Non-monotonic Disclosure in Policy Advice

Anna Denisenko (University of Chicago), Catherine Hafer (NYU), and Dimitri Landa (NYU)

SPSA – 2025

Motivation

Substantive setting of special interest: strategic communications between policymakers and bureaucratic agencies

Motivation

Substantive setting of special interest: strategic communications between policymakers and bureaucratic agencies

- Policymaker-bureaucrats communications often occur under **verifiable information**
  - both highly and weakly institutionalized

Motivation

Substantive setting of special interest: strategic communications between policymakers and bureaucratic agencies

- Policymaker-bureaucrats communications often occur under **verifiable information**
  - both highly and weakly institutionalized
- Policymakers (elected officials) and bureaucrats preferences are frequently misaligned
  - bureaucrats less affected by short-term volatility than policymakers

Motivation

Substantive setting of special interest: strategic communications between policymakers and bureaucratic agencies

- Policymaker-bureaucrats communications often occur under **verifiable information**
  - both highly and weakly institutionalized
- Policymakers (elected officials) and bureaucrats preferences are frequently misaligned
  - bureaucrats less affected by short-term volatility than policymakers
  - preference misalignment under verifiable information $\rightarrow$ full disclosure (Milgrom, 1981, Grossman, 1981)

Motivation

Substantive setting of special interest: strategic communications between policymakers and bureaucratic agencies

- Policymaker-bureaucrats communications often occur under **verifiable information**
  - both highly and weakly institutionalized
- Policymakers (elected officials) and bureaucrats preferences are frequently misaligned
  - bureaucrats less affected by short-term volatility than policymakers
  - preference misalignment under verifiable information $\rightarrow$ full disclosure (Milgrom, 1981, Grossman, 1981)

$\rightarrow$ When sender's most-preferred action is close to the expected value of the state, unraveling **can** stop before being complete

Motivation

Substantive setting of special interest: strategic communications between policymakers and bureaucratic agencies

---

- Policymaker-bureaucrats communications often occur under **verifiable information**
  - both highly and weakly institutionalized
- Policymakers (elected officials) and bureaucrats preferences are frequently misaligned
  - bureaucrats less affected by short-term volatility than policymakers
  - preference misalignment under verifiable information $\rightarrow$ full disclosure (Milgrom, 1981, Grossman, 1981)

$\rightarrow$ When sender's most-preferred action is close to the expected value of the state, unraveling **can** stop before being complete

---

- Higher preference misalignment
  $\rightarrow$ less informative communication between receivers and senders / Policymakers and Bureaucratic Agencies (borne out in the classic cheap-talk models)

Motivation

Substantive setting of special interest: strategic communications between policymakers and bureaucratic agencies

---

- Policymaker-bureaucrats communications often occur under **verifiable information**
  - both highly and weakly institutionalized
- Policymakers (elected officials) and bureaucrats preferences are frequently misaligned
  - bureaucrats less affected by short-term volatility than policymakers
  - preference misalignment under verifiable information $\rightarrow$ full disclosure (Milgrom, 1981, Grossman, 1981)

$\rightarrow$ When sender's most-preferred action is close to the expected value of the state, unraveling **can** stop before being complete

---

- Higher preference misalignment
  - $\rightarrow$ less informative communication between receivers and senders / Policymakers and Bureaucratic Agencies (borne out in the classic cheap-talk models)

$\rightarrow$ Higher degree of preference misalignment can lead to **more informative** communication

Related Literature

- Full disclosure in games of verifiable advice:
  - seminal papers by **Milgrom** (1981), **Grossman** (1981)
  - sender's preferences more state-dependent than receiver's **Seidmann and Winter** (1997)
  - for review see **Milgrom** (2008)
- Partial disclosure in games of verifiable advice
  - uninformed sender **Dye** (1985), **Jung and Kwon** (1988)
  - uncertainty about sender's preferences **Wolinsky** (2003), **Dziuda** (2011)
  - multidimensional advice **Callander, Lambert and Matouschek** (2021)
- 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)
  - except **Callander** (2008)

