

Do the Advantages of Incumbency Advantage Incumbents?

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Abstract

We develop a model that calls into question whether some key sources of incumbency advantage frequently cited in the empirical and theoretical literature are, in fact, beneficial to incumbents. Our results show that increases in ostensible benefits of incumbency associated with these sources make it difficult for voters to differentiate incumbents of higher and lower quality. While this leads to an improvement in the electoral prospects of lower-quality incumbents, it is harmful to those of higher quality. Whether the net electoral consequence for high-quality incumbents is positive or negative depends on whether an ostensible source of incumbency advantage affects candidate entry and exit decisions directly or indirectly, as mediated through voters' choices. Our findings suggest, further, that fundamental tensions may exist between different sources of incumbency advantage, and point to obstacles to disaggregating the sources of incumbency advantage empirically.

“Incumbency advantage” typically refers to the electoral margin a candidate enjoys on account of her status as an incumbent running for reelection. An extensive literature in American politics beginning in the 1960s and 1970s has documented the existence of such a margin – first in congressional elections (e.g. Erikson 1971; Mayhew 1974), and later elsewhere (e.g. Ansolabehere and Snyder 2002). Other scholars have endeavored to disaggregate the impact on the incumbency advantage of what might be called the *advantages of incumbency* – that is, analytically distinct features of electoral politics perceived to contribute to that margin. A default presumption of these studies (and often a logical implication of their research designs) is that while these advantages may differ in the magnitude of their effects, they all point in the same direction. All are understood to work to the benefit of incumbents as such, rather than, for example, to the benefit of some types of incumbents occupying the same office and to the detriment of others. Further, none are thought to operate in opposition to one another.

We evaluate this presumption in a sequence of three simple models of electoral competition with strategic challengers, incumbents, and voters. In each of the models, a prospective challenger and incumbent, who may differ in their qualifications, make decisions concerning whether to participate in a race. The outcome of the race is determined by voters, who are less informed about the qualifications of the candidates than the candidates themselves. Each model captures a key feature of the electoral environment that affects the relative electoral fortunes of incumbents and prospective challengers apart from voters’ beliefs about the specific qualifications of individual politicians. (For convenience, we refer to these features as “environmental” sources of the incumbency advantage.) The first two models consider two sources typically associated with *direct officeholder benefits*: what we call the *campaign discount*, which corresponds to mechanisms that, *ceteris paribus*, make it less costly for an incumbent to run for reelection than for a challenger to mount a campaign, and *pro-incumbent endorser bias*, which may emerge from the unique opportunities officeholders have to cultivate relationships with influential interest groups or elites in a district. The third model considers ideological heterogeneity and *district partisan bias* toward an incumbent.¹

In each of these models, voters cannot observe candidate quality directly and must draw inferences about the relative merits of candidates from features of the electoral environment and the particular race. We demonstrate that a key implication of an increase in the campaign discount, endorser bias, and district partisan bias is an equilibrium *pooling effect* among incumbents of differing ability: because voters cue off candidates’ decisions to enter or stay in a race,

less-qualified incumbents will have a stronger incentive to remain in a contest against a serious challenger. While this effect may benefit those low-quality incumbents, it may harm those of higher quality by diluting the value of the signal entailed in their decision to run for reelection in the face of a serious challenge. Thus, these sources of incumbency advantage may advantage or *disadvantage* the electoral fortunes of incumbents depending on their relative abilities.

While the presence of the pooling effect is a key factor in determining the electoral fortunes of incumbents, our analysis shows that whether highly qualified incumbents are, in expectation, harmed by this effect depends on whether it is mediated by voter choices. An increase in the campaign discount or in endorser bias directly influences incumbent behavior, even holding constant the voter's choice. By contrast, an increase in pro-incumbent partisan bias produces pooling by making an incumbent more attractive to voters even holding constant candidate choices. In equilibrium, this distinction implies that a larger campaign discount or endorser bias does, in fact, have opposite effects on the electoral fortunes of high- and low-quality incumbents, whereas a larger pro-incumbent partisan bias is all upside.

These results suggest that some traditionally-noted sources of incumbency advantage may not uniformly benefit all incumbents: while some help incumbents indiscriminately, others help certain categories of incumbents while actually harming others. Our analysis further suggests a tension between some of the “environmental” sources of incumbency advantage and sources that may be thought to emerge *endogenously* in the immediate electoral context, most notably, selection and challenger scare-off. As discussed in further detail below, these are understood to put progressively higher quality incumbents in office. However, those same incumbents are the ones made worse off by the existence of the campaign discount and greater endorser bias. The presence of this tension implies a slowing of the selection effect. It also suggests a methodological challenge for efforts to isolate the sources of incumbency advantage empirically.

The remainder of the paper is organized as follows. We begin by providing a brief overview of the advantages of incumbency discussed in previous empirical and theoretical research. Subsequently, we turn to the formal analysis of our three models. Finally, we discuss some of the implications of our research for future work on electoral politics. To focus the discussion in the main body on comparative statics and the electoral welfare effects associated with the sources of incumbency advantage, we defer formal characterizations of the equilibria to the Web Appendix.

Incumbent Advantages and Electoral Politics

The political economy literature on accountability and electoral control has focused on twin features of electoral politics: conditions that enable voters to obtain high-quality performance from incumbents and those that determine incumbents' electoral welfare. One of two key mechanisms of electoral control emerging from these studies concerns the creation of incentives for the politicians to make policy choices more congruent with voters' own preferences (in "moral hazard" models - see e.g., Ferejohn 1986, Persson, Roland and Tabellini 1997; Bueno de Mesquita and Landa 2008). The other mechanism, more closely related to the present paper, turns on the selection of candidates on the basis of signals of their underlying quality (in "adverse election" models). In studies that explore politicians' behavior in response to "career concerns," such signals typically come from the incumbents' policy or effort choices prior to the elections (e.g., Banks and Sundaram 1998; Canes-Wrone, Herron and Shotts 2001; Ashworth 2005; Besley 2006, ch. 3), and voters' choices come down to the comparison of posterior beliefs about the incumbent's type with the expected type of a randomly-drawn challenger. The basic structure of our models departs from these studies by endogenizing the candidates' participation decisions and the signaling content of those decisions themselves.

Our models focus explicitly on properties of three environmental (in the above sense) sources of incumbent electoral welfare. The first two models correspond to direct officeholder benefits: sources of electoral advantage available to incumbents by virtue of their access to the powers of office. First, the *campaign discount* reflects greater name recognition within a district (which may stem from constituency service – see, e.g., Cain, Ferejohn, and Fiorina 1987), the franking privilege (Mayhew 1974), greater media coverage (Arnold 2004; Prior 2006; but see Ansolabehere, Snowberg, and Snyder 2004), and the ability to amass a war chest of contributions (Goodliffe 2005). All of these factors make it cheaper for an incumbent to mount a serious reelection campaign than for a candidate to mount a serious challenge, *ceteris paribus*.²

Second, *pro-incumbent endorser bias* is relevant in part because uninformed voters may rely on endorsements from respected elites or interest groups when deciding how to cast their ballots (McKelvey and Ordeshook 1985; Lupia 1994; Wittman 2007).³ Because incumbent officeholders have opportunities to cultivate relationships or offer promises to those elites, this may lead to some form of bias toward the incumbent (c.f. Grossman and Helpman 1999).

The campaign discount and pro-incumbent endorser bias contrast with a third key source

of incumbency advantage that also operates independently from voters' beliefs about the specific qualifications of individual politicians. *Pro-incumbent district partisan bias* reflects the ideological orientation of an incumbent's constituency. Absent redistricting, the ideological characteristics of a district tend to be relatively stable. Thus, an incumbent may enjoy an advantage over challengers in the same electorate that put her in power in the first place (Alford and Brady 1989; Gelman and King 1990; Hirano and Snyder 2007).

Each of these three factors exist in an environment in which voters may possess different *prior beliefs* about the quality or valence of an incumbent officeholder when compared to the typical challenger. The sources of this disparity may thus operate as sources of incumbency advantage as well. One such source is the electoral selection effect (Erikson 1971; Zaller 1998; Ashworth and Bueno de Mesquita 2008; Gowrisankaran, Mitchell, and Moro 2008): if voters systematically elect candidates of higher quality, then over time, we should anticipate officeholders to be of progressively higher quality. Moreover, given this effect, it is reasonable for relatively uninformed voters to rely on incumbency as a cue regarding a candidate's superior qualifications (Mayhew 1974; Ansolabehere, Hirano, Snyder, and Ueda 2006). An institutional source of disparate beliefs in the context of legislative elections is seniority (McKelvey and Riezman 1992): if agenda-setting power increases with experience, then, *ceteris paribus*, voters will anticipate higher performance from an incumbent than from her replacement. Finally, an incumbent's constituency service may contribute to the disparity in voter evaluations of incumbents and challengers (Fiorina and Rivers 1989; Cain, Ferejohn, and Fiorina 1987; Fiorina 1977).

The conjunction of disparate prior voter beliefs about quality and the three environmental factors may contribute further to *behavior* at the time of an election that may affect an incumbent's electoral prospects. Challengers reluctant to enter a race against an incumbent perceived to be unbeatable may be *scared off* (Banks and Kiewiet 1989; Cox and Katz 1996; Gordon, Huber, and Landa 2007; Lazarus 2008). Incumbents facing a serious challenge may *strategically retire* rather than experience a likely defeat (Jacobson and Kernell 1983; Kiewiet and Zeng 1993; Hall and van Houweling 1995; Ansolabehere and Snyder 2004; Carson 2005). Finally, given the presence of pro-incumbent endorser bias, elites must decide whether or not to endorse an incumbent given the potential electoral consequences of doing so (Juravich and Shergold 1988; Asher, Heberlig, Ripley, and Snyder 2001; Hill 2003).

The Campaign Discount Model

Primitives and Equilibrium Concept

There are three players: an incumbent i , a (prospective) challenger c , and a representative voter v .⁴ An incumbent officeholder's type $t_i \in \mathbb{R}$ is a draw from a distribution with density $p_i(\cdot)$ and cdf $P_i(\cdot)$. Likewise, the prospective challenger's type, $t_c \in \mathbb{R}$, is a draw from a distribution with density $p_c(\cdot)$ and cdf $P_c(\cdot)$. We will assume that both distributions are normal, the first with mean μ_i and variance σ_i^2 , and the second with mean μ_c and variance σ_c^2 . The candidates' types are measures of their underlying quality – how they can be expected to perform in office. The underlying densities are common knowledge to all players.

We assume that the incumbent and prospective challenger, consistent with their status as political elites, are better informed than voters. We model this asymmetry by assuming they know the specific values of t_i and t_c , while the voter initially knows only their distribution. Note that having incumbents and prospective challengers come from separate distributions is meant to capture the notion that the voter's prior beliefs about candidates who contemplate entering a race need not be symmetric.⁵

The sequence of events is as follows:

1. The prospective challenger chooses whether to enter/challenge ($C = 1$) or not ($C = 0$). If $C = 0$, the game ends with the incumbent remaining in office.
2. If the prospective challenger enters, the incumbent decides whether to stay in the race ($S = 1$) or quit ($S = 0$). If $S = 0$, the game ends with the challenger's election.
3. If the incumbent stays, the voter next observes additional information about the candidates, and then chooses whether to reelect the incumbent ($R = 1$) or not ($R = 0$).

