Corrupt Voting: Information and Electoral Accountability*

David K. Levine[†], Federico Weinschelbaum[‡], and Felipe Zurita[§]

This version: July 27, 2026

Abstract

Does the ability of the electorate to replace corrupt politicians deter corruption? This paper analyzes the limitations of electoral accountability. We show that if the electorate cannot commit elections offer no defense against corruption. However, when a commitment technology exists, the electorate can strategically choose to remove only those caught taking bribes. This incentivizes corrupt politicians to pass up bribe opportunities for which the value is small. We then examine how improved monitoring can impact outcomes and show that increasing information quality does not always benefit the electorate.

1 Introduction

Does the ability of the electorate to replace corrupt politicians deter corruption? We know from a variety of theoretical and empirical work that in a political competition

*We are grateful to Benjamin Blumenthal, Marco Celentani, Boris Ginzburg, Ángel Hernando, Ramon Marimon, Catherine Reyes-Housholder, Johannes Schneider, and Pablo Zurita; seminar participants at Universidad Carlos III de Madrid, Spain; Universidad de San Andrés, Argentina; Universidad del CEMA, Argentina; the International Economic Association World Congress, Serbia; the Royal Economic Society Annual Conference, UK; the European Meeting on Game Theory, Italy; and the Reunión Anual de la Sociedad de Economía de Chile; as well as the ADEPU working group. Levine is grateful to the Leverhulme Trust for financial support, and Zurita is grateful to Royal Holloway, University of London for its hospitality.

†Department of Economics, Royal Holloway University of London, United Kingdom. Email: david@dklevine.com.

‡*Universidad Torcuato di Tella and CONICET*, Argentina. Email: fweinschelbaum@utdt.edu.

§*Pontificia Universidad Católica de Chile*, Chile. Email: fzurita@uc.cl.

between groups larger groups have an advantage in elections and smaller groups an advantage in lobbying (Leech 2010). Naturally small groups then seek to undermine electoral results by lobbying and bribing politicians once in office. In the worst case democracy is meaningless and small lobbying groups run the show, as Gilens and Page (2014) suggests might be the case in the U.S. There are, however, two things, that give some hope: first, the ability to remove corrupt politicians can improve incentives for politicians to act in the voter's interest. Second, voters have an incentive to elect idealists who are hard to bribe.

We explore these issues in a simple dynamic model of a majority party - the electorate - modeled as a single rational voter who chooses a politician. Politicians can be of two types: honest politicians who always act in the electorate's best interest (idealists) and corruptible politicians. We allow for the possibility that the politicians' type changes from one period to the next. In particular idealism is not *ex ante* observable, and deteriorates over time so that politicians who came to office with the best of intentions may become corrupt. Historical precedents suggest that initial idealism is a poor predictor of long-term political behavior. For instance, Yoweri Museveni assumed the Ugandan presidency in 1986 explicitly condemning leaders who overstay in power (Museveni 2000). However, as his tenure lengthened, his administration systematically dismantled term limits (Mwenda 2007) and increasingly relied on state-sanctioned corruption and patronage networks to maintain electoral dominance (Tangri and Mwenda 2006).

In our formal model there is a repeated game. We make the key assumption that following an election the electorate learns whether or not the politician in office is corruptible. Hence, in the next election, politicians can be fired based on whether or not they are corruptible. Our question is whether, prior to a new election, can corruptible politicians be induced not to take bribes? Specifically, during their term in office a politician has a corruption opportunity: this is an action against the electorate's interest but results in the politician receiving a bribe. It is characterized by the size of the bribe and the chances of being caught. After the bribe-taking decision is (or is not) observed an election takes place. Replacing the incumbent is costly to the electorate though. The key point is that when the election takes place the electorate knows whether or not the politician is corruptible but has only observed the bribe with some probability. Never-the-less, since the bribe is sometimes observed, they may impose discipline on a (known) corruptible politician by replacing them if a bribe is observed but not otherwise.

Following the election if the politician is replaced a new office holder is randomly drawn. If the politician remains in office and is honest there is a chance they become corruptible. We assume, however, that this probability is small enough that it is better to keep an honest politician than to drawn anew.

The electorate rationally balances out the chances of a replacement politician being honest with saving itself the cost of replacement while risking a corruption event. But they also understand the effect of their strategy on future politicians' behavior. We ask: Under what conditions may we expect corruptible politicians to behave honestly by passing up bribing opportunities? The answer is twofold. Without commitment never. This is because the electorate's current action does not influence the politician's behavior, hence the electorate does not have any incentive to deviate from her static best response. In contrast, if the electorate can commit to pure strategies then the corruptible politician could prefer to pass up small bribes in order to be in office when a large one arrives. Depending on parameter values, we find that in equilibrium the corruptible politicians either get fired always, never, or whenever they are caught taking a bribe.

In our analysis, just as in Myerson (2006), incumbent replacement costs play a key role. These costs encompass the transition frictions associated with a newly elected government, including necessary periods of learning and adaptation. In a related vein, Gersbach, Muller, and Tejada (2019) highlight the explicit costs of the policy reversals that frequenlty followadministrative changes. Incorporating the broader interpretations of these costs detailed by Myerson (2006), we show that the presence of such replacement frictions fosters political stability, which ultimately diminishes the attractiveness of electoral accountability.

In the pure commitment equilibrium, the global level of corruption may also influence the electorate's behavior. The more likely it is that a newly elected politician is corruptible, the more likely it is that observed acts of corruption will be punished. Within the commitment framework, we also study the effect of improving information technology. We find that under pure commitment, the electorate may actually prefer inferior information technology. This is because improvements in public auditing can trigger excessive replacements; if the electorate could commit to mixed strategies, it might avoid the implied costs by randomly forgiving certain acts of corruption—effectively mimicking less precise information technology. Thus, when allowing for commitment to mixed strategies, electorate preferences are not monotonically decreasing in information technology.

Under the pure commitment equilibrium, the baseline prevalence of corruption directly shapes voter behavior: a higher prior probability of replacing an incumbent with a corrupt challenger increases the strictness with which observed corruption is punished. Extending our framework to variations in auditing precision, we demonstrate that voters under pure commitment may strictly prefer coarser information technologies. The intuition is that greater transparency can trigger inefficiently high electoral turnover. By contrast, if the electorate could commit to mixed strategies, it could avoid these turnover costs by probabilistically pardoning certain infractions—a mechanism that functionally replicates a less precise information environment. Therefore, electorate welfare may exhibit a non-monotonic relationship with information precision if commitment to only pure strategies is feasible.

Literature Review

There is an extensive literature on dynamic political agency that envisions the electorate as delegating authority to political officers. This originates with Barro (1973) and Ferejohn (1986), and has been comprehensively surveyed by Ashworth (2012) and Duggan and Martinelli (2017). This strand of research is primarily concerned with the behavior of politicians once in office. It emphasizes the conflict of interest between the common good—represented by the electorate's welfare—and the objectives of incumbents. This frames governance as an agency problem.

In addition to performance in office, some research examines issues of political selection, namely the recruitment and retention of competent policymakers. Central to this literature is the question of whether incentive schemes exist that can induce politicians to act in the electorate's best interest, and how such mechanisms affect collective welfare. Politicians' actions are modeled as unobservable effort. This is only imperfectly correlated with observable outcomes such as economic performance—a variable that empirical studies suggest voters weigh heavily. In this setting, the electorate's sole strategic instrument is a retention rule, which may depend either on contemporaneous outcomes and calendar time (e.g., Ferejohn 1986; Gieczewski and Li 2024) or on the full history of performance over the incumbent's tenure (e.g., Acharya, Lipnowski, and Ramos 2025).

Rather than focusing on politicians' overall performance, we concentrate specifically on corruption. Corruption can be regarded as one dimension of performance. Consequently the models discussed above can be interpreted as encompassing episodes of corruption only in a stylized manner. In particular, corruption exhibits particular features that warrant explicit treatment. A key distinction lies in observability: whereas in standard agency models it is uncommon for a player to be unaware of her own payoff, we think in the corruption context this is natural. Uncovering the scope of a corruption case often requires years of investigation, and the eventual findings, even if conclusive, are typically filtered through complex legal or technical reporting that most voters will only partially grasp, if at all. Moreover, the electorate generally lacks familiarity with the technical workings of government institutions, such as laws, accounting procedures, and administrative responsibilities. For this reason, we model the electorate's current payoff as observable to the incumbent–meaning that the politician understands what she is doing and is aware of its consequences–but unobservable to the electorate. This informational asymmetry rules out the type of retention-based mechanisms examined in the canonical models cited above. The politicians actions are imperfectly observed, however, as we assume that there is an (imperfect) mechanism to uncover corruption episodes–perhaps a composite of free press, congressional oversight, and courts.

Another distinction is voters memory. We assume that they may condition on whether or not corruption has been currently exposed, and on the current incumbent's type, and nothing else. This is encapsulated on our restriction to stationary Markov strategies. There is a literature that characterizes voters as having short term memories (Achen and Bartels 2016) in the sense of voting behavior being sensitive to short run economic growth rather than growth over the whole term. Healy and Lenz (2014) attribute this to cognitive limitations. Our reading of this is that although we are modeling the electorate as a rational agent, it represents a multitude that might not have the collective cognitive power to implement sophisticated behavior based on unlimited memory that a standard folk theorem like strategy would require.

In our analysis, the electorate's commitment capabilities come to the forefront. In the agency models discussed so far, some form of commitment is implicitly assumed when focusing on the electorate-preferred equilibrium. On the other hand, Banks and Sundaram (1998) study an equilibrium in which the electorate uses an incentive strategy without commitment. They achieve this by mixing moral hazard with adverse selection. As the incumbent type is unknown in their setting, her performance is informative of her type. Hence, the provision of incentives to the politician is a byproduct of the electorate's aim of selecting better politicians. This is unlikely to produce electorate-best incentives though. Indeed, Besley and Smart (2007) delve into the trade off between incentives and selection that the electorate faces when it is able to choose information quality. Anesi and Buisseret (2022) establish conditions under which an equilibrium yielding electorate payoffs arbitrarily close to the first best is achievable in a similar model as long as the players are patient enough. This result is obtained through a retrospective voting rule that conditions not only on the current incumbent's performance, but also on the historical performance and campaign behavior of all candidates. A key feature of their framework is that candidates who lose an election today can run and be elected again in the future. Kartik, Lipnowski, and Pei (2026) also focus on conditions for achieving the first best in an equilibrium in which the electorate conditions on the incumbent's full record.

