Incumbency and Information*

Scott Ashworth† Ethan Bueno de Mesquita‡ Amanda Friedenberg§

October 3, 2019

Abstract

A long tradition in political science is normatively troubled by the incumbency advantage. High reelection rates raise the concern that incumbents use the perquisites of office to insulate themselves from electoral threat. We uncover a previously unrecognized mechanism contributing to the incumbency advantage. Incumbents govern, and challengers do not. This generates information about incumbents that is not available about challengers. As a result, incumbents systematically win reelection at a different rate than they would were they in an open-seat election. This is so even absent any partisanship, electoral selection or challenger scare off. In particular, it holds even if incumbency and challenger status are randomly assigned. The information-based incumbency advantage co-varies positively with voter welfare. So, even with an ideal empirical research design, a positive incumbency advantage does not have the straightforward normative implications hypothesized by the literature.

*This paper was inspired by the discussion at the 2016 CHEAP conference. We thank Anthony Fowler, Navin Kartik, Jim Snyder, and seminar audiences at Columbia, Harvard, Stanford, Utah, the Berkeley Political Economy and Governance Conference, the LA Theory Day, the Warwick/Princeton/Utah Political Economy Conference 2018, and Washington PECO 2018.

†Harris School of Public Policy, University of Chicago, email: sashwort@uchicago.edu

‡Harris School of Public Policy, University of Chicago, email: bdm@uchicago.edu.

§Eller College of Management, University of Arizona, email: amanda@amandafriedenberg.org

At least since Erikson's (1971) agenda-setting paper, political scientists have been normatively concerned about the high rate at which incumbents win reelection. Do high reelection rates imply that incumbents use the perquisites of office—e.g., greater access to campaign resources, gerrymandering, challenger scare off, etc.—to insulate themselves from electoral threat? (See, e.g., Fiorina (1989).) If so, then electoral accountability may be ineffective at generating good governance outcomes. Cox and Katz (2002, p. 7) summarize the conventional wisdom:

> Whenever the resources of public office are used to insulate individual politicians from electoral risk, their accountability to their constituents is weakened.... Thus, insulation from electoral risk of the kind suspected would, at a single stroke, debilitate the two fundamental accountability relationships of a democratic system of government.

Of course, high reelection rates need not reflect insulation against electoral threat. Those rates may instead reflect the reasons incumbents get elected in the first place. One reason is *party match*—partisan voters may systematically elect politicians from the party they prefer. A second reason is *electoral selection* (Samuelson, 1984; Zaller, 1998; Ashworth and Bueno de Mesquita, 2008; Fowler, 2018). During electoral campaigns, voters may learn important information about candidates' characteristics, e.g. competence, ideology, or character. Voters use this information to select candidates who appeal to them. As a result, incumbents have characteristics that are, on average, more appealing to voters than do challengers. Importantly, to the extent that party match and electoral selection are major explanations of high incumbent reelection rates, the normative implications are reversed: High incumbent reelection rates might just mean voters do a particularly good job of identifying the politicians they want to have in office.

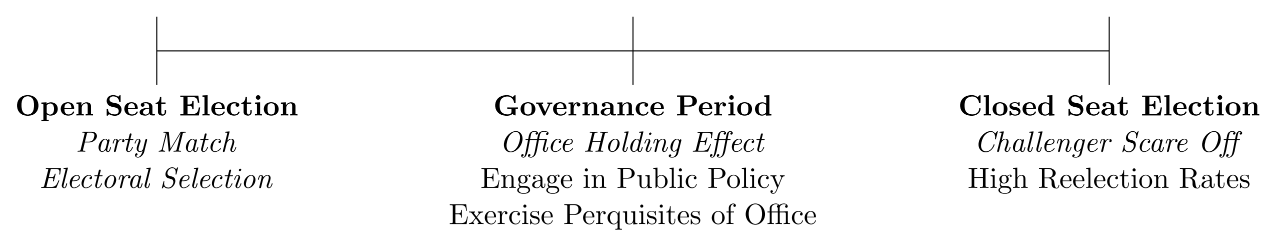

Figure 1: Illustration of the Literature

Figure 1 summarizes the literature's understanding of incumbent retention rates. It points to four mechanisms. The first two mechanisms arise from the act of selecting an incumbent. In an open seat election, voters choose politicians based on both partisanship and information about politician characteristics that they learn in the course of the campaign. As a consequence, on average, voters prefer incumbents over challengers in the later closed seat election. Both of these mechanisms benefit voters. The third mechanism arises during the course of holding office. While governing, the incumbent works on public policy and exercises the perquisites of office. These perquisites directly advantage her in the closed seat election, by insulating her from electoral threat. The literature views this *office holding effect* as detrimental for voters. It reduces both

the incumbent's incentives to work on behalf of voters and the extent to which voters weed out bad types in subsequent elections. Each of these three mechanisms may then be exacerbated by *challenger scare off*, whereby incumbent entrenchment deters high-quality challengers from running for office (Cox and Katz, 1996; Gordon, Huber and Landa, 2007).

Many empirical papers try to isolate the effect of office holding on incumbent reelection rates (Erikson, 1971; Cox and Katz, 1996; Levitt and Wolfram, 1997; Hirano and Snyder, 2009; Ansolabehere and Stewart, 2000; Fowler and Hall, 2014; Fowler, 2016). The view is that, if the literature can succeed in purging the estimate of partisan match and electoral selection, then the normative implications are clear. That estimate would show how the perquisites of office impact incumbent reelection rates. The larger the estimate, the more concerned we should be.[1]

We argue that this conclusion is misplaced. Even a research design that perfectly purged the effects of party match and electoral selection would not entail such normative conclusions. Isolating the effect of office holding on reelection rates does not suffice to draw normative conclusions. Our key observation is that another mechanism can increase reelection rates while also having normatively desirable effects.

