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THE CALCULUS OF STONEWALLING

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ABSTRACT

We consider a politician's choice of whether to be evaluated, either by subjecting himself to a detailed interview or by asking for the appointment of a special prosecutor. If politicians are risk-neutral, then in equilibrium all choose to be evaluated. If politicians are risk-averse, then whether when they do or do not know the quality of their own actions, stable equilibria may exist in which politicians can avoid evaluation, or prefer evaluation by a body which can poorly discriminate between good and bad actions. The ability of voters to distinguish between good and bad politicians may therefore be limited.

KEY WORDS • information • revelation • stonewalling • uncertainty

1. Introduction

For government, or for that matter almost any organization, to function well, leaders who do well should be rewarded, and leaders who do poorly should be penalized or replaced. Often, however, voters may not directly know the quality of a leader's actions; they must rely on the judgement of evaluators (such as journalists). An added difficulty is that the leader has some control over whether he is evaluated by such experts, over how he is evaluated, and over the quality of the experts who evaluate him. Thus, a president subject to newspaper stories about sexual misdeeds may or may not claim executive privilege for witnesses. A candidate may hold a long press conference in which he answers all questions or he may evade questions. A prime minister faced with perceptions of weak parliamentary support can call for a vote of confidence, or he can instead avoid all controversial votes.

For succinctness we shall speak of a politician who had taken some action now subject to controversy. The action was either Good or Bad. For example, he may or may not have solicited improper campaign contributions; he may or may not be popular with the electorate; he may or may not have scored a diplomatic victory.

Some politicians may know whether they did Good or Bad; others may not. For example, a president may be evaluated by the quality of the cabinet

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members he appointed. When a cabinet member is accused of misdeeds, however, the president may be unsure whether the charges are true. Should s/he investigate the cabinet member or should s/he instead have the cabinet member stonewall? Similarly, a politician may be unsure whether each item on his income tax return is proper or whether some item could be interpreted as tax evasion. We shall consider both cases later.

The evaluator could be a court, the majority of a party, a special prosecutor, the General Accounting Office, a journalist and so on. What makes the problem non-trivial is that the public forms its posterior beliefs about the politician's actions by considering not only the evaluator's judgement, if any, but also by considering whether the politician chose to be evaluated. The main question is under what conditions he will prefer evaluation. If politicians who did Bad are most likely to avoid evaluation, then voters may infer a politician's quality from his willingness to be evaluated. But if politicians who did Bad and those who did Good make the same choice on evaluation, then voters may remain ignorant.

We shall see that risk-neutral politicians always choose evaluation. But otherwise in equilibrium some or all politicians avoid evaluation, leaving the public with imperfect information about the quality of the politicians' actions.

We follow the standard language in the literature in naming the different types of equilibria. An equilibrium in which different types of people behave differently is called a separating equilibrium; in our case a separating equilibrium would have a politician who did Good choosing to be evaluated and a politician who did Bad choosing to avoid evaluation. All other equilibria, in which different types of people may do the same thing, are called pooling equilibria. One pooling equilibrium, for example, would have both politicians who did Bad and politicians who did Good choosing to be evaluated; another pooling equilibrium would have a politician who did Bad avoiding evaluation and have a politician who did Good avoiding evaluation with a positive probability.

2. Literature

Since stonewalling, the politician's refusal to cooperate in an evaluation or to be evaluated at all, can be interpreted as a signal of guilt, our work necessarily relates to the classic signaling model (see Spence, 1973).[1] Our model also relates to Lazear (1986), who compares workers paid by piece rates and by salary: the output of the former is evaluated, while that of the latter is not.

1. Issues of evaluation also relate to analyses of how much information a principal wants to obtain about his/her agent, as found in Townsend (1979), Baiman and Demski (1980), Kanodia (1985), Border and Sobel (1987), Predergast and Topel (1996) and Cown and Glazer (1996).

