Reciprocity and Democratic Accountability*

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Abstract

In this paper, we introduce reciprocity concerns in a political agency model with symmetric learning about politicians' ability and moral hazard. Voters with reciprocity concerns are both prospective—that is, seek to select competent politicians—and retrospective—that is, reward fair actions and punish unfair ones. We focus on how electoral incentives induce politicians to exert effort (electoral control) and how voters remove incompetent politicians (electoral screening). We show that taking voters' reciprocity concerns into account has important normative implications and can overturn results from standard models that neglect them: increasing transparency about the incumbent's effort improves electoral control if and only if voters have sufficiently strong reciprocity concerns; increasing benefits from office improves electoral control if and only if voters have sufficiently low reciprocity concerns. Moreover, we show that reciprocity concerns can affect electoral screening, by affecting the competence threshold incumbents must clear to ensure reelection, generating incumbency advantages or disadvantages.

Keywords: Political Agency; Career Concerns; Social Preferences; Behavioral Models of Politics

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1 Introduction

The literature on electoral accountability has long debated whether elections are used by voters as a tool to select good types or to sanction poor performances. Work emphasizing sanctioning motives (e.g. Key, 1966; Barro, 1973; Fiorina, 1981; Ferejohn, 1986) take a retrospective view of voters' voting behaviour: in their view, voters' reelection standards reflect "approval or disapproval of that which has happened before" (Key, 1966, cited in Ashworth, 2012). By contrast, work emphasizing selecting motives (e.g. Besley and Case, 1995; Coate and Morris, 1995; Besley, 2006; Alt et al., 2011) take a prospective view of voters' behaviour: voters use past experiences only insofar as they allow them to infer how incumbents would act in the future if reelected (Fearon, 1999).

In this paper, we argue that taking into account voters' *reciprocity* concerns, a form of *other-regarding* preferences (Fehr and Schmidt, 2006), offers a way to synthesise the two approaches, without dispensing with either rational updating or the possibility of expressing approval or disapproval of past actions. We show that our approach has important normative and positive implications for the study and design of political institutions, overturning results from standard models: while in standard career-concerns models of electoral accountability, increasing voters' information on the incumbent's effort and reducing benefits from office reduces the level of electoral control, our results show that when voters have reciprocity concerns, increasing transparency and reducing benefits from office might have the opposite effect when the degree of reciprocity is high enough.

Our paper builds on an important empirical literature that has provided evidence of reciprocity concerns among voters in numerous different contexts (e.g. Landa, 2010; Finan and Schechter, 2012; Woon, 2012; Landa and Duell, 2015; Konrad and Sherif, 2019; Leight et al., 2020). We offer a simple formal framework able to capture simultaneously the prospective and retrospective aspects of voters' behaviour. Reciprocity concerns are captured in our model by incorporating in our representative voter's utility function the future utility of an incumbent seeking reelection. Our voter's behaviour is affected by how he sees the action of the incumbent in office: if he deems it fair, he is inclined to reward the politician. By contrast, if the action of the incumbent is insufficient for him, the voter is inclined to sanction the incumbent. Importantly, however, we do not dispense with Bayesian reasoning and prospective voting. Our voter weighs these reciprocity concerns against his prospective concerns, which affects which kind of politicians he is willing to reelect.

Formally, we study a two-period political agency career-concerns model, in the vein of Ashworth (2005), with symmetric learning about politicians' ability and moral hazard. An incumbent seeking reelection must decide what level of effort to exert, an effort which affects the level of public good that is delivered. This level of effort also affects the voter's assessment of the incumbent's ability when the voter cannot observe the precise contribution of the politician to the public good production. The voter updates his beliefs about the ability of the incumbent, and decides whether to reelect her or elect

the challenger to hold office in the second and last period of the game. Our framework captures both prospective voting and retrospective voting, since, *ceteris paribus*, the voter prefers to reelect a more competent incumbent (for a given level of effort in the first period) and to reelect an incumbent who has exerted a higher effort in the first period (for a given ability level).

We explore the implications of the introduction of reciprocity concerns for voters on three main areas of interest: electoral *control*, or how electoral incentives induce politicians to exert effort; electoral *screening*, or how voters remove incompetent politicians; and voter welfare. On electoral control, we show that increasing transparency or decreasing electoral benefits is beneficial only if voters have sufficiently high reciprocity concerns. This occurs because of *kindness boosting*: with reciprocity concerns, politicians have an incentive to exert effort to decrease the Bayesian competence hurdle they must clear to be reelected, which might more than overcome the decreased incentive to affect voters' evaluation of their competence through signal-jamming. This mechanism also affects electoral screening, as less competent politicians can be reelected when they act in a fairer way. An important implication of this mechanism is that incumbency advantages or disadvantages can emerge, depending on what voters deem fair, making incumbents *ex-ante* more or less likely to be reelected. On voter welfare, we emphasise that, since screening concerns might be weighed against reciprocity concerns, re-electing incompetent politicians or voting competent politicians out might be fully consistent with rational, welfare-maximising behaviour from the voter.

Our work relates to the literature on electoral accountability, as surveyed in Ashworth (2012) and Duggan and Martinelli (2017). Most closely related to our modelling approach are papers in the career-concerns framework: these papers (e.g. Lohmann, 1998; Ashworth, 2005; Alesina and Tabellini, 2007, 2008; Bruns and Himmler, 2016; Ashworth and Bueno de Mesquita, 2017; Landa and Le Bihan, 2018; Aytimur and Bruns, 2019) feature symmetric uncertainty about politicians' ability, which can induce politicians to exert effort to affect voters' perception of their abilities. Our contribution with respect to this literature is to offer a framework that captures *simultaneously* prospective voting (Fearon, 1999) and retrospective voting: without dispensing with Bayesian reasoning on voters' side, we show how reciprocity concerns can have subtle effects on electoral outcomes and political behaviour, overturning standard results in settings without reciprocity. We also relate to the literature on electoral accountability and transparency (Prat, 2005; Fox, 2007; Fox and Van Weelden, 2012; Blumenthal, 2023, 2024a,b; Heo, 2024), by showing how taking into account voters' reciprocity concerns can affect the benefits and costs of an increased transparency of politicians' actions.

