Ideologues or Pragmatists?[*]

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Abstract

We study a model of electoral control where the politician is a policy expert, but the voter is not. First, we focus on the case of an "ideologue," i.e., a politician who always wants the same policy implemented regardless of the state. We show that the voter's lack of policy expertise comes at no cost to him, but may come at an electoral cost to the politician. Next, we turn to the case of a "pragmatist," i.e., a politician whose preferences are state contingent. We show that the voter's lack of policy expertise does come at a cost to him. As a consequence, the voter may fare better with an ideologue than with a pragmatist. This can occur even if the pragmatist's preferences are arbitrarily close to and perfectly correlated with the voter's.

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What types of politicians do voters prefer? Often, the argument is made that voters prefer politicians who serve their interest on some important dimension. For instance, voters may prefer congruent to non-congruent politicians (Canes-Wrone, Herron and Shotts, 2001; Maskin and Tirole, 2004; Besley, 2006; Fox, 2007), honest to dishonest politicians (Callander and Wilkie, 2007), non-corrupt to corrupt politicians (Myerson, 1993), and high- to low-ability politicians (Persson and Tabellini, 2000; Ashworth, 2005; Ashworth and Bueno de Mesquita, 2006).

Here, we focus on a distinction between what we will call ideologues and pragmatists. We view an ideologue as a politician whose preferences about some particular policy do not depend on the data. Put differently, an ideologue is a politician whose preferences are not state contingent. For instance, a politician who supports or opposes stem cell research, regardless of the scientific evidence, is an ideologue (on that policy dimension).

Contrast this with a pragmatist. In our account, a pragmatist is a politician whose preferences about some particular policy depend on the data. Put differently, a pragmatist is a politician whose preferences over a particular policy are state contingent. For instance, a politician whose position on stem cell research depends on scientific facts (i.e., relating to the likely impact of such research or the likely success of alternative approaches) is a pragmatist (on that policy dimension). Such a politician's preferences may change with new information.

The distinction we focus on is in line with Canes-Wrone and Shotts's (2007) notion of ideological rigidity.[1] This idea revolves around whether or not a politician's preferences are state contingent. It is important to note that ideologues do not (necessarily) care more about policy than pragmatists. Likewise, ideologues may be willing to compromise their principles, just as pragmatists are.[2] In this paper, we draw only one distinction— whether preferences are sensitive to new information or not. Indeed, we consider the case where politicians—be they ideologues or pragmatists—care both about policy and about electoral benefits. Both types of politicians may be prepared to compromise on their policy preferences if electoral incentives are sufficiently strong.

Intuition might suggest that a pragmatic voter will always prefer a pragmatic politician, so long as the politician's preferences are similar to the voter's. Indeed, when the voter and politician have access to the same information, the voter will prefer such a pragmatist. The rationale is as follows. Because the voter has access to the same information as the politician, the voter can offer electoral incentives that depend on both the voter's (and

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[1]Within their model, an ideologue (in our sense of the term) is a politician with β equal to zero or one.

[2]Thus, our notion of an ideologue differs from that in Ghosh and Tripathi (2009).

politician's) information and on the policy the politician chose.

We will see that this need not be the case when the politician is a policy expert—i.e., when the politician has access to information (about the state) that is not available to the voter. In this case, the voter does not know the true state, and so does not know the pragmatist's actual preferences over policy. This uncertainty can make it difficult to induce a pragmatist to choose a policy that reflects the voter's interests. On the other hand, the voter knows exactly where the ideologue stands on the issues. We show that the voter can use this knowledge to gain electoral control.

Formally, we consider a model of electoral control in which the incumbent is a policy expert relative to the voter. We are interested in the level of compliance the voter can achieve (under a Bayesian equilibrium analysis). That is, we ask: In what situations can the voter induce the politician to choose his ideal policy?

Begin with a politician who is an ideologue. We show three surprising results. First, the voter can achieve the same level of compliance that he could if he had full information. Thus, the absence of information comes at no cost to the voter. But to achieve this level of compliance, the voter uses a particular voting rule, and this voting rule may differ from the one used when he (i.e., the voter) is a policy expert. This leads to the second result. Because the voter uses a different voting rule, his lack of information may come at an electoral cost to the politician. The third result follows from the particular voting rule used. We show that an uninformed voter, faced with an incumbent ideologue, should bias her reelection decisions to reward incumbents who choose "extreme" policies—i.e., policies far from the incumbent's own ideal policy.[3]

Next turn to a politician who is a pragmatist. We consider a (particular) formalization of a pragmatic politician, where the voter's and pragmatist's preferences are positively correlated. Indeed, we will be able to take the voter's and pragmatist's ideal policies to be arbitrarily close to one another. We show another surprising result: the voter may be better off with an ideologue than with a pragmatist. How can this happen?

The voter's means for inducing the politician to choose his (i.e., the voter's) ideal policy is by offering electoral incentives—that is, by choosing different probabilities of reelection for different policy choices. Because the voter is not a policy expert, these electoral incentives cannot depend on the state (or, put differently, the information). They only depend on the policy the politician actually chooses.

In the case of an ideologue, the voter can infer the politician's cost of choosing any given policy over her (i.e., the politician's) own ideal policy. The voter can use this information

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[3]We thank an anonymous referee for bringing this third point to our attention.

to design electoral incentives, so that the politician chooses the voter's ideal policy in a wide variety of scenarios.

In the case of a pragmatist, however, the voter cannot infer the politician's cost of choosing any given policy over her (i.e., the politician's) own ideal policy. (This is the case, even though the voter can infer the politician's cost of choosing the voter's ideal policy over her own ideal policy.) As such, it is difficult for the voter to design electoral incentives so that the politician chooses the voter's ideal policy in a wide variety of scenarios. In particular, unlike the case of an ideologue, here the voter faces a tradeoff: By offering electoral incentives to choose the voter's ideal policy in certain scenarios, the voter must give up on the politician choosing his (i.e., the voter's) ideal policy in other scenarios.

To sum up, we will see that the voter may fare better with an ideologue than with a pragmatist—provided that the politician is a policy expert and the voter is not. We view the case of policy expertise as natural, and indeed it has been studied by a number of papers in the literature. See, for instance, Gilligan and Krehbiel (1987, 1989, 1990), Schultz (1996), and Callander (2008, 2009).

The paper proceeds as follows. Section 1 lays out the game. Section 2 defines the notion of compliance. In Section 3, we focus on the case of an ideologue. We turn to the case of a pragmatist in Section 4. Section 5 shows that the voter may prefer an ideologue over a pragmatist, even when the pragmatist's preferences are arbitrarily close to the voter's. Finally, Section 6 discusses some extensions of the results and points to some open questions.

1 The Game

There are two players, the Politician and the Voter. We refer to the Politician as "she" and the Voter as "he." The order of play is as follows: Nature chooses a state, viz. ω, from $\Omega = \mathbb{R}$. The state determines the players' policy preferences. The Politician observes the true state and then chooses a policy, viz. $p \in \mathbb{R}$. The Voter observes the Politician's policy choice. Finally, the Voter decides whether or not to reelect the Politician. That is, the Voter chooses $r \in \{0, 1\}$, where $r = 1$ represents the decision to reelect the Politician.

