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### The Impact of Re-election Concerns on Truth-telling in a Cheap-Talk Model of a Bureaucrat's Advice

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#### Abstract

This paper analyzes the impact of a politician's re-election concerns on the truthfulness of a bureaucrat's advice in a two-period cheap-talk model of information transmission under the merit system. I demonstrate that the politician follows the bureaucrat's advice when his re-election concerns are strong, but he does not necessarily follow the bureaucrat's advice when his concerns are weak. I also demonstrate that when the politician has strong re-election concerns, the bureaucrat's advice is affected by the politician's initial reputation and the discount factor. Specifically, the region with an informative equilibrium expands when the politician's initial reputation improves or the discount factor increases. In contrast, when the politician has weak re-election concerns, the bureaucrat's advice is affected only by the discount factor. The region with an informative equilibrium expands only when the discount factor increases. Finally, I explore the implication for the voter's welfare in the equilibrium when re-election concerns are strong and when the concerns are weak.

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## 1. Introduction

In representative democracies, politicians set policies by voter mandate, but voters usually have insufficient information regarding a policy's likely effects. In many cases, politicians choose a policy that improves their own re-election chances over a policy that affects voters, and they may take advantage of their superior information to push a personally preferable policy forward. When the principals (voters) and the agents (politicians) have asymmetric information, the so-called principal-agent problem arises because the two parties have different goals. Research on the retrospective voting model asserts that the electoral system offers possible solutions to the principal-agent problem (e.g., Barro 1973, Ferejohn 1986). The policymaking process typically includes a third party, however, because politicians often need information from specialized advisors to create optimal policies.\*<sup>1</sup> Thus, to fully understand politicians' choices, we must also consider the behavior of these advisors. An advisor generally has more information about a particular policy decision than a politician does, and in order to implement her preferable policy, this advisor may manipulate the politician. Hence, it is important to characterize the conditions under which the advisor transmits her information honestly.

Although the literature has long explored the relationship between an advisor's behavior and a politician's decisions and characterized the conditions for giving truthful advice (e.g., Crawford and Sobel 1982, Morris 2001), the relationship between an advisor's behavior and elections has rarely been studied. Most models implicitly assume that the advisor is a governmental bureaucrat who is directly affected by the elections' result under a political appointee system. However, some countries have a merit system of bureaucracy, and the relationship between elections and bureaucrats' advice and behavior has not been explored in this context. In particular, a politician's re-election concerns may affect a bureaucrat's advice differently when the bureaucrat is not directly affected by the election results.

This paper explores this issue using a two-period cheap-talk model of the transmission of information between a politician and a bureaucrat under the merit system. I consider two types of politicians. Good politicians operate independent of interest groups, whereas bad politicians are cozy with interest groups. I demonstrate that when the politician has strong re-election concerns, the bureaucrat's advice is affected by the incumbent's initial reputation and the discount factor, and the region of the informative equilibrium expands when either the probability that the incumbent is a good politician or the discount factor increases. Because of the difficulty of realizing a public project in the next period, a higher probability that the incumbent is a good politician increases the bureaucrat's value of colluding with the politician relative to the value of the public project. Similarly, a higher discount factor also increases the relative value of colluding. In contrast, I demonstrate that when the politician has weak re-election concerns, the bureaucrat's advice is affected only by the discount factor. When a bad politician has weak re-election concerns and does not follow the bureaucrat's advice, only the discount factor influences the value of colluding relative to that of the public project.

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\*<sup>1</sup> Two countries in which bureaucrats under the merit system play a key role in governmental decision making are Japan and England. For example, MINISTERIAL CODE, a document setting out standards for government ministers in the United Kingdom, states, "Ministers have a duty to give fair consideration and due weight to informed and impartial advice from civil servants, as well as to other considerations and advice, in reaching policy decisions."

This paper draws on the cheap-talk model, which was pioneered by Crawford and Sobel (1982). In this model, an agent with superior information provides this information to a decision-making principal, and most papers in this field aim to characterize the conditions under which the agent provides truthful information to the principal. However, this literature limits the analysis to the relationship between these two agents (e.g., Crawford and Sobel 1982, Morris 2001, Ottaviani and Sorensen 2006 a, b, Wrasai and Swank 2007, Frisell and Lagerlof 2007) and does not incorporate voter pressure through elections. This paper analyzes the rarely discussed effect of a bureaucrat's advice on a politician's behavior by modeling bureaucrats, politicians, and voters and characterizes the conditions under which the bureaucrat provides truthful advice to the politician.