Our work also relates to a growing literature on behavioural political economy (Callander and Wilson, 2006, 2008; Minozzi, 2013; Ashworth and Bueno de Mesquita, 2014; Bisin et al., 2015; Levy and Razin, 2015; Ortoleva and Snowberg, 2015; Diermeier and Li, 2017; Glaeser and Ponzetto, 2017; Lockwood, 2017; Matějka and Tabellini, 2021; Little et al., 2022; Grillo and Prato, 2023; Nunnari and Zapal, 2024), which has sought to incorporate findings from behavioural economics in the modelling

of interactions between politicians and voters, by including cognitive biases or bounded rationality into their strategic calculus. In particular, our paper relates to recent work that has sought to incorporate reciprocity concerns in modelling the behaviour of political actors (Drazen and Ozbay, 2019; Dalmia et al., 2020; Leight et al., 2020). In line with these papers, we consider a political agency framework, but our focus is on the behaviour of voters (unlike Drazen and Ozbay (2019) and Dalmia et al. (2020), which focus on politicians with reciprocity concerns), who face both a moral hazard problem and learn about politicians' abilities over time (unlike Leight et al. (2020), which considers a pure moral hazard setting) allowing us to offer a framework flexible enough to accommodate both prospective *and* retrospective voting, without dispensing with Bayesian reasoning.

2 Model

We consider a simple model of electoral accountability with career concerns, following Ashworth (2005). At each of two dates, $t = \{1, 2\}$, the politician in office decides how much effort to exert, $a_t \in \mathbb{R}_+$. When she is in office and exerts effort a_t, a politician's payoff is $w_t = B - c(a_t)$, where $B > 0$ is the benefit from office (capturing both formal compensation and ego rents from holding power) and $c(a_t)$ is the cost of effort. The function $c(\cdot)$ is increasing, continuously differentiable, strictly convex, and satisfies $c(0) = 0$ and $\lim_{a_t \to \infty} c'(a_t) = \infty$. Any politician who is not in office gets zero in that period.[1] An incumbent is in office at the beginning of the game and, at the end of the first period, a representative voter chooses whether to re-elect her or replace her with a challenger. Untried politicians have unknown *ability*, $\theta \sim \mathcal{N}\left(\overline{\theta}, \sigma_\theta^2\right)$, and uncertainty is symmetric. In the two periods, the voter has utility

$$u_1 = \theta_1 + a_1 + \varepsilon_1 \tag{1}$$

$$u_2 = \theta_2 + a_2 + \mathbb{1}_{\{\text{Keep}\}} \eta (a_1 - a^e) w_2 + \varepsilon_2, \tag{2}$$

where θ_t is the ability of that period's incumbent, $\mathbb{1}_{\{\text{Keep}\}}$ is an indicator function which equals 1 if the incumbent is retained at the end of the first period, η measures the voter's degree of *reciprocity* towards the first-period incumbent (that is, the degree to which he internalizes the second-period utility of the incumbent), a^e is the level of effort the voter deems as *equitable*, and $\varepsilon_t \sim \mathcal{N}\left(0, \sigma_\varepsilon^2\right)$ is a noise term. When the effort of the incumbent is above the equitable level of effort, a^e, the voter regards this action as fair and he has a preference for rewarding the first-period incumbent which is proportional to his degree of reciprocity and to the magnitude of the incumbent's action's fairness. When it is below the equitable level of effort, the voter regards the action as unfair and has a preference for sanctioning the first-period incumbent, proportional to his degree of reciprocity and the magnitude of the incumbent's

[1] The crucial assumption is that the benefit from being in office is greater than the outside option of the politician. The normalisation of the value of this outside option to 0 simplifies the exposition.

action's unfairness.

The voter might only imperfectly monitor the politician's action. To capture that, we assume that there is a probability $\tau \in [0,1]$ that the politician's equilibrium action in the first period a_1^* is observed prior to the election. With complementary probability, the politician's equilibrium action in the first period is not revealed prior to the election, and the voter only observes the realisation of the public good, u_1.

Equilibrium Concept. We characterise the pure-strategy perfect Bayesian equilibrium of the game. A sufficient condition for the existence of this equilibrium is that B is not too large, ensuring that the first-order conditions derived below characterise the optimal effort choice by the incumbent. The precise condition is derived formally at the beginning of the Appendix.

Modelling Assumptions. The way we model transparency aims at capturing two crucial real-world features of policymaking processes. First, voters are often poorly equipped to disentangle the precise contribution of a politicians to the observed level of public good provision, as opposed to the contribution of economic fluctuations or other forces. Second, there are monitoring mechanisms whose task is to investigate the contributions of politicians to the provision of public good: this might be, for instance, through accountability journalism or administrative and judicial oversight (Besley and Burgess, 2002; Ferraz and Finan, 2008; Snyder Jr and Strömberg, 2010; Ferraz and Finan, 2011; Avis et al., 2018). In our model, increasing transparency means increasing the likelihood that the action is observed, reflecting, for instance, an increased attention devoted by monitoring institutions to the actions of politicians or a better efficiency in monitoring.

The way in which we model reciprocity is in line with the models of reciprocity proposed by Rabin (1993), Dufwenberg and Kirchsteiger (2004), Cox et al. (2007), Dufwenberg and Kirchsteiger (2019). Reciprocity is the action tendency of being kind towards those whom we perceive as kind with us and unkind towards whom we perceive as unkind with us. Rabin (1993) argues that kindness is based on *intentions*: the kindness of i towards j is measured by the difference between how much i expects to make j earn (which, in our model is linearly increasing in her effort) and an "equitable payoff." In Rabin's model, the equitable payoff is determined by the actions available to i, that is, the range of material payoffs i could have given to j. In particular, Rabin defines the equitable payoff as the average between the minimum and the maximum i can give to j, given i's beliefs. This definition is not immediately applicable to our setting since, as in the standard model of career-concern, the set of actions available to the incumbent is unbounded. Both for this reason and because we believe that the equitable level of effort is affected by the norms of fairness prevailing in a given community, we derive

results for an arbitrary value of a^e.[2] Moreover, as in these models, the voter's willingness to sacrifice his material payoff to reward a kind incumbent and to punish an unkind incumbent is proportional to the relevance of reciprocity concerns for his well-being (η) and to how much the incumbent is perceived as (un)kind, not just whether he was kind or unkind (similarly to, e.g., the *emotional state* introduced by Cox et al. 2007).