Road Map

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

Actors and Timing

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

Actors and Timing

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

(1)	Nature determines the state of the world (ω)	$\omega \sim U[-1, 1]$

Actors and Timing

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

(1)	Nature determines the state of the world (ω)	$\omega \sim U[-1, 1]$
(2)	The Agency observes the state (ω)	ω

Actors and Timing

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

(1)	Nature determines the state of the world (ω)	$\omega \sim U[-1, 1]$
(2)	The Agency observes the state (ω)	ω
(3)	The Agency chooses which message (m) to send to the Policymaker	$m(\omega) \in \{\omega, \varnothing\}$

Actors and Timing

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

1	Nature determines the state of the world (ω)	$\omega \sim U[-1, 1]$
2	The Agency observes the state (ω)	ω
3	The Agency chooses which message (m) to send to the Policymaker	$m(\omega) \in \{\omega, \varnothing\}$
4	The Policymaker observes message (m) and chooses policy (p) to implement	$\mathrm{p(m)} \in \mathbb{R}$

Payoffs and Solution Concept

- Agency:

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

Payoffs and Solution Concept

- Agency:

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

we assume $i \geq 0$.

Payoffs and Solution Concept

- Agency:

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

  we assume $i \geq 0$.
- Policymaker:

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

Solution Concept: Sequential Equilibrium.

Road Map

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

Equilibrium Characterization

When Policymaker observes $m \neq \varnothing$, she implements $p^*(m = \omega) = \omega$.

Otherwise, the Policymaker chooses $p^*(\varnothing) = x^* \equiv E[\omega | m = \varnothing; m^*(\omega)]$.

Equilibrium Characterization

When Policymaker observes $m \neq \varnothing$, she implements $p^*(m = \omega) = \omega$.

Otherwise, the Policymaker chooses $p^*(\varnothing) = x^* \equiv E[\omega | m = \varnothing; m^*(\omega)]$.

The Agency discloses the state when $E[u_A(p^*(m))|m = \omega] > E[u_A(p^*(m))|m = \varnothing] \Rightarrow$

Equilibrium Characterization

When Policymaker observes $m \neq \varnothing$, she implements $p^*(m = \omega) = \omega$.

Otherwise, the Policymaker chooses $p^*(\varnothing) = x^* \equiv E[\omega | m = \varnothing; m^*(\omega)]$.

The Agency discloses the state when $E[u_A(p^*(m))|m = \omega] > E[u_A(p^*(m))|m = \varnothing] \Rightarrow$ The Agency discloses states when

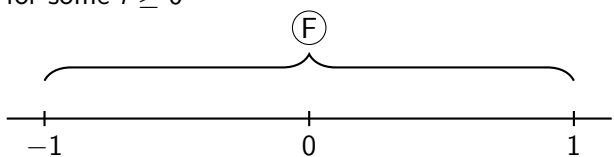
$\omega \in [x^*, 2 \cdot i - x^*] \cap [-1, 1]$ and conceals otherwise.

Equilibrium Outcomes

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

1. **Full disclosure strategy**;

Disclosure intervals for some $i \geq 0$

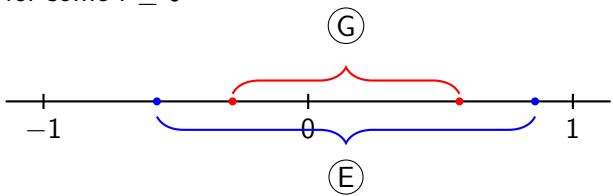


Equilibrium Outcomes

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

1. Full disclosure strategy (F)
2. **Partial disclosure strategy:**
   - **Guarded disclosure (G);**
   - **Expansive disclosure (E).**

Disclosure intervals for some $i \geq 0$

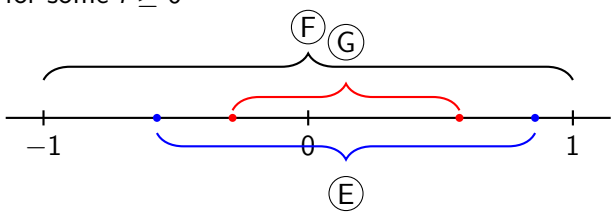


Equilibrium Outcomes

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

1. Full disclosure strategy;
2. Partial disclosure strategy:
   - Guarded disclosure;
   - Expansive disclosure.

Disclosure intervals for some $i \geq 0$



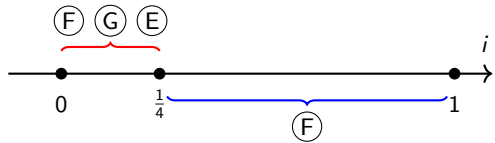
Road Map

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

Effects of A's Policy Preference (i) on Equilibria

Prop.1.