The literature on electoral accountability has long recognized the threat of removal as the primary tool for disciplining politicians. However, Myerson (2006) famously showed that this tool is blunted when high leadership transition costs lead to equilibria where corruption is tolerated. Recent important contributions have further explored how this process is shaped by long-run reputation (Kartik, Lipnowski, and Pei 2026) and informational heterogeneity among the electorate (Blumenthal 2026). We view our work as complementary to these studies: while Kartik, Lipnowski, and Pei (2026) provide a benchmark for accountability in stable, developed institutional settings, and Blumenthal (2026) examines the distributive effects of information, our model captures the dynamics more prevalent in developing regions, such as Latin America. By allowing for the natural decay of political idealism—rather than assuming fixed types—we show that the selection and informational mechanisms identified in previous literature are often insufficient to guarantee long-run honesty in environments with weaker institutional safeguards. Furthermore, we demonstrate that when Myerson's transition costs interact with a fundamental lack of voter commitment, corruption becomes an inevitable "no-defense" trap. In this context, even perfect information or potential honest successors fail to protect the electorate, making corruption the unique equilibrium outcome for societies facing structural political instability.

An important result of our work is that, in our model, the electorate may prefer a less advanced information technology. This finding challenges standard intuition and runs counter to the "informativeness principle" proposed by Holmström (1979) and Shavell (1979), which suggests that more information is never detrimental to the principal. However, the literature identifies several exceptions to this principle. For instance, greater transparency can harm the principal if the information is also accessible to a third party who could use it against the electorate (Prat 2005)—an effect absent in our framework, as we assume no third-party agents. Alternatively, revealing more information might misalign the agent's interests with those of the principal. Dewatripont, Jewitt, and Tirole (1999) give examples where the agent works harder when the principal receives noisy signals rather than observing her actual performance. Similarly, Holmström (1999) points out that better information about an agent's type reduces their incentive to exert effort to establish their reputation (Ashworth, Mesquita, and Friedenberg 2017 explore a related tension between selection and incentives). In a career concern model, Prat (2005) analyzes how transparency causes agents to ignore valuable private information, while Crémer (1995) suggests that in settings with renegotiation, high-quality signals can undermine the principal's commitment not to renegotiate.

This negative effect of transparency is echoed in other strategic political contexts. Fox (2007) demonstrates that policy transparency can induce perverse reputational concerns, prompting incumbents to shy away from optimal policies to avoid signaling an ideological bias to an uninformed public. In a similar vein, Ashworth and Bueno de Mesquita (2014) identify a trade-off where better information induces extremists to mimic moderates to secure reelection; while this improves short-term policy, it degrades long-term voter welfare by preventing the electorate from screening out 'bad' types. Furthermore, Blumenthal (2023) argues that perfect monitoring can be suboptimal when interest groups provide implementation subsidies, as it might destroy equilibria where politicians implement 'shady' but beneficial projects to avoid total policy inaction.

In contrast to these mechanisms, our model assumes the agent's type is known, and revealing more information about her actions strictly improves the alignment of her incentives with the electorate's interests. To the best of our knowledge, the mechanism driving our result remains unexplored in the literature: improvements in public auditing do not merely involve better technology; they also increase the likelihood that the electorate will replace politicians more frequently than is socially optimal. When this 'replacement effect' outweighs the direct incentive benefits, improved auditing becomes detrimental due to the high transition costs associated with government turnover.

On the empirical side, there are also papers that study the relationship between information and accountability. Ferraz and Finan (2008) demonstrate that audit reports significantly impact incumbents' electoral performance. In a later study, Ferraz and

Finan (2011) find that mayors with reelection incentives tend to be less corrupt, and that the likelihood of corruption detection strengthens the effect of accountability. On the other hand, Boas, Hidalgo, and Melo (2019) explain that in real life, accountability does not have the same impact as it does in controlled experiments. They highlight that corruption accusations often lack specifics, that the campaign context limits the effectiveness of information, and that local factors such as attitudes toward political dynasties influence voter behavior. In their study of Brazil, they observed that voters may punish corrupt mayors in hypothetical scenarios, but not in real elections, due to concerns over local issues like employment and healthcare services. Hence, the evidence of electoral accountability being used as a tool against corruption seems mixed.

2 The model

We consider two versions of an infinite horizon game between an electorate and a sequence of politicians: the no commitment game, in Section 5, and the commitment game, in which the electorate can commit to a policy at the beginning of the game, in Section 6.

In both cases, all players have a common discount factor δ, with $\delta \in (0, 1)$. We use average present value. There are two types of politician: honest ($h = 1$) and corruptible ($h = 0$). Time is discrete: $t = 1, 2, ...$

In the no commitment case, the electorate and politician play a stage game t as follows:

- At the beginning of period t the politician in office is either honest ($h_t = 1$) or corruptible ($h_t = 0$), and has a prior *reputation* or public belief of being honest of η_t, with $\eta_t \in [0, 1]$.
- Nature *reveals* the politician's type. The prior η_t is correspondingly updated to either 0 (if corruptible) or 1 (if honest). The updated prior, or interim reputation, is denoted by $\underline{\eta}_t$, and is equal to the actual type h_t.
- Nature also chooses a state u_t from a fixed pdf $f(u_t)$, with cdf $F(u_t)$. This represents the opportunity to receive a bribe where u_t is the size of the bribe. We assume that f has full support over $[0, 1]$ - a normalization. The state is only observed by the politician in office.
- The politician in office, having observed u_t, chooses an action $a_t \in \{0, 1\}$, 0 being the honest action, and 1 the corrupt action - taking a bribe. The honest type always chooses the honest action; the corruptible type is a strategic type.

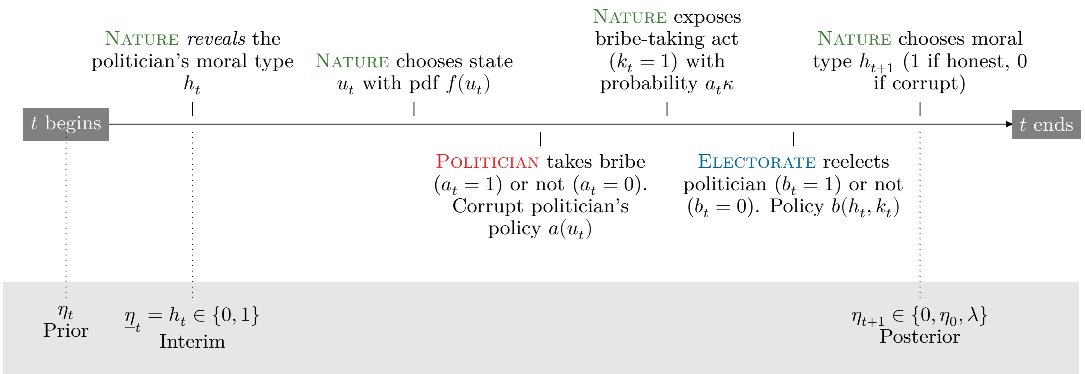


Figure 1: Timeline for the stage game

- When choosing the corrupt action, the politician knows that there is a probability κ of that fact being exposed to the public. The indicator function k_t takes on the value 1 if the corrupt action is exposed at t, and 0 otherwise. Thus, $\kappa \equiv E[k_t]$. Notice that only the acceptance of the bribe can be observed, not the size.
- The electorate chooses a probability of keeping the incumbent β_t - a mixed strategy. Its realization is either keeping the politician in office ($b_t = 1$) or replacing her ($b_t = 0$). Thus, $\beta_t = E[b_t]$. The choice is made with the information at hand: the incumbent's type h_t, and the realization k_t of whether the bribe is observed.
- Nature chooses the type for next period's politician, h_{t+1}. If the incumbent was re-elected, a corruptible incumbent remains corruptible, while an honest one has a probability λ of remaining honest. If instead last period's politician was not re-elected, or if the game is about to start, Nature fills-in the position with a randomly drawn politician from a given pool. A new politician is honest with probability η_0. We assume that $\lambda > \eta_0$; we will show later that this condition guarantees that the known honest politician is preferred to a new draw from the moral roulette.

The stage game thus ends with re-election or replacement. A voted out politician can never be a candidate again. The timeline is shown in Figure 1.

Payoffs are as follows:

- The politician's period payoff to action $a_t = 0$ is normalized to 0; the period payoff to the corrupt action is state-dependent: $u_t \geq 0$.
- If the honest action is taken the electorate receives zero. The corrupt action costs it σu_t, where $\sigma \geq 1$. If $\sigma = 1$, the stage game between the corruptible politician and the electorate is a zero-sum one. A parameter $\sigma > 1$ means that

corrupt actions are not mere transfers, but instead they destroy value - they are inefficient. For instance, this would be the case if the politician initiates an unnecessary public infrastructure project so that her party comrades are awarded the contract. Hence $\sigma - 1$ can be interpreted as a measure of the inefficiency entailed in corruption.

- Following Myerson (2006), the replacement action ($b_t = 0$) costs $c > 0$ to the electorate and nothing to the politician.
- The payoff to the politician that is not in office is null.

In this game there are no proper subgames as the politician may know the past draws of u_t while the electorate does not. However, these past payoffs are irrelevant for the continuation game so we can define a version of Markov perfect equilibrium[1] in which we treat each period as the beginning of one of two types of games depending only on whether the politician is known to be corruptible or not. In the latter case, in the first period of the continuation game, the honest politician rejects the bribe. In the former case denote by $a(u_t)$ the decision of the corruptible politician whether or not to accept the bribe based on how large it is. In both cases denote the first period strategy of the electorate by $\beta(h_t, k_t)$. Notice the Markov assumption that both of these strategies depend on the past only on whether the politician is known to be honest at the beginning of the period.

While the assumption that voters do not observe their realized payoffs may appear non-standard, it is highly realistic in environments with weak institutional oversight. In settings where media and judicial systems are sluggish or ineffective, voters face a fundamental signal extraction problem. Upon experiencing diminished welfare, the electorate cannot perfectly discern whether the decline is driven by adverse exogenous shocks or by political rent extraction. Furthermore, the consequences of corruption are often unevenly distributed across a heterogeneous electorate, making the aggregate effect even harder to perceive. Crucially, for information to shape voting strategies, it must be available prior to the next election; the findings of a protracted investigation that arrive post-election are strategically irrelevant. Naturally, in environments with rigorous and timely investigative reporting, this informational friction is relaxed. For an analysis of that alternative setting, see Kartik, Lipnowski, and Pei (2026).