3 Equilibrium Analysis

We proceed by backward induction. The second period ends the game and, thus, there are no reputational incentives for a second period office-holder to exert effort. Therefore, regardless of her ability, the second period office-holder does not exert effort in the second period, that is, $a_2^\star = 0$. Moving one step backward, the voter will reelect the incumbent if and only if the expected utility from reelecting her is at least as large as the expected utility from replacing her with an untried challenger. Thus, denoting by $\tilde{\theta}$ the posterior mean of the voter's belief about the incumbent's ability, the voter reelects the incumbent if and only if:

$$\text{EU(Retain)} = \tilde{\theta} + \eta(a_1 - a^e)B \geqslant \overline{\theta} = \text{EU(Replace)}, \tag{3}$$

It is worth pausing here to compare this condition with the one that would hold without reciprocity concerns, which would be the case if η were equal to 0, and with the conditions that hold in pure moral hazard settings *à la* Barro (1973) and Ferejohn (1986). Compared to the case without reciprocity concerns, the difference is the presence of B in the voter's re-election decision. This is because, given the voter's reciprocity concerns, the value that a re-elected incumbent would derive from being in office is a relevant quantity for the voter who seeks to sanction unfair behaviour and reward fair behaviour. By contrast, in the standard approach in a two-period framework with moral hazard and adverse selection (Fearon, 1999), the only thing that matters for the voter is the prospective aspect (see also Ashworth, 2012), with the comparison between the posterior belief on the incumbent's ability and the prior belief on the challenger's ability. In pure moral hazard models, by contrast, voters optimally choose the action threshold above which they re-elect incumbents. Moreover, politicians are re-elected if their conjectured action is above the threshold, and are thrown out if it is below the threshold. Here, the equitable level of effort plays a role similar to the action threshold chosen by voters in those models. However, this threshold is not chosen freely by the voter but rather pinned down by the voter's preferences. Moreover, the combination of moral hazard and symmetric learning about the politician's ability implies that, depending on the voter's updated belief about her ability, a

[2] If we assumed a bounded set of actions, we could use the definition in Rabin (1993). As we show below, our key results — in particular, how the introduction of reciprocity concerns affects electoral control and how it changes comparative statics with respect to, e.g., transparency — do not depend on a^e taking any particular value or on whether the voter feels positive or negative reciprocity towards the incumbent. The equitable level of effort matters, instead, for electoral screening.

politician who has exceeded the equitable level of effort may be kicked out of office or a politician who has not reached it may be re-elected: the learning dimension adds smoothness to the threshold.

Next, we derive the incumbent's first period equilibrium action. Note first that depending on whether her action is revealed prior to the election, the incumbent might be evaluated either on the basis of her observed action (if it is observed, which occurs with probability τ) or on the basis of the realised public good and the associated conjectured action (if her action is unobserved, which occurs with complementary probability $1-\tau$).

Building Intuition: Unobserved Incumbent's Action. Consider first the case where the action of the incumbent is unobserved. Because of rational expectations, the voter's forecast about the incumbent's action corresponds to her equilibrium action, $a_1^\star$. Endowed with this knowledge, the voter learns something about the incumbent's ability by observing her performance in office — that is, the public good production, which increases in both effort and ability — and taking into account the incumbent's equilibrium effort. The posterior mean of the voter's belief about the incumbent's ability is a weighted average of the voter's prior belief ($\overline{\theta}$) and of the information contained in the first-period's incumbent performance, where the weights depend on how precise these two pieces of information are. Formally, we have:

$$\tilde{\theta} = \lambda(u_1 - a_1^\star) + (1-\lambda)\overline{\theta}, \tag{4}$$

where $\lambda = \sigma_\theta^2/(\sigma_\varepsilon^2 + \sigma_\theta^2)$.[3]

The incumbent can partially affect the voter's belief about her ability through her effort but remains uncertain about it. The incumbent expects the voter's posterior belief about her ability to be distributed normally with mean $\lambda(u_1 - a_1^\star) + (1-\lambda)\overline{\theta} = \lambda(\theta + a_1 + \varepsilon_1 - a_1^\star) + (1-\lambda)\overline{\theta}$, and variance $\lambda^2(\sigma_\theta^2 + \sigma_\varepsilon^2) = \frac{\sigma_\theta^4(\sigma_\theta^2+\sigma_\varepsilon^2)}{(\sigma_\varepsilon^2+\sigma_\theta^2)^2} = \frac{\sigma_\theta^4}{(\sigma_\varepsilon^2+\sigma_\theta^2)} = \lambda\sigma_\theta^2$. Remember that the incumbent is reelected if and only if the voter's posterior mean is greater than $\overline{\theta} - \eta(a_1^\star - a^e)B$. Thus, when choosing her level of effort, the incumbent's re-election probability (which is a crucial element of her objective function) is

$$1 - \Phi\left(\frac{\overline{\theta} - \eta(a_1^\star - a^e)B - \overline{\theta} - \lambda(a_1 - a_1^\star)}{\sqrt{\lambda}\sigma_\theta}\right),$$

where $\Phi(\cdot)$ is the CDF of the standard normal distribution. Note that this probability is increasing in a_1. As in standard models of career-concerns (where $\eta = 0$), the incumbent's action is a substitute for ability and the incumbent has an incentive to engage in *signal jamming*: since the voter thinks he has corrected for this by subtracting $a_1^\star$, increases in the action fool the voter into thinking ability is high. Thus, a marginal increase in effort increases the chance of overcoming a given re-election threshold.

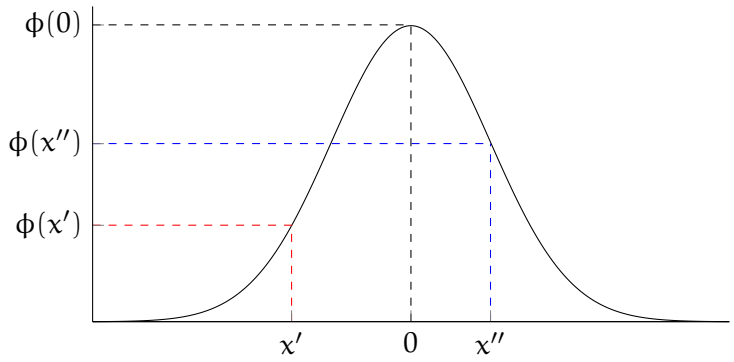
At the same time, contrary to the standard model, this re-election threshold is different from

[3] See DeGroot (1970).

$\overline{\theta}$ and this reduces the benefit of signal jamming. Indeed, in equilibrium, the marginal benefit of increasing a_1 from the perspective of the incumbent is

$$\underbrace{\phi\left(\frac{-\eta(a_1^\star - a^e)B}{\sqrt{\lambda}\sigma_\theta}\right)\left(\frac{\lambda}{\sqrt{\lambda}\sigma_\theta}\right)}_{\text{Increase in Probability of Re-Election}} B,$$

where $\phi(\cdot)$ is the PDF of the standard normal. This marginal benefit is decreasing in η both when the voter seeks to punish the incumbent ($a_1^\star < a^e$) and when he seeks to reward her ($a_1^\star > a^e$). The reason lies in the density of θ, which decreases in the distance from its average, $\overline{\theta}$: as shown in the figure below, $\phi(x) < \phi(0)$ for any $x \neq 0$ and is strictly decreasing in $|x|$.



