# 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, i.e., seek to select competent politicians; and retrospective, i.e., 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, as increasing transparency about the incumbent's effort improves electoral control if and only if voters have sufficiently strong 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

**JEL Codes:** C72, D72, D82, D91, H11

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# 1 Introduction

Voters' task at the ballot box is complex. With a single ballot, they often have to decide whether to keep an incumbent office-holder, or vote her out and elect a challenger as a replacement. Voters' re-election decision thus determines who will exert political power in the future, a choice which has two important dimensions. First, it determines what kind of politician will be in charge in the future: voters can engage in *prospective* voting, to select more competent politicians, or politicians with more aligned preferences. Second, it determines which politicians will get to enjoy being in office in the future: re-election decisions are the tool of voters to engage in *retrospective* voting, to reward fair actions and punish unfair ones. In recent decades, the formal theory literature has mostly focused on prospective voting. The idea, following Fearon (1999), is that voters' lack of commitment power in voting strategies can lead their voting behaviour to focus on selecting good types, rather than sanctioning poor performances. However, we observe from the empirical literature, both in experimental and in observational studies, a strong element of retrospective voting (Landa, 2010; Finan and Schechter, 2012; Woon, 2012; Landa and Duell, 2015; Konrad and Sherif, 2019; Leight et al., 2020): voters reward fair actions and punish unfair ones, even when there is scope for prospective voting.

Our goal in this project is to get a better empirical and theoretical understanding of the importance of reciprocity for political behaviour. To do so, we first report the results of a survey on a representative sample of Italian citizens that measures reciprocity concerns and other political traits and behaviours. Our results show that reciprocity matters for a wide range of political preferences and behaviour. Building on this evidence, we then offer a simple formal framework able to capture *simultaneously* the prospective and retrospective aspects of voters' behaviour. The key idea in our model is that voters have *reciprocity concerns*, a form of *other-regarding* preferences (Fehr and Schmidt, 2006). 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 more transparency is beneficial only if voters have sufficiently high reciprocity concerns. On electoral screening, we show that reciprocity concerns affect the Bayesian competence hurdle that incumbents have to clear to be reelected: when they act in a fairer way, less competent politicians can be reelected. An important implication of this mechanism is that incumbency advantages or disadvantages can emerge, depending on what is deemed 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, 2024*a*,*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, Lizzeri and Yariv, 2015; Levy and Razin, 2015; Ortoleva and Snowberg, 2015; Diermeier and Li, 2017; Glaeser and Ponzetto, 2017; Lockwood, 2017; Matějka and Tabellini, 2021; Little, Schnakenberg and Turner, 2022; 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, Drazen and Ozbay, 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, Drazen and Ozbay (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 Motivating Evidence

Does reciprocity matter for political behavior? To answer this question, we present motivating evidence from a survey on representative sample of Italian citizens. An established polling firm (SWG) administered two waves of a longitudinal survey, spanning a highly anticipated national election: Wave 1 took place in February 2018 and Wave 2 took place in May 2018, with Italian legislative elections held on March 4, 2018. In each wave, we used non-incentivized but *experimentally validated* questions to measure an array of economic preferences (risk aversion, loss aversion, ambiguity aversion, patience), social preferences (unconditional altruism, trust, positive reciprocity, negative reciprocity), and cognitive abilities (cognitive reflection, overestimation, overplacement, overprecision).

We measured positive and negative reciprocity using 5 survey items from Falk et al. 2018:

1. (Positive 1) Imagine you got lost in an unfamiliar area and that a stranger — when asked for directions — offers to take you to your destination. Which out of six presents (worth between 5 and 30 euros) would you give to a stranger as a "thank you"?
2. (Positive 2) When someone does me a favor I am willing to return it.
3. (Negative 1) I am willing to punish someone who treats me unfairly, even at a cost.
4. (Negative 2) I am willing to punish someone who treats others unfairly, even at at cost.
5. (Negative 3) If treated very unjustly, I will take revenge at the first occasion, even at a cost.