Related work applied to politics considers how a candidate may gain from imperfect information about himself. Shepsle (1972) shows that ambiguity pays when voters are risk-loving. Glazer (1990) shows that if each candidate is uncertain about the median voter's preferred policy (and therefore faces the risk of stating an unpopular position), then in equilibrium both candidates may adopt ambiguous positions. The benefits of ambiguity rise further if the position announced by one candidate allows the other candidate to estimate more accurately the preferences of the voters. Similarly, Alesina and Cukierman (1990) show that a party can increase its popularity by concealing from voters its preferences.

3. Assumptions

3.1. Politician

The politician chooses to be evaluated if that maximizes his utility, $U(\pi)$, which increases with the public's posterior probability, π, that the politician did Good (G) rather than Bad (B).

Our general model assumes that the politician is uncertain about the quality of his action. Instead, we assume that politicians are of two types. A High-quality politician (or a type-H politician) did Good with probability $p_{G|H}$; he did Bad with probability $p_{B|H}$. A Low-quality politician (or a type-L politician) did good with probability $p_{G|L}$; he did Bad with probability $p_{B|L}$. We let $p_{G|H} > p_{G|L}$ and $p_{B|H} < p_{B|L}$. A politician knows his type, but may or may not know whether his action was Good or Bad.

3.2. Public

Before the public observes the politician's choice of whether to be evaluated, it has some idea of how likely he did Bad or Good. This idea is captured by the probability it assigns to the politician having done Good (or Bad). This probability is called the prior probability. After the public observes whether the politician chose evaluation, and after the public observes the outcome of any such evaluation, it revises its beliefs. For example, following a favorable evaluation, the public is more likely to think that the politician did Good. This revised probability is called the posterior probability. A rational person would form the posterior probability taking into account his prior probability, the likelihood that an evaluation is correct, the outcome of an evaluation and the choices different types of politicians would make. All these considerations are properly incorporated by making use of a formula known as Bayes Theorem.

The public uses its prior beliefs and its observations to determine the posterior probability, π, that the politician did Good. The calculus for determining the posterior beliefs in equilibrium is described in Section 4.

3.3. Evaluator

A single body evaluates the action of any politician who requests an evaluation. The evaluator says that the politician's action was either Good or Bad; the evaluator himself performs no Bayesian updating, but the public does. As appears realistic, the evaluation can be imperfect: with some probability a Good action will be evaluated as Bad. Denote the outcome of an evaluation by e, with $e = G$ or $e = B$. The probability of a correct evaluation of action a, with $a = G$ or $a = B$, is c_a, which satisfies $1/2 < c_a \leq 1$.

4. Solution

The public's posterior beliefs about the politician's action depend on the prior probability that the action was Good, on the strategy known to be used by different types of politicians and on the result of any evaluation. The calculus is described later. The posterior beliefs are summarized by the posterior probability that the politician did Good.

The solution under risk-neutrality, where a politician's utility is proportional to the posterior probability that he did Good, is instructive. Consider the plausible equilibria in which a high-quality politician is at least as likely as a low-quality politician to be evaluated. Then the only equilibrium has all politicians evaluated, for a high-quality politician who chooses evaluation increases the expected value of the posterior probability of having done Good. And if all high-quality politicians choose evaluation, then a low-quality one also does better by choosing evaluation.

Consider next the possibility that a low-quality politician is more likely than a high-quality politician to choose evaluation. Then any low-quality politician would prefer to avoid evaluation. Because with no evaluation, the expected posterior probability that he did Good is the probability that an agent in the pool of high-quality and low-quality politicians who avoid evaluation did Good, and in the possible equilibrium we are considering that pool has a higher fraction of high-quality politicians in it than does the pool of politicians who choose evaluation. Thus, under risk neutrality, no equilibrium can have a low-quality politician more likely than a high-quality politician to choose evaluation.

Combining the results in the two previous paragraphs, we conclude that in no equilibrium with risk-neutral politicians can some avoid evaluation with a positive probability.

