Appendix: Information and Climate (In)action

Contents

A Formal Proofs

Pandering

Proof of Proposition 1: To prove Proposition 1, I proceed in three parts. First, I show the existence of a unique equilibrium, characterized by the threshold $\tilde{x}^*$. Second, I show that this threshold is decreasing in π. Third, I show that the incompetent type's probability of climate action $A_0(\tilde{x}^*)$ is increasing in π, and thus must satisfy $\pi = A_0(\tilde{x}^*)$.

Lemma A.1 *The model with pandering has a unique equilibrium given by the threshold $\tilde{x}^*$.*

Proof of Lemma A.1: The voter observes $a \in \{0, 1\}$ and so his posterior belief about politician competence is $\mu(a) = P(\theta = 1|a)$. He reelects the politician iff $\mu(a) \geq \varepsilon$, and so the probability that the politician is reelected is simply $F(\mu(a))$.

Now consider the choice of the politician. Given x^1, the competent politician knows the state ω with certainty and thus has no reason to deviate to $a \neq \omega$. Clearly, $P(a = 1|\theta = 1) = \sigma^*(1, x^1) = x^1 = \omega$.

Now consider the incompetent politician. Given her signal x, the incompetent politician does not know the state with certainty but has the updated posterior belief $\eta(x) = P(\omega = 1|x) = \frac{\pi g(x;1)}{\pi g(x;1)+(1-\pi)g(x;0)}$. Then it is optimal for the incompetent politician to choose $a = 1$ iff

$$\eta(x) + F(\mu(1)) \geq 1 - \eta(x) + F(\mu(0)).$$

Define $\tilde{x}$ as the signal that makes the incompetent politician indifferent between choosing $a = 1$ and $a = 0$. Then with probability $1 - G(\tilde{x}; \omega)$, the incompetent politician chooses $a = 1$ in state ω. Given this cutoff, the voter's posterior beliefs can be written as

$$\mu(1; \tilde{x}) = \frac{\tau\pi}{\tau\pi + (1-\tau)\left(\pi(1 - G(\tilde{x}; 1)) + (1-\pi)(1 - G(\tilde{x}; 0))\right)}.$$
$$\mu(0; \tilde{x}) = \frac{\tau(1-\pi)}{\tau(1-\pi) + (1-\tau)\left(\pi G(\tilde{x}; 1) + (1-\pi)G(\tilde{x}; 0)\right)}.$$

The politician's problem can be rewritten such that the equilibrium cutoff signal $\tilde{x}^*$ satisfies

$$2\eta(\tilde{x}^*) - 1 + F(\mu(1; \tilde{x}^*)) - F(\mu(0; \tilde{x}^*)) = 0. \tag{1}$$

By the MLRP, $\eta(x)$ is increasing in x. Observe that $\mu(1; \tilde{x})$ is increasing in $\tilde{x}$ and $\mu(0; \tilde{x})$ is decreasing in $\tilde{x}$. Hence the LHS is strictly increasing in $\tilde{x}$ such that the incompetent politician chooses $a = 1$ iff $x \geq \tilde{x}^*$, which is unique and well-defined. Hence $P(a = 1|\theta = 0) = \sigma^*(0, x^0) = 1 - G(\tilde{x}^*; \omega)$. As $\tilde{x}^*$ is unique, the equilibrium is unique. ■

Lemma A.2 *The threshold $\tilde{x}^*$ is decreasing in π. There exists a unique $\pi^\dagger$ such that $\pi^\dagger = A_0(\tilde{x}^*; \pi^\dagger)$ where $A_0(\tilde{x}^*; \pi)$ is the probability that the incompetent politician chooses $a = 1$.*

Proof of Lemma A.2: Define $I(\tilde{x})$ as

$$I(\tilde{x}) = 2\eta(\tilde{x}) - 1 + F(\mu(1;\tilde{x})) - F(\mu(0;\tilde{x})).$$

This function is increasing in $\tilde{x}$ by definition of the equilibrium, proved in Lemma A.1. By the implicit function theorem,

$$\frac{d\tilde{x}^*}{d\pi} = -\frac{\partial I(\tilde{x})/\partial \pi}{\partial I(\tilde{x})/\partial \tilde{x}}.$$

Observe that as $\pi \to 0$, $I(\tilde{x}) < 0$ so $\tilde{x}^* \to \infty$; as $\pi \to 1$, $I(\tilde{x}) > 0$ so $\tilde{x}^* \to -\infty$. By the MLRP, $\eta(\tilde{x})$ is increasing in π. Moreover, $\mu(1;\tilde{x})$ is increasing in π and $\mu(0;\tilde{x})$ is decreasing in π. Hence $I(\tilde{x})$ is increasing in π and $\frac{d\tilde{x}^*}{d\pi} \leq 0$.

Now observe that the probability that the incompetent politician takes action is

$$A_0(\tilde{x}^*;\pi) = \pi(1 - G(\tilde{x}^*;1)) + (1-\pi)(1 - G(\tilde{x}^*;0)).$$

Clearly, $A_0(\tilde{x}^*;0) = 1 - G(\tilde{x}^*;0) = 0$ and $A_0(\tilde{x}^*;1) = 1 - G(\tilde{x}^*;1) = 1$. Then in π, $A_0(\tilde{x}^*;\pi)$ is a self-map from [0,1] to [0,1]. Differentiating yields

$$\frac{dA_0(\tilde{x}^*;\pi)}{d\pi} = G(\tilde{x}^*;0) - G(\tilde{x}^*;1) - \frac{d\tilde{x}^*}{d\pi}(\pi g(\tilde{x}^*;1) + (1-\pi)g(\tilde{x}^*;0)) > 0,$$

such that there is a unique fixed point, $\pi^\dagger$, where $\pi^\dagger = A_0(\tilde{x}^*;\pi^\dagger)$. ■ ■

Proof of Corollary 1: It can be shown that $\mu(1;\tilde{x}) \geq \mu(0;\tilde{x})$ iff $\pi \geq 1 - \pi G(\tilde{x};1) - (1 - \pi)G(\tilde{x};0)$, which is exactly the condition $\pi < \pi^\dagger$. ■

Persuasion

Proof of Proposition 2: As before, I proceed first by showing that the climate policy subgame has a unique equilibrium, analogous to Proposition 1. Then I demonstrate the strategic equivalence to the game without the special interest group when $\beta = 1$. Next I show that the threshold $\tilde{x}^*$ is U-shaped in β. Finally I show the special interest's optimal misreporting strategy $\beta^* = 0$ when $\pi < \pi^*$ and $\beta^* = 1$ when $\pi > \pi^*$.

Lemma A.3 *The climate policy subgame in the model with pandering and persuasion has a unique equilibrium given by the threshold $\tilde{x}^*$.*

Proof of Lemma A.3: The voter now conditions his reelection decision on both a and s such that $\mu(a,s) = P(\theta = 1|a,s)$, and reelects the incumbent politician iff $\mu(a,s) \geq \varepsilon$. The incumbent's probability of reelection is simply $F(\mu(a,s))$.