This paper is also related to the literature on the retrospective voting model. Coate and Morris (1995) show that an inefficient redistribution policy might be chosen when voters have incomplete information on the type of politicians and the policy's likely effects. Furthermore, Maskin and Tirole (2004) note that politicians may be more likely to choose a pandering policy in an election period. Although most models of the electoral system limit analysis to the relationship between politicians and voters, the model in this paper includes the advisor as well.

This study is organized as follows. In Section 2, I consider a two-period cheap-talk model of information transmission between a politician and a bureaucrat under the merit system. In Section 3, I analyze the perfect Bayesian Nash equilibrium of the model. Section 4 concludes with a summary.

## 2. Model

I consider a two period model,  $t = 1, 2$ . There are four players: a politician, a bureaucrat, an interest group, and a voter. In each period, the incumbent politician must decide whether to invest in a public project ( $A$ ) or to maintain the status quo ( $N$ ) after the bureaucrat provides information about the state of the world  $\omega_t \in \{H, L\}$ . The state of the world is drawn randomly and independently in each period and affects the outcome of the policy, and the probability that the state of the world is  $L$  is  $p \in (0.5, 1)$ , which is common knowledge.

If the politician chooses the public project policy  $A$  when the state of the world is  $\omega_t$ , then the voter obtains payoff  $G^{\omega_t}$  at the end of each period. Regardless of the state of the world, the bureaucrat and the interest group each get payoff  $I$  when the politician chooses policy  $A$ . The voter, the bureaucrat, and the interest group each obtain payoff 0 when the politician chooses the status quo policy  $N$ . This payoff structure can be interpreted as follows. Although the voter prefers implementing the efficient policy, which depends on the state of the world, the bureaucrat is eager to maximize his budget, and the interest group is interested in profiting from the public project.

I impose the following two assumptions.

**Assumption 1.** (I)  $G^H > 0 > G^L$ , (II)  $p(G^L + I) + (1 - p)(G^H + I) < 0$

Part (I) of assumption 1 states that the public investment policy is good for the voter only when the state of the world  $\omega_t$  is  $H$ . Part (II) of assumption 1 states that the voter's ex ante expected payoff from

the public investment policy is strictly negative.

Although the politician and the voter only know the prior probability  $p$  of state  $L$ , the bureaucrat knows the exact state of the world. The bureaucrat gives the politician advice  $m_t \in \{H, L\}$  about the state of the world, but that advice is not necessarily the true state of the world.

#### The interest group and the voter

The interest group receives a payoff when the public project investment policy is chosen. When the politician chooses policy  $x_t(m_t)$  in period  $t$ , the interest groups' expected payoff  $I(x_t(m_t))$  is given as follows.

$$I(x_t(m_t)) = \begin{cases} I & \text{if } x_t(m_t) = A \\ 0 & \text{if } x_t(m_t) = N \end{cases} \quad (1)$$

The voter cares whether a suitable policy is chosen. When the politician chooses policy  $x_t(m_t)$  in period  $t$ , the voter's expected payoff  $V(x_t(m_t), \omega_t)$  is given as follows.

$$V(x_t(m_t), \omega_t) = \begin{cases} G^H & \text{if } x_t(m_t) = A, \omega_t = H \\ G^L & \text{if } x_t(m_t) = A, \omega_t = L \\ 0 & \text{if } x_t(m_t) = N \end{cases} \quad (2)$$

#### The politician

The politician may be of the good type or the bad type. The bad type has a cozy relationship with the interest group, and the good type operates independent of the interest group. With probability  $\theta \in [0, 1]$ , the incumbent is a good politician.  $\theta$  can be interpreted as the incumbent's initial reputation (Coate and Morris 1995), which is the probability that the incumbent is good, and is estimated only by his appearance or past record. The voter cannot observe the politician's type, but the bureaucrat can. If the politician is good, he cares about maximizing social welfare, which is the sum of the voter's and the interest group's payoffs. When the politician chooses policy  $x_t(m_t)$  in period  $t$ , social welfare  $W(x_t(m_t), \omega_t)$  is given as follows.

$$W(x_t(m_t), \omega_t) = \begin{cases} G^H + I & \text{if } x_t(m_t) = A, \omega_t = H \\ G^L + I & \text{if } x_t(m_t) = A, \omega_t = L \\ 0 & \text{if } x_t(m_t) = N \end{cases} \quad (3)$$

If the politician is bad, however, he cares about the payoff  $I(x_t(m_t))$  of the interest group and the rent  $R > 0$  stemming from re-election, which can be interpreted as the "ego" rent containing such factors as a high social standing and various privileges (Rogoff 1990). Regardless of his type, the politician obtains no payoff when not in office.

