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Reputation Effects and Incumbency (Dis)Advantage*

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Abstract

We study dynamic models of electoral accountability. Politicians' policy preferences are their private information, so officeholders act to influence the electorate's beliefs—i.e., to build reputation—and improve their re-election prospects. The resulting behavior may be socially desirable ("good reputation effects") or undesirable ("bad reputation effects"). When newly-elected officeholders face stronger reputation pressures than their established counterparts, good reputation effects give rise to incumbency disadvantage while bad reputation effects induce incumbency advantage, all else equal. We relate these results to empirical patterns on incumbency effects across democracies.

1. Introduction

This paper concerns electoral accountability and incumbency effects. In democracies, voters delegate policy decisions to elected politicians. Such delegation poses challenges, however: there is no formal contract governing what decisions an officeholder takes (so there is moral hazard), and officeholders may have their own policy preferences that only they know (so there is adverse selection). The primary instrument that voters can use to control officeholders—to hold them accountable for their actions—is the decision of re-election. We study how re-election concerns shape incumbents' behavior and the consequences for voters' retention decisions.

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The theoretical literature on electoral accountability with adverse selection and moral hazard has largely used either one- or two-period models (Ashworth, 2012).[1] We develop in Section 2 an infinite-horizon model of repeated elections in which politicians are subject to a two-term limit, in the tradition of Banks and Sundaram (1998). Our model focuses attention on the asymmetry voters face between re-electing an incumbent into his second term, when he will be electorally unaccountable, and electing a challenger who can be held electorally accountable in his first term. This issue cannot be satisfactorily addressed in one- or two-period models. We tackle two questions: does politicians' desire for re-election lead to beneficial outcomes for the electorate, and does the resulting political behavior, and the asymmetry between the incumbent and challenger, generate an incumbency (dis)advantage?

As is standard, first-term incumbents in our model choose policies based not only on their policy preferences, but also to affect voters' beliefs about these preferences; i.e., politicians want to build a *reputation* that will make voters more inclined to re-elect them. Importantly, our framework accommodates both good and bad reputation effects: re-election concerns (accountability) can alter incumbents' policy choices in a way that is either beneficial or harmful to the electorate's welfare. Good reputation effects include higher effort, less corruption, etc. Bad reputation effects involve inefficient policy distortions, often referred to in the political-economy literature as *pandering* (e.g., Canes-Wrone, Herron, and Shotts, 2001; Maskin and Tirole, 2004). We follow Ely and Välimäki (2003) in using the terminology "bad reputation". In either case, whether reputation effects are good or bad, the reason an incumbent alters his behavior is the same—to signal to voters that he is a "good" type, viz., that he is of high ability and/or that his ideology is aligned with theirs. What distinguishes the two settings are the welfare consequences of incumbents' signaling.

When reputation effects are harmful voters may prefer an unaccountable officeholder in his second term, even one whose policy preferences are known to be different from the electorate's, to a first-term incumbent whose preferences may be aligned but who panders because of re-election concerns.[2] On the other hand, when reputation effects are beneficial voters may prefer a first-term officeholder whose preferences they are uncertain about, but who is motivated to work for re-election, to any type of second-term officeholder. We establish in Section 3 that voters' expected utility from re-electing an incumbent can be higher or lower than from electing

[1] Exceptions include Duggan (2000), Schwabe (2010), and papers mentioned subsequently. The seminal work of Barro (1973) and Ferejohn (1986) incorporated moral hazard but not adverse selection.

[2] Kartik and Van Weelden (2017) highlighted this phenomenon of "a known devil is better than an unknown angel" in a one-period model with a different focus; see also Fox and Shotts (2009) and Acemoglu, Egorov, and Sonin (2013). In some models, such as Maskin and Tirole (2004), even though pandering results in inefficiency, it is not the case that voters would prefer an unaccountable officeholder whose preferences are misaligned to an accountable officeholder with uncertain preferences.

a challenger, depending on the nature of reputation effects.[3]

We derive this key result in the context of strong office motivation. The resulting distortions on policy choices of a first-term officeholder become arbitrarily large: at the limit (in terms of the strength of office motivation), all first-term officeholders behave in the same manner. Elections lose any selection benefits. Crucially, even when the behavior of (all) first-term officeholders is less or more preferred by voters to that of (all) second-term officeholders, it is optimal for first-term officeholders to distort their behavior because voters' re-election decisions are subject to some randomness. That is, we assume probabilistic voting (e.g., voters' preferences also depend on "valence" shocks), and hence first-term officeholders always value increasing their reputation, regardless of whether voters expect better policies from officeholders in their first or second term. Section 3 explains how probabilistic voting, which we view as realistic, is the crucial difference with Duggan (2017), who argues that term limits put a bound on how much re-election concerns can affect policymaking.

Our analysis generates new insights into the effects of incumbency. An *incumbency advantage* (resp., *disadvantage*) is said to exist when an incumbent wins re-election more (resp., less) than half the time. As we abstract from mechanisms affecting which candidates run for office, and winning an election is not informative about a candidate's quality, incumbency (dis)advantage in our model is attributable to the effects of holding office *per se*. We show that bad reputation effects increase an incumbent's re-election rates, while good reputation effects decrease them; moreover, if there were no incumbency effects absent reputation effects, then there is an incumbency advantage with bad reputation but an incumbency disadvantage with good reputation. The logic derives from that mentioned earlier: under bad reputation, officeholders' behavior is worse in their first term than in their second term; hence, voters prefer to re-elect incumbents (who will then be in their second term) than to elect challengers (who will be in their first term). The reasoning is reversed under good reputation. It bears emphasis that the only feature distinguishing incumbents from their challengers in our model is their respective political horizons: a second-term officeholder will be unaccountable while a first-time officeholder will be accountable. In other words, we are identifying a distinct effect of incumbency from "direct" effects such as better fundraising opportunities or increased visibility discussed elsewhere (e.g., Mayhew, 1974; Cain, Fiorina, and Ferejohn, 1987; Gordon and Landa, 2009).

The foregoing discussion, and our formal analysis in Section 3, relies on the institutional feature of term limits. A broader intuition, however, is that similar themes—in particular, that

[3] Many empirical studies find that politicians in their last term of office choose systematically different policies than their early-term counterparts (e.g., Besley and Case, 1995, 2003). Naturally, it is difficult to empirically evaluate the welfare consequences. Our theoretical findings highlight that one should expect conclusions about welfare to be context-dependent.

the nature of reputation effects can lead to very different incumbency effects—should hold so long as reputation concerns are stronger for a newly-elected politician than one who has already served at least one term in office. We illustrate this broader intuition in Section 4 using a model without term limits in which a policymaker's type is exogenously revealed over time.

Our results on incumbency effects may help understand cross-country variation documented by empirical research.[4] A substantial literature has established incumbency advantage in U.S. elections (e.g., Erikson, 1971; Gelman and King, 1990; Ansolabehere and Snyder, 2002).[5] The advantage persists even when the incumbent was initially elected in an election that was close to tied (Lee, 2008), which shows that the incumbency advantage is above and beyond any initial selection effects (cf., Ashworth and Bueno de Mesquita, 2008). A similar incumbency advantage has also been noted in Canada (Kendall and Rekkas, 2012) and Western Europe (Hainmueller and Kern, 2008; Eggers and Spirling, 2017). However, in other parts of the world, the incumbency advantage is smaller and may even be negative; several scholars have argued that there is an incumbency disadvantage, conditional on random election, in India (Uppal, 2009), Brazil (Klašnja and Titiunik, 2017), Zambia (Macdonald, 2014), and Eastern Europe (Klašnja, 2015).[6]

Our theory accounts for differential incumbency effects based on how the effects of reputation concerns generated by accountability depend on institutional features. Electoral accountability no doubt has both beneficial and distortionary effects, with the relative magnitude of the two effects likely to vary across democracies. We find it plausible that the beneficial effects of accountability in generating desirable political behavior (e.g., less corruption and more policy effort) dominate its negative effects in places such as India, Brazil, Zambia, and Eastern Europe. Indeed, these benefits are estimated to be substantial: Ferraz and Finan (2011) conclude that reelection opportunities reduce Brazilian mayors' misappropriation by 27%. Our model's predictions accordingly tilt towards an incumbency disadvantage in the developing world. Concerns

[4] The empirical literature generally estimates a party incumbency effect rather than a personal one, to avoid bias associated with candidates' decision of whether or not to run for (re-)election (Gelman and King, 1990). Our model does not have parties and can be viewed as identifying a personal incumbency effect. Personal and party incumbency effects are closely related, however, as the party effect is a weighted average of the effect when an incumbent is and isn't up for re-election. Fowler and Hall (2014) present evidence that in U.S. legislatures with term limits there is a significant personal incumbency advantage.