Begin with the Voter's preferences. These are state-contingent. In particular, $x_V : \Omega \to \mathbb{R}$ is an onto mapping, i.e., mapping each state into an ideal policy for the Voter. For ease of exposition, we focus on the case where, for each $\omega \in \Omega$, $x_V(\omega) = \omega$. (The result holds more generally. See Bueno de Mesquita and Friedenberg (2009).) Notice, we are careful to write $x_V(\omega)$ for the Voter's ideal point at ω, and not the equivalent ω. This is done to avoid confusing the Voter's ideal policy at ω with the actual state ω.

Now turn to the Politician's preferences. Again, we have a mapping $x_P : \Omega \to \mathbb{R}$ from states into ideal policies. When the Politician is an Ideologue, her ideal policy does not vary with the state. In this case, we will take x_P so that, for each $\omega \in \Omega$, $x_P(\omega) = 0$. When the Politician is Pragmatist, her preferences are state-contingent. In particular, we focus on the special case where the Pragmatist's ideal policy is always k units above the Voter's ideal policy, i.e., for each $\omega \in \Omega$, $x_P(\omega) = x_V(\omega) + k$, where $k > 0$. Thus, k can be viewed as the extent to which the Pragmatist's ideal policy is biased away from the Voter's.

Here, the Voter does not know the true state chosen by Nature. Instead, he has a prior μ on Ω and this prior is "transparent" to the players. But, because he is uncertain about the true state, he is also uncertain about his ideal policy and the Pragmatist's ideal policy. Indeed, μ induces a belief about the Pragmatist's ideal policy. But, of course, the Voter faces no uncertainty about the Ideologue's ideal policy. It is 0.

The Politician has quadratic preferences over policy and seeks reelection. In particular, at a state ω, her payoffs from choosing policy p and the reelection decision r are

$$u_P(\omega, p, r) = -\left(p - x_P(\omega)\right)^2 + rB,$$

where $B > 0$ represents the benefit of reelection. The Voter also has quadratic preferences over policy. In particular, at a state ω, the Voter's payoffs from policy p are

$$u_V(\omega, p) = -\left(p - x_V(\omega)\right)^2.$$

We will focus on equilibria in behavioral strategies: A (behavioral) strategy for the Politician maps each state into a probability measure on the policy space, viz. $s_P : \Omega \to \Delta(\mathbb{R})$, where we write $\Delta(\mathbb{R})$ for the set of probability measures on $\mathbb{R}$. Likewise, a (behavioral) strategy for the Voter maps each policy choice into a measure on reelection decisions. Note, we can instead view a strategy for the Voter as a mapping $s_V : \mathbb{R} \to [0, 1]$, where $s_V(p)$ is the probability that the Voter reelects the Politician after seeing policy p. We loosely refer to $s_V(p)$ as a measure on $\{0, 1\}$. No confusion should result.

Write $\mathbb{E}u_P(\omega, p, s_V)$ for the Politician's expected payoffs, at the state ω, from choosing policy p when the Voter chooses the reelection strategy s_V, i.e.,

$$\mathbb{E}u_P(\omega, p, s_V) = -\left(p - x_P(\omega)\right)^2 + s_V(p)B.$$

Given a mixture $\sigma_P \in \Delta(\mathbb{R})$ and a measurable s_V, define $s_V[\sigma_P]$ so that, for each event E in $[0, 1]$, $s_V[\sigma_P](E) = \sigma_P\left((s_V)^{-1}(E)\right)$. That is, $s_V[\sigma_P]$ gives the probability that the

Politician is reelected if she chooses a mixture σ_P. Then, if the true state is ω and the Politician chooses a mixture of policies, viz. σ_P, her expected payoffs under the Voter's strategy s_V are

$$\mathbb{E}u_P\left(\omega, \sigma_P, s_V\right) = -\int_{\mathbb{R}}\left(p - x_P\left(\omega\right)\right)^2 d\sigma_P + s_V\left[\sigma_P\right]B.$$

We will abuse notation and write $\mathbb{E}u_P\left(\omega, s_P, s_V\right)$ for $\mathbb{E}u_P\left(\omega, s_P\left(\omega\right), s_V\right)$, i.e., for the expected utility of the Politician, at the state ω, under the strategy profile $\left(s_P, s_V\right)$. Likewise, if the true state is ω and the Politician chooses a mixture, viz. σ_P, the Voter's expected payoffs are

$$\mathbb{E}u_V\left(\omega, \sigma_P\right) = -\int_{p\in\mathbb{R}}\left(p - x_V\left(\omega\right)\right)^2 d\sigma_P.$$

Again, we abuse notation and write $\mathbb{E}u_V\left(\omega, s_P\right)$ for $\mathbb{E}u_V\left(\omega, s_P\left(\omega\right)\right)$.

2 Compliance

When can the Voter induce the Politician to choose his ideal policy? Or, put differently, when can the Voter achieve compliance?

We ask this question under a Bayesian equilibrium analysis of the game. As such, we begin with this definition. Then, we introduce the idea of compliance, which is defined relative to a particular equilibrium. Specifically, the Voter achieves compliance over a set of policies, if the Voter can induce the Politician to choose his ideal policy whenever it is contained in that set.

Definition 2.1 *A strategy profile $\left(s_P^*, s_V^*\right)$ is a **Bayesian equilibrium** if*

(i) *s_P^* and s_V^* are measurable; and*

(ii) *for each $\omega \in \Omega$, $\mathbb{E}u_P\left(\omega, s_P^*, s_V^*\right) \geq \mathbb{E}u_P\left(\omega, \sigma_P, b_V^*\right)$ for all $\sigma_P \in \Delta\left(\mathbb{R}\right)$.*

Condition (i) requires that the Politician's and Voter's strategies must both be measurable, so that players' can compute their expected payoffs. Condition (ii) requires that, at each state, the Politician chooses a policy that maximizes her expected payoffs, given the Voter's actual "reelection rule," i.e., given the Voter's actual strategy s_V^*. There is no analogous requirement for the Voter: Because he makes his reelection decision at the end of the game, his choice does not directly affect his payoffs.[4]

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[4]For the same reason, we omit a requirement on updating beliefs. Imposing the natural requirement yields an equivalent definition.

Because the Voter's reelection decision does not directly affect his payoffs, there are many equilibria of the game. We focus on the question of which equilibrium is "best" from the Voter's perspective. That is, what is the maximum level of control the Voter can hope to obtain? This question is of substantive interest because it provides a normative benchmark—i.e., it identifies the most the Voter can hope to achieve with his vote.

Toward this end, we introduce a notion of compliance. Consider some Bayesian equilibrium, viz. (s_P^*, s_V^*). Informally, the Voter achieves C-compliance if he can induce the Politician to choose his ideal policy whenever it is contained in C.

Definition 2.2 *Fix a set $C \subseteq \mathbb{R}$. Call a Bayesian equilibrium, viz. (s_P^*, s_V^*), **C-compliant** if, for each state $\omega \in (x_V)^{-1}(C) = C$, $s_P^*(\omega)$ assigns probability one to $x_V(\omega)$.*

Fix an equilibrium, viz. (s_P^*, s_V^*). By definition, there is some set C so that (s_P^*, s_V^*) is C-compliant. (Of course, C may be empty.) Also, if (s_P^*, s_V^*) is C-compliant and $D \subseteq C$, then (s_P^*, s_V^*) is also D-compliant. Say C is the **maximal compliance induced by** (s_P^*, s_V^*), if (s_P^*, s_V^*) is C-compliant and, for each D that strictly contains C, (s_P^*, s_V^*) is not D-compliant. The idea of maximal compliance will be useful in our analysis. But it is important to note that it does not characterize the Voter's welfare under different equilibria. In particular, it only considers whether the Voter's actual ideal policy is chosen. However, the Voter may care about which policy is chosen, even at states where the Politician does not choose his ideal policy. Thus, there may be two equilibria with the same level of maximal compliance, but the Voter may prefer one over the other. We could even have one equilibrium preferred to a second, despite the fact that it has a lower level of maximal compliance.