1. If $i \in [0, 1/4]$, there are three equilibria: full disclosure, guarded disclosure, and expansive disclosure;
2. If $i > 1/4$, there is a unique equilibrium – full disclosure equilibrium.



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

The Agency discloses state ω to the Policymaker when

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

and conceals information otherwise.

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

The Agency discloses state ω to the Policymaker when

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

and conceals information otherwise.

The departure of the Agency's preferences from zero has direct

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

The Agency discloses state ω to the Policymaker when

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

and conceals information otherwise.

The departure of the Agency's preferences from zero has direct and indirect effects on disclosure.

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

The Agency discloses state ω to the Policymaker when

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

and conceals information otherwise.

The departure of the Agency's preferences from zero has direct and indirect effects on disclosure.

- Direct effect always (*weakly*) improves communication between the Agency and the Policymaker
- Indirect effect
  - $\rightarrow$ Improves communication in the **guarded** equilibrium

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

The Agency discloses state ω to the Policymaker when

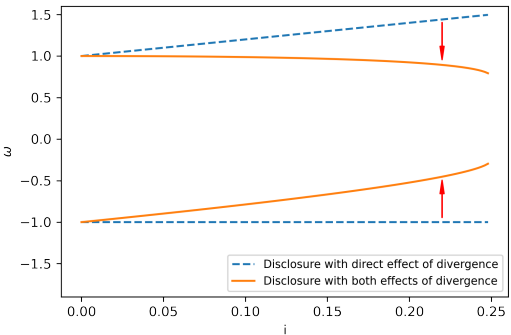
$$\omega \in [x^*, 2 \cdot i - x^*] \cap [-1, 1],$$

and conceals information otherwise.

The departure of the Agency's preferences from zero has direct and indirect effects on disclosure.

- Direct effect always (*weakly*) improves communication between the Agency and the Policymaker
- Indirect effect
  - $\rightarrow$ Improves communication in the **guarded** equilibrium
  - $\rightarrow$ Reduces communication in the **expansive** equilibrium

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

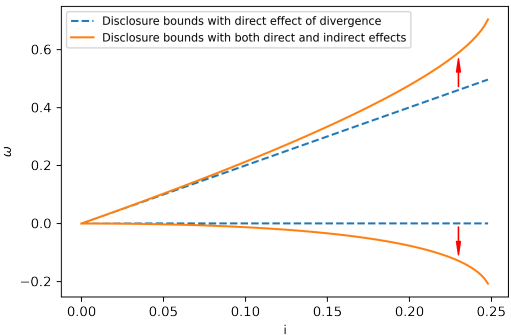


Prop.2.

Communication between actors

$\rightarrow$ *deteriorates* in i in expansive equilibrium;

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



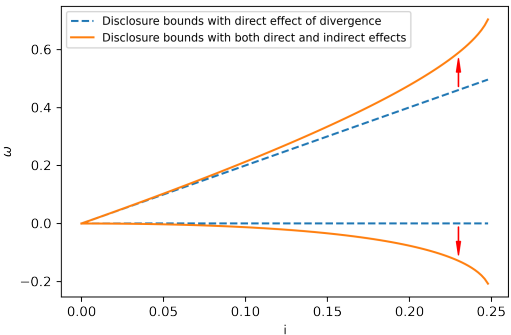
Prop.2.

Communication between actors

$\rightarrow$ *deteriorate* in i in expansive equilibrium;

$\rightarrow$ *improves* in i in guarded equilibrium;

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



Prop.2.

Communication between actors

→ *deteriorate* in i in expansive equilibrium;

→ *improves* in i in guarded equilibrium;

→ *not affected* by i in the equilibrium with full disclosure.

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

Parameter i measures A's policy preference.
Parameter i also represent **ex-ante** divergence between actors' preferences.

Prop.2.