In the no commitment case our equilibrium concept is that these strategies should form a Nash equilibrium of the game beginning in period t. In the commitment case

[1]For a discussion of the philosophy behind Markov perfect equilibria, see Maskin and Tirole (2001).

$\beta(h_t, k_t)$ is chosen once and for all at the beginning of the first period and the politician is assumed to respond optimally.

3 Main Result

Our main result characterizes equilibrium in all cases. First we define the *posterior* reputation at t, which will also be next period's *prior*, as η_0 if the politician were replaced, 0 if the dishonest politician were kept, and λ if the honest politician were kept. That is, the posterior is

$$\eta_{t+1} = \begin{cases} \eta_0 & \text{if } b_t = 0, \\ 0 & \text{if } b_t = 1 \wedge h_t = 0, \text{ and} \\ \lambda & \text{if } b_t = 1 \wedge h_t = 1. \end{cases} \tag{1}$$

Theorem 1. *Regardless of whether commitment is possible or not the electorate never replaces an honest politician.*

If the electorate cannot commit, in a strict Markov equilibrium the corruptible politician takes all bribes. There is a unique cutoff c_1 such that regardless of whether a bribe is observed a corruptible politician is replaced if $c < c_1$ and re-elected if $c > c_1$.

If the electorate can commit to pure strategies then there are unique cutoffs c_0, c_2 such that the optimal policy for the electorate is given by the probability of re-electing a dishonest politician in the absence of an observed bribe $\hat{\beta}_0$ and the probability when a bribe is observed $\hat{\beta}_1$ and

$$(\hat{\beta}_0, \hat{\beta}_1) = \begin{cases} (0,0) & \textit{if } c < c_0, \\ (1,0) & \textit{if } c_0 < c < c_2, \textit{ and} \\ (1,1) & \textit{if } c > c_2. \end{cases} \tag{2}$$

In the first and last case the politician accepts all bribes while in the intermediate case there is a unique γ^* such that the bribe is accepted if and only if $u_t \geq \gamma^*$. If the electorate could commit to mixed strategies, for some parameter values it would do so in order to avoid paying the replacement cost too often.

The unique equilibrium values of c_1, c_0, c_2, γ^* are computed below.

The first part (no commitment) of the Theorem is proven as Corollary 1 below, while the second part (commitment) follows from Propositions 3 and 1 below.

The first part (no commitment) of the Theorem as promised shows that in this case corruption is endemic and either politicians are never replaced or always replaced depending on how the cost of replacement compares with the chances of getting another corruptible politician.

The second part (commitment) for low or high replacement cost is similar to the no commitment case, but has the crucial additional intermediate case in which politicians are replaced exactly when they are caught taking bribes, and as a result take only lucrative bribes.

Moreover, under commitment we demonstrate (Proposition 6) that advancements in monitoring technology could potentially diminish the electorate's welfare when exclusively pure strategies are available. This phenomenon occurs because, in scenarios where the technology is "excessively effective," electorates employing the incentive strategy may terminate the politician's tenure with undue frequency. The availability of mixed strategies empowers an electorate to emulate inferior information technologies, thereby averting a decline in welfare attributable to the technology.

4 The corruptible politician's problem

The honest politician is a behavioral type that always passes up bribing opportunities. Here we examine the best response of the corruptible politician to a Markov policy of the electorate and show that it is described by a cutoff function in which only lucrative bribes as measured by u_t the value of the bribe are accepted.

Observe that the probability the electorate re-elects a corruptible politician upon exposure and upon non-exposure, by the Markov property must be constant over time, so may be denoted respectively by β_1 and β_0. Hence, the corruptible politician's decision problem is to choose a_t, that is whether to accept the corruption opportunity u_t, as described by the following Bellman equation:

$$v(u_t) = \max_{a_t \in \{0,1\}} \left\{ a_t \Big((1-\delta)u_t + \delta \Big[\kappa\beta_1 V + (1-\kappa)\beta_0 V \Big] \Big) + (1-a_t)\delta\beta_0 V \right\}. \qquad (3)$$

where recall that $\kappa \equiv E[k_t]$ is the expected probability of exposure and

$$V \equiv E[v(u)] \tag{4}$$

is the expected continuation value, where the expectation is taken with respect to u.

Eq. (3) shows that the consequences of taking the bribe ($a_t = 1$) are getting u_t in the present, and then, with a probability $\kappa\beta_1$ being exposed and re-elected, or instead, not being exposed and still be re-elected with probability $(1-\kappa)\beta_0$. Not taking the bribe gives nothing in the present, and leads to reelection with probability β_0. Being replaced or re-elected after each circumstance are the electorate's choice (β_0, β_1).

Our basic result concerning the politician's behavior is this:[2]

Lemma 1 (Politician's cutoff policy)**.** *In a Markov equilibrium the corruptible politician must use a cutoff rule: accept the offer exactly in those states in which $u_t \geq \hat{\gamma}$, that is,*

$$\hat{a}(u_t) = \begin{cases} 1 & \text{if } u_t \geq \hat{\gamma}, \text{ and} \\ 0 & \text{otherwise,} \end{cases} \tag{5}$$

where

$$\hat{\gamma} \equiv \kappa \frac{\delta}{1-\delta}(\beta_0 - \beta_1)V. \tag{6}$$

Proof. In the Appendix. □

The politician weights the loot u_t against the chances of getting caught κ. Her choice is to take the high-gain opportunities, and pass up the low-gain ones. The more attractive corruption opportunities are naturally those that offer the largest payoffs.

For given V, the cutoff $\hat{\gamma}$ is increasing in the discount factor δ: the more patient she is, the more she is willing to let go in the short run so as to keep the opportunity of taking larger bribes in the future.

On the other hand, the cutoff is affected by the electorate's strategy. In order for the cutoff to be positive, it is necessary that the electorate rewards good behavior (or rather, the inexistence of evidence of bad behavior); for if the electorate's response were the same once the corrupt action were exposed than otherwise, the corruptible politician

[2] In a previous version of the paper, we studied the case where the state is defined by the amount of the bribe and the probability of detection. The results are similar, given that the politician's decision cutoff depends on the bribe-to-detection-probability ratio.

would simply steal at every opportunity. Formally, $\beta_0 = \beta_1$ implies $\hat{\gamma} = 0$, as can be seen in Eq. (6).

Finally, the cutoff is also increasing in the continuation value V: the larger the present value of the stream of prizes, the more willing to let go the small and dangerous (i.e., likely-to-be-exposed) bribing opportunities.

The result that the politician only takes bribes when u_t is high enough is robust to cases where the probability of detection increases with the size of the bribe, provided that the bribe-to-detection-probability ratio is increasing in the bribe. If we allow the politician to choose a bribe $b < u_t$, they will never choose a value strictly less than u_t , provided that the bribe-to-detection-probability ratio is increasing in the bribe.

Observe that a given cutoff γ determines an ex ante expected loot $\nu \equiv E[ua(u)]$, that is,

$$\nu(\gamma) = \int_{\gamma}^{1} uf(u)\mathrm{d}u. \tag{7}$$

This function is monotonically decreasing in the cutoff γ.

Observe that when $\gamma = 0$ the corruptible politician takes all bribes and the expected loot reaches its maximum value, namely $\nu = E[u]$. At the other extreme, a unitary cutoff would mean $\nu = 0$ because $a(u)$ would be 0 with probability 1 (i.e., almost surely –a.e.).

Proposition 1 below characterizes the corruptible politician's choice of γ. Recall that the cdf of the bribe u is denoted by $F(u)$.

Proposition 1 (corruptible politician's best reply)**.** *If $\beta_0 - \beta_1 \leq 0$ the unique optimum is $\hat{\gamma} = 0$. If $\beta_0 - \beta_1 > 0$, for each pair (β_0, β_1) there is a unique optimum $\hat{\gamma}$ defined by*

$$\hat{\gamma} = \frac{\kappa\delta(\beta_0 - \beta_1)}{1 - \delta B(\hat{\gamma})}\nu(\hat{\gamma}) \tag{8}$$

where $B(\gamma) \equiv (1 - F(\gamma))(\kappa\beta_1 + (1 - \kappa)\beta_0) + F(\gamma)\beta_0 = \beta_0 - (1 - F(\gamma))\kappa(\beta_0 - \beta_1)$ is the expected probability of reelection of a corruptible politician. Moreover, the optimum satisfies

$$\frac{\mathrm{d}\hat{\gamma}}{\mathrm{d}\beta_0} > 0 \quad \textit{and} \quad \frac{\mathrm{d}\hat{\gamma}}{\mathrm{d}\beta_1} < 0.$$

Proof. In the Appendix. □

Re-election serving as a reward for corruptible politicians creates a perverse incentive. A higher likelihood of re-election following corruption exposure compared to non-exposure encourages the politician to maximize bribe-taking. Conversely, only when $\beta_0 > \beta_1$ does a corruptible politician exhibit restraint. Moreover, the cutoff for taking bribes is increasing in the probability of reelection after not being exposed (β_0) and decreasing in the probability of reelection after being exposed (β_1). As a consequence, the strongest incentives to avoid corruption are provided by the strategy $\beta_1 = 0$ and $\beta_0 = 1$ - which will henceforth be referred to as "the maximal incentive strategy," or simply "incentive strategy" for short. Under this strategy, the highest equilibrium cutoff γ^* is obtained, and is the solution to

$$\gamma^* = \frac{\delta\kappa}{1-\delta\left(1-\kappa(1-F(\gamma^*))\right)}\nu(\gamma^*). \tag{9}$$

Clearly, $0 < \gamma^*$, and generic strategies β result in $\hat{\gamma} \in [0, \gamma^*]$.

We now turn to the electorate's choice. In this case commitment matters a great deal to the equilibrium strategy of the electorate, so we study the cases with and without commitment separately.

5 The game without commitment

In this section, we explore—under the assumption of no commitment—whether it is optimal to disincentivize a known corruptible politician by threatening her with destitution Specifically, we examine whether the threat of removal (and the loss of future bribe opportunities) is an effective deterrent. As it turns out, while such a policy could be implemented, it is never optimal to do so.