[5] Many studies concern Congress, in which there are no term limits; however it has also been demonstrated that there is an incumbency advantage in U.S. state elections with term limits (Ansolabehere and Snyder, 2004; Fowler and Hall, 2014). A similar caveat applies to studies outside the U.S. that we shortly mention in which term limits are often not in effect. As mentioned above, Section 4 shows that the incumbency effects we identify can also emerge without term limits.

[6] Estimating the effect of incumbency is more complicated outside the U.S., particularly in countries where there are many parties, party switching is more prevalent, and/or incumbent retirements are more common. De Magalhaes (2015) discusses how these issues can lead to biased estimates; he advocates a specification in which he finds neither an incumbency advantage nor disadvantage in Brazil and India.

with corruption tend to be more muted in the U.S. and other developed countries (as measured by the Corruptions Perception Index 2015, for example), arguably because of institutional structures such as greater transparency, trust in the legal system, and even norms. When such institutions are more effective, the harmful policy distortions emerging from accountability become relatively more important. Hence, our model's implications favor incumbency advantage in the U.S. and Western Europe, or at least higher incumbency rates than in the developing world.

We are not the first to rationalize incumbency (dis)advantage beyond initial selection. Some explanations for incumbency effects focus on voters rewarding or punishing incumbents for their past behavior (e.g., Fiorina, 1977; Uppal, 2009). However, rational prospective voters must evaluate the value of re-electing an incumbent versus replacing him with a new politician. Scholars have nevertheless shown that an incumbency advantage can emerge due to noisy signaling by incumbents using messages that are payoff irrelevant to voters (Caselli, Cunningham, Morelli, and Moreno de Barreda, 2014), voters imperfectly observing previous electoral margins (Fowler, 2015), or learning by doing (Dick and Lott, 1993) and legislative seniority rules (Muthoo and Shepsle, 2014; Eguia and Shepsle, 2015). Incumbency disadvantage can emerge when a politician's ability to secure personal rents increases with tenure (Klašnja, 2016). Eggers (2015) demonstrates that either incumbency advantage or disadvantage can be generated by non-random retirements as well as by asymmetries or trends in the distribution of politicians' quality. Prato and Wolton (2015) discuss how electoral campaigns can exacerbate or mitigate a pre-existing incumbency advantage.

Relative to these other papers, we develop a novel mechanism and provide a unified framework to understand both incumbency advantage and disadvantage. While other forces are no doubt also relevant, our theory's predictions are based on changes in a politician's incentives that are caused by tenure in office *per se*, without requiring an additional assumption that they get more effective (Dick and Lott, 1993; Muthoo and Shepsle, 2014; Eguia and Shepsle, 2015) or more corrupt (Klašnja, 2016) over the course of their career. Our theory appears well suited to addressing cross-country variation in incumbency rates, a comparative issue that has received limited theoretical attention. It also suggest new empirical tests. For example, strengthening legal sanctions for corruption in a country should increase incumbency rates in that country, because—by mitigating the need for politicians to signal their (lack of) corruptibility—such reforms decrease the relative strength of good reputation effects.

2. A Model with Term Limits

We first elucidate our main points using a simple model with term limits. There is an infinite horizon, with discrete periods indexed $t = 1, 2, \ldots$. In each period t: (i) a policymaker (PM) is elected into office by a representative voter; (ii) the PM privately observes a state of the world, $s_t \in \mathbb{R}$, which is drawn independently across time from a continuous distribution $F(\cdot)$ whose support is equal to $\mathbb{R}$; and (iii) the PM then chooses a policy action $a_t \in \{0, 1\}$.

Elections. There is a new (representative or median) voter in each period.[7] At the beginning of any period t, that period's voter observes the entire history of electoral outcomes and PMs' actions, the states $(s_1, s_2, \ldots, s_{t-2})$, and then elects the PM for period t.[8] PMs are subject to a two-term limit. In any period $t > 1$, if the incumbent PM has just completed his first term, then he competes against a new challenger. In period 1 and in any $t > 1$ in which the incumbent has completed his second term, two new challengers compete against each other; for simplicity, we assume directly in this case that a random challenger takes office. A PM who has served two terms or who loses an election will never be a candidate for office again.

Voters' preferences. The period t voter's payoff is $u(s_t)a_t$. That is, the voter's policy payoff is normalized to 0 when action 0 is taken, while action 1 in state s yields a policy payoff $u(s)$. Action 1 is thus optimal for the voter if and only if $u(s) > 0$. The model allows for action 1 to be unambiguously good for voters (e.g., it corresponds to lack of rent-seeking), in which case $u(s) > 0$ for all s, or for action 1 to be undesirable in some states (e.g., the appropriate foreign policy depends on external circumstances), in which case $u(s) < 0$ for some s. Consistent with our assumption about state unobservability, we assume that the period t voter does not observe s_{t-1} or the realization of the period $t-1$ voter's payoff.

We assume voters re-elect incumbents rationally but stochastically. Specifically, if the period t voter's expected utilities from re-electing the incumbent and challenger are I and C, respectively, the incumbent is re-elected with probability $1 - \Phi(C - I)$, where Φ is a continuous cumulative distribution with support $\mathbb{R}$. We view Φ as capturing the effects of probabilistic voting, for example due to additive "valence" shocks.[9] Importantly, our formulation ensures that a lower $C - I$ always increases an incumbent's re-election probability. While it is natural to consider $\Phi(0) = 1/2$—there is no incumbency advantage or disadvantage when the incumbent

[7] One can also interpret the analysis as applying to a long-lived voter who acts myopically. See fn. 18 for a discussion of forward-looking long-lived voters.

[8] What is important is that the voter observes the PM's action in the previous period (we could allow for imperfect observation) while not (perfectly) observing the previous period's state; the other observability assumptions are purely for convenience.

[9] Given the notation C and I above, suppose the voter's expected payoff from electing the challenger remains C, but is augmented to $I + v$ from re-electing the incumbent. The variable v a publicly-observed random shock that is drawn from the cumulative distribution $\Phi(\cdot)$. Since the voter rationally re-elects the incumbent if and only if (ignoring equality) $v > C - I$, the incumbent's probability of being re-elected is $1 - \Phi(C - I)$.

and challenger are expected to provide the voter with the same utility—we do not impose that assumption.

Politicians' preferences. A politician can be one of two *types*, $\theta \in \{g, b\}$; this type is drawn independently from the state and across politicians. A politician's type is his private information (never observed by the voter) and persistent across his political career. We denote the ex-ante probability of type $\theta = g$ by $p \in (0, 1)$. For simplicity we assume the politician's payoff in any period that he is not elected into office is 0; we show that our main conclusions also hold when politicians care about policy out of office in Appendix C. In any period t, the PM's payoff is

$$k + u^\theta(s_t)a_t + \mu^\theta. \tag{1}$$

Here, $k > 0$ is an office-holding benefit, while $u^\theta(s_t)a_t$ represents policy utility. In the absence of electoral accountability—in particular, during a PM's second-term in office, or if politicians' types were commonly known—a period t PM of type θ would choose $a_t = 1$ if and only if (ignoring indifference) $u^\theta(s_t) > 0$.[10] We interpret the μ^θ term in (1) as capturing type-specific benefits and costs (including opportunity costs) of holding office or having policy-making power, and elaborate on it below.