As a shorthand, we will refer in what follows to situations in which the prospective challenger enters the race and the incumbent stays ($C = 1, S = 1$) as *contested races*. The information of relevance that a voter receives during a contested race is fully encapsulated by a noisy index of relative candidate quality, $w = t_i - t_c + \varepsilon$, where $\varepsilon \sim N(0, \sigma_\varepsilon^2)$. We use $p_\varepsilon(\cdot)$ to denote the density of ε , and $P_\varepsilon(\cdot)$ the cdf. Higher values of w correspond to situations in which the events of the campaign favor the incumbent relative to the challenger, and lower values to events in which the challenger is favored. This information, which may vary in its quality, may be interpreted as emerging from the environment of an electoral campaign, for example, via scrutiny of the

Table 1: Payoffs to Players

<i>Actions</i>		Challenger does not run	Challenger runs, incumbent quits	Both challenger, incumbent run
Voter retains incumbent	u_c	t_i	–	$t_i - k$
	u_i	$t_i + q$	–	$t_i + q - (k - d)$
	u_v	t_i	–	t_i
Voter elects challenger	u_c	–	$t_c + q - k$	$t_c + q - k$
	u_i	–	t_c	$t_c - (k - d)$
	u_v	–	t_c	t_c

candidates by the media or watchdog groups (e.g., Arnold 2004). A convenient property of the distributional assumptions is that, for any set of prior beliefs, it is possible (even if exceedingly unlikely) that the voter could receive information during the campaign that changes her mind.

Challengers, incumbents, and voters all value the quality of the officeholder. Additionally, challengers and incumbents place intrinsic value $q > 0$ on holding office. Further, challengers face an opportunity cost from running $k > 0$, with $k < q$, while incumbents face an opportunity cost $k - d$, with $0 < d < k$. The parameter d captures the difference between opportunity costs between challengers and incumbents, and may be thought of as a measure of the incumbent's campaign discount discussed above. The values of q , k , and d are commonly known to all players.⁶ The payoffs to all players under all action profiles are summarized in Table 1.

Our solution concept is weak perfect Bayesian equilibrium, which requires that (a) each player's choices be sequentially rational given her beliefs at the time of choice and the other players' strategies; and (b) beliefs about the other players' types be consistent with prior beliefs, equilibrium strategies, and Bayes' Rule on the path of play. Other than the equilibrium we analyze in detail below, there are also two pooling equilibria in which one or the other candidate never runs, and so no races are ever contested. These equilibria require, somewhat implausibly, that the voter's beliefs off the path of play ignore even incontrovertible evidence of a candidate's superiority (via w). Because we are interested in the relationship between the institutional environment and the inferences voters can draw in competitive races, and how those inferences affect the incumbents, we focus on the equilibrium in which competitive races can occur.

Analysis

We begin by characterizing best response correspondences for the voter, challenger, and incumbent. Given a contested race, the voter will vote to retain the incumbent if she believes that

$E[t_i|C = 1, S = 1, w] > E[t_c|C = 1, S = 1, w]$. Because the voter's beliefs must be correct in equilibrium, she will associate a larger campaign signal w with higher incumbent types, t_i , and lower challenger types, t_c . Let $\hat{w}(\cdot)$ be the threshold value of campaign information w such that

$$E[t_i|C = 1, S = 1, \hat{w}] = E[t_c|C = 1, S = 1, \hat{w}]. \quad (1)$$

Thus, the voter will vote to retain the incumbent if and only if $w > \hat{w}(\cdot)$. We demonstrate in Lemma 1 in the Web Appendix that \hat{w} exists and is unique for a given vector of model parameters. (Note that because w is continuous, $\hat{w}(\cdot)$ is a measure zero event.) Then the probability the incumbent is retained is given by $\Pr(w > \hat{w}(\cdot)) = 1 - P_\varepsilon(\hat{w}(\cdot) - t_i + t_c)$. The incumbent's expected utilities from not staying in the race and staying are, then, respectively:

$$\begin{aligned} E[u_i(S = 0|C = 1)] &= t_c \\ E[u_i(S = 1|C = 1)] &= -(k - d) + P_\varepsilon(\hat{w}(\cdot) - t_i + t_c)t_c + (1 - P_\varepsilon(\hat{w}(\cdot) - t_i + t_c))(t_i + q). \end{aligned}$$

Comparing these two values, the incumbent will stay to contest a challenge if and only if

$$t_i - t_c > -q + \frac{k - d}{1 - P_\varepsilon(\hat{w}(\cdot) - t_i + t_c)}. \quad (2)$$

Next, let $\theta(t_c, t_i)$ denote the probability that an incumbent of type t_i will stay in the race if challenged by a candidate of type t_c . By the same rationale as that applied in the case of the incumbent, a prospective challenger will enter if and only if

$$t_i - t_c < q - \frac{k}{P_\varepsilon(\hat{w}(\cdot) - t_i + t_c)\theta(t_c, t_i)}. \quad (3)$$

Inequalities (2) and (3) imply that the entry decision of the prospective challenger and the decision of the incumbent on whether to stay are monotonic in type; that is, if a prospective challenger of type t'_c chooses to enter, than any challenger of type $t''_c > t'_c$ will do so as well, and symmetrically for the incumbent.⁷ Given the monotonicity of incumbent and challenger strategies, we can characterize equilibrium behavior in relation to critical points in the space of candidate types and $\hat{w}(\cdot)$, satisfying the conjunction of conditions (1), (2), and (3).

In equilibrium, when the perquisites of office and the probability of victory are low, or when the opportunity cost of running is high, very incompetent prospective challengers will not find it in their interest to pursue office, and very incompetent incumbents will prefer leaving office to contesting a challenger who does enter. In order for races ever to be contested, the perquisites of holding office q must be relatively high (see Lemma 1 in the Web Appendix), otherwise, one or the other candidate will not run.

Our first formal result describes how the incumbent's campaign discount d relates to observ-

able features of candidate electoral performance. Of particular interest are the *ex ante electoral prospects* of an incumbent of type t_i – that is, her chances of retaining office averaging over the entire distribution of possible prospective challenger types, as affected by challenger, incumbent, and voter behavior. The proposition below captures the effects of d on the determinants of the *ex ante electoral prospects* (parts (a) through (c)) and their joint consequences (part (d)).

Proposition 1 (Electoral Prospects and Campaign Discount) *In equilibrium, when contested races are possible, an increase in the campaign discount d for an incumbent of type t_i leads to (a) a strict increase in the probability that a challenger enters the race; (b) a strict increase in the probability that the incumbent stays in the race if challenged; (c) a strict decrease in the probability the voter retains the incumbent in a contested race against a challenger of type t_c ; and (d) a strict decrease in the electoral prospects of the incumbent for sufficiently high t_i , and a strict increase for sufficiently low t_i .*

The portion of Panel A of Figure 1 above the dotted line depicts the intuition for this result, given a hypothetical change from lower to higher campaign discount d . The *direct* effect of an increase in d is to encourage incumbents to remain to contest a broader range of superior challengers than previously. If this direct effect were the only effect, then an increase in d would unequivocally benefit incumbents electorally. However, this would not be an equilibrium: first, given the greater willingness of inferior incumbents to remain in the race, the information revealed during the campaign will have to be more pro-incumbent than was previously the case for the voter to support the incumbent, i.e. \hat{w} will increase. Consequently, in equilibrium there must also exist an *indirect* effect: the retention probability in a contested race against a given challenger will decrease. Thus, incumbents who face contested races before and after the change in d will win with lower probability. Further, the decrease in retention probability will encourage some inferior challengers who were initially deterred to enter the race. This works to the clear detriment of those incumbents who would previously have been unopposed and won with certainty, but who might now face a contested race.

For those incumbents who would previously have stepped down but remain in the race given the increase in campaign discount d , electoral prospects are improved: they now have a positive probability of retaining office, whereas before that probability was zero. However, as the incumbent's type t_i increases, the likelihood of being in such a situation decreases, and will eventually be too small to offset the other negative consequences of the increase in

d. (By contrast, this effect eventually dominates for low-quality incumbents.) This points to what is, in effect, a disadvantage associated with the campaign discount, a feature of the electoral environment generally thought to advantage incumbents. Moreover, part (a) of our result indicates that an increase in the campaign discount actually *undermines* the “scare-off” of challengers – another purported source of incumbency advantage.

The Endorser Bias Model

Setup and Preliminaries

We next consider a second hypothesized source of incumbency advantage: the greater ease of obtaining the support of an influential interest group or other “endorser.” We model it by introducing another player, the endorser, e , who, like the politicians themselves, is fully informed about their types and, consistent with our discussion of the sources of the incumbency advantage, is biased toward the incumbent. We model this bias by assuming that she would prefer that the incumbent remain in office as long as $t_c < t_i + b$, where $b > 0$ is a commonly-known parameter capturing the size of the endorser’s bias toward the incumbent.

The sequence of play is identical to that described in the previous section, with the addition of the following step: conditional on a contested race, and following the revelation of campaign information w , the endorser announces her support either for the incumbent ($B = 1$) or the challenger ($B = 0$).⁸ (The order in which these two pieces of information are revealed in this model is without loss of generality.⁹) Let $\xi(t_i, t_c)$ be the probability the endorser endorses an incumbent of type t_i given a challenger of type t_c in a contested race. Let $\hat{w}^i(\cdot)$ be the voter’s campaign information threshold given an endorsement of the incumbent, and $\hat{w}^c(\cdot)$ the threshold given an endorsement for the challenger, analogous to the definition of $\hat{w}(\cdot)$ in the campaign discount model. The expected utilities to the incumbent from not staying in the race and staying are, respectively:

$$\begin{aligned}
 E[u_i(S = 0|C = 1)] &= t_c \\
 E[u_i(S = 1|C = 1)] &= \xi(t_i, t_c)((1 - P_\varepsilon(\hat{w}^i(\cdot) - t_i + t_c))(t_i + b) + P_\varepsilon(\hat{w}^i(\cdot) - t_i + t_c)t_c) \\
 &\quad + (1 - \xi(t_i, t_c))((1 - P_\varepsilon(\hat{w}^c(\cdot) - t_i + t_c))(t_i + b) + P_\varepsilon(\hat{w}^c(\cdot) - t_i + t_c)t_c) - (k - d)
 \end{aligned} \tag{4}$$

Likewise, the expected utilities to the challenger from not challenging and challenging are:

$$\begin{aligned}
E[u_c(C = 0)] &= t_i \\
E[u_c(C = 1)] &= (1 - \theta(t_c, t_i))(t_c + b) \\
&\quad + \xi(t_i, t_c)\theta(t_c, t_i)(P_\varepsilon(\hat{w}^i(\cdot) - t_i + t_c)(t_c + b) + (1 - P_\varepsilon(\hat{w}^i(\cdot) - t_i + t_c))t_i) \\
&\quad + (1 - \xi(t_i, t_c))\theta(t_c, t_i)(P_\varepsilon(\hat{w}^c(\cdot) - t_i + t_c)(t_c + b) + (1 - P_\varepsilon(\hat{w}^c(\cdot) - t_i + t_c))t_i) - k.
\end{aligned} \tag{5}$$

The requirements of the solution concept we employ are identical to those described above. We further refine the set of informative equilibria by requiring that the equilibrium be consistent with common knowledge of the fact that if the endorser endorses a given candidate, she prefers that that candidate be elected. This refinement eliminates a strategically equivalent equilibrium in which the labels on endorsements are reversed.