One more case under risk-neutrality needs to be considered. What happens when a politician chooses an out-of-equilibrium strategy? We consider that by supposing that a politician who adopts an out-of-equilibrium strategy is deemed, a priori, to be a random draw from the population. Therefore a type-H politician would want to be evaluated if a politician of any other type would want to be evaluated. And if a type-L politician is expected to avoid evaluation, then a type-H politician would choose evaluation. Similarly, a type-L politician gains nothing in deviating from the equilibrium strategies. So once again, under risk-neutrality, all politicians will choose evaluation.

When politicians are risk averse, determining the equilibria becomes more complicated. Consider a high-quality politician. An evaluation is likely to make the posterior probability that he did Good exceed the prior probability that he did Good. But with positive probability the evaluation will say he did Bad, making the posterior probability smaller than the prior probability. A sufficiently risk-averse politician may therefore avoid evaluation. In the following we shall concentrate on risk aversion, investigating conditions for an equilibrium in which a politician of type t (with $t = L$ or $t = H$) seeks evaluation with probability α_t.

4.1. *Forms of equilibria*

Let the expected utility of a politician who avoids evaluation be U^{NE}. Similarly, let U_t^E be the expected utility of a type-t politician who chooses to be evaluated, with $t \in \{L,H\}$. An equilibrium can have all politicians choose evaluation, that is, in equilibrium $U^{NE} \leq U_t^E$ and $\alpha_H = \alpha_L = 1$. That equilibrium can be sustained if the public believes that anyone who avoids evaluation is likely to be Bad.

It is less evident that an equilibrium in which all politicians avoid evaluation is possible. We will show, however, that even a Good politician who knows the quality of his/her action for certain may avoid evaluation, if the evaluator is imperfect.

We denote the probability of an event A_1 given A_2, by $p_{A_1|A_2}$, where A_1 and A_2 may be B, G, L, H, E, NE, $e = B$, or $e = G$. Here E and NE refer to the events of choosing to be evaluated or not, and $e = B$ or $e = G$ refer to the outcome of the evaluation. Let p_L be the prior probability that the politician's type is L; p_H is defined analogously.

The utility of a politician who avoids evaluation is deterministic and independent of his/her type:

$$U^{NE} = U(p_{G|NE}) + U\left(\frac{p_{G|H}p_H(1-\alpha_H) + p_{G|L}p_L(1-\alpha_L)}{p_H(1-\alpha_L) + p_L(1-\alpha_L)}\right). \tag{1}$$

The expected utility of a type-t politician who chooses evaluation is

$$U_t^E = p_{e=G|t}U(p_{G|e=G}) + p_{e=B|t}U(p_{G|e=B}). \quad (2)$$

The following lemmas, the proofs of which are given in the Appendix, help us describe the equilibrium solutions.

LEMMA 1. $p_{G|e=G} > p_{G|e=B}$: *the posterior probability that a politician did Good is higher if the evaluator says he did Good than if the evaluator says s/he did Bad.*

LEMMA 2. $U_H^E > U_L^E$: *following an evaluation, the expected utility of a high-quality politician exceeds that of a low-quality politician.*

LEMMA 3. *Let α_t be the probability that a type-t politician chooses evaluation.*

1. *If in equilibrium $\alpha_H < 1$ then $\alpha_L = 0$: if some high-quality politicians avoid evaluation, then all low-quality politicians avoid evaluation.*
2. *If in equilibrium $\alpha_L > 0$ then $\alpha_H = 1$: if some low-quality politicians choose evaluation, then all high-quality politicians choose evaluation.*

COROLLARY 4. *The equilibrium can take one of five forms:*

1. *$U^{NE} \geq U_H^E$ and $\alpha_H = \alpha_L = 0$ (complete pooling; no type is evaluated);*
2. *$U^{NE} \geq U_H^E$ and $0 < \alpha_H < 1$, $\alpha_L = 0$ (partial pooling with L-types not evaluated);*
3. *$U_L^E < U^{NE} < U_H^E$ and $\alpha_H = 1$, $\alpha_L = 0$ (no pooling; only H-types evaluated);*
4. *$U_L^E = U^{NE}$ and $\alpha_H = 1$, $0 < \alpha_L < 1$ (partial pooling; all H-types and some L-types evaluated);*
5. *$U^{NE} \leq U_L^E$ and $\alpha_H = \alpha_L = 1$ (complete pooling; all types evaluated).*

We note that cases 1, 3, and 5 describe equilibria with pure strategies; cases 2 and 4 describe mixed strategies.