Our alternative mechanism is informational. An intrinsic difference between an incumbent and a challenger is that the incumbent has the opportunity to govern. Doing so generates governance outcomes that voters can use to learn about the incumbent. Similar information is not available about the challenger. This asymmetry in information suffices to create an incumbency advantage. Incumbent reelection rates differ systematically from election rates in open seat elections, even absent party match, electoral selection, or challenger scare off.[2]

To better understand the idea, it is important to distinguish it from others that might, at first blush, appear related. First, we focus on rational voters who use all information available to them in forming their beliefs. At times, the additional information will lead voters to reelect the incumbent but, at other times, the additional information will lead voters to replace the incumbent. So, in particular, the incumbent cannot govern in a manner that is guaranteed to improve her reputation. Second, we focus on voters who cannot commit to a backroom-deal with the incumbent, whereby the incumbent is promised a vote in exchange for certain actions while in office. This again mitigates the incumbent's ability to secure reelection. Third, we focus on voters who have instrumental preferences over governance outcomes (of the usual sort). So they do not have, say, warm-glow preferences that give them direct utility when voting for incumbents who have behaved well in the past.

We illustrate our alternative informational mechanism in a stripped-down model. It abstracts away from the incumbent's active role in generating governance outcomes. This makes our mechanism transparent. But nothing about our results hinges on this assumption. All of our results continue to hold in a richer (but more complicated) model in which the incumbent takes endognous

[1] Eggers (2015) points to difficulties in isolating the effect of office holding on reelection rates empirically, given the current state of the art.

[2] Gordon and Landa (2009) study how the non-policy related perquisites of office might affect politician behavior and, consequently, voter information.

actions that affect governance outcomes.

1 A Model of Governance-Based Incumbency Effects

There is a Voter, an Incumbent, and a Challenger. We refer to each Politician (P) as "she" and the Voter as "he." Each politician P has a type θ^P that can take on one of two values: type $\underline{\theta}$ represents a low quality politician and type $\overline{\theta} > \underline{\theta}$ represents a high quality politician. The probability that Politician P is high quality (i.e., $\theta^P = \overline{\theta}$) is $\pi \in (0, 1)$. Write $\mathbb{E}(\boldsymbol{\theta}^P)$ for the *ex ante* expected type of Politician P. Note, the Incumbent and Challenger are *ex ante* identical, i.e., $\mathbb{E}(\boldsymbol{\theta}^I) = \mathbb{E}(\boldsymbol{\theta}^C)$.

The Voter observes a signal of the Incumbent's type and chooses whether to reelect the Incumbent or replace her with the Challenger. The Voter reelects (resp. replaces) the Incumbent if his conditional expectation of the Incumbent's type is strictly higher (resp. lower) than the *ex ante* expectation of the Challenger's type $\mathbb{E}(\boldsymbol{\theta}^C)$.

The signal is drawn from a set of signals $S = \mathbb{R}$. The likelihood of observing a signal depends on the type of the Incumbent. When the Incumbent is of type θ^I, the signal is drawn from a full-support absolutely continuous distribution $F(\cdot \mid \theta^I)$, whose density is $f(\cdot \mid \theta^I)$. We refer to $\mathcal{F} = (f(\cdot \mid \overline{\theta}), f(\cdot \mid \underline{\theta}))$ as the **signal structure**. Write $\mathbb{E}(\boldsymbol{\theta}^I \mid s)$ for the Voter's expectation of the Incumbent's type, conditional upon observing the signal $s \in S$.

There are three requirements on the signal structure. First, it satisfies the **strict monotone likelihood ratio property** (**MLRP**), i.e., $\frac{f(s|\overline{\theta})}{f(s|\underline{\theta})}$ is strictly increasing in s. This implies that the conditional expectation $\mathbb{E}(\boldsymbol{\theta}^I \mid s)$ is strictly increasing in s. (See Proposition 2 in Milgrom (1981).) Second, there is a signal ν with $f(\nu \mid \overline{\theta}) = f(\nu \mid \underline{\theta})$. This signal provides the Voter with no information about the Incumbent's type, i.e., the Voter's expectation of the Incumbent's type conditional upon observing ν ($\mathbb{E}(\boldsymbol{\theta}^I \mid \nu)$) is exactly his *ex ante* expectation of the Incumbent's type ($\mathbb{E}(\boldsymbol{\theta}^I)$). Thus, we refer to ν as the **neutral news signal**. Third, the distributions are **symmetric around neutral news**, i.e., $F(\nu \mid \overline{\theta}) = 1 - F(\nu \mid \underline{\theta})$. (We later discuss the implications of this assumption.) We now give a prominent example of a signal structure that satisfies these requirements.