I now define the probability of re-election  $\Psi(x_1(m_1), \omega_1)$  and the discount factor  $\delta \in (0, 1)$ .  $\delta$  can be interpreted as the degree of myopia of the players. The more the player values the current payoff, rather than a future payoff, the larger is  $\delta$ . In many cases, players may have different discount factors. However, for simplicity, I assume that the politician, the bureaucrat, and the voter have the same discount factor. If the politician is good, his expected payoff  $U^{gP}$  is given as follows.

$$U^{gP}(x_t(m_t), \omega_t) = W(x_1(m_1), \omega_1) + \delta \Psi(x_1(m_1), \omega_1) W(x_2(m_2), \omega_2) \quad (4)$$

If he is bad, his expected payoff  $U^{bP}$  is given as follows.

$$U^{bP}(x_t(m_t), \omega_t) = I(x_1(m_1)) + \delta \Psi(x_1(m_1), \omega_1) [R + I(x_2(m_2))] \quad (5)$$

### The bureaucrat

The bureaucrat cannot be replaced during the two periods because she is chosen by merit. I assume the bureaucrat obtains rent  $B > 0$  from the incumbent's re-election, which represents the merits of this position or future options. The bureaucrat obtains this rent through collusion with the politician because the same political regime continues for two periods<sup>\*2</sup>. The bureaucrat cares about the interest group's payoff  $I(x_t(m_t))$  and the rent  $B > 0$  from collusion. Her expected payoff  $U^B$  is given as follows.

$$U^B(x_t(m_t), \omega_t) = I(x_1(m_1)) + \delta \Psi(x_1(m_1), \omega_1) [B + I(x_2(m_2))] \\ + \delta [1 - \Psi(x_1(m_1), \omega_1)] [I(x_2(m_2))]$$

Here,  $I(x_1(m_1), \omega_1)$  is the payoff of the interest group at period 1,  $\delta$  is the discount factor,  $\Psi(x_1(m_1), \omega_1)$  is the probability of re-election of the incumbent,  $[B + I(x_2(m_2))]$  is the bureaucrat's payoff when the incumbent wins the election and chooses the policy in the second period,  $[1 - \Psi(x_1(m_1), \omega_1)]$  is the probability that the challenger wins, and  $[I(x_2(m_2))]$  is the payoff of the bureaucrat when the challenger chooses the policy in the second period.

### The timing of events

The timing of events is as follows. In the first period, nature creates the incumbent's type and this period's state of the world  $\omega_1 \in \{H, L\}$ . The bureaucrat observes the incumbent's type and the state of the world, and she gives the incumbent advice  $m_1 \in \{H, L\}$ . Then, the incumbent chooses a policy  $x_1 \in \{A, N\}$ , and the first period's outcome  $s \in \{G^H, G^L, 0\}$  is fulfilled. Finally, the voter observes the outcome  $s$ , the state of the world  $\omega_1$ , and the probability of the challenger is the good politician  $\tilde{\lambda}$ , and decides whether to re-elect the incumbent.

In the second period, nature again creates the state of the world  $\omega_2 \in \{H, L\}$ . The bureaucrat again observes the politician's type and the state of the world, and she gives the politician in office advice  $m_2 \in \{H, L\}$ . The politician in power chooses a policy  $x_2 \in \{A, N\}$ , and the second period's outcome is fulfilled.

## 3. Equilibrium

In this section, I seek a pure strategy perfect Bayesian Nash equilibrium of the game and solve it by backward induction. I focus on the informative equilibrium, in which the bureaucrat transmits true information to the politician ( $m_t = \omega_t$ ).

**Definition 1.** *An equilibrium is informative if the bureaucrat transmits the information truthfully to the politician i.e.,  $m_t = \omega_t$ , ( $t = 1$  or  $2$ ).*

<sup>\*2</sup> Ramseyer and Rosenbluth (1993) assert that during the long-term one-party rule of the Liberal Democratic Party in Japan, politicians controlled the bureaucrats under the merit system through such means as veto power over bureaucratic initiatives, interventions in personnel matters, and promises to reassign ex-government officials to positions in the private sector or semi-governmental organizations.