We make the following assumption on policy preferences.

Assumption 1. *The policy utility functions satisfy:*

1. *$u(\cdot)$, $u^g(\cdot)$, and $u^b(\cdot)$ are each integrable with respect to $F(\cdot)$, continuous, and strictly increasing. Moreover, $u^g(\cdot)$ and $u^b(\cdot)$ are unbounded both above and below.*

2. *For all $s \in \mathbb{R}$, $u(s) \geq u^g(s) > u^b(s)$.*

Part 1 of the assumption implies that all actors—voters and PMs of either type—gain more from taking action 1 when the state is higher. Moreover, for each $\theta \in \{g, b\}$, there is a unique s^θ such that $u^\theta(s^\theta) = 0$; an accountable PM of type θ will use a threshold of s^θ, i.e., take action 1 if and only if (ignoring indifference) the state is at least s^θ. Part 2 says that the gain from taking action 1 is always strictly larger for type g than type b; moreover, the voter's gain is always at least as large as type g's. It follows that the voter's preferred threshold (which may be $-\infty$) is no larger than s^g, and that $s^b > s^g$. Hence, the voter's payoff would be higher from an

[10] Our framework allows for the voter's policy preferences to coincide with the type-g PM's; this is the case when $u(s) = u^g(s)$. There is no general reason, however, that the voter and the PM (of either type) need have the same policy preferences, since the PM may have to exert policy effort or face other tradeoffs, as elaborated subsequently.

unaccountable PM of type g than type b; accordingly, we refer to type g as the *good type* and type b as the *bad type*.[11]

Our framework accommodates different interpretations of a politician's type. The state s could reflect the social benefit of action $a = 1$ over $a = 0$, with a bad PM being more ideologically biased towards $a = 0$ than a good PM. Alternatively, s could reflect the net social benefit of taking action $a = 1$ less the private cost (in terms of effort or forgone rent-seeking opportunities) to a type-g PM from doing so; a bad PM could be less competent or more corruptible and so have a higher private cost of taking $a = 1$. In other words, a politician's type may reflect ideology, competence, corruptibility, or other traits that affect his preferences over actions.

Returning to the μ^θ term in (1), we set

$$\mu^\theta := -(1 - F(s^\theta))\mathbb{E}[u^\theta(s)|s \geq s^\theta], \tag{2}$$

so that the expected value of being in office in a period is the same (viz., k) for both types of politicians absent electoral accountability. This particular choice of μ^θ is not essential but simplifies algebra; it implies the desirable property that both PM types gain the same expected utility from re-election to a second term. Remark 1 in Appendix C elaborates on this point. A politician's lifetime payoff is the sum of his payoffs in the (two or fewer) periods he holds office.

Solution concept. The PM in period t chooses which action $a_t \in \{0, 1\}$ to take as a function of his (persistent) type, $\theta_t \in \{g, b\}$, the number of times he can still be re-elected, $r_t \in \{0, 1\}$, as well as the state $s_t \in \mathbb{R}$.[12] We denote the period-t PM's (pure) strategy by a function

$$\alpha_t : \{g, b\} \times \{0, 1\} \times \mathbb{R} \to \{0, 1\}.$$

We say that politicians' strategies are *stationary* if, for all (θ, r, s) and all periods t and t',

$$\alpha_t(\theta, r, s) = \alpha_{t'}(\theta, r, s),$$

and we write $\alpha(\cdot)$ without a time subscript for a stationary strategy.

We study stationary perfect Bayesian equilibria in pure strategies, henceforth referred to

[11] Our analysis can be extended to more types and actions by building on Kartik and Van Weelden's (2017) Supplementary Appendix.

[12] In principle, a PM's action can also condition on other variables, e.g., a second-term PM's action could depend on his first-term action. Our approach entails no loss of generality because, as will become clear from the analysis in Section 3, short-lived voters and term limits allow us to apply backward-induction logic.

as *stationary equilibria*.[13] In a stationary equilibrium: (i) each period's voter optimally decides whether to retain the incumbent (if the incumbent is eligible for re-election; and modulo probabilistic voting) given politicians' strategies and her beliefs about the incumbent's type; (ii) voters' beliefs are derived by Bayes' rule on the equilibrium path; (iii) PMs choose their actions optimally given voters' retention behavior; and (iv) politicians' strategies are stationary.

2.1. Good and Bad Reputation

Re-election concerns can generate either beneficial or harmful reputation effects, as follows.

Good reputation. If $u(s) > 0$ for all s, then the voter prefers action $a = 1$ no matter the state. In this case $a = 1$ is an unambiguously good action, while $a = 0$ is something undesirable such as rent-seeking, corruption, low policy effort, etc. This setting corresponds to canonical agency models, such as those studied by Banks and Sundaram (1993, 1998), Duggan and Martinelli (2015), and Duggan (2017), among others. Since a PM of type g takes action $a = 1$ more often than one of type b in the absence of accountability, it is intuitive (and will be formally confirmed) that re-election concerns will affect first-term PMs' behavior in a manner that benefits voters. In fact, we will see in Corollary 2 that, when office motivation is large, accountability has beneficial consequences so long as a weaker condition holds:

$$\mathbb{E}[u(s)|s < s^g] > 0. \tag{3}$$

When condition (3) is satisfied we say that the setting is one of *good reputation*.

Bad reputation. If $u(s) < 0$ for some s, then it becomes possible for accountability to induce a PM to take action $a = 1$ more often than desired by the voter. (As noted earlier, such behavior cannot arise without accountability.) Put differently, this is a setting in which a PM's re-election concern may cause "pandering" that is potentially harmful to the voter, as in Acemoglu et al. (2013) and Kartik and Van Weelden (2017). In this setting, the state s captures which policy action is socially desirable. The bad type of politician, $\theta = b$, is biased towards action $a = 0$, either because of ideology or competence. If

$$\mathbb{E}[u(s)|s < s^b] < 0, \tag{4}$$

[13] Focussing on pure strategies is without loss of generality: given any profile of strategies, it is a measure zero event for any player to be indifferent. Stationarity is not essential either for our main points but it simplifies the exposition substantially.

then $\mathbb{E}[u(s)] < (1 - F(s^b))\mathbb{E}[u(s)|s \geq s^b]$, and so the voter is better off with an unaccountable bad type than a PM who takes action $a = 1$ regardless of the state. When condition (4) is satisfied we say that the setting is one of *bad reputation*; the reason is that, as we will show, strong re-election concerns can lead to worse outcomes for the voter than no accountability. While a setting of bad reputation rules out $u(s) > 0$ for all s, it does not require that the voter's payoff can become arbitrarily negative.

Note that, as we have defined them, good and bad reputation settings are not exhaustive: neither condition (3) nor (4) need hold. We also emphasize that in both cases—good and bad reputation—an accountable PM is trying to signal that he is the good type, $\theta = g$. Bad (resp., good) reputation arises when the welfare effects of the PM trying to signal that he is a good type are harmful (resp., beneficial) to the voter.

3. Main Results

As a second-term PM faces a binding term limit, he will simply choose his myopically preferred policy, which is $a = 1$ if and only if $s > s^\theta$. Hence the expected payoff to a voter from re-electing an incumbent when he is perceived as the good type ($\theta = g$) with probability $\hat{p}$ is

$$\begin{aligned} U(\hat{p}) &:= (1 - F(s^g))\hat{p}\mathbb{E}[u(s)|s > s^g] + (1 - F(s^b))(1 - \hat{p})\mathbb{E}[u(s)|s > s^b] \\ &= \hat{p}\int_{s^g}^{s^b} u(s)\mathrm{d}F(s) + \int_{s^b}^{\infty} u(s)\mathrm{d}F(s), \end{aligned}$$

which is strictly increasing in $\hat{p}$ because $u(s) > 0$ for all $s \in (s^g, s^b)$ and $F(s^b) > F(s^g)$. (Throughout this section, we drop time subscripts as we are building towards stationary equilibria.)

