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ORIGINAL ARTICLE

Government transparency and policymaking

Justin Fox

Abstract We argue that making lawmakers more accountable to the public by making it eas-
ier to identify their policy choices can have negative consequences. Specifically, we analyze
a model of political agency with a single lawmaker and a representative voter. In our model,
the lawmaker has better information than the voter about the appropriateness of alternative
policy courses. In addition, the voter is uncertain about the incumbent's policy preferences
– specifically, the voter is worried the incumbent is an ideologue. Our model suggests that
when lawmakers expect their policy choices to be widely publicized, for those lawmakers
sufficiently concerned about reelection, the desire to select policies that lead the public to
believe they are unbiased will trump the incentive to select those policies that are best for
their constituents. Hence, lawmakers who would do the right thing behind close doors may
no longer do so when policy is determined in the open.

1 Introduction

Numerous scholars have observed that representative democracies can produce inefficient
outcomes.[1] The key thread running through this literature is that there are many situations in
which those policies that further an incumbent's reelection prospects differ from those poli-
cies that further the public's interest. Recent models of political agency suggest that when
such divergence exists, voter welfare can be improved by either term-limiting incumbents
or providing office holders with lifetime appointments (Maskin & Tirole, 2004; Smart &
Sturm, 2006). This paper takes a different tack. Instead of severing the electoral connection

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[1] For a summary of the various causes of such inefficiencies, see Gilmour (1995) and Besley and Coate
(1998).

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between office holders and the public when representative democracy is susceptible to ineffi-
ciencies, we examine the ways in which we can make representative democracy work better
by regulating the public's flow of information concerning the policymaking process. Thus,
this paper provides a formal analysis of the consequences of government transparency.[2] The
central contribution of this paper is in identifying specific conditions under which making
the policy process more open can have a deleterious effect on the public's welfare.

Despite the drawbacks of transparency captured in this paper's model, there has been a
recent trend towards greater openness in government proceedings – both at the executive
level (Frankel, 2000), by giving citizens greater access to government documents, and at
the legislative level, with more legislatures subjecting more of their votes to recorded roll
calls (Carey, 2004). An important rationale for this move towards transparency is the concern
that when incumbent policy choices are not known, the electorate is unable to punish those
policymakers who engage in corruption and other forms of public malfeasance.[34]

While scholars of American and Comparative politics (Arnold, 1990; Carey, 2004;
Gilmour, 1995) have long warned that transparency may have potential downsides, most
game-theoretic work on the effects of transparency captures only its potential benefits (e.g.,
Besley & Burgess, 2002; Snyder & Ting, 2005). Two strong assumptions, however, underlie
these formal models. The first assumption is that the public holds unbiased beliefs about the
effects of public policy. The second assumption is that lawmakers and the public are equally
well positioned to judge the appropriateness of legislation. As well will see, when either
assumption is relaxed, a rationale for secrecy in policymaking arises.

Recent empirical scholarship undercuts the assumption that the public is unbiased (Caplan,
2002).[5] In a series of papers, Caplan (2000, 2001, 2002, 2003) provides micro-foundations
for how rational voters can hold biased beliefs about the consequences of pubic policy – a
phenomena Caplan dubs "rational irrationality." Clearly, on those issues where the public's
beliefs are systematically biased, making the policy process more transparent has drawbacks,
as those politicians who would chose the policy that maximizes the public's welfare behind
closed doors have electoral incentives to cater to the public's misperceptions when policy is
made in the open.[6]

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[2] Throughout this paper, "government transparency" and "transparency" will refer to the publicizing of in-
cumbent policy choices.

[3] Miroff (1989, 157) argues that "the American people cannot judge what they do not know." As such, he
warns (1989, 152):

> Secret action . . . offers a president the opportunity to advance his foreign policy goals with methods of
> actions that would raise ethical as well as constitutional problems. It permits the president to persist in a
> course of policy even if that policy lacks support from, or is strongly opposed by, majorities in Congress
> and among the American people . . .

[4] On the connection between an incumbent's policy record and her electoral fortunes, Canes-Wrone, Brady, and
Cogan (2002) find that an incumbent's probability of reelection is decreasing in the percentage of the time she
votes with her party. On the connection between transparency and policymaking, Besley and Burgess (2002)
examine the relationship between newspaper circulation and government responsiveness to agricultural failures
across Indian states. They find that states with greater rates of newspaper circulation devote more resources
to alleviating agricultural failures.

[5] In that paper, Caplan finds a sharp divergence in the opinions of professional economists and the opinions
of the general public on various matters of economic policy. For example, Caplan points out that most voters
are convinced that the U.S. economy would perform better if only the U.S. gave *less* foreign aid, an opinion
held by almost no professional economist.

[6] In Caplan's (2003) framework, indiduals face psychic costs to giving up their preconceived notions about
the way the world works. In the domain of politics, given that an individual's vote has an infinitesimally small

In this paper, we examine the effects of relaxing the other restrictive assumption that has underpinned many formal analyses of transparency – the assumption that politicians and voters are symmetrically informed about the facts that determine a given policy's merits. This assumption is literally violated on matters of national security where policymakers have access to sensitive intelligence that cannot be released to the public. Moreover, it is reasonable to presume that in many policy domains, lawmakers, through their interactions with other actors in the political arena (e.g., members of the executive branch, members of their staffs, and lobbyists), are significantly more likely than the general public to be familiar with the latest evidence pertaining to the consequences of proposed legislation.

To see how a rationale for secrecy in policymaking arises once this second assumption is relaxed, consider the 2002 Congressional resolution authorizing war against Iraq. Here, members of Congress had access to intelligence pertaining to the likelihood that Iraq had weapons of mass destruction (WMD) that was not available to the public. For the purpose of our example, suppose that the "median" resident of each member's district wanted the U.S. military to invade Iraq if and only if Iraq possessed WMD. In addition, suppose that the electorate as a whole was averse to reelecting "dovish" lawmakers.[7]

Now, consider the situation of an incumbent who was not a dove, but believed that the administration's intelligence suggesting that Iraq had WMD was deeply flawed; that is, the incumbent believed that if her constituents had access to the same information she had, they would demand that she oppose the use of force against Iraq. Unfortunately, due to the classified nature of the government's intelligence, such an incumbent could not concretely and credibly convey her doubts about the intelligence to her constituency. As a result, the public could not be entirely certain whether opposition to the use of force against Iraq was based on doubts about the intelligence's legitimacy, or, instead, was the result of a general disinclination towards preemptive military action. Hence, it is quite possible that an incumbent in the above position supported the use of force against Iraq, despite her better judgment, in order to signal to the electorate that she was *not* dovish on matters of national security. Thus, if the vote authorizing war against Iraq had instead been taken in secret, the quality of intelligence necessary to yield majority support would likely have been significantly higher.

To capture situations like the above formally, we examine a two-period model of lawmaking with an election held in between periods. In our model, the utility the public receives from a given policy depends on the realization of the underlying "state of the world." As discussed earlier, we are interested in the consequences of transparency in environments where lawmakers are in a better positions than the public to judge the merits of public policy. To model this, we suppose only the former directly observe the state of the world. Finally, we assume that the public is uncertain of the incumbent's policy preferences. Specifically, we allow for two types of politicians – "unbiased" and "biased." In our framework, unbiased politicians share the public's state-contingent policy preferences, whereas biased politicians do not.

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impact on the direction of public policy, a voter has little incentive to give up his policy predispositions. As a result, it is individually rational for a voter to maintain his initial beliefs about the effects of public policy even when presented with evidence suggesting that those beliefs are biased away from the truth. When the median voter's beliefs about policy are biased, lawmakers will have electoral incentives to pursue policies consistent with those biases. This results in suboptimal policies being enacted into law. Note, in Caplan's framework, political failure can arise even when voters are not at an informational disadvantage vis-à-vis politicians.