Recall that σu is the cost to the electorate of the bribe u. Then the electorate's value function is given by

$$\begin{aligned} w(h_t, k_t) = \max_{\beta_{k_t}\in[0,1]} \Big\{ &(1-\delta)\Big(-(1-h_t)\sigma\big(k_t\nu_1 + (1-k_t)\nu_0\big) - (1-h_t)(1-\rho_t)\,c\Big) + \\ &\delta\Big(h_t W(\lambda) + (1-h_t)\left(\rho_t W(0) + (1-\rho_t)\,W(\eta_0)\right)\Big)\Big\}, \end{aligned} \tag{10}$$

where $\rho_t \equiv k_t\beta_1 + (1-k_t)\beta_0$ is the probability of reelecting a corruptible politician given $k_t \in \{0,1\}$, $\nu_1 \equiv E[ua(u)|k=1]$ is the expected size of the bribe given that a bribe taking act was exposed, $\nu_0 \equiv E[ua(u)|k=0]$ is the expected size of the bribe given that a bribe taking act wasn't exposed, $\nu \equiv (1 - \kappa(1 - F(\gamma)))\,\nu_0 + \kappa(1 - F(\gamma))\nu_1 = E[ua(u)]$ is the expected size of the bribe taken by a corruptible politician, and

$$W(\eta) \equiv E[w(h,k)] \tag{11}$$

is the expected continuation payoff of a stage that begins with a prior reputation η. Eq. (10) says that the electorate's expected flow payoff (whose value is discounted by $(1-\delta)$) when facing a corruptible politician is the expected bribe amplified by the factor σ, minus the cost of replacing the politician c if that is the choice ($\rho = 0$); plus the expected continuation payoff, multiplied by the factor δ. The continuation payoff is the expected value of either maintaining the current politician - i.e., starting next period with a politician who is honest with probability λ of honest today and 0 if corruptible today - or replacing her with another who will be honest with probability η_0.

Proposition 2 (Electorate's policy without commitment)**.** *Consider a fixed politician's policy $a(u) = \mathbf{1}_{\{u \geq \gamma\}}$ generating an expected bribe value of $\nu(\gamma)$. Then, the electorate's optimal policy involves reelecting the honest politician, while when facing a dishonest one, reelect her if it is too expensive to replace her and replace her otherwise, irrespective of whether she was caught taking a bribe or not. Formally,*

$$(\hat{\beta}_0, \hat{\beta}_1) = \begin{cases} (1,1) & \text{if } c > \hat{c}\,(\gamma) \\ (0,0) & \text{if } c < \hat{c}\,(\gamma) \end{cases} \tag{12}$$

where

$$\hat{c}\,(\gamma) \equiv \frac{\delta\eta_0}{1 - \delta\lambda}\sigma\nu\,(\gamma)\,. \tag{13}$$

Proof. In the Appendix. □

Except for the knife-edge case of indifference, the optimal policy is unconditional in the sense that it considers doing the same regardless of the corrupt act having being exposed or not ($\beta_0 = \beta_1$). Indeed, knowing that the politician took a bribe, or not knowing it, affects the expected payoff for the stage game but not the continuation payoff. This is to say, exposure of the corrupt act is inconsequential to the expectation of future payoffs, and therefore the rational electorate doesn't take this event into consideration when deciding whether to reelect the politician or not. Consequently, the corruptible politicians do not have incentives to not take bribes.

Corollary 1. *If the electorate cannot commit, in a strict Markov equilibrium the corruptible politician takes all bribes ($\hat{\gamma} = 0$), and $\hat{c}(0) = c_1$, with*

$$c_1 \equiv \frac{\delta \eta_0}{1 - \delta \lambda} \sigma \nu (0) . \tag{14}$$

Proof. Simply note that Eq. (6) evaluates to 0 if $\beta_0 = \beta_1$. Consequently, $a(u) = 1$ for all u, and $\nu = E[ua(u, \kappa)] = \nu(0)$. $\square$

Thus, in a strict equilibrium $\hat{a}(u) = 1$, $\hat{\nu} = E[u] = \nu(0)$, and the politician is never replaced if the cost is higher than the cutoff $\hat{c}$ while is always replaced if the cost is smaller than that.

This cutoff cost is proportional to η_0. If, on the extreme, the expectations are so low that the electorate believes all politicians to be corruptible ($\eta_0 = 0$), the situation is hopeless and the smallest replacement cost induces the electorate to always reelect the known-corruptible politician. This results in not punishing corruptible politicians even when they are caught. Indeed, Pavão (2018) finds that when corruption is pervasive electorates indeed tend to overlook it.

The factors that increase this cutoff include the discount factor δ (the more patient the electorate, the higher the standard for reelection); the probability that the honest remains honest λ (the higher it is, the higher the cutoff); and the expected cost of corruption, which is the product of the expected loot times its damage factor, $\sigma \nu(0)$ (the more damaging corruption is, the higher the standard for reelecting the politician).

It is important to note that the variables δ, η_0, σ, and $\nu(0)$ enter the cutoff cost in a multiplicative fashion, indicating a strong form of complementarity. Indeed, none of them affects the cutoff $\hat{c}$ if any of the others is null; conversely, their effect on the cutoff is higher the higher the value of the rest of the variables. For instance, the better the pool of alternative candidates η_0, the larger the effect of the expected bribes on the cutoff.

So far we have referred only to strict equilibria. It turns out that there are also mixed strategy equilibria (described in Appendix B) that involve a cost that makes the electorate indifferent among all strategies. These equilibria face the familiar criticisms of mixed strategies, namely, that they are not robust (Fudenberg, Kreps, and Levine 1988) and that the electorate would be acting for no good reason, among others. Moreover, these equilibria are not generic in the parameter space.

Things are different if the electorate may commit to act differently upon exposure than upon non exposure, as this would incentivize the politician to behave honestly when the realization of u - the loot - is small enough. Doing so requires commitment because the electorate would need to keep the politician when it would prefer to get rid of her, or to destitute her when it would rather reelect her. This is the case we analyze next. It turns out that the policy of promising to reelect the corruptible politician if she was not caught taking bribes and depose her otherwise, is optimal for intermediate values of the reelection cost c.

6 The game with pure commitment

We assume now that the electorate can commit at the beginning of time to a pure[3] strategy (β_0, β_1) when facing corruptible politicians, and implement it from then onward.

The following proposition shows that the incentive strategy $(\beta_0, \beta_1) = (1, 0)$, namely, replacing the politician if and only if she was caught taking a bribe, is the best policy the electorate can choose, in a given parameter region. This policy induces a cutoff γ^*, as defined by Eq. (9). This induces the smallest equilibrium probability of corrupt actions in any Markov equilibria.

Proposition 3 (Electorate's policy with pure commitment)**.** *There exist critical values*

$$c_0 \equiv \frac{\sigma}{1-\kappa\left(1-F\left(\gamma^*\right)\right)}\left(\nu\left(\gamma^*\right)\left(1+\frac{\delta\eta_0}{1-\delta\lambda}\right)-\nu\left(0\right)\left(1+\frac{\delta\eta_0}{1-\delta\lambda}\kappa\left(1-F\left(\gamma^*\right)\right)\right)\right) \tag{15a}$$

$$c_2 \equiv \frac{\sigma\delta\eta_0}{1-\delta\lambda}\nu(0)+\frac{\sigma}{\kappa\left(1-F\left(\gamma^*\right)\right)}\left(\nu\left(0\right)-\nu\left(\gamma^*\right)\right), \tag{15b}$$

such that the optimal policy is

$$(\hat{\beta}_0, \hat{\beta}_1) = \begin{cases} (0,0) & \text{if } c < c_0, \\ (1,0) & \text{if } c_0 < c < c_2, \text{ and} \\ (1,1) & \text{if } c > c_2. \end{cases} \tag{16}$$

Proof. In the Appendix. □

[3]We consider mixed strategies in the next section.

Observe first that under commitment it is still optimal to never reelect the corruptible politician if the cost of replacement is low enough (namely, $c < c_0$), as is also still optimal to reelect her regardless of being caught taking bribes or not if the cost of replacing her is high enough (namely, $c > c_2$). What changes from the no-commitment case is that at intermediate replacement cost values (namely, $c \in (c_0, c_2)$), it is now optimal to reelect the politician in office if she is not caught taking bribes, and replace her whenever she is caught doing so. The benefit of such policy is inducing the dishonest politician to forego bribe-taking opportunities in which the bribes are small, motivated by the chances of being in office when a better opportunity presents itself. In other words, the benefit to the electorate is inducing a higher cutoff for taking bribes γ^*.

We need to distinguish the two forms of commitment that emerge in our model. On the one hand, there is the commitment to throw out a politician that was caught taking bribes: $\beta_1 = 0$. This might be achievable by means of a (not uncommon) constitutional provision that makes office incompatible with a conviction. A prominent real-world example of such an institutional mechanism is the Clean Record Act legislation in Brazil (see Finan and Mazzocco 2025). Under this interpretation, exposing corruption would mean proving it in a court of law. The parameter κ would measure the quality of the judicial system, in terms of how likely it is to produce convictions to guilty parties.[4] Such a constitutional proviso, however, cannot be expected to work in all circumstances. For instance, popular strongmen are known for their proclivity to change constitutions. Another form of commitment involves public rage. Human emotions have been interpreted as commitment devices elsewhere both, in the context of individuals as well as communities (e.g., Aubé (1998) and Berezin (2002)). In this case, κ would measure the quality of the process by which the truth about the politicians' behavior reaches the public as well as the public's willingness to act upon such information. This is a form of community enforcement that would come about by a combination of a free press and an interested or involved electorate.

The second form of commitment that is required in our model is the commitment to retain a known corruptible politician whose bribe taking, if any, has not being exposed: $\beta_0 = 1$. Again, if the electorate were to get rid of corruptible politicians regardless of their actions, they would take all bribes. Incentivizing corruptible politicians to choose carefully their opportunities requires both forms of commitment. Although this form of

[4] Our model assumed that it is impossible that the innocent is found guilty, an error which surely also occurs in real life.

commitment seems to be trickier to achieve it seems that known corruptible politicians are generally re-elected in practice. For example, the American politician Huey Long, was widely believed and we think "known" to be corrupt, but charges were never proven (specific bribes not observed) and he was continually re-elected until his assassination.