I show that an informative equilibrium does not exist in the second period and then identify the conditions for the existence of such an equilibrium in the first period.

### 3.1 The politician's policy choice and the bureaucrat's behavior in the second period

First, I analyze the politician's policy choice and the bureaucrat's behavior in the second period. Because this is a two-period model, the politician and the bureaucrat have no re-election concerns in the second period. From (1), then, the bureaucrat always gives advice  $m_2(\omega_2) = H$  independent of the state of the world  $\omega_2$ . Thus, an informative equilibrium does not exist in the second period. From (3) and assumption 1, a good politician who expected such policy advice from a bureaucrat chooses  $x_2 = N$ , and from (1), a bad politician chooses  $x_2 = A$ .

### 3.2 The first period's informative equilibrium

At the end of the first period, the voter observes the outcome  $s \in \{G^H, G^L, 0\}$  and decides whether to re-elect the incumbent or vote for the challenger. The probability that the challenger is a good politician is given by  $\tilde{\lambda} \in [0, 1]$ , which I interpret as the challenger's initial reputation. The value of  $\tilde{\lambda}$  is not known by the voter, the bureaucrat, or the incumbent until just before the election, when the challenger becomes a candidate. I assume that  $\tilde{\lambda}$  is drawn from a common knowledge cumulative distribution of the continuous uniform distribution  $F(\lambda) \equiv \Pr(\tilde{\lambda} \leq \lambda)$  over support  $[0, 1]$ .

The voter, who anticipates the policy choice above, will elect a good politician to office in the second period by observing  $\theta$ ,  $\tilde{\lambda}$ , and the first period's outcome  $s \in \{G^H, G^L, 0\}$ . If the voter observes  $s$  and anticipates that the incumbent is a good politician with probability  $\mu(s)$ , then he will re-elect the incumbent only when  $\tilde{\lambda} \leq \mu(s)$ . I denote the incumbent's re-election as  $e = 1$  and the challenger's election as  $e = 0$ . Thus, the voter's strategy is given by  $\sigma : (\theta, \tilde{\lambda}, s) \rightarrow \{1, 0\}$ . Similarly, the politician's and the bureaucrat's strategies are given by  $\zeta : (p, m_1, F(\lambda)) \rightarrow \{A, N\}$  and  $\chi : (\theta, \omega_1, F(\lambda)) \rightarrow \{H, L\}$ , respectively.

The voter can learn the state of the world indirectly by observing the outcome  $s$ . That is, an incumbent who chooses  $x_1(m_1) = A$  can achieve the outcome  $s = G^H$  only when  $\omega_1 = H$ . A voter who observes  $s = G^H$  and  $\omega_1 = H$  anticipates that the incumbent is a good politician with probability  $\mu(G^H)$ . The probability of the incumbent's re-election  $\Psi(x_1(m_1), \omega_1) = \Psi(A, H)$  becomes  $F(\mu(G^H)) = \Pr(\tilde{\lambda} \leq \mu(G^H))$ . I can derive  $\Psi(A, L)$ ,  $\Psi(N, H)$ , and  $\Psi(N, L)$  in the same manner. Thus, when the incumbent chooses  $x_1(m_1)$ , his probability of re-election  $\Psi(x_1(m_1), \omega_1)$  becomes as follows.

$$\Psi(x_1(m_1), \omega_1) = \begin{cases} F(\mu(G^H)) & \text{if } x_1(m_1) = A, \omega_1 = H \\ F(\mu(G^L)) & \text{if } x_1(m_1) = A, \omega_1 = L \\ F(\mu(0)) & \text{if } x_1(m_1) = N, \omega_1 = H \text{ or } L \end{cases} \quad (6)$$

From (3), if the bureaucrat gives honest advice to a good incumbent, the incumbent chooses  $x_1 = A$  when  $m_1 = H$  and  $x_1 = N$  when  $m_1 = L$  ( $x_1(H) = A, x_1(L) = N$ ). Similarly, a bad incumbent chooses one of the following options on the equilibrium path.