[7] Dovish legislators are taken to be those who oppose preemptive military action against gathering military threats regardless of the circumstances.

We find that when lawmakers are better informed than the public about the underlying state of the world, parameterizations of the model always exist in which increasing the transparency of the policy process harms the public. To establish this claim, we show that unbiased politicians, who always select the policy that maximizes the public's welfare when policy is determined behind closed doors, no longer do so when policy is made in the open. In our setting, when policy is observable, lawmakers that place sufficient weight on being reelected do not select policies that benefit their constituents if doing so might lead the electorate to infer that they are biased.

This paper is related to the larger literature on political agency that examines incumbent decision making in settings where the public is unsure about the appropriate policy course and the personal attributes of lawmakers. While this paper focuses on the case where lawmakers have private information about their policy preferences,[8] other papers in this literature examine settings where lawmakers have private information about their competence.[9] Prat (2005) has analyzed the welfare consequences of transparency in the latter environment. In doing so, he identifies a rationale for secrecy that is related to that identified here. Whereas in this paper's setting, politicians have an electoral incentive to convince the electorate that they are unbiased, in Prat's setting, politicians have an electoral incentive to convince the electorate that they are competent. When policy is made in secret, Prat argues that both competent and incompetent politicians pursue the policy course that they believe will maximize the public's welfare. However, when policy choices are transparent, both types of politicians will select the policy that maximizes the public's perception of their competence. This can harm the public's welfare when the policy that maximizes the politician's reputation for being competent does not coincide with her private information about which policy is best for the electorate. This paper can be viewed as extending Prat's analysis to an environment where politicians are homogenous in their competence, but heterogonous in their policy preferences.

This paper proceeds as follows. Section 2 formulates our model of political agency. Section 3 characterizes the main technical results of the paper. There, we also discuss why the inefficiencies transparency induces in this paper's framework are *not* the result of politicians "pandering" to ill-conceived public opinion, a phenomena that can arise in settings where the public's beliefs about the consequences of public policy are systematically biased away from the truth. Section 4 concludes.

2 The model

2.1 Timing and payoffs

We analyze a two-period model of lawmaking and elections. In each period $t \in \{1, 2\}$, the office holder selects a policy $x_t \in \{0, 1\}$. Between periods, an election is held between an existing incumbent and a challenger. The incumbent selects policy in the first period. The election winner, determined by a representative voter, selects policy in the second period.

The payoff an agent receives from the policy selected in period t may depend on the *period-t state of the world* $s_t \in \{0, 1\}$. We assume that s_t is drawn at the beginning of period

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[8] A sampling of papers that also examine policymaking in such a framework include Austen-Smith (1992), Canes-Wrone and Shotts (forthcoming), Maskin and Tirole (2004), and Smart and Sturm (2006).

[9] A sampling of this literature includes Canes-Wrone, Herron, and Shotts (2001), Glazer (2002), and Majumdar and Mukand (2004).

t, and that s_1 and s_2 are drawn independently. With probability p, the state of the world in period t is equal to one. The *period-t outcome* is a pair (x_t, s_t).

The voter's preference over policies depends on the state of the world. Specifically, the voter would like the politician to select the policy that matches the state. To represent this formally, the voter's payoff in period t is specified as

$$v(x_t, s_t) = x_t s_t + (1 - x_t)(1 - s_t).$$

As such, when the office holder's policy choice matches the state of the world (i.e., $x_t = s_t$), the voter receives a payoff of one, whereas when the office holder's policy choice does not match the state of the world (i.e., $x_t \neq s_t$), the voter receives a payoff of zero. Consequently, whenever $x_t = s_t$, we shall say that the office holder's policy choice was *appropriate*, and whenever $x_t \neq s_t$, we shall say that her policy choice was *inappropriate*.

Turning to the preferences of lawmakers, we allow for heterogeneity in their policy preferences and value they attach to holding office. A politician's preferences over policies is characterized by $\theta \in \{u, b\}$. A politician for whom $\theta = u$ will be referred to as *unbiased*, and a politician for whom $\theta = b$ will be referred to as *biased*. The *rent* a politician receives when holding office is given by $\rho \in \mathbb{R}_+$. We think of ρ as representing some combination of a lawmaker's salary and the intrinsic value that she places on holding office. We refer to (θ, ρ) as a politician's *type*.

For each state of the world, unbiased politicians share the representative voter's preference over policies. (Hence, an unbiased politician maximizes her policy payoff by matching policy to the state.) Their per-period payoff from selecting x_t while in office is specified as:

$$u_u(x_t, s_t; \rho) = v(x_t, s_t) + \rho.$$

Biased politicians, however, prefer policy zero regardless of the state of the world. Their per-period payoff from selecting x_t while in office is specified as:

$$u_b(x_t, s_t; \rho) = \begin{cases} 1 + \rho & \text{if } x_t = 0 \\ \rho & \text{if } x_t = 1 \end{cases}.$$

Hence, a biased politician's policy preference is aligned with the voter's only when the state of the world is zero. We might think of biased politicians as being "political ideologues." Alternatively, we might think of biased politicians as those who have been captured by an interest group that benefits from policy zero regardless of the state of the world.

It follows from the above specification of politician utilities, the greater the rent ρ from holding office, the more the incumbent cares about reelection.[10] For ease of exposition, we assume that a politician receives a payoff of zero in those periods in which she does not hold office.

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[10] Thus, an incumbent for whom $\rho = 0$ cares only about policy outcomes, and an incumbent for whom $\rho = \infty$ cares only about reelection.

All agents discount future payoffs by $\delta \in [0, 1)$.[11] An agent's payoff to the game is given by the sum of its discounted per-period payoffs. Finally, we assume that first-period payoffs are not realized until after the election.[12]

2.2 Information

The voter's state-contingent policy preferences are common knowledge. In addition, we assume that in each period, the office holder knows the realization of that period's state of the world. This taken together with the common knowledge of the voter's policy preferences implies that each period's office holder knows which policy is the appropriate policy course from the perspective of our representative voter.

Voters, however, are taken to be uncertain of the motivations of politicians, and, in addition, might be uncertain of the state of the world. To capture the former type of uncertainty, we assume that each politician's type (θ, ρ) is private information. Hence, when a politician assumes office, the voter does not know whether she is biased or unbiased. The probability model from which a politician's type is drawn, however, is known. With probability q, the politician is unbiased.[13] And, the density from which a politician's rent ρ is drawn is f, where f has full support on $[0, \infty)$. ρ and θ, both random variables from the perspective of the voter, are assumed to be statistically independent.

2.3 Preliminaries

Before examining the effects of transparency on voter welfare, we identify several key features of equilibrium behavior that hold across all of the models analyzed here. In order to do so, we employ a form of backwards induction.[14]

Since the game ends after the second-period policy is chosen, it is immediate that the election winner selects her preferred policy. Consequently, in the second period, unbiased politicians match policy to the state, and biased politicians select policy zero regardless of the state. Hence, a biased politician's (second-period) policy choice matches the state of the world with probability $(1 - p)$.

Having pinned down the election winner's second-period behavior, the voter's (second-period) payoff when an unbiased politician wins the election is 1, while his expected (second-period) payoff when a biased politician wins the election is $(1 - p)$. Letting π denote the voter's updated belief that the incumbent is unbiased, it follows that the voter's expected payoff from reelecting the incumbent is

$$\pi + (1 - \pi)(1 - p),$$

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[11] All results in this paper would continue to hold if we allowed $\delta = 1$. However, some of the welfare comparisons between informational regimes are more easily established when we allow the voter to discount future payoffs.

[12] If first-period payoffs were realized before the election, when casting his ballot, the voter would know whether the incumbent's policy choice was appropriate simply by observing his own utility level. Such an environment is isomorphic to an environment where the voter directly observes the first-period state prior to the election.