Since the benefit of signal jamming shrinks as $|\eta(a_1^\star - a^e)B|$ grows, increasing the voter's degree of reciprocity concerns unambiguously reduces the optimal level of effort when conditioning on the scenario where the voter does not observe the incumbent's action.

Building Intuition: Observed Incumbent's Action. Consider now the case where the incumbent's action is observed. In this case, the voter does not need to conjecture the incumbent's effort and the mean of his posterior belief about the incumbent's ability is

$$\tilde{\theta} = \lambda(u_1 - a_1) + (1-\lambda)\overline{\theta}, \tag{5}$$

where $\lambda = \sigma_\theta^2/(\sigma_\varepsilon^2 + \sigma_\theta^2)$.

As in the previous case, when choosing how much effort to exert, the incumbent is uncertain about the voter's posterior belief about her ability when deciding whether to reelect her or not. This belief will be distributed normally with mean $\lambda(u_1 - a_1) + (1-\lambda)\overline{\theta} = \lambda(\theta + a_1 + \varepsilon_1 - a_1) + (1-\lambda)\overline{\theta} = \lambda(\theta + \varepsilon_1) + (1-\lambda)\overline{\theta}$. It is important to note that, contrary to the previous case, the voter's mean posterior belief is independent of the incumbent's effort. As in the standard model ($\eta = 0$), when politicians' actions are perfectly observable, signal jamming is impossible.

On the other hand, contrary to the standard model, when voters have reciprocity concerns there is a novel effect, which we label *kindness boosting*. The incumbent's belief about the voter's belief is

normal with mean $\overline{\theta}$ and variance $\lambda\sigma_\theta^2$. Since the incumbent is re-elected if and only if the voter's posterior mean is greater than $\overline{\theta} - \eta(a_1 - a^e)B$, the re-election probability in this case is

$$1 - \Phi\left(\frac{-\eta(a_1 - a^e)B}{\sqrt{\lambda}\sigma_\theta}\right).$$

This re-election probability is increasing in a_1, since, as a_1 increases, incumbents with a lower ability are re-elected, as a reward for their fairer actions. In other words, a marginal increase in effort decreases the re-election threshold, thus increasing the incumbent's chance of re-election.

The benefit of kindness boosting on the incumbent's re-election probability is non-monotonic in η. On the one hand, as η grows, the effect of effort in decreasing the re-election threshold grows. On the other hand, as η grows, the effect of a given decrease in the re-election threshold on the chance of overcoming it decreases. This occurs because, as we discussed above, the density of θ decreases in the distance from its average, $\overline{\theta}$. As a consequence, conditioning on the scenario where the voter observes the incumbent's action, the optimal level of effort first increases in η, then decreases.

General Case with Uncertainty over Monitoring. Putting these two elements together, the incumbent chooses in period 1 the action that maximizes her expected utility:

$$\tau B\left[\left(1 - \Phi\left(\frac{-\eta(a_1 - a^e)B}{\sqrt{\lambda}\sigma_\theta}\right)\right)\right] + (1-\tau)B\left(1 - \Phi\left(\frac{-\eta(a_1^\star - a^e)B - \lambda(a_1 - a_1^\star)}{\sqrt{\lambda}\sigma_\theta}\right)\right) - c(a_1)$$

Combining the previous results, it is then straightforward to compute the pure strategy equilibrium of the game. Formally, we have that:

Proposition 1. *There exists an essentially unique pure strategy equilibrium to the game. In it, the incumbent's first-period action $a_1^\star$ is characterised by the following first-order condition:*

$$\phi\left(\frac{-\eta(a - a^e)B\sqrt{\sigma_\theta^2 + \sigma_\varepsilon^2}}{\sigma_\theta^2}\right)\left[\tau\left(\frac{\eta B^2\sqrt{\sigma_\theta^2 + \sigma_\varepsilon^2}}{\sigma_\theta^2}\right) + (1-\tau)\left(\frac{B}{\sqrt{\sigma_\varepsilon^2 + \sigma_\theta^2}}\right)\right] - c'(a_1^\star) = 0,$$

and she is reelected if and only if the voter's updated belief on her ability $\tilde{\theta}$ is greater than $\overline{\theta} - \eta(a_1 - a^e)B$.

3.1 Electoral Control

In this subsection, we provide some comparative statics on the level of the incumbent's first-period action, focusing on the role of transparency and politician compensation. Formally, we obtain that:

Proposition 2.
1. *The incumbent's equilibrium first period level of effort is increasing in the voter's degree of reciprocity, η, if and only if τ is sufficiently large.*
2. *The incumbent's equilibrium first period level of effort is increasing in the voter's degree of monitoring, τ,*

if and only if η *is sufficiently large.*

3. *When* $\tau \in \{0, 1\}$*, the incumbent's equilibrium first period level of effort is increasing in* B *if and only if* η *is sufficiently low.*

In a standard career-concerns framework, the only reason why the first-period incumbent exerts any effort is to affect the voter's learning about her type (that is, to jam the signal). Greater transparency about the incumbent's action reduces the incumbent's ability to interfere with voter's learning and, thus, reduces her incentives to exert effort. In the limit, when there is perfect monitoring, the first-period incumbent's chances of reelection are independent of her action and she is better off being completely idle. As such, in these models, transparency is undesirable. When we take voters' reciprocity concerns into account, though, things are dramatically different: as discussed above, there is a second reason why first-period incumbents might want to exert effort, that is, kindness boosting. Since kind actions are more likely to be rewarded with a lower reelection hurdle when they are more likely to be observed, this incentive grows with transparency. As we increase transparency and the voter becomes more likely to observe the politician's action, the incumbent's first period action is more likely to be rewarded with a lower reelection hurdle and the voter's reelection decision is more likely to be driven by the kindness of action rather than the competence of the politician. As such, kindness boosting (rather than signal jamming) becomes the predominant force. As a consequence, when the degree of reciprocity is sufficiently high, more transparency *increases* the incumbent's equilibrium first period effort level, whereas it is harmful with a low enough degree of reciprocity (as in the standard framework, which is a special case of our model with $\eta = 0$). This has important normative implications for democratic institutions.

3.2 Electoral Screening

We have studied in the preceding subsection the effect of the introduction of reciprocity concerns on the incumbent's behaviour in the first period. In this subsection, we study electoral screening, focusing on how reciprocity concerns affect the representative voter's behaviour as well as the pool of reelected incumbents.