3   The Ideologue

In this section, we focus on the Politician who is an Ideologue. We will see that the Voter can achieve the same level of compliance that he could if he too were a policy expert. We first analyze this latter situation. It should be viewed as a benchmark case.

3.1   A Benchmark

Consider a different game—one in which the Voter learns the true state before making his reelection decision. What is the best that the Voter can achieve in this game?

First, notice that if (s_P^*, s_V^*) is a C-compliant equilibrium then $C \subseteq [-\sqrt{B}, \sqrt{B}]$. Put differently, the Voter can never induce the Ideologue to choose his ideal policy when it is

further than $\sqrt{B}$ from the Ideologue's ideal policy. The electoral incentives for choosing such a policy are necessarily insufficient. (The Ideologue's expected payoffs are strictly less than zero, when she chooses such a policy. Her expected payoffs from choosing her own ideal policy is at least zero.)

But there does exist a $[-\sqrt{B}, \sqrt{B}]$-compliant equilibrium. Specifically, suppose the Voter uses the following rule. If the Voter learns his ideal point is contained in $[-\sqrt{B}, \sqrt{B}]$, he reelects the Ideologue if and only if she chose the Voter's ideal policy. If the Voter learns his ideal policy is less than $-\sqrt{B}$ (resp. greater than $\sqrt{B}$), he reelects the Ideologue if and only if she chooses $-\sqrt{B}$ (resp. $\sqrt{B}$). Now, there is an associated equilibrium where the Ideologue chose the Voter's ideal policy whenever it lies within $\sqrt{B}$ of zero and otherwise chooses $\pm\sqrt{B}$, as per the Voter's preference. Moreover, this equilibrium is "best" from the Voter's perspective.

3.2 Compliance with Behavioral Strategies

Now turn to the game described in Section 1, where the Voter is not a policy expert. Here, the Voter does not know the true state, when he makes his reelection decision. As such, the reelection rule cannot be state contingent.

Does a $[-\sqrt{B}, \sqrt{B}]$-compliant equilibrium exist? At first blush, the answer may appear to be no. To see why, consider the case where the Voter is restricted to the use of pure strategies. Fix an equilibrium where, at some state, the Ideologue chooses a policy $p > 0$. Then the Voter must offer electoral incentives for choosing p. If not, the Ideologue would strictly prefer to choose her own ideal policy at the given state. Moreover, the Voter must offer no electoral incentives for choosing policies closer to the Ideologues's ideal policy (i.e., for choosing policies in $(-p, p)$). If not—i.e., if the Voter also reelects the Ideologue when she chooses some $q \in (-p, p)$—then the Ideologue would strictly prefer to choose this policy, viz. q, over the policy p. So, if there is a pure-strategy equilibrium where the Voter can induce the Ideologue to choose two distinct policies $p, q \neq 0$, then these policies must be equidistant from the Ideologue's ideal policy, i.e., $p = -q$. Indeed, it can be shown that, in any pure-strategy equilibrium, the maximal level of compliance achieved is either $\{-p, p\}$ for some $p \in (0, \sqrt{B})$ or $\{-\sqrt{B}, 0, \sqrt{B}\}$. (See Bueno de Mesquita and Friedenberg (2009).)

But, when the Voter can use a probabilistic voting rule, he can achieve a greater level of compliance.[5] To see why, note that, when the Voter uses a deterministic voting rule, he cannot offer electoral incentives to choose distinct policies p and q, where q lies closer to the

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[5]In a different setting, Meirowitz (2007) also shows that using a probabilistic voting rule increases electoral control.

Ideologue's ideal policy than does p. The electoral incentives for choosing q conflict with the electoral incentives for choosing p. However, when the Voter can respond probabilistically, such a conflict need not arise. The Voter can now offer different levels of electoral incentives for choosing different policies, and thereby eliminate the conflict.

Proposition 3.1 *There exists a Bayesian equilibrium in behavioral strategies, viz.* (s_P^*, s_V^*), *so that:*

(i) if $x_V(\omega) \in [-\sqrt{B}, \sqrt{B}]$, *then* $s_P^*(\omega)$ *assigns probability one to* $x_V(\omega)$;

(ii) if $x_V(\omega) < -\sqrt{B}$, *then* $s_P^*(\omega)$ *assigns probability one to* $-\sqrt{B}$; *and*

(iii) if $x_V(\omega) > \sqrt{B}$, *then* $s_P^*(\omega)$ *assigns probability one to* $\sqrt{B}$.

Proof. Let s_P^* be a strategy as in the statement of the result. Construct s_V^* so that

$$s_V^*(p) = \begin{cases} \frac{p^2}{B} & \text{if } p \in [-\sqrt{B}, \sqrt{B}] \\ 1 & \text{if } p \in \mathbb{R} \backslash [-\sqrt{B}, \sqrt{B}]. \end{cases}$$

We will show that (s_P^*, s_V^*) is a Bayesian equilibrium. Part (i) of Definition 2.1 immediate. We focus on part (ii) of Definition 2.1.

Fix some $\omega \in \Omega$. It suffices to show that

$$\mathbb{E}u_P(\omega, s_P^*, s_V^*) = 0 \geq \mathbb{E}u_P(\omega, p, s_V^*)$$

for each p with $s_P^*(\omega)(p) = 0$. If so, then, certainly, for any mixture $\sigma_P \in \Delta(\mathbb{R})$,

$$\mathbb{E}u_P(\omega, s_P^*, s_V^*) \geq \mathbb{E}u_P(\omega, \sigma_P, s_V^*),$$

as required.

Begin by showing that $\mathbb{E}u_P(\omega, s_P^*, s_V^*) = 0$. First, suppose that $B \geq [x_V(\omega)]^2$. Here,

$$\mathbb{E}u_P(\omega, s_P^*, s_V^*) = -[x_V(\omega)]^2 + \frac{[x_V(\omega)]^2}{B} B = 0,$$

as required. Next, suppose that $[x_V(\omega)]^2 > B$. Here too,

$$\mathbb{E}u_P(\omega, s_P^*, s_V^*) = -B + B = 0,$$

as required.

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Now fix some p with $s_P^*(\omega)(p) = 0$. If $B \geq p^2$, then

$$\mathbb{E}u_P(\omega, p, s_V^*) = -p^2 + \frac{p^2}{B}B = 0,$$

as required. If $p^2 > B$, then

$$\mathbb{E}u_P(\omega, p, s_V^*) = -p^2 + B < 0,$$

as required. ∎

Proposition 3.1 implies that there exists a $[-\sqrt{B}, \sqrt{B}]$-compliant equilibrium. Further, there are three somewhat surprising implications from Proposition 3.1.

First, the Voter's lack of information comes at no cost to him. Specifically, the Voter can achieve the same level of electoral control whether he is a policy expert (as in Section 3.1) or not (as in Proposition 3.1).