Importantly the politician does not know which signal will be realized, but can update her beliefs about the likelihood of each signal given her own signal about the state of the world ω. First consider the competent politician. If she receives signal $x^1 = 0$, she knows that the interest group will always send signal $s = 0$. Her expected utility from $a = 1$ vs. $a = 0$ is

$$F(\mu(1,0)) \geq 1 + F(\mu(0,0)),$$

so clearly upon observing signal $x^1 = 0$ the competent politician prefers $a = 0$. Upon observing $x^1 = 1$, the competent politician's expected utility from $a = 1$ vs. $a = 0$ is

$$1 + \beta F(\mu(1,0)) + (1-\beta)F(\mu(1,1)) \geq \beta F(\mu(0,0)) + (1-\beta)F(\mu(0,1)),$$

and so the competent politician prefers $a = 1$ following $x^1 = 1$. As before, the competent politician follows her signal, so $P(a = 1|\theta = 1) = \sigma^*(1, x^1) = x^1 = \omega$.

The incompetent politician does not know the state for sure, but has updated beliefs $\eta(x) = P(\omega = 1|x)$ such that the expected utility from choosing $a = 1$ vs. $a = 0$ can be expressed as

$$\eta(x)+\eta(x)(1-\beta)F(\mu(1,1))+(1-\eta(x)+\eta(x)\beta)F(\mu(1,0)) \geq 1-\eta(x)+\eta(x)(1-\beta)F(\mu(0,1))+(1-\eta(x)+\eta(x)\beta)F(\mu(0,0)).$$

Define $\Delta(s) = F(\mu(1,s)) - F(\mu(0,s))$ so that the incompetent politician is indifferent between $a = 1$ and $a = 0$ when

$$2\eta(\tilde{x}) - 1 + \eta(\tilde{x})(1-\beta)\Delta(1) + (1 - \eta(\tilde{x}) + \eta(\tilde{x})\beta)\Delta(0) = 0, \tag{2}$$

where $\tilde{x}$ is the signal that satisfies at equality, as before. Given this cutoff, voters have posterior beliefs

$$\begin{aligned}
\mu(1,0;\tilde{x}) &= \frac{\tau\pi\beta}{\tau\pi\beta + (1-\tau)(\pi\beta(1-G(\tilde{x};1)) + (1-\pi)(1-G(\tilde{x};0)))}. \\
\mu(1,1;\tilde{x}) &= \frac{\tau}{\tau + (1-\tau)(1-G(\tilde{x};1))}. \\
\mu(0,0;\tilde{x}) &= \frac{\tau(1-\pi)}{\tau(1-\pi) + (1-\tau)(\pi\beta G(\tilde{x};1) + (1-\pi)G(\tilde{x};0))}. \\
\mu(0,1;\tilde{x}) &= 0.
\end{aligned}$$

Differentiating Equation 2 with respect to $\tilde{x}$ yields

$$2\frac{\partial\eta(\tilde{x})}{\partial\tilde{x}} + (1-\beta)\frac{\partial\eta(\tilde{x})}{\partial\tilde{x}}(\Delta(1;\tilde{x}) - \Delta(0;\tilde{x})) + (1-\beta)\eta(\tilde{x})\frac{\partial\Delta(1;\tilde{x})}{\partial\tilde{x}} + (1-\eta(\tilde{x})\beta\eta(\tilde{x}))\frac{\partial\Delta(0;\tilde{x})}{\partial\tilde{x}}.$$

Since $g(\cdot)$ has the monotone likelihood ratio property, $\eta(\tilde{x})$ is increasing in $\tilde{x}$. Now observe that $\mu^*(1,0;\tilde{x})$ is increasing in $\tilde{x}$ and $\mu^*(0,0;\tilde{x})$ is decreasing in $\tilde{x}$, which means that $\Delta(0)$ is increasing in $\tilde{x}$. Moreover, $\mu^*(1,1;\tilde{x})$ is increasing in $\tilde{x}$ so $\Delta(1)$ is increasing in $\tilde{x}$. Further, by definition of posterior beliefs we have $\Delta(1;\tilde{x}) \geq \Delta(0;\tilde{x})$ so this expression is increasing in $\tilde{x}$. Hence by the intermediate value theorem there is a unique $\tilde{x}^*$ solving Equation 2 such that the incompetent politician plays $a = 1$ when $x^0 > \tilde{x}^*$ and plays $a = 0$ when $x^0 \leq \tilde{x}^*$. ■

Lemma A.4 *The model with pandering and persuasion is equivalent to the model with pan-*

dering when $\beta = 1$.

Proof of Lemma A.4: Substitute $\beta = 1$ into Equation 2 and notice that it is identical to Equation 1 except with $\Delta(0; \tilde{x})$. Substitute $\beta = 1$ into posterior beliefs above and observe that as $\beta \to 1$, $\mu(1, 0; \tilde{x}) \to \mu(1)$ and $\mu(0, 0; \tilde{x}) \to \mu(0)$. ■

Lemma A.5 *The threshold $\tilde{x}^*$ is U-shaped in β.*

Proof of Lemma A.5: Define $I(\tilde{x})$ as

$$I(\tilde{x}) = 2\eta(\tilde{x}) - 1 + \eta(\tilde{x})(1 - \beta)\Delta(1; \tilde{x}) + (1 - \eta(\tilde{x}) + \eta(\tilde{x})\beta)\Delta(0; \tilde{x})$$

By definition of the equilibrium cutoff, $I(\tilde{x})$ is increasing in $\tilde{x}$. Partially differentiating with respect to β gives

$$\frac{\partial I(\tilde{x})}{\partial \beta} = -\eta(\tilde{x})(\Delta(1; \tilde{x}) - \Delta(0; \tilde{x})) + (1 - \eta(\tilde{x}) + \eta(\tilde{x})\beta)\frac{\partial \Delta(0; \tilde{x})}{\partial \beta}.$$

The first term is negative and the second term is positive because $\mu(1, 0; \tilde{x})$ is increasing in β and $\mu(0, 0; \tilde{x})$ is decreasing in β. Note that $\left.\frac{\partial \mu(1,0;\tilde{x})}{\partial \beta}\right|_{\beta=0} > \left.\frac{\partial \mu(1,0;\tilde{x})}{\partial \beta}\right|_{\beta=1}$ and $\left.\frac{\partial \mu(0,0;\tilde{x})}{\partial \beta}\right|_{\beta=0} < \left.\frac{\partial \mu(0,0;\tilde{x})}{\partial \beta}\right|_{\beta=1}$ such that $\frac{\partial \Delta(0;\tilde{x})}{\partial \beta}$ is largest when $\beta \to 0$. Then for small β, $\frac{\partial I(\tilde{x})}{\partial \beta} > 0$ so $\frac{d\tilde{x}^*}{d\beta} \leq 0$ and for large β, $\frac{\partial I(\tilde{x})}{\partial \beta} < 0$ so $\frac{d\tilde{x}^*}{d\beta} \geq 0$. ■

Lemma A.6 *There exists π^* such that $\beta^* = 0$ when $\pi < \pi^*$ and $\beta^* = 1$ when $\pi > \pi^*$.*

Proof of Lemma A.6: The *ex ante* probability of climate action is

$$A(\tilde{x}^*) = \tau\pi + (1 - \tau)\pi(1 - G(\tilde{x}^*; 1)) + (1 - \tau)(1 - \pi)(1 - G(\tilde{x}^*; 0)).$$

The special interest has the objective function

$$\max_{\beta \in [0,1]} 1 - A(\tilde{x}^*).$$

By Lemma A.5, $\tilde{x}^*$ is U-shaped in β so $1 - A(\tilde{x}^*)$ is also U-shaped in β. This implies that the maximum lies either at $\beta = 0$ or $\beta = 1$.

