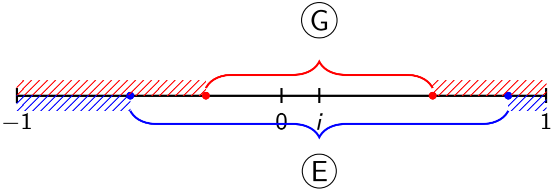

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Equilibria

There can be a *maximum* of three equilibria

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2. Partial disclosure equilibria:
   - Guarded equilibrium,
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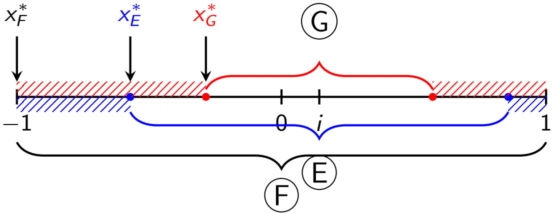

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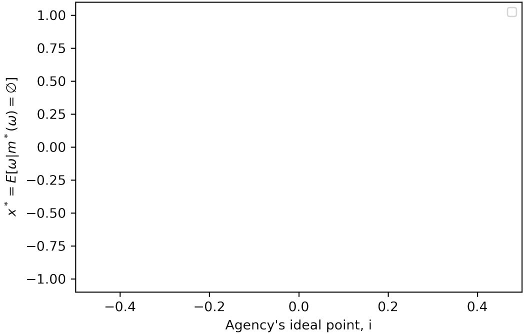
Effect of A's Policy Preference (i) on Policy Absent Disclosure

Prop.1

Increasing i,

1. no effect on $x_F^* = E[\omega|m^*(\omega) = \varnothing]$ in full disclosure equilibrium, $i \neq 0$;



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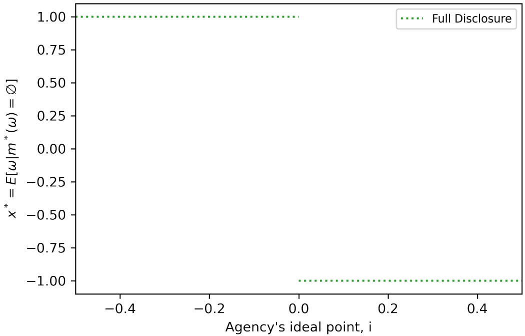

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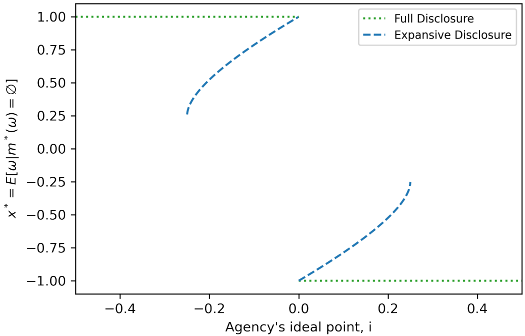

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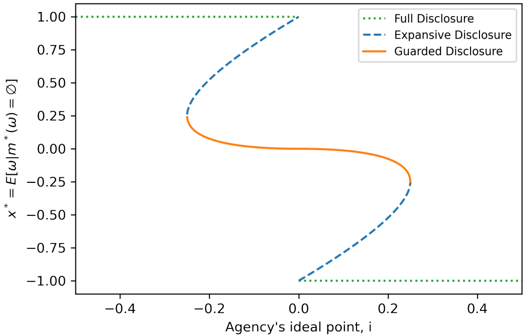

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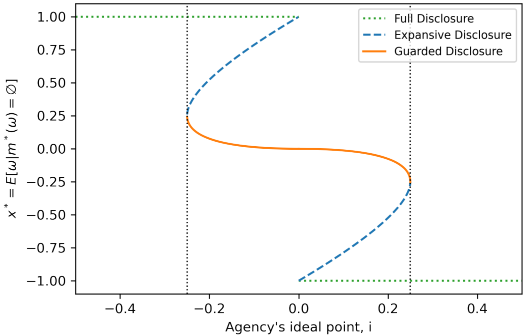
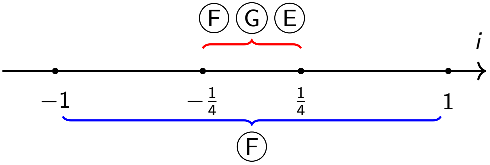


Effect of A's Policy Preference (i) on Full Disclosure Equilibrium Uniqueness

Prop.2

1. For all i there exists full disclosure equilibrium;
2. If and only if $i \in [-1/4, 1/4]$, there are two partial disclosure equilibria: **guarded** and **expansive**.



Effect of A's Policy Preference (i) on Equilibrium Disclosure

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Agency discloses ω to PM when

$$\omega \in [x^*, 2 \cdot i - x^*] \cap [-1, 1],$$

and conceals information otherwise.

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  - $\rightarrow$ Improves communication in **guarded** equilibrium

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- Direct effect always (*weakly*) improves communication between A and PM
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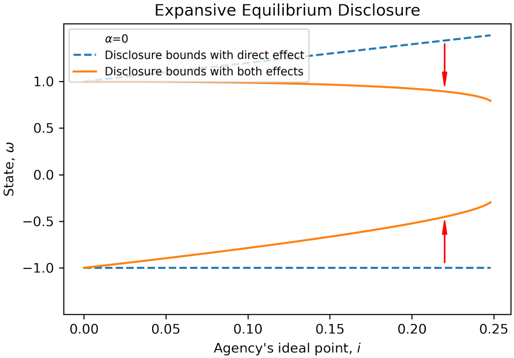
  - → Reduces communication in **expansive** equilibrium

Effect of A's Policy Preference (i) on Expansive Disclosure



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Communication between actors

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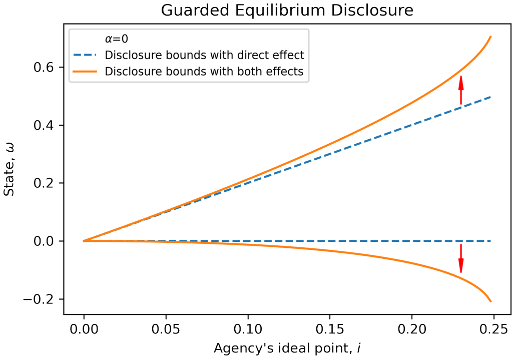

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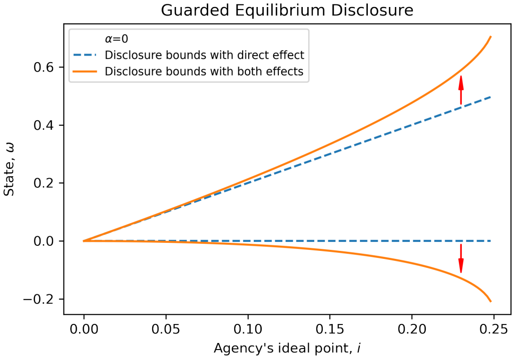

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Comparative Statics Underlying Intuition

Effect of Preferences Divergence ($|i|$) on Equilibrium Disclosure

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Parameter $|i|$ represents **ex-ante** divergence between actors' preferences.