Recalling that voters are short lived, and letting U^c denote the voter's utility in a PM's first term (which will be determined endogenously), a first-term PM is re-elected with probability

$$1 - \Phi(U^c - U(\hat{p})).$$

As the voter observes the PM's action but not the state of the world, a PM's re-election probability does not depend on the state (but can depend on his action). A PM's utility from taking action 1 in any period is strictly increasing in the state. Therefore, in any equilibrium, a first-term PM will take action 1 if and only if the state exceeds some threshold. Letting $\hat{p}(1)$ and $\hat{p}(0)$ be the reputations (i.e., the voter's belief that the incumbent is the good type) from choosing action 1

and action 0 respectively, a type-θ PM uses a threshold s_*^θ that solves

$$u^\theta(s_*^\theta) = k[\Phi(U^c - U(\hat{p}(1))) - \Phi(U^c - U(\hat{p}(0)))]. \tag{5}$$

The left-hand side of this equation is the difference in policy payoffs to a type θ from taking action $a = 1$ and $a = 0$, while the right-hand side is the difference in re-election probabilities multiplied by the value of re-election. Since the right-hand side (RHS) is independent of θ, it follows from Equation 5 that given any updating rule for the voter (i.e., a specification of $\hat{p}(1)$ and $\hat{p}(0)$), a first-term PM's thresholds satisfy

$$s_*^b = (u^b)^{-1}(u^g(s_*^g)) > s_*^g. \tag{6}$$

Consequently, in any equilibrium, a type-b PM takes action 0 more frequently than a type-g PM, as would also have been the case were the PM's type known. Moreover, a stationary equilibrium is fully characterized by a single threshold, $s_* := s_*^g$ with s_*^b defined in terms of s_* by Equation 6. Note that $\hat{p}(1)$ and $\hat{p}(0)$ depend on s_*. We will write $\hat{p}(a, s_*)$ as the voter's posterior when observing action a given threshold $s_* \in \mathbb{R}$.[14] For any s_*, it holds that $\hat{p}(1, s_*) > \hat{p}(0, s_*)$. Finally, the voter's utility from a first-term PM is also a function of s_*, which we denote by

$$U^c(s_*) := (1 - F(s_*))p\mathbb{E}[u(s)|s > s_*] + (1 - F(s_*^b(s_*)))(1 - p)\mathbb{E}[u(s)|s > s_*^b(s_*)]. \tag{7}$$

It follows that a stationary equilibrium is characterized by a threshold s_* that solves

$$u^\theta(s_*) = k[\Phi(U^c(s_*) - U(\hat{p}(1, s_*))) - \Phi(U^c(s_*) - U(\hat{p}(0, s_*)))]. \tag{8}$$

Proposition 1 (Equilibrium Characterization)**.** *A stationary equilibrium exists. In every stationary equilibrium there exists $s_*^g < s^g$ and $s_*^b < s^b$ such that:*

1. *(First-term PMs.) $\alpha(\theta, 1, s_t) = 0$ if and only if $s_t \geq s_*^\theta$.*

2. *(Second-term PMs.) $\alpha(\theta, 0, s_t) = 0$ if and only if $s_t \geq s^\theta$.*

Furthermore, in every sequence of stationary equilibria as $k \to \infty$, $\lim_{k\to\infty} s_*^\theta = -\infty$ for $\theta \in \{g, b\}$.

Proof. It is immediate that a second-term PM of type θ takes action $a_t = 1$ if and only if $s_t > s^\theta$. Moreover, by the preceding analysis, a stationary equilibrium is characterized by a threshold s_* that solves Equation 8, with a first-term PM in period t taking action $a_t = 1$ if and only if $s_t \geq s_*^\theta$,

[14] Explicitly, Bayes' rule yields $\hat{p}(1, s_*) = \frac{p(1-F(s_*))}{p(1-F(s_*))+(1-p)(1-F(s_*^b(s_*)))}$ and $\hat{p}(0, s_*) = \frac{pF(s_*)}{pF(s_*)+(1-p)F(s_*^b(s_*))}$.

where $s_g^* = s_*$ and s_*^b is defined by the equality in (6) given s_*^g. It is therefore sufficient to establish that s_* exists, $s_* < s^g$, and $\lim_{k\to\infty} s_* = -\infty$.[15]

Step 1 (Existence): Fix any $k > 0$. We first show that a stationary equilibrium exists and that every stationary equilibrium has $s_* < s^g$. Define

$$T(s_*) := u^\theta(s_*) - k[\Phi(U^c(s_*) - U(\hat{p}(1, s_*))) - \Phi(U^c(s_*) - U(\hat{p}(0, s_*)))].$$

By Equation 8, s_* characterizes a stationary equilibrium if and only if $T(s_*) = 0$. For any s_*,

$$-[\Phi(U^c(s_*) - U(\hat{p}(1, s_*))) - \Phi(U^c(s_*) - U(\hat{p}(0, s_*)))] > 0$$

because $\hat{p}(1, s_*) > \hat{p}(0, s_*)$ and both $U(\cdot)$ and $\Phi(\cdot)$ are strictly increasing. Since $u(s_*) > 0$ for all $s_* \geq s^g$ (by Assumption 1), it follows that $T(s_*) > 0$ for all $s_* \geq s^g$, which implies that any stationary equilibrium has $s_* < s^g$. As $\Phi(U^c(s_*) - U(\hat{p}(1, s_*))) - \Phi(U^c(s_*) - U(\hat{p}(0, s_*)))$ is bounded over s_*, it holds that $\lim_{s_*\to-\infty} T(s_*) = -\infty$. Since $T(\cdot)$ is continuous, the intermediate value theorem implies that there is a zero of $T(\cdot)$.

Step 2 (Limit): We now show that for any $\overline{s} \in \mathbb{R}$ there exists a $\overline{k}$ such that, for all $k > \overline{k}$, $s_* < \overline{s}$; this implies that $\lim_{k\to\infty} s_* = -\infty$ in every sequence of stationary equilibria. Without loss by the previous step, we may restrict attention to $\overline{s} < s^g$. So fix any $\overline{s} < s^g$. Define

$$\Delta(\overline{s}) := \min_{s_* \in [\overline{s}, s^g]} -[\Phi(U^c(s_*) - U(\hat{p}(1, s_*))) - \Phi(U^c(s_*) - U(\hat{p}(0, s_*)))] > 0.$$

Since $u^g(\cdot)$ is increasing, it follows that for any $\tilde{s} \in [\overline{s}, s^g]$, $T(\tilde{s}) \geq u^g(\overline{s}) + k\Delta(\overline{s})$, and hence, when $k > \overline{k} := -u^g(\overline{s})/\Delta(\overline{s})$, that $T(\tilde{s}) > 0$. Thus, for $k > \overline{k}$, every stationary equilibrium has $s_* < \overline{s}$. $\square$

Proposition 1 reveals that in every stationary equilibrium, a first-term PM takes action $a = 1$ more often than he would in the absence of reputation concerns. The reason is that observing action $a = 1$ increases the voter's belief that the PM is the good type, which raises the PM's re-election probability because second-term PMs simply follow their true preferences. As office-holding benefits, and hence reputation concerns, grow arbitrarily large, the likelihood that a first-term PM chooses action $a = 1$ goes to one, no matter his type.