Example 1.1 (Location Experiment)**.** *The Voter observes a governance outcome that is the sum of the Incumbent's type and a random shock—i.e., the signal is $s = \theta^I + \epsilon$, where ϵ represents the random shock. This shock is the realization of a random variable that is independent of the Politicians' types. It is distributed according to a full-support absolutely continuous CDF. The associated PDF, ϕ, is log-concave and symmetric about zero (i.e., for each $x \in \mathbb{R}$, $\phi(x) = \phi(-x)$). A mean-zero normal distribution is one example of such a density ϕ.*

This translates into the framework above: The set of signals is $S = \mathbb{R}$. The likelihood of observing s when the Incumbent is of type θ is $f(s \mid \theta) = \phi(s - \theta)$. Log-concavity of ϕ implies the strict MLRP. Since ϕ is symmetric about zero, $\nu = \frac{\overline{\theta}+\underline{\theta}}{2}$ is the neutral news signal. Symmetry about zero also implies symmetry about neutral news.

It is worth highlighting several features of the model. First, the Incumbent and Challenger are *ex*

ante identical. Thus, the model has no party match or electoral selection. Since the model has no partisanship, party match does not contribute to the Incumbent's likelihood of reelection. Further, the Incumbent is expected to be the same quality as the Challenger. This symmetry is meant to be the theoretical analogue of a research design that is perfectly purged of party match, electoral selection, and challenger scare-off. (The distribution of abilities would be equal if politicians were randomly assigned to the role of incumbent vs. challenger.)

Second, the model does not explicitly account for perquisites of office. Some perquisites of office serve to provide the Voter with information and, in that case, they work through the mechanism we are pointing to. Other perquisites of office directly impact the Voter's utility for the Incumbent relative to the Challenger; we abstract away from these perquisites of office. To better understand what our model does versus does not account for, consider the effect of press releases. On the one hand, access to the press increases the Voters' information about Incumbents. This will impact the distribution of signals and, so, this effect will be captured by our analysis. On the other hand, Incumbents can shape the tone of press releases to present a systematically positive spin. This, in turn, may directly impact the Voters' utility for the Incumbent, in a way that is independent of the quality of the Politicians. We have abstracted away from this latter effect, in order to highlight our informational mechanism.

Third, in this stylized model, the Politicians are not strategic actors. In particular, the Incumbent cannot influence the distribution of signals. In practice, by engaging in public policy, the Incumbent may well influence the distribution of signals. It is straightforward to extend our model to allow for endogenous effort by Incumbents. Doing so does not affect our core conclusions.

2 The Incumbency Effect

The model features only one difference between the Incumbent and the Challenger: the Voter has the opportunity to learn information about the Incumbent's quality but does not have the opportunity to learn (symmetric) information about the Challenger. The effect of incumbency is then the impact of this informational difference on the *ex ante* probability of reelection.

To formalize this idea, write Pr(Reelect Incumbent) for the *ex ante* probability of reelection, when the Voter receives a signal about the Incumbent's type but not the Challenger's type. This situation corresponds to expected Voter behavior in our model. We will compare this to the case where the Voter has access to an independent but symmetric signal about the Challenger. In that case, *ex ante*, the Voter would be equally likely to obtain good news about the Incumbent as about the Challenger. So, *ex ante*, the two politicians would be equally likely to be elected in the closed-seat election. With this in mind, the **incumbency effect** is

$$\mathcal{IE} = \Pr(\text{Reelect Incumbent}) - \frac{1}{2}.$$

If $\mathcal{IE} > 0$, we say that there is an **incumbency advantage** and, if $\mathcal{IE} < 0$, we say that there is an **incumbency disadvantage**.

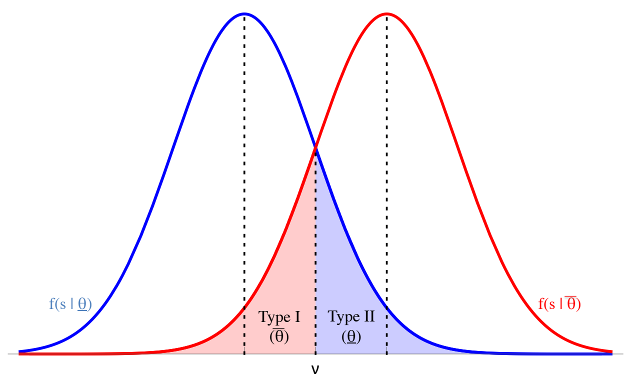

Figure 2: Distribution of governance outcome by type.

To understand the incumbency advantage (or disadvantage), we must understand why the *ex ante* probability that the Incumbent wins may differ from one-half, even though the two candidates are *ex ante* identical. Toward this end, it will be useful to reconceptualize the Voter's inference problem as one of hypothesis testing: The null hypothesis is that the Incumbent is high quality ($\mathrm{H}_0 = \{\theta^I = \overline{\theta}\}$) and the alternate is that the Incumbent is low quality ($\mathrm{H}_1 = \{\theta^I = \underline{\theta}\}$). The observed signal can provide evidence in favor or against these hypotheses. Evidence in favor of H_0 over H_1 is good news about the Incumbent's type and so we refer to it as a **good news signal**. Evidence in favor of H_1 over H_0 is referred to as a **bad news signal**.