Biased Policymaker

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- $\rightarrow$ *deteriorates* in **ex-ante** *preference divergence* in expansive equilibrium;
- $\rightarrow$ *improves* in **ex-ante** *preference divergence* in guarded equilibrium; and
- $\rightarrow$ *not affected* by **ex-ante** *preference divergence* in full disclosure equilibrium.

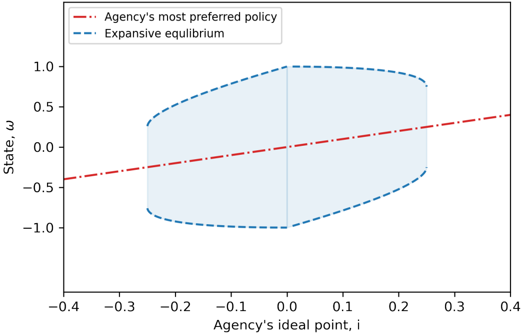
Road Map

Belief-Stability: Motivation

We have multiple equilibria with contrary comparative statics:

- Expansive → communication deteriorates in ex-ante preference misalignment
- Guarded → communication improves in ex-ante preference misalignment

All survive standard refinements → Which one should we expect?



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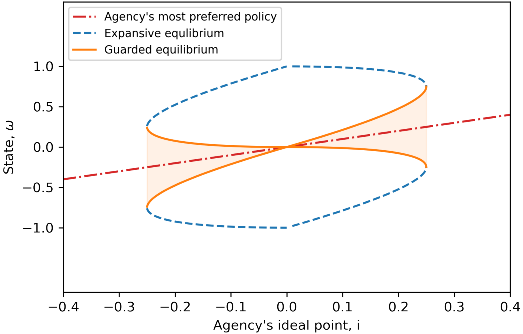

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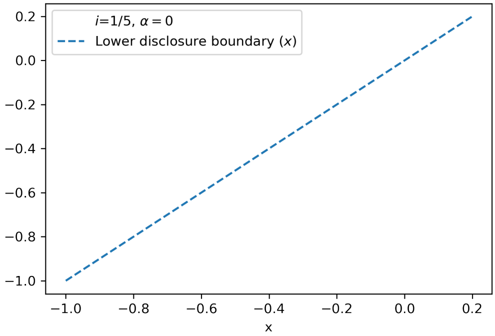

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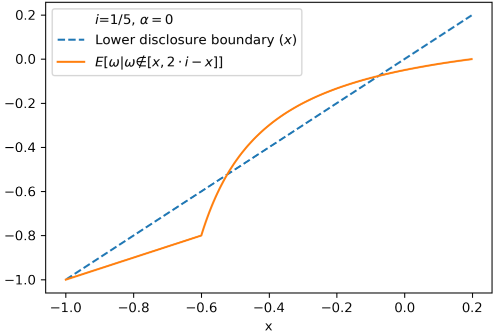

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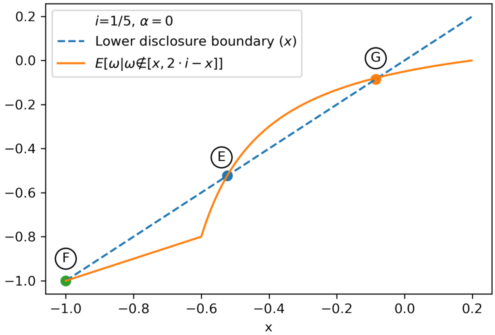

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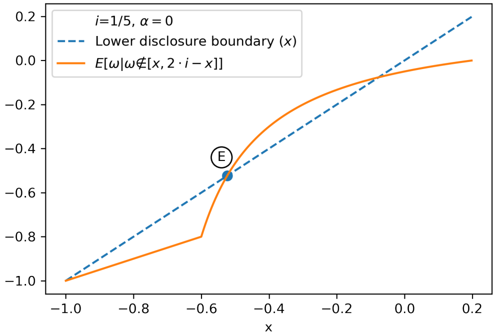

'Instability' of Expansive Equilibrium

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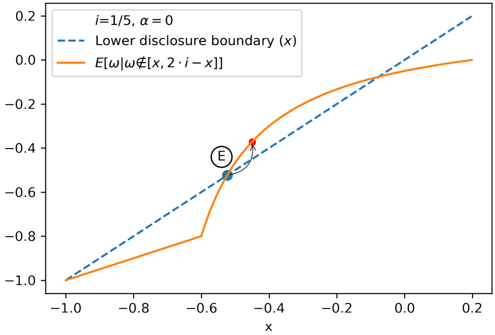

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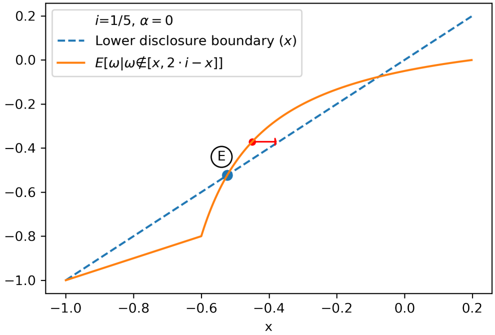

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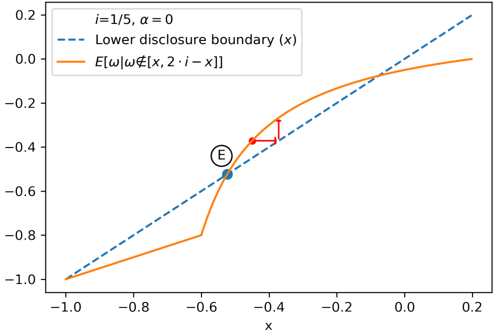

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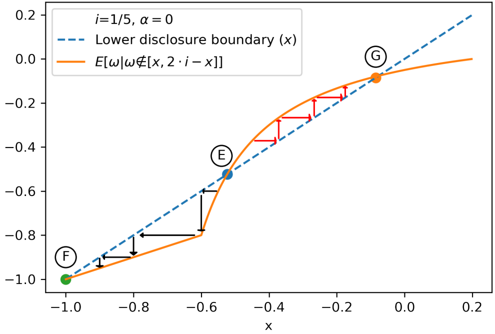
Regardless of direction of perturbation, expansive equilibrium will ’collapse.’