Whether such first-term behavior is beneficial to the voter or not depends on whether the voter is better off with a PM who takes $a = 1$ regardless of the state of world or a PM who is

[15] These are sufficient because $u^b(s_*^b) = u^g(s_*)$ implies, using Assumption 1, that the function $s_*^b(s_*)$ is strictly increasing, unbounded below, and satisfies $s_*^b(s^g) = s^b$.

insulated from reputation concerns. If the setting is one of good reputation (i.e., $\mathbb{E}[u(s)|s < s^g] > 0$) then the voter would prefer a PM who always takes action $a = 1$ to a PM who only takes action $a = 1$ when $s > 0$ (as does a type $\theta = g$ PM without reputation concerns); conditional on states where the actions differ, the expected benefit to the voter from $a = 1$ is positive. Similarly, if the setting is one of bad reputation (i.e., $\mathbb{E}[u(s)|s < s^b] < 0$), then the voter's payoff is higher from the bad PM without reputation concerns than one who always takes action $a = 1$. The final possibility is that $\mathbb{E}[u(s)|s < s^0] < 0 < \mathbb{E}[u(s)|s < s^b]$, in which case the voter's payoff from a PM who always takes action $a = 1$ is higher than from a reputationally-insulated bad type but lower than from a reputationally-insulated good type. We summarize the key points as follows.

Corollary 1 (Welfare)**.** *When office motivation is strong:*

1. *Under good reputation (i.e., (3)), a random challenger is preferred to any second-term PM. That is, there exists a $\overline{k}$ such that for all $k > \overline{k}$ and in every stationary equilibrium, $U^c > U(1)$.*

2. *Under bad reputation (i.e., (4)), any second-term PM is preferred to a random challenger. That is, there exists a $\overline{k}$ such that for all $k > \overline{k}$ and in every stationary equilibrium, $U^c < U(0)$.*

Corollary 1 says that depending on whether the setting is one of good or bad reputation, an electorally accountable politician could be better than an unaccountable good type (part 1) or worse than an unaccountable bad type (part 2). As already noted, good reputation is the more traditional focus of moral hazard models—actions correspond to policy effort or the degree of corruption—but bad reputation is readily interpreted as arising when the PM engages in excess pandering due to re-election pressures.[16]

Our assumption of probabilistic voting, which we view as realistic, plays a crucial role in generating Corollary 1. Suppose, instead, that voters deterministically elect the candidate who is expected to provide them with a higher utility. In this case it would be impossible to have a stationary equilibrium with $U^c > U(1)$: in such an equilibrium, voters would never re-elect any PM, and hence a first-term PM would act as if he were unaccountable, contradicting $U^c > U(1)$. This is the essence of Duggan's (2017) argument, although he casts it in a different model.[17] But with probabilistic voting, there is no such contradiction: even though a first-term PM may expect

[16] When part 2 of Corollary 1 applies, it is clear that there could be social benefits from either imposing a one-term limit or from other institutional changes that free PMs from reputation concerns, e.g., reducing transparency to make PMs' actions unobservable. As these issues have received attention elsewhere (e.g., Maskin and Tirole, 2004; Prat, 2005; Smart and Sturm, 2013), we do not pursue them here.

[17] Duggan's (2017) model is one of good reputation, which is when the relevant inequality in Corollary 1 is $U^c > U(1)$. Under bad reputation, the relevant inequality is $U^c < U(0)$. That creates a similar contradiction: now deterministic voters would always re-elect a PM into his second term, which again implies that a first-term PM would act as if he were unaccountable, contradicting $U^c < U(0)$.

to be re-elected with small probability, he is willing, under strong office motivation, to distort his behavior significantly in order to slightly increase that re-election probability.[18]

We now turn to implications on retention probabilities under strong office motivation. Under good reputation—when accountability's equilibrium effects are beneficial—the voter prefers the behavior of any type of first-term PM (who is electorally accountable) to any type of second-term PM (who is unaccountable). Consequently, incumbents will be re-elected with relatively low probability. While it may seem surprising that good reputation leads to low incumbent retention rates, the logic is compelling: when accountability has desirable effects, a rational prospective voter prefers to elect a new challenger rather than retain the incumbent because only the challenger will be accountable. Conversely, in a bad-reputation environment—when accountability's equilibrium effects are harmful—the distortion from any first-term PM is worse than the behavior from any type of second-term PM. Hence, incumbents will be re-elected with relatively high probability, as the voter prefers to have a PM freed from re-election pressures.

Corollary 2 (Incumbency Effects)**.** *When office motivation is strong:*

1. *Under good reputation (i.e.,* (3)*), an incumbent running for re-election is relatively disadvantaged. That is, there exists a* $\overline{k}$ *such that for all* $k > \overline{k}$ *and in every stationary equilibrium, the re-election probability is less than* $1 - \Phi(0)$*.*

2. *Under bad reputation (i.e.,* (4)*), an incumbent running for re-election is relatively advantaged. That is, there exists a* $\overline{k}$ *such that for all* $k > \overline{k}$ *and in every stationary equilibrium, the re-election probability is greater than* $1 - \Phi(0)$*.*

Corollary 2 is a consequence of Corollary 1, which implies that, under strong office motivation, an incumbent is expected to deliver a lower (resp., higher) policy payoff to the voter than a random challenger in a good-reputation (resp., bad-reputation) setting. When $\Phi(0) = 1/2$, an absolute incumbency disadvantage emerges under good reputation (incumbents are re-elected with probability less than $1/2$) while an absolute incumbency advantage arises under bad reputation (incumbents are re-elected with probability greater than $1/2$). Although such a clear-cut distinction need not hold when $\Phi(0) \neq 1/2$, it is still true that, relative to any incumbency (dis)advantage emerging from sources outside our model—as captured by $1-\Phi(0)$—good reputation effects confer incumbents with a disadvantage while bad reputation effects confer them an advantage. In particular, for any $\Phi(0)$, incumbency rates will be higher when reputation effects are bad than when they are good.

[18] Given our assumptions on probabilistic voting (in particular, that Φ has support $\mathbb{R}$), a version of Corollary 1 would also hold if voters are long lived and forward looking. In a nutshell, the reason is that even in that case an incumbent's re-election will always be uncertain and depend on a voter's belief about his type; thus, a first-term PM will be willing to distort his threshold without bound as office motivation grows without bound.

Corollary 2 can be related to differences in observed incumbent re-election rates. Our model deliberately sets aside selection issues among new PMs; we have instead assumed that whenever the voter elects a new PM, that PM is simply a random draw from the candidate population. Abstracting from selection effects allows us to highlight the (dis)advantages created by having already served in office. It is this sort of effect that empirical studies attempt to isolate with a regression discontinuity approach (e.g., Lee, 2008).[19]

Our results have been stated for a comparison of good-reputation settings with those of bad reputation. In practice, most environments will feature both kinds of reputational effects, with relative weights that vary with institutional features. The foregoing analysis suggests that incumbency rates will be higher when the bad-reputation component is relatively more important. We confirm this formally in the Appendix B.

As discussed in the Introduction, the empirical literature has identified wide variation in incumbency effects across democracies. There is a strong incumbency advantage in the U.S. and other highly-developed countries, but a much weaker advantage, or even a disadvantage, in many democracies in Africa, Asia, Eastern Europe, and South America. Our model rationalizes these findings when good reputation effects are relatively more important than bad reputation effects in the latter countries as compared to the former. Such a difference could arise, for example, because concerns about corruption drown out concerns about pandering when institutional elements (e.g., norms or the legal system) are less conducive to mitigating political corruption.

Although incumbency effects have been documented for offices with term limits, many empirical studies are in contexts without term limits, e.g., the United States Congress. Our analysis with term limits can be viewed as starkly capturing a broader intuition concerning incumbency effects when the opportunities and incentives for signaling one's type are greater for new PMs than their established counterparts. The next section expands on this point.