In addition, we asked questions on socio-demographics, political preferences and political behavior. We use a battery of qualitative questions and self-assessments to measure political ideology on a liberal-conservative scale; likelihood to abstain in a future election; political party a subject feels closest to; and opinions on the European Union, the Euro and immigration. Appendix B provides additional details on the sample, the data collection, and the survey items.

Table X reports the results. We find that the measured behavioral characteristics are strongly correlated with political preferences and behavior, even when controlling for socio-demographics. Reciprocity concerns are particularly important: the support for populist parties at either end of the ideological spectrum (Five Star Movement and The League) as well as the belief that current flows of

| | (1) Conservative | (2) Populism | (3) No EU | (4) No Euro | (5) No Immigration |
|---|---|---|---|---|---|
| Risk Aversion | -0.73 | -0.01 | -0.00 | -0.01 | 0.29 |
| | (0.51) | (0.09) | (0.13) | (0.14) | (0.29) |
| Loss Aversion | -1.41*** | 0.03 | -0.21** | -0.13 | -0.74*** |
| | (0.37) | (0.06) | (0.10) | (0.10) | (0.22) |
| Ambiguity Aversion | 0.10 | 0.14 | 0.49*** | 0.14 | 1.33*** |
| | (0.64) | (0.12) | (0.19) | (0.19) | (0.39) |
| Patience | -0.56* | -0.12** | -0.31*** | -0.45*** | -0.56*** |
| | (0.31) | (0.05) | (0.08) | (0.09) | (0.18) |
| Positive Reciprocity | 0.11 | 0.19** | -0.12 | -0.09 | 0.54** |
| | (0.45) | (0.08) | (0.12) | (0.13) | (0.26) |
| Negative Reciprocity | 1.22*** | 0.33*** | 0.44*** | 0.48*** | 0.51** |
| | (0.47) | (0.07) | (0.11) | (0.12) | (0.26) |
| Altruism | -3.74*** | -0.39*** | -0.42** | -0.37* | -1.47*** |
| | (0.68) | (0.10) | (0.18) | (0.19) | (0.41) |
| Trust | -0.43 | 0.00 | -0.16* | -0.13 | -0.59*** |
| | (0.34) | (0.06) | (0.09) | (0.10) | (0.19) |
| Overconfidence | 0.11 | 0.02 | 0.01 | -0.01 | -0.17** |
| | (0.12) | (0.02) | (0.03) | (0.04) | (0.08) |
| Cognitive Reflection | -0.16 | 0.00 | -0.13** | -0.14** | -0.29** |
| | (0.24) | (0.04) | (0.06) | (0.07) | (0.14) |
| N | 1784 | 1946 | 1921 | 1925 | 1947 |
| $R^2$ | 0.0862 | 0.0541 | 0.1274 | 0.1329 | 0.1033 |

immigration are excessive are strongly correlated with both negative and positive reciprocity; holding a more conservative worldview and the belief that belonging to the European Union or the Euro are bad for the country are strongly correlated with negative reciprocity. This suggests that reciprocity concerns are fundamental determinants of voters' political preferences and behavior and, thus, that it is a worthwhile endeavour to incorporate them in formal models of politics.

## 3 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 $\theta_t$ 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, $\eta$ 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 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, Ferraz and Finan, 2018). In our model, increasing transparency means increasing the likelihood

[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.

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, Friedman and Gjerstad (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 ($\eta$) 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, Friedman and Gjerstad 2007).

## 4 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:

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

It is worth pausing here to compare this condition with the one that would hold without

[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.

reciprocity concerns, which would be the case if $\eta$ 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 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 $\tau$) 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]

[3] See DeGroot (1970).