Communication between actors

- $\rightarrow$ *deteriorate* in i in expansive equilibrium;
- $\rightarrow$ *improves* in i in guarded equilibrium;
- $\rightarrow$ *not affected* by i in the equilibrium with full disclosure.

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

Parameter i measures A's policy preference.
Parameter i also represent **ex-ante** divergence between actors' preferences.

Prop.2.

Communication between actors

- $\rightarrow$ *deteriorate* in *preferences divergence* in expansive equilibrium;
- $\rightarrow$ *improves* in *preferences divergence* in guarded equilibrium;
- $\rightarrow$ *not affected* by *preferences divergence* in the equilibrium with full disclosure.

Road Map

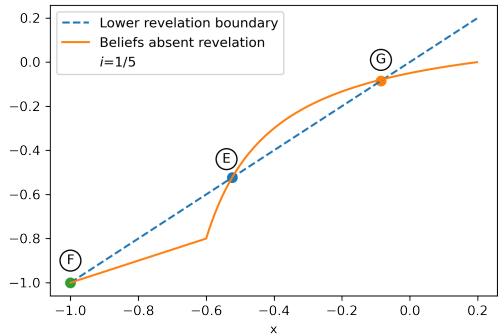
1. Introduction
2. Model
   - Game Structure
   - Equilibrium Characterization
   - Effects of Agency's Policy Preferences
   - Belief-Stable Equilibria
3. Generalization
4. Summary

Belief-Stable Equilibria

When $i \geq 0$, the lower bound of the Agency's disclosure must coincide with Policymaker's belief about state absent disclosure.

Three disclosure strs that can be supported in equilibrium:

1. Full disclosure;
2. Guarded disclosure;
3. Expansive disclosure.

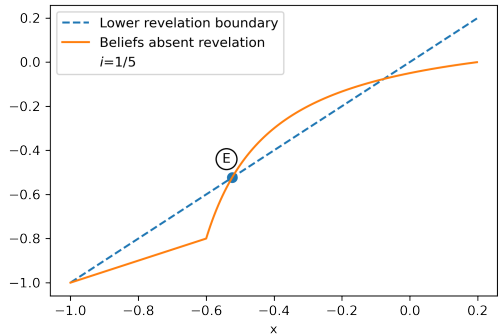


Belief-Stable Equilibria

When $i \geq 0$, the lower bound of the Agency's disclosure must coincide with Policymaker's belief about state absent disclosure.

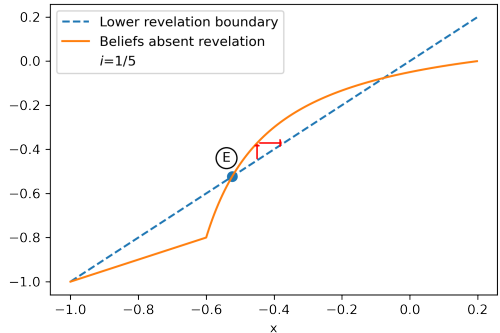
Three disclosure strs that can be supported in equilibrium:

1. Full disclosure;
2. Guarded disclosure;
3. **Expansive disclosure.**



Belief-Stable Equilibria

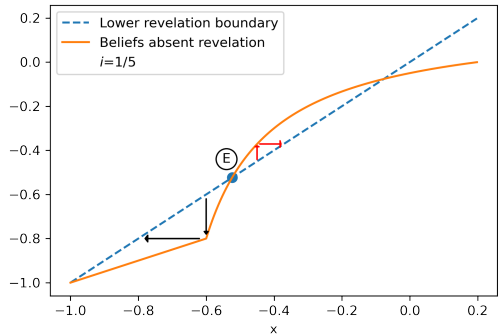
Imagine, there is slight perturbation to the Policymaker's beliefs in **expansive** equilibrium.



Belief-Stable Equilibria

Imagine, there is slight perturbation to the Policymaker's beliefs in **expansive** equilibrium.