Belief-Stable Equilibria

Def.1

Consider an equilibrium (σ, μ)

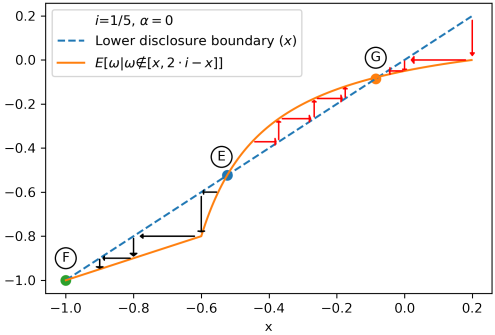
Let μ_j^ε be j's perturbed system of beliefs

Take σ^ε, seq. rational given $(\mu_j^\varepsilon, \mu_{-j})$

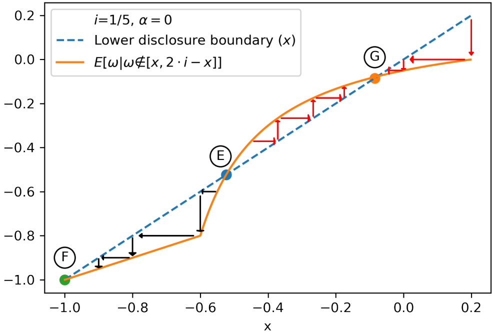
Let $\hat{\mu}_j^\varepsilon$ be consistent with σ^ε

If there exists an $\varepsilon > 0$ such that, for every μ_j^ε and y that satisfies $|\mu_j^\varepsilon(y) - \mu_j(y)| < \varepsilon$, $|\hat{\mu}_j^\varepsilon(y) - \mu_j(y)| \leq |\mu_j^\varepsilon(y) - \mu_j(y)|$ is satisfied

$\Rightarrow$ Equilibrium (σ, μ) is **belief-stable** (for j)



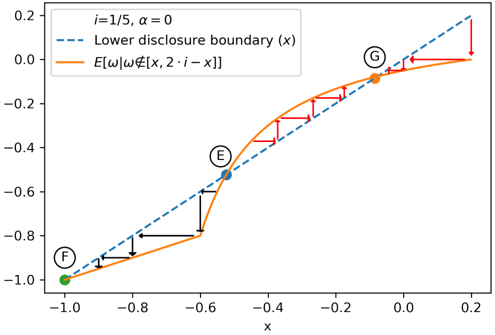
Belief-Stable Equilibria



Prop.4

1. Expansive equilibrium is not belief-stable

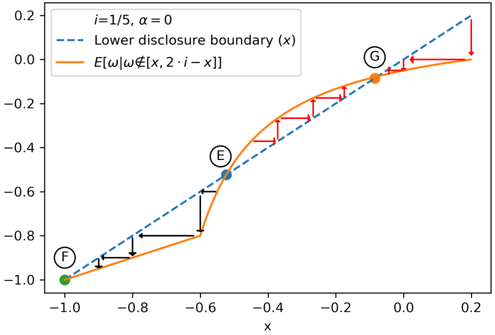
Belief-Stable Equilibria



Prop.4

1. Expansive equilibrium is not belief-stable;
2. Guarded equilibrium is belief-stable when $|i| \neq 1/4$;

Belief-Stable Equilibria



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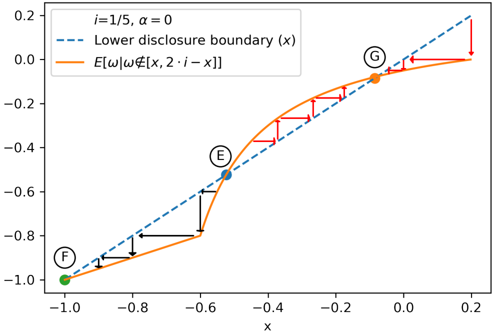
$\Rightarrow$ **Corollary 1.** Equilibrium is belief-stable $\Leftrightarrow$ equilibrium communication **improves** in preference divergence. Equilibrium is not belief-stable $\Leftrightarrow$ equilibrium communication **worsens** in preference divergence.

Belief-Stable Equilibria



Prop.4

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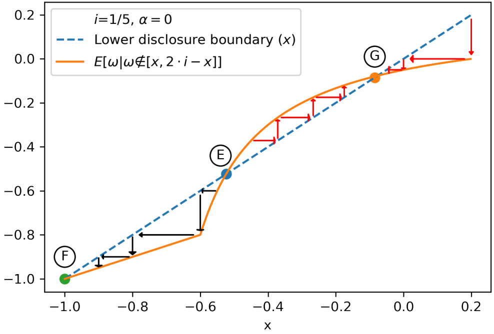
3. Full disclosure is belief-stable

Belief-Stable Equilibria



Prop.4

1. Expansive equilibrium is not belief-stable;
2. Guarded equilibrium is belief-stable when $|i| \neq 1/4$;
3. Full disclosure is belief-stable when $i \neq 0$.

Extent of Belief-Stability

Def.2

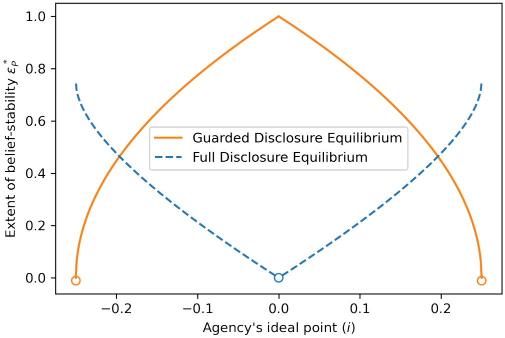
ε_j^* the **extent of belief-stability of** (σ, μ) **for player j** when it is the largest value $\varepsilon > 0$ such that, for every μ_j^ε that satisfies $|\mu_j^\varepsilon(y) - \mu_j(y)| < \varepsilon$, condition $|\hat{\mu_j^\varepsilon}(y) - \mu_j(y)| \leq |\mu_j^\varepsilon(y) - \mu_j(y)|$ is satisfied for all decision nodes y assigned to j.