Figure 2 elucidates which outcomes are good news versus bad news: The signal is drawn from one of two densities, either $f(\cdot \mid \overline{\theta})$ or $f(\cdot \mid \underline{\theta})$. The Voter is trying to figure out which density the signal s was drawn from. The neutral news signal is the signal at which the two densities intersect. At that signal, the Voter has no additional information about which density the signal was drawn from. Thus, $\mathbb{E}(\boldsymbol{\theta}^I \mid \nu) = \mathbb{E}(\boldsymbol{\theta}^I)$. Higher signals make it more likely it came from the density associated with the high type, i.e., from $f(\cdot \mid \overline{\theta})$ vs. $f(\cdot \mid \underline{\theta})$. (This follows from the MLRP.) Hence, the signal s is good news if $s > \nu$ and bad news if $s < \nu$. Thus, good news signals raise the Voter's conditional expectation above $\mathbb{E}(\boldsymbol{\theta}^I) = \mathbb{E}(\boldsymbol{\theta}^C)$, while bad new signals lower the Voter's conditional expectation.[3] Thus:

Lemma 2.1. *The Voter reelects the Incumbent if he observes $s > \nu$ and replaces the Incumbent if he observes $s < \nu$.*

While this is the Voter's optimal electoral rule, it may involve *ex post* error. The Voter makes a Type I error if he rejects the true H_0, i.e., he replaces a high quality Incumbent. This happens when the Voter observes a signal $s < \nu$ that was drawn from the density $f(\cdot \mid \overline{\theta})$. The Voter makes a Type II error if he fails to reject the false H_0, i.e., he reelects a low quality Incumbent. This happens when the Voter observes a signal $s > \nu$ that was drawn from the density $f(\cdot \mid \underline{\theta})$. Thus,

[3] All proofs are in the appendix.

the *ex ante* probabilities of these errors are

$$\alpha \equiv \Pr(\text{Type I error}) = F(\nu \mid \overline{\theta}) \qquad\qquad \beta \equiv \Pr(\text{Type II error}) = 1 - F(\nu \mid \underline{\theta}).$$

The shaded regions in Figure 2 correspond to the probabilities of Type I and Type II errors.

The Incumbent is reelected if she is high quality and there is no Type I error or if she is low quality and there is Type II error. Thus, the probability that the Incumbent is reelected is:

$$\begin{aligned}\Pr(\text{Reelect Incumbent}) &= \pi \Pr(s \geq \nu \mid \theta^I = \overline{\theta}) + (1-\pi)\Pr(s \geq \nu \mid \theta^I = \underline{\theta}) \\ &= \pi(1-\alpha) + (1-\pi)\beta\end{aligned}$$

Since the signal structure symmetric around neutral news, $\alpha = \beta$. With this,

$$\mathcal{IE} = \frac{1}{2}(2\pi - 1)(1 - 2\alpha) \tag{1}$$

The strict MLRP and symmetry around neutral news imply that $\alpha \in (0, .5)$ (Lemma A.1). Thus:

Proposition 1.

(i) There is an incumbency advantage if and only if $\pi > \frac{1}{2}$.

(ii) There is an incumbency disadvantage if and only if $\pi < \frac{1}{2}$.

Proposition 1 says that there is an incumbency disadvantage whenever the pool of candidates contains more low quality than high quality candidates (i.e., $1/2 > \pi$) and an incumbency advantage whenever the pool of candidates contains more high quality than low quality candidates (i.e., $\pi > 1/2$).[4]

3 How Voter Welfare Varies with the Incumbency Effect

The previous section pointed to an informational mechanism that gives rise to an incumbency effect—even if the pool of Incumbents and Challengers are *ex ante* identical. We now show that, under this mechanism, increases in the incumbency advantage are associated with higher levels of Voter welfare. This contradicts the conventional wisdom.

To make this idea precise, we need to be more concrete about the Voter's preferences. We said that the Voter chooses to reelect the Incumbent if and only if her conditional expected type is higher than the expected Challenger type. This assumption about behavior was a reduced-form for a Voter who, in each governance period, cares about the type of the politician in office. That is, the Voter's payoffs are $\theta^I + \theta^W$, where θ^I is the type of the Incumbent and θ^W is the type of the Politician who wins the election.[5] With this in mind, the *ex ante* Voter welfare is the *ex ante*

[4] Some empirical papers do, in fact, find a negative incumbency advantage (e.g., Uppal, 2009; Ariga, 2015).

[5] More generally, we can think of the Voter's payoffs as $u(\theta^I) + u(\theta^W)$, where u is a strictly increasing in the type of politician. Up to relabeling, this is equivalent to the formalization here.

expectation of the Incumbent's type plus the *ex ante* expectation of the winner's type, i.e.,

$$\text{VW} = \mathbb{E}(\boldsymbol{\theta^I}) + \Pr(\theta^W = \overline{\theta})\overline{\theta} + (1 - \Pr(\theta^W = \overline{\theta}))\underline{\theta}.$$

Here $\Pr(\theta^W = \overline{\theta})$ indicates the *ex ante* probability that the winner is the high type.

In the model, there are two factors that can impact the incumbency effect: the pool of candidates π and the signal structure $\mathcal{F}$. We consider increases in the incumbency effect that arise from changes to each of these. We compare that to the changes in Voter welfare.

Changes Driven by the Pool of Candidates: If an increase in the incumbency effect is driven by a change in the pool of candidates, then it is associated with higher Voter welfare.

Proposition 2.

(i) The incumbency effect is strictly increasing in π.

(ii) Voter welfare is strictly increasing in π.

To understand part (i) recall that, here, the incumbency effect *only* arises from the fact that the Voter observes a signal of the Incumbent's (but not the Challenger's) type. High types are more likely to generate good news outcomes and so more likely to be reelected. The more high types there are in the pool of candidates, the more likely it is that the Incumbent will generate good news and be reelected. Hence, the larger π, the higher the reelection rate of Incumbents.

To understand part (ii), observe that increasing π increases the *ex ante* expectation of the Incumbent's type. It also increases the probability that the winner of the election is the high type. Intuitively, increasing the probability that all politicians are high types increases the probability that the Politician chosen by the optimizing Voter will be a high type.