- (a)  $x_1 = A$  when  $m_1 = H$  and  $x_1 = N$  when  $m_1 = L$  ( $x_1(H) = A, x_1(L) = N$ ).
- (b)  $x_1 = A$  irrespective of the bureaucrat's advice ( $x_1(H) = A, x_1(L) = A$ ).
- (c)  $x_1 = N$  irrespective of the bureaucrat's advice ( $x_1(H) = N, x_1(L) = N$ ).
- (d)  $x_1 = N$  when  $m_1 = H$  and  $x_1 = A$  when  $m_1 = L$  ( $x_1(H) = N, x_1(L) = A$ ).

The voter prefers (a), in which the bureaucrat gives true information and the politician follows it. In (b), the politician may implement an inefficient public project, in (c), the politician does nothing, and in (d), the politician implements only an inefficient public project. I analyze each option for both a politician with strong re-election concerns ( $\frac{\delta(R+I)}{I} \geq 1$ ) and one with weak re-election concerns ( $\frac{\delta(R+I)}{I} < 1$ ). When  $\frac{\delta(R+I)}{I} \geq 1$ , the politician puts more value on staying in office through two periods than on choosing the best policy in the first period, and when  $\frac{\delta(R+I)}{I} < 1$ , the politician puts more value one choosing the best policy in the first period. Our results can be summarized as follows, with proofs represented in the Appendix.

**Proposition 1.**

1. *If the politician has strong re-election concerns ( $\frac{\delta(R+I)}{I} \geq 1$ ), the only informative equilibrium occurs when the bureaucrat gives honest advice to the politician regardless of his type and the politician follows it. I can summarize the incentive compatible conditions for this equilibrium's existence as follows.*

$$\frac{B}{I(\frac{1}{\theta\delta} + \frac{1-\theta}{2})} \geq 1 \quad (7)$$

2. *If the politician has weak re-election concerns ( $\frac{\delta(R+I)}{I} < 1$ ), the only informative equilibrium occurs when the politician is good and follows the bureaucrat's advice. If the politician is bad, he may implement an inefficient public project. I can summarize the incentive compatible conditions for this equilibrium's existence as follows.*

$$\frac{B}{I(\frac{1}{\delta} + \frac{1}{2})} \geq 1 \quad (8)$$

When the politician has strong re-election concerns, he follows the advice to obtain the high re-election rents regardless of his type, but when he has weak re-election concerns, he does not. Furthermore, when the politician has strong re-election concerns, the region of the informative equilibrium expands as his initial reputation  $\theta$  increases or as the discount factor  $\delta$  increases. Part 1 of Proposition 1 implies that when the politician is bad but follows the advice because of his strong re-election concerns, the probability that the challenger is good must be high for the challenger to win the election if the incumbent's initial reputation has a high probability of being good. Hence, if the challenger wins the election, he has a low probability of being bad and thus has a low probability of implementing the public project in the second period. Therefore, for the bureaucrat, the rent from colluding with the politician rises in comparison with the gain from a public project. Increasing the discount factor  $\delta$  also increases the relative value of the rent from collusion and decreases the relative importance of the first period for the bureaucrat. These factors enhance the bureaucrat's incentive with regard to truth-telling. In contrast, when the politician has weak re-election concerns, the region of the informative equilibrium only expands as the discount factor  $\delta$  increases. Part 2 of Proposition 1 implies that because the bureaucrat's advice cannot affect



the second period's policy choice owing to the politician's weak re-election concerns, only the discount factor influences the value to the bureaucrat of colluding in comparison with the public project rent. Increasing the discount factor  $\delta$  decreases the relative importance of the first period for the bureaucrat and increases the relative value of the rent from collusion. This enhances the bureaucrat's incentive with regard to truth-telling.

Additionally, to understand the relationship between the politician's re-election concerns and the voter's welfare, it is useful to calculate the voter's welfare in a truth-telling equilibrium when the concerns are strong or weak. Our results can be summarized as follows, with proofs presented in the Appendix.

**Proposition 2.** *Under (7) and (8), and for any politician's initial reputation  $\theta$  and the discount factor  $\delta$ , the politician's strong re-election concerns improve welfare.*

When the politician has strong re-election concerns, both types select the policy in accordance with the bureaucrat's advice in order to win the election, given that the bureaucrat gives true information. However, when the politician has weak re-election concerns, the good type follows the advice and the bad type selects the policy that results in large short-term benefits. Thus, the probability that the efficient policy for the voter is implemented by using the bureaucrat's information increases more when the re-election concerns are strong than when the concerns are weak. This result supports Suurmond et al.'s (2004) view that reputational concerns might be socially beneficial.