Let $\tilde{x}^*_\beta$ be the incompetent politician's optimal cutoff for a misreporting level β. Then the interest group's payoff from $\beta = 1$ is $\pi G(\tilde{x}^*_1; 1) + (1 - \pi)G(\tilde{x}^*_1; 0)$, and the payoff from $\beta = 0$ is $\pi G(\tilde{x}^*_0; 1) + (1 - \pi)G(\tilde{x}^*_0; 0)$. Then the net gain of $\beta = 1$ vs. $\beta = 0$ is

$$\Gamma(\pi) = \pi G(\tilde{x}^*_1; 1) + (1 - \pi)G(\tilde{x}^*_1; 0) - \pi G(\tilde{x}^*_0; 1) - (1 - \pi)G(\tilde{x}^*_0; 0).$$

Note that $\Gamma(0) = \Gamma(1) = 0$. Akin to an envelope theorem argument, note that for any π such that $\Gamma(\pi) = 0$, we have the derivative

$$\Gamma'(\pi) = G(\tilde{x}^*_1; 1) - G(\tilde{x}^*_1; 0) - G(\tilde{x}^*_0; 1) + G(\tilde{x}^*_0; 0).$$

Since $g(x;\omega)$ satisfies the MLRP, the direct effect of the prior shifts the weight monotonically. Consequently, it must hold that $\Gamma'(\pi) > 0$. Because $\Gamma(\pi)$ can only cross zero from below, the single-crossing property is satisfied, again by MLRP, guaranteeing that the interior root π^* is unique. Thus when $\pi < \pi^*$ we have $\Gamma(\pi) < 0$ such that $\beta^* = 0$ is optimal and when $\pi > \pi^*$ we have $\Gamma(\pi) > 0$ such that $\beta^* = 1$ is optimal. ■ ■

International Coordination

Proof of Proposition 3: First I establish existence and uniqueness of the equilibrium thresholds $(\tilde{x}_i^*, \tilde{x}_j^*)$. Throughout, I assume that the competent politicians values getting policy right by some weight $W_i > \frac{1}{\tau_j}$; they are "intrinsic cooperators." This ensures that competent politicians follow their signal and do not pander, keeping the analysis tractable.

Given equilibrium cutoffs, I show that $(\tilde{x}_i^*, \tilde{x}_j^*)$ are strategic complements, then that $\tilde{x}_i^*$ is U-shaped in β_i which implies that $\tilde{x}_j^*$ is also U-shaped in β_i. Finally I characterize the optimal choice of (β_i^*, β_j^*).

Lemma A.7 *There exists a unique pair of cutoffs $(\tilde{x}_i^*, \tilde{x}_j^*)$ that are mutual best responses.*

Proof of Lemma A.7: The voter in country i observes the triple (a_i, s_i, a_j) and forms posterior belief $\mu_i(a_i, s_i, a_j) = P(\theta_i = 1|a_i, s_i, a_j)$. The voter reelects politician i iff $\mu_i(a_i, s_i, a_j) \geq \varepsilon_i$, or with probability $F(\mu_i(a_i, s_i, a_j))$.

As competent politicians always follow their signal by assumption, consider the behavior of the incompetent politician i in country i with signal x_i. Let $p_{j\omega} = P(a_j = 1|\omega)$ be the belief that politician j chooses $a_j = 1$ in state ω. Write $\Delta_i(s_i, a_j) = F(\mu_i(1, s_i, a_j)) - F(\mu_i(0, s_i, a_j))$. Then the incompetent politician plays $a_i = 1$ iff

$$\eta(x_i)\Big[p_{j1} + p_{j1}\beta_i\Delta_i(0,1) + p_{j1}(1-\beta_i)\Delta_i(1,1) + (1-p_{j1})(1-\beta_i)\Delta_i(1,0) + (1-p_{j1})\beta_i\Delta_i(0,0)\Big]$$
$$\geq (1-\eta(x_i))\Big[1 - p_{j0} - p_{j0}\Delta_i(0,1) - (1-p_{j0})\Delta_i(0,0)\Big].$$

which can be rearranged to

$$\frac{g(x_i;1)}{g(x_i;0)} \geq \frac{1-\pi}{\pi}\frac{1 - p_{j0} - p_{j0}\Delta_i(0,1) - (1-p_{j0})\Delta_i(0,0)}{p_{j1} + p_{j1}\beta_i\Delta_i(0,1) + p_{j1}(1-\beta_i)\Delta_i(1,1) + (1-p_{j1})(1-\beta_i)\Delta_i(1,0) + (1-p_{j1})\beta_i\Delta_i(0,0)}.$$

Now the RHS is constant in x_i and the LHS is increasing in x_i such that there is a solution $\tilde{x}_i$ satisfying with equality. Analogously for j, there is a $\tilde{x}_j$. This means that the incompetent politician's best response to politician j and voter i is a cutoff rule. Then the incompetent politician plays $a = 1$ when $x \geq \tilde{x}$ for each respective country.

This means that country i's beliefs about the behavior of country j are

$$p_{j1} = \tau_j + (1-\tau_j)(1 - G(\tilde{x}_j; 1)).$$
$$p_{j0} = (1-\tau_j)(1 - G(\tilde{x}_j; 0)),$$

where clearly $p_{j\omega}$ is decreasing in $\tilde{x}_j$.