Second, the Voter's lack of information may make the Ideologue worse off. To see this, consider the strategy s_P^* as in Proposition 3.1. This strategy is associated with an equilibrium, both when the Voter has full information and when the Voter has no information. (From the Voter's perspective, the equilibria associated with this strategy are the "best" in their respective games.) When the Voter knows the true state, there is an equilibrium in which the Ideologue chooses s_P^* and is reelected with certainty. When the Voter does not know the true state, there is also an equilibrium in which the Ideologue chooses s_P^*. In any such equilibrium, the Voter reelects the Ideologue with probability strictly less than one whenever the Voter's ideal policy lies in $(-\sqrt{B}, \sqrt{B})$. Thus, the Voter's lack of information—while imposing no cost on him—comes at an electoral cost to the Ideologue.

Third, the equilibrium constructed has the property that the Voter reelects the incumbent Ideologue with probability $\frac{p^2}{B}$ for $p \in [-\sqrt{B}, \sqrt{B}]$. (Indeed, any $[-\sqrt{B}, \sqrt{B}]$-compliant equilibrium must have this feature.) So the Voter is more likely to reelect the incumbent only if she chooses sufficiently "extreme" policies. That is, an uninformed Voter, faced with an Ideologue, should bias his vote toward rewarding policy choices that are far from the incumbent's ideal policy. He does so to "compensate" the Ideologue for the cost associated with such a policy choice. The Voter is able to so because he knows the Ideologues ideal policy and, thus, knows the exact cost to the Ideologue of any given policy choice.

4 Pragmatists

In this section, we focus on the Politician who is a Pragmatist. Recall, in this case, the Politician's preferences are perfectly correlated with the Voter's—and may even be arbitrarily close to the Voter's. As such, it may seem that the Voter's electoral control problem should be particularly easy. But, we will see that this need not be the case.

What is the difficulty? Recall, with a Pragmatist, for each $\omega \in \Omega$, $x_P(\omega) = x_V(\omega) + k$. Throughout, we require that $k \in (0, \sqrt{B}]$ so that, in principle, electoral incentives can be effective. Yet, still there is a difficulty. To see this, notice that, if the Voter knows the Pragmatist's ideal policy is p, he knows his own ideal policy is $p - k$. But, importantly, because the Voter does not know the true state, he does not know the Pragmatist's ideal policy. As such, he does not know the Pragmatist's cost of choosing any given policy over her own (i.e., the Pragmatist's) ideal policy. This is where the problem arises.

Suppose that, at each state, the Voter can induce the Pragmatist to choose his ideal policy. Then, for each policy p, the Voter must offer electoral incentives to choose p over $p + k$: If not, there will be some state at which the Pragmatist prefers to choose her own ideal policy, viz. $p + k$, over the Voter's ideal policy, viz. p. So the electoral incentives for choosing the policy p must be higher than the electoral incentives for choosing the policy $p + k$. But the Voter also wants the Pragmatist to choose his ideal policy when it is $p + k$. So the electoral incentives for choosing $p + k$ must be higher than the electoral incentives for choosing $p + 2k$. More generally, for each m, the electoral incentives for choosing policy $p + mk$ must be higher than the electoral incentives for choosing $p + (m + 1)k$. (The minimal electoral incentives required to choose $p + mk$ over $p + (m+1)k$ do not depend on m.) But this cannot be, since the electoral incentives are bounded from above by B.

The next result formalizes this idea.

Proposition 4.1 *Fix some set* $\{p, p + k, \ldots, p + mk\}$. *If* (s_P^*, s_V^*) *is* $\{p, p + k, \ldots, p + mk\}$-*compliant, then* $\frac{B-k^2}{k^2} \geq m$.

To prove Proposition 4.1, we will make use of the following remark.

Remark 4.1 *Fix a Bayesian Equilibrium, viz.* (s_P^*, s_V^*), *and a state* $\omega \in \Omega$ *with* $s_P^*(\omega)(x_V(\omega)) = 1$. *Then, for each* $p \in \mathbb{R}$,

$$[s_V^*(x_V(\omega)) - s_V^*(p)] B \geq k^2 - (p - x_V(\omega) - k)^2.$$

In particular,

$$[s_V^*(x_V(\omega)) - s_V^*(x_V(\omega) + k)] B \geq k^2,$$

and so

$$s_V^* \left(x_V \left(\omega \right) \right) \geq \frac{k^2}{B}.$$

Proof. Fix some state ω so that $s_P^* \left(\omega \right)$ assigns probability one to $x_V \left(\omega \right)$. Then, for each $p \in \mathbb{R}$,

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\begin{aligned}
\mathbb{E} u_P \left(\omega, s_P^*, s_V^* \right) &= -k^2 + s_V^* \left(x_V \left(\omega \right) \right) B \\
&\geq -\left(p - x_V \left(\omega \right) - k \right)^2 + s_V^* \left(p \right) B = \mathbb{E} u_P \left(\omega, p, s_V^* \right).
\end{aligned}
$$

This gives the first inequality. Taking $p = x_V \left(\omega \right) + k$ gives the second inequality. Noting that $s_V^* \left(x_V \left(\omega \right) + k \right) \geq 0$ gives the final inequality. ∎

Proof of Proposition 4.1. Fix some equilibrium (s_P^*, s_V^*) that is $\{p, p+k, \ldots, p+mk\}$-compliant. Applying Remark 4.1, we have that

$$\left[s_V^* \left(p \right) - s_V^* \left(p + k \right) \right] B \geq k^2$$

$$\left[s_V^* \left(p + k \right) - s_V^* \left(p + 2k \right) \right] B \geq k^2$$

$$\ldots$$

$$\left[s_V^* \left(p + mk \right) - s_V^* \left(p + \left(m + 1 \right) k \right) \right] B \geq k^2.$$

So, certainly,

$$\left[s_V^* \left(p \right) - s_V^* \left(p + \left(m + 1 \right) k \right) \right] B \geq \left(m + 1 \right) k^2.$$

Now note that $1 \geq \left[s_V^* \left(p \right) - s_V^* \left(p + \left(m + 1 \right) k \right) \right]$. It follows that

$$B \geq \left[s_V^* \left(p \right) - s_V^* \left(p + \left(m + 1 \right) k \right) \right] B \geq \left(m + 1 \right) k^2,$$

or

$$\frac{B}{k^2} \geq m + 1.$$

The result now follows immediately. ∎

Proposition 4.1 says that there is a limit on the Voter's ability to achieve compliance from a Pragmatist. The reason is that the Voter would like to give the Pragmatist incentives to choose policies $p, p + k, p + 2k$, and so on. But, because the Voter does not know the actual state, the Voter does not know the Pragmatist's cost of choosing any one of these policies. As such, he must offer higher and higher electoral incentives to choose lower and

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lower policies.[6] He cannot do so because electoral incentives are bounded.

4.1   A Second Limitation on Compliance

Proposition 4.1 provides one limitation on the Voter's ability to achieve compliance. We will now see that there is a second important limitation. Doing so is a key step in identifying some of the tradeoffs the Voter faces—i.e., for understanding which equilibrium is "best" from the Voter's perspective. (We elaborate on this in the next subsection.)

Consider a simple numerical example. Take $B = 11$ and $k = 1$. The set $[0, 6] \cup \{7, 8, 9, 10\}$ satisfies the requirements of Proposition 4.1, in the sense that each $\{p, p + k, \ldots, p + mk\}$ contained in $[0, 6] \cup \{7, 8, 9, 10\}$ has $m \leq 10$. The limitation examined in Proposition 4.1 focused on the Voter providing incentives to choose 0 over 1, 1 over 2, and so on. However, if the Voter achieves $[0, 6] \cup \{6, 7, 8, 9, 10\}$ compliance, then he must also provide the Pragmatist with incentives to choose 0 over, say, .5, i.e., to choose a policy p over a policy $q \in (p, p + k)$. We will see that he cannot do so for each policy $p \in [0, 6]$.