First, recall that for an incumbent to be reelected, the voter's posterior belief on her ability should be greater than $\overline{\theta}_I - \eta(a_1^\star - a^e)B$. Equipped with this, we can compute the equilibrium probability of re-election of the incumbent. Regardless of the degree of monitoring, since conjectures are correct in equilibrium, this is equal to:

$$1 - \Phi\left(\frac{-\eta(a_1^\star - a^e)B}{\sqrt{\lambda}\sigma_\theta}\right). \tag{6}$$

Using this, we can compute the *ex-ante* expected mean of the second period office-holder's ability,

which is given by:

$$\Phi\left(\frac{-\eta(a_1^\star - a^e)B}{\sqrt{\lambda}\sigma_\theta}\right)\overline{\theta}_I + \left(1 - \Phi\left(\frac{-\eta(a_1^\star - a^e)B}{\sqrt{\lambda}\sigma_\theta}\right)\right)\left(\overline{\theta}_I + \frac{\phi\left(\frac{-\eta(a_1^\star - a^e)B}{\sqrt{\lambda}\sigma_\theta}\right)}{1 - \Phi\left(\frac{-\eta(a_1^\star - a^e)B}{\sqrt{\lambda}\sigma_\theta}\right)}\sigma_\theta\sqrt{\lambda}\right)$$

With probability $\Phi\left(\frac{-\eta(a_1^\star - a^e)B}{\sqrt{\lambda}\sigma_\theta}\right)$ the incumbent does not clear the reelection threshold set by the voter and the challenger is elected. The challenger's ability is drawn from a Normal distribution with mean $\overline{\theta_I}$. With complementary probability $(1 - \Phi\left(\frac{-\eta(a_1^\star - a^e)B}{\sqrt{\lambda}\sigma_\theta}\right))$, the incumbent clears the reelection threshold set by the voter and is reelected. In that case, the reelected incumbent's expected ability's mean is $\overline{\theta}_I + \frac{\phi\left(\frac{-\eta(a_1^\star - a^e)B}{\sqrt{\lambda}\sigma_\theta}\right)}{1-\Phi\left(\frac{-\eta(a_1^\star - a^e)B}{\sqrt{\lambda}\sigma_\theta}\right)}\sigma_\theta\sqrt{\lambda}$, the mean of a truncated normal distribution truncated from below at the reelection threshold.

Changes in the value of a_1 have two countervailing effects on the *ex-ante* expected mean of the second-period office-holder's ability. First, as a_1 increases, there is a higher likelihood of reelecting an incumbent whose mean ability is strictly higher than the ability of an untried challenger. The second effect goes in the opposite direction: as a_1 increases, the voter's reelection threshold decreases: a politician can be reelected with a lower *ex-post* ability, since the voter rewards fairer actions. The total effect on the expected mean of the second period office-holder's ability is a combination of the two effects. The total effect depends on the relationship between $a_1^\star$ and a^e. When $a^e > a_1^\star$, the second period office-holder's expected ability is increasing in $a_1^\star$: this is because, when $a^e > a_1^\star$, the reelection threshold is above the prior mean and the Normal distribution is uni-modal and symmetric around its mean: in other words, the density of the standard normal at the cutoff is increasing in $a_1^\star$. The reverse holds when $a^e < a_1^\star$. Summarising, we have:

Proposition 3. *The second period's incumbent expected ability is increasing in the equilibrium effort of the first period's incumbent if* $a^e > a_1^\star$ *and decreasing otherwise.*

A useful benchmark to compare these results to is what would hold in a set-up without reciprocity concerns. In that case, the second period office-holder's expected ability would be independent from the equilibrium effort of the incumbent in the first period, since the voter would simply apply a purely prospective voting rule (i.e. he would reelect the incumbent if and only if his posterior belief on her ability were higher than his prior belief on the challenger's ability; see also Ashworth (2005)).

Incumbency advantage or disadvantage. An abundant empirical literature has shown how, in some contexts, incumbents can be systematically more likely to be reelected than to lose their reelection bids (Ansolabehere and Snyder, 2002; Lee, 2008; Kendall and Rekkas, 2012), or, on the contrary, be systematically less likely to be reelected than to win their reelection bids (Klašnja, 2015; Klašnja and Titiunik, 2017; Weaver, 2021). The theoretical literature has so far offered a number of explanations for

these contrasting results: they range from explanations centering on the role of the pool of politicians running for reelection or to challenge incumbents (Ashworth, 2005; Gordon et al., 2007; Ashworth and Bueno de Mesquita, 2008; Eggers, 2017), to explanations centering on the information that voters can infer from incumbents' actions in office (Caselli et al., 2014; Kartik and Van Weelden, 2019; Ashworth et al., 2019), and explanations that center around the varying levels of efforts required from politicians by voters to ensure their reelection over the course of their electoral careers (Acharya et al., 2024; Gieczewski and Li, 2024).

We can use our framework to shed some light on the fate of incumbents standing for reelection and the mechanisms underpinning incumbency advantages or disadvantages. Indeed, in our model, incumbency advantages or disadvantages can emerge in a setting where the voter is fully rational (indeed, the voter updates his beliefs about the incumbent's ability in a Bayesian way) but has reciprocity concerns. This mechanism is complementary to the aforementioned other mechanisms. Since the challenger and the incumbent are *ex-ante* identical, we can use a 50-50 chance of reelection as the baseline to measure the incumbency advantage in the model. Using the probabilities of reelection derived above, the following holds:

Proposition 4. 1. *If* $a_1^\star > a^e$, *there is an incumbency advantage.*

2. *If* $a_1^\star < a^e$, *there is an incumbency disadvantage.*

To understand this result, a useful benchmark is to consider what would happen with a voter devoid of reciprocity concerns. In that case, by the martingale property of beliefs, the *ex-ante* probability of reelection of an incumbent is equal to $\frac{1}{2}$, regardless of the level of effort exerted by the incumbent in the first period (Ashworth, 2005). The difference, and the result of Proposition 4, stem from the reciprocity concerns of the voter: depending on the level of effort that voters deem fair a^e and other primitives of the model (the value of holding office, the level of transparency in the political system...) the incumbent can be *ex-ante* more or less likely to be reelected: when the first period equilibrium action of the incumbent $a_1^\star$ is below the fair level a^e, her *ex-ante* probability of being reelected is lower than half, since she can be removed even if the voter's updated mean belief on her ability is above $\overline{\theta}_I$. By contrast, when the equilibrium first period action of the incumbent is above the fair level, her *ex-ante* probability of being reelected is higher than half, since she can be reelected even if the voter's updated mean belief on her ability is below $\overline{\theta}_I$

There are a number of implications and positive predictions that follow from Proposition 4. First, changes in the characteristics of the electoral system can affect the magnitude of the incumbency advantage (or disadvantage) of politicians without necessarily affecting the pool of politicians running in elections, simply by affecting the target behaviour of politicians, as derived in Proposition 2. Second, cultural norms can play a role in the emergence of incumbency advantages or disadvantages: societies with high levels of fairness expectations for politicians' effort in office will tend to have incumbency

disadvantages, because, since politicians will not reach these levels, competent politicians will be voted out. Conversely, societies with low fairness expectations of politicians' performance will tend to have incumbency advantages, as less competent politicians will retain office thanks to their performances exceeding fairness expectations.