Consider the nature of an endorsement of the *challenger*. Such an endorsement is an unambiguous signal of the challenger’s superiority: “The relative competence of this challenger is so high that it overcomes my bias for the incumbent.” Upon receiving such a message, the voter would simply vote to elect the challenger given a contested race. But then the incumbent would prefer not to remain in the race, owing to the opportunity cost of doing so. Hence:

Remark 1 *In equilibrium, there are no contested races with endorsement of the challenger.*

We demonstrate in the Web Appendix that in equilibrium, the endorser will pursue a cutpoint strategy, endorsing the incumbent if and only if the incumbent is not “too much worse” than the challenger. Given Remark 1, this implies that on the equilibrium path of play in a contested race, $\xi(t_i, t_c) = 1$. Because the endorser is biased in favor of the incumbent, an endorsement of the incumbent is ambiguous – it is consistent with the incumbent either being superior to the challenger, or being inferior by as much as the bias in the endorser’s strategy. The effect is that sometimes, in equilibrium, the voter will ignore an endorsement of the incumbent as uninformative. Whether she chooses to do so will affect the nature of equilibrium play. To make the distinction between these cases precise, we define an endorsement of the incumbent as *redundant* if, on the path of play, it provides no additional information to the voter. Lemma 2 in the Web Appendix describes the precise conditions for redundancy. Informally, an endorsement is redundant if incumbents who would be deterred from staying in a race by the threat of not receiving an endorsement are already deterred by other strategic considerations. In such situations, an endorsement for the incumbent will convey no additional information to the voter about the types of candidates. It bears pointing out that if endorsement were redundant and the

challenger were endorsed, this *would* convey additional information to the voter; however, via Remark 1, such endorsements do not occur on the path of play (and so the notion of redundancy makes sense only when defined with respect to endorsements of incumbents). Note that whether endorsement is redundant is determined endogenously by the location of the highest quality challenger against whom an incumbent would remain in the race in the campaign discount game. Thus, the candidates' best response correspondences are determined jointly with (and so are functions of) the endorsement's redundancy.

Analysis

As in the campaign discount model, the challenger and incumbent best response correspondences are obtained by comparing these expected utilities, and are omitted here. If endorsement is redundant, the equilibrium is precisely that described in the campaign discount game described above. The interesting part of the current analysis therefore focuses on the situation in which endorsement is not redundant. First, recall that in the equilibrium without endorsements, some inferior incumbents could, if challenged, be deterred from running for reelection by the threat that the voter might elect the challenger. The presence of endorsements adds an additional threat to an inferior incumbent's retention, because even the (relatively uninformed) voter can make a well-informed judgment if the challenger is endorsed. An inferior incumbent who anticipates not receiving the endorsement will therefore choose not to run for reelection if challenged. Given this, the voter's critical campaign information threshold $\hat{w}^i(\cdot)$ is defined implicitly by equation (1), noting that in a contested race, both $E[t_i|\cdot]$ and $E[t_c|\cdot]$ are now functions of the endorser's strategy β .

There is no incentive in this equilibrium for the endorser to deviate from a strategy of endorsing the challenger if $t_c > t_i + b$ and otherwise endorsing the incumbent when endorsement is not redundant. If $t_c > t_i + b$, the endorser prefers that the challenger be elected, and can assure this outcome by endorsing that candidate. If $t_c < t_i + b$, the endorser prefers the incumbent, and maximizes the probability of an incumbent victory by endorsing the incumbent. Thus, in equilibrium, the bias in the endorser's strategy is equivalent to the bias in her type on the path of play (cf. Wittman 2007).

Our next result concerns the relationship between the extent of endorser bias b and the behavior of challengers, incumbents, and voters, and on the incumbent's ex ante electoral prospects.

Proposition 2 (Electoral Prospects and Endorsers) *Under conditions for which endorse-*

ments are not redundant in equilibrium:

1. the *ex ante* electoral prospects of incumbents of sufficiently high (low) type strictly benefit (suffer) from the existence of a pro-incumbent endorser; but
2. an increase in the extent of endorser bias b , given t_i , leads to (a) a strict increase in the probability the challenger enters the race; (b) a strict increase in the probability the incumbent stays in the race if challenged; (c) a strict decrease in the probability the voter retains the incumbent in a contested race against a challenger of type t_c ; and (d) a strict decrease in the electoral prospects of the incumbent for sufficiently high t_i , and a strict increase for incumbents of sufficiently low t_i .

If endorsements are redundant, then neither eliminating the endorser nor increasing the extent of endorser bias b has an effect on equilibrium strategies, beliefs, or outcomes.

The underlying intuition of Part 1 of this proposition is that the absence of endorsements implies greater pooling of candidates. Low quality incumbents benefit in expectation from being able to pool with their higher quality counterparts, whereas the opposite is true for the latter.

To see the intuition for Part 2, suppose, first, that a challenger has entered the race and endorsements are not redundant. The incumbent will drop out if the challenger's type t_c exceeds $t_i + b$. More (and lower) types of incumbents will prefer staying in the race when b is larger – a direct effect. As in the campaign discount model, this implies that the information revealed during the campaign, w , will have to be more strongly pro-incumbent when b is larger in order for the voter to support the incumbent; consequently, the indirect effect of an increase in b is a decrease in the retention probability. Further, this reduction encourages more inferior challengers to enter, undermining the scare-off of challengers as in the campaign discount model. (Panel A of Figure 1 captures these effects graphically.) Thus, while the direct effect is unambiguously beneficial to the incumbent, the indirect effects entailed by the equilibrium responses of the voter and challenger are harmful. For sufficiently high-quality incumbents, the indirect effects will come to outweigh the direct benefits. In sum, high-quality incumbents prefer operating in a world with endorsers, but wish them to be minimally biased. Low-quality incumbents prefer no endorsers at all, but conditional on their existence, prefer that they be maximally biased.

Given model parameters, endorsement will be redundant for sufficiently large b . If endorsement is redundant, then a marginal increase in the extent of the endorser's bias will have no

effect on the choices of any of the actors in the model. Consequently, such a change will have no effect on the electoral prospects of any incumbent.

The Partisan Bias Model

Setup and Preliminaries

In our previous models, differences between candidates were formalized in terms of “competence,” evoking the existence of a valence dimension about which consensus among voters regarding candidate quality might exist. In such an environment, single-voter models are reasonable approximations. By contrast, the existence of ideological differences between candidates naturally corresponds to the existence of an ideologically heterogeneous electorate, calling for a multiple-voter model.

Consider, then, a model identical to the campaign discount model in all respects except the following. There is a set of N voters, N odd, with voter v ’s most preferred policy position in the underlying unidimensional policy space X denoted by $x_v \in \mathbb{R}$. Let $x_i \in \mathbb{R}$ and $x_c \in \mathbb{R}$ be the most preferred policies for the incumbent and the challenger, respectively. Voters’ utilities are defined as above but for the additional additive “ideological bias” term, $-(x_v - \hat{x})^2$, where $\hat{x} \in \mathbb{R}$ is the policy adopted by the candidate elected. The utilities of the incumbent and the challenger are amended by adding a quadratic loss term $-(x_i - \hat{x})^2$ for the incumbent and $-(x_c - \hat{x})^2$ for the challenger.

We assume without loss of generality that if elected, the challenger implements $\hat{x} = 0$ and the incumbent $\hat{x} = 1$. Platform divergence is assumed in order to focus on exogenous partisan bias within the electorate; it is consistent with findings of Groseclose (2001) and Aragonés and Palfrey (2002), whose models generate platform divergence endogenously. Our normalization permits us to avoid confounding the effects of partisan bias and ideological polarization between the parties, focusing our attention on the former. Further, it will allow us to capture in reduced form the voters’ bias that stems from features of political parties rather than of particular candidates. (This is the sort of bias that in the congressional literature is associated with the “normal vote” for Republicans or Democrats – net of candidate-specific considerations.)

The preceding assumptions imply that the voters’ preferences are *one-and-a-half dimensional* in the sense of Groseclose (2007, 323-24),¹⁰ who demonstrates that under the conditions satisfied here, majority rule is transitive and selects the candidate most preferred by the median voter (who need not be pivotal). Thus, we can restrict our attention to the analysis of the median

voter's choice problem. Let $x_m \in (0, 1)$ be the most preferred policy of the median voter. Note that greater x_m corresponds to m 's (and so the electoral district's) greater ideological bias toward the incumbent's party. Finally, we assume that each candidate's platform is closer to her ideal point than to that of her erstwhile competitor: that is, $|x_i - 0| < |x_i - 1|$ and with the symmetric condition holding for the challenger. The sequence of play is identical to that in the campaign discount model.

Let $\hat{w}_m(\cdot)$ be the campaign information threshold for the median voter. This threshold will now be a function of the candidates' platforms as well as the candidates' most-preferred policies. Suppressing arguments of $\hat{w}_m(\cdot)$ and θ (the probability the incumbent stays in the race if challenged), the expected utilities to the prospective challenger are given by

$$\begin{aligned} E[u_c(C = 0)] &= t_i - (x_c - 1)^2 \\ E[u_c(C = 1)] &= -k + ((1 - \theta(\cdot)) + \theta(\cdot)P_\varepsilon(\hat{w}_m(\cdot) - t_i + t_c))(t_c + q - (x_c - 0)^2) \\ &\quad + \theta(\cdot)(1 - P_\varepsilon(\hat{w}_m(\cdot) - t_i + t_c))(t_i - (x_c - 1)^2). \end{aligned}$$

The prospective challenger will enter the race if and only if

$$t_i - t_c < q - (2x_c - 1) - \frac{k}{P_\varepsilon(\hat{w}_m(\cdot) - t_i + t_c)\theta}. \quad (6)$$

By a similar logic, the incumbent will stay in the race if and only if

$$t_i - t_c > -q - (2x_i - 1) + \frac{k - d}{1 - P_\varepsilon(\hat{w}_m(\cdot) - t_i + t_c)}. \quad (7)$$

The value of the median voter's campaign information threshold $\hat{w}_m(\cdot)$ is defined implicitly by

$$E[t_c|C = 1, S = 1, \hat{w}_m] - x_m^2 = E[t_i|C = 1, S = 1, \hat{w}_m] - (1 - x_m)^2, \quad (8)$$

Note that $\hat{w}_m(\cdot)$ will now incorporate the ideological bias of the median voter. This, in turn, implies that increased ideological bias corresponds to greater tolerance by the median voter of lower-quality incumbents (cf. Lemma 3 in Ashworth and Bueno de Mesquita 2008).