The proposition below characterizes the parameter region in which it is optimal to commit to this new policy.

Proposition 4 (The pure commitment region)**.** *Under the maintained assumptions that* $\delta > 0$ *and* $\lambda > \eta_0$*,*

i. the interval (c_0, c_2) is nonempty, while

$$\lim_{\delta \to 0} c_0 = \lim_{\delta \to 0} c_2 = 0;$$

ii. Let

$$c_1^* \equiv \frac{\sigma \delta \eta_0}{1 - \delta \lambda} \nu \left(\gamma^* \right), \tag{17}$$

then $c_1^* < c_1$ and c_1^* is in the interior of (c_0, c_2), separating the regions (c_0, c_1^*), in which the electorate would rather replace the corruptible politician that has not been caught, and (c_1^*, c_2), where the electorate would rather reelect the corruptible politician that has been caught;

iii. the three cutoffs c_0, c_1^*, and c_2, are monotonically increasing in η_0 and λ, and are proportional to σ.

Proof. In the Appendix. □

It should be noted that c_0 could be negative, meaning that there could be no positive cost levels at which replacing the corruptible politician regardless of whether she was caught or not is optimal. Trivially, this is the case, for instance, when $\eta_0 = 0$: if a replacing politician is sure to also be corruptible, there is no benefit from replacing the one in office. In this case, $c_2 > 0$, meaning that for not-too-high cost levels, the optimal policy is indeed to reelect known corruptible politicians as long as they are not caught taking bribes.

It also should be noted that c_2 could be very large; $\sigma \left(\nu \left(0 \right) - \nu \left(\gamma^* \right) \right)$ is the expected period gain to the electorate from inducing the corruptible politician not to take all bribes, a strictly positive quantity, $\sigma > 1$ being a measure of the inefficiency entailed in corruption. In the same vein, the inverse of the equilibrium probability of being caught could itself be a large multiplier.

Corollary 2. *If the electorate can commit only to pure strategies, for intermediate costs of replacement in a strict Markov equilibrium the electorate commits to replace the corruptible politicians if and only if they are caught taking bribes, and the corruptible politician refrains from taking bribes below* γ^*. *Indeed,*

$$\left(\hat{\gamma}, \hat{\beta}_0, \hat{\beta}_1\right) = \begin{cases} (0,0,0) & \text{if } c < c_0, \\ (\gamma^*, 1, 0) & \text{if } c_0 < c < c_2, \\ (0,1,1) & \text{if } c_2 < c. \end{cases}$$

There could be mixed strict equilibria as well; we discuss them in the next Section.

The discount factor plays an important role in our model. Should players not care about the future ($\delta = 0$), there would be no interest on the electorate in modifying current behavior to induce any response on the part of future politicians; this is reflected in the collapsing interval of incentives. Nor there would be an interest on the part of the corruptible politician to forego bribes in order to secure her future reelection ($\lim_{\delta\to 0}\hat{\gamma} = 0$, implying $\lim_{\delta\to 0}\hat{\nu} = \nu(0)$). On the other hand, the more the players care about the future, the larger the commitment region becomes. Our next result concerns the effect the players' patience on equilibrium behavior under pure commitment.

Proposition 5 (The effect of patience on the corruptible politician's equilibrium behavior)**.** *Suppose* $c \in (c_0, c_2)$. *In a strict equilibrium under pure commitment, the corruptible politician's behavior satisfies*

$$\frac{\partial \gamma^*}{\partial \delta} > 0.$$

Moreover,

$$\lim_{\delta\to 0}\gamma^* = 0 \quad \text{and} \quad \lim_{\delta\to 1}\gamma^* = 1.$$

Proof. In the Appendix. □

Proposition 5 says that the more patient the corruptible politician is, the more stringent the criterion for accepting bribes she will adopt. As a consequence, she will take fewer bribes, and be exposed less often, and obtain a smaller per-period expected loot. All this, in exchange for a longer expected term in office. In the other direction, this says that the politician will not wait for the highest bribes, but instead will accept increasingly more bribes the less impatient she is.

We conclude this section by showing that a rise in information accuracy may lead to a decline in the welfare of the electorate.

Proposition 6 (Improvements in monitoring technology are not always welcome)**.** *In a strict equilibrium under pure commitment improvements in the informational content of the signal (κ) may reduce the electorate's welfare.*

Proof. The proof is by example. Consider a uniform distribution F over u. The parameters are set to $(c, \delta, \eta_0, \lambda, \sigma) = (1.5, 0.95, 0.2, 0.8, 1)$. Under these assumptions, $c_1 = \frac{19}{48}$. Figure 2 shows value functions $P(\beta_0, \beta_1, \eta)$ for the incentive policy $(1, 0)$ and strategy $(1, 1)$ as well. Observe that $P(1, 0, 0)$ is increasing in the A-C region and decreasing elsewhere. On the other hand, $P(1, 0, 0)$ is larger than $P(1, 1, 0)$ - and therefore optimal,and equal to the value function - in the B-D region and smaller elsewhere. From C to D then the electorate's welfare is indeed decreasing, as asserted. As the information technology (represented by κ) improves, incentives are strengthened and the corruptible politician indeed becomes more selective (higher $\hat{\gamma}$). However, gains from incentives are countered by increased costs from getting rid of politicians more often. The latter effect dominates between C and D. Beyond D, providing incentives becomes so expensive that is ceases to be worth it and the electorate goes back to the always reelecting policy. $\square$

By the end of next section we go back to this result but then considering that the electorate could use mixed strategies.

7 Mixed commitment

This section considers the choice when all mixed strategies $(\beta_0, \beta_1) \in [0, 1]^2$ are available. Levine and Mattozzi (2020) argues that political parties can and do commit to using mixed strategies. Additionally, our aim is to gain an understanding of the result in Proposition 6. Through its commitment to a mixed strategy the electorate induces the corruptible politician to select a given cutoff γ and also induces a probability of

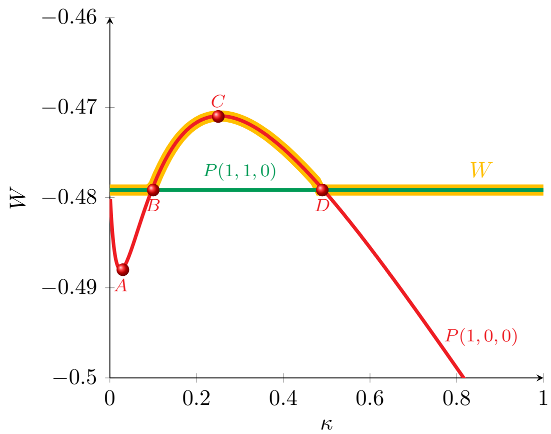


Figure 2: A non monotonic value function.

This numerical example is generated by a uniform distribution F over u. The parameters are set to $(c, \delta, \eta_0, \lambda, \sigma) = (1.5, 0.95, 0.2, 0.8, 1)$. Under these assumptions, $c_1 = \frac{19}{48}$. The picture shows the value functions $P(\beta_0, \beta_1, \eta)$ for strategies with $\beta_0 = 1$ and $\eta = 0$ (i.e., the electorate facing a known corruptible politician) for the two values of β_1. The optimal strategy is thus $(1, 1)$ for the extreme values of κ and $(1, 0)$ for intermediate ones.

reelection B. The results of this section are summarized in the following proposition:

Proposition 7 (Electorate's policy with mixed commitment)**.** *The optimal strategy is either a pure one from the set* $\{(0,0), (1,0), (1,1)\}$, *or a convex combination of* $\{(0,0), (1,0)\}$ *or of* $\{(1,0), (1,1)\}$.

We prove this proposition in different segments. We characterize first the combinations of (γ, B) that are feasible and secondly we study the preferences and the option that maximizes the electorate's utility.

The feasible set

When the electorate chooses an strategy $(\beta_0, \beta_1) \in [0,1]^2$, the corruptible politician's behavior gives rise to a pair (γ, B),the cutoff for accepting bribes and the probability of re-election defined implicitly by the equations (24) and (33), namely

$$\hat{\gamma} = \max\left\{0, \frac{\kappa\delta(\beta_0 - \beta_1)}{1 - \delta B(\hat{\gamma})}\nu(\hat{\gamma})\right\} \text{ and}$$
$$B(\hat{\gamma}) = \beta_0 - (1 - F(\hat{\gamma}))\kappa(\beta_0 - \beta_1).$$

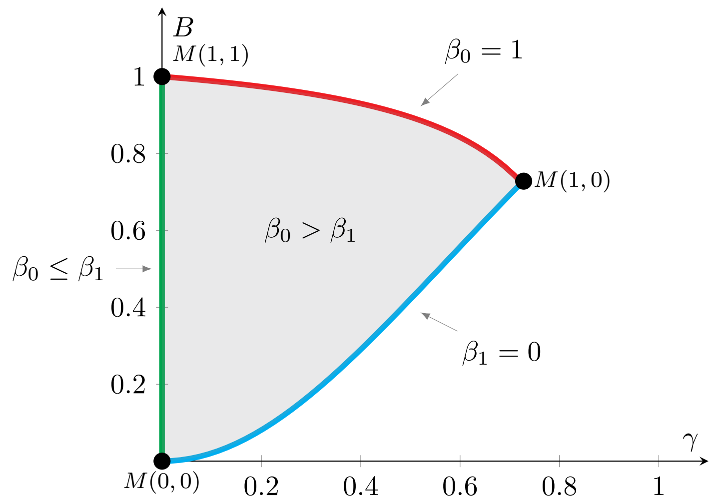


Figure 3: The feasible set

This numerical example is generated by a uniform distribution F over u and the parameters $(\kappa, \delta) = (1, 0.95)$.