4. Incumbency Effects Without Term Limits

In this section we illustrate how our findings can also emerge in a repeated-elections model without term limits. As suggested above, the key property needed is that new PMs are more affected by reputation concerns than established PMs. We capture this in a model without term limits, but wherein a PM's (persistent) type may be revealed at the end of each period.

Formally, suppose that at the end of any period t, the period-t PM's type is revealed to the subsequent period's voter with probability $q \in [0, 1)$ if the PM has just completed his first term in

[19] However, incumbents elected in a close election could systematically differ from the pool of candidates for the reasons discussed in Eggers (2015).

office, and with probability one if he has completed two or more terms. Politicians are long-lived and maximize their expected sum of payoffs.[20] Once a PM is not re-elected, he can never run for office again. All other aspects of the model are as in Section 2.

We study *"Markovian" equilibria* in which in any period: (i) the voter's expected utility from a electing a politician (the incumbent or challenger) only depends on the politician's reputation and whether he will be in his first term of office, $\nu_t = 1$, or not, $\nu_t = 0$ (read ν as mnemonic for new); and (ii) a PM uses a pure strategy that can be written as a function $\alpha(\theta_t, \nu_t, s_t)$. We will refer to a Markovian equilibrium in which a first-term PM generates a weakly higher reputation by taking action $a = 1$ than by taking $a = 0$ as a *natural-signaling* equilibrium, because the behavior of a PM in the absence of reputation concerns would induce this ordering of reputation.

Plainly, in a Markovian equilibrium there is no benefit for a PM of distorting his action from the unaccountable threshold when $\nu_t = 0$. So hereafter consider the case of $\nu_t = 1$. As before, let U^c denote the voter's expected utility from electing a challenger. Let $\overline{V}^\theta$ denote the expected utility for a PM who runs for re-election when his type is publicly known to be θ. Letting $\hat{p}(a)$ be the reputation from choosing action a in a PM's first term, the payoffs to a first-term PM from taking action a given state s, denoted $V^\theta(a, s)$, are respectively:

$$V^\theta(0, s) = k + \mu_\theta + q\overline{V}^\theta + (1 - q)\left[1 - \Phi(U^c - U(\hat{p}(0)))\right]\left(k + \overline{V}^\theta\right),$$
$$V^\theta(1, s) = k + u^\theta(s) + \mu_\theta + q\overline{V}^\theta + (1 - q)\left[1 - \Phi(U^c - U(\hat{p}(1)))\right]\left(k + \overline{V}^\theta\right).$$

Subtracting the first RHS above from the second, and equating to zero, we obtain a pair of equations for a stationary equilibrium cutoff pair $\mathbf{s}_* \equiv (s_*^g, s_*^b)$:

$$u^\theta(s_*^\theta) = (1-q)(k+\overline{V}^\theta(\mathbf{s}_*))\left[\Phi(U^c(\mathbf{s}_*) - U(\hat{p}(1, \mathbf{s}_*))) - \Phi(U^c(\mathbf{s}_*) - U(\hat{p}(0, \mathbf{s}_*)))\right], \text{ for } \theta \in \{0, b\}, \quad (9)$$

where we have made explicit the dependence of U^c, $\overline{V}^\theta$, and $\hat{p}(a)$ on the vector $\mathbf{s}_*$. We omit the straightforward derivations of these functions as they are similar to Section 3.

Proposition 2. *In the model without term limits, a natural-signaling Markovian equilibrium exists. In every natural-signaling Markovian equilibrium there exists $s_*^g < s^g$ and $s_*^b < s^b$ such that:*

1. *(First-term PMs.) $\alpha(\theta, 1, s_t) = 0$ if and only if $s_t \geq s_*^\theta$.*
2. *(Later-term PMs.) $\alpha(\theta, 0, s_t) = 0$ if and only if $s_t \geq s^\theta$.*

Furthermore, in every sequence of natural-signaling Markovian equilibria as $k \to \infty$, $\lim\limits_{k\to\infty} s_*^\theta = -\infty$ for $\theta \in \{g, b\}$.

[20] Due to the assumed probabilistic voting, it is not necessary to assume that PMs discount the future. It would be straightforward to incorporate discounting.

Proposition 2 parallels Proposition 1. The caveat is that Proposition 2 restricts attention to natural signaling. When the benefit from generating a higher reputation is larger for the good type than the bad type—which is the case here because a PM who is known to be good is re-elected with higher probability than a PM known to be bad—we cannot rule out equilibria in which both types distort their behavior towards action 0 because action 0 generates a higher reputation than action 1. (See Remark 1 in Appendix C for more on this point.) While theoretically intriguing, such "perverse" equilibria are arguably less plausible than equilibria with the "natural" distortion towards action 1, with action 1 generating higher reputation than action 0.

Given Proposition 2, it is straightforward that analogous results to Corollary 1 and Corollary 2 hold in our model without term limits as well. Among natural-signaling Markovian equilibria, when office motivation is strong, in a good (resp., bad) reputation environment the voter's expected utility from a challenger is higher (resp., lower) than from re-electing an incumbent, and hence an incumbent's retention rate is lower (resp., higher) than $1 - \Phi(0)$.

5. Conclusion

We have studied dynamic models of elections in which new policymakers face stronger reputation pressures than their established counterparts. This property is guaranteed by the institution of term limits, but we have illustrated how it can also reasonably obtain in other environments. When elections involve some plausible randomness, there is no bound on the extent of equilibrium signaling by early-term PMs. Depending on whether such signaling is beneficial or harmful to the electorate, voters may prefer either early- or late-term officeholders. There can thus be contrasting incumbency effects depending on the underlying environment. Our model predicts that, all else equal, incumbents' re-election rates will be higher when electoral accountability's negative effects (e.g., inducing pandering) are stronger relative to its beneficial effects (e.g., reducing corruption). This prediction is consistent with empirical studies that find higher incumbency rates in developed countries than in developing democracies.

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Appendices

A. Proof of Proposition 2

(Existence.) We first establish that for each $\theta \in \{g, b\}$, $\overline{V}^{\theta}(\mathbf{s}_*)$ is bounded over $\mathbf{s}_* \in \mathbb{R}^2$. Observe that

$$\overline{V}^{g}(\mathbf{s}_*) = [1 - \Phi(U^c(\mathbf{s}_*) - U(1))]\,(k + \overline{V}^{g}(\mathbf{s}_*)),$$
$$\overline{V}^{b}(\mathbf{s}_*) = [1 - \Phi(U^c(\mathbf{s}_*) - U(0))]\,(k + \overline{V}^{b}(\mathbf{s}_*)),$$

which solve for

$$\overline{V}^{g}(\mathbf{s}_*) = \frac{1 - \Phi(U^c(\mathbf{s}_*) - U(1))}{\Phi(U^c(\mathbf{s}_*) - U(1))}k \quad \text{and} \quad \overline{V}^{b}(\mathbf{s}_*) = \frac{1 - \Phi(U^c(\mathbf{s}_*) - U(0))}{\Phi(U^c(\mathbf{s}_*) - U(0))}k. \tag{10}$$

The boundedness of $U^c(\mathbf{s}_*)$, which follows from the integrability of $u(\cdot)$ (Assumption 1), implies that both $\overline{V}^{b}(\mathbf{s}_*)$ and $\overline{V}^{g}(\mathbf{s}_*)$ are bounded.

We write RHS^{θ}(9) to denote the RHS of (9) for type θ. Letting

$$h^{\theta}(\mathbf{s}_*) := (u^{\theta})^{-1}(RHS^{\theta}(9)),$$

the system (9) is equivalent to

$$\mathbf{s}_* = \mathbf{h}(\mathbf{s}_*) := (h^{b}(\mathbf{s}_*), h^{g}(\mathbf{s}_*)). \tag{11}$$

For each θ, the RHS of (9) is bounded over $\mathbf{s}_* \in \mathbb{R}^2$, as $\Phi(\cdot)$ is a cumulative distribution and $\overline{V}^{\theta}(\cdot)$ is bounded. Hence, $\mathbf{h}(\cdot)$ is bounded over $\mathbb{R}^2$.