Analysis

We first consider the robustness of the results from the campaign discount and endorser bias models in the environment with partisan bias described above. Note that with respect to endorser bias, this requires redefining bias to reflect the introduction of ideology. In particular, suppose that in addition to non-ideological bias b (as above), the endorser has an ideal point x_e in the policy space (cf. Grofman and Norrander 1990). Then the aggregate pro-incumbent endorser bias is given by $b + x_e^2 - (x_e - 1)^2 = b + 2x_e - 1$. This quantity must be positive for

the endorser to be meaningfully pro-incumbent. (Note that the non-ideological component of aggregate bias, b , could be negative.) We have the following remark:

Remark 2 (Robustness of Propositions 1 and 2) *The relationship of the campaign discount and aggregate pro-incumbent endorser bias to the probability a prospective challenger enters, the probability an incumbent stays in a race if challenged, the probability the voter retains the incumbent in a contested race, and the incumbent's electoral prospects are robust in the presence of ideological policy preferences as modeled here.*

This robustness result emerges immediately from the strategic logic of the equilibrium. In particular, the best response correspondences of the incumbent and prospective challenger are qualitatively similar to those in the campaign discount game above. From the perspective of the candidates, the introduction of ideology and platforms simply gives each of them an additional incentive to run beyond the perquisites q . From the perspective of the voters, the introduction of ideological bias may alter the equilibrium probability that she retains the incumbent given a contested race; however, a change in the incumbent's campaign discount d has the same qualitative effects on the agents' choices as in the previous models.

Next, we consider the effects of district pro-incumbent partisan bias. To isolate these effects as cleanly as possible, we focus on the case in which the endorser's bias is redundant. Recall that x_m , the median voter's ideal policy, represents the partisan or ideological bias of the district. Given the results from the previous two models, one might initially suspect that an increase in x_m will harm the electoral prospects of the incumbent. Indeed, in the present model, such an increase will lead to greater pooling of lower quality with higher quality incumbents, as in the case of an increase in the campaign discount or endorser bias. However, the equilibrium consequences are quite different:

Proposition 3 (Electoral Prospects and Pro-Incumbent District Partisan Bias) *Given an incumbent of type t_i , an increase in pro-incumbent district partisan bias leads to (a) a strict decrease in the probability that a challenger enters the race; (b) a strict increase in the probability that an incumbent stays in the race if challenged; and (c) a strict increase in the electoral prospects of the incumbent irrespective of the incumbent's type.*

The key reason for the difference in the effects of an increase in incumbency advantage between this and the previous models concerns how such an increase operates on the incentives of the players. An increase in district partisan bias makes the incumbent more attractive to

the voter. This will have the effect of encouraging entry by lower quality incumbents. In equilibrium, their influx is stemmed by a reduction in the probability the incumbent is retained. That probability is, nonetheless, higher than it was prior to the change in x_m , because the equilibrium increase in the retention probability has the additional effect of crowding some (relatively lower quality) challengers who would have previously entered the race. Panel B of Figure 1 depicts these effects graphically.

Note that all of the effect of the change in partisan bias on the candidates' strategies is *indirect*, that is, operating via the change in the median voter's information threshold, \hat{w}_m . By contrast, the immediate effect of the relevant change in the campaign discount and endorser bias on incumbents is *direct*, occurring even holding constant \hat{w}_m . What hurts high quality incumbents in those cases is the response by the voter and challenger to those direct effects.

Effects on Selection on Quality

As noted above, the *selection account* of incumbency advantage refers to the feature of elections that, in expectation, leads to the improvement of officeholder quality in repeated elections (e.g. Zaller 1998; Ashworth and Bueno de Mesquita 2008). Indeed, positive selection on quality also occurs in equilibria in the models considered above. Given equilibrium play by the voter, following an election the officeholder will either be the incumbent (when there is either no challenge or a contested race with the voter choosing to retain the incumbent) or a challenger who is, in expectation, as good as the incumbent (when there is a contested race and the voter elects the challenger) or better (when the challenger enters and the incumbent quits).

In this section, we consider the interaction of selection and the three advantages of incumbency explicitly considered above. In particular, we analyze the effects of the campaign discount d , endorser bias b , and district partisan bias x_m on the expected quality of an officeholder following an election.

Proposition 4 (Post-Election Expected Officeholder Quality) *The expected quality of an officeholder following an election is (a) decreasing in the campaign discount in the absence of an endorser or if endorsement is redundant; (b) decreasing in endorser bias if endorsements are not redundant; (c) increasing in district partisan bias if the challenger wins, holding constant the voter's information set; and (d) decreasing in district partisan bias if the incumbent wins, holding constant the voter's information set.*

The implication of parts (a) and (b) of the proposition is a kind of net “drag” on the rate of

selection on quality. To understand the intuition, consider an increase in the campaign discount d . In equilibrium, more inferior challengers will enter the race, and more inferior incumbents will stay if challenged. Uncontested races, which would demonstrate the clear superiority of one candidate over the other, are therefore less frequent, and in contested races, the voter is more likely to choose a lower-quality candidate.

Unlike the effects of increasing the campaign discount or endorser bias, the effect of an increase in partisan bias depends on whether the winner is the incumbent or the challenger, and on the conditions under which that individual won. As our analysis in the previous section shows, an increase in that bias leads to greater willingness by inferior incumbents to stay in a race and lesser willingness by inferior prospective challengers to enter. Consequently, when the incumbent wins, the effect of an increase in x_m is to decrease, and when the challenger wins, to increase the posterior mean on the officeholder. The fact that these effects have opposite signs makes it difficult to ascertain the average effect of an increase in x_m on the speed of selection. However, if selection is expected to decrease the probability of a challenge over time, then part (d) of Proposition 4 becomes particularly relevant, its implication also being the presence of a tension between the selection account and pro-incumbent partisan bias.

Discussion

Further Considerations of Robustness

Our analysis has assumed that candidates intrinsically care about policy. A consequence of this assumption is that a higher quality candidate receives a higher utility from office - intuitively, because a more competent office holder is in a position to get more accomplished. A complementary consequence is that sufficiently low quality candidates may prefer not to run because they would enjoy a higher utility from the (much) better policy outcome resulting from the victory of their (much) more competent opponent. Apart from its substantive appeal, this assumption is also attractive because its consequences may be thought to go against our findings: it encourages, both directly and through cues to voters, better selection on (higher) type, which our results put in question. In this sense, our results may be seen as being in spite of rather than because of this assumption. Still, it is instructive to consider why they would be robust if it were to be set aside.

Suppose that candidates did not care about policy. It is straightforward to demonstrate that the equilibria in the appropriately revised models would be qualitatively similar to those in the

models analyzed above. For example, the direct effect of an increase in the campaign discount in the “interesting” equilibrium of the revised campaign discount model would be to make lower types of incumbent prefer to stay in the race. By the same logic as above, the equilibrium consequences, then, would be a reduction in the probability of retention and an increase in the probability of a contested race. Note that, like in the models we analyzed above, candidate equilibrium strategies would be monotonic in type: because the stochastic campaign signals are positively correlated with candidates’ actual types, candidates’ decisions to run will be a function of those types themselves.

Disadvantages of Incumbency and Institutional Reforms

If, as we have demonstrated, a greater campaign discount or endorser bias are bad for high-quality incumbents, and we expect from the (attenuated) quality-filtering effect that high-quality incumbents are more likely to be selected, it is instructive to consider why we continue to see those sources of incumbency advantage available to the incumbents. Why would incumbents not eliminate them?

At least two reasons stand out. First, a number of factors determining the ability of particular candidates to run a successful campaign, e.g., exogenous differences in the availability of resources, and the range of ways in which those resources translate into electoral advantages, lie outside our model. In this sense, it is important to see our results on comparative electoral welfare as *ceteris paribus*. For example, high-quality incumbents may benefit from the campaign discount if they, unlike their expected challengers, do not have a personal fortune that could be spent on running. Reforms aimed at equalizing access of challengers and incumbents to such resources could thus encounter resistance from both lower- and higher-quality incumbents.

Second, a number of the factors commonly associated with the campaign discount, such as the franking privilege and other influences on name recognition, interact with what we mean by “candidate quality.” Eliminating these may entail undermining the ability of officeholders to engage in activities that benefit their constituents, and so may be unpopular with the voters.

However, not all actions that officeholders could take in response to the incentives we identify have these perils. At an individual level, a high-quality incumbent may do well to lower her campaign discount if she could advertise that to the voters, e.g., by eschewing PAC contributions.¹¹ However, if voters already believe the campaign discount has a particular value, a candidate will, of course, want to take advantage of it.

At an institutional level, high-quality incumbents will want to decrease the campaign discount for the same reason, but also because in an environment of repeated elections, doing so will have an additional scare-off effect: in particular, it will further deter lower-quality challengers by reducing their expected stream of future payoffs associated with winning office. This additional effect suggests that, all else equal, the high-quality incumbents are better off with an institutional reform than with an individual action taken while keeping the institution fixed.

Some Empirical Implications

Our findings point to a number of implications for empirical research on incumbency advantage. First, consider work examining the effects of endorsements on election outcomes. An obvious challenge to this research is omitted variables bias: *ceteris paribus*, newspapers and interest groups are more likely to endorse highly qualified candidates, so an endorsement may simply be proxying a difference in quality known to voters but unobservable to the analyst. Our findings concerning endorsers suggest that a problem of selection bias exists as well: if an endorser is sufficiently powerful to affect an election, then the candidate toward whom it is biased will drop out if she anticipates not receiving its endorsement. By contrast, the choices of endorsers to whom less attention is paid will not drive incumbents to retire, but the magnitude of their effects will be limited.

Second, much of the empirical literature on congressional elections has aimed at decomposing the effects of different sources of incumbency advantage by controlling for sources other than those of immediate interest. By focusing on the “sophomore surge,” Erikson (1971) and others have sought to control for time-invariant features of a candidate’s quality. Likewise, the methodology of Gelman and King (1990) aims to control for latent party sympathies (the “normal vote”) in a district. Cox and Katz (1996) seek to distinguish the direct effect on voters of incumbency from its indirect, “scare-off” effect on challengers. By confining their attention to repeat interactions between candidates, Levitt and Wolfram (1997) seek to “difference out” the effects of candidate quality and candidate scare-off. Hirano and Snyder (2007) apply this methodology to multi-member district elections, to remove the effects of quality, scare-off, and district partisan sympathies.