These equations define a mapping $(\gamma, B) = M(\beta_0, \beta_1)$. The feasible set of (γ, B) pairs, denoted by $\mathcal{F}(\kappa, \delta)$, is the image of operator, $\mathcal{F}(\kappa, \delta) = M([0,1]^2)$. Figure 3 plots an example in the plane (γ, B). It is bounded above by the image of the convex combinations of the strategies $(1,1)$ and $(1,0)$, i.e., they involve $\beta_0 = 1$, and

$$\frac{\partial B}{\partial \gamma} = \frac{\partial B / \partial \beta_1}{\partial \gamma / \partial \beta_1} = -\frac{1 - F(\gamma)}{\nu(\gamma)} \frac{1 - \delta B}{\delta(1 - \delta)} < 0. \tag{18}$$

It is bounded below by the convex combinations of the strategies $(0,0)$ and $(1,0)$, i.e., they involve $\beta_1 = 0$ and

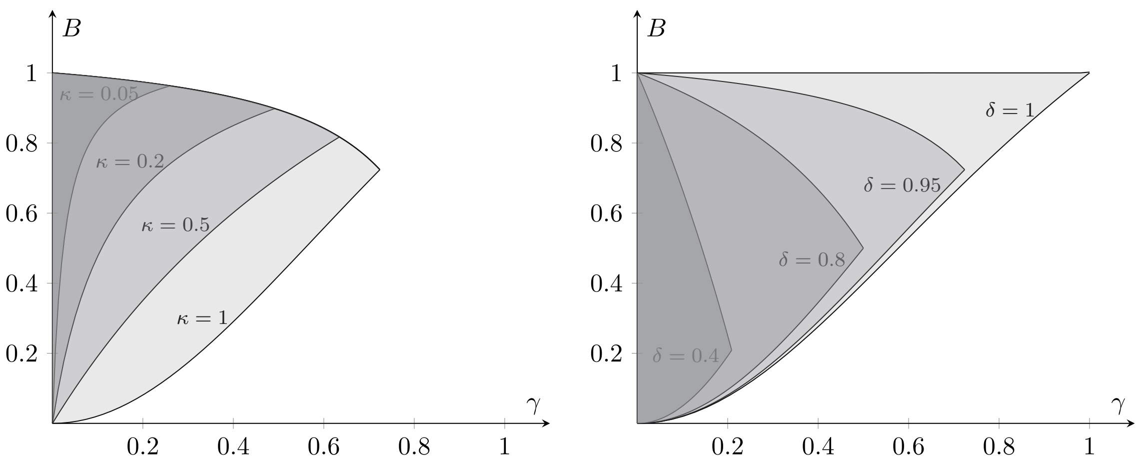
$$\frac{\partial B}{\partial \gamma} = \frac{\partial B / \partial \beta_0}{\partial \gamma / \partial \beta_0} = \frac{1 - \kappa(1 - F(\gamma))}{\nu(\gamma)} \frac{1 - \delta B}{\delta \kappa} > 0. \tag{19}$$

Finally, it is bounded to the left by all strategies that consider $\beta_0 \leq \beta_1$ which induce a $\hat{\gamma} = 0$.

The feasible set is increasing both in the probability that bribery is exposed κ and the degree of patience of politicians and the electorate δ. This is illustrated in Fig. 4 as way of example where the bribe opportunity distribution is uniform.

Lemma 2. *The feasible set is increasing in κ and δ, ie.,*

$$\kappa < \kappa' \implies \mathcal{F}(\kappa, \delta) \subset \mathcal{F}(\kappa', \delta) \quad \textit{and} \quad \delta < \delta' \implies \mathcal{F}(\kappa, \delta) \subset \mathcal{F}(\kappa, \delta').$$



(a) The effect of κ ($\delta = 0.95$). (b) The effect of δ ($\kappa = 1$).

Figure 4: Comparative statics of the feasible set

This numerical example is generated by a uniform distribution F over u.

Proof. Let $(\gamma, B) \in \mathcal{F}(\kappa, \delta)$. If κ increased to κ' the same (γ, B) could be selected by choosing $\beta_0' = \beta_0$ and $\beta_1' = \left(1 - \frac{\kappa}{\kappa'}\right)\beta_0 + \frac{\kappa}{\kappa'}\beta_1 \in [0,1]$ so that $(\beta_0' - \beta_1') = \frac{\kappa}{\kappa'}(\beta_0 - \beta_1)$

$$B' = \beta_0' - (1 - F(\hat{\gamma}))\kappa'(\beta_0' - \beta_1') = \beta_0 - (1 - F(\hat{\gamma}))\kappa'\frac{\kappa}{\kappa'}(\beta_0 - \beta_1) = B \text{ and}$$

$$\hat{\gamma}' = \max\left\{0, \frac{\kappa'\delta(\beta_0' - \beta_1')}{1 - \delta B'}\nu(\hat{\gamma}')\right\} = \max\left\{0, \frac{\kappa\delta(\beta_0 - \beta_1)}{1 - \delta B(\hat{\gamma})}\nu(\hat{\gamma})\right\} = \hat{\gamma}.$$

Then, $(\gamma, B) \in \mathcal{F}(\kappa, \delta) \implies (\gamma, B) \in \mathcal{F}(\kappa', \delta)$. As for δ, it doesn't enter the equation for B so it doesn't affect it; as for $\hat{\gamma}$,it suffices to choose $(\beta_0' - \beta_1') = \frac{\delta}{\delta'}(\beta_0 - \beta_1) < 1$ so as to maintain it. Therefore, $(\gamma, B) \in \mathcal{F}(\kappa, \delta) \implies (\gamma, B) \in \mathcal{F}(\kappa, \delta')$. □

The significance of this result is twofold. On the one hand, the quality of public auditing as represented by κ is crucial to the electorate. The larger it is, the more options the electorate has. Secondly, the same is true of the discount factors as incentives work better on the more patient corruptible politicians.

We now turn to study the electorate's preferences and optimality.

Preferences and optimality

Note that the utility of the electorate (Eq. (34)) depends on its strategy choice only through their influence on $\hat{\gamma}$ and $\hat{B}$, namely, the cutoff - which determines what bribes are taken - and the reelection probability - that determines both, the frequency at which the replacement cost c is paid and the chances of drawing a honest politician.

Observe that increasing γ is always utility-enhancing. Indeed, from Eq. (34) we have

$$\frac{\partial P}{\partial \gamma} = \frac{-\sigma\gamma f\left(\gamma\right)}{\left(1-\delta\lambda+\delta\eta_0(1-B)\right)^2} T(\eta) > 0.$$

This implies that we need only consider mixed strategies of the form $(1, \beta_1)$ and $(\beta_0, 0)$, as only points in the right border of the feasible set could be optimal. The preference for B in contrast depends crucially on the replacement cost:

$$\begin{aligned} \frac{\partial P}{\partial B} &= \frac{-c\left(1-\delta\lambda\right)+\delta\eta_0\sigma\nu\left(\gamma\right)}{\left(1-\delta\lambda+\delta\eta_0(1-B)\right)^2} T(\eta) \gtreqqless 0 \\ \iff\ c &\gtreqqless \frac{\delta\eta_0\sigma}{(1-\delta\lambda)}\nu\left(\gamma\right). \end{aligned}$$

When the replacement cost is too high, the electorate prefers to increase the probability of reelecting the corruptible politician B to save in replacement costs. When it is not that expensive, it prefers to decrease it to improve the chances of getting a honest politician. This agrees with Prop. 2: if all options available consider $\gamma = 0$, the electorate prefers $B = 1$ if $c > c_1$ and $B = 0$ if $c < c_1$. It also agrees with Prop. 3: if only the vertices are feasible in the choice set in (γ, B) the electorate will doubt between $(1, 1)$ and $(1, 0)$ if $c > c_1^*$ and between $(0, 0)$ and $(1, 0)$ if $c < c_1^*$. What needs to be considered is that attaining γ^* requires some sacrifice in B; the cutoffs c_0 and c_2 are the result of weighting these factors.

With mixed commitment all intermediate points also are available and the marginalist approach becomes adequate. The induced marginal rate of substitution between γ and B is the ratio of the previous derivatives, namely

$$\mathrm{MRS}(\gamma, B) = \frac{\partial P/\partial\gamma}{\partial P/\partial B} = \frac{-\sigma\gamma f\left(\gamma\right)}{-c\left(1-\delta\lambda\right)+\delta\eta_0\sigma\nu\left(\gamma\right)}. \tag{20}$$

Again, the MRS will be positive and utility increasing in the direction of higher γ and B if the cost of replacement c is high enough; otherwise, the MRS will be negative and the utility will increase in the direction of higher γ and smaller B. Observe also that the MRS depends only on γ, not on B, so that the indifference curve map in the plane

(γ, B) is vertically parallel. In particular,

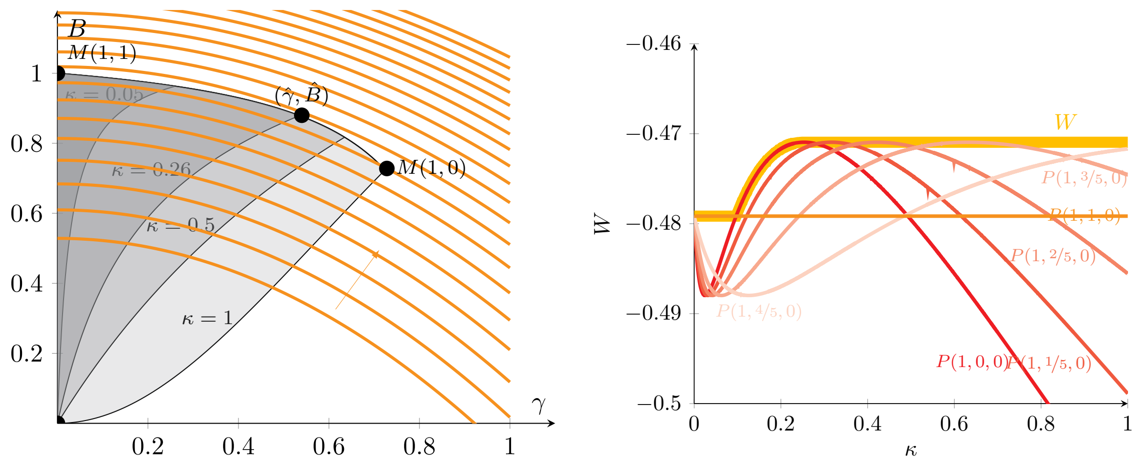
$$\text{MRS}(0,1) = \frac{-\sigma 0 f(0)}{-c(1-\delta\lambda) + \delta\eta_0\sigma\nu(0)} = 0 = \text{MRS}(0,0).$$

We observed before that $\frac{\partial P}{\partial \gamma} > 0$, i.e., the electorate welfare is always increasing in the corruptible politician's cutoff point. This implies that the optimum will occur at the right frontier of the feasible set $\mathcal{F}$. It could be at the top border - which is formed by the convex combinations of $\{(1,0),(1,1)\}$ - if $\frac{\partial P}{\partial B} > 0$, or at the bottom border - which is formed by the convex combinations of $\{(0,0),(1,0)\}$) - if $\frac{\partial P}{\partial B} < 0$.