Extent of Belief-Stability

Prop.5

As ex-ante preference divergence ($|i|$) between actors decreases,

1. the extent of belief stability of the full disclosure equilibrium decreases; and
2. the extent of belief stability of the guarded equilibrium increases.



Road Map

General Model: Actors and Timing

Two players: the Agency (it) and the Policymaker (she).

1	Nature determines state of the world $\omega \in \Omega$: Ω is compact and $conv(\Omega) = [\underline{\Omega}, \overline{\Omega}]$	$\omega \sim F(\cdot)$ such that $\int_{\underline{\Omega}}^{\overline{\Omega}} x \cdot f(x) dx = 0$
2	Agency observes ω	ω
3	Agency chooses message (m) to send to Policymaker	$m \in \{\omega, \varnothing\}$
4	Policymaker observes m and chooses policy (p) to implement	$\mathrm{p} \in \mathbb{R}$

$$u_P(p) = -(p-\omega)^2, \quad u_A(p) = -(p - \alpha \cdot \omega + (1-\alpha) \cdot i)^2$$

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$$u_P(p) = -(p - \omega)^2, \quad u_A(p) = -(p - 0 \cdot \omega + (1 - 0) \cdot i)^2$$

General Model: Equilibria Characterization

Prop.6

In all equilibria

$$p^* = \begin{cases} m \text{ if } \; m \neq \varnothing, \\ x^* \text{ if } \; m = \varnothing \end{cases} \quad ; \quad m^*(\omega) = \begin{cases} \omega \text{ if } \; \omega \in [i - \sqrt{(i - x^*)^2}, i + \sqrt{(i - x^*)^2}], \\ \varnothing \quad \textit{else}, \end{cases}$$

where $x^* \equiv E[\omega | m^*(\omega) = \varnothing]$.

Full Disclosure Equilibrium Uniqueness

Prop.7

There exists an interval $I^* \subseteq (\underline{\Omega}/2, \overline{\Omega}/2)$ such that, for $i \notin I^*$, the unique equilibrium is full disclosure, and for $i \in I^*$, there **exist** multiple equilibria, including those with partial disclosure.

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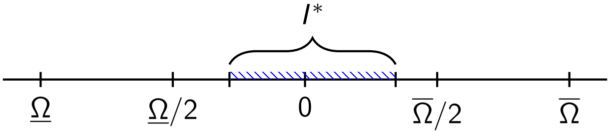

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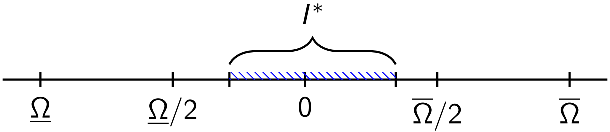

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$\Rightarrow$ **Corollary 2.** When sender's and receiver's ex-ante preference are sufficiently aligned $\Rightarrow$ there exists equilibria with partial disclosure. When sender's and receiver's ex-ante preference are sufficiently misaligned $\Rightarrow$ FDE is unique equilibrium in the game.

Multiple Equilibria

Let X^* denote the set of all equilibrium policies selected by the Policymaker absent disclosure:

$$X^* \equiv \{x^* : x^* = E[\omega | m^*(\omega) = \varnothing]\}.$$

Order the elements of the set X^* such that when $s > t$, $|x_s^*| > |x_t^*| : X^* = \{x_1^*, x_2^*, ...\}$.

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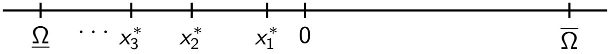
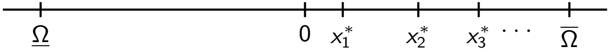
Stylized image for some $i \geq 0$:



Stylized image for some $i \leq 0$:



Multiple Equilibria: Nestedness

Prop.8

All equilibrium disclosure intervals are nested:

$$\forall k > j,\ [i - \sqrt{(i - x_j^*)^2}, i + \sqrt{(i - x_j^*)^2}] \subset [i - \sqrt{(i - x_k^*)^2}, i + \sqrt{(i - x_k^*)^2}].$$

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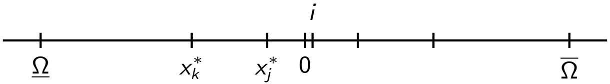

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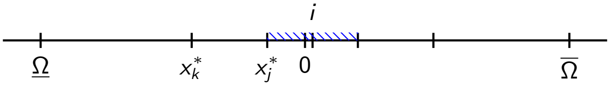

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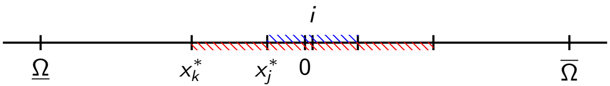


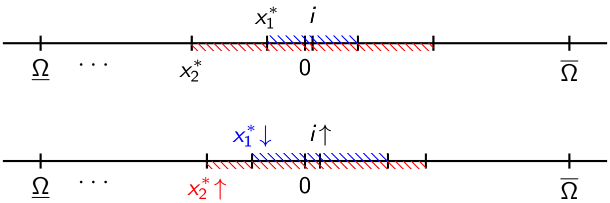
Effect of Preferences Divergence ($|i|$) on Equilibrium Disclosure

Prop.9

The Agency's equilibrium disclosure

1. increases in divergence between the Agency's and the Policymaker's ex-ante preferences, $|i|$, in equilibria with odd-indexed policies absent disclosure;
2. decreases in divergence between the Agency's and the Policymaker's ex-ante preferences, $|i|$, in equilibria with even-indexed policies absent disclosure.

Stylized image for some $i \geq 0$:



General Model: Belief Stability

Prop.10

Equilibria with odd-indexed policies absent disclosure are belief-stable. Equilibria with even-indexed policies absent disclosure are not belief-stable.