To see this last step more concretely, observe that the winner is a high type in exactly three circumstances: (i) the Incumbent was a high type and the Voter retained the Incumbent, (ii) the Incumbent was a high type, the Voter replaced the Incumbent, and drew a high type Challenger, or (iii) the Incumbent was a low type, the Voter replaced the Incumbent, and drew a high type Challenger. The first case arises if the Voter does not make a Type I error (conditional probability $(1-\alpha)$). The second case arises either if the Voter does make a Type I error and draws a high quality Challenger (conditional probability $\pi\alpha$) or if the Voter does not make a Type II error and draws a high quality Challenger (conditional probability $\pi(1-\beta)$). Using symmetry around neutral news,

$$\begin{aligned} \Pr(\theta^W = \overline{\theta}) &= \pi(1-\alpha) + \pi^2\alpha + (1-\pi)\pi(1-\beta) \\ &= \pi(1-\alpha) + \pi^2\alpha + (1-\pi)\pi(1-\alpha), \end{aligned}$$

which is strictly increasing in π. (See Lemma A.2.)

Changes Driven by the Informativeness of the Signal: We now consider an increase in the incumbency effect that is driven by a change in the informativeness of the signal. We will see that this corresponds to higher Voter welfare if—prior to the change in informativeness—there was an incumbency advantage. But, it will correspond to lower voter welfare if—prior to the change in informativeness—there was an incumbency disadvantage.

Throughout, we fix two signal structures $\mathcal{F}$ and $\mathcal{G}$, both satisfying the assumptions laid out in Section 1. Write $\mathcal{IE}(\mathcal{F})$ (resp. $\mathcal{IE}(\mathcal{G})$) for the incumbency effect, when the signal structure is $\mathcal{F}$ (resp. $\mathcal{G}$). We adopt the Lehmann (1988) information order:

Definition 1 (Lehmann, 1988). *The signal structure $\mathcal{F}$ is* ***more informative*** *than $\mathcal{G}$ if, for each s,*

$$F^{-1}(G(s \mid \overline{\theta}) \mid \overline{\theta}) \geq F^{-1}(G(s \mid \underline{\theta}) \mid \underline{\theta}).$$

Because there are two types, $\mathcal{F}$ is more informative than $\mathcal{G}$ if and only if $\mathcal{F}$ is more Blackwell-informative than $\mathcal{G}$. (See Jewitt, 2007, Proposition 1.)

Proposition 3. *Suppose $\mathcal{F}$ is more informative than $\mathcal{G}$.*

(i) If $\pi > \frac{1}{2}$, then $\mathcal{IE}(\mathcal{F}) \geq \mathcal{IE}(\mathcal{G})$.

(ii) If $\pi < \frac{1}{2}$, then $\mathcal{IE}(\mathcal{F}) \leq \mathcal{IE}(\mathcal{G})$.

Moreover, these inequalities are strict if it is not the case that $F(\nu_F \mid \overline{\theta}) = G(\nu_G \mid \overline{\theta}) = \frac{1}{2}$, where ν_F (resp. ν_G) is the neutral news outcome for $\mathcal{F}$ (resp. $\mathcal{G}$).

Proposition 3 states that, when $\pi \neq \frac{1}{2}$, the magnitude of the incumbency effect is sensitive to the quality of the Voter's information. When the pool of candidates has more high types than low types (i.e., $\pi > \frac{1}{2}$), signals are more likely to be good news than bad news. As such, the Incumbent benefits from more accurate signals. Hence, when there is a positive incumbency advantage, the more accurate the Voter's information, the larger (i.e., more positive) is that advantage. However, when the pool of candidates has more low types than high types (i.e., $\pi < \frac{1}{2}$), signals are more likely to be bad news than good news. As such, the Incumbent benefits from less accurate signals. Hence, when there is an incumbency disadvantage, the more accurate the Voter's information, the smaller (i.e., more negative) is that disadvantage.[6]

Example 3.1. *Return to the example of a location experiment, where the signal is $s = \theta^I + \varepsilon$. Consider two distributions of ϵ. One, $\phi_{\mathcal{F}}$, is a mean zero normal distribution with variance $\sigma^2_{\mathcal{F}}$; the second, $\phi_{\mathcal{G}}$, is a mean zero normal distribution with variance $\sigma^2_{\mathcal{G}}$. In keeping with Example 1.1, these induce two signal structures, viz. $\mathcal{F}$ and $\mathcal{G}$, associated with pdfs $f(s \mid \theta) = \phi_{\mathcal{F}}(s - \theta)$ and $g(s \mid \theta) = \phi_{\mathcal{G}}(s - \theta)$.*

[6] Fouirnaies (2019) shows that in Denmark—which has a positive incumbency advantage—the incumbency advantage (estimated through a regression discontinuity) is increasing in voter access to information (measured through access to newspapers).

Suppose that $\sigma^2_{\mathcal{F}} < \sigma^2_{\mathcal{G}}$. Then, $\mathcal{F}$ is more informative than $\mathcal{G}$. Moreover, writing $\Phi_{\mathcal{F}}$ for the CDF associated with $\phi_{\mathcal{F}}$, $F(\nu \mid \overline{\theta}) = \Phi_{\mathcal{F}}(\frac{\underline{\theta}-\overline{\theta}}{2}) < \frac{1}{2}$. So, Proposition 3 says (i) if $\pi > \frac{1}{2}$, then $\mathcal{IE}(\mathcal{F}) > \mathcal{IE}(\mathcal{G})$; and (ii) if $\pi < \frac{1}{2}$, then $\mathcal{IE}(\mathcal{F}) < \mathcal{IE}(\mathcal{G})$.