Here is the idea of the proof: Suppose we found an equilibrium, viz. (s_P^*, s_V^*), that is $[0, 6] \cup \{7, 8, 9, 10\}$-compliant. The key step is that, for each $p \in [0, 6]$, s_V^* must be differentiable at p and, in particular, the derivative is $-\frac{2}{11} = -\frac{2k}{B}$. (See Lemma 4.1 below. This arises from the requirement that the Voter must offer electoral incentives to choose a policy p over a policy $q \in (p, p + k)$.) But then, we have

$$\frac{s_V^* (6) - s_V^* (0)}{6 - 0} = -\frac{2}{11},$$

or

$$s_V^* (0) - s_V^* (6) = \frac{12}{11}.$$

This cannot be, since $1 \geq s_V^* (0)$ and $s_V^* (6) \geq 0$.

Let us give this argument more generally. Fix an interval $[\underline{p}, \overline{p}] \subseteq \mathbb{R}$. We call $\overline{p} - \underline{p}$ the **length of the interval** $[\underline{p}, \overline{p}]$.

Proposition 4.2 *If* (s_P^*, s_V^*) *is* $[\underline{p}, \overline{p}]$-*compliant, then the length of* $[\underline{p}, \overline{p}]$ *is less than or equal to* $\frac{B - k^2}{2k}$.

The key to Proposition 4.2 is the following lemma.

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[6]Of course, this is because the Pragmatist's ideal point is biased upward (i.e., $k > 0$). If k were negative, the Voter would have to offer lower and lower electoral incentives to choose lower and lower policies. An analogous limitation would arise.

Lemma 4.1 *Fix a Bayesian equilibrium, viz. (s_P^*, s_V^*), that is $[\underline{p}, \overline{p}]$-compliant. Then, for each $p \in [\underline{p}, \overline{p}]$, s_V^* is differentiable at p and, specifically, the derivative of s_V^* at p is $-\frac{2k}{B}$.*

Proof. Fix some (s_P^*, s_V^*) that is $[\underline{p}, \overline{p}]$-compliant. Then, by Remark 4.1,

$$s_V^*(p) - s_V^*(q) \geq -\frac{(p-q)^2}{B} - \frac{2k(p-q)}{B},$$

for each $p, q \in [\underline{p}, \overline{p}]$.

Fix some $p \in [\underline{p}, \overline{p}]$ and some sequence $\{q_n\}_{n \in \mathbb{N}}$, so that $q_n \in [\underline{p}, \overline{p}] \setminus \{p\}$ and $\lim_{n \to \infty} q_n = p$. We have that, for each q_n,

$$s_V^*(p) - s_V^*(q_n) \geq -\frac{(p - q_n)^2}{B} - \frac{2k(p - q_n)}{B}$$

and

$$s_V^*(q_n) - s_V^*(p) \geq -\frac{(q_n - p)^2}{B} - \frac{2k(q_n - p)}{B}.$$

Putting these two together, we have

$$\frac{(q_n - p)^2}{B} - \frac{2k(q_n - p)}{B} \geq s_V^*(q_n) - s_V^*(p) \geq -\frac{(q_n - p)^2}{B} - \frac{2k(q_n - p)}{B}.$$

It follows that

$$\frac{|q_n - p|}{B} - \frac{2k}{B} \geq \frac{s_V^*(q_n) - s_V^*(p)}{q_n - p} \geq -\frac{|q_n - p|}{B} - \frac{2k}{B}.$$

Now, fix some open set U with $-\frac{2k}{B} \in U$. Then, there exists some N so that, for each $n \geq N$,

$$\frac{s_V^*(q_n) - s_V^*(p)}{q_n - p} \in U.$$

It follows that

$$\lim_{n \to \infty} \frac{s_V^*(q_n) - s_V^*(p)}{q_n - p} = -\frac{2k}{B},$$

as required. $\blacksquare$

Proof of Proposition 4.2. Fix some (s_P^*, s_V^*) that is C-compliant and suppose that $[\underline{p}, \overline{p}] \subseteq C$. By Lemma 4.1, for each $p \in [\underline{p}, \overline{p}]$, s_V^* is differentiable at p and the derivative at p is $-\frac{2k}{B}$. It follows that there exists some $a \in \mathbb{R}$, so that, for each $p \in [\underline{p}, \overline{p}]$, $s_V^*(p) = a - \frac{2k}{B}p$.
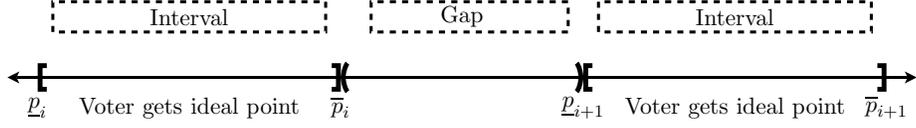
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Figure 4.1

Given that, on the domain $[\underline{p}, \overline{p}]$, the slope of s_V^* is $-\frac{2k}{B}$, we must have

$$\frac{s_V^*\left(\overline{p}\right) - s_V^*(\underline{p})}{\overline{p} - \underline{p}} = -\frac{2k}{B},$$

or

$$\overline{p} - \underline{p} = \frac{B}{2k}[s_V^*(\underline{p}) - s_V^*\left(\overline{p}\right)].$$

Note, by Remark 4.1, $s_V^*\left(\overline{p}\right) B \geq k^2$. Moreover, $1 \geq s_V^*(\underline{p})$. As such,

$$\frac{B - k^2}{B} = 1 - \frac{k^2}{B} \geq [s_V^*(\underline{p}) - s_V^*\left(\overline{p}\right)].$$

With this,

$$\frac{B - k^2}{2k} \geq \frac{B}{2k}[s_V^*(\underline{p}) - s_V^*\left(\overline{p}\right)] = \overline{p} - \underline{p},$$

as required. ∎

4.2 Equilibria: Intervals and Gaps

Proposition 4.2 implies that any C-compliant equilibrium (for $C \neq \emptyset$) is made up of intervals and gaps. Refer to Figure 4.1. When the Voter's ideal policy is contained in one of the intervals, the Pragmatist chooses his (i.e., the Voter's) ideal policy. When the Voter's ideal policy is contained in one of the gaps, she does not. Per Proposition 4.1, any C-compliant equilibrium must consist of a gap. But, an equilibrium need not consist of an interval (i.e., C may be empty) and, even if it does, the interval may be a single point. (And, of course, an equilibrium may consist of only one interval)

Which equilibrium is "best" from the Voter's perspective? Two factors are important here. First, where are the intervals (and gaps) located relative to the Voter's prior? Second, how big are the gaps?

Begin with the first consideration—i.e., the location of the intervals (and gaps). This is

straightforward. All else equal, the Voter would prefer that the Pragmatist choose his ideal policy when it is contained in an interval to which he, ex ante, assigns high probability. But, of course, where two intervals are located affects the size of the gap. That is, the location of the interval depends, in part, on the size of the gap, and so the Voter may indeed face tradeoffs here.