General Model: Belief Stability

Prop.10

Equilibria with odd-indexed policies absent disclosure are belief-stable. Equilibria with even-indexed policies absent disclosure are not belief-stable.

$\Rightarrow$ **Corollary 2.** Equilibria are belief-stable $\Leftrightarrow$ equilibrium communication **improves** in preference divergence. Equilibria are not belief-stable $\Leftrightarrow$ equilibrium communication **worsens** in preference divergence.

General Model: Some Results

1. There is interval bounded away from bounds of support outside which $\rightarrow$ unique FDE.
2. Inside this interval multiple SE exist, including those with partial disclosure.
3. Partial disclosure SE alternate in their comp. statics wrt ex-ante preference divergence.
4. Only SE where communication **improves** in ex-ante pref. divergence are belief-stable.

Agency's state dependence

Road Map

1. Introduction
2. Model
3. Generalization
4. Agency's Vagueness
5. Summary

Agency's Vagueness

Let the Agency choose **precision** of its communication.

For all realizations $\omega \in \Omega$, Agency can send a message $m_S(T)$ for all T such that $\omega \in T \subseteq \Omega$.

Message $m_S(\omega)$ is most precise. Message $m_S(\Omega)$ is least precise.

After the Policymaker observes $m_S(\cdot)$, she chooses policy p.

Agency's Vagueness: Equilibrium Outcome

Let $i \geq 0$. The following can be supported in SE:

The Agency:

- sends message $m_S([x, \overline{\Omega}])$ when $\omega \in [x, \overline{\Omega}]$ and $x : \int_x^{\overline{\Omega}} y \, f_\omega(y) dy = i$;
- discloses state and sends message $m_S(\omega)$ otherwise.

The Policymaker:

- implements policy $p = i$ when observes $m_S([x, \overline{\Omega}])$;
- implements policy $p = \omega$ otherwise.

Agency's Vagueness: Uniform Distribution

Let $\omega \sim U[-1, 1]$, and $i \geq 0$.

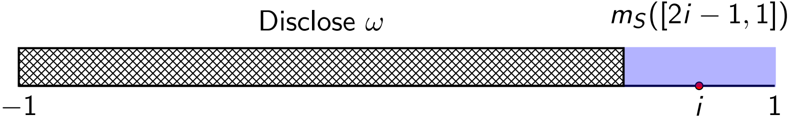
The Agency:

- sends message $m_S([2 \cdot i - 1, 1])$ when $\omega \in [2 \cdot i - 1, 1]$;
- discloses state and sends message $m_S(\omega)$ otherwise.

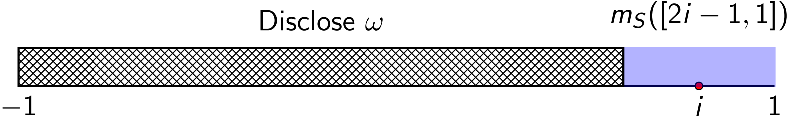
The Policymaker:

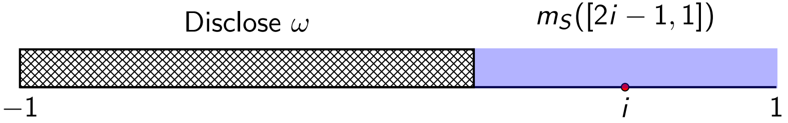
- implements policy $p = i$ when observes $m_S([2 \cdot i - 1, 1])$;
- implements policy $p = \omega$ otherwise.

Agency's Vagueness: Disclosure



Agency's Vagueness: Disclosure





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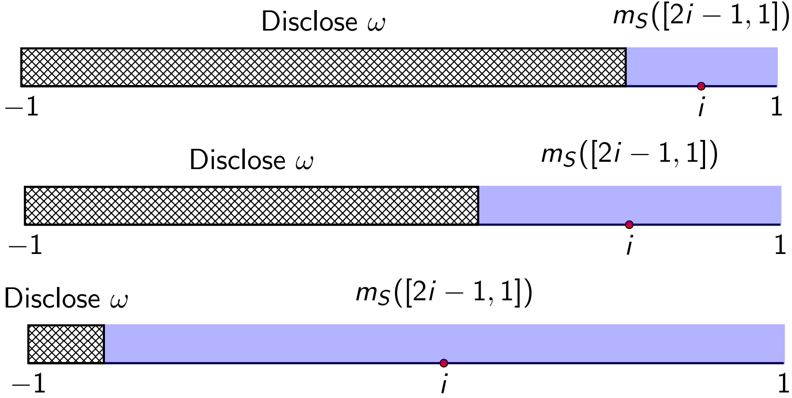

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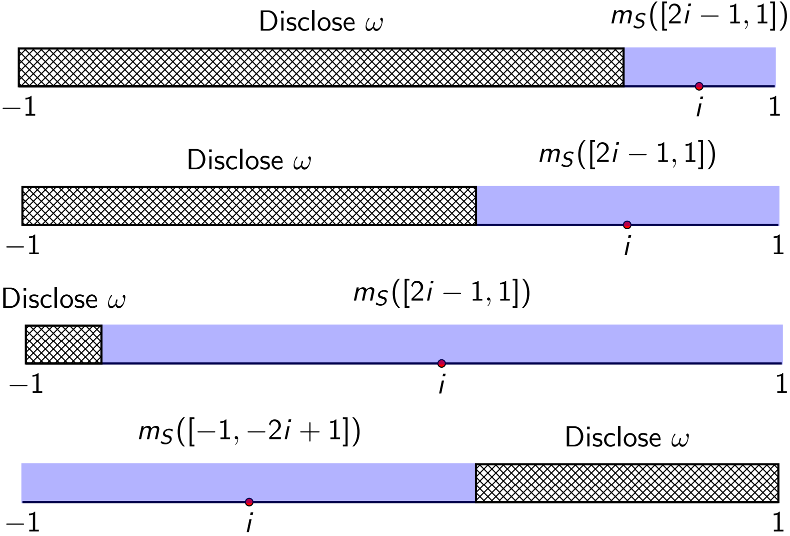
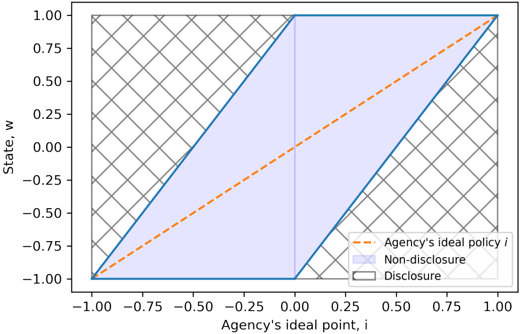
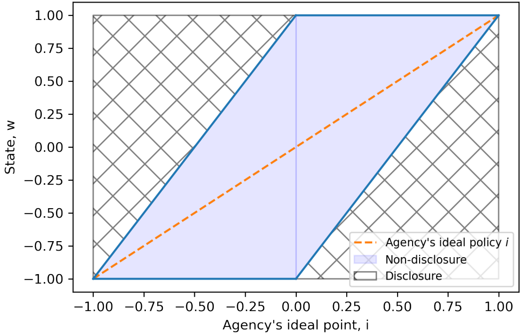