Given cutoffs $(\tilde{x}_i, \tilde{x}_j)$, the voter has posterior beliefs $\mu_i(a_i, s_i, a_j; \tilde{x}_i, \tilde{x}_j)$

$$\mu_i(1,1,a_j;\tilde{x}_i,\tilde{x}_j) = \frac{\tau_i}{\tau_i + (1-\tau_i)(1-G(\tilde{x}_i;1))}.$$

$$\mu_i(0,1,a_j;\tilde{x}_i,\tilde{x}_j) = 0.$$

$$\mu_i(1,0,1;\tilde{x}_i,\tilde{x}_j) = \frac{\tau_i\pi\beta_i p_{j1}}{\tau_i\pi\beta_i p_{j1} + (1-\tau_i)\Big[\pi\beta_i(1-G(\tilde{x}_i;1))p_{j1} + (1-\pi)(1-G(\tilde{x}_i;0))p_{j0}\Big]}.$$

$$\mu_i(1,0,0;\tilde{x}_i,\tilde{x}_j) = \frac{\tau_i\pi\beta_i(1-p_{j1})}{\tau_i\pi\beta_i(1-p_{j1}) + (1-\tau_i)\Big[\pi\beta_i(1-G(\tilde{x}_i;1))(1-p_{j1}) + (1-\pi)(1-G(\tilde{x}_i;0))(1-p_{j0})\Big]}.$$

$$\mu_i(0,0,1;\tilde{x}_i,\tilde{x}_j) = \frac{\tau_i(1-\pi)p_{j0}}{\tau_i(1-\pi)p_{j0} + (1-\tau_i)\Big[\pi\beta_i G(\tilde{x}_i;1)p_{j1} + (1-\pi)G(\tilde{x}_i;0)p_{j0}\Big]}.$$

$$\mu_i(0,0,0;\tilde{x}_i,\tilde{x}_j) = \frac{\tau_i(1-\pi)(1-p_{j0})}{\tau_i(1-\pi)(1-p_{j0}) + (1-\tau_i)\Big[\pi\beta_i G(\tilde{x}_i;1)(1-p_{j1}) + (1-\pi)G(\tilde{x}_i;0)(1-p_{j0})\Big]}.$$

Note that as $\beta_i \to 1$, $\mu_i(1,0,1;\tilde{x}_i,\tilde{x}_j) \to \mu_i(1,1;\tilde{x}_i,\tilde{x}_j)$, $\mu_i(1,0,0;\tilde{x}_i,\tilde{x}_j) \to \mu_i(1,0;\tilde{x}_i,\tilde{x}_j)$, $\mu_i(0,0,1;\tilde{x}_i,\tilde{x}_j) \to \mu_i(0,1;\tilde{x}_i,\tilde{x}_j)$ and $\mu_i(0,0,0;\tilde{x}_i,\tilde{x}_j) \to \mu_i(0,0;\tilde{x}_i,\tilde{x}_j)$.

Furthermore, as $\mu_i(1,1,1;\tilde{x}_i,\tilde{x}_j) = \mu_i(1,1,0;\tilde{x}_i,\tilde{x}_j)$ and $\mu_i(0,1,1;\tilde{x}_i,\tilde{x}_j) = \mu_i(0,1,0;\tilde{x}_i,\tilde{x}_j)$, we have that $\Delta_i(1,1) = \Delta_i(1,0) = \Delta_i(1)$ to economize notation. Also note that $\Delta_i(1)$ is not a function of $\tilde{x}_j$.

It is evident that $\mu_i(1,s_i,a_j;\tilde{x}_i,\tilde{x}_j)$ is increasing in $\tilde{x}_i$ and $\mu_i(0,s_i,a_j;\tilde{x}_i,\tilde{x}_j)$ is decreasing in $\tilde{x}_i$ so $\Delta_i(s_i,a_j)$ is increasing in $\tilde{x}_i$. It can also be shown that since $G(x;\omega)$ satisfies MLRP, this implies $G(x;\omega)$ has the hazard rate order. Then $\mu_i(a_i,0,1)$ is increasing in $\tilde{x}_j$ and $\mu_i(a_i,0,0)$ is decreasing in $\tilde{x}_j$ (it is clear that $\mu_i(a_i,1,a_j)$ is constant in $\tilde{x}_j$).

Then the equilibrium cutoff solves

$$\frac{g(\tilde{x}_i;1)}{g(\tilde{x}_i;0)} = \frac{1-\pi}{\pi}\frac{1-p_{j0}(\tilde{x}_j) - p_{j0}(\tilde{x}_j)\Delta_i(0,1;\tilde{x}_i,\tilde{x}_j) - (1-p_{j0}(\tilde{x}_j))\Delta_i(0,0;\tilde{x}_i,\tilde{x}_j)}{p_{j1}(\tilde{x}_j) + p_{j1}(\tilde{x}_j)\beta_i\Delta_i(0,1;\tilde{x}_i,\tilde{x}_j) + (1-\beta_i)\Delta_i(1;\tilde{x}_i) + (1-p_{j1}(\tilde{x}_j))\beta_i\Delta_i(0,0;\tilde{x}_i,\tilde{x}_j)}.$$

Then the RHS of the incompetent politician's constraint is strictly decreasing in $\tilde{x}_i$ because the numerator is decreasing and the denominator is increasing. So there is a unique $\tilde{x}_i^*$ such that the incompetent politician plays $a_i = 1$ iff $x_i \geq \tilde{x}_i^*$ (analogous for j).

Then there are two equations in two unknowns. Define $\Lambda_i(\Delta_i(1), \Delta_i(0,1), \Delta_i(0,0))$ as the collection of domestic reelection probabilities for country i. Then, rearranging the incompetent politician's constraint, define $I(\tilde{x}_i,\tilde{x}_j;\Lambda_i)$ as

$$\begin{aligned} I(\tilde{x}_i,\tilde{x}_j;\Lambda_i) &= \eta(\tilde{x}_i)p_{j1}(\tilde{x}_j) - (1-\eta(\tilde{x}_i))(1-p_{j0}(\tilde{x}_j)) + \eta(\tilde{x}_i)(1-\beta_i)\Delta_i(1;\tilde{x}_i) \\ &+ \Big(\eta(\tilde{x}_i)p_{j1}(\tilde{x}_j)\beta_i + (1-\eta(\tilde{x}_i))p_{j0}(\tilde{x}_j)\Big)\Delta_i(0,1;\tilde{x}_i,\tilde{x}_j) \\ &+ \Big(\eta(\tilde{x}_i)(1-p_{j1}(\tilde{x}_j))\beta_i + (1-\eta(\tilde{x}_i))(1-p_{j0}(\tilde{x}_j))\Big)\Delta_i(0,0;\tilde{x}_i,\tilde{x}_j). \end{aligned}$$

Then the cutoffs $(\tilde{x}_i^*, \tilde{x}_j^*)$ solve the system

$$I(\tilde{x}_i^*, \tilde{x}_j^*; \Lambda_i(\tilde{x}_i^*, \tilde{x}_j^*)) = 0 \text{ and } I(\tilde{x}_j^*, \tilde{x}_i^*; \Lambda_j(\tilde{x}_j^*, \tilde{x}_i^*)) = 0.$$

To show the system has a unique solution, I use the implicit function theorem. The Jacobian matrix is

$$\mathbf{J} = \begin{bmatrix} \frac{\partial I(\tilde{x}_i,\tilde{x}_j;\Lambda_i)}{\partial \tilde{x}_i} & \frac{\partial I(\tilde{x}_i,\tilde{x}_j;\Lambda_i)}{\partial \tilde{x}_j} \\ \frac{\partial I(\tilde{x}_j,\tilde{x}_i;\Lambda_j)}{\partial \tilde{x}_i} & \frac{\partial I(\tilde{x}_j,\tilde{x}_i;\Lambda_j)}{\partial \tilde{x}_j} \end{bmatrix}.$$