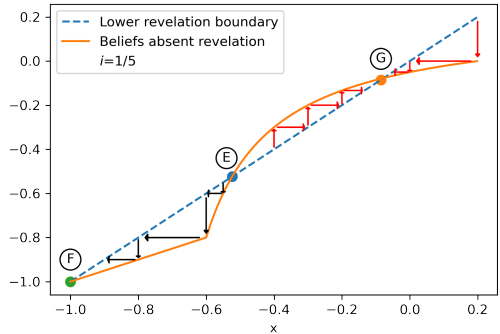
Regardless of the direction of perturbation, this equilibrium will 'collapse.'



Belief-Stable Equilibria

Def.1

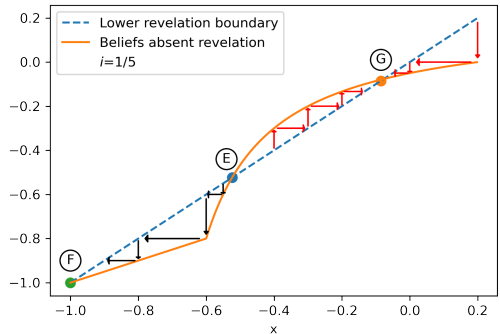
Consider a sequential equilibrium (σ, μ) and a perturbed system of beliefs μ_i^ε. Let σ^ε be sequentially rational given the beliefs $(\mu_i^\varepsilon, \mu_{-i})$, and let $\hat{\mu}_i^\varepsilon$ be consistent with σ^ε. If there exists an $\varepsilon > 0$ such that, for every μ_i^ε that satisfies $|\mu_i^\varepsilon(x) - \mu_i(x)| < \varepsilon$, condition $|\hat{\mu_i^\varepsilon}(x) - \mu_i(x)| \leq |\mu_i^\varepsilon(x) - \mu_i(x)|$ is satisfied for all decision nodes x assigned to i, then we say that equilibrium (σ, μ) is **belief-stable for player i**. If equilibrium (σ, μ) is belief-stable for every player i, then we say it is **belief-stable**.



Belief-Stable Equilibria

Def.1

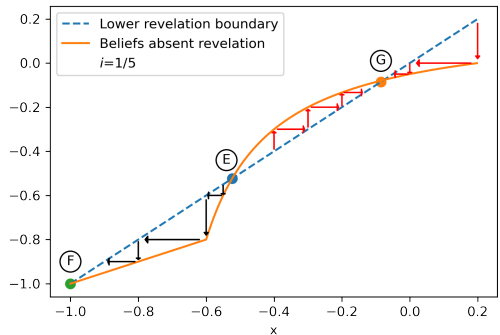
An equilibrium (σ, μ) is **belief-stable for player** i if small perturbations in i's beliefs (μ_i^ε) lead to consistent updates $(\hat{\mu}_i^\varepsilon)$ that are closer to the original beliefs (μ_i), for all decision nodes assigned to i. If this holds for every player, the equilibrium is **belief-stable**.



Belief-Stable Equilibria

Prop.3.

1. Full disclosure is belief-stable when $i > 0$;
2. Guarded equilibrium is always belief-stable;
3. Expansive equilibrium is never belief-stable.



Road Map

1. Introduction
2. Model
3. Summary

- Discrete Example
- Disclosure Reward
- Generalization
- Policymaker's bias
- Optimal Choice of Agency
- Perturbations to Agency's policy preferences **TBA**

Summary

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

1. When Sender's optimal policy is close to the mean of the distribution, unraveling can stop before being complete;
2. Higher ex-ante preference divergences can encourages the Agency to disclose more information;
3. Equilibria where communication deteriorate in preference divergence are not belief-stable.

Thank you!

Road Map

1. Introduction
2. Model
3. Generalization
4. Summary

General Model: Actors and Timing

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

1	Nature determines the state of the world ($\omega \in [\underline{\Omega}, \overline{\Omega}]$)	$\omega \sim F(\cdot)$ such that $\int_{\underline{\Omega}}^{\overline{\Omega}} x \cdot f(x)dx = 0$
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 ($p(\omega)$) to implement	$p \in \mathbb{R}$

General Model: Characterization

Prop. In all sequential equilibria in this game

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

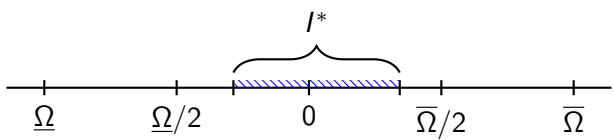
where $x^* \equiv E[\omega | m = \varnothing, m^*]$.