Agency's Vagueness: Generalized Disclosure



Agency's Vagueness: Generalized Disclosure



Prop.11

Communication improves in ex-ante preference divergence ($|i|$) between actors.

Road Map

1. Introduction
2. Model
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5. Summary

- Discrete Example
- Disclosure Reward
- Agency's State-Dependence
- Extension 1: Policymaker's Bias
- Extension 2: Partial Verifiability
- Extension 3: Optimal Choice of Agency

Summary

A model of **verifiable communication** between a Policymaker and a Bureaucratic Agency:

1. When Agency and Policymaker's ex-ante preferences are sufficiently aligned, unraveling may stop before being complete;
2. Greater ex-ante preference divergence can encourage Agency to disclose more information;
3. Equilibria where communication improves with preference divergence are belief-stable.

Road Map

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Thank you!

Example: Actors and Timing

There are two strategic players: the Agency (it) and the Policymaker (she).

1	Nature determines the state of the world (ω), all states equally likely	$\omega \in \{-A, -B, 0, B, A\}$
2	The Agency observes the state (ω)	ω
3	The Agency chooses which message (m) to send to the Policymaker	$m \in \{\omega, \varnothing\}$
4	The Policymaker observes message (m) and chooses policy (p) to implement	$\mathrm{p} \in \mathbb{R}$

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Example: Payoffs and Solution Concept

- Agency:
$$u_A(p) = -(p - i)^2.$$
- Policymaker:
$$u_P(p) = -(p - \omega)^2.$$

Solution Concept: Sequential Equilibrium.

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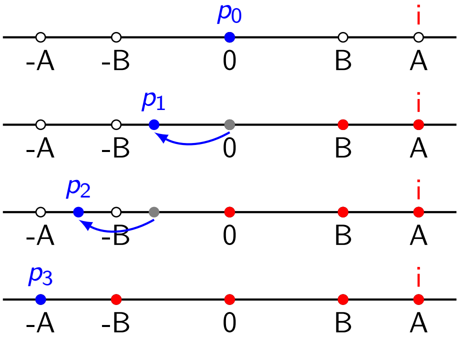
Revelation Dynamics: Full Disclosure

- Let $i = A$
- The only equilibrium is one with full revelation



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Revelation Dynamics: Partial Disclosure

- Let $i = B$, $i \leq 3 \cdot A/7$
- When Policymaker observes $m = \omega$

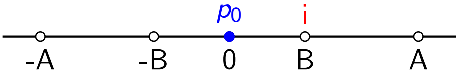
$$p = \omega$$

Revelation Dynamics: Partial Disclosure

- Let $i = B$, $i \leq 3 \cdot A/7$
- When Policymaker observes $m = \omega$

$$p = \omega$$

- Suppose $m = \varnothing$ is not informative; then $p(\varnothing) = 0$



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- Let $i = B$, $i \leq 3 \cdot A/7$
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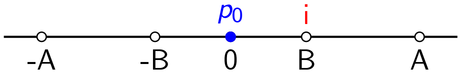
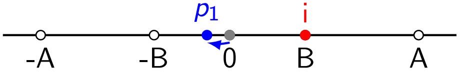


$\rightarrow$ The Agency discloses B; but then $p(\varnothing) = p_1 \rightarrow$ disclose $\omega = 0$



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- Let $i = B$, $i \leq 3 \cdot A/7$
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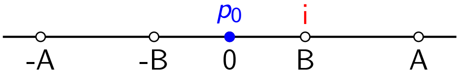
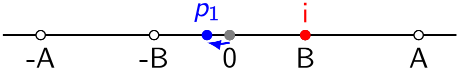
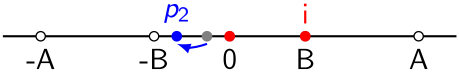


→ The Agency discloses B; but then $p(\varnothing) = p_1$ → disclose $\omega = 0$



→ Policymaker implements $p(\varnothing) = p_2$

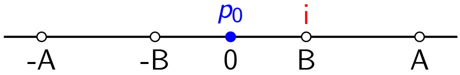


Revelation Dynamics: Partial Disclosure

- Let $i = B$, $i \leq 3 \cdot A/7$
- When Policymaker observes $m = \omega$

$$p = \omega$$

- Suppose $m = \varnothing$ is not informative; then $p(\varnothing) = 0$



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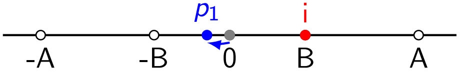

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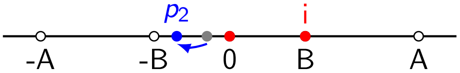
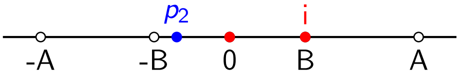


→ Equilibrium



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Introducing Disclosure Reward, R

The Agency receives a lump sum gain R when it shares information

$$u_A(p) = \begin{cases} -(p-i)^2 + R, & m \neq \varnothing; \\ -(x-i)^2, & m = \varnothing. \end{cases}$$

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Model with Reward: Equilibrium Characterization

The Policymaker implements $p^*(m) = m$, when she observes $m = \omega$.

She chooses a policy x^* otherwise.

The Agency discloses the state ω when $\omega \in [i - \sqrt{(i-x)^2 + R}, i + \sqrt{(i-x)^2 + R}]$, and conceals information otherwise.