We have already established that the derivatives on the main diagonal are positive. To sign the off diagonal, consider (analogous for j, suppressing dependence on $\tilde{x}_i$ and $\tilde{x}_j$)

$$\begin{aligned} \frac{\partial I(\tilde{x}_i, \tilde{x}_j; \Lambda_i)}{\partial \tilde{x}_j} &= \eta(\tilde{x}_i)\frac{\partial p_{j1}}{\partial \tilde{x}_j} + (1-\eta(\tilde{x}_i))\frac{\partial p_{j0}}{\partial \tilde{x}_j} + \Big(\eta(\tilde{x}_i)\beta_i\frac{\partial p_{j1}}{\partial \tilde{x}_j} + (1-\eta(\tilde{x}_i))\frac{\partial p_{j0}}{\partial \tilde{x}_j}\Big)(\Delta_i(0,1) - \Delta_i(0,0)) \\ &+ \Big(\eta(\tilde{x}_i)\beta_i p_{j1} + (1-\eta(\tilde{x}_i))p_{j0}\Big)\frac{\partial \Delta_i(0,1)}{\partial \tilde{x}_j} + \Big(\eta(\tilde{x}_i)(1-p_{j1})\beta_i + (1-\eta(\tilde{x}_i))(1-p_{j0})\Big)\frac{\partial \Delta_i(0,0)}{\partial \tilde{x}_j} \leq 0. \end{aligned}$$

Since the determinant $|\mathbf{J}| = \frac{\partial I(\tilde{x}_i,\tilde{x}_j;\Lambda_i)}{\partial \tilde{x}_i}\frac{\partial I(\tilde{x}_j,\tilde{x}_i;\Lambda_j)}{\partial \tilde{x}_j} - \frac{\partial I(\tilde{x}_i,\tilde{x}_j;\Lambda_i)}{\partial \tilde{x}_j}\frac{\partial I(\tilde{x}_j,\tilde{x}_i;\Lambda_j)}{\partial \tilde{x}_i} > 0$, the system has a unique solution at the cutoffs $(\tilde{x}_i^*, \tilde{x}_j^*)$ are well-defined. ■

Lemma A.8 *The threshold $\tilde{x}_i^*$ is increasing in $\tilde{x}_j$.*

Proof of Lemma A.8: Immediate from the implicit function theorem,

$$\frac{d\tilde{x}_i^*}{d\tilde{x}_j} = -\frac{\partial I(\tilde{x}_i, \tilde{x}_j; \Lambda_i)/\partial \tilde{x}_j}{\partial I(\tilde{x}_i, \tilde{x}_j; \Lambda_i)/\partial \tilde{x}_i} \geq 0.$$

■

Lemma A.9 *The threshold $\tilde{x}_i^*$ is U-shaped in β_i.*

Proof of Lemma A.9: From the implicit function theorem,

$$\frac{d\tilde{x}_i^*}{d\beta_i} = -\frac{\left|\begin{bmatrix} \frac{\partial I(\tilde{x}_i,\tilde{x}_j;\Lambda_i)}{\partial \beta_i} & \frac{\partial I(\tilde{x}_i,\tilde{x}_j;\Lambda_i)}{\partial \tilde{x}_j} \\ \frac{\partial I(\tilde{x}_j,\tilde{x}_i;\Lambda_j)}{\partial \beta_i} & \frac{\partial I(\tilde{x}_j,\tilde{x}_i;\Lambda_j)}{\partial \tilde{x}_j} \end{bmatrix}\right|}{|\mathbf{J}|}.$$

Observe that $\frac{\partial I(\tilde{x}_j,\tilde{x}_i;\Lambda_j)}{\partial \beta_i} = 0$, there is no direct effect of β_i on $\tilde{x}_j^*$. Partially differentiating with respect to β_i (and suppressing dependence on $\tilde{x}_i$ and $\tilde{x}_j$) yields

$$\begin{aligned} \frac{\partial I(\tilde{x}_i, \tilde{x}_j; \Lambda_i)}{\partial \beta_i} &= -\eta(\tilde{x}_i)\Big(\Delta_i(1) - p_{j1}\Delta_i(0,1) - (1-p_{j1})\Delta_i(0,0)\Big) \\ &+ \Big(\eta(\tilde{x}_i)p_{j1}\beta_i + (1-\eta(\tilde{x}_i))p_{j0}\Big)\frac{\partial \Delta_i(0,1)}{\partial \beta_i} \\ &+ \Big(\eta(\tilde{x}_i)(1-p_{j1})\beta_i + (1-\eta(\tilde{x}_i))(1-p_{j0})\Big)\frac{\partial \Delta_i(0,0)}{\partial \beta_i}. \end{aligned}$$

It can be shown that $\mu_i(1,0,a_j)$ are increasing in β_i and $\mu_i(0,0,a_j)$ are decreasing in β_i. Then $\Delta_i(0,a_j)$ is also increasing in β_i. By definition of posterior beliefs, $\Delta_i(1) \geq \Delta_i(0,a_j)$. This means that first term of $\frac{\partial I(\tilde{x}_i,\tilde{x}_j;\Lambda_i)}{\partial \beta_i}$ is negative and the second and third terms are positive. Observe that this expression is exactly the same as in Lemma A.5 except it also incorporates the behavior of politician j. Then, as in Lemma A.5, it can be shown that $I(\tilde{x}_i,\tilde{x}_j;\Lambda_i)$ is increasing in β_i for small β_i and decreasing in β_i for large β_i. This means that the determinant of the numerator is positive for small β_i and negative for large β_i, so by the implicit function theorem $\frac{d\tilde{x}_i^*}{d\beta_i}$ is U-shaped. ■

Lemma A.10 *The threshold $\tilde{x}_j^*$ is U-shaped in β_i.*

Proof of Lemma A.10: From the implicit function theorem,

$$\frac{d\tilde{x}_j^*}{d\beta_i} = -\frac{\left|\begin{bmatrix} \frac{\partial I(\tilde{x}_i,\tilde{x}_j;\Lambda_i)}{\partial \tilde{x}_i} & \frac{\partial I(\tilde{x}_i,\tilde{x}_j;\Lambda_i)}{\partial \beta_i} \\ \frac{\partial I(\tilde{x}_j,\tilde{x}_i;\Lambda_j)}{\partial \tilde{x}_i} & \frac{\partial I(\tilde{x}_j,\tilde{x}_i;\Lambda_j)}{\partial \beta_i} \end{bmatrix}\right|}{|\mathbf{J}|}.$$

It is clear that $\frac{\partial I(\tilde{x}_j,\tilde{x}_i;\Lambda_j)}{\partial \beta_i} = 0$. Then the determinant of the numerator is $-\frac{\partial I(\tilde{x}_i,\tilde{x}_j;\Lambda_i)}{\partial \beta_i}\frac{\partial I(\tilde{x}_j,\tilde{x}_i;\Lambda_j)}{\partial \tilde{x}_i}$, which is inverse U-shaped. So by the implicit function theorem $\frac{d\tilde{x}_j^*}{d\beta_i}$ is U-shaped. ■