3.3 Welfare Considerations

In standard two-period models of electoral accountability, the representative voter's welfare is usually some straightforward combination of the level of electoral control and electoral screening in equilibrium: in most cases, as electoral control and electoral screening increase, so does voter welfare. In a career concerns model, this translates into, on the one hand, a positive relationship between the incumbent's first period level of effort and the voter's welfare, through its effect on the first period level of public good provided; and, on the other hand, a positive relationship between voter welfare and the *ex-ante* expected ability of the second period office-holder, through its effect on the second period level of public good provided.

However, this relationship need not always hold. For instance, if the equilibrium level of action of the incumbent in the first period affects the information voters can extract about her ability, a higher level of control in the first period might mean lower welfare in the second period and, possibly, lower aggregate welfare (Ashworth et al., 2017). Here, too, this relationship need not hold: this is because in the second period, beyond the utility that the voter derives from the provision of the public good (which is an increasing function of the *ex-ante* expected ability of the re-elected incumbent), the voter derives some utility from his reciprocity concerns. Thus, the effect on screening described in Proposition 4 is counterbalanced by a reciprocity effect: when the voter re-elects incumbents whose ability is below the challenger's expected ability, he derives some utility from his rewarding of the incumbent's fair action (a similar reasoning holds for the sanctioning of an incumbent engaging in an unfair action). This highlights the normative challenge of evaluating institutions when voters' preferences are behavioural.

4 Conclusion

In this paper, we introduce reciprocity concerns in a model of political agency with career-concerns *à la* Ashworth (2005). Voters with reciprocity concerns are both forward-looking — that is, interested in selecting competent politicians — and retrospective — that is, have a preference for rewarding kind actions and punishing unkind actions. We show that taking reciprocity into account can overturn results from standard models and has important normative implications: indeed, in standard career-concerns models of electoral accountability, increasing voters' information on the incumbent's effort and reducing benefits from office reduces the level of electoral control. Our results show that when

voters have reciprocity concerns, increasing transparency and reducing benefits from office might increase the level of electoral control. We also show that reciprocity concerns affect the Bayesian competence hurdle that incumbents have to clear to be reelected, which can lead to an incumbency advantage when voters have low fairness expectations and an incumbency advantage when voters have high fairness expectations.

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Appendix A: Proofs

We begin by deriving a sufficient condition for the incumbent's maximisation problem to be concave and, thus, for the first-order conditions of the problem to characterise the optimal effort choice by the incumbent.

Lemma 1. *Suppose*

$$B \leqslant min\left\{\sqrt{\left(\frac{\sigma_\theta^2}{\eta\sqrt{\sigma_\theta^2+\sigma_\varepsilon^2}}\right)\cdot\sqrt{2\pi e}\cdot c''(0)}, (\sigma_\theta^2+\sigma_\varepsilon^2)\cdot\sqrt{2\pi e}\cdot c''(0)\right\}$$

Then, for any $\tau \in [0,1]$*, the incumbent's maximisation problem is strictly concave.*

Proof of Lemma 1

Claim: If $B \leqslant \sqrt{\left(\frac{\sigma_\theta^2}{\eta\sqrt{\sigma_\theta^2+\sigma_\varepsilon^2}}\right)\cdot\sqrt{2\pi e}\cdot c''(0)}$, then $F(a_1) = B\left(1-\Phi\left(\frac{-\eta(a_1-a^e)B}{\sqrt{\lambda}\sigma_\theta}\right)\right) - c(a_1)$ is strictly concave.

Proof: Recall that $\phi'(x) = -x\phi(x)$. Using this, $F(a_1)$'s second derivative is:

$$B^2\left(\frac{\eta\sqrt{\sigma_\theta^2+\sigma_\varepsilon^2}}{\sigma_\theta^2}\right)\alpha\phi(-\alpha) - c''(a_1),$$

where

$$\alpha = \frac{\eta(a_1-a^e)B}{\sqrt{\lambda}\sigma_\theta}.$$

Since $x\phi(x)$ is bounded between $-(2\pi e)^{-1/2}$ and $(2\pi e)^{-1/2}$ (Ashworth, 2005: 460) the upper bound for B in the claim implies that

$$B^2\left(\frac{\eta\sqrt{\sigma_\theta^2+\sigma_\varepsilon^2}}{\sigma_\theta^2}\right)\alpha\phi(-\alpha) < \left(\frac{\eta\sqrt{\sigma_\theta^2+\sigma_\varepsilon^2}}{\sigma_\theta^2}\right)\left(\frac{\sigma_\theta^2}{\eta\sqrt{\sigma_\theta^2+\sigma_\varepsilon^2}}\right)\sqrt{2\pi e}\frac{1}{\sqrt{2\pi e}}c''(0) = c''(0) \leqslant c''(a_1),$$

where the last inequality follows from $c'''(0) \geqslant 0$. Thus,

$$B^2\left(\frac{\eta\sqrt{\sigma_\theta^2+\sigma_\varepsilon^2}}{\sigma_\theta^2}\right)\alpha\phi(-\alpha) < c''(a_1),$$

and $F(a_1)$ is strictly concave.

Claim: If $B \leqslant (\sigma_\theta^2+\sigma_\varepsilon^2)\cdot\sqrt{2\pi e}\cdot c''(0)$, then $G(a_1) = B\left(1-\Phi\left(\frac{-\eta(a_1^\star-a^e)B-\lambda(a_1-a_1^\star)}{\sqrt{\lambda}\sigma_\theta}\right)\right) - c(a_1)$ is strictly concave.