Full Disclosure: Uniqueness

Prop. 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.

Full Disclosure: Uniqueness

Prop. 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.



*stylized image

Multiple Equilibria

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

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

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

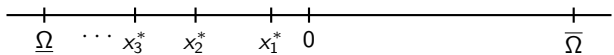
Multiple Equilibria

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

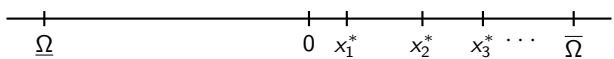
$$X^* \equiv \{x^* : x^* = E[\omega | m = \varnothing, m^*]\}.$$

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

Stylized image for some $i \geq 0$:



Stylized image for some $i \leq 0$:



Multiple Equilibria: Analysis

Prop. All equilibrium disclosure intervals are nested:

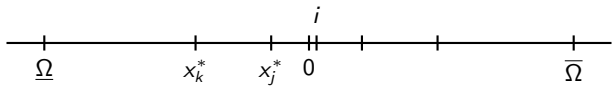
$$\forall k > j,\ [i - \sqrt{(i - x_j^*)^2}, i + \sqrt{(i - x_j^*)^2}] \subset [i - \sqrt{(i - x_k^*)^2}, i + \sqrt{(i - x_k^*)^2}].$$

Multiple Equilibria: Analysis

Prop. All equilibrium disclosure intervals are nested:

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

Stylized image for some $i \geq 0$, $k > j$:

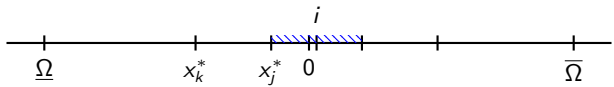


Multiple Equilibria: Analysis

Prop. All equilibrium disclosure intervals are nested:

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

Stylized image for some $i \geq 0$, $k > j$:

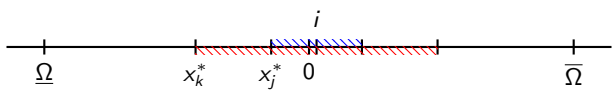


Multiple Equilibria: Analysis

Prop. All equilibrium disclosure intervals are nested:

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

Stylized image for some $i \geq 0$, $k > j$:



Multiple Equilibria: Comparative Statics

Prop. For all j, equilibrium policy selected absent disclosure x_j^*

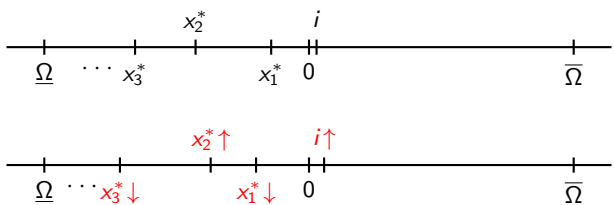
1. weakly decreases in i when $j = 2 \cdot k - 1 : k \in \mathbf{N}$,
2. weakly increases in i when $j = 2 \cdot k : k \in \mathbf{N}$.

Multiple Equilibria: Comparative Statics

Prop. For all j, equilibrium policy selected absent disclosure x_j^*

1. weakly decreases in i when $j = 2 \cdot k - 1 : k \in \mathbf{N}$,
2. weakly increases in i when $j = 2 \cdot k : k \in \mathbf{N}$.

Stylized image for some $i \geq 0$:



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

The Agency is disclosing state to the Policymaker when

$$\omega \in [i - \sqrt{(i - x^*)^2}, i + \sqrt{(i - x^*)^2}] \cap [-1, 1],$$

and conceals information otherwise.

The departure of the Agency's preferences from zero has direct and indirect effects on disclosure.