This concludes the analysis leading to the statement of Prop. 7.

Notice that, there are parameter values at which all the optimal strategies are pure. Consider the following prominent case: $\kappa = \delta = 1$. The feasible set is the largest, and only the incentive strategy $(1,0)$ is optimal for any cost $c \geq 0$. Indeed, when $\kappa = \delta = 1 = \beta_0$ M becomes $\hat{\gamma} = \max\left\{0, \frac{(1-\beta_1)}{1-B}\nu(\hat{\gamma})\right\}$ and $B = 1 - (1 - F(\hat{\gamma}))(1-\beta_1)$; replacing $(1-\beta_1)$ from the latter into the former equation, we see that $\hat{\gamma} = \frac{1}{(1-F(\hat{\gamma}))}\nu(\hat{\gamma})$ implying $\hat{\gamma} = 1$ as γ. becomes the expectation of u conditional on being larger than γ. At the same time, the MRS evaluated at $\gamma^* = 1$ is $MRS = \frac{-\sigma f(\gamma^*)}{-c(1-\lambda)} > 0$ since $\nu(1) = 0$. It follows that all pairs (γ, B) that are better than $M(1,0)$ are above and beyond $(\gamma^*, B^*) = (1,1)$, i.e., are unfeasible. Therefore, only $(\beta_0, \beta_1) = (1,0)$ is optimal for any $c > 0$.

There are also some parameter configurations for which the unique optimal strategy is strictly mixed. Let's return to the example in Fig. 2 introduced in the proof of Proposition 6. The cost of replacement is high enough ($c = 1.5$, to be compared with a maximum bribe of 1) that if $\kappa = 0.26$ the electorate chooses the incentive strategy. However, for a larger κ it would prefer not to replace the corruptible politician every time she is caught taking a bribe, because that would be too expensive. Instead, it would choose to mimic a smaller κ by way of the strategy described in the proof of Lemma 2. By increasing the probability of reelecting a politician that has been caught β_1 it renounces to give more stringent incentives to the corruptible politician, because incentives are just too costly. This is shown in Figure 5. We see in panel (a) that for $\kappa > 0.26$ the incentive strategy $(\beta_0, \beta_1) = (1,0)$ becomes suboptimal. Panel (b) shows the same, this time by comparing the value functions for fixed electorate strategies. By increasing β_1 as κ increases beyond 0.26 the electorate is able to replicate both, the threshold and frequency of replacements, thereby maintaining the value W. In other



(a) $c = 1.5$.

(b) Payoffs as a function of κ.

Figure 5: Optimal mixed strategy with commitment

This numerical example is the same as Figure 2,'s namely a uniform distribution F over u and $(c, \delta, \eta_0, \lambda, \sigma) = (1.5, 0.95, 0.2, 0.8, 1)$. Under these assumptions, $c_1 = \frac{19}{48}$. Left panel: the choice of $\left(\hat{\gamma}, \hat{B}\right)$ with an optimum in a wall rather than a vertex of the feasible set, corresponding to an interior β_1. Right panel: the value functions for different strategies $P(\beta_0, \beta_1, \eta)$ for $\beta_0 = 1$ and $\eta = 0$ (i.e., the electorate facing a known corruptible politician) for a bunch of values of β_1. In particular, the value of $c = \frac{3}{2}$ is high enough that under the incentive policy $(1, 0)$ further increases in κ beyond a point reduce the electorate's welfare. However, after that point a strategy that uses a higher value of β_1 becomes optimal. Indeed, the value function W is a envelope of such P functions in that domain segment. W is thus non decreasing in κ.

words, a strictly mixed strategy is strictly preferred when the incentive strategy becomes suboptimal, in this example because of the high cost of replacement.

8 Long run outcomes

This section studies the long run outcomes generated by the Markov equilibrium under no commitment and under pure commitment.

Recall that corruptible politicians choose a cutoff γ, and the electorate chooses the probability of reelection of known corruptible politicians, conditional on the corrupt acts being exposed is β_0, while it is β_1 if not exposed. For a strategy γ of the corruptible politician the probability that corrupt acts are perpetrated and exposed if a corruptible politician is in office is $\kappa\,(1 - F(\gamma))$, so for the optimal strategy $\hat{\gamma}$, the probability is $\kappa\,(1 - F(\hat{\gamma}))$. By contrast to $\hat{\gamma}$ when $(\beta_0, \beta_1) = (1, 0)$ the optimal cutoff is denoted by

γ^*. Recall also that the probability of a new politician being honest is η_0 and that the probability of the honest politician of remaining honest next period is λ. The Proposition below characterizes what the long run probability of corrupt acts is as a function of the underlying parameters. This probability is the product of those of corruptible politicians being in office, and corruptible politicians committing corrupt acts.

Proposition 8. *The equilibrium frequency of corrupt acts is*

Frequency	*Without commitment if*	*With pure commitment if*
$\frac{1-\lambda}{1-\lambda+\eta_0}$	$c < c_1$	$c < c_0$
$\frac{1-\lambda}{1-\lambda+\eta_0\kappa(1-F(\gamma^*))}\left(1-F\left(\gamma^*\right)\right)$	–	$c_0 < c < c_2$
1	$c_1 < c$	$c_2 < c$

where c_1 is as defined in Eq. (14) *and c_0 and c_2 in Eqs.* (15a) *and* (15b)*, respectively.*

Proposition 8 tells us how often corruption acts will be perpetrated in equilibrium as a function of the replacement cost c and the availability of a commitment technology. Without commitment, in the worse case, if c is too high, there will be complete corruption. At the other extreme, even if c is null there will always be a strictly positive frequency of corrupt acts because even honest politicians will eventually become corruptible. How large is that frequency depends on both the probability of honest politicians remaining hones λ and the probability of new politicians being honest η_0. With commitment, nothing changes for too low or too high costs (namely, $c < c_0$ and $c > c_2$, respectively). However, for intermediate-high cost levels ($c \in (c_1, c_2)$) the frequency of corrupt acts is smaller than without commitment as the corruptible politicians are incentivized to pass up the lesser bribe opportunities. For intermediate-low cost levels ($c \in (c_0, c_1)$) the frequency comparison is a priori unclear, because under the incentive strategy that would be used in equilibrium the electorate retains corruptible politicians that without commitment would have fired.

It is worth noting that in our model the probability of corrupt acts is bounded away from 0 even in the long run. In part this results from our assumption that idealist politicians eventually become corruptible ($\lambda < 1$); see Kartik, Lipnowski, and Pei (2026) for a situation where $\lambda = 1$, so that having a honest politician in office is an absorbing state instead.

The proof of Proposition 8 is provided after Lemma 3 is presented.

Although the use of incentives reduces the instances in which corruptible politicians accept bribes, it does not necessarily decrease the overall frequency of corrupt acts. This occurs because, under an incentive-based regime, corruptible politicians achieve prolonged tenure. Consequently, while “petty corruption” is effectively eliminated, “large-scale” corruption becomes more prevalent. Besley and Smart (2007) study how voters use elections both to discipline incumbents (incentives) and to select high-quality candidates (selection). They argue that providing incentives can be counterproductive because “bad” politicians mimic “good”’ types to secure re-election, thereby preventing the electorate from identifying and replacing them. This generates a cost similar to the one we identify: corruptible politicians remaining in power for longer periods. However, our model demonstrates that this trade-off persists even when the politician’s type is observable. In this dynamic setting, incentives reduce the immediate probability of corruption but increase the density of corruptible agents in office over time. Thus, the electorate effectively trades lower current corruption for a higher frequency of significant corruption in the future.

The long-run probability of having a corruptible politician in office is characterized in the following lemma.

Lemma 3 (Long run probabilities)**.** *For a fixed strategy profile* $(\gamma, \beta_0, \beta_1)$ *- equilibrium or otherwise - the long run frequency of corruptible politicians in office is*

$$\pi(\gamma, \beta_0, \beta_1) \equiv \frac{1-\lambda}{1-\lambda+\eta_0(1-\beta_0+\kappa\,(\beta_0-\beta_1)\,(1-F\,(\gamma)))}. \tag{21}$$

while the long run frequency of corrupt acts is $\pi(\gamma, \beta_0, \beta_1)\,(1-F(\gamma))$.

Proof. In the Appendix. □

Proof of Proposition 8. Recall that in equilibrium: (i) Without commitment, $\hat{\beta}_0 = \hat{\beta}_1 = 0$ if $c < c_1$ and $\hat{\beta}_0 = \hat{\beta}_1 = 1$ if $c > c_1$ and $\hat{\gamma} = 0$ in either case; (ii) With pure commitment, $\hat{\beta}_0 = \hat{\beta}_1 = 0$ and $\hat{\gamma} = 0$ if $c < c_0$; $\hat{\beta}_0 = 1$, $\hat{\beta}_1 = 0$ and $\hat{\gamma} = \gamma^*$ if $c_0 < c < c_2$; and $\hat{\beta}_0 = \hat{\beta}_1 = 1$ and $\hat{\gamma} = 0$ if $c > c_2$. Evaluating the frequency $\pi\left(\hat{\gamma}, \hat{\beta}_0, \hat{\beta}_1\right)$ from Lemma 3 times $(1-F(\hat{\gamma}))$ yields Proposition 8. □

While committing to the policy $(\beta_0, \beta_1) = (1, 0)$ yields an intermediate frequency of in-office corruptible politicians it might be that this strategy minimizes the frequency of corrupt *acts*. This, in view of the fact that corruptible politicians will find it optimal to pass up the smaller bribing opportunities. Indeed, under the incentive policy the long run frequency of corrupt acts is smaller than under the policy of removing corruptible politicians if $\eta_0 < \frac{1-\lambda}{1-\kappa} \frac{F(\gamma^*)}{1-F(\gamma^*)}$.