Lemma A.11 *The probability that both countries take climate action is inverse U-shaped in β_i. The probability that neither country takes climate action is U-shaped in β_i. The probability that only one country takes unilateral action is U-shaped in β_i if $A_i(\tilde{x}_i^*) > \frac{1}{2}$ and $A_j(\tilde{x}_j^*) > \frac{1}{2}$.*

Proof of Lemma A.11: Country i's (j analogous) probability of climate action is

$$A_i(\tilde{x}_i^*) = \tau_i\pi + (1-\tau_i)\pi(1-G(\tilde{x}_i^*;1)) + (1-\tau_i)(1-\pi)(1-G(\tilde{x}_i^*;0)).$$

Differentiating with respect to β_i yields

$$\frac{dA_i}{d\beta_i} = -(1-\tau_i)\frac{d\tilde{x}_i^*}{d\beta_i}\Big(\pi g(\tilde{x}_i^*;1) + (1-\pi)g(\tilde{x}_i^*;0)\Big).$$
$$\frac{dA_j}{d\beta_i} = -(1-\tau_j)\frac{d\tilde{x}_j^*}{d\beta_i}\Big(\pi g(\tilde{x}_j^*;1) + (1-\pi)g(\tilde{x}_j^*;0)\Big).$$

Clearly, since $\tilde{x}_i^*$ and $\tilde{x}_j^*$ are U-shaped in β_i, A_i and A_j are inverse U-shaped in β_i. Then, using the definitions of coordinated climate action, unilateral climate action, and coordinated climate inaction from the text, differentiating with respect to β_i yields

$$\frac{dA_iA_j}{d\beta_i} = A_i\frac{dA_j}{d\beta_i} + \frac{dA_i}{d\beta_i}A_j.$$
$$\frac{d(A_i(1-A_j)+(1-A_i)A_j)}{d\beta_i} = \frac{dA_i}{d\beta_i}(1-2A_j) + \frac{dA_j}{d\beta_i}(1-2A_i).$$

$$\frac{d(1-A_i)(1-A_j)}{d\beta_i} = -(1-A_i)\frac{dA_j}{d\beta_i} - \frac{dA_i}{d\beta_i}(1-A_j).$$

This implies that $\frac{dA_iA_j}{d\beta_i}$ is inverse U-shaped in β_i and $\frac{d(1-A_i)(1-A_j)}{d\beta_i}$ is U-shaped in β_i. The sign of $\frac{d(A_i(1-A_j)+(1-A_i)A_j)}{d\beta_i}$ is ambiguous. A sufficient condition for $\frac{d(A_i(1-A_j)+(1-A_i)A_j)}{d\beta_i}$ to be U-shaped in β_i is if $A_i > \frac{1}{2}$ and $A_j > \frac{1}{2}$. ■

Lemma A.12 *There exist thresholds $\pi_i^*(1) < \pi_i^*(0)$ (analogous for j) such that special interest group's optimal misreporting is*

$$\beta_i^*(\pi) = \begin{cases} 0 & \pi < \pi_i^*(1) \\ \beta_j^* & \pi_i^*(1) \leq \pi \leq \pi_i^*(0) \\ 1 & \pi > \pi_i^*(0). \end{cases}$$

Proof of Lemma A.12: Since action is inverse U shaped in β_i, each special interest will either choose $\beta_i = 0$ or $\beta_i = 1$. Let $\tilde{x}^*_{\beta_i}(\beta_j)$ be the incompetent politician i's optimal cutoff for a misreporting level β_i when the special interest group j misreports at level β_j. Then holding fixed β_j, the game is as in Lemma A.6. Defined analogously, each special interest group has a net gain $\Gamma_i(\pi, \beta_j)$ which is the difference in payoffs from $\beta_i = 1$ vs. $\beta_i = 0$:

$$\Gamma_i(\pi,\beta_j) = \pi G(\tilde{x}_1^*(\beta_j);1) + (1-\pi)G(\tilde{x}_1^*(\beta_j);0) - \pi G(\tilde{x}_0^*(\beta_j);1) - (1-\pi)G(\tilde{x}_0^*(\beta_j);0).$$

Then there exists a point $\pi_i^*(\beta_j)$ such that $\Gamma_i(\pi_i^*(\beta_j), \beta_j) = 0$. The best response to β_j for special interest i is to play $\beta_i = 0$ when $\pi < \pi_i^*(\beta_j)$ and $\beta_i = 1$ when $\pi > \pi_i^*(\beta_j)$. Symmetrically, interest group j has the best response $\beta_j = 0$ when $\pi < \pi_j^*(\beta_i)$ and $\beta_j = 1$ when $\pi > \pi_j^*(\beta_i)$.

Recall that $\frac{d\tilde{x}_i^*}{d\tilde{x}_j} \geq 0$. The magnitude of this complementarity depends on the signal s_i sent by special interest group i. Note that if $\beta_i = 0$, s_i is fully informative. Then a_j only affects posterior beliefs for $\mu_i(0,0,1)$ and $\mu_i(0,0,0)$. Thus, the effect of the complementarity is stronger when $\beta_i = 1$ versus $\beta_i = 0$. This implies that $\Gamma_i(\pi, \beta_j)$ is increasing in β_j, so $\Gamma_i(\pi,1) > \Gamma_i(\pi,0)$. Then we have $\pi_i^*(1) < \pi_i^*(0)$ (analogous for j).

Then a candidate equilibrium (β_i^*, β_j^*) is characterized by its relation to the prior π:

- $(0,0)$ is an equilibrium iff $\pi \leq \min\{\pi_i^*(0), \pi_j^*(0)\}$.
- $(1,1)$ is an equilibrium iff $\pi \geq \max\{\pi_i^*(1), \pi_j^*(1)\}$.
- $(1,0)$ is an equilibrium iff $\pi_i^*(0) < \pi < \pi_j^*(1)$.
- $(0,1)$ is an equilibrium iff $\pi_j^*(0) < \pi < \pi_i^*(1)$.

■ ■

Proof of Corollary 2: Immediate from the fact that $\tilde{x}_i^*$ is U-shaped in β_i and β_j. ■

Model Extensions

Here I briefly sketch two model extensions: a pro-climate interest group and a revised model in which the politician can condition directly on s_i.

Pro-Climate Interest Group

Suppose that instead of a special interest group biased against climate action, the group that disseminates information to the voter is in favor of ambitious climate policies. Specifically, the group designs a signal $s \in \{0, 1\}$ according to the experiment

$$\mathcal{E}(s = 0, \omega = 0) = 1 - \gamma. \;\; \mathcal{E}(s = 1, \omega = 0) = \gamma.$$
$$\mathcal{E}(s = 0, \omega = 1) = 0. \;\; \mathcal{E}(s = 1, \omega = 1) = 1.$$

The interest group therefore chooses the parameter $\gamma \in [0, 1]$. All of the analysis remains as before. I characterize the equilibrium of the climate policy subgame and show that the special interest's optimal choice of γ exists, as in the main text for an anti-climate interest group.