A Blackwell-improvement in information leads to a higher optimized payoff for any Bayesian decision maker. Thus, Proposition 3 has direct implications for Voter welfare. Suppose there are two signal structures—ordered by informativeness—each of which leads to a positive incumbency effect. Then Proposition 1 implies that $\pi > \frac{1}{2}$. Proposition 3 then implies that the incumbency effect is larger for the more informative signal structure. The reverse implications obtain when the structures both have a negative incumbency effect.

Corollary 3.1.

(i) Suppose there is an incumbency advantage. Increasing informativeness of the signal structure leads to both higher Voter welfare and a higher incumbency advantage.

(ii) Suppose there is an incumbency disadvantage. Increasing informativeness of the signal structure leads to higher Voter welfare and a lower incumbency disadvantage.

To sum up: In environments with an incumbency advantage, our information mechanism tends to create a positive covariance between Voter welfare and the incumbency advantage. This contradicts the conventional wisdom.

4 Discussion

We pointed to a new mechanism that gives rise to an incumbency effect. Through the act of governing, an incumbent politician generates information about her quality; the voter does not have the opportunity to observe analogous information about the challenger. This asymmetry produces a governance-based informational incumbency effect. It exists even if the incumbent and challenger are ex ante identical. As such, it will be included in estimates of the incumbency advantage that are purged of party match and electoral selection. Moreover, this mechanism does not support standard normative concerns—i.e., that the incumbency effect co-varies negatively with voter welfare. In particular, we showed that increases in this governance-based informational incumbency advantage are associated with higher voter welfare.[7]

It is important to note that the argument here is quite different from that in Eggers (2015). In particular, Eggers (2015) is concerned with a distinct question: Are RD estimates of the incumbency effect, in fact, purged of electoral selection? He points out that if, in the open seat election, the pool of candidates has more high types than low types—that is, if $\pi > \frac{1}{2}$—then RD estimates do not purge electoral selection.[8] When $\pi > \frac{1}{2}$, it is more likely that there will be two high quality

[7]Complementary work by Camargo and Degan (2019) focuses on a different mechanism and shows that structural changes that increase the possibility of challenger scare-off may be welfare enhancing for voters.

[8]See the two-type example on page 9 of Eggers (2015).

than low quality candidates in the open seat election. As a consequence, when the open seat race is close (as in the RD design), the Incumbent is more likely to be a high quality candidate. In that case, RD estimates are not purged of electoral selection. Our focus is different. We argue that, even if the empirical literature provides an estimate of the incumbency effect that is purged of electoral selection, there would still be questions about the normative interpretation. The reason is that, over the course of governance, the Voter learns about the Incumbent's quality, which generates an independent incumbency effect.

A Proofs

Proof of Lemma 2.1. Suppose the Voter observes a signal $s > \nu$. By the strict MLRP, $\mathbb{E}(\boldsymbol{\theta}^I \mid s) > \mathbb{E}(\boldsymbol{\theta}^I \mid \nu)$. Moreover, at the neutral news signal, the Voter's conditional expectation of the Incumbent's type is equal to his expectation of the Challenger's type, i.e., $\mathbb{E}(\boldsymbol{\theta}^I \mid \nu) = \mathbb{E}(\boldsymbol{\theta}^I) = \mathbb{E}(\boldsymbol{\theta}^C)$. Thus, $\mathbb{E}(\boldsymbol{\theta}^I \mid s) > \mathbb{E}(\boldsymbol{\theta}^C)$ and, so, he reelects the Incumbent. An analogous argument implies that the Voter replaces the Incumbent if $s < \nu$. $\square$

Lemma A.1. $\alpha = F(\nu \mid \overline{\theta}) < \frac{1}{2}$.

Proof. Suppose contra hypothesis, $F(\nu \mid \overline{\theta}) \geq \frac{1}{2}$. Since the signal structure is symmetric around neutral news, $1 - F(\nu \mid \underline{\theta}) \geq \frac{1}{2}$. Summing across both inequalities, we get that $F(\nu \mid \overline{\theta}) \geq F(\nu \mid \underline{\theta})$. But this contradicts the strict MLRP: Recall that

$$\frac{f(\nu \mid \overline{\theta})}{f(\nu \mid \underline{\theta})} = 1.$$

Thus, by the strict MLRP, for each $s < \nu$, $f(s \mid \overline{\theta}) < f(s \mid \underline{\theta})$. Thus,

$$F(\nu \mid \overline{\theta}) = \int_{s \leq \nu} f(s \mid \overline{\theta}) \mathrm{d}s < \int_{s \leq \nu} f(s \mid \underline{\theta}) \mathrm{d}s = F(\nu \mid \underline{\theta}),$$

a contradiction. $\square$

Lemma A.2. $\Pr(\theta^W = \overline{\theta})$ *is strictly increasing in* π.