- Direct effect always (*weakly*) improves communication between the Agency and the Policymaker
- Indirect effect
  - $\rightarrow$ Improves communication in equilibria with **odd-indexed** policies absent disclosure
  - $\rightarrow$ Reduces communication in equilibria with **even-indexed** policies absent disclosure

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

Prop. The Agency's equilibrium disclosure

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

General Model: Belief Stability

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

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

Example: Actors and Timing

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

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	$\omega \in \{-A, -B, 0, B, A\}$

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

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	$m(\omega) \in \{\omega, \varnothing\}$

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	$m(\omega) \in \{\omega, \varnothing\}$
④	The Policymaker observes message (m) and chooses policy (p) to implement	$\mathrm{p(m)} \in \mathbb{R}$

Back to Road Map

Example: Payoffs and Solution Concept

- Agency:

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

Example: Payoffs and Solution Concept

- Agency:

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

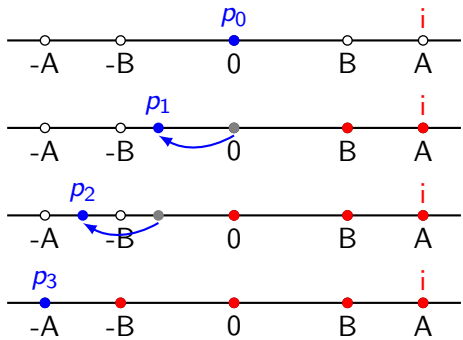
- Policymaker:

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

Solution Concept: Sequential Equilibrium. Back to Road Map

Revelation Dynamics: Full Disclosure

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



Back to Road Map

Revelation Dynamics: Partial Disclosure

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

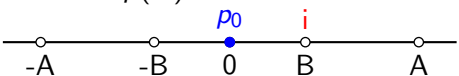
$$p = \omega$$

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 $p(\varnothing) = 0$

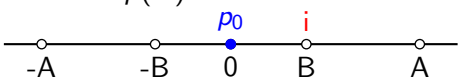


Revelation Dynamics: Partial Disclosure

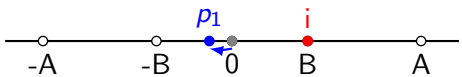
- Let $i = B$, $i \leq 3 \cdot A/7$
- When Policymaker observes $m = \omega$

$$p = \omega$$

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



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

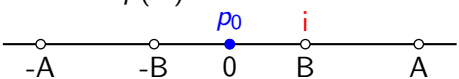


Revelation Dynamics: Partial Disclosure

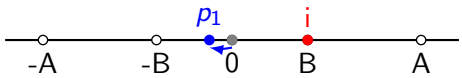
- Let $i = B$, $i \leq 3 \cdot A/7$
- When Policymaker observes $m = \omega$

$$p = \omega$$

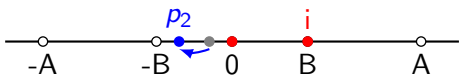
- Suppose $m = \varnothing$ is not informative; then $p(\varnothing) = 0$



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



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

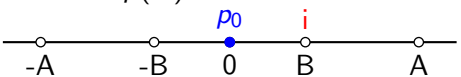


Revelation Dynamics: Partial Disclosure

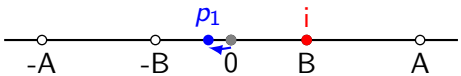
- Let $i = B$, $i \leq 3 \cdot A/7$
- When Policymaker observes $m = \omega$

$$p = \omega$$

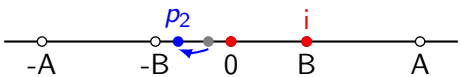
- Suppose $m = \varnothing$ is not informative; then $p(\varnothing) = 0$



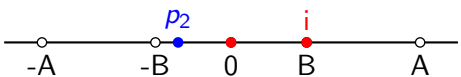
$\rightarrow$ The Agency discloses B; but then $p(\varnothing) = p_1 \rightarrow$ disclose $\omega = 0$



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



$\rightarrow$ Equilibrium



Back to Road Map

Introducing Disclosure Reward, R

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

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

Back to Road Map

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.

Back to Road Map

Model with Reward: Effects on Communication

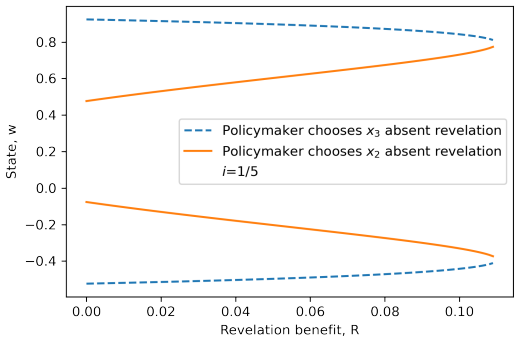
Lemma. Holding fixed Policymaker's choice absent disclosure, informativeness of communication between actors improves in R.