#### 4. Conclusion

In this paper, I analyzed the impact of a politician's re-election concerns on the actions of a bureaucrat in a two-period cheap-talk model of information transmission. The analysis results indicate that regardless of his type, the politician follows the bureaucrat's advice when he has strong re-election concerns. When he has weak re-election concerns, however, he does not necessarily follow the advice if he is the bad type. Furthermore, when the politician has strong re-election concerns, the bureaucrat's advice is affected by the incumbent's initial reputation and by the discount factor, and hence, the region of the informative equilibrium expands as the incumbent's initial reputation and the discount factor increase. By contrast, when the politician has weak re-election concerns, the bureaucrat's advice is only affected by the discount factor, and hence, the region of the informative equilibrium expands as the discount factor increases. These results suggest that a bureaucrat who is not directly affected by an election is still indirectly affected through pressure on politicians.

Although our model supposes each role in the policy-making process, in the real world, it is not always true that the player who has the authority is the one making decisions. How allocation of formal authority is transformed into real authority (Aghion and Tirole 1997) and then changes the political outcome is an important subject that would be worth investigating in our retrospective voting framework. Moreover, this model focuses on the impact of a politician's re-election concerns on the actions of a bureaucrat, and hence, it implicitly assumes the presence of an electoral system. Not all countries, however, have a well-functioning electoral system. In order to investigate the role of the electoral system itself more deeply, our results need to be compared with the case where there is no election, and thus, a future study should address the role of elections in a cheap-talk model of bureaucrats' advice.



## Appendix

**Proof of Proposition 1.**

First, I analyze the conditions for the existence of an equilibrium in case (a). A voter who observes the outcome  $s = G^H$  assumes that either the bureaucrat observed  $\omega_1 = H$  and gave advice  $m_1(H) = H$  and that the politician chose  $x_1(H) = A$  and is good or that the bureaucrat observed  $\omega_1 = H$  and gave advice  $m_1(H) = H$  and the politician chose  $x_1(H) = A$  and is bad. Thus, given  $s = G^H$ , Bayes' rule determines the voter's beliefs about the politician's type as follows.

$$\mu(G^H) = \frac{\theta(1-p)}{\theta(1-p) + (1-\theta)(1-p)} = \theta \quad (9)$$

Similarly, I can derive  $\mu(G^L) = 0$  and  $\mu(0) = \theta$ . The outcomes  $s = G^L$  or  $C$  are never realized on the equilibrium path. Thus, I assume that the politician never chooses the outcome  $s = G^L$  or  $C$  on the off-path if he is good.

Given these beliefs, the incentive compatibility condition when the politician is bad for  $x_1(H) = A, x_1(L) = N$  is that he does not choose  $x_1(L) = A$  but  $x_1(L) = N$  if  $m_1 = L$ , i.e., it must satisfy the following condition.

$$\Psi(N, L)\delta[R + I] \geq I + \Psi(A, L)\delta[R + I] \quad (10)$$

The left-hand side of (10) represents the expected payoff when the bad politician chooses  $x_1(L) = N$ . The right-hand side of (10) represents the expected payoff when the bad politician chooses  $x_1(L) = A$ .

From (5), it is desirable for the bureaucrat that the bad politician is in office in the second period. Thus, the incentive compatible condition that the bureaucrat gives advice honestly to both types of politician is that the bureaucrat gives advice  $m_1(L) = L$  to the politician when the state of the world is  $\omega_1 = L$ . I can write the incentive condition for the bureaucrat as follows.

$$\Psi(N, L)\delta B + [1 - \Psi(N, L)]\delta \frac{1 - \mu(0)}{2} I \geq I + \Psi(A, L)\delta B + [1 - \Psi(A, L)]\delta \frac{1 - \mu(G^L)}{2} I \quad (11)$$

The left-hand side of (11) represents the expected payoff when the bureaucrat gives advice  $m_1(L) = L$ . The right-hand side of (11) represents the expected payoff when the bureaucrat gives advice  $m_1(L) = H$ .

From (10) and (11), I can summarize the incentive conditions that the bureaucrat gives advice honestly to the politician regardless of his type and the politician follows it as follows.

$$\theta \geq \frac{I}{\delta[R + I]} \quad (12)$$

$$\frac{B}{I(\frac{1}{\theta\delta} + \frac{1-\theta}{2})} \geq 1 \quad (13)$$

Equation (12) is satisfied only when the politician has strong re-election concerns ( $\frac{\delta(R+I)}{I} > 1$ ).