Now, turn to the second consideration—i.e., the size of the gaps. All else equal, the Voter would prefer to shrink the size of the gaps, since the Pragmatist does not choose the Voter's ideal policy on this set. But, again, the Voter faces tradeoffs—in particular, there are two distinct reasons the Voter may prefer to increase the size of the gap. First, as suggested above, to shrink the size of the gap, the Voter must also shrink the size of adjacent intervals. Second, the size of the gap determines the types of incentives the Voter can give the Pragmatist on the gap. In particular, we will see that, by increasing the size of the gap, the Voter may be able to induce the Pragmatist to choose better policies when the Voter's ideal policy falls within the gap. Now we turn to an analysis of these issues.

4.3 Tradeoffs

To better understand some of the tradeoffs mentioned above, let us fix intervals, viz. $[\underline{p}_1, \overline{p}_1]$ and $[\underline{p}_2, \overline{p}_2]$, with $\underline{p}_2 > \overline{p}_1$. Take $[\underline{p}_1, \overline{p}_1]$ to have length $\frac{B-k^2}{2k}$. We do not specify the length of $[\underline{p}_2, \overline{p}_2]$, so it can even be degenerate. Proposition 4.2 implies that if an equilibrium, viz. (s_P^*, s_V^*), is $[\underline{p}_1, \overline{p}_1] \cup [\underline{p}_2, \overline{p}_2]$-compliant, it is not $[\underline{p}_1, \underline{p}_2]$-compliant. That is, there must be a gap between $[\underline{p}_1, \overline{p}_1]$ and $\underline{p}_2$. How large must the gap be? How large should the gap be?

Begin with the question of how large the gap must be. The answer depends on the length of the interval $[\underline{p}_2, \overline{p}_2]$. Lemma 4.1 gives that there exists some $a \geq 0$ so that, for each $p \in [\underline{p}_2, \overline{p}_2]$, $s_V^*(p) = a - \frac{2k}{B}p$. Let us construct this function as sparingly as possible. In this case, $s_V^*(\overline{p}_2) = \frac{k^2}{B}$. (Refer to Remark 4.1.) As such,

$$s_V^*(\underline{p}_2) = \frac{2k}{B}(\overline{p}_2 - \underline{p}_2) + \frac{k^2}{B}.$$

This says that when the length of the interval $[\underline{p}_2, \overline{p}_2]$ is larger, the electoral incentives from choosing $s_V^*(\underline{p}_2)$ must be larger. At the same time, the gap must increase as we increase the electoral incentives from choosing $s_V^*(\underline{p}_2)$. This is a consequence of Lemma A1 in Appendix A. (See the discussion in Appendix A.a.) So, in this sense, the size of the gap may need to be larger when the length of the interval $[\underline{p}_2, \overline{p}_2]$ is larger.

In the above argument, we constructed the function s_V^* so that $s_V^*(\overline{p}_2) = \frac{k^2}{B}$. Remark 4.1 tells us that we must have $s_V^*(\overline{p}_2) \geq \frac{k^2}{B}$. However, importantly, the Voter may not be able

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to choose $s_V^* (\overline{p}_2) = \frac{k^2}{B}$. Specifically, suppose that (s_P^*, s_V^*) is also $[\underline{p}_1, \overline{p}_1] \cup [\underline{p}_2, \overline{p}_2] \cup [\underline{p}_3, \overline{p}_3]$-compliant, for $\underline{p}_3 > \overline{p}_2$. Then, the Voter may want to increase $s_V^* (\overline{p}_2)$ precisely so that the Voter can minimize the gap between $\overline{p}_2$ and $\underline{p}_3$. That is, the Voter must jointly determine the size of the gap between $\overline{p}_1$ and $\underline{p}_2$ versus the size of the gap between $\overline{p}_2$ and $\underline{p}_3$.

Now consider the question of how large the gap should be. Will the Voter always prefer the smallest gap? In light of the discussion above, we see that the answer may be no. The Voter may want to increase the size of the gap, so that the adjacent intervals are of "full length," i.e., of length $\frac{B-k^2}{2k}$. In the particular case where the Voter wants each of the intervals to be of full length, the gap must be at least $k + \sqrt{B}$. (See Proposition 4.3 to come.) But we will see, the Voter may have a second incentive to increase the size of the gap. By doing so, he may be able to improve his welfare, when his ideal policy is within the gap. Specifically, by increasing the size of the gap beyond $k + \sqrt{B}$, he may be able to give the Pragmatist better incentives within the gap.

To better understand this last point, consider a $\bigcup_i [\underline{p}_i, \overline{p}_i]$-compliant equilibrium, where the length of each interval is $\frac{B-k^2}{2k}$. Here, we can precisely characterize the smallest possible gap. Specifically, we have:

Proposition 4.3 *Fix a collection of disjoint intervals* $[\underline{p}_i, \overline{p}_i]$, *each of length* $\frac{B-k^2}{2k}$.

(i) *If* (s_P^*, s_V^*) *is* $\bigcup_i [\underline{p}_i, \overline{p}_i]$-*compliant, then* $\underline{p}_j - \overline{p}_i \geq k + \sqrt{B}$, *whenever* $\underline{p}_j > \overline{p}_i$.

(ii) *Suppose that,* $\underline{p}_j - \overline{p}_i \geq k + \sqrt{B}$, *whenever* $\underline{p}_j > \overline{p}_i$. *Then, there exists some* $\bigcup_i [\underline{p}_i, \overline{p}_i]$-*compliant equilibrium.*

The proof can be found in Appendix A. Let us focus on part (ii). Refer to Figure 4.1 and consider sets $[\underline{p}_1, \overline{p}_1]$, $[\underline{p}_2, \overline{p}_2]$, ... Suppose each interval has length $\frac{B-k^2}{2k}$ and, in particular, each $\underline{p}_{i+1} - \overline{p}_i = k + \sqrt{B}$. Let us construct a $\bigcup_i [\underline{p}_i, \overline{p}_i]$-compliant equilibrium, viz. (s_P^*, s_V^*). Lemma 4.1 says that, if (s_P^*, s_V^*) is $\bigcup_i [\underline{p}_i, \overline{p}_i]$-compliant and $p \in \bigcup_i [\underline{p}_i, \overline{p}_i]$, then s_V^* must be differentiable at p and, specifically, the derivative of $s_V^* (p)$ must be $-\frac{2k}{B}$. Using the length of each interval, we have that, if $p \in [\underline{p}_i, \overline{p}_i]$, we must set

$$s_V^* (p) = 1 + \frac{2k}{B} (\underline{p}_i - p).$$

Indeed, let us set $s_V^* (p)$ accordingly. If p is not contained in any of the sets $[\underline{p}_i, \overline{p}_i]$, we set $s_V^* (p) = 0$.

Figure 4.2 depicts the Pragmatist's best responses, when the Voter plays the strategy s_V^*. In particular, if the Voter's ideal policy is contained in one of the sets $[\underline{p}_i, \overline{p}_i]$, it is a

Interval   Gap

$\underline{p}_i$ Choose Voter's ideal point $\overline{p}_i$ Choose Pragmatist's ideal point $\underline{p}_{i+1} - \sqrt{B}$ Choose $\underline{p}_{i+1}$ $\underline{p}_{i+1}$
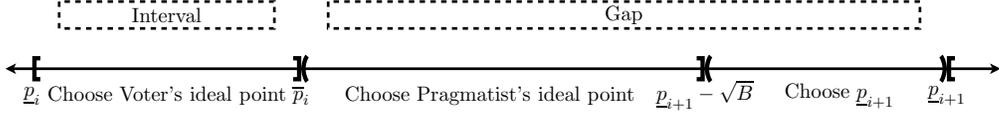
Figure 4.2

best response for the Pragmatist to choose the Voter's ideal policy. If, however, the Voter's ideal policy is contained in one of the sets $(\overline{p}_i, \underline{p}_{i+1} - \sqrt{B}]$, it is a best response for the Pragmatist to choose her own ideal policy. Finally, if the Voter's ideal policy is contained in one of the sets $(\underline{p}_{i+1} - \sqrt{B}, \underline{p}_{i+1})$, it is a best response for the Pragmatist to choose $\underline{p}_{i+1}$.