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

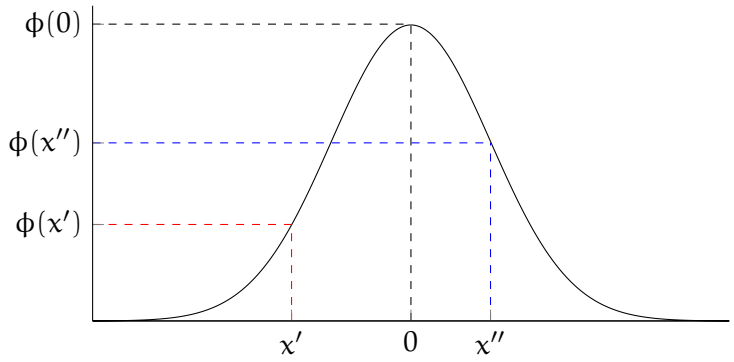
$$1 - \Phi\left(\frac{\overline{\theta} - \eta(a_1^\star - a^e)B - \overline{\theta} - \lambda(a_1 - a_1^\star)}{\sqrt{\lambda}\sigma_\theta}\right),$$

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 $\overline{\theta}$ 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 $\eta$ 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 $\theta$, 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 $\eta$. On the one hand, as $\eta$ grows, the effect of effort in decreasing the re-election threshold grows. On the other hand, as $\eta$ 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 $\theta$ 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 $\eta$, then decreases.

**General Case with Uncertainty over Monitoring.** Putting these two elements together, we have that, in period 1, the incumbent chooses 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 equilib-

rium 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 $\overline{\theta}-\eta(a_1-a^e)B$.*

### 4.1 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, $\eta$, if and only if $\tau$ is sufficiently large.*
2. *The incumbent's equilibrium first period level of effort is increasing in the voter's degree of monitoring, $\tau$, if and only if $\eta$ 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 $\eta$ 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.

### 4.2 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, Huber and Landa, 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, Bueno De Mesquita and Friedenberg, 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, Lipnowski and Ramos, 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* $a^e > a_1^\star$*, then there is an incumbency advantage.*
2. *If* $a^e < a_1^\star$*, then 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.

### 4.3 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, Bueno de Mesquita and Friedenberg, 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. This implies that 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).

## 5 Conclusion

In this paper, we provide evidence on the relevance of reciprocity for political behavior, with a survey on a representative sample of Italian citizens. Building on this evidence and other work showing how voters can reward or punish politicians for their actions depending on whether they are seen as fair or unfair, 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 $\eta$ and $\tau$ 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 $\eta$ 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 $\tau$ 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:

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

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

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

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.

□

## Appendix B: Additional Details on Motivating Evidence

**Sample and Data Collection.** The sample is composed of Italian citizen and resident who were 18 years old or older at the time of the survey. Participants were recruited through the database of volunteers maintained by an established polling firm (SWG): 1,128 subjects completed the survey in Wave 1, which took place in February 2018, and were invited to participate to Wave 2, which took place three months later, in May 2018; 1,005 participants completed both surveys. Attrition between the two waves is uncorrelated with socio-demographics. The final sample is representative of the general population of Italians for age, gender and location of residence: 50% of respondents are female; the mean age is 48 (with 22% of respondents older than 65); 45% of participants live in Northern Italy, 20% in the Center, and 35% in the South or in the Islands. At the same time, while the sample remains more representative than samples of college students or convenience samples from Internet panels (e.g., Amazon Mechanical Turk), participants are more likely than the general population to have a college degree (35% in the sample versus 16% in the general population) and less likely to be unemployed (6% in the sample versus 10% in the general population). The average duration of each survey was 20 minutes and subjects who completed a survey were rewarded with a flat participation fee of 4 (plus a bonus for completing both surveys).