Now consider the set

$$S := \{\mathbf{s}_* : s_*^g \leq s_*^b \text{ and } s_*^g \leq s^g \text{ and } s_*^b \leq s^b\}.$$

A Markovian equilibrium with threshold vector $\mathbf{s}_*$ is a natural-signaling Markovian equilibrium if $\mathbf{s}_* \in S$. We claim that

$$\mathbf{s}_* \in S \implies \mathbf{h}(\mathbf{s}_*) \in S. \tag{12}$$

To prove (12), fix any $\mathbf{s}_* \in S$. For each $\theta \in \{g, b\}$, the RHS of (9) is non-positive because: (i) action 1 does not decrease reputation (since $s_*^b \geq s_*^g$), hence $\Phi(U^c(\mathbf{s}_*) - U(\hat{p}(1, \mathbf{s}_*))) \leq \Phi(U^c(\mathbf{s}_*) - U(\hat{p}(0, \mathbf{s}_*)))$, and (ii) $k > 0$ and so, by (10), $\overline{V}^{\theta}(\mathbf{s}_*) > 0$. Consequently, for each $\theta \in \{g, b\}$, $h^{\theta}(\mathbf{s}_*) \equiv$

$(u^\theta)^{-1}(RHS^\theta(9)) \leq s^\theta$ for each θ. It remains to show that $h^b(\mathbf{s}_*) \geq h^g(\mathbf{s}_*)$. This inequality holds because $\overline{V}^g(\mathbf{s}_*) > \overline{V}^b(\mathbf{s}_*)$, as seen from (10) using $U(1) > U(0)$, and so $RHS^g(9) \leq RHS^b(9)$.

In light of (12) and the boundedness of $\mathbf{h}(\cdot)$, there is a compact rectangle $\tilde{S} \subset S$ that contains $\bigcup_{\mathbf{s}_* \in S} \mathbf{h}(\mathbf{s}_*)$. The function $\mathbf{h} : \tilde{S} \to \tilde{S}$ is continuous. It follows from Brouwer's fixed point theorem that there is a solution to Equation 11 within $\tilde{S}$, which corresponds to a natural-signaling Markovian equilibrium.

Finally, to show that any natural-signaling Markovian equilibrium has $s_*^\theta < s^\theta$ for each $\theta \in \{g, b\}$, suppose otherwise for some θ. It follows from (9) that $RHS^\theta(9) \geq 0$. If $RHS^\theta(9) > 0$, then $\Phi(U^c(\mathbf{s}_*) - U(\hat{p}(1, \mathbf{s}_*))) > \Phi(U^c(\mathbf{s}_*) - U(\hat{p}(0, \mathbf{s}_*)))$, hence $\hat{p}(1, \mathbf{s}_*) < \hat{p}(0, \mathbf{s}_*)$, contradicting the definition of a natural-signaling Markovian equilibrium. If $RHS^\theta(9) = 0$, then (9) implies $\mathbf{s}_* = (s^g, s^b)$, which in turn implies $\hat{p}(1, \mathbf{s}_*) < \hat{p}(0, \mathbf{s}_*)$, and hence $RHS^\theta(9) < 0$, a contradiction.

(Limit.) The argument showing that any sequence of natural-signaling Markovian equilibria has $\lim_{k \to \infty} s_*^\theta = -\infty$ for each $\theta \in \{g, b\}$ is analogous to that in the proof of Proposition 1. $\square$

B. Simultaneous Good and Bad Reputation

The main text contrasted settings with good reputation (i.e., (3)) with those of bad reputation (i.e., (4)). Here, we elaborate on the model with term limits from Section 2 to allow for both good and bad reputation components simultaneously; we show that our main result on incumbency effects obtains as a comparative static when good reputation becomes relatively more important.

Suppose the period t voter's policy payoff $u(s_t)a_t$ can be decomposed into two dimensions. Specifically, let

$$u(s) \equiv \gamma u_1(s) + (1 - \gamma) u_2(s), \tag{13}$$

where $\gamma \in [0, 1]$ and $u_1(\cdot)$ and $u_2(\cdot)$ are non-decreasing functions that are always greater than $u^g(\cdot)$. The model is otherwise exactly as Section 2; all the results from Section 3 continue to apply since $u(\cdot)$ satisfies our maintained assumptions.

The parameter γ in (13) reflects the relative importance of dimension 1 compared to dimension 2 for the voter. Take dimension 1 to be one of bad reputation and dimension 2 to be one of good reputation: $\mathbb{E}[u_1(s)|s < s^g] > 0$ while $\mathbb{E}[u_2(s)|s < s^b] < 0$.

Recall that at the limit when office motivation, and hence reputation concerns, become arbitrarily large ($k \to \infty$), the equilibrium threshold $s_* \to \infty$ along any sequence of equilibria. At the limit, with probability one every first-term PM takes action 0 and voters do not learn anything about the PM's type from his action. Hence, at the limit, the probability of re-electing the incumbent is simply

$$R^* := 1 - \Phi((U^c(-\infty) - U(p)). \tag{14}$$

Proposition 3. *Consider the specification with both good and bad reputation components. When office motivation is arbitrarily large, incumbency rates are higher when bad reputation is relatively more important:* $\frac{\mathrm{d}R^*}{\mathrm{d}\gamma} > 0$.

Proof. Substitute $U^c(-\infty) = \mathbb{E}[u(s)]$ and

$$U(p) = p(1 - F(0))\mathbb{E}[u(s)|s > s^g] + (1 - p)(1 - F(b))\mathbb{E}[u(s)|s > s^b]$$

into (14) and simplify to get

$$R^* = 1 - \Phi\left(pF(s^g)\mathbb{E}[u(s)|s < s^g] + (1 - p)F(s^b)\mathbb{E}[u(s)|s < s^b]\right). \tag{15}$$

The assumptions on $u_1(\cdot)$ and $u_2(\cdot)$ imply

$$\mathbb{E}[u_1(s)|s < s^g] \leq \mathbb{E}[u_1(s)|s < s^b] < 0 < \mathbb{E}[u_2(s)|s < s^g] \leq \mathbb{E}[u_2(s)|s < s^b].$$

Since $u(s) = \gamma u_1(s) + (1 - \gamma)u_2(s)$, the above inequalities imply that $\mathbb{E}[u(s)|s < s^\theta]$ is strictly decreasing in γ for each $\theta \in \{g, b\}$. Hence, the RHS of Equation 15 is strictly increasing in γ. $\square$

The setting described above is a simple extension of our baseline model. One can also expand on our baseline model to allow for the state, action, and PMs' types to all be two dimensional, with one dimension entailing good reputation and the other bad reputation.[21] Under suitable conditions, it can be shown in such a setting too that incumbency rates are higher when bad reputation is relatively more important than good reputation. Details are available from the authors on request.

C. Out-of-Office Policy Payoffs

Consider the model with term limits from Section 2, but now suppose that a politician of type θ—who only lives for two periods—receives a payoff $a_t u^\theta(s_t)$ in each period t that he is not in office. We maintain that the PM's payoff is $a_t u^\theta(s_t) + k + \mu^\theta$, with μ^θ set as per (2).

[21] Formally, a period t PM takes an action $a_t^1 \equiv (a_t^1, a_t^2) \in \{0, 1\}^2$ after observing a state $s_t \equiv (s_t^1, s_t^2) \in \mathbb{R}^2$. The PM's type is $\theta \equiv (\theta^1, \theta^2) \in \{g, b\}^2$, reflecting the PM's bias on each dimension. The period t voter's payoff is $\gamma u_1(s_t^1)a_t^1 + (1 - \gamma)u_2(s_t^2)a_t^2$ while the PM's payoff in that period is $k + \gamma u_1^{\theta^1}(s_t^1)a_t^1 + (1 - \gamma)u_2^{\theta^2}(s_t^2)a_t^2 + \mu^\theta$.