Corollary 4 derived the property that in equilibrium either $\alpha_L = 0$ or $\alpha_H = 1$: either a low-quality politician is certain to avoid evaluation; or a high-quality politician is certain to choose evaluation.

LEMMA 5. *When $\alpha_L = 0$, utility under no evaluation, U^{NE}, monotonically decreases with α_H, and U_H^E is invariant with α_H. When $\alpha_H = 1$, utility U^{NE} is invariant with α_L and U_L^E monotonically decreases with α_L.*

As a consequence of Corollary 4, the state space then has one dimensions, allowing us to use Figure 1. The x-axis describes the variables α_L and α_H. We first set α_L to 0 and increase α_H from 0 to 1. Then we set α_L to 1 and increase α_H from 0 to 1. The vertical axis shows utility. We show several functions U^{NE} as broken lines. We simplify the figure by drawing these

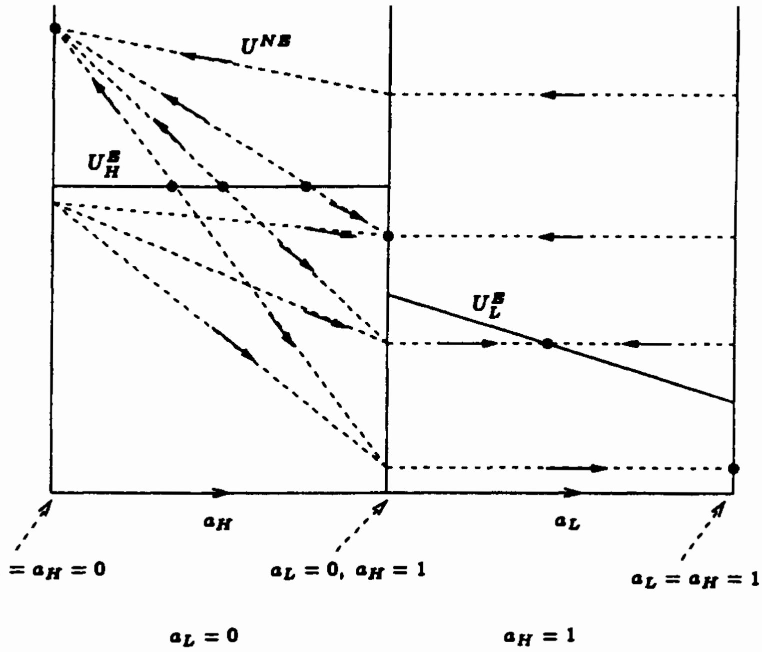

Figure 1. Equilibrium Types

functions as linear in the range where $\alpha_L = 0$. Circles mark intersection points corresponding to equilibria. The arrows in the figure show the direction of moves dictated by the equilibrium behavior of a politician.

Note that when $\alpha_L = 0$, a politician who chooses evaluation is a priori considered to be type H with probability 1, so that the values of U_L^E and of U_H^E are fixed as functions of α_H. On the other hand, in the region where $\alpha_H = 1$, the value of U^{NE} is constant: a politician who evades evaluation is considered to be of type L; independently of the value of α_L, utility U^{NE} thus equals $U(p_{G|L})$.