Proof: Recall that $\phi'(x) = -x\phi(x)$. Using this, $G(a_1)$'s second derivative is:

$$\frac{B}{\sigma_\theta^2 + \sigma_\varepsilon^2}\alpha\phi(-\alpha) - c''(a_1),$$

where

$$\alpha = \frac{-\overline{\theta}_C + \overline{\theta}_I + \lambda(a_1 - a_1^\star)}{\sqrt{\lambda}\sigma_\theta}.$$

Since $x\phi(x)$ is bounded between $-(2\pi e)^{-1/2}$ and $(2\pi e)^{-1/2}$ (Ashworth, 2005: 460) the upper bound for B in the claim implies that

$$\frac{B}{\sigma_\theta^2 + \sigma_\varepsilon^2}\alpha\phi(-\alpha) < \frac{1}{\sigma_\theta^2 + \sigma_\varepsilon^2}(\sigma_\theta^2 + \sigma_\varepsilon^2)\sqrt{2\pi e}\frac{1}{\sqrt{2\pi e}}c''(0) = c''(0) \leqslant c''(a_1),$$

where the last inequality follows from $c'''(0) \geqslant 0$. Thus,

$$\frac{B}{\sigma_\theta^2 + \sigma_\varepsilon^2}\alpha\phi(-\alpha) < c''(a_1),$$

and $G(a_1)$ is strictly concave.

Since the sum of two concave functions is itself concave, it follows that if

$$B \leqslant \min\left\{\sqrt{\left(\frac{\sigma_\theta^2}{\eta\sqrt{\sigma_\theta^2 + \sigma_\varepsilon^2}}\right) \cdot \sqrt{2\pi e} \cdot c''(0)}, (\sigma_\theta^2 + \sigma_\varepsilon^2) \cdot \sqrt{2\pi e} \cdot c''(0)\right\},$$

the incumbent's maximisation problem is strictly concave for any $\tau \in [0, 1]$.

□

Proof of Proposition 1

Given the lack of reputational concerns of the second period office-holder, the re-election rule of the voter, and Lemma 1, the first-order condition of the objective function of the incumbent in the first period characterises the equilibrium first-period action $a_1^\star$ of the politician.

□

Proof of Proposition 2

We are interested in how changes in η and τ affect $a_1^\star$. Since the objective function is twice continuously differentiable and strictly concave, we can use the Implicit Function Theorem: when $a_1^\star > 0$, its derivative with respect to any parameter has the same sign as the derivative of the first-order condition characterising $a_1^\star$ with respect to that same parameter.

1. The derivative of the first-order condition characterised in Proposition 1 with respect to η is:

$$\phi\left(\frac{-\eta k B\sqrt{\sigma_\theta^2+\sigma_\varepsilon^2}}{\sigma_\theta^2}\right)\left[\tau\left(\frac{B^2\sqrt{\sigma_\theta^2+\sigma_\varepsilon^2}}{\sigma_\theta^2}\right)+(1-\tau)\left(\frac{-\eta k^2 B\sqrt{\sigma_\varepsilon^2+\sigma_\theta^2}}{\sigma_\theta^4}\right)\right]$$

Since $\phi(.)$ is strictly positive for all possible values, the derivative is positive if and only if

$$\begin{aligned}
\tau\left(\frac{B^2\sqrt{\sigma_\theta^2+\sigma_\varepsilon^2}}{\sigma_\theta^2}\right) &> (1-\tau)\left(\frac{\eta k^2 B\sqrt{\sigma_\varepsilon^2+\sigma_\theta^2}}{\sigma_\theta^4}\right)\\
\tau\left(\frac{B^2\sqrt{\sigma_\theta^2+\sigma_\varepsilon^2}}{\sigma_\theta^2}+\frac{\eta k^2 B\sqrt{\sigma_\varepsilon^2+\sigma_\theta^2}}{\sigma_\theta^4}\right) &> \frac{\eta k^2 B\sqrt{\sigma_\varepsilon^2+\sigma_\theta^2}}{\sigma_\theta^4}\\
\tau\left(\frac{B\sqrt{\sigma_\theta^2+\sigma_\varepsilon^2}(B\sigma_\theta^2+\eta k^2)}{\sigma_\theta^4}\right) &> \frac{\eta k^2 B\sqrt{\sigma_\varepsilon^2+\sigma_\theta^2}}{\sigma_\theta^4}\\
\tau &> \frac{\eta k^2}{B\sigma_\theta^2+\eta k^2}\in(0,1)
\end{aligned}$$

2. The derivative of the first-order condition characterised in Proposition 1 with respect to τ is:

$$\phi\left(\frac{-\eta(a-a^e)B\sqrt{\sigma_\theta^2+\sigma_\varepsilon^2}}{\sigma_\theta^2}\right)\left[\left(\frac{\eta B^2\sqrt{\sigma_\theta^2+\sigma_\varepsilon^2}}{\sigma_\theta^2}\right)-\left(\frac{B}{\sqrt{\sigma_\varepsilon^2+\sigma_\theta^2}}\right)\right]$$

Since $\phi(.)$ is strictly positive for all possible values, the derivative is positive if and only if:

$$\begin{aligned}
\left(\frac{\eta B^2\sqrt{\sigma_\theta^2+\sigma_\varepsilon^2}}{\sigma_\theta^2}\right)-\left(\frac{B}{\sqrt{\sigma_\varepsilon^2+\sigma_\theta^2}}\right) &\geqslant 0\\
\frac{\eta B^2\sqrt{\sigma_\theta^2+\sigma_\varepsilon^2}}{\sigma_\theta^2} &\geqslant \frac{B}{\sqrt{\sigma_\varepsilon^2+\sigma_\theta^2}}\\
\eta &\geqslant \frac{\lambda}{B}
\end{aligned}$$

Consider next the case of changes in B. We are interested in how changes in B affect $a_1^\star$ when $\tau\in\{0,1\}$. Let's first consider the case of $\tau=1$. In that case, the first-order condition characterising $a_1^\star$ boils down to:

$$\phi\left(\frac{-\eta(a_1^\star-a^e)B\sqrt{\sigma_\theta^2+\sigma_\varepsilon^2}}{\sigma_\theta^2}\right)\left(\frac{\eta B^2\sqrt{\sigma_\theta^2+\sigma_\varepsilon^2}}{\sigma_\theta^2}\right)-c'(a_1^\star)=0$$

Since it is twice continuously differentiable and strictly concave, we can use the Implicit Function