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Model with Reward: Effects on Communication

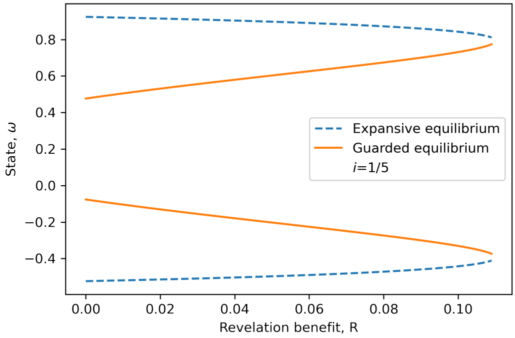
Lemma. Holding fixed Policymaker's choice absent disclosure, informativeness of communication between actors improves in R.

Model with Reward: Effects on Communication

Lemma. Holding fixed Policymaker's choice absent disclosure, informativeness of communication between actors improves in R.

Proposition. Communication

- improves in R in guarded equilibrium;
- deteriorates in R in expansive equilibrium;



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Sequential Rationality of Reward Scheme

Assume the Policymaker can choose whether to award R to the Agency.

- In the unique payoff-dominant (for the Policymaker) equilibrium, the Policymaker never awards less than R for disclosure;
- In the unique payoff-dominant (for the Policymaker) equilibrium, the Policymaker always awards disclosure and never awards lack thereof.

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Introducing Policymaker's Bias, b

The Policymaker wishes to implement policies co-aligned with her bias b

$$u_P(p) = -(p - \omega - b)^2.$$

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Model with Policymaker's bias: Equilibrium Characterization

The Policymaker implements $p^*(m) = m + b$, when she observes $m \neq \varnothing$.

She chooses a policy $E[\omega | m = \varnothing] + b$ otherwise.

The Agency discloses the state ω when

$$\omega \in \begin{cases} [2 \cdot (i - b) - x, x] \cap [-1, 1], \; i - b < 0; \\ [x, 2 \cdot (i - b) - x] \cap [-1, 1], \; i - b > 0, \end{cases}$$

and conceals information otherwise.

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Model with Policymaker's bias: Preferences Divergence

Let us denote $d \equiv |i - b|$. d represents ex-ante preference divergence between the Policymaker and the Agency.

The Agency discloses the state ω when

$$\omega \in \begin{cases} [-2 \cdot d - x, x] \cap [-1, 1], & i - b < 0; \\ [x, 2 \cdot d - x] \cap [-1, 1], & i - b > 0, \end{cases}$$

and conceals information otherwise.

Back to Road Map

Model with Policymaker's Bias: Equilibria

There can be a *maximum* of three equilibria

1. Full disclosure equilibrium;
2. Partial disclosure equilibria:
   - *Guarded* equilibrium;
   - *Expansive* equilibrium.

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Model with Policymaker's Bias: Comparative Statics

Communication between actors

1. not affected by ex-ante preference divergence $|d|$ in FDE;
2. improves in ex-ante divergence $|d|$ in guarded equilibrium;
3. deteriorate in ex-ante divergence $|d|$ in expansive equilibrium.

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Model with Policymaker's Bias: Belief Stability

1. FDE is belief stable when $d \neq 0$ and not belief stable otherwise;
2. Guarded equilibrium is belief stable;
3. Expansive equilibrium is not belief stable.

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Agency's Competence: Game Modification

Companion paper: DHL 2024

①	Nature determines the state of the world (ω)	$\omega \sim N(0,1)$
②	The Agency of known competence (θ) observes private signal (s) about the state	$s = \omega + \varepsilon$, $\varepsilon \sim N(0, 1/\theta)$
③	The Agency chooses which message (m) to send to the Policymaker	$m \in \{s, \varnothing\}$
④	The Policymaker observes message (m) and chooses policy (a) to implement	$a \in \mathbb{R}$

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Agency's Competence: Agency's Disclosure Strategy

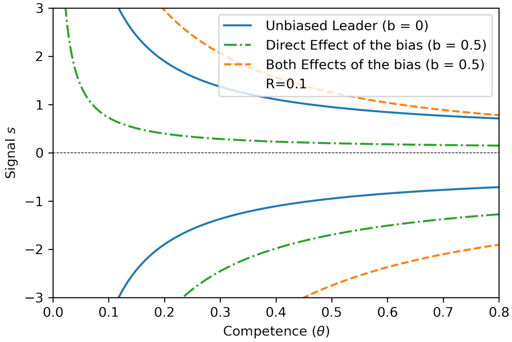
Policymaker implements policy $a = \frac{m}{1+1/\theta} + \frac{b}{2}$, when observes informative message m.

Agency of competence θ discloses its signal to the Policymaker if and only if

$$s \geq -\frac{\sqrt{R+d}\cdot(1+\theta)}{\theta} - b,$$

and

$$s \leq \frac{\sqrt{R+d}\cdot(1+\theta)}{\theta} - b.$$



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Agency's State-Dependence

- Agency:

$$u_A(p) = -(p - (1-\alpha) \cdot i - \alpha \cdot \omega)^2$$

- Policymaker:

$$u_P(p) = -(p - \omega)^2$$

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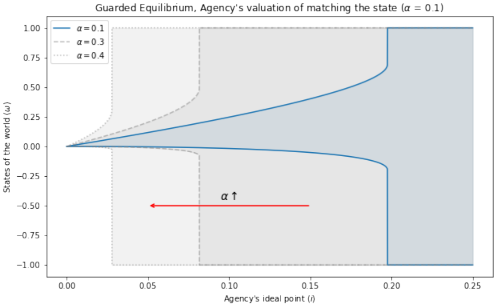
Agency's State-Dependence

$$u_A(p) = -(p - (1-\alpha) \cdot i - \alpha \cdot \omega)^2$$



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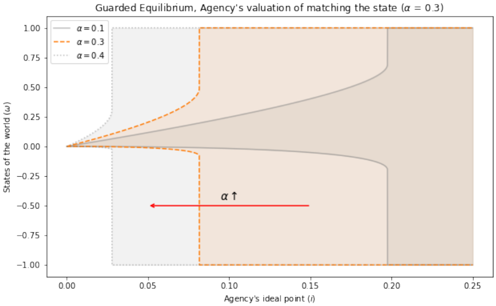
Agency's State-Dependence