**Survey Items.** We use a combination of quantitative and qualitative questions to measure preferences towards uncertainty (4 measures), patience (2 measures), social preferences (8 measures), and cognitive abilities (5 measures). The questionnaire builds on the Preference Survey Module (PSM), developed by Falk, Becker, Dohmen, Huffman and Sunde (2016). Survey items in the PSM are selected through an ex-ante experimental validation procedure: undergraduate students at the University of Bonn participated in financially incentivized experimental tasks designed to elicit the desired preference parameters with state-of-the-art methods from laboratory economics; two weeks later, the same subjects answered a large batteries of survey questions designed to measure the same preferences; those survey items that jointly performed best in explaining observed behavior in experiments were selected for the PSM. As an example, consider risk aversion. In the laboratory experiment, risk aversion was measured with a financially incentivized Multiple Price List (MPL), which involved a sequence of binary choices between a fixed lottery (a 50-50 chance of 1000 points, corresponding to 8, or 0 points) and varying safe payments to establish an individual's certainty equivalent for the lottery (among 21 possible values in steps of 50 points from 0 to 1000). The validation procedure selected two types of survey items: Risk Aversion Qualitative, a self-assessment on an 11-points scale ('Are you generally willing to take risks or try to avoid taking risks?'); and Risk Aversion Quantitative, an hypothetical version of the MPL where the fixed lottery involves the hypothetical chance of winning 300.[4]

[4]As reported in Falk, Becker, Dohmen, Huffman and Sunde (2016), the Spearman correlations between the two survey items and behavior in the incentivized MPL were 0.3524 for Risk Aversion Qualitative and 0.4095 for Risk Aversion Quantitative. When estimating an OLS regression with behavior in the incentivized MPL as dependent variable, the coefficients were 0.2034 for Risk Aversion Qualitative and 0.2758 for Risk Aversion Quantitative.

| Measure | Item Description |
|---|---|
| *Preferences for Uncertainty* | |
| Risk Aversion Qualitative | Willingness to Take Risks (Self-Assessment) |
| Risk Aversion Quantitative | Lottery Choice Sequence (Staircase Method, 5 Questions) |
| Loss Aversion | Lottery Choice Sequence (Staircase Method, 5 Questions) |
| Ambiguity Aversion | Lottery Choice Sequence (Staircase Method, 5 Questions) |
| *Preferences for Time* | |
| Patience Qualitative | Willingness to Wait for Larger Reward (Self-Assessment) |
| Patience Quantitative | Inter-Temporal Choice Sequence (Staircase Method, 5 Questions) |
| *Social Preferences* | |
| Altruism Quantitative | Donation Decision |
| Altruism Qualitative | Willingness to Give to Good Causes (Self-Assessment) |
| Positive Reciprocity Quantitative | Gift in Exchange for Help |
| Positive Reciprocity Qualitative | Willingness to Return a Favor (Self-Assessment) |
| Negative Reciprocity Qualitative 1 | Willingness to Punish Unfairness to Self (Self-Assessment) |
| Negative Reciprocity Qualitative 2 | Willingness to Punish Unfairness to Other (Self-Assessment) |
| Negative Reciprocity Qualitative 3 | Willingness to Take Revenge (Self-Assessment) |
| Trust | People Have Only the Best Intentions (Self-Assessment) |
| *Cognitive Abilities* | |
| Cognitive Reflection/Impulsivity | Cognitive Reflection Test (3 Questions) |
| Overestimation | Perceived vs Actual Absolute Performance in CRT |
| Overprecision Qualitative | Confidence in Answer to Factual Question |
| Overprecision Quantitative | Confidence in Answer to Factual Question (Probability) |
| Overplacement | Perceived vs Actual Relative Performance in Factual Question |

Table 1: Preferences and Cognitive Abilities, Summary of Measures and How Measured. Notes: See Appendix A for the wording of the questions.

Falk, Becker, Dohmen, Enke, Huffman and Sunde (2018) investigate the global variation in preferences and their predictive power for economic outcomes using a *streamlined* version of the Preference Survey Module. The streamlined version replaces some of the non-incentivized experimental games from the original version with qualitative questions which predict less accurately behavior in incentivized laboratory experiments but, at the same time, reduce the duration and the complexity of the survey. Our survey uses the streamlined Preference Survey Module. Moreover, in contrast with Falk, Becker, Dohmen, Enke, Huffman and Sunde (2018), it measures additional preferences over uncertainty (loss aversion and ambiguity aversion) and some cognitive abilities (cognitive reflection, and the three facets of overconfidence); it collects data on political preferences and behavior; and it has a (minimally) longitudinal structure, interviewing the same sample both before and after a national election.