The constructed equilibrium is made up of intervals and gaps, as it should be. The Pragmatist chooses the Voter's ideal policy, only when it falls in the intervals. But this does not imply that the Voter necessarily wants to shrink the size of the gaps, i.e., so that each interval falls exactly $k + \sqrt{B}$ units from the adjacent intervals. That is, even if the Voter does want to induce the Pragmatist to choose his ideal policy (only) over intervals of "full length," i.e., of length $\frac{B - k^2}{2k}$, the Voter may not want to minimize the gap between two adjacent intervals. This may be the case for two reasons.

First, the Voter may prefer a larger gap, so that he can achieve compliance on a set of policies that, ex ante, he thinks is more likely to contain his actual ideal policy. For instance, suppose $B = 100$, $k = 1$, and the support of the Voter's prior is $(x_V)^{-1}([0, 49.5] \cup [70.5, 120])$ (or equivalently $[0, 49.5] \cup [70.5, 120]$). The Voter can achieve $[0, 49.5]$-compliance. Doing so means that he cannot achieve compliance on the interval $(49.5, 60.5)$. He can achieve $[0, 49.5] \cup [60.5, 110]$-compliance. But he can also achieve $[0, 49.5] \cup [70.5, 120]$-compliance and this would improve his expected payoffs.

Second, the Voter may prefer a larger gap so that he can induce the Pragmatist to choose "better policies" within the gap. To see this, refer back to the equilibrium constructed in Figure 4.2. When the Voter's ideal policy is contained in the interval $(\underline{p}_{i+1} - \sqrt{B}, \underline{p}_{i+1} - k)$, the Pragmatist chooses $\underline{p}_{i+1}$. If $\sqrt{B}$ is large relative to k, this may be particularly bad from the Voter's perspective. In this case, he would prefer that the Pragmatist choose her own ideal policy versus the policy $\underline{p}_{i+1}$. When the gap is exactly $k + \sqrt{B}$, this is not possible. By giving the Pragmatist sufficient incentives to induce her to choose her own ideal policy in this range, the Voter also insures that the Pragmatist will not choose his (i.e., the Voter's) ideal policy when it is exactly $\overline{p}_i$. That is, there is a conflict between (i) giving the Pragmatist incentives to choose the Voter's ideal policy when it is $\overline{p}_i$ and (ii) giving the Pragmatist incentives to choose her own ideal policy when the Voter's ideal

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policy is contained in $(\underline{p}_{i+1} - \sqrt{B}, \underline{p}_{i+1} - k)$. Specifically:

Lemma 4.2 *Fix sets $[\underline{p}_i, \overline{p}_i]$ and $[\underline{p}_{i+1}, \overline{p}_{i+1}]$ each of length $\frac{B-k^2}{2k}$. Suppose further that $\underline{p}_{i+1} - \overline{p}_i = k + \sqrt{B}$. If (s_P^*, s_V^*) is $[\underline{p}_i, \overline{p}_i] \cup [\underline{p}_{i+1}, \overline{p}_{i+1}]$-compliant, then $s_V^*(\omega)(x_P(\omega)) = 0$ whenever $x_V(\omega) \in (\underline{p}_{i+1} - \sqrt{B}, \underline{p}_{i+1} - k)$.*

Fix a $[\underline{p}_i, \overline{p}_i] \cup [\underline{p}_{i+1}, \overline{p}_{i+1}]$-compliant equilibrium, and suppose the gap is exactly $k + \sqrt{B}$. Lemma 4.2 says that, in this case, the Voter cannot induce the Pragmatist to choose her own ideal policy when $x_V(\omega) \in (\underline{p}_{i+1} - \sqrt{B}, \underline{p}_{i+1} - k)$, i.e., when the Voter would prefer that the Pragmatist does so. Specifically, by giving the Pragmatist sufficient incentives to choose her own ideal policy when $x_V(\omega) \in (\underline{p}_{i+1} - \sqrt{B}, \underline{p}_{i+1} - k)$, the Voter disturbs the Pragmatist's incentives to choose $\overline{p}_i$ when that is the Voter's ideal policy. However, when the gap is larger, i.e., when $\underline{p}_{i+1} - \sqrt{B}$ is large relative to $\overline{p}_i$, this conflict need not occur. Now, the Voter may be able induce the Pragmatist to choose her (i.e, the Pragmatist's) ideal policy when the Voter's ideal policy is contained in $(\underline{p}_{i+1} - \sqrt{B}, \underline{p}_{i+1} - k)$, without disturbing the Pragmatist's incentives for $\{\overline{p}_i\}$-compliance. Lemma A8 in Appendix A formalizes this idea.

5 Ideologues or Pragmatists?

Section 3 showed that the Voter can induce an Ideologue to choose his ideal policy whenever it is within $\sqrt{B}$ of the Ideologue's ideal policy. Section 4 showed that this may not be the case for a Pragmatist. The Voter may not be able to induce a Pragmatist to choose his ideal policy, even if it is very close to the Pragmatist's own ideal policy. This the raises the question: Is the Voter better off with an Ideologue or with a Pragmatist? We will see that the Voter may sometimes prefer the Ideologue. Why?

Notice, the Voter faces a trade-off. On the one hand, with the Ideologue, the Voter can achieve $[-\sqrt{B}, \sqrt{B}]$-compliance. If $2\sqrt{B} > \frac{B-k^2}{2k}$, the Voter cannot do so with the Pragmatist. So for this range of ideal policies the Voter may find an Ideologue more attractive than a Pragmatist. On the other hand, with the Ideologue, the Voter cannot achieve his ideal policy whenever it lies further from zero than $\sqrt{B}$, whereas with the Pragmatist doing so may be possible.

This tradeoff suggests that the Voter is sometimes better off with an Ideologue and sometimes better off with a Pragmatist, depending on the prior. To formalize this idea, let us introduce some terminology. Suppose that a particular Ideologue is associated with a (finite) benefit of reelection B. Call this Ideologue a B-*Ideologue*. Likewise, consider a

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Pragmatist with a (finite) benefit of reelection B and whose ideal policy is always k units above the Voter's, with $k \in (0, \sqrt{B}]$. Call this Pragmatist a (k, B)-Pragmatist.

Definition 5.1 *Fix a prior μ. Say the Voter **prefers a $\mathbf{B_0}$-Ideologue to a $(\mathbf{k_1}, \mathbf{B_1})$-Pragmatist (given μ)** if the following holds: There exists some equilibrium, viz. (s_P^*, s_V^*), of the game with the B_0-Ideologue so that*

$$\int_\Omega \mathbb{E} u_V(\omega, s_P^*) \, d\mu > \int_\Omega \mathbb{E} u_V(\omega, r_P^*) \, d\mu,$$

for each equilibrium (r_P^*, r_V^*) of the game with a (k_1, B_1)-Pragmatist.