[13] Note, we are assuming that both the incumbent and the challenger are biased in the same direction. However, if one assumes that the incumbent's probability of reelection is an increasing function of the public's belief that she is unbiased, then the welfare results of this paper extend to the case in which the voter is concerned that the incumbent is biased towards policy zero and the challenger is biased towards policy one.

[14] Technically, our solution concept is perfect Bayesian equilibrium, henceforth referred to as equilibrium.

whereas the voter's expected payoff from electing the challenger is

$$q + (1 - q)(1 - p),$$

where q was defined as the voter's prior that an untried politician is unbiased. Consequently, it is optimal for the voter to reelect the incumbent only when $\pi \geq q$: the voter reelects the incumbent only when his updated belief that the incumbent is unbiased is greater than his prior that the challenger is unbiased.

Finally, we turn our attention to the incentives the incumbent faces when selecting policy in the first period. Let r denote the incumbent's probability of reelection when she chooses her preferred policy, and let r' denote the incumbent's probability of reelection when she chooses her less preferred policy. (Both r and r' are determined in an equilibrium.) Her expected payoff from choosing her preferred policy is

$$(1 + \rho) + r\delta(1 + \rho),$$

whereas her expected payoff from choosing her less preferred policy is

$$\rho + r'\delta(1 + \rho).$$

Consequently, the incumbent will select her less preferred policy only if

$$r' > r$$

and

$$\rho > \frac{1 - \delta(r' - r)}{\delta(r' - r)}.$$

The first condition requires that the incumbent's less preferred policy strictly maximize her probability of reelection. The second condition requires that the incumbent is sufficiently concerned about begin reelected. Summarizing the above, we have:

Result 1. In any equilibrium of the model:

a. The election winner selects her preferred policy;
b. The voter reelects the incumbent only if his updated belief that the incumbent is unbiased is greater than or equal to his prior belief that the challenger is unbiased;
c. The incumbent selects her less preferred policy (in the first period) only if, by doing so, she strictly maximizes her probability of reelection, and she places sufficient weight on holding office.

3 Incumbent behavior and voter welfare under alternative informational regimes

In this section, we establish that the welfare consequences of making the policy process more open to the public depends, in large part, upon whether incumbents are better informed than the public about the underlying state of the world. When both lawmakers and the public know the state of the world, we show that transparency benefits the public. However, when

this condition is not satisfied, we identify conditions under which transparency can have a deleterious effect on the public's welfare.

In what follows, we shall say that an incumbent-type's policy strategy is *truthful*, if for each state of the world, it specifies the policy that matches the state.[15] In other words, an incumbent who employs a truthful strategy is a perfect agent of the voter, always selecting the appropriate policy course. Clearly, the voter's expected first-period payoff is increasing in the fraction of incumbent-types that employ a truthful strategy. Additionally, we shall say that an incumbent-type's policy strategy is *inflexible* if it specifies the same policy regardless of the state.

3.1 Unobservable policy

In order to understand the effects of transparency on voter welfare, we need a prediction of incumbent behavior when policy is determined behind closed doors. As such, this subsection considers the case where the voter does not observe the incumbent's policy choice prior to the election. This version might approximate an environment in which voters are disengaged from the political process, or, perhaps, policymaking in a legislature where roll-calls are not recorded. In the latter setting, voters might know the outcome of the legislative roll-call, but they would not know how their representative voted.[16] Our main result of this subsection is:

Result 2. Suppose the incumbent's policy choice is not observed by the voter. Then in any equilibrium, each incumbent-type selects her preferred policy (in the first period), and the voter is indifferent between reelecting and dismissing the incumbent.

Hence, when policy is unobservable, unbiased incumbents employ a truthful strategy, whereas biased incumbents select policy zero regardless of the state. In other words, when policy is determined behind close doors, unbiased incumbents always select the appropriate policy; the policy choice of biased incumbents, however, is only appropriate when the state of the world is equal to zero. Consequently, the probability that a biased incumbent happens to select the appropriate policy in the first period is simply $(1 - p)$, the ex-ante probability that the state of the world is equal to zero.

The logic behind this result is straightforward. As the voter does not observe the incumbent's policy choice, the incumbent's probability of reelection is independent of what she chooses. Thus, each incumbent-type selects her preferred policy as there is no electoral benefit from doing otherwise.[17]

The voter's equilibrium expected payoff when incumbent policy choices are concealed is

$$W_c \equiv (1 + qp - p)(1 + \delta).^{18}$$

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[15] Similar terminology is employed in Smart and Sturm (2006).

[16] For example, the voter would know whether the legislature approved a tax cut, but he would not know whether his representative voted for that tax cut. See Stasavage (forthcoming) for an explicit analysis of transparency in a legislative setting.

[17] Formally, this is a direct consequence of Result 1.

[18] As discussed in Section 4.1, if we allow for pre-electoral feedback regarding the outcome of the incumbent's policy choice (i.e., whether policy matched the state), then those biased incumbents that place sufficient weight on reelection will employ a truthful strategy as well. Hence, W_c can be viewed as a lower bound on the public's welfare when policy choices are concealed.

The term $(1 + qp - p)$ is the voter's per-period expected payoff when each politician-type selects her preferred policy. Note, W_c is increasing in the probability q that a randomly drawn politician is unbiased. This follows because, behind closed doors, unbiased politicians are perfect agents of the voter, always matching policy to the state of the world. Additionally, W_c is decreasing in the probability p that the state of the world is equal to one. This follows since it is only when $s = 0$ that biased politicians match policy to the state. Consequently, when the fraction of unbiased politicians in the candidate pool is large or when the ex-ante probability that $s = 0$ is large, the benefit the voter stands to gain from making the policy process less secretive is, at best, marginal. When either of the these conditions are met, the probability that lawmakers would chose the appropriate policy course behind closed doors is high, and, as a result, little can be gained from making the policy process more open to the public.

3.2 Observable policy

We now turn to analyzing the consequences of making the policy process more transparent; specifically, in this subsection, we will assume that the voter observes the incumbent's (first-period) policy choice. Relative to the case where incumbent policy choices are concealed from the public, transparency can potentially improve voter welfare by enabling voters to screen unbiased incumbents from biased incumbents, which, in turn, may have a disciplining effect on incumbent behavior. Formally, we shall say that transparency *disciplines* incumbent behavior if the probability that the first-period policy matches the first-period state is greater than when policy choices are concealed.[19] We shall say that transparency *screens* unbiased incumbents from biased incumbents if the probability that the election winner is unbiased is greater than when policy choices are concealed.[20]

Not surprisingly, in what follows, we establish that transparency enables the voter to screen unbiased incumbents from biased incumbents. However, somewhat surprisingly, this increased ability to screen incumbents can weaken incumbent discipline when, relative to the public, lawmakers are better able to judge the appropriateness of alternative policy courses. Due to the latter possibility, transparency can lower voter welfare in this paper's theoretical framework.

In this subsection, we assume that the public knows the incumbent's policy choice, but does not know the state of the world. This setting approximates an environment where the primary source of the public's information regarding the policy process are thirty-second campaign spots; such spots typically provide information about how a legislator voted, but rarely provide enough context so as to understand why the legislator voted the way that she did. This setting also captures aspects of policymaking on issues of national security, where at the time of the lawmaker's decision, she is not able to reveal the details of the intelligence upon which her decision was based. In this subsection, we formally establish that when lawmakers know the state and the public does not, transparency can weaken incumbent discipline. In doing so, we are able to identify conditions under which the public is better off when policy is determined behind closed doors.

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[19] Hence, transparency disciplines incumbent behavior when the probability that the first-period policy matches the first-period state is greater than $q + (1 - q)(1 - p)$.

[20] Hence, transparency has a screening effect when the equilibrium probability that the election winner is unbiased is greater than q.