Proof. Differentiating, we have

$$\frac{d \Pr(\theta^W = \overline{\theta})}{d\pi} = 2(1 - \pi) + 2\alpha(2\pi - 1).$$

If $\pi \geq \frac{1}{2}$, this derivative is clearly strictly positive. If $\pi < \frac{1}{2}$ then

$$2(1 - \pi) + 2\alpha(2\pi - 1) \geq 1 + 2\alpha(2\pi - 1) > 2\alpha + 2\alpha(2\pi - 1) \geq 0,$$

where the penultimate inequality follows from Lemma A.1. $\square$

The remainder of the Appendix is devoted to showing Proposition 3. In what follows, we will fix signal structures $\mathcal{F}$ and $\mathcal{G}$ that satisfy the assumptions in the main text. Write ν_F for the neutral news signal for $\mathcal{F}$ and ν_G for the neutral news signal for $\mathcal{G}$. The next result shows that there is no harm in taking $\nu_F = \nu_G$.

Lemma A.3. *Fix signal structures $\mathcal{F}$ and $\mathcal{G}$, so that $\mathcal{F}$ is symmetric around ν_F and $\mathcal{G}$ is symmetric around ν_G. If $\mathcal{F}$ is more informative than $\mathcal{G}$, there exist a signal structure $\mathcal{H}$ so that*

(i) $\mathcal{H}$ satisfies the MLRP,

(ii) ν_F *is neutral news for* $\mathcal{H}$*,*

(iii) $\mathcal{H}$ *is symmetric around* ν_F*,*

(iv) $\mathcal{F}$ *is more informative than* $\mathcal{H}$*, and*

(v) $\mathcal{IE}(\mathcal{G}) = \mathcal{IE}(\mathcal{H})$*.*

Proof. Set $\tilde{\nu} = \nu_F - \nu_G$. Define $\mathcal{H} = (S, \{h(\cdot \mid \theta)\}_{\theta \in \Theta})$ so that $h(s \mid \theta) = g(s - \tilde{\nu} \mid \theta)$ for each $\theta \in \Theta$. Note, $h(s|\overline{\theta})/h(s|\underline{\theta})$ is increasing in s, since $g(s-\tilde{\nu}|\overline{\theta})/g(s-\tilde{\nu}|\underline{\theta})$ is increasing in s. Thus, $\mathcal{H}$ satisfies the MLRP. Moreover, for each $\theta \in \Theta$, $h(\nu_F \mid \theta) = g(\nu_G \mid \theta)$. Since ν_G is neutral news for $\mathcal{G}$, ν_F is neutral news for $\mathcal{H}$. Moreover, since $\mathcal{G}$ is symmetric around ν_G,

$$H(\nu_F \mid \overline{\theta}) = G(\nu_G \mid \overline{\theta}) = 1 - G(\nu_G \mid \underline{\theta}) = 1 - H(\nu_G \mid \underline{\theta}).$$

Thus, $\mathcal{H}$ is symmetric around ν_F.

Fix some θ and some $s \in S$. Denote $\tilde{s} = s - \tilde{\nu}$ and observe that, for each θ, $H(s \mid \theta) = G(\tilde{s} \mid \theta)$. Since $\mathcal{F}$ is more informative than $\mathcal{G}$, $F^{-1}(G(\tilde{s} \mid \theta) \mid \theta)$ is increasing in θ and, so, $F^{-1}(H(s \mid \theta) \mid \theta)$ is increasing in θ. Thus, $\mathcal{F}$ is more informative than $\mathcal{H}$.

Finally, for each θ, $H(\nu_F \mid \theta) = G(\nu_G \mid \theta)$. Thus, $\mathcal{IE}(\mathcal{G}) = \mathcal{IE}(\mathcal{H})$. □

Remark A.1. *Let* $\mathcal{F}$ *and* $\mathcal{G}$ *be signal structures that are symmetric around the same neutral news outcome* $\nu_F = \nu_G = \nu$*. If* $\mathcal{F}$ *is more informative than* $\mathcal{G}$*, then*

$$F^{-1}(G(\nu \mid \overline{\theta}) \mid \overline{\theta}) \geq F^{-1}(G(\nu \mid \underline{\theta}) \mid \underline{\theta}).$$

Lemma A.4. *Let* $\mathcal{F}$ *and* $\mathcal{G}$ *be signal structures that are symmetric around the same neutral news outcome* $\nu_F = \nu_G = \nu$*. If* $\mathcal{F}$ *is more informative than* $\mathcal{G}$*, then* $F^{-1}(G(\nu \mid \overline{\theta}) \mid \overline{\theta}) \geq \nu$*.*

Proof. By Remark A.1,

$$F^{-1}(G(\nu \mid \overline{\theta}) \mid \overline{\theta}) \geq F^{-1}(G(\nu \mid \underline{\theta}) \mid \underline{\theta}).$$

Contra hypothesis, suppose that

$$\nu > F^{-1}(G(\nu \mid \overline{\theta}) \mid \overline{\theta}) \geq F^{-1}(G(\nu \mid \underline{\theta}) \mid \underline{\theta}).$$

Then,

$$F(\nu \mid \overline{\theta}) > F\left(F^{-1}(G(\nu \mid \overline{\theta}) \mid \overline{\theta}) \mid \overline{\theta}\right) = G\left(\nu \mid \overline{\theta}\right),$$

and

$$F(\nu \mid \underline{\theta}) > F\left(F^{-1}(G(\nu \mid \underline{\theta}) \mid \underline{\theta}) \mid \underline{\theta}\right) = G(\nu \mid \underline{\theta}).$$

But, applying symmetry of the signal structure to the second display,

$$1 - F(\nu \mid \overline{\theta}) = F(\nu \mid \underline{\theta}) > G(\nu \mid \underline{\theta}) = 1 - G(\nu \mid \overline{\theta}),$$

contradicting the first display. $\square$

Lemma A.5. *Let $\mathcal{F}$ and $\mathcal{G}$ be signal structures that are symmetric around the same neutral news outcome $\nu_F = \nu_G = \nu$. If $\mathcal{F}$ is more informative than $\mathcal{G}$, then $F(\nu \mid \overline{\theta}) \leq G(\nu \mid \overline{\theta})$.*