$$u_A(p) = -(p - (1-\alpha) \cdot i - \alpha \cdot \omega)^2$$



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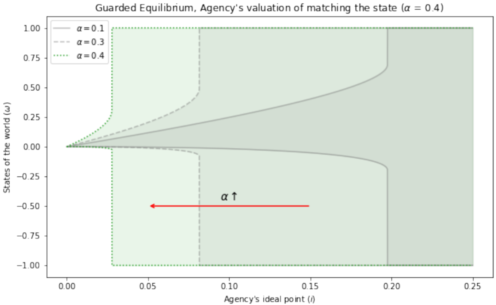
Agency's State-Dependence

$$u_A(p) = -(p - (1 - \alpha) \cdot i - \alpha \cdot \omega)^2$$



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Generalization of Agency's State-Dependence: Summary

$$u_A(p) = -(p - (1-\alpha)\cdot i - \alpha \cdot \omega)^2$$

1. Unique equilibrium is FDE when $\alpha > 1/2$.
2. When $\alpha \leq 1/2$, FDE unique when $i \notin I^* \subseteq ([\frac{\underline{\Omega}\cdot(1-2\alpha)}{2\cdot(1-\alpha)}, \frac{\overline{\Omega}\cdot(1-2\alpha)}{2\cdot(1-\alpha)}])$, not unique if $i \in I^*$.
3. Equilibrium disclosure intervals are nested.
4. Equilibrium disclosure alternates in comparative statics wrt $|i|$.
5. Only those eq where communication improves in ex-ante divergence are belief-stable.

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Partial Verifiability

- Assume the Agency can distort information observed sending message $m \in [-1, 1] \cup \{\varnothing\}$.
- With probability q the Policymaker can 'verify' this information – she observes signal *True* when $m = \omega$ and signal *False* otherwise.
- With probability $1 - q$, the Policymaker cannot verify the Agency's message.

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- When $q = 1$, all messages are verifiable $\rightarrow$ *hard information.*
- When $q = 0$, messages never verifiable $\rightarrow$ *cheap talk* (*with sender's state-independent preferences).

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Partial Verifiability: Equilibrium Characterization

Agency:

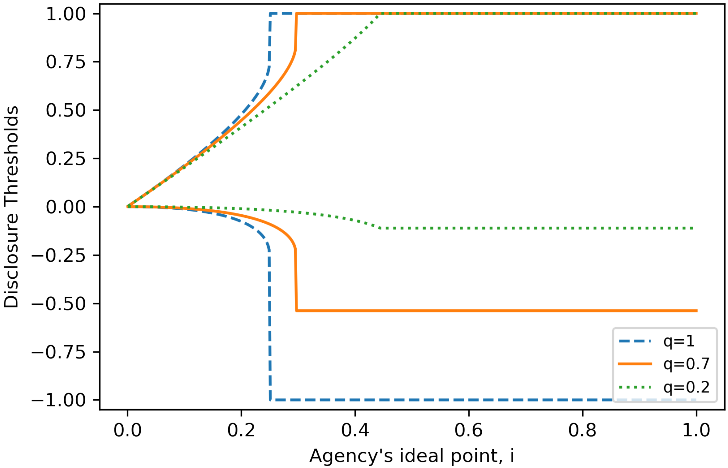
- Discloses state when $\omega \in [y, 2 \cdot i - y]$;
- Distorts information to $U[y, 2 \cdot i - y]$ otherwise.

Policymaker:

- Chooses policy $p = \omega$ when verifies message to be *True*;
- Chooses policy $p = x$ when verifies message to be *False*;
- Chooses policy $p = z$ when not able to verifies message.

$x = \frac{i \cdot (y-i)}{1-i+y}$, $z = m \cdot (i - y) + x \cdot (1 - i + y)$, $y : y = q \cdot \frac{i \cdot (y-i)}{1-i+y}$. Back to Road Map

Partial Verifiability: Disclosure Intervals



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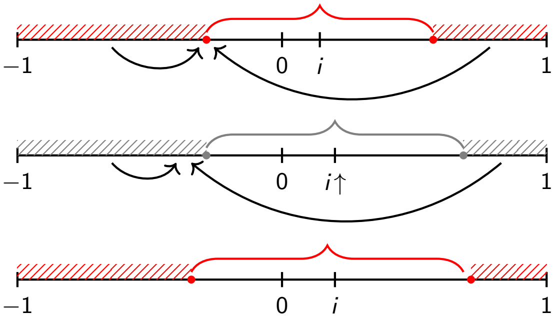
Intuition Behind Comparative Statics: Guarded

Stylized images:



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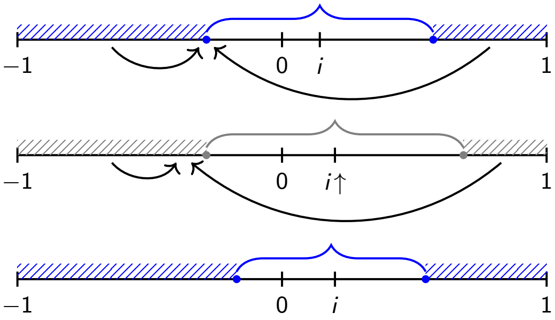
Intuition Behind Comparative Statics: Expansive

Stylized images



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More Stylized Examples

- Consumer Financial Protection Bureau
  - access to information that could be used contrary to its mission $\rightarrow$ re business regulations;
  - incentives to conceal.
- Internal Revenue Service
  - preferences for uniform enforcement;
  - private information re non-compliance statistical likelihood;
  - incentives to conceal from opposed policymaker.
- Central Intelligence Agency (Bay of Pigs)
  - information re conditional mission success;
  - incentives to conceal from more risk averse policymakers.
- USSR Ministry of Energy and Electrification (Chernobyl)
  - private information re nature of disaster(s);
  - incentives to limit information about disaster extent to avoid repercussions.

Optimal Choice of Agency

Assume Policymaker (receiver) has discretion over selection of Advisor (sender).

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- "Ally principle" $\rightarrow$ principals delegate to co-aligned agents (Bendor and Meirowitz, 2004)

Optimal Choice of Agency

Assume Policymaker (receiver) has discretion over selection of Advisor (sender).

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This paper:

- $\exists$ eq. with partial disclosure where comm. improves in (ex-ante) divergence (Prop.9);
- these eq. are belief stable (Prop.10);
- when preferences sufficiently misaligned $\rightarrow$ FDE is unique (Prop.7).

$\Rightarrow$ Receiver may prefer more (ex-ante) misaligned Sender.

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