We begin by stating the equilibrium behavior under this subsection's informational regime. Define $\bar{\rho} \equiv (1 - \delta)/\delta$.[21] An incumbent-type for whom $\rho = \bar{\rho}$ is exactly indifferent between selecting her less preferred policy (in the first period) and winning (reelection), and selecting her preferred policy and losing. Consequently, incumbent-types whose rent from holding office is greater than $\bar{\rho}$ will be said to be *reelection oriented*, as these incumbents maximize their payoff to the game by selecting whichever policy maximizes their probability of reelection. For analogous reasons, incumbent-types for whom ρ is less than $\bar{\rho}$ will be said to be *policy oriented.*

Result 3. Suppose the voter can observe the incumbent's policy choice but not the state of the world. An equilibrium to the model exists in which:

a. If the incumbent selects policy zero, she is defeated, whereas if she selects policy one, she is reelected.
b. If $\theta = b$ and $\rho \leq \bar{\rho}$, then for each $s \in \{0, 1\}$, the incumbent selects policy zero.
c. If $\theta = u$ and $\rho \leq \bar{\rho}$, then for each $s \in \{0, 1\}$, the incumbent matches policy to the state of the world.
d. If $\theta \in \{u, b\}$ and $\rho > \bar{\rho}$, then for each $s \in \{0, 1\}$, the incumbent selects policy one.

Further, no other equilibrium exists.

Proof: See Appendix B.

Thus, when policy is observable, not every incumbent-type selects her preferred policy in the first period. For example, when the state is zero, both biased and unbiased incumbents prefer policy zero. Nevertheless, those that place sufficient weight on gaining reelection wind up selecting policy one instead. Therefore, transparency alters the likelihood that the first-period policy matches the first-period state.

Before spelling out the conditions under which the voter might be better off having policy determined behind closed doors, we first provide some of the intuition that underlies Result 3. Note, a key feature of Result 3 is that while unbiased politicians are prefect agents of the voter when policy is determined behind closed doors, they are no longer so when policy is determined in the open. This results from the fact that when an incumbent's policy choice is publicized, the incumbent must be concerned not only about the policy's effect on her own utility, she must also consider the policy's effect on her reelection prospects.

It follows from our earlier discussion of the voter's incentives, the voter will reelect the incumbent if and only if she believes the incumbent is less likely than the challenger to be biased in favor of policy zero. At the time of the election, the only information the voter has to update his prior regarding the incumbent's bias is the incumbent's first-period policy choice. The key step to proving Result 3 is showing that, in any equilibrium, the voter believes that an incumbent who selects policy one is less likely to be biased than an incumbent who selects policy zero.

To see why the preceding claim holds, first, fix the respective probabilities of reelection associated with the selection of policy zero and policy one. Finally, assume that the value the incumbent attaches to holding office is $\hat{\rho} > 0$. It is easily verified that if such an unbiased incumbent finds it optimal to select policy zero, then so will such a biased incumbent. However, when $\hat{\rho} < \bar{\rho}$, the opposite is not true. For example, suppose that state of the world is one and the incumbent places almost no weight on holding office – that is, the incumbent

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[21] $\bar{\rho} = [1 - \delta(r' - r)]/[\delta(r' - r)]$, where $r' = 1$ and $r = 0$.

is policy oriented. While such a biased incumbent will find it optimal to select zero, such an unbiased incumbent will find it optimal to select policy one. As a result of the above, in any equilibrium, the probability that a biased incumbent selects policy zero is greater than that of an unbiased incumbent. Thus, given the incumbent's equilibrium strategy, Bayesian updating by the voter leads him to believe that an incumbent who selects policy zero is more likely to be biased than an incumbent who selects policy one.[22] Consequently, in any equilibrium, the voter reelects the incumbent if and only if policy one is selected in the first period.

In sum, voter ignorance of the state of the world combined with the voter's equilibrium updating leads all incumbents who place sufficient weight on reelection to use their policy choice to signal to the electorate they are unbiased. To signal they are unbiased, they avoid selecting the policy preferred by biased politicians. Thus, the voter's attempt to weed out biased politicians from the pool of office holders leads reelection oriented incumbents to select policy one (in the first period) even when they know policy one is inappropriate. Importantly, this perverse consequence of transparency persists even when the fraction of biased politicians in the candidate pool approaches zero.

As a result of the above incentives, the possibility arises that transparency weakens incumbent discipline, potentially lowering the voter's welfare vis-á-vis a situation where policy is determined behind closed doors. To see how this can occur, note that transparency decreases the likelihood that an unbiased incumbent matches policy to the state. In addition, when the probability that $s = 0$ is greater than one-half (i.e., $p < 1/2$), one can also show that transparency decreases the likelihood that a biased incumbent matches policy to the state as well.[23]

When transparency weakens incumbent discipline, transparency can lower the voter's expected payoff to the game. To see this formally, the voter's expected welfare when policy is observable and the state is not can be expressed as:

$$W_p \equiv (1 + qp - p)(1 + \delta) + (1 - \phi)[2p - pq - 1] + \delta\phi(1 - q)qp^2,$$

where

$$\phi \equiv \int_0^{\bar{\rho}} f(\rho)d\rho.^{24}$$

The term $\phi(1 - q)qp^2$ is the expected gain in the voter's second-period payoff due to his ability to (imperfectly) sort unbiased incumbents from biased incumbents based upon the incumbent's policy choice, whereas $(1 - \phi)[2p - pq - 1]$ is the change in the voter's expected first-period payoff relative to the case when policy is unobservable.[25] If the latter is non-negative, then $W_p > W_c$: transparency increases voter welfare. However, if the latter is

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[22] This fact, taken together with the fact that the voter's expected posterior belief that the incumbent is unbiased must equal his prior belief that the incumbent is unbiased, implies that $\pi(0) < q < \pi(1)$, where $\pi(p)$ is the voter's updated belief that the incumbent is unbiased upon observing a first-period policy of p.

[23] Recall that when incumbent policy choices are concealed, all biased incumbents inflexibly select policy zero. However, with transparency, reelection-oriented biased incumbents inflexibly select policy one, while policy-oriented biased incumbents inflexibly select policy zero. As such, when $p < 1/2$, this change in behavior among reelection-oriented biased incumbents decreases the equilibrium probability that a biased incumbent matches policy to the state.

[24]The term ϕ is simply the probability that an incumbent is policy oriented.

[25] Note, $(1 - \phi)(2p - pq - 1)$ can be rewritten as $(1 - \phi)p(1 - q) - (1 - \phi)(1 - p)$. Hence, $(1 - \phi)p(1 - q)$ is the gain to the voter from reelection oriented biased incumbents selecting policy one when the sate is one.

negative, and if the voter is sufficiently impatient, then $W_p < W_c$: the screening benefits that accrue from transparency are offset by a decrease in incumbent discipline. Summarizing, we have:

Proposition 1. *Suppose the voter does not observe the state of the world. (a) If $p > 1/(2 - q)$, then the voter's equilibrium welfare is higher when she observes the incumbent's policy choice than when she does not. (b) If $p < 1/(2 - q)$ and the voter is sufficiently impatient, then the voter benefits from not observing the incumbent's policy choice.*

Thus, when either the fraction of unbiased politicians in the candidate pool is high or the (ex-ante) probability that the policy preferred by biased politicians is optimal is large, transparency, absent knowledge of the state, can decrease voter welfare. In other words, if we need not worry too much about lawmakers selecting inappropriate policies when policy is determined behind closed doors, making the policy choices of lawmakers more traceable can only make the public worse off.