Proof. By Lemma A.4, $\nu \leq F^{-1}(G(\nu \mid \overline{\theta}) \mid \overline{\theta})$. Thus, $F(\nu \mid \overline{\theta}) \leq G(\nu \mid \overline{\theta})$. $\square$

Proof of Proposition 3. Suppose $\mathcal{F}$ is more informative than $\mathcal{G}$. By Lemma A.3, it suffices to assume that they are symmetric around the same neutral news outcome ν. By Lemma A.5, $F(\nu \mid \overline{\theta}) \leq G(\nu \mid \overline{\theta})$. Thus,

$$\mathcal{IE}(\mathcal{F}) = (2\pi - 1)\left(\tfrac{1}{2} - F(\nu \mid \overline{\theta})\right) \qquad \square \qquad (2\pi - 1)\left(\tfrac{1}{2} - G(\nu \mid \overline{\theta})\right) = \mathcal{IE}(\mathcal{G}),$$

where $\square$ is $\geq$ if $\pi > \frac{1}{2}$ and $\leq$ if $\pi < \frac{1}{2}$. Moreover, these inequalities are strict if it is not the case that $F(\nu \mid \overline{\theta}) = G(\nu \mid \overline{\theta}) = \frac{1}{2}$. $\square$

References

Ansolabehere, Steven, James M.S̃nyder, Jr. and Charles Stewart. 2000. "Old Voters, New Voters, and the Personal Vote: Using Redistricting to Measure the Incumbency Advantage." *American Journal of Political Science* 44(1):17–34.

Ariga, Kenichi. 2015. "Incumbency Disadvantage Under Electoral Rules with Intraparty Competition: Evidence from Japan." *The Journal of Politics* 77(3):874–887.

Ashworth, Scott and Ethan Bueno de Mesquita. 2008. "Electoral Selection, Strategic Challenger Entry, and the Incumbency Advantage." *Journal of Politics* 70(4):1006–1025.

Blackwell, David. 1951. The Comparison of Experiments. In *Proceedings, Second Berkeley Symposium on Mathematical Statistics and Probability.* Berkeley: University of California Press pp. 93–102.

Camargo, Braz and Arianna Degan. 2019. "Accountability and Political Competition." Working Paper.

Cox, Gary W. and Jonathan N. Katz. 1996. "Why Did the Incumbency Advantage in U.S. House Elections Grow?" *American Journal of Political Science* 40:478–497.

Cox, Gary W. and Jonathan N. Katz. 2002. *Elbridge Gerry's Salamander: The Electoral Consequences of the Reapportionment Revolution.* New York: Cambridge University Press.

Eggers, Andy. 2015. "Quality-Based Explanations of Incumbency Effects." Forthcoming in the *Journal of Politics.*

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

Fiorina, Morris P. 1989. *Congress: Keystone of the Washington establishment.* Yale University Press.

Fouirnaies, Alexander. 2019. "Do Newspapers Benefit Incumbents?" University of Chicago Working Paper.

Fowler, Anthony. 2016. "What Explains Incumbent Success? Disentangling Selection on Party, Selection on Candidate Characteristics, and Office-Holding Benefits." *Quarterly Journal of Political Science* 11(3):313–338.

Fowler, Anthony. 2018. "A Bayesian Explanation for the Effect of Incumbency." *Electoral Studies* 53:66–78.

Fowler, Anthony and Andrew B. Hall. 2014. "Disentangling the Personal and Partisan Incumbency Advantages: Evidence from Close Elections and Term Limits." *Quarterly Journal of Political Science* 9(4):501–531.

Gordon, Sanford C. and Dimitri Landa. 2009. "Do the Advantages of Incumbency Advantage Incumbents?" *Journal of Politics* 71(4):1481–1498.

Gordon, Sanford C., Gregory A. Huber and Dimitri Landa. 2007. "Challenger Entry and Voter Learning." *American Political Science Review* 101(2):303–320.

Hirano, Shigeo and James M Snyder, Jr. 2009. "Using multimember district elections to estimate the sources of the incumbency advantage." *American Journal of Political Science* 53(2):292–306.

Jewitt, Ian. 2007. "Information Order in Decision and Agency Problems." Nuffield College Typescript.

Lehmann, E. L. 1988. "Comparing Location Experiments." *Annals of Statistics* 16(2):521–533.

Levitt, Steven D. and Catherine D. Wolfram. 1997. "Decomposing the Sources of Incumbency Advantage in the US House." *Legislative Studies Quarterly* pp. 45–60.

Milgrom, Paul R. 1981. "Good News and Bad News: Representation Theorems and Applications." *The Bell Journal of Economics* pp. 380–391.

Samuelson, Larry. 1984. "Electoral Equilibria with Restricted Strategies." *Public Choice* 43:307–327.

Uppal, Yogesh. 2009. "The Disadvantaged Incumbents: Estimating Incumbency Effects in Indian State Legislatures." *Public Choice* 138(1/2):9–27.

Zaller, John. 1998. Politicians as Prize Fighters: Electoral Selection and the Incumbency Advantage. In *Politicians and Party Politics*, ed. John G. Geer. Baltimore, MD: Johns Hopkins Univresity Press.