Figure 1 reveals an interesting property. Of the five forms of equilibria, the three pure ones (cases 1, 3, and 5 in Corollary 4) are Evolutionary Stable Strategies (ESS). That is, a small deviation from the equilibrium results in a return to it.[2] The pooling equilibrium (case 2 in Corollary 4) is unstable: a deviation leads to convergence to a different equilibrium. Such

2. For example, an equilibrium with $\alpha_L = \alpha_L = 0$ is an Equilibrium Stable Strategy. The incentive to be evaluated, and thus to move away from that equilibrium, is strongest for a type-H politician. We assume that here and find that the equilibrium is nevertheless an ESS.

an equilibrium is therefore unlikely to be observed. The fourth form of equilibrium, however, with $\alpha_H = 1$ and $0 < \alpha_L < 1$, is stable. The difference arises because if a type-H politician becomes more likely to choose evaluation, evaluation becomes more attractive for a politician of any type. But if a type-L politician is more likely seeks evaluation, any politician would find evaluation less attractive.

THEOREM 6. *For all values of the parameters satisfying* $c_i > \frac{1}{2}$ *and* $p_{G|H} > p_{G|L}$ *at least one but no more than three equilibria exist.*

PROOF: The proof follows from Corollary 4 and Figure 1 ■

As a special case we also have from Figure 1

THEOREM 7. *Under risk neutrality* $U^{NE} < U_H^E$ *for* $a_L = 0$, $U^{NE} < U_L^E$ *for* $a_H = 1$, *and the only equilibrium has* $a_L = a_H = 1$.

THEOREM 8. *If a politician knows the quality of his action with certainty, then an equilibrium similar to forms 3 or 4 in Corollary 4 (all politicians who did Good are evaluated but some who did Bad are not) is impossible.*

PROOF: In such a separating equilibrium, a politician who avoids evaluation signals that he did Bad. So he can do better by choosing evaluation, where with some positive probability he is evaluated as having done Good. ■

Theorem 8 implies that when politicians know with certainty the quality of their actions, only two forms of stable equilibria exist. In both equilibria a politician who did Bad avoids evaluation. A politician who did Good always chooses evaluation in one of the equilibria, and always avoids it in the other equilibrium.

4.2. *Quality of evaluator*

This section considers how the equilibrium changes as the evaluator becomes more accurate. Suppose, for example, that c_B is held fixed while c_G increases. An increase in c_G increases $p_{G|e=G}$ and reduces $p_{G|e=B}$. Consequently, compared to the prior probabilities, a politician who is evaluated will be more favorably viewed if the evaluation was Good, but will be viewed less favorably if the evaluation was Bad. For a sufficiently risk-averse politician, the change may reduce the benefits of an evaluation.

4.3. *Perfect evaluator*

Suppose the evaluation is perfect, that is, $c_B = c_G = 1$, and set $U(0) = 0$. Then

$$U_l^E = p_{G|l}U(1).$$

$$U^{NE} = U\left(\frac{p_H(1-a_H)p_{G|H} + p_L p_{G|L}}{1 - p_H a_H}\right) \qquad \text{when } a_L = 0$$

and

$$U^{NE} = U(P_{G|L}) \quad \text{when } a_H = 1$$

If the incumbent is risk-averse, then for $a_H = 1$ we have

$$U_L^E = p_{G|L}U(1) < U(p_{G|L}) = U^{NE}$$

Thus, under risk aversion and perfect evaluation a type-L politician avoids evaluation, since he prefers to be viewed as having his expected quality. In contrast, when the evaluator is imperfect, a type-L politician may sometimes prefer to be evaluated. We can reach the same conclusion from Figure 2. The figure shows three possible values for U_H^E in the range $a_L = 0$, differing by their relation to U^{NE}: in each equilibrium $a_L = 0$. We obtain the following result:

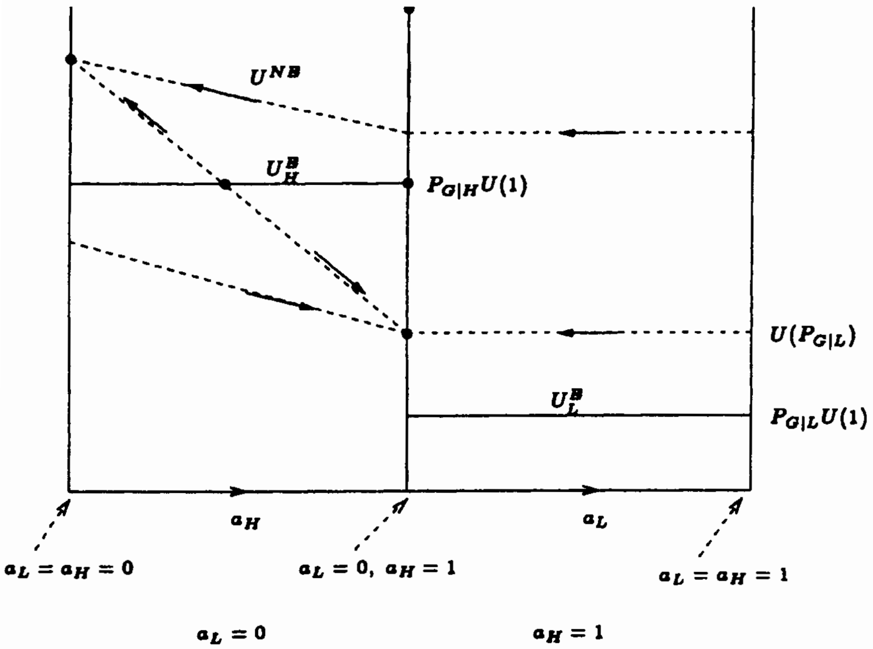

Figure 2. Equilibrium with Perfect Judge

THEOREM 9. *If the evaluator is perfect and politicians are risk-averse then an equilibrium of forms 4 or 5 in Corollary 4 (all H-types are evaluated and some or all L-types are evaluated) is impossible.*

The intuition for the result rests on the observation that an L-type who is not evaluated has utility $U(p_{G|L})$. But an L-type who is evaluated has utility $(1 - p_{G|L})U(0) + p_{G|L}U(1)$, which under risk aversion is less than $U(p_{G|L})$.

We see that a politician may be more willing to be evaluated by an imperfect evaluator than by a perfect one. A more responsible press, a less partisan congressional investigation or a more competent special prosecutor may therefore all lead to fewer voluntary evaluations and may thus lead to poorer information about a politician. Put differently, the benefits arising from a system of judgement depend not only on the accuracy of whatever judgments it makes, but also on the willingness of persons to subject themselves to its judgement.

5. Additional Applications

The model can be applied to additional situations. Consider the choice faced by a political candidate of whether to participate in a political debate. Since an election is a zero-sum game, why should both candidates agree to participate? It is not hard to see why the candidate behind in the polls would want a debate – in its absence he is likely to lose the election, but if he performs well he may win. But why should the front-runner participate? Our analysis suggests a reason. A candidate who avoids evaluation reveals that he is likely of low quality (for a candidate, low quality may refer to one who holds unpopular views, lacks command of the facts, speaks poorly or cracks under pressure). So a front-runner who avoids a debate may signal that he thinks he will perform poorly, thereby reducing support for him. The front-runner who wants to remain a front-runner may therefore participate in an activity, a debate, where he will be evaluated.

Finally, we note that because a politician's choice of who should evaluate him/her can signal the politician's beliefs about his own quality, evaluation may be more effective when politicians can freely choose whether to be evaluated than when they are forced to be evaluated. Consider equilibria with $\alpha_H = 1$ and $\alpha_L < 1$. In such equilibria, the posterior probability that a person evaluated as Good indeed did Good is higher than the posterior probability in any solution with both $\alpha_H = 1$ and $\alpha_L < 1$. That is, if the ability to do Good is more important for some positions than for others, then government may operate better when persons of different quality can choose whether to be evaluated, than when all are required to be evaluated or when all are required to be evaluated by experts of uniform quality.