Most immediately, our analysis implies that some of the advantages of incumbency may actually be disadvantageous for some (high-quality) incumbents. It is not surprising, therefore, that a number of empirical studies have found that the effect of “direct officeholder benefits”

on the reelection prospects of incumbents tends to be small. Moreover, the tensions discussed above between purported sources of the incumbency advantage imply that these sources are fundamentally *interactive*, and that further, those interactions are negative. Our analysis thus implies that a certain degree of caution is required when interpreting empirical results from analyses seeking to decompose the effects of different sources of incumbency advantage.

Conclusion

This paper has sought to determine whether some commonly-attributed sources of incumbency advantage do, in fact, benefit incumbents. Through a sequence of formal models, we have demonstrated that the answer to this question is not straightforward. In particular, large direct officeholder benefits – in the form of a discount incumbents receive on campaigning relative to challengers and the existence of pro-incumbent endorser bias – actually harm the electoral prospects of incumbents of sufficiently high quality. Further, these benefits undermine deterrence of entry by challengers and the ability of voters to employ elections to select the most qualified candidates. Pro-incumbent district partisan bias benefits incumbents at all levels of quality and enhances challenger deterrence; its effects on selection, however, are more subtle.

A Appendix

A.1 Preliminaries

We begin by noting two immediate consequences of the distributional assumptions described above. First, the joint distribution $p(t_i, t_c|w)$, derived via Bayes' Rule, satisfies a strict and unbounded *monotone likelihood ratio property* (MLRP): formally, for any $w'' > w'$, $p(t_i, t_c|w'')/p(t_i, t_c|w')$ is strictly increasing in t_i toward ∞ and strictly decreasing in t_c toward 0. MLRP implies that $p(t_i|w'', t_c)$ strictly first order stochastically dominates $p(t_i|w', t_c)$, and $p(t_c|w', t_i)$ strictly first order stochastically dominates $p(t_c|w'', t_i)$ (Milgrom 1981).

Second, the prior density on t_c is characterized by a *thin-tail property* (TTP). Formally, let $a' < a''$. Then $\frac{p_c(t+a'')}{p_c(t+a')}$ $\rightarrow 0$ as $t \rightarrow \infty$, and $\frac{p_c(t+a'')}{p_c(t+a')}$ $\rightarrow \infty$ as $t \rightarrow -\infty$. This follows immediately from substituting the formula for the normal density for $p_c(\cdot)$.

A.2 Proofs of Results

Proposition 1. We first introduce some useful notation. Let $\underline{t}_c(t_i; q, k, d, \hat{w}(\cdot), P_\varepsilon(\cdot))$ denote the lowest quality prospective challenger willing to enter the race against an incumbent of type t_i , and $\bar{t}_c(t_i; q, k, d, \hat{w}(\cdot), P_\varepsilon(\cdot))$ the highest quality challenger against whom that incum-

bent would remain in the race. Likewise, let $\underline{t}_i(t_c; q, k, d, \hat{w}(\cdot), P_\varepsilon(\cdot))$ denote the lowest quality incumbent willing to stay in the race against a challenger given the challenger's type t_c , and $\bar{t}_i(t_c; q, k, d, \hat{w}(\cdot), P_\varepsilon(\cdot))$ the highest quality incumbent against whom that challenger would enter the race. (In what follows, we suppress reference in these functions to arguments other than the types of the incumbent and challenger.) Note that by definition, $\theta^*(t_c, \bar{t}_i(t_c, \cdot)) = 1$. Further, given monotonicity of incumbent and challenger strategies, in any equilibrium with a positive probability of a contested race, $\theta^*(\underline{t}_c(t_i, \cdot), t_i) = 1$: if incumbents were indifferent toward running when $t_c = \underline{t}_c(t_i, \cdot)$ or strictly preferred not to run, then they would prefer not to run for any other value of $t_c > \underline{t}_c(t_i, \cdot)$. But then a contested race could only occur in that knife's edge case, which has zero probability mass. Thus, $\underline{t}_c(t_i, \cdot)$, $\bar{t}_c(t_i, \cdot)$, $\underline{t}_i(t_c, \cdot)$, and $\bar{t}_i(t_c, \cdot)$ are defined implicitly by (2) and (3) at equality, with $\theta(t_c, t_i) = 1$. Finally, noting that t_i and t_c are perfect negative substitutes in (2) and (3), let $\underline{y}(\cdot) = t_i - \underline{t}_c(t_i, \cdot) = \bar{t}_i(t_c, \cdot) - t_c = q - \frac{k}{P_\varepsilon(\hat{w}(\cdot) - \underline{y}(\cdot))}$ and $\bar{y}(\cdot) = \bar{t}_c(t_i, \cdot) - t_i = t_c - \underline{t}_i(t_c, \cdot) = q - \frac{k-d}{1 - P_\varepsilon(\hat{w}(\cdot) + \bar{y}(\cdot))}$.

We next provide some instrumental results:

Claim 1.1. $\frac{\partial \hat{w}(\cdot)}{\partial d} > 0$. **Proof.** Via the implicit function theorem,

$$\begin{aligned} \frac{\partial y(\cdot)}{\partial d} &= \frac{kp_\varepsilon(\hat{w}(\cdot) - y(\cdot)) \frac{\partial \hat{w}(\cdot)}{\partial d}}{(P_\varepsilon(\hat{w}(\cdot) - y(\cdot)))^2 + kp_\varepsilon(\hat{w}(\cdot) - y(\cdot))} \quad \text{and} \\ \frac{\partial \bar{y}(\cdot)}{\partial d} &= \frac{1 - P_\varepsilon(\hat{w}(\cdot) + \bar{y}(\cdot)) - (k-d)p_\varepsilon(\hat{w}(\cdot) + \bar{y}(\cdot)) \frac{\partial \hat{w}(\cdot)}{\partial d}}{(1 - P_\varepsilon(\hat{w}(\cdot) + \bar{y}(\cdot)))^2 + (k-d)p_\varepsilon(\hat{w}(\cdot) + \bar{y}(\cdot))}. \end{aligned} \quad (9)$$

Suppose $\frac{\partial \hat{w}(\cdot)}{\partial d} \leq 0$. Then $\frac{\partial y(\cdot)}{\partial d} \leq 0$ and $\frac{\partial \bar{y}(\cdot)}{\partial d} > 0$, implying $\frac{\partial t_c(t_i, \cdot)}{\partial d} \geq 0$, $\frac{\partial \bar{t}_c(t_i, \cdot)}{\partial d} > 0$, $\frac{\partial \bar{t}_i(t_c, \cdot)}{\partial d} \leq 0$, and $\frac{\partial t_i(t_c, \cdot)}{\partial d} < 0$. Iterating expectations over the conditional density of incumbents given challengers and challengers given incumbents allows us to express equation (1) as

$$\int_{-\infty}^{\infty} \int_{\tau_i - \underline{y}(\cdot)}^{\tau_i + \bar{y}(\cdot)} \frac{\tau_c p(\tau_i, \tau_c | \hat{w})}{P_c(\tau_i + \bar{y}(\cdot)) - P_c(\tau_i - \underline{y}(\cdot))} d\tau_c d\tau_i = \int_{-\infty}^{\infty} \int_{\tau_c - \bar{y}(\cdot)}^{\tau_c + \underline{y}(\cdot)} \frac{\tau_i p(\tau_i, \tau_c | \hat{w})}{P_i(\tau_c + \underline{y}(\cdot)) - P_i(\tau_c - \bar{y}(\cdot))} d\tau_i d\tau_c, \quad (10)$$

where $p(t_i, t_c | w)$ is the multivariate posterior density on the incumbent and challenger types conditional on w (but not on equilibrium candidate behavior). Holding constant \hat{w} , an increase in d would lead to an increase in the left side of equation (10) and a decrease in the right side. By MLRP of $p(t_i, t_c | w)$ (see Section A.1), restoring equality would necessitate an increase in \hat{w} , a contradiction. Therefore $\frac{\partial \hat{w}(\cdot)}{\partial d} > 0$. ■

Claim 1.2. $\frac{\partial y(\cdot)}{\partial d} > 0$. **Proof.** Follows immediately from Claim 1 and the first line of (9). ■

Claim 1.3. $\frac{\partial \bar{y}(\cdot)}{\partial d} > 0$. **Proof.** Suppose otherwise. Given $\frac{\partial y(\cdot)}{\partial d} > 0$, and holding constant \hat{w} , an increase in d would lead to a decrease in the left side of equation (10) and an increase

in the right side. By MLRP of $p(t_i, t_c|w)$, restoring equality would necessitate decreasing \hat{w} , contradicting $\frac{\partial \hat{w}}{\partial d} > 0$. Therefore $\frac{\partial \bar{y}(\cdot)}{\partial d} > 0$. ■

We next prove parts (a), (b), (c), and (d) of the Proposition in sequence.

$$(a) \frac{\partial \Pr(C=1|t_i)}{\partial d} = \frac{\partial(1-P_c(t_i-\underline{y}(\cdot)))}{\partial d} = p_c(t_i - \underline{y}(\cdot)) \frac{\partial \underline{y}(\cdot)}{\partial d} > 0.$$

$$(b) \Pr(S = 1|C = 1; t_i) = \frac{P_c(t_i + \bar{y}(\cdot)) - P_c(t_i - \underline{y}(\cdot))}{1 - P_c(t_i - \underline{y}(\cdot))}. \text{ Differentiating with respect to } d \text{ yields}$$

$$\frac{(p_c(t_i + \bar{y}(\cdot)) \frac{\partial \bar{y}(\cdot)}{\partial d} + p_c(t_c - \underline{y}(\cdot)) \frac{\partial \underline{y}(\cdot)}{\partial d})(1 - P_c(t_i - \underline{y}(\cdot))) - p_c(t_i - \underline{y}(\cdot)) \frac{\partial \underline{y}(\cdot)}{\partial d} (P_c(t_i + \bar{y}(\cdot)) - P_c(t_i - \underline{y}(\cdot)))}{(1 - P_c(t_i - \underline{y}(\cdot)))^2}.$$

Collecting terms and rearranging, this expression is strictly positive if and only if

$$p_c(t_i + \bar{y}(\cdot))(1 - P_c(t_i - \underline{y}(\cdot))) \frac{\partial \bar{y}(\cdot)}{\partial d} + p_c(t_i - \underline{y}(\cdot))(1 - P_c(t_i + \bar{y}(\cdot))) \frac{\partial \underline{y}(\cdot)}{\partial d} > 0,$$

which holds for any t_i given the above claims.

$$(c) \frac{\partial \Pr(R=1|C=1, S=1; t_i, t_c)}{\partial d} = \frac{\partial(1 - P_\varepsilon(\hat{w}(\cdot) - t_i + t_c))}{\partial d} = -p_\varepsilon(\hat{w}(\cdot) - t_i + t_c) \frac{\partial \hat{w}(\cdot)}{\partial d} < 0.$$

(d) Ex ante electoral prospects for an incumbent of type t_i are given by

$$P_c(t_i - \underline{y}(\cdot)) + \int_{t_i - \underline{y}(\cdot)}^{t_i + \bar{y}(\cdot)} (1 - P_\varepsilon(\hat{w}(\cdot) - t_i + \tau_c)) p_c(\tau_c) d\tau_c. \quad (11)$$