Second, I analyze the conditions for the existence of the equilibrium in case (b). As above, I can derive  $\mu(G^H) = \theta$ ,  $\mu(G^L) = 0$  and  $\mu(0) = 1$ . Given these beliefs, the incentive compatibility condition when

the politician is bad for  $x_1(H) = A, x_1(L) = A$  is that he does not choose  $x_1(L) = N$  but  $x_1(L) = A$  when  $m_1 = L$ , i.e., it must satisfy the following condition.

$$I + \Psi(A, L)\delta[R + I] \geq I + \Psi(N, L)\delta[R + I] \tag{14}$$

The left-hand side of (14) represents the expected payoff when the bad politician chooses  $x_1(L) = A$ . The right-hand side of (14) represents the expected payoff when the bad politician chooses  $x_1(L) = L$ .

From (5), the bureaucrat prefers the bad politician to be in office in the second period. Thus, the incentive compatible condition that the bureaucrat gives advice honestly to both types of politician is that the bureaucrat does not give advice  $m_1(L) = H$  but  $m_1(L) = L$  to the politician when the state of the world is  $\omega_1 = L$ . I can write the incentive condition for the bureaucrat as follows.

$$\Psi(N, L)\delta B + [1 - \Psi(N, L)]\delta \frac{1 - \mu(0)}{2} I \geq I + \Psi(A, L)\delta B + [1 - \Psi(A, L)]\delta \frac{1 - \mu(G^L)}{2} I \tag{15}$$

The left-hand side of (15) represents the expected payoff when the bureaucrat gives advice  $m_1(L) = L$ . The right-hand side of (15) represents the expected payoff when the bureaucrat gives advice  $m_1(L) = H$ .

From (14) and (15), I can summarize the incentive conditions that the bureaucrat gives advice honestly to the politician regardless of his type and the politician also follows it as follows.

$$\frac{\delta[R + I]}{I} \leq 1 \tag{16}$$

$$\frac{B}{I(\frac{1}{\delta} + \frac{1}{2})} \geq 1 \tag{17}$$

Equation (16) is satisfied only when the politician has weak re-election concerns ( $\frac{\delta(R+I)}{I} < 1$ ).

Finally, I analyze the conditions for the existence of the equilibrium in cases (c) and (d). As above, I can derive  $\mu(G^H) = 1, \mu(G^L) = 0$ , and  $\mu(0) = \frac{p\theta}{p\theta+(1-\theta)}$  in case (c). I can also derive  $\mu(G^H) = 1, \mu(G^L) = 0$ , and  $\mu(0) = \frac{p\theta}{p\theta+(1-p)(1-\theta)}$  in case (d).  $\mu(G^H) > \mu(G^L)$  in both cases. This implies that if the bad politician chooses  $x_1(H) = N$ , then he obtains no payoff and the probability of re-election is reduced compared to the case  $x_1(H) = A$  in the first period. Thus, the bad politician has no incentive to choose  $x_1(H) = N$ , and there is no informative equilibrium in cases (c) and (d). □

**Proof of Proposition 2.**

The voter’s expected total welfare in a truth telling equilibrium when the politician has strong re-election concerns is

$$W^s = (1 - p)G^H + \delta\{\theta(1 - p) + (1 - \theta)^2(1 - p) + \theta(1 - \theta)(1 - p)\}G^H + \delta\{(1 - \theta)\theta p + (1 - \theta)(1 - \tilde{\lambda})p\}G^L.$$

The voter’s expected total welfare in a truth telling equilibrium when the politician has weak re-election concerns is

$$W^w = (1 - p)G^H + \delta\{\theta(1 - p)^2 + (1 - \theta)(1 - p)(1 - \tilde{\lambda})\}G^H + (1 - \theta)pG^L + \delta\{(1 - p)\theta p + (1 - \theta)(1 - \tilde{\lambda})p\}G^L.$$

Note that  $G^L < 0$  and comparing the two yields:

$$W^s - W^w = \delta(1-p)\{p\theta + (1-\theta)\tilde{\lambda}\}G^H - \{(1-\theta)p(1-\delta\theta) + \delta(1-p)\theta p\}G^L > 0$$

□

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