APPENDIX

PROOF OF LEMMA 1.

$$p_{G\,|\,e=G} = p_{G\,|\,e=G} = \frac{p_{G\,|\,E}c_G}{p_{e=G\,|\,E}}$$

and

$$p_{G\,|\,e=B} = p_{G\,|\,e=B} = \frac{p_{G\,|\,E}(1-c_G)}{p_{e=B\,|\,E}}$$

Thus, our claim is equivalent to $c_G P_{e=B|E} > (1-c_G)p_{e=G|E}$ or

$$c_G[p_{H|E}(p_{G|H}(1-c_G) + p_{B|H}c_B) + p_{L|E}(p_{G|L}(1-c_G) + p_{B|L}c_B)] >$$
$$(1-c_G)[p_{H|E}(p_{G|H}c_G + p_{B|H}(1-c_B)) + p_{L|E}(p_{G|L}c_G + p_{B|L}(1-c_B))]$$

or to

$$c_G c_B(p_{B|H} + p_{B|L}) > (1-c_G)(1-c_B)(p_{B|H} + p_{B|L})$$

Because by assumption $c > (1-c_x)$ i = G, B, the inequality holds. ■

PROOF OF LEMMA 2.

By Equation 2 and Lemma 1, it suffices to prove that $p_{e=G|H} > p_{e=G|L}$. Equivalently,

$$[p_{G|H}c_G + (1-p_{G|H})(1-c_B)] - [p_{G|L}c_G + (1-p_{G|L})(1-c_B)]$$
$$= (p_{G|H} - p_{G|L})(c_G + c_B - 1) > 0$$

By our assumptions that $c_B > 1/2$, $c_G > 1/2$, and $p_{G|H} > p_{G|L}$ the inequality holds. ■

PROOF OF LEMMA 4.

If in equilibrium $\alpha_H < 1$ then $U^{NE} \geq U_H^E$. By Lemma 2 it follows that $U^{NE} > U_L^E$, so that $\alpha_L = 0$. Similarly, if in equilibrium $\alpha_L > 0$ then $U^{NE} \leq U_L^E$; by Lemma 2 it follows that $U^{NE} < U_H^E$, so that $\alpha_H = 1$. ■

PROOF OF LEMMA 5.

Consider first the case $\alpha_L = 0$. To show that U^{NE} monotonically decreases it suffices to prove the effect for $p_{G|NE}$. $p_{G|NE} = p_{G|H}p_{H|NE} + p_{G|L}p_{L|NE}$. If α_H increases, $p_{H|NE}$ increases and $p_{L|NE}$ decreases in the same amount. Since $p_{G|H} > p_{G|L}$, it follows that $p_{G|NE}$ decreases. To show that U_H^E is constant it suffices to show the result for $p_{G|e=G}$. In this case, however, only H-types choose evaluation, so that $p_{G|e=G} = p_{G|H,e=G}$, which is independent of α_H.

Consider now the case $\alpha_H = 1$. To show that U^{NE} is constant it suffices to show it for $p_{G|NE}$. In this case, however, a politician who avoids evaluation has type L, so that $p_{G|NE} = p_{G|L}$, which is independent of α_L. To show that U_L^E decreases we show it for $p_{G|e=G}$. In this case all H-types choose evaluation; as α_L increases the proportion of L-types among those who choose evaluation increases and $p_{G|e=G}$ decreases. ■

NOTATION

c_a, probability that evaluator correctly evaluates action a.
e, outcome of an evaluation, $e \in \{B,G\}$.
p_t, prior probability that the politician has type t.
U_t^E, expected utility of a type-t politician who is evaluated.
U^{NE}, utility of a politician who is not evaluated.
$p_{A_1|A_2}$, probability of an event A_1 given A_2 where A_1 and A_2 may be B, G, L, H, E, NE, $e = B$ or $e = G$.
α_t, probability that a type-t politician chooses to be evaluated.
π_t, posterior probability that politician did Good.

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