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;



Back to Road Map

Introducing Policymaker's Bias, b

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

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

we assume $b > 0$.

Back to Road Map

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.

Back to Road Map

Model with Policymaker's bias: Equilibria

There can be a *maximum* of three equilibrium outcomes in this game

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

Back to Road Map

Model with Policymaker's bias: Comparative Statics

Communication between actors

1. is not affected by the Policymaker's bias in fully revealing equilibrium;
2. improves as Policymaker's bias departs from the Agency's ideal point in guarded equilibrium;
3. deteriorate as Policymaker's bias departs from the Agency's ideal point in expansive equilibrium.

Back to Road Map

Model with Policymaker's bias: Belief Stability

1. Fully revealing equilibrium is belief stable when the Policymaker's bias is different from the Agency's ideal point and not belief stable otherwise;
2. Guarded equilibrium is always belief stable;
3. Expansive equilibrium is never belief stable.

Back to Road Map

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 (p) to implement	$p \in \mathbb{R}$

Back to Road Map

Agency's Competence: Agency's Disclosure Strategy

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

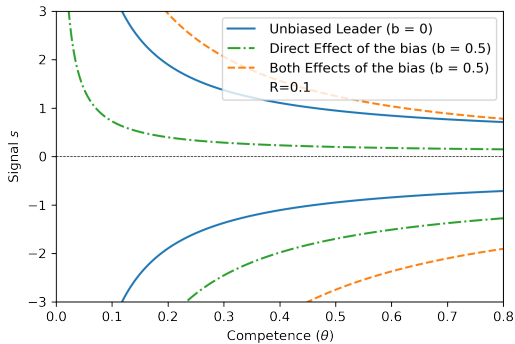
Agency of competence θ discloses its signal to the Policymaker if and only if

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

and

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

Back to Road Map



Sequential Rationality of Reward Scheme

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

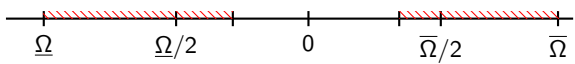
- In the unique payoff-dominant (for the Policymaker) equilibrium, the Policymaker never awards less than R for disclosure;
- In the unique payoff-dominant (for the Policymaker) equilibrium, the Policymaker always awards disclosure and never awards lack thereof.

Back to Road Map

PM's Choice of the Agency

- Why pursue conformity?
  - Cheap-talk literature (seminal paper by **Crawford and Sobel**, 1982): more divergence $\rightarrow$ less communication;
  - "Ally principal" (see **Bendor and Meirowitz**, 2004): more divergence $\rightarrow$ less delegation.
- Why avoid conformity?
  - Incentives to acquire information (**Che and Kartik**, 2009);
  - Incentives to acquire expertise (**Gailmard and Patty**, 2007);
  - Incentives to exert effort (**Prendergast, 2007**).

This paper's contribution: preference divergence guarantee full-disclosure uniqueness.

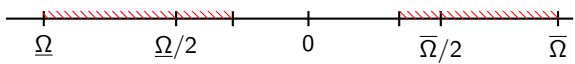


In shaded areas of the stylized image, full disclosure is the unique equilibrium.

PM's Choice of the Agency

- Why pursue conformity?
  - Cheap-talk literature (seminal paper by **Crawford and Sobel**, 1982): more divergence $\rightarrow$ less communication;
  - "Ally principal" (see **Bendor and Meirowitz**, 2004): more divergence $\rightarrow$ less delegation.
- Why avoid conformity?
  - Incentives to acquire information (**Che and Kartik**, 2009);
  - Incentives to acquire expertise (**Gailmard and Patty**, 2007);
  - Incentives to exert effort (**Prendergast, 2007**).

This paper's contribution: preference divergence guarantee full-disclosure uniqueness.



In shaded areas of the stylized image, full disclosure is the unique equilibrium.

Further, PM's utility is **weakly increasing** in the preference divergence in all belief-stable equilibria; It depends on preference divergence **non-monotonically** only in not belief-stable equilibria.