Theorem. Differentiating with respect to B yields:

$$\left(\frac{\eta k B\sqrt{\sigma_\epsilon^2+\sigma_\theta^2}}{\sigma_\theta^2}\right)\phi\left(\frac{-\eta k B\sqrt{\sigma_\epsilon^2+\sigma_\theta^2}}{\sigma_\theta^2}\right)\left(\frac{-k\eta\sqrt{\sigma_\epsilon^2+\sigma_\theta^2}}{\sigma_\theta^2}\right)+$$
$$+\phi\left(\frac{-\eta k B\sqrt{\sigma_\theta^2+\sigma_\epsilon^2}}{\sigma_\theta^2}\right)\left(\frac{2B\eta\sqrt{\sigma_\theta^2+\sigma_\epsilon^2}}{\sigma_\theta^2}\right)$$

where $k=(a_1^\star-a^e)$. The equation above can be rewritten as

$$\left[2-\eta\left(\frac{k^2\sqrt{\sigma_\epsilon^2+\sigma_\theta^2}}{\sigma_\theta^2}\right)\right]B\phi\left(\frac{-\eta k B\sqrt{\sigma_\epsilon^2+\sigma_\theta^2}}{\sigma_\theta^2}\right)\left(\frac{\eta\sqrt{\sigma_\epsilon^2+\sigma_\theta^2}}{\sigma_\theta^2}\right)$$

This equation is positive if and only if:

$$\eta\left(\frac{k^2\sqrt{\sigma_\epsilon^2+\sigma_\theta^2}}{\sigma_\theta^2}\right)\leqslant 2$$
$$\eta\leqslant\frac{2\sigma_\theta^2}{(a_1^\star-a^e)^2\sqrt{\sigma_\epsilon^2+\sigma_\theta^2}}$$

Consider the case of $\tau=0$. In that case, the first-order condition characterising $a_1^\star$ boils down to:

$$\phi\left(\frac{-\eta(a_1^\star-a^e)B\sqrt{\sigma_\epsilon^2+\sigma_\theta^2}}{\sigma_\theta^2}\right)\left(\frac{B}{\sqrt{\sigma_\epsilon^2+\sigma_\theta^2}}\right)-c'(a_1^\star)=0$$

Since it is twice continuously differentiable and strictly concave, we can use the Implicit Function Theorem. Differentiating with respect to B yields:

$$\left(\frac{\eta(a_1^\star-a^e)B\sqrt{\sigma_\epsilon^2+\sigma_\theta^2}}{\sigma_\theta^2}\right)\phi\left(\frac{-\eta(a_1^\star-a^e)B\sqrt{\sigma_\epsilon^2+\sigma_\theta^2}}{\sigma_\theta^2}\right)\left(\frac{-\eta(a_1^\star-a^e)\sqrt{\sigma_\epsilon^2+\sigma_\theta^2}}{\sigma_\theta^2}\right)\left(\frac{B}{\sqrt{\sigma_\epsilon^2+\sigma_\theta^2}}\right)+$$
$$+\phi\left(\frac{-\eta(a_1^\star-a^e)B\sqrt{\sigma_\epsilon^2+\sigma_\theta^2}}{\sigma_\theta^2}\right)\left(\frac{1}{\sqrt{\sigma_\epsilon^2+\sigma_\theta^2}}\right)$$

The first term is always negative while the second term is always positive. When does the first term

dominates the second one? The equation above can be rewritten as

$$\phi\left(\frac{-\eta k B\sqrt{\sigma_\epsilon^2+\sigma_\theta^2}}{\sigma_\theta^2}\right)\left[(-k^2)\left(\frac{\eta^2B^2\sqrt{\sigma_\epsilon^2+\sigma_\theta^2}}{\sigma_\theta^4}\right)+\left(\frac{1}{\sqrt{\sigma_\epsilon^2+\sigma_\theta^2}}\right)\right]$$
$$\phi\left(\frac{-\eta k B\sqrt{\sigma_\epsilon^2+\sigma_\theta^2}}{\sigma_\theta^2}\right)\left[\frac{\sigma_\theta^4-k^2\eta^2B^2\left(\sigma_\epsilon^2+\sigma_\theta^2\right)}{\sigma_\theta^4\sqrt{\sigma_\epsilon^2+\sigma_\theta^2}}\right]$$

which is positive if and only if

$$k^2\eta^2B^2\left(\sigma_\epsilon^2+\sigma_\theta^2\right)\leqslant\sigma_\theta^4$$
$$\eta\leqslant\frac{\sigma_\theta^2}{|k|B\sqrt{\sigma_\epsilon^2+\sigma_\theta^2}}$$

where $k=(a_1^\star-a^e)$.

□

Proof of Proposition 3

Recall that the *ex-ante* expected mean of the second period office-holder's ability is given by:

$$\Phi\left(\frac{-\eta(a_1^\star-a^e)B}{\sqrt{\lambda}\sigma_\theta}\right)\bar{\theta}_I+\left(1-\Phi\left(\frac{-\eta(a_1^\star-a^e)B}{\sqrt{\lambda}\sigma_\theta}\right)\right)\left(\bar{\theta}_I+\frac{\phi\left(\frac{-\eta(a_1^\star-a^e)B}{\sqrt{\lambda}\sigma_\theta}\right)}{1-\Phi\left(\frac{-\eta(a_1^\star-a^e)B}{\sqrt{\lambda}\sigma_\theta}\right)}\sigma_\theta\sqrt{\lambda}\right)$$

This can be simplified as

$$\bar{\theta}_I+\phi\left(\frac{-\eta(a_1^\star-a^e)B}{\sqrt{\lambda}\sigma_\theta}\right)\sigma_\theta\sqrt{\lambda}$$

Differentiating this expression with respect to $a_1^\star$ yields

$$\left(\frac{-\eta B}{\sqrt{\lambda}\sigma_\theta}\right)\left(\frac{\eta(a_1^\star-a^e)B}{\sqrt{\lambda}\sigma_\theta}\right)\phi\left(\frac{-\eta(a_1^\star-a^e)B}{\sqrt{\lambda}\sigma_\theta}\right)\sigma_\theta\sqrt{\lambda}$$

This equation is positive if and only if $(a_1^\star-a^e)$ is negative.

□

Proof of Proposition 4

Recall that the equilibrium probability of re-election of the incumbent is equal to:

$$1-\Phi\left(\frac{-\eta(a_1^\star-a^e)B}{\sqrt{\lambda}\sigma_\theta}\right).$$

Since $\Phi(0) = \frac{1}{2}$, it straightforwardly follows that if $a^e > a_1^\star$, the probability of re-election of the incumbent is strictly greater than $\frac{1}{2}$, an incumbency advantage. Similarly, if $a^e < a_1^\star$, the probability of re-election of the incumbent is strictly lower than $\frac{1}{2}$, an incumbency disadvantage.

□