In light of Proposition 1, the common desire of political leaders for greater secrecy in policymaking need not be the result of nefarious intentions. Instead, it may be that leaders advocating secrecy recognize that it is incentive compatible to consistently act on behalf of the public's interest only when their policy choices are shielded from the electorate. Proposition 1 also provides theoretical underpinnings for those who worry that the rise of the 30-second campaign spot has led many lawmakers to shy away from selecting those policies that are in their constituents' interest.[26]

Before proceeding to the next subsection, we wish to clarify that while it may appear that the inefficiency which results from transparency in this paper's model is the result of incumbent lawmakers "pandering" to an electorate with biased beliefs about the effects of public policy, this would be an inaccurate interpretation.[27] To see why, consider an application of our model to trade policy, and suppose that the public is concerned that the incumbent is biased in favor of free trade.[28] As the voter is unable to judge the appropriateness of the incumbent's position on trade policy until several years after the policy takes effect, the most immediate way for the incumbent to allay the voter's concern that she is a dogmatic free trader is to support protectionist policies regardless of their ultimate consequences.[29] In this example, incumbents do not oppose free trade because the public is biased in favor of

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And, $(1 - \phi)(1 - p)$ is the loss to the voter from both unbiased and biased reelection oriented incumbents selecting policy one when the sate is zero.

[26] For example, Ehrenhalt (1984, 2565) reports

> Some incumbents discovered in 1984 that seemingly inconsequential votes on the House floor could prove damaging to them when made the basis of oversimplified thirty-second commercials by their opponents. Such negative ads can have a chilling effect on the legislative process as members ponder whether stands they regard as reasonable could prove embarrassing in a negative campaign ad in the next election.

Similar sentiments are expressed by Ansolabehere and Iyengar (1995, 148).

[27] See Caplan (2000, 2001, 2003) for micro-foundations as to how rational voters can have biased beliefs about the effects public policy.

[28] Such concerns could be induced if it were easy for wealthy multinational corporations to buy off incumbent lawmakers.

[29] Note, if the voter was instead worried that the incumbent might be biased in favor of protectionist policies, then politicians would have an electoral incentive to support free trade even when it is not in their constituents' interest to do so.

protectionist policies; *rather, they oppose free trade in order to signal that they themselves are not biased in favor of free trade agreements.*

3.3 Robustness

Turning to the robustness of the model, one of the stronger assumptions that we have made thus far is that the public has no ability whatsoever to judge the appropriateness of the incumbent's first-period policy choice (prior to the election). It turns out that so long as the public is not able to *perfectly assess* whether the incumbent's policy choice matched the state of the world, then policy secrecy can dominate policy openness.[30] Thus, the logic of Proposition 1 continues to hold even when the public receives noisy feedback regarding the appropriateness of the incumbent's policy choice prior to casting their ballots.

   The intuition behind the above claims can be gleaned from considering economic policymaking. A typical voter is likely to be aware of a number of economic statistics, such as change in gross domestic product (GDP). While an increase in GDP might increase the voter's confidence that the government chose the appropriate economic course, he cannot be certain, as factors outside the control of policymakers also influence economic growth. Consequently, despite the availability of numerous economics indicators that are somewhat informative as to the appropriateness of the government's economic program, the fact that there is not a one-to-one relationship between economic policy and economic output means that voters always face some uncertainty regarding the optimality of the government's actions; hence, the fact that voters receive information about the economy's performance at regular intervals does not eliminate the incentive for lawmakers to select those economic policies that signal that they are unbiased over those policies that best serve their constituents.

   In fact, it is only when we make the strong assumption that the voter and the incumbent have identical information about the state of the world by the time of election that policy transparency dominates policy secrecy at each parameterization of this paper's model. Hence, we have our second main result of the paper:

Proposition 2. *Suppose the voter observes the state of the world. Then, at all parameterizations of the model, the voter's equilibrium welfare when she observes the incumbent's policy choice is greater than when she does not.*

Proof: See Appendix C.

The logic of this result is straightforward. When the public knows the state of the world, the public knows whether the incumbent's first-period policy choice was appropriate. Hence, when the state of the world is zero, lawmakers no longer need to worry that the public might think that they are biased if they happen to select policy zero. Consequently, in this setting, unbiased politicians have an electoral incentive to match policy to the state, just as they do when policy is determined behind closed doors. In addition, biased politicians that care enough about getting reelected will match policy to the state as well, as mimicking the behavior of unbiased incumbents is the only way that they can mask their bias from the electorate. In sum, Proposition 2 suggests that it is only when both lawmakers and the

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[30] This result is formally proved in a supplemental appendix to this paper, available upon request.

public know the state of the world that transparency necessarily has the disciplining effects anticipated by advocates of greater openness in government.[31]

Another strong assumption made in this paper is that voters are only worried about lawmakers being biased in a particular direction – specifically, the public is concerned that the lawmaker is biased in favor of policy zero. One might wonder whether the logic of Proposition 1 continues to hold in a world where there were are also politicians who are biased in favor of policy one. It is easily demonstrated that in such an environment transparency continues to distort the behavior of unbiased politicians so long as the public views one of the biases in a more negative light than the other; specifically, in a setting in which the public is worried that the incumbent could be biased towards either policy zero or policy one, when politicians expect their policy choices to be publicized, they will use their policy choice to signal to the electorate that they suffer from the lesser of the two biases. Thus, in the context of foreign policy, in a world with unbiased politicians, hawkish politicians, and dovish politicians, if the public is particularly averse to dovish politicians, transparency will induce reelection oriented politicians to pursue hawkish policies, regardless of the merits of doing so, where the logic for doing so is simply to signal to the electorate that they are not weak on national security. Consequently, even in this richer setting, transparency has the exact same downside as that identified earlier: unbiased lawmakers, who do the right thing behind closed doors, no longer do so when policy is made in the open.

4 Conclusion

This paper identifies conditions under which publicizing incumbent policy choices can harm the electorate's welfare. Specifically, we examined an environment where the merits of a given policy depended upon the underlying state of the world. We demonstrated that when lawmakers are able to observe the state, but the public is not, moving from a situation where policy is determined behind close doors to a more open setting can make the public worse off. This result is driven by our assumption that voters are worried that the incumbent's policy preferences diverge from their own; specifically, they are concerned that the incumbent is biased in that her policy preferences are independent of the underlying state. In our model, transparency induces perverse reputational concerns among incumbents, whereby incumbents select those policies that signal that they are unbiased over those policies that are best for their constituents. Thus, the downside of transparency is that it leads lawmakers who always select appropriate policies behind closed doors to do otherwise when policy is made in the open.

As noted earlier, the inefficiency that transparency induces in this paper's framework is distinct from another form of inefficiency transparency might induce – pandering to ill-conceived and systematically biased public opinion. In developing a more complete welfare analysis of government transparency than that offered here, it will be necessary to capture this type of inefficiency as well. However, to do so, one will need to consider a more realistic model of voter reasoning than we consider. For example, one might build upon recent scholarship

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[31] A further implication of Proposition 2 is that institutions such as the press, by providing the electorate with information on the state of the world, can play a key role in alleviating the negative consequences potentially associated with publicizing incumbent policy choices. Finally, Proposition 2 provides a functionalist rationale for the normative ideal of an informed electorate – monitoring both incumbent policy choices and the conditions that led to those choices – as such knowledge creates conditions conducive for the making of good public policy.

that allows voters to have preferences not only over policy outcomes, but also over the beliefs that they hold – see, for example, Akerlof (1989) and Caplan (2003). By stepping outside the rational-choice paradigm and allowing for the possibility that voters are imperfect reasoners, future analyses of government transparency will be able to offer a richer picture of its benefits and costs. Nonetheless, this paper has demonstrated that even within the strict confines of rational-choice theory, there exist grounds upon which to question the conventional wisdom concerning the consequences of government transparency.

A Definitions

We first introduce some added notation; it will be employed – in the subsequent section – in proving the main results of this paper. Let r_0 denote the incumbent's probability of reelection when selecting policy zero, and let r_1 denote her probability of reelection when selecting policy one. Let $\bar{\rho} : [0, 1] \times [0, 1] \to \mathbb{R}_+$, where

$$\bar{\rho}(r_0, r_1) = \begin{cases} \dfrac{1 - \delta(r_0 - r_1)}{\delta(r_0 - r_1)} & \text{if } r_0 > r_1 \\ \infty & \text{if } r_0 = r_1 \\ \dfrac{1 - \delta(r_1 - r_0)}{\delta(r_1 - r_0)} & \text{if } r_0 < r_1 \end{cases}$$

It is easily verified that for any pair of reelection probabilities (r_0, r_1), when an incumbent faces a tradeoff between selecting her preferred policy and maximizing her probability of reelection, if the value she attaches to holding office is greater than $\bar{\rho}(r_0, r_1)$, she optimally resolves this tradeoff by selecting the policy that maximizes her probability of reelection, whereas if the value she attaches to holding office is less than $\bar{\rho}(r_0, r_1)$, she optimally resolves this tradeoff by selecting her preferred policy.