Proposition A.1 *In the unique equilibrium of the model with a pro-climate interest group:*

- *The probability of climate action is U-shaped in γ.*
- *There exists a π^* such that the special interest's optimal misreporting strategy is*

$$\gamma^*(\pi) = \begin{cases} 1 & \pi < \pi^* \\ 0 & \pi \geq \pi^*. \end{cases}$$

Proof of Proposition A.1: First I show that the game has a unique equilibrium in the exact fashion as those in the main text. Then I demonstrate that $\tilde{x}^*$ is XXX in γ. Finally I show that the interest group chooses $\gamma = 1$ when $\pi < \pi^*$ and $\gamma = 0$ when $\pi > \pi^*$.

Lemma A.13 *The model with a pro-climate interest group has a unique equilibrium given by the threshold $\tilde{x}^*$.*

Proof of Lemma A.13: The voter observes (a, s) and retains the politician when $\mu(a, s) \geq \varepsilon$, occurring with probability $F(\mu(a, s))$.

The competent politician always follows her signal. If $x^1 = 1$, playing $a = 1$ is optimal:

$$1 + F(\mu(1, 1)) \geq F(\mu(0, 1)) \;\Leftrightarrow\; 1 \geq -\Delta(1).$$

Similarly, if $x^1 = 0$, the competent politician chooses $a = 0$:

$$\gamma F(\mu(1, 1)) + (1-\gamma) F(\mu(1, 0)) \leq 1 + \gamma F(\mu(0, 1)) + (1-\gamma) F(\mu(0, 0)) \;\Leftrightarrow\; \gamma\Delta(1) + (1-\gamma)\Delta(0) \leq 1.$$

Given the signal $x^0 = x$, the incompetent type chooses $a = 1$ iff

$$\begin{aligned}
&\eta(x)+\gamma(1-\eta(x))F(\mu(1,1)) + (1-\gamma)(1-\eta(x))F(\mu(1,0)) + \eta(x)F(\mu(1,1) \geq \\
&\qquad (1-\eta(x)) + \gamma(1-\eta(x))F(\mu(0,1)) + (1-\gamma)(1-\eta(x))F(\mu(0,0)) + \eta(x)F(\mu(0,1)) \\
&\Leftrightarrow\ 2\eta(x) - 1 + (\gamma - \gamma\eta(x) + \eta(x))\Delta(1) + (1-\gamma)(1-\eta(x))\Delta(0) \geq 0.
\end{aligned}$$

Let $\tilde{x}$ be the value of x that solves this at equality. The posterior beliefs induced by these strategies are

$$\begin{aligned}
\mu(1,0) &= 0. \\
\mu(1,1) &= \frac{\tau\pi}{\tau\pi + (1-\tau)(\pi(1-G(\tilde{x};1)) + (1-\pi)\gamma(1-G(\tilde{x};0)))}. \\
\mu(0,0) &= \frac{\tau}{\tau + (1-\tau)G(\tilde{x};0)}. \\
\mu(0,1) &= \frac{\tau\gamma(1-\pi)}{\tau\gamma(1-\pi) + (1-\tau)(\pi G(\tilde{x};1) + (1-\pi)\gamma G(\tilde{x};0))}.
\end{aligned}$$

Differentiating the incompetent type's constraint with respect to x yields

$$2 - \frac{\partial\eta(x)}{\partial x}(1-\gamma)(\Delta(1)+\Delta(0)) + (\gamma(1-\eta(x)) + \eta(x))\frac{\partial\Delta(1)}{\partial x} + (1-\eta(x))(1-\gamma)\frac{\partial\Delta(0)}{\partial x}.$$

Since $\mu(0,0)$ is decreasing in $\tilde{x}$, $\Delta(0)$ is increasing in $\tilde{x}$. Similarly, $\mu(1,1)$ is increasing in $\tilde{x}$ and $\mu(0,1)$ is decreasing in $\tilde{x}$. Hence by the intermediate value theorem there is a $\tilde{x}^*$ such that the incompetent type plays $a = 1$ iff $x^0 \geq \tilde{x}^*$. ■

Lemma A.14 *The equilibrium signal cutoff $\tilde{x}$ is inverse U-shaped in γ in the model with a pro-climate interest group.*

Proof of Lemma A.14: Define the function

$$I_\gamma(\tilde{x}) := 2\eta(\tilde{x}) - 1 + (\gamma - \gamma\eta(\tilde{x}) + \eta(\tilde{x}))\Delta(1;\tilde{x}) + (1-\gamma)(1-\eta(\tilde{x}))\Delta(0;\tilde{x}).$$

Clearly, $I_\gamma(\tilde{x})$ is increasing in $\tilde{x}$ and the point $\tilde{x}^*$ is defined by $I_\gamma(\tilde{x}^*) = 0$. By the implicit function theorem,

$$\frac{d\tilde{x}^*}{d\gamma} = -\frac{\partial I_\gamma(\tilde{x})/\partial\gamma}{\partial I_\gamma(\tilde{x})/\partial\tilde{x}}.$$

Differentiating with respect to γ yields

$$\frac{\partial I_\gamma(\tilde{x})}{\partial\gamma} = (1-\eta(\tilde{x}))(\Delta(1;\tilde{x}) - \Delta(0;\tilde{x})) + (\gamma - \gamma\eta(\tilde{x}) + \eta(\tilde{x}))\frac{\partial\Delta(1;\tilde{x})}{\partial\gamma}.$$

Now, $\mu(1,1)$ is decreasing in γ and $\mu(1,0)$ is increasing in γ so $\frac{\partial\Delta(1;\tilde{x})}{\partial\gamma} < 0$. Then the first term is positive and the second term is negative. Analogous to Lemma A.5, this function is negative for low γ and positive for high γ. Hence by the implicit function theorem $\tilde{x}^*$ is inverse U-shaped in γ. ■

Lemma A.15 *There exists π^* such that $\gamma^* = 0$ when $\pi > \pi^*$ and $\gamma^* = 1$ when $\pi < \pi^*$.*

Proof of Lemma A.15: The argument is identical to Lemma A.6 and so I omit details. As $\tilde{x}^*$ is inverse U-shaped in γ, the probability of climate action is U-shaped in γ. The special interest group seeks to maximize climate action, which happens at either $\gamma = 0$ or $\gamma = 1$. The function $\Gamma(\pi)$ again gives the net gain from choosing $\gamma = 1$ vs. $\gamma = 0$; since high π aligns with the interest group's preferred action, it selects $\gamma = 0$ when $\pi > \pi^*$ and $\gamma = 1$ when $\pi < \pi^*$. ■ ■

Politician and Interest Group Signal

In the main model, the politician is unable to condition her strategy on the signal s sent by the interest group. I now relax that assumption. This means that the politician's strategy is now a function of her type θ, her private signal x^θ, as well as the public signal s.