Differentiating with respect to d and rearranging yields

$$p_c(t_i + \bar{y}(\cdot))(1 - P_\varepsilon(\hat{w}(\cdot) + \bar{y}(\cdot))) \frac{\partial \bar{y}(\cdot)}{\partial d} - p_c(t_i - \underline{y}(\cdot)) P_\varepsilon(\hat{w}(\cdot) - \underline{y}(\cdot)) \frac{\partial \underline{y}(\cdot)}{\partial d} - \frac{\partial \hat{w}(\cdot)}{\partial d} \int_{t_i - \underline{y}(\cdot)}^{t_i + \bar{y}(\cdot)} p_\varepsilon(\hat{w}(\cdot) - t_i + \tau_c) p_c(\tau_c) d\tau_c. \quad (12)$$

Having established $\frac{\partial \bar{y}(\cdot)}{\partial d} > 0$, $\frac{\partial \underline{y}(\cdot)}{\partial d} > 0$, and $\frac{\partial \hat{w}(\cdot)}{\partial d} > 0$, a sufficient condition for (12) to be negative is that the sum of the first two terms be negative, which holds if and only if

$$\frac{p_c(t_i + \bar{y}(\cdot))}{p_c(t_i - \underline{y}(\cdot))} < \frac{P_\varepsilon(\hat{w}(\cdot) - \underline{y}(\cdot)) \frac{\partial \underline{y}(\cdot)}{\partial d}}{(1 - P_\varepsilon(\hat{w}(\cdot) + \bar{y}(\cdot))) \frac{\partial \bar{y}(\cdot)}{\partial d}}. \quad (13)$$

The equilibrium value of $\hat{w}(\cdot)$ is independent of the realized value of t_i . Further, implicitly differentiating the expressions for $\underline{y}(\cdot)$ and $\bar{y}(\cdot)$, it is straightforward to demonstrate that both are independent of t_i . Therefore, the right side of (13) is positive and independent of t_i , whereas, via TTP of $p_c(\cdot)$ (see Section A.1), the left side is strictly decreasing toward 0 as t_i approaches ∞ . Thus for sufficiently high values of t_i the inequality is satisfied, which is sufficient for electoral prospects decreasing in d .

The expression in (12) is strictly positive if and only if

$$(1 - P_\varepsilon(\hat{w}(\cdot) + \bar{y}(\cdot))) \frac{\partial \bar{y}(\cdot)}{\partial d} > \frac{p_c(t_i - \underline{y}(\cdot)) P_\varepsilon(\hat{w}(\cdot) - \underline{y}(\cdot)) \frac{\partial \underline{y}(\cdot)}{\partial d}}{p_c(t_i + \bar{y}(\cdot))} + \frac{\frac{\partial \hat{w}(\cdot)}{\partial d} \int_{t_i - \underline{y}(\cdot)}^{t_i + \bar{y}(\cdot)} p_\varepsilon(\hat{w}(\cdot) - t_i + \tau_c) p_c(\tau_c) d\tau_c}{p_c(t_i + \bar{y}(\cdot))}. \quad (14)$$

The left side of this inequality is positive and independent of t_i . Via TTP of $p_c(\cdot)$, the

first fraction on the right is strictly decreasing toward 0 as t_i approaches $-\infty$. Let $G(s) = \int_{-\infty}^s p_\varepsilon(\hat{w}(\cdot) - t_i + \tau_c) p_c(\tau_c) d\tau_c$. Then the integral in the numerator of the second fraction may be expressed as $G(t_i + \bar{y}(\cdot)) - G(t_i - \underline{y}(\cdot))$. By the mean value theorem, there exists an $\alpha \in (-\underline{y}(\cdot), \bar{y}(\cdot))$ such that $G(t_i + \bar{y}(\cdot)) - G(t_i - \underline{y}(\cdot)) = (\underline{y}(\cdot) + \bar{y}(\cdot)) p_\varepsilon(\hat{w}(\cdot) + \alpha) p_c(t_i + \alpha)$. Substituting into the second fraction on the right side of inequality (14) yields a constant (with respect to t_i) multiplied by $\frac{p_c(t_i + \alpha)}{p_c(t_i + \bar{y}(\cdot))}$. By TTP of $p_c(\cdot)$, this is strictly decreasing toward 0 as t_i approaches $-\infty$. Therefore inequality (14) will be satisfied for sufficiently low t_i , which is sufficient for electoral prospects increasing in d . ■

Proof of Remark 1. Suppose $t_i > t_c - b$. An endorsement of the challenger is either uninformative, in which case the endorser is indifferent between endorsing the challenger and incumbent, or it is informative, in which case endorsing the incumbent increases the probability the incumbent is elected. Thus, holding fixed t_i , t_c , and b , any strategy for the endorser that includes endorsement of challengers with type $t_c < t_i + b$ is weakly dominated by one in which the endorser endorses the incumbent. Consequently, if the endorser endorses the challenger, it must be that $t_i \leq t_c - b$, and so the voter would strictly prefer electing the challenger. But then the race would not be contested because the incumbent would strictly prefer not to run. A similar argument establishes the conclusion for $t_i \leq t_c - b$. ■

Proof of Proposition 2. Suppose endorsement is redundant. Let $\underline{t}_c(t_i; q, k, d, \hat{w}^i(\cdot), \hat{w}^c(\cdot), P_\varepsilon(\cdot))$ denote the lowest quality prospective challenger willing to enter the race against an incumbent of type t_i , and $\bar{t}_c(t_i; q, k, d, \hat{w}^i(\cdot), \hat{w}^c(\cdot), P_\varepsilon(\cdot))$ the highest quality challenger against whom that incumbent would remain in the race. Likewise, let $\underline{t}_i(t_c; q, k, d, \hat{w}^i(\cdot), \hat{w}^c(\cdot), P_\varepsilon(\cdot))$ denote the lowest quality incumbent willing to stay in the race against a challenger given the challenger's type t_c , and $\bar{t}_i(t_c; q, k, d, \hat{w}^i(\cdot), \hat{w}^c(\cdot), P_\varepsilon(\cdot))$ the highest quality incumbent against whom that challenger would enter the race. From Lemma 2 in the Web Appendix, $\underline{t}_c(t_i, \cdot)$, $\bar{t}_c(t_i, \cdot)$, $\underline{t}_i(t_c, \cdot)$, and $\bar{t}_i(t_c, \cdot)$ are functionally equivalent to the corresponding values in the campaign discount model.

Next, suppose endorsement is not redundant. From Lemma 2 in the Web Appendix, incumbents will stay in the race when challenged if and only if $t_c < t_i + b < \bar{t}_c(t_i, \cdot)$. Further, challengers will challenge if and only if $t_c > \underline{t}_c(t_i, \cdot)$ (equivalently, $t_i < \bar{t}_i(t_c, \cdot)$). Because, given non-redundant endorsements, the highest quality challenger against whom an incumbent would remain in the race is given by $t_i + b$ rather than $\bar{t}_c(t_i, \cdot)$, and the lowest quality challenger who would enter the race against an incumbent of type t_i is given by the newly defined $\underline{t}_c(t_i, \cdot)$, the

proof Part 2 of the proposition may be obtained via the same arguments as those in Proposition 1, substituting b for $\bar{y}(\cdot)$ when endorsement is not redundant.

To establish Part 1, recall that in the campaign discount model, $\bar{t}_c(t_i, \cdot)$ represented the highest quality challenger against whom an incumbent of type t_i would remain in the race in the absence of an endorser. A change from a non-redundant endorser to no endorser is equivalent to a change in the identity of the highest challenger against whom an incumbent of type t_i would remain in the race from $t_i + b < \bar{t}_c(t_i, \cdot)$ to $t_i + b = \sup(t_i, \bar{t}_c(t_i, \cdot))$. By Part 2, an increase in b leads to a decrease in electoral prospects for incumbents of sufficiently high type and an increase for incumbents of sufficiently low type. Thus, electoral prospects of the former suffer from the absence of an endorser, while those of the latter benefit. ■

Proof of Remark 2. Proof follows from the argument in the text. ■

Proof of Proposition 3. We begin with some useful notation. Let $\underline{t}_c(t_i; q, k, d, x_c, x_m, \hat{w}(\cdot), P_\varepsilon(\cdot))$ denote the lowest quality prospective challenger willing to enter the race against an incumbent of type t_i , and $\bar{t}_c(t_i; q, k, d, x_i, x_m, \hat{w}(\cdot), P_\varepsilon(\cdot))$ the highest quality challenger against whom that incumbent would remain in the race. Likewise, let $\underline{t}_i(t_c; q, k, d, x_i, x_m, \hat{w}(\cdot), P_\varepsilon(\cdot))$ denote the lowest quality incumbent willing to stay in the race against a challenger given the challenger's type t_c , and $\bar{t}_i(t_c; q, k, d, x_c, x_m, \hat{w}(\cdot), P_\varepsilon(\cdot))$ the highest quality incumbent against whom that challenger would enter the race. Further, let $\underline{y}(\cdot) = t_i - \underline{t}_c(t_i, \cdot)$ and $\bar{y}(\cdot) = \bar{t}_c(t_i, \cdot) - t_i$. From the challenger and incumbent best response correspondences in (6) and (7) and proceeding similarly to the proofs of Propositions 1 and 2, $\underline{y}(\cdot) = q - (2x_c - 1) - \frac{k}{P_\varepsilon(\hat{w}_m - \underline{y}(\cdot))}$, and $\bar{y}(\cdot) = q + (2x_i - 1) - \frac{k-d}{1 - P_\varepsilon(\hat{w}_m + \bar{y}(\cdot))}$.

We next provide several instrumental results.