Let $\phi : [0, 1] \times [0, 1] \to [0, 1]$, where

$$\phi(r_0, r_1) \equiv \int_0^{\bar{\rho}(r_0, r_1)} f(\rho) d\rho.$$

For any pair of reelection probabilities (r_0, r_1), if an incumbent with policy preferences characterized by $\theta \in \{u, b\}$ faces a tradeoff between maximizing her probability of reelection and selecting her preferred policy, $\phi(r_0, r_1)$ gives the probability that this tradeoff is optimally resolved by selecting her preferred policy.

B Proof of Result 3

This section provides a formal proof of Result 3. Recall, Result 3 applies to environments where the voter observes the incumbent's policy choice, but not the state of the of the world.

B.1 Preliminaries

A policy strategy for an unbiased incumbent is a function $\gamma_u : \{0, 1\} \times \mathbb{R}_+ \to \{0, 1\}$. Likewise, a policy strategy for a biased incumbent is a function $\gamma_b : \{0, 1\} \times \mathbb{R}_+ \to \{0, 1\}$. These

functions map each state and rent pair (s, ρ) into a first-period policy x.[32] A strategy for the voter is a function $\sigma : \{0, 1\} \to [0, 1]$; hence, for each first-period policy, the voter's strategy specifies the probability that she will vote to reelect the incumbent. Technically speaking, the voter's beliefs regarding the incumbent's type are given by a function that maps each first-period policy into a probability measure on $\{u, b\} \times \mathbb{R}_+$. However, since the value the incumbent attaches to holding office has no effect on the voter's expected second-period payoff (in the event the incumbent is reelected), it suffices to restrict attention to belief functions that map first-period policies into a probability that the incumbent is unbiased. As such, a belief function for the voter is defined to be a mapping $\pi : \{0, 1\} \to [0, 1]$, where $\pi(x)$ denotes the voter's updated belief that the incumbent is unbiased given a first-period policy of x.

A profile $(\gamma_u, \gamma_b, \sigma, \pi)$ is an *equilibrium* if the following three condition are met: for each state of the world, each incumbent-type selects the policy that maximizes her expected payoff to the game given the voter's strategy; for each first-period policy, the voter elects the politician who he believes is more likely to be unbiased; and, the belief function π is derived from the incumbent's strategy through Bayes' rule when possible.

B.2 The proof

B.2.1 Existence

We first show that an equilibrium exists to the model. Specifically, we claim that

$$\gamma_u(s, \rho) = \begin{cases} s & \text{if } \rho \leq \bar{\rho}(0, 1) \\ 1 & \text{if } \rho > \bar{\rho}(0, 1) \end{cases}, \tag{1}$$

$$\gamma_b(s, \rho) = \begin{cases} 0 & \text{if } \rho \leq \bar{\rho}(0, 1) \\ 1 & \text{if } \rho > \bar{\rho}(0, 1) \end{cases}, \tag{2}$$

$$\sigma(x) = \begin{cases} 0 & \text{if } x = 0 \\ 1 & \text{if } x = 1 \end{cases}, \tag{3}$$

and

$$\pi(x) = \begin{cases} \dfrac{q\phi(0, 1)(1 - p)}{q\phi(0, 1)(1 - p) + (1 - q)\phi(0, 1)} & \text{if } x = 0 \\[4mm] \dfrac{q[p + (1 - p)(1 - \phi(0, 1))]}{q[p + (1 - p)(1 - \phi(0, 1))] + (1 - q)[1 - \phi(0, 1)]} & \text{if } x = 1 \end{cases} \tag{4}$$

constitute an equilibrium.

To see that this is so, first note that $\pi(0)$ and $\pi(1)$ are derived from the incumbent's strategy according to Bayes' rules. Second, note that $\pi(0) < q$ and $\pi(1) > q$: when policy zero (one) is selected in the first period, the voter's updated belief that the incumbent is unbiased is less

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[32] One could allow the incumbent to use a mixed strategy. Such a strategy maps each state and rent pair into a probability of selecting policy one. However, it is easily verified that in any equilibrium, the set of incumbent-types that are indifferent between policy zero and policy one has measure zero. As such, without loss of generality, we restrict our attention to equilibria in which the incumbent employs a pure strategy. In addition, without loss of generality, we assume that any incumbent-type (θ, ρ) who is indifferent between selecting policy one and policy zero when the first-period state is s_1 selects the policy that maximizes $u_\theta(\cdot, s; \rho)$.

(greater) than his prior that the challenger is unbiased. Consequently, when the first-period policy is zero (one), the voter maximizes his expected payoff by electing the challenger (incumbent). Hence, given belief function π, for each first-period policy x, $\sigma(x)$ maximizes the voter's expected payoff.

All that remains to be checked is that for each state of the world, each incumbent-type's policy choice maximizes her expected payoff to the game given the voter's strategy. Begin by considering the situation of a biased incumbent and fix the state of the world. Her expected payoff from selecting policy zero is one, whereas her expected payoff from selecting her less preferred policy, policy one, is $\delta(1 + \rho)$. Hence, for a given value of the state, selecting zero is optimal if

$$\rho \leq \frac{1 - \delta}{\delta} = \bar{\rho}(0, 1).$$

Consequently, for each state and rent pair, γ_b specifies a biased incumbent's optimal policy choice. Likewise, in an analogous manner, it is easily established that for each state and rent pair, γ_u specifies an unbiased incumbent's optimal policy choice.

B.2.2. Uniqueness

We now establish that no other strategy profile constitutes an equilibrium of the model: if $(\gamma_u^*, \gamma_b^*, \sigma^*, \pi^*)$ is an equilibrium, then γ_u^* is given by (1), γ_b^* is given by (2), σ^* is given by (3), and π^* is given by (4).

Step 1: We first show that there does not exist an equilibrium in which the incumbent's probability of reelection when she selects policy zero is greater than her probability of reelection when she selects policy one.

Suppose $(\gamma_u^*, \gamma_b^*, \sigma^*, \pi^*)$ is an equilibrium where $\sigma^*(1) < \sigma^*(0)$. As $\sigma^*(1) < \sigma^*(0)$, for each $s \in \{0, 1\}$, a biased incumbent can simultaneously achieve her reelection and policy aims by selecting policy zero; the same is true for an unbiased incumbent when $s = 0$. Thus, $\sigma^*(1) < \sigma^*(0)$ implies that $\gamma_b^*(s, \rho) = 0$ for each $(s, \rho) \in \{0, 1\} \times \mathbb{R}_+$, and $\gamma_u^*(0, \rho) = 0$ for each $\rho \in \mathbb{R}_+$. All that remains to be specified is the optimal behavior of an unbiased incumbent when $s = 1$. When $s = 1$, an unbiased incumbent faces a tradeoff: she can select policy zero and maximize her probability of reelection, or she can select her preferred policy, policy one. Algebra establishes that an unbiased incumbent for whom $\rho < \bar{\rho}(\sigma^*(0), \sigma^*(1))$ maximizes her expected payoff by selecting policy one. Hence, $\gamma_u^*(1, \rho) = 1$ for all $\rho < \bar{\rho}(\sigma^*(0), \sigma^*(1))$.