Proposition 5.1

(i) *Fix some $k > 0$. There exists a non-empty, open interval $U \subseteq (0, \infty)$ so that the following holds: for each $B \in U$, there exists a prior μ, such that the Voter prefers the B-Ideologue over the (k, B)-Pragmatist.*

(ii) *Fix some $B > 0$. There exists a non-empty open interval $U \subseteq (0, \sqrt{B})$ so that, the following holds: for each $k \in U$, there exists a prior μ, such that the Voter prefers the B-Ideologue over the (k, B)-Pragmatist.*

Part (i) says that for each $k > 0$ there is a level of electoral rewards such that the Voter prefers the Ideologue to that Pragmatist. Importantly, this means that the Voter may prefer an Ideologue even when his (i.e., the Voter's) preferences are arbitrarily close to the Pragmatist's. Part (ii) says that, for any $B > 0$ there is a $k < \sqrt{B}$ such that the Voter prefers the Ideologue to the Pragmatist. That is, even if the rewards to office are arbitrarily small, the Ideologue may be better for the Voter than a Pragmatist.

6 Discussion

Throughout the paper, we've made some very specific assumptions. In this section, we attempt to step away from some of these assumptions, to better understand the extent to which our results hold in a richer—perhaps, more realistic—environment. In so doing, we point to some avenues for future research.

a. Multiple Candidates. In our model, at the time of the election, the Voter is indifferent between reelecting and replacing the Politician. As such, he can credibly use his reelection

rule to reward past behavior, without regard for the future. What if there is a future value to a Politician, so that the Voter is no longer indifferent between reelecting and replacing the Politician? In this case, can the Voter credibly use his reelection rule to reward past behavior? In particular, if the Voter has a choice between Ideologues and Pragmatists, can the incentives identified in Section 3 be used to exert similar control over an Ideologue?

We conjecture that the answer may be yes. Consider an infinitely repeated version of the game, where there is a large pool of identical Ideologues and identical Pragmatists. (So, each Ideologue has the same ideal policy, and likewise for the Pragmatists.) The game begins with an incumbent Ideologue. Now focus on a Voter strategy where: in each period with an Ideologue in office, the Voter reelects an Ideologue using the probabilities associated with Proposition 3.1, and the Voter assigns the remaining probability to electing a new Ideologue—i.e., one who has never been in office. If a Pragmatist is in office, the Voter replaces her with a new Ideologue. Note, under this Voter strategy, the (current) Ideologue's per-period expected payoff from choosing any policy in $[-\sqrt{B}, \sqrt{B}]$ is zero. With this, it is a best response for the Ideologue to choose a strategy that, in each period she is in office, plays in accordance with the $[-\sqrt{B}, \sqrt{B}]$-compliant equilibrium of the stage game. On the other hand, given the fact that a Pragmatist will be replaced for certain, it is a best response for the Pragmatist in office to choose her own ideal point. As such, it appears that this reelection rule may indeed be a best response for the Voter (for some k, B, and μ). And, under this reelection rule, the Voter always elects an Ideologue to office—so, in each period, the Voter obtains his ideal policy, whenever it is in $[-\sqrt{B}, \sqrt{B}]$.

Of course, this is not a thorough analysis of the game. One question is whether it is possible for the Voter to induce the Ideologue in office to choose the Voter's ideal policy beyond the interval $[-\sqrt{B}, \sqrt{B}]$, since reelection offers the Ideologue benefits beyond the current period. This relates to the basic open question: For which (k, B)-Pragmatists might the Voter prefer a B-Ideologue to a (k, B)-Pragmatist? That is, for which values of k and B (if any) is this indeed an equilibrium strategy profile? We leave this as an open question.

b. Voter Strategies. In the case of the Ideologue, we saw that there is a $[-\sqrt{B}, \sqrt{B}]$-compliant equilibrium. This might appear to be an artifact of a probabilistic voting rule, since the result is quite different for the case of a deterministic voting rule (within this model). But, the Voter may be able to achieve $[-\sqrt{B}, \sqrt{B}]$-compliance in other informational environments, even when he is restricted to use a deterministic voting rule.

To see this, consider the following modified game: Before the Voter's electoral decision, Nature chooses whether to inform the Voter of the true state or to leave the Voter unin-

formed. Ex ante, the Ideologue assigns probability π to the event that the Voter will learn the true state, and this probability is "transparent" to the players. We restrict the Voter to use a deterministic voting rule. Nonetheless, the Voter has a rich pure strategy set—if Nature does choose to inform the Voter, he can offer state contingent incentives. So, the Voter can now use both informed incentives (i.e., incentives that are contingent upon being informed of the true state) and uninformed incentives (i.e., incentives that are contingent upon being uninformed). It can be shown that, when $\pi \geq \frac{1}{2}$, there is a $[-\sqrt{B}, \sqrt{B}]$-compliant equilibrium. (See Bueno de Mesquita and Friedenberg (2009), which proves this result and also discusses the case of $\pi < \frac{1}{2}$.) This is achieved by a Voter strategy that uses informed and uninformed incentives in tandem.

Of course, we might be interested in other informational structures, e.g., where the Voter receives a noisy signal of the state. Here, can the Voter achieve $[-\sqrt{B}, \sqrt{B}]$-compliance when there is an Ideologue in office? We leave this as an open question.

c. Other Pragmatists. We studied a particular type of Pragmatist, one whose ideal policy is k units above the Voter's. The compliance problem may become more difficult with other types of Pragmatists whose preferences are positively correlated with the Voter's. This can occur because the Voter has less information about the Pragmatist's ideal policy.

For instance, suppose the Voter knows that the Pragmatist's ideal policy is always k units away from his own ideal policy, but does not know if it is above or below his own. Set $\Omega = \Omega_1 \times \Omega_2 = \mathbb{R} \times \{\overline{\omega}_2, \underline{\omega}_2\}$. At the state (ω_1, ω_2), the Voter's ideal policy is ω_1 and the Pragmatist's ideal policy is $\omega_1 + k$ (resp. $\omega_1 - k$) if $\omega_2 = \overline{\omega}_2$ (resp. $\omega_2 = \underline{\omega}_2$), where $k \in (0, \sqrt{B}]$. For each $p \in \mathbb{R}$, there is no $\{p, p+k\}$-compliant equilibrium. (See Bueno de Mesquita and Friedenberg (2009).) Why? In any equilibrium, if the Pragmatist chooses the Voter's ideal policy at $(p, \overline{\omega}_2)$ then the Pragmatist cannot choose the Voter's ideal policy at the state $(p+k, \underline{\omega}_2)$. To see this, suppose the strategy s_V^* induces the Pragmatist to choose the Voter's ideal policy, viz. p, at the state $(p, \overline{\omega}_2)$. Then, $-k^2 + s_V^*(p)B \geq s_V^*(p+k)B$, and so $s_V^*(p) > s_V^*(p+k)$. But, now, consider the state $(p+k, \underline{\omega}_2)$, where the Pragmatist's ideal policy is p. Here, the Pragmatist's expected payoffs from choosing her own ideal policy are $s_V^*(p)B$. These expected payoffs are greater than $s_V^*(p+k)B$, and so greater than her expected payoffs from choosing the Voter's ideal policy, viz. $-k^2 + s_V^*(p+k)B$.

Of course, there are other interesting cases where the Voter has less information about the Pragmatist's ideal policy—e.g., the Voter may know the Pragmatist's ideal policy is above his own, but not know exactly how far apart they are. In such cases, when would the Voter prefer an Ideologue to a Pragmatist? We leave this as an open question.

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