Claim 3.1. $\frac{\partial \hat{w}_m(\cdot)}{\partial x_m} < 0$. **Proof.** Via the implicit function theorem,

$$\begin{aligned} \frac{\partial \underline{y}(\cdot)}{\partial x_m} &= \frac{kp_\varepsilon(\hat{w}_m(\cdot) - \underline{y}(\cdot)) \frac{\partial \hat{w}_m(\cdot)}{\partial x_m}}{(P_\varepsilon(\hat{w}_m(\cdot) - \underline{y}(\cdot)))^2 + kp_\varepsilon(\hat{w}_m(\cdot) - \underline{y}(\cdot))} \quad \text{and} \\ \frac{\partial \bar{y}(\cdot)}{\partial x_m} &= \frac{-(k-d)p_\varepsilon(\hat{w}_m(\cdot) + \bar{y}(\cdot)) \frac{\partial \hat{w}_m(\cdot)}{\partial x_m}}{(1 - P_\varepsilon(\hat{w}_m(\cdot) + \bar{y}(\cdot)))^2 + (k-d)p_\varepsilon(\hat{w}_m(\cdot) + \bar{y}(\cdot))}. \end{aligned} \quad (15)$$

Suppose $\frac{\partial \hat{w}_m(\cdot)}{\partial x_m} \geq 0$. Then $\frac{\partial \underline{y}(\cdot)}{\partial x_m} \geq 0$ and $\frac{\partial \bar{y}(\cdot)}{\partial x_m} \leq 0$. Iterating expectations over the conditional density of incumbents given challengers and challengers given incumbents allows us to express

equation (8) as

$$\begin{aligned} & \int_{-\infty}^{\infty} \int_{\tau_i - \underline{y}(\cdot)}^{\tau_i + \bar{y}(\cdot)} \frac{\tau_c p(\tau_i, \tau_c | \hat{w}_m(\cdot))}{P_c(\tau_i + \bar{y}(\cdot)) - P_c(\tau_i - \underline{y}(\cdot))} d\tau_c d\tau_i - x_m^2 \\ &= \int_{-\infty}^{\infty} \int_{\tau_c - \bar{y}(\cdot)}^{\tau_c + \underline{y}(\cdot)} \frac{\tau_i p(\tau_i, \tau_c | \hat{w}_m(\cdot))}{P_i(\tau_c + \underline{y}(\cdot)) - P_i(\tau_c - \bar{y}(\cdot))} d\tau_i d\tau_c - (1 - x_m)^2, \end{aligned} \quad (16)$$

where $p(t_i, t_c | w)$ is the multivariate posterior density on the incumbent and challenger types conditional on w (but not on equilibrium candidate behavior). Holding constant \hat{w}_m , an increase in x_m would then lead to a strict decrease in the left side of equation (16) and a strict increase in the right side. By MLRP of $p(t_i, t_c | w)$ (see Section A.1), restoring equality would necessitate a decrease in \hat{w}_m , a contradiction. Therefore $\frac{\partial \hat{w}_m(\cdot)}{\partial x_m} < 0$. ■

Claim 3.2. $\frac{\partial \underline{y}(\cdot)}{\partial x_m} < 0$. **Proof.** Follows from Claim 3.1 and the first line of (15). ■

Claim 3.3 $\frac{\partial \bar{y}(\cdot)}{\partial x_m} > 0$. **Proof.** Follows from Claim 3.1 and the second line of (15). ■

We next prove parts (a), (b), (c) in sequence, using the above claims.

$$(a) \frac{\partial \Pr(C=1|t_i)}{\partial x_m} = \frac{\partial(1 - P_c(t_i - \underline{y}(\cdot)))}{\partial x_m} = p_c(t_i - \underline{y}(\cdot)) \frac{\partial \underline{y}(\cdot)}{\partial x_m} < 0.$$

$$(b) \frac{\partial \Pr(R=1|C=1, S=1; t_i, t_c)}{\partial x_m} = \frac{\partial(1 - P_\varepsilon(\hat{w}_m(\cdot) - t_i + t_c))}{\partial x_m} = -p_\varepsilon(\hat{w}_m(\cdot) - t_i + t_c) \frac{\partial \hat{w}_m(\cdot)}{\partial x_m} > 0.$$

(c) Ex ante electoral prospects for an incumbent are given in (11). Differentiating with respect to x_m and rearranging yields

$$\begin{aligned} & p_c(t_i + \bar{y}(\cdot))(1 - P_\varepsilon(\hat{w}_m(\cdot) + \bar{y}(\cdot))) \frac{\partial \bar{y}(\cdot)}{\partial x_m} - p_c(t_i - \underline{y}(\cdot)) P_\varepsilon(\hat{w}_m(\cdot) - \underline{y}(\cdot)) \frac{\partial \underline{y}(\cdot)}{\partial x_m} \\ & \quad - \int_{t_i - \underline{y}(\cdot)}^{t_i + \bar{y}(\cdot)} p_\varepsilon(\hat{w}_m(\cdot) - t_i + \tau_c) \frac{\partial \hat{w}_m(\cdot)}{\partial x_m} p_c(\tau_c) d\tau_c, \end{aligned}$$

which is strictly positive for any t_i . ■

Proof of Proposition 4. In what follows, we employ $\underline{t}_c(t_i, \cdot)$, $\bar{t}_c(t_i, \cdot)$, $\underline{t}_i(t_c, \cdot)$, and $\bar{t}_i(t_c, \cdot)$, $\underline{y}(\cdot)$, and $\bar{y}(\cdot)$ as defined in the context of each of the three models (see proofs of Propositions 1, 2, and 3 above), and rely on equilibrium characterizations formalized in the Web Appendix.

(a) Let t_2 denote the officeholder's type following the election; and $d'' > d'$. Then from the proof of Proposition 1, $\hat{w}(d'', \cdot) > \hat{w}(d', \cdot)$ and $t_i - \underline{y}(d'', \cdot) < t_i - \underline{y}(d', \cdot) < t_i + \bar{y}(d', \cdot) < t_i + \bar{y}(d'', \cdot)$. We proceed by demonstrating that for each of the five intervals of values of t_c implied by this ordering, the expected officeholder type following an election under d'' is either equal to or worse than under d' .

(1) $t_c \in (-\infty, t_i - \underline{y}(d'', \cdot)]$. On this interval races are contested neither under $d = d'$ nor $d = d''$ and so $E[t_2 | \cdot] = E[t_i | t_c \in (-\infty, t_i - \underline{y}(d'', \cdot))]$ in both cases.

(2) $t_c \in (t_i - \underline{y}(d'', \cdot), t_i - \underline{y}(d', \cdot)]$. $E[t_2 | t_c \in (t_i - \underline{y}(d'', \cdot), t_i - \underline{y}(d', \cdot)); d'] = E[t_i | t_c \in (t_i -$

$\underline{y}(d'', \cdot), t_i - \underline{y}(d', \cdot)]$, whereas $E[t_2|t_c \in (t_i - \underline{y}(d'', \cdot), t_i - \underline{y}(d', \cdot)); d'']$ is a weighted average of $E[t_i|t_c \in (t_i - \underline{y}(d'', \cdot), t_i - \underline{y}(d', \cdot))]$ and $E[t_c|t_c \in (t_i - \underline{y}(d'', \cdot), t_i - \underline{y}(d', \cdot))] < E[t_i|t_c \in (t_i - \underline{y}(d'', \cdot), t_i - \underline{y}(d', \cdot))]$.

- (3) $t_c \in (t_i - \underline{y}(d', \cdot), t_i + \bar{y}(d', \cdot))$. Sequential rationality requires that the voter adopt a value of \hat{w} that maximizes $E[t_2|t_c \in (t_i - \underline{y}(d', \cdot), t_i + \bar{y}(d', \cdot)); \hat{w}]$. For $d = d'$, that value is equal to \hat{w}' . Therefore, fixing $\underline{y}(\cdot) = \underline{y}(d', \cdot)$ and $\bar{y}(\cdot) = \bar{y}(d', \cdot)$, any deviation from \hat{w}' , including to \hat{w}'' , must lead to a weakly lower $E[t_2|t_c \in (t_i - \underline{y}(d', \cdot), t_i + \bar{y}(d', \cdot))]$.
- (4) $t_c \in [t_i + \bar{y}(d', \cdot), t_i + \bar{y}(d'', \cdot))$. Then $E[t_2|t_c \in [t_i + \bar{y}(d', \cdot), t_i + \bar{y}(d'', \cdot)); d'] = E[t_c|t_c \in [t_i + \bar{y}(d', \cdot), t_i + \bar{y}(d'', \cdot)]]$, whereas $E[t_2|t_c \in [t_i + \bar{y}(d', \cdot), t_i + \bar{y}(d'', \cdot)]; d'']$ is a weighted average of $E[t_c|t_c \in [t_i + \bar{y}(d', \cdot), t_i + \bar{y}(d'', \cdot)]]$ and $E[t_i] < E[t_c|t_c \in [t_i + \bar{y}(d', \cdot), t_i + \bar{y}(d'', \cdot)]]$.
- (5) $t_c \in [t_i + \bar{y}(d'', \cdot), \infty)$. On this interval races are contested neither under $d = d'$ nor $d = d''$ and so $E[t_2|\cdot] = E[t_c|t_c \in [t_i + \bar{y}(d'', \cdot), \infty), t_i]$ in both cases.

(b) The proof is identical to that of part (a), substituting b' for d' and b'' for d'' .

(c) The expected challenger type conditional on a contested race is given by

$$E[t_c|C = 1, S = 1] = \int_{-\infty}^{\infty} p_i(\tau_i) \left[\frac{\int_{\tau_i - \underline{y}(\cdot)}^{\tau_i + \bar{y}(\cdot)} p_c(\tau_c) \tau_c d\tau_c}{P_c(\tau_i + \bar{y}(\cdot)) - P_c(\tau_i - \underline{y}(\cdot))} \right] d\tau_i. \quad (17)$$

From the Proof of Proposition 3, $\frac{\partial \underline{y}(\cdot)}{\partial x_m} < 0$ and $\frac{\partial \bar{y}(\cdot)}{\partial x_m} > 0$. Consequently, the term in square brackets in (17) is increasing in x_m , which is sufficient for $E[t_c|C = 1, S = 1]$ increasing in x_m .

The expected challenger type conditional on challenger entry and the incumbent stepping down is given by

$$E[t_c|C = 1, S = 0] = \int_{-\infty}^{\infty} p_i(\tau_i) \left[\frac{\int_{\tau_i + \bar{y}(\cdot)}^{\infty} p_c(\tau_c) \tau_c d\tau_c}{1 - P_c(\tau_i + \bar{y}(\cdot))} \right] d\tau_i \quad (18)$$

$\frac{\partial \bar{y}(\cdot)}{\partial x_m} > 0$ implies the term in square brackets in (18) is increasing in x_m , which is sufficient for $E[t_c|C = 1, S = 0]$ increasing in x_m .

(d) The logic of the proof of part (d) is symmetric to that of part (c). ■

Notes

¹We discuss empirical literature associated with these advantages in further detail below.

²As this formulation implies, factors that contribute to the campaign discount are not necessarily insurmountable obstacles to the challenger. They may be surmountable, albeit at cost.

³For a discussion of growing pro-incumbent tendencies in newspaper endorsements, see Ansolabehere, Lessem, and Snyder (2006).

⁴Below, we consider a model with ideologically heterogeneous voters.

⁵For example, the voter could have a higher prior mean on and/or much sharper beliefs about the incumbent than the challenger ($\mu_i > \mu_c$, $\sigma_i^2 \ll \sigma_c^2$, respectively). This setup may, thus, be thought of as consistent with models of “career concerns,” in which, prior to the election season, an incumbent invests in his or her reputation, e.g., through a costly investment in effort.

⁶The restriction $k > 0$ can be interpreted as implying that the challengers considered here are not “sacrificial lambs.” A sacrificial lamb may choose to run even in the face of a certain electoral loss, for example to build name recognition for future contests or to provide a service to the party. These benefits may be interpreted as positive consumption value outside of the current model. However, in the context of our model, we can interpret k as a *net* cost to the candidate, with $k > 0$ reflecting common knowledge that the prospective challenger in question is “serious,” that is, not a sacrificial lamb. In this regard, the absence of a challenge in this setting is equivalent to entry by a sacrificial lamb believed to be inferior to the incumbent.