Our analysis in this appendix will also clarify the role of μ^θ. To this end, it will be convenient to use the notation

$$\pi^\theta := (1 - F(s^\theta))\mathbb{E}[u^\theta(s)|s > s^\theta],$$

which is the expected policy utility for an unaccountable PM of type θ. Plainly, $\pi^\theta = -\mu^\theta$ and $\pi^g > \pi^b$ by Assumption 1. Nevertheless, we will write $\pi^\theta + \mu^\theta$ instead of just 0 at various points below, to eventually explain how (2) can be weakened.

We will use the following additional assumption:

Assumption 2. *There is $\varepsilon > 0$ such that for all s, $u^g(s) - u^b(s) > \varepsilon$.*

Let W^θ denote the (endogenously determined) expected payoff for a politician in his second period of life when a random challenger holds office.[22]

Following the notation of Section 4, we now compute a first-term PM's payoffs $V^\theta(a, s)$ as:

$$V^\theta(0, s) = k + \mu^\theta + [1 - \Phi(U^c - U(\hat{p}(0)))] \left(k + \pi^\theta + \mu^\theta\right) + \Phi(U^c - U(\hat{p}(0)))W^\theta,$$
$$V^\theta(1, s) = k + u^\theta(s) + \mu^\theta + [1 - \Phi(U^c - U(\hat{p}(1)))] \left(k + \pi^\theta + \mu^\theta\right) + \Phi(U^c - U(\hat{p}(1)))W^\theta.$$

A stationary equilibrium cutoff pair $\mathbf{s}_* \equiv (s^g_*, s^b_*)$ solves

$$u^\theta(s^\theta_*) = \left(k + \pi^\theta + \mu^\theta - W^\theta(\mathbf{s}_*)\right) [\Phi(U^c - U(\hat{p}(1, \mathbf{s}_*))) - \Phi(U^c - U(\hat{p}(0, \mathbf{s}_*)))] \,, \text{ for } \theta \in \{g, b\}. \quad (16)$$

Proposition 4. *In the specification with term limits but with out-of-office policy payoffs, a stationary equilibrium exists. In every stationary equilibrium there exists (s^g_*, s^b_*) such that:*

1. *(First-term PMs.) $\alpha(\theta, 1, s_t) = 0$ if and only if $s_t \geq s^\theta_*$.*

2. *(Second-term PMs.) $\alpha(\theta, 0, s_t) = 0$ if and only if $s_t \geq s^\theta$.*

Furthermore, in every sequence of stationary equilibria as $k \to \infty$, $\lim\limits_{k\to\infty} s^\theta_* = -\infty$ for each $\theta \in \{g, b\}$.

Even though Proposition 4 does not assure that for any arbitrary k, policy-making is distorted towards action 1, it does for large k. Specifically, the last part of the proposition implies that there is $\overline{k} > 0$ such that for any $k > \overline{k}$, in every stationary equilibrium $s^b_* < s^b$ and $s^g_* < s^g$. In turn, this implies that for large k, $s^g_* < s^b_*$: otherwise, there would be no reputation benefit of taking action 1, and we would have $s^\theta_* \geq s^\theta$ for both θ.

[22] When k is large enough a politician will always prefer to hold office in any period than not hold office. We do not need notation for the expected payoff for a politician who does not win when he first runs for office, as this payoff is strategically irrelevant.

Proof of Proposition 4. (Existence.) We write RHS^θ(16) to denote the RHS of (16) for type θ. Letting

$$h^\theta(\mathbf{s}_*) := (u^\theta)^{-1}(RHS^\theta((16))),$$

the system (16) is equivalent to

$$\mathbf{s}_* = \mathbf{h}(\mathbf{s}_*) := (h^b(\mathbf{s}_*), h^g(\mathbf{s}_*)). \tag{17}$$

For each θ, the RHS of (16) is bounded over $\mathbf{s}_* \in \mathbb{R}^2$ because $\Phi(\cdot)$ is a cumulative distribution and $W^\theta(\cdot)$ is bounded. Hence, $\mathbf{h}(\cdot)$ is bounded over $\mathbb{R}^2$. Pick any compact rectangle $S \subset \mathbb{R}^2$ that contains $\bigcup_{\mathbf{s}_* \in \mathbb{R}^2} \mathbf{h}(\mathbf{s}_*)$. The function $\mathbf{h} : S \to S$ is continuous. It follows from Brouwer's fixed point theorem that there is a solution to Equation 17 within S.

(Limit.) Using a similar argument to those in the earlier equilibrium characterizations, it can be established that for any $[\underline{s}, \overline{s}]$, once k is sufficiently large, in every stationary equilibrium, either $\min\{s_*^g, s_*^b\} > \overline{s}$ or $\max\{s_*^g, s_*^b\} < \underline{s}$. Therefore, as $k \to \infty$, in every stationary equilibrium, either both thresholds are arbitrarily large or arbitrarily small.

Consider, to contradiction, a sequence of $k \to \infty$ with stationary equilibria in which $s_*^b \to \infty$ and $s_*^g \to \infty$. For any (large enough) k and θ, since $s_*^\theta > s^\theta$, it follows from (16) that

$$J(\mathbf{s}_*) := \Phi(U^c - U(\hat{p}(1, \mathbf{s}_*))) - \Phi(U^c - U(\hat{p}(0, \mathbf{s}_*))) > 0,$$

using the facts that $u^\theta(\cdot)$ is strictly increasing and $(k + \pi^\theta + \mu^\theta - W^\theta(\cdot)) > 0$ (as k is large and $W^\theta(\cdot)$ is bounded). That is, there is a reputational benefit of taking action 0; consequently, it must also hold that $s_*^b < s_*^g$ in this sequence. Manipulating (16), it also holds that

$$u^b(s_*^b) = u^g(s_*^g) - J(\mathbf{s}_*)[\pi^g + \mu^g - (\pi^b + \mu^b) - (W^g(\mathbf{s}_*) - W^b(\mathbf{s}_*))].$$

This equality implies that for large k, since both PM types are taking action 0 with probability approaching one (so for each θ, $W^\theta(\mathbf{s}_*) \to 0$),

$$u^b(s_*^b) \to u^g(s_*^g) - J(\mathbf{s}_*)[\pi^g + \mu^g - (\pi^b + \mu^b)].$$

Since $\pi^g + \mu^g = \pi^b + \mu^b = 0$, we further simplify to $u^b(s_*^b) \to u^g(s_*^g)$. But, in light of Assumption 2 and that u^b is strictly increasing, we have a contradiction with $s_*^b < s_*^g$. $\square$

Remark 1. The argument in the last two sentences of the above proof applies so long as

$$\pi^b + \mu^b \geq \pi^g + \mu^g. \tag{18}$$

As this is the only place in the proof where (2) was invoked, our main points hold even if that condition is replaced with the weaker condition (18). This condition requires that—when both types have the same payoff from not being re-elected—type g's gain from being re-elected is no larger than type b's. Without this condition—i.e., were type g to value reputation more than type b—one cannot rule out that (even for large k), in equilibrium, action 0 generates a higher reputation than action 1 and both types distort their behavior towards action 0. Intuitively, it is more costly for type g than type b to engage in such signaling (since $u^g(s) > u^b(s)$ for all s), so such an equilibrium can only exist if type g values reputation more. Nevertheless, even when (18) fails, one can prove, similarly to Proposition 2, that there is a stationary equilibrium with "natural" signaling (i.e., in which action 1 induces a higher reputation than action 0) when k is large enough, and that in any sequence of natural-signaling stationary equilibria, $\lim\limits_{k\to\infty} s_*^\theta = -\infty$ for each $\theta \in \{g, b\}$.