The incumbent's equilibrium strategy implies that $\pi^*(1) = 1$. Since $\pi^*(1) > q$, the voter strictly maximizes his expected payoff by reelecting the incumbent when $x = 1$: $\sigma^*(1) = 1$. Thus, $\sigma^*(0) \leq \sigma^*(1) = 1$, a contradiction to our supposition otherwise.

Step 2: An analogous argument establishes that there does not exist an equilibrium where the incumbent's probability of reelection is independent of her first-period policy choice.

Step 3: By Step 1 and Step 2, we know that – in an equilibrium – the incumbent's probability of reelection when she selects policy one must be greater than her probability of reelection when she selects policy zero. We now show that this fact implies that the incumbent's probability of reelection is equal to one when she selects policy one and is equal to zero when she selects policy zero.

Suppose $(\gamma_u^*, \gamma_b^*, \sigma^*, \pi^*)$ is an equilibrium where $\sigma^*(1) > \sigma^*(0)$. As $\sigma^*(1) > \sigma^*(0)$, when $s = 1$, an unbiased incumbent maximizes her expect payoff by selecting policy one. However, when $s = 0$, an unbiased incumbent faces a tradeoff between selecting her preferred policy, policy zero, and maximizing her probability of reelection, which she accomplishes by

selecting policy one. A biased incumbent faces an identical tradeoff, regardless of the state. Of the incumbents that face this tradeoff, those for whom $\rho \leq \bar{\rho}(\sigma^*(0), \sigma^*(1))$ optimally resolve it by selecting policy zero; otherwise, this tradeoff is optimally resolved by selecting policy one. As such, we have:

$$\gamma_b^*(s, \rho) = \begin{cases} 0 & \text{if } \rho \leq \bar{\rho}(\sigma^*) \\ 1 & \text{if } \rho > \bar{\rho}(\bar{\sigma}^*) \end{cases},$$

and

$$\gamma_u^*(s, \rho) = \begin{cases} s & \text{if } \rho \leq \bar{\rho}(\sigma^*) \\ 1 & \text{if } \rho > \bar{\rho}(\sigma^*) \end{cases},$$

where $\sigma^* = (\sigma^*(0), \sigma^*(1))$. Given (γ_b^*, γ_u^*), by Bayes' rule,

$$\pi^*(x) = \begin{cases} \dfrac{q\phi(\sigma^*)(1-p)}{q\phi(\sigma^*)(1-p) + (1-q)\phi(\sigma^*)} & \text{if } x = 0 \\ \dfrac{q[p + (1-p)(1-\phi(\sigma^*))]}{q[p + (1-p)(1-\phi(\sigma^*))] + (1-q)[1-\phi(\sigma^*)]} & \text{if } x = 1 \end{cases}.$$

Since $\pi^*(0) < q$, $\sigma^*(0) = 0$; since $\pi^*(1) > q$, $\sigma^*(1) = 1$.

Step 4: Given Step 3, we have that if $(\gamma_u^*, \gamma_b^*, \sigma^*, \pi^*)$ is an equilibrium, then $\sigma^*(0) = 0$ and $\sigma^*(1) = 1$. As such, it is easily verified that γ_u^* is given by Equation (1), γ_b^* is given by Equation (2), and π^* is given by Equation (4). Thus, the model has a unique equilibrium.

C Proof of Proposition 2

This section provides a formal proof of Proposition 2. Recall, Proposition 2 holds in environments where the voter observes both the incumbent's first-period policy choice and the first-period state of the world.

C.1 Preliminaries

As before, a strategy for an unbiased incumbent is a function $\gamma_u : \{0, 1\} \times \mathbb{R}_+ \to \{0, 1\}$, and a strategy for a biased incumbent is a function $\gamma_b : \{0, 1\} \times \mathbb{R}_+ \to \{0, 1\}$. Now, however, a strategy for the voter is a function $\sigma : \{0, 1\} \times \{0, 1\} \to [0, 1]$ that maps each first-period state and policy pair (s, x) into a probability of reelecting the incumbent. The voter's belief function is also modified: it is now a mapping $\pi : \{0, 1\} \times \{0, 1\} \to [0, 1]$ from first-period state and policy pairs into a probability that the incumbent is unbiased; hence, $\pi(s, x)$ is the probability the incumbent is unbiased given a first-period state of s and a first-period policy of x.

In analyzing the case where the voter observes policy and the sate, we restrict attention to *Markov* equilibria. An equilibrium $(\gamma_u^*, \gamma_b^*, \sigma^*, \pi^*)$ is Markov if whenever $\pi^*(s, x) = \pi^*(s', x')$, then $\sigma^*(s, x) = \sigma^*(s', x')$. Hence, we restrict our attention to equilibria in which

the probability the voter reelects the incumbent is uniquely determined by his belief that the incumbent is unbiased.[33]

Proposition 2 is an immediate consequence of the following result.

Result 4. Suppose the voter can observe the incumbent's policy choice and the state of the world. Then, in any (Markov) equilibrium, the following holds.

a. If $s = 1$, then the incumbent is reelected when $x = 1$ and is replaced when $x = 0$.
b. If $s = 0$, then the incumbent's probability of reelection is maximized when $x = 0$.
c. If $\theta = u$ or $[\theta = b$ and $\rho > \bar{\rho}]$, then for each $s \in \{0, 1\}$, the incumbent matches policy to the state of the world.
d. If $\theta = b$ and $\rho \leq \bar{\rho}$, then for each $s \in \{0, 1\}$, the incumbent selects policy zero.

In words, when the voter observes both the first-period policy and the first-period state prior to the election, unbiased incumbents *and* reelection-oriented biased incumbents employ truthful strategies, while policy-oriented biased incumbents inflexibly select policy zero. Since unbiased incumbents match policy to the state when policy is determined behind closed doors, transparency, when accompanied with observability of the state, has no effect on their behavior; however, as *all* biased incumbents inflexibly select policy zero when policy is determined behind closed doors, transparency, when accompanied with the public's ability to verify to the state, increases the probability that a biased incumbent matches policy to the state of the world. Hence, when both lawmakers and the public know the state of the world, transparency disciplines incumbent behavior.

The voter's equilibrium welfare when both policy and the state are observed is

$$W_{st} = (1 + qp - p)(1 + \delta) + (1 - \phi)(1 - q)p + \delta\phi(1 - q)qp^2.$$

The term $\phi(1 - q)qp^2$, as before, is the expected increase in the voter's second-period payoff which accrues from being able to (imperfectly) sort unbiased from biased incumbents based upon their policy choices, whereas $(1 - \phi)(1 - q)p$ is the benefit the voter receives from increased incumbent discipline. Since both terms are positive, as expected, $W_{st} > W_c$: voter welfare is greater when both the policy and the state are observed than when neither are. All that remains is to verify Result 4.

C.2. The Proof of Result 4

C.2.1. Existence

We first show that an equilibrium exists when the public observes both policy and the state. Specifically, we claim that

$$\gamma_u(s, \rho) = s, \tag{5}$$

$$\gamma_b(s, \rho) = \begin{cases} 0 & \text{if } \rho \leq \bar{\rho}(0, 1) \\ s & \text{if } \rho > \bar{\rho}(0, 1) \end{cases}, \tag{6}$$

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[33] As will be established in the process of proving Result 4, this refinement rules out equilibria where the incumbent's probability of reelection is maximized by selecting policy one when the state of the world is zero.

$$\sigma(s, x) = \begin{cases} 0 & \text{if } s \neq x \\ 1 & \text{if } s = x \end{cases}, \tag{7}$$

$$\pi(0, x) = \begin{cases} q & \text{if } x = 0 \\ 0 & \text{if } x = 1 \end{cases}, \tag{8}$$

and

$$\pi(1, x) = \begin{cases} 0 & \text{if } x = 0 \\ \dfrac{q}{q + (1 - q)(1 - \phi(0, 1))} & \text{if } x = 1 \end{cases} \tag{9}$$

constitutes an equilibrium.