⁷Observe that the left side of inequality (2) is increasing in t_i and the right side is decreasing; likewise, the left side of inequality (3) is increasing in t_c and the right side is decreasing.

⁸Allowing for gradations in the strength of endorsement would not alter the equilibrium in this model: conditional on wanting one candidate to win, the endorser has an incentive to give her the strongest endorsement.

⁹These two sources of voter information, while related, have different consequences. In particular, in the absence of campaign information w , equilibrium in a contested race would require the voter to be indifferent between the candidates, regardless of the presence of an endorser (otherwise, one candidate would prefer not to run). By contrast, voter indifference is not required given the presence of campaign information w , because the noisiness of w creates the uncertainty necessary to permit entry by both candidates even when voter is not indifferent.

¹⁰That is, they satisfy the following set of conditions: (1) each candidate is describable by a

vector (x, t) in \mathbb{R}^2 ; (2) for each voter v , there exists a parameter $x_v \in \mathbb{R}$ that is the voter's ideal point; (3) there exist functions $q(z)$ and $w(z)$ such that for all $v \in N$ and for any two candidates i and c , $iR_v c$ if and only if $q(x_i - x_v) + w(t_i) \geq q(x_c - x_v) + w(t_c)$; where (4) $w(z)$ is finite for all z ; (5) $q(z)$ is concave; and (6) $q(z)$ reaches a maximum at $z = 0$.

¹¹See, for example data from the Center for Responsive Politics, at www.opensecrets.org.

References

- Alford, John R., and David W. Brady. 1989. "Personal and Partisan Advantage in U.S. Congressional Elections, 1846-1986." In Lawrence C. Dodd and Bruce I. Oppenheimer, eds., *Congress Reconsidered* 4th edition. Washington, DC: CQ Press, 153-169.
- Ansolabehere, Stephen and James M. Snyder. 2002. "The Incumbency Advantage in U.S. Elections: An Analysis of State and Federal Offices, 1942-2000." *Election Law Journal* 1(3): 315-338.
- Ansolabehere, Stephen and James M. Snyder. 2004. "Using Term Limits to Estimate Incumbency Advantage when Officeholders Retire Strategically." *Legislative Studies Quarterly* 29: 487-515.
- Ansolabehere, Stephen, Shigeo Hirano, James M. Snyder, and Michiko Ueda. 2006 "Party and Incumbency Cues in Voting: Are They Substitutes?" *Quarterly Journal of Political Science* 1: 119-137.
- Ansolabehere, Stephen, Rebecca Lessem, and James M. Snyder, Jr. 2006 "The Orientation of Newspaper Endorsements in U.S. Elections, 1940-2002." *Quarterly Journal of Political Science* 1: 393-404.
- Ansolabehere, Stephen, Erik Snowberg, and James M. Snyder, Jr. 2004. "Television and the Incumbency Advantage in U.S. Elections." *Legislative Studies Quarterly* 31: 469-490.
- Aragones, Enriqueta, and Thomas Palfrey. 2002. "Mixed Equilibrium in a Downsian Model with a Favored Candidate." *Journal of Economic Theory* 103: 131-161.
- Arnold, R. Douglas. 2004. *Congress, the Press, and Political Accountability*. Princeton, NJ: Princeton University Press.
- Asher, Herbert, Eric S. Heberlig, Randall B. Ripley, and Karen C. Snyder. 2001. *Labor Unions in American Elections*. Lanham, MD: Rowman and Littlefield.
- Ashworth, Scott. 2005. "Reputational Dynamics and Political Careers." *Journal of Law, Economics and Organization* 21: 441-466.
- Ashworth, Scott, and Ethan Bueno de Mesquita. 2008. "Electoral Selection, Strategic Challenger Entry, and the Incumbency Advantage." *Journal of Politics*, forthcoming.
- Banks, Jeffrey S. and Rangarajan K. Sundaram. 1998. "Optimal Retention in Agency Problems." *Journal of Economic Theory* 82: 293-323.
- Besley, Timothy. 2006 *Principled Agents? The Political Economy of Good Government*.

Oxford: Oxford University Press.

Bueno de Mesquita, Ethan and Dimitri Landa. 2008. "The Equilibrium Theory of Clarity of Responsibility." University of Chicago Mimeo.

Cain, Bruce, John Ferejohn, and Morris Fiorina. 1987. *The Personal Vote: Constituency Service and Electoral Independence*. Cambridge, MA: Harvard University Press.

Canes-Wrone, Brandice, Michael C. Herron and Kenneth W. Shotts. 2001. "Leadership and Pandering: A Theory of Executive Policymaking." *American Journal of Political Science* 45:532-550.

Carson, Jamie L. 2005. "Strategy, Selection, and Candidate Competition in U.S. House and Senate Elections." *Journal of Politics* 67: 1-28.

Cox, Gary W. and Jonathan N. Katz. 1996. "Why Did the Incumbency Advantage in U.S. House Elections Grow?" *American Journal of Political Science* 40: 478-97.

Erikson, Robert S. 1971. "The Advantage of Incumbency in Congressional Elections." *Polity* 3: 395-405.

Ferejohn, John. 1986. "Incumbent Performance and Electoral Control." *Public Choice* 50: 5-26.

Fiorina, Morris. 1977. *Congress: Keystone of the Washington Establishment*. New Haven: Yale University Press.

Gelman, Andrew, and Gary King. 1990. "Estimating Incumbency Advantage without Bias." *American Journal of Political Science* 34: 1142-1164.

Goodliffe, Jay. 2005. "When Do War Chests Deter?" *Journal of Theoretical Politics* 17: 249-277.

Gordon, Sanford C., Gregory Huber, and Dimitri Landa. 2007. "Challenger Entry and Voter Learning." *American Political Science Review* 101: 303-320.

Gowrisankaran, Gautam, Matthew F. Mitchell and Andrea Moro. 2008. "Electoral Design and Voter Welfare from the U.S. Senate: Evidence from a Dynamic Selection Model." *Review of Economic Dynamics* 11: 1-17.

Grofman, Bernard, and Barbara Norrander. 1990. "Efficient Use of Reference Cues in a Single Dimension." *Public Choice* 64: 213-227.

Groseclose, Tim. 2001. "A Model of Candidate Location When One Candidate Has a Valence Advantage." *American Journal of Political Science* 45: 862-886.

Groseclose, Tim. 2007. "'One and a Half Dimensional' Preferences and Majority Rule."

Social Choice and Welfare 28: 321-335.

Grossman, Gene, and Elhanan Helpman. 1999. "Competing for Endorsements." *American Economic Review* 89: 501-524.

Hall, Richard L., Robert P. van Houweling. 1995. "Avarice and Ambition in Congress: Representatives' Decisions to Run or Retire from the U.S. House." *American Political Science Review*. 89: 121-136

Hill, Timothy G. 2003. "Interest-ing Candidates: The Electoral Impact of Interest Group Endorsements." Ph.D. Dissertation, The Ohio State University.

Hirano, Shigeo, and James M. Snyder 2007. "Using Multi-Member District Elections to Decompose the Sources of the Incumbency Advantage." Paper presented at the Annual meeting of the Midwest Political Science Association, April 2007.

Jacobson, Gary, and Samuel Kernell. 1983. *Strategy and Choice in Congressional Elections*. New Haven, CT: Yale University Press.

Juravich, Tom, and Peter R. Shergold. 1988. "The Impact of Unions on the Voting Behavior of Their Members." *Industrial and Labor Relations Review* 41: 374-385.

Kiewiet, D. Roderick, and Langche Zeng. 1993. "An Analysis of Congressional Career Decisions, 1947-1986." *American Political Science Review* 87: 928-941.

Lazarus, Jeffrey. 2008. "Why Do Experienced Challengers Do Better than Amateurs?" *Political Behavior* 30: 185-198.

Levitt, Steven D., and Catherine D. Wolfram. 1997. "Decomposing the Sources of Incumbency Advantage in the U. S. House." *Legislative Studies Quarterly* 22: 45-60.

Lupia, Arthur. 1994. "Shortcuts versus Encyclopedias: Information and Voting Behavior in California Insurance Reform Elections." *American Political Science Review* 88: 63-76.

Mayhew, David R. 1974. "Congressional Elections: The Case of the Vanishing Marginals." *Polity* 6: 295-317.

McKelvey, Richard D. and Peter C. Ordeshook. 1985. "Sequential Elections with Limited Information." *American Journal of Political Science* 29: 3 (Aug) pp. 480-512.

McKelvey, Richard D., and Raymond Riezman. 1992. "Seniority in Legislatures." *American Political Science Review* 86: 951-965.

Milgrom, Paul. 1981. "Good News and Bad News: Representation Theorems and Applications." *Bell Journal of Economics* 12: 38091.

Persson, Torsten, Gerard Roland, and Guido Tabellini. 1997. "Separation of Powers and

Political Accountability.” *Quarterly Journal of Economics* 112: 1163-1202.

Prior, Markus. 2006. “The Incumbent in the Living Room: The Rise of Television and the Incumbency Advantage in U.S. House Elections.” *Journal of Politics* 68: 657-673.

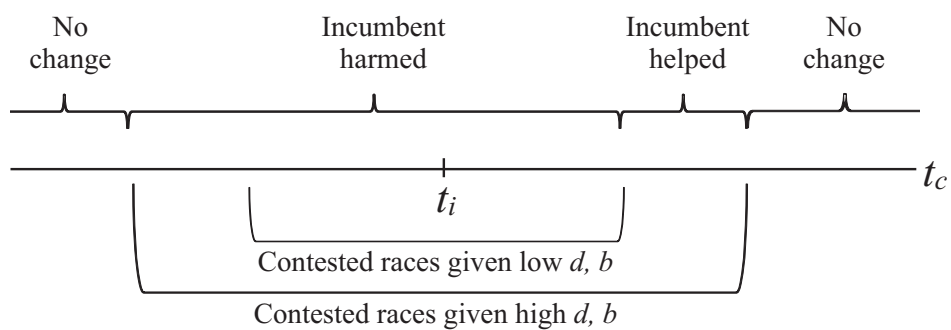
Rivers, Douglas, and Morris Fiorina. 1989. “Constituency Service, Reputation, and the Incumbency Advantage.” In Morris Fiorina and David Rohde, eds., *Home Style and Washington Work*. Ann Arbor, MI: University of Michigan Press, 17-45.

Wittman, Donald. 2007. “Candidate quality, pressure group endorsements and the nature of political advertising.” *European Journal of Political Economy* 23: 360-378.

Zaller, John. 1998. “Politicians as Prize Fighters: Electoral Selection and Incumbency Advantage.” In *Politicians and Party Politics*, ed. John G. Geer, pp. 125-85. New York: Palgrave Macmillan.

Figure 1: Incumbent Electoral Fortunes Given Changes in Model Parameters

A. Campaign Discount and Endorser Bias



B. District Pro-Incumbent Partisan Bias