Proposition A.2 *In the model where the politician can observe the interest group's signal:*

- *The probability of climate action is increasing in β.*
- *The optimal level of misreporting is $\beta^* = 0$.*

The results of this proposition are relatively straightforward and uninteresting. If the politician can observe the interest group's signal and the interest group inflates the possibility of false negatives, then the politician and the voter rationally discount this. This entices the incompetent politician to pursue action more, as the voter uses the politician's action more heavily as an assessment of competence. These results also imply that there is an importance of having the politician not know what the interest group will ultimately report to the public.

Proof of Proposition A.2: It is straightforward to observe that the interest group's signal has no effect on the competent type: since she knows ω perfectly already, there is no incentive to deviate from her equilibrium strategy as posited in the main text. Hence, $\sigma^*(1, x^1, s) = x^1 = \omega$.

Now consider the incompetent type. Define $\rho(x^0, s; \beta) = P(\omega = 1 | x^0, s; \beta)$ to be the incompetent type's posterior belief that $\omega = 1$ given her private signal x^0 and the realization of the interest group's message s given β. Since $s = 1$ is a truthful message, $\rho(x^0, 1) = 1$ for any value of x^0. Hence in the subgame following $s = 1$, the incompetent type chooses $a = 1$ iff

$$1 + F(\mu(1,1)) \geq F(\mu(0,1)),$$

which is always satisfied, so $\sigma^*(0, x^0, 1) = 1$. Hence following $s = 1$, there is a pooling equilibrium on $a = 1$. Off path, $\mu(0, 1) = 0$ as it is the incompetent type who would possibly deviate.

Following $s = 0$, the incompetent type does not know if the special interest is truthfully reporting $\omega = 0$ or if with some probability β it misreported. Her posterior belief is $\rho(x^0, 0; \beta) = \frac{g(x^0;1)\beta\pi}{g(x^0;1)\beta\pi + g(x^0;0)(1-\pi)}$. Then the incompetent type's problem is to choose $a = 1$ whenever

$$\rho(x^0, 0; \beta) + F(\mu(1,0)) \geq (1 - \rho(x^0, 0; \beta)) + F(\mu(0,0)) \iff 2\rho(x^0, 0; \beta) - 1 + \Delta(0) \geq 0.$$

The posterior beliefs $\mu(1, 0; \tilde{x})$ and $\mu(0, 0; \tilde{x})$ are defined as in Lemma A.3 and are thus increasing in $\tilde{x}$ and decreasing in $\tilde{x}$ respectively. Then there is a cutoff $\tilde{x}^*$ such that the incompetent type plays $a = 1$ iff $x^0 \geq \tilde{x}^*$. Hence $\sigma^*(0, x^0, 0) = 1 - G(\tilde{x}^*; \omega)$.

Now observe that $\frac{\partial \rho(x^0,0;\beta)}{\partial \beta} = \frac{\pi(1-\pi)g(x^0;1)g(x^0;0)}{(g(x^0;1)\pi\beta + g(x^0;0)(1-\pi))^2} > 0$ for any β and any signal x^0, as the politician rationally discounts the special interest group's signal as reporting is more likely to be biased. Moreover, as in Lemma A.5, $\frac{\partial \Delta(0)}{\partial \beta} > 0$ and so by the implicit function theorem $\frac{d\tilde{x}^*}{d\beta} \leq 0$, or misreporting increases climate action. This is simply because the politician rationally discounts the signal $s = 0$ at higher values of β. As action is monotonically increasing in β, the optimal misreporting is $\beta^* = 0$. $\blacksquare$

B Exxon Source Documents

- Exxon scientist James Black's 1978 memo notes the scientific consensus that the climate is affected by fossil fuels. Notably, he writes that "present thinking holds that man has a time window of five to ten years before the need for hard decisions regarding changes in energy strategies might become critical." The document is available at https://climateintegrity.org/uploads/deception/1978-Exxon-BlackMemo.pdf.

- Exxon scientist Roger Cohen's 1982 memo summarizes findings about Exxon's internal climate modeling. It documents the projected relationship between increased carbon dioxide in the atmosphere and changes in the Earth's climate. It further discusses the scientific consensus around this result. The document is available at https://www.climatefiles.com/exxonmobil/1982-exxon-memo-summarizing-climate-modeling-and-co2-greenhouse-effect-research/.

- In 1996 and 1998, Exxon released pamphlets to the masses that sought to inject doubt into the public discourse about the validity of climate science and the subsequent need for policy action. In particular, one such pamphlet was entitled "Global climate change: everyone's debate," and is available at https://www.climatefiles.com/exxonmobil/1998-exxon-pamphlet-global-climate-change-everyones-debate/. The pamphlet "Global warming: who's right?" admonishes readers not to "ignore the facts" about climate change and is available at https://climateintegrity.org/uploads/deception/1996-Exxon-Global-Warming-Whos-Right.pdf.

- The "Victory Memo" of 1998 makes the goal to inject uncertainty into the public sphere clear: "victory will be achieved when average citizens 'understand' (recognize) uncertainties in climate science," and "recognition of uncertainty becomes part of the 'conventional wisdom."' The memo can be found at https://www.climatefiles.com/trade-group/american-petroleum-institute/1998-global-climate-science-communications-team-action-plan/.

- "The Greenhouse Effect" is a report published by a working group of Shell scientists in 1988 documents potential climate impacts, including rising sea levels, ocean acidification, and human migration, from continued fossil fuel production. The full document is available at https://www.documentcloud.org/documents/4411090-Document3.html.

- The Global Climate Coalition was a lobbying group of several large oil and gas companies that operated between 1989 an 2001. Its primary function was to coordinate messaging against global climate action like the ratification of the Kyoto Protocol. In 1995, the GCC internally circulated *Predicting Future Climate Change: A Primer*, which summarized the state of climate science. Notably, it reads, "The scientific basis for the Greenhouse Effect and the potential impact of human emissions of greenhouse gases such as CO2 on climate is well established and cannot be denied." The full document is available at https://www.ucsusa.org/sites/default/files/attach/2015/07/Climate-Deception-Dossier-7_GCC-Climate-Primer.pdf.

- While the GCC internally circulated *Predicting Future Climate Change: A Primer*, its public-facing publications of the time were very different. In 1995, it also published "Climate Change: Your Passport To The Facts," a booklet allegedly intended to introduce readers to essential facts about climate change. Facts include that "the notion that scientists have reached consensus that man-made emissions of greenhouse gases are leading to a dangerous level of global warming is not true" and "computer climate models, which are the basis for "predictions" of global climate change, suffer from severe flaws." The document is available at https://www.worthingtoncaron.com/documents/1995-CLIMATE-CHANGE-YOUR-PASSPORT.pdf.

- ExxonMobil published a series of newspaper ads in order to sow doubt into the public about climate science. In the spring of 2000, ExxonMobil rad the ad "Unsettled Science" in major news outlets (e.g., the *New York Times*). These ads also tried to discredit climate scientists. Scientists like Lloyd Keigwin later responded in the *Wall Street Journal* complaining that ExxonMobil had distorted his work by suggesting it supported the notion that global warming was just a natural cycle.[1]

[1] https://insideclimatenews.org/news/22102015/exxon-sowed-doubt-about-climate-science-for-decades-by-stressing-uncertainty/