To see that this is so, we first establish that π is derived from the incumbent's strategy through Bayes' rule when possible. When the state of the world is zero, given the specified strategies, each incumbent-type is to select policy zero. Hence, upon observing $(s, x) = (0, 0)$, the voter's posterior that the incumbent is a unbiased politician is equal to his prior: $\pi(0, 0) = q$. As no incumbent-type selects policy one when the state of the world is zero, our equilibrium concept places no restrictions on our specification of $\pi(0, 1)$. When the state of the world is one, given the specified strategies, only biased incumbent-types select policy zero. Hence, $\pi(1, 0) = 0$. Finally, it is easy to check that $\pi(1, 1)$ is consistent with Bayes' rule, as when $s = 1$, policy one is selected by each unbiased incumbent and those biased incumbents that place sufficient weight on reelection.

We now establish that reelecting the incumbent when policy matches the state and electing the challenger when policy does not match the state is optimal for the voter. Since $\pi(1, 1) > q$ and $\pi(0, 0) = q$, reelecting the incumbent when policy matches the state maximizes the voter's expected payoff. Since $\pi(0, 1) = \pi(1, 0) = 0 < q$, electing the challenger when the policy does not match the state maximizes the voter's expected payoff. Thus, for each state and policy pair, the reelection decision specified by the voter's strategy is optimal.

Finally, we verify that each incumbent-type maximizes her expected payoff under (γ_u, γ_b). Given that reelection is assured if the incumbent matches policy to the state, an unbiased incumbent maximizes her expected payoff by doing such. Likewise, when $s = 0$, a biased incumbent maximizes her expected payoff by selecting policy zero. Hence, it is only when the incumbent is biased and $s = 1$ that the incumbent faces a tradeoff between maximizing her probability of reelection (by selecting policy one) and selecting her preferred policy (policy zero). It is easily verified that biased incumbents for whom $\rho \leq \bar{\rho}(0, 1)$ optimally resolve this tradeoff by selecting policy zero; otherwise, this tradeoff is optimally resolved by selecting policy one. Hence, the incumbent's strategy specifies the optimal policy choice for each incumbent-type.

C.2.2. Uniqueness

We now establish that if $(\gamma_u^*, \gamma_b^*, \sigma^*, \pi^*)$ is a Markov equilibrium, then $\sigma^*(1, 1) = 1$, $\sigma^*(1, 0) = 0$, $\sigma^*(0, 0) \geq \sigma^*(0, 1)$, γ_u^* is equal to (5), and γ_b^* is equal to (6).

Step 1: Show that in any equilibrium of the model, when $s = 1$, the incumbent's probability of reelection is equal to one if $x = 1$, and is equal to zero if $x = 0$.

By way of contradiction, suppose that $(\gamma_u^*, \gamma_b^*, \sigma^*, \pi^*)$ is an equilibrium in which $\sigma^*(1, 0) > \sigma^*(1, 1)$. Consider the case where $s = 1$. As $\sigma^*(1, 0) > \sigma^*(1, 1)$, a biased incumbent can simultaneously achieves her policy and reelection objectives by selecting policy

zero. Unbiased incumbents, however, face a tradeoff between selecting their preferred policy and maximizing their probability of reelection. Those that do not place sufficient weight on reelection optimally resolve this tradeoff by selecting their preferred policy – policy one.

Applying Bayes' rule, we have that $\pi^*(1, 1) = 1$. Since $\pi^*(1, 1) > q$, the voter strictly maximizes his expected payoff by reelecting the incumbent when $(s, x) = (1, 1)$. Thus, $\sigma^*(1, 0) \leq \sigma^*(1, 1) = 1$, which yields a contradiction with our supposition otherwise.

An analogous argument establishes that we cannot have an equilibrium $(\gamma_u^*, \gamma_b^*, \sigma^*, \pi^*)$ in which $\sigma^*(1, 0) = \sigma^*(1, 1)$. Consequently, if $(\gamma_u^*, \gamma_b^*, \sigma^*, \pi^*)$ is an equilibrium, then $\sigma^*(1, 0) < \sigma^*(1, 1)$.

So, suppose we have an equilibrium $(\gamma_u^*, \gamma_b^*, \sigma^*, \pi^*)$ in which $\sigma^*(1, 0) < \sigma^*(1, 1)$. And, again, consider the case in which $s = 1$. Since $\sigma^*(1, 0) < \sigma^*(1, 1)$, unbiased incumbents strictly maximize their expected payoff by selecting policy one, whereas biased incumbents face a tradeoff between policy and reelection aims. Biased incumbents that do not place sufficient weight on holding office optimally resolve this tradeoff by selecting policy zero. Consequently, when $\sigma^*(1, 0) < \sigma^*(1, 1)$, we have: $\gamma_u^*(1, \rho) = 1$ and

$$
\gamma_b^*(1, \rho) = \begin{cases} 0 & \text{if } \rho \leq \bar{\rho}(\sigma^*(1, 0), \sigma^*(1, 1)) \\ 1 & \text{if } \rho > \bar{\rho}(\sigma^*(1, 0), \sigma^*(1, 1)) \end{cases} .
$$

As such, by Bayes' rules, $\pi^*(1, 0) = 0$ and

$$
\pi^*(1, 1) = \frac{q}{q + (1 - q)[1 - \phi(\sigma^*(1, 0), \sigma^*(1, 1))]} .
$$

Since $\pi^*(1, 1) > q$, the voter maximizes his expected payoff by reelecting the incumbent when $(s, x) = (1, 1)$. Since $\pi^*(1, 0) < q$, the voter maximizes his expected payoff by electing the challenger when $(s, x) = (1, 0)$. Hence, if $(\gamma_u^*, \gamma_b^*, \sigma^*, \pi^*)$ is an equilibrium, then $\sigma^*(1, 1) = 1$ and $\sigma^*(1, 0) = 0$.

Step 2: Show that there does not exist a Markov equilibrium in which – given that the state of the world is equal to zero – the incumbent's probability of reelection when she selects policy one is greater than her probability of reelection when she selects policy zero.

Suppose $(\gamma_u^*, \gamma_b^*, \sigma^*, \pi^*)$ is a Markov equilibrium in which $\sigma^*(0, 1) > \sigma^*(0, 0)$. And, consider the case where $s = 0$. Since $s = 0$, both unbiased incumbents and biased incumbents prefer policy zero. Consequently, as $\sigma^*(0, 1) > \sigma^*(0, 0)$, both unbiased and biased incumbents face a tradeoff between policy and reelection objectives. Incumbent-types that do not place sufficient weight on reelection optimally resolve this tradeoff by selecting policy zero. Hence, for each $\theta \in \{u, b\}$,

$$
\gamma_\theta^*(0, \rho) = \begin{cases} 0 & \text{if } \rho < \bar{\rho}(\sigma^*(0, 0), \sigma^*(0, 1)) \\ 1 & \text{if } \rho > \bar{\rho}(\sigma^*(0, 0), \sigma^*(0, 1)) \end{cases} .
$$

Thus, applying Bayes' rule, $\pi^*(0, 0) = q$ and $\pi^*(0, 1) = q$: when the state of the world is zero, regardless of the incumbent's policy choice, the voter is indifferent between reelecting and defeating the incumbent. Given that σ^* is Markovian, $\pi^*(0, 0) = \pi^*(0, 1)$ implies that $\sigma^*(0, 0) = \sigma^*(0, 1) \in [0, 1]$, a contradiction to our supposition that $\sigma^*(0, 0) < \sigma^*(0, 1)$.

Step 3: If $(\gamma_u^*, \gamma_b^*, \sigma^*, \pi^*)$ is a Markov equilibrium, then from steps one and two we have: $\sigma^*(1, 1) = 1, \sigma^*(1, 0) = 0$, and $\sigma^*(0, 0) \geq \sigma^*(0, 1)$. It is easily verified that this implies that γ_u^* is equal to (5) and γ_b^* is equal to (6).

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