Proposition 9 (Long-run relationship between monitoring technology and corruption)**.** *The long run probability of corruptible politicians in office and of corrupt acts are both not always monotone in κ.*

Proof. The proof is by example. One could expect that improvements in the monitoring technology would allow for a finer fight against corruption and indeed it does, except that getting rid of corruptible politicians too often may become excessively expensive. Consider again the case of the uniform distribution over u with the parameters in Figure 5. It can be appreciated there that for $\kappa = 0$ and slightly above, the optimal policy is $(1, 1)$ because the cost of replacement is too high – above the threshold c_2. Under that policy, both long run probabilities are 1. However, as the monitoring technology κ improves, at some point the incentive strategy becomes optimal and both long run probabilities drop. Still, as κ continues increasing, eventually the incentive strategy requires getting rid of the corruptible politicians way too often. Under pure commitment, the optimal strategy is to switch back to $(1, 1)$, with both long run probabilities going back to 1, completing a discontinuous U-shape pattern. □

9 Conclusions

We studied a model of a rational electorate who faces the risk of being wronged by corruptible politicians. The defense tools we considered were a combination of elections with the imperfect monitoring of the in-office politician's actions. We concluded that without the ability to commit, elections provide no effective defense against corruption. On the other hand, the ability to commit may not prevent corruption altogether, but can alleviate the problem somewhat, by means of inducing corruptible politicians to pass by bribing opportunities in the hope of being in office when a better one presents itself.

The ability to commit works hand in hand with the monitoring technology, which we assume to be imperfect. Somewhat surprisingly, we find that while monitoring is essential for enabling electoral accountability, improvements in monitoring do not necessarily make the electorate better off. For each case, there exists an optimal level of detection that balances politicians' incentives to behave with the need to remove them from office. When the technology is "too informative," the electorate may benefit from mimicking a less precise one by committing to a mixed strategy—i.e., by occasionally forgiving detected cases of corruption.

References

Acharya, Avidit, Elliot Lipnowski, and João Ramos (2025). "Political accountability under moral hazard". In: *American Journal of Political Science* 69.2, pp. 641–652.

Achen, Christopher H. and Larry M. Bartels (2016). *Democracy for realists: Why elections do not produce responsive government*. Princeton, NJ: Princeton University Press.

Anesi, Vincent and Peter Buisseret (2022). "Making elections work: Accountability with selection and control". In: *American Economic Journal: Microeconomics* 14.4, pp. 616–644.

Ashworth, Scott (June 2012). "Electoral accountability: Recent theoretical and empirical work". In: *Annual Review of Political Science* 15.Volume 15, 2012, pp. 183–201.

Ashworth, Scott and Ethan Bueno de Mesquita (2014). "Is voter competence good for voters?: Information, rationality, and democratic performance". In: *American Political Science Review* 108.3, pp. 565–587.

Ashworth, Scott, Ethan Bueno de Mesquita, and Amanda Friedenberg (2017). "Accountability and information in elections". In: *American Economic Journal: Microeconomics* 9.2, pp. 95–138.

Aubé, Michel (1998). "A commitment theory of emotions". In: *AAAI-1998*.

Banks, Jeffrey S and Rangarajan K Sundaram (1998). "Optimal retention in agency problems". In: *Journal of Economic Theory* 82.2, pp. 293–323.

Barro, Robert J. (1973). "The control of politicians: An economic model". In: *Public Choice* 14, pp. 19–42.

Berezin, Mabel (2002). "Secure states: towards a political sociology of emotion". In: *The Sociological Review* 50.S2, pp. 33–52.

Besley, Timothy and Michael Smart (2007). "Fiscal restraints and voter welfare". In: *Journal of Public Economics* 91.3-4, pp. 755–773.

Blumenthal, Benjamin (Oct. 19, 2023). "Political Agency and Implementation Subsidies with Imperfect Monitoring". In: *The Journal of Law, Economics, and Organization* 39.3, pp. 775–800.

Blumenthal, Benjamin (2026). “Voter information and distributive politics”. In: *American Economic Journal: Microeconomics* 18.2, pp. 293–312.

Boas, Taylor C, F Daniel Hidalgo, and Marcus André Melo (2019). “Norms versus action: Why voters fail to sanction malfeasance in Brazil”. In: *American Journal of Political Science* 63.2, pp. 385–400.

Crémer, Jacques (1995). “Arm’s length relationships”. In: *The Quarterly Journal of Economics* 110.2, pp. 275–295.

Dewatripont, Mathias, Ian Jewitt, and Jean Tirole (1999). “The economics of career concerns, part I: Comparing information structures”. In: *The Review of Economic Studies* 66.1, pp. 183–198.

Duggan, John and Cesar Martinelli (Sept. 2017). “The political economy of dynamic elections: Accountability, commitment, and responsiveness”. In: *Journal of Economic Literature* 55.3, pp. 916–84.

Ferejohn, John (1986). “Incumbent performance and electoral control”. In: *Public Choice* 50.1/3, pp. 5–25.

Ferraz, Claudio and Frederico Finan (2008). “Exposing corrupt politicians: The effects of Brazil’s publicly released audits on electoral outcomes”. In: *The Quarterly Journal of Economics* 123.2, pp. 703–745.

– (2011). “Electoral accountability and corruption: Evidence from the audits of local governments”. In: *The American Economic Review* 101.4, pp. 1274–1311.

Finan, Frederico and Maurizio Mazzocco (2025). “Combating political corruption with policy bundles”. In: *Journal of Political Economy* 133.8, pp. 2414–2461.

Fox, Justin (Apr. 1, 2007). “Government transparency and policymaking”. In: *Public Choice* 131.1, pp. 23–44.

Fudenberg, Drew, David M Kreps, and David K Levine (1988). “On the robustness of equilibrium refinements”. In: *Journal of Economic Theory* 44.2, pp. 354–380.

Gersbach, Hans, Philippe Muller, and Oriol Tejada (2019). “Costs of change and political polarization”. In: *European Journal of Political Economy* 60, p. 101801.

Gieczewski, Germán and Christopher Li (2024). “Incumbent performance and electoral control: A comment”. In: *Quarterly Journal of Political Science* 19.3, pp. 331–353.

Gilens, Martin and Benjamin I Page (2014). “Testing theories of American politics: Elites, interest groups, and average citizens”. In: *Perspectives on Politics* 12.03, pp. 564–581.

Healy, Andrew and Gabriel S Lenz (2014). "Substituting the end for the whole: Why voters respond primarily to the election-year economy". In: *American Journal of Political Science* 58.1, pp. 31–47.

Holmström, Bengt (1979). "Moral hazard and observability". In: *The Bell Journal of Economics*, pp. 74–91.

– (1999). "Managerial incentive problems: A dynamic perspective". In: *The Review of Economic Studies* 66.1, pp. 169–182.

Kartik, Navin, Elliot Lipnowski, and Harry Pei (2026). *Replacement and Reputation*. Working Paper 35154. National Bureau of Economic Research.

Leech, Beth L. (2010). "The Oxford Handbook of American Political Parties and Interest Groups". In: ed. by L. Sandy Maisel et al. Oxford University Press. Chap. Lobbying and influence.

Levine, David K. and Andrea Mattozzi (2020). "Voter Turnout with Peer Punishment". In: *American Economic Review* 110.10, pp. 3298–3314.

Maskin, Eric and Jean Tirole (2001). "Markov perfect equilibrium: I. Observable actions". In: *Journal of Economic Theory* 100.2, pp. 191–219.

Museveni, Yoweri (2000). *What is Africa's Problem?* University of Minnesota Press.

Mwenda, Andrew M. (2007). "Personalizing Power in Uganda". In: *Journal of Democracy* 18.3, pp. 23–37.

Myerson, Roger B. (Jan. 15, 2006). "Federalism and Incentives for Success of Democracy". In: *Quarterly Journal of Political Science* 1.1, pp. 3–23.

Pavão, Nara (2018). "Corruption as the only option: The limits to electoral accountability". In: *The Journal of Politics* 80.3, pp. 996–1010.

Prat, Andrea (2005). "The Wrong Kind of Transparency". In: *American Economic Review* 95.3, pp. 862–877.

Shavell, Steven (1979). "Risk Sharing and Incentives in the Principal and Agent Relationship". In: *The Bell Journal of Economics* 10.1, pp. 55–73.

Tangri, Roger and Andrew M. Mwenda (2006). "Politics, Donors and the Ineffectiveness of Anti-Corruption Institutions in Uganda". In: *The Journal of Modern African Studies* 44.1, pp. 101–124.

A Proofs

Proof of Lemma 1. From Eq. (3), the condition for $a_t = 1$ to be optimal is that

$$u_t \geq \kappa \frac{\delta}{1-\delta} \left(\beta_0 V - \beta_1 V\right). \tag{22}$$

Let us define $\hat{\gamma}$ as in Eq. (6). This expression is independent of u_t and as such, it is a cutoff. $a_t = 1$ is the unique optimum if $u_t > \hat{\gamma}$. $\square$

Proof of Proposition 1. Indeed, from Lemma 1 the best reply of the politician is taking the bribes if u is greater than a given γ. Computing the expectation of Eq. (3) under the policy $a(u) = \mathbf{1}_{\{u \geq \gamma\}}$ (where $\mathbf{1}_A$ is the indicator function of the set A) we get

$$V = \int_\gamma^1 \Big((1-\delta)u_t + \delta\Big[\kappa\beta_1 V + (1-\kappa)\beta_0 V\Big]\Big) f(u)\mathrm{d}u + \int_0^\gamma \delta\beta_0 V f(u)\mathrm{d}u.$$

Evaluating the integrals and collecting V we get

$$V(1 - \delta\Big[\kappa\beta_1 + (1-\kappa)\beta_0\Big](1 - F(\gamma)) - \delta\beta_0 F(\gamma)) = (1-\delta)\nu(\gamma).$$

Rearranging, we obtain

$$V = \frac{1-\delta}{1-\delta B(\gamma)}\nu(\gamma). \tag{23}$$

Replacing in (6) the cutoff becomes

$$\hat{\gamma} = \frac{\kappa\delta\left(\beta_0 - \beta_1\right)}{1-\delta B\left(\hat{\gamma}\right)}\nu\left(\hat{\gamma}\right). \tag{24}$$

Let

$$g\left(\gamma\right) \equiv \frac{\kappa\delta\left(\beta_0 - \beta_1\right)}{1-\delta B(\gamma)}\nu(\gamma) \tag{25}$$

be the right hand side of Eq. (24), so that $\hat{\gamma}$ is a fixed point of g. It can be seen that $g'\left(\gamma\right) \gtreqless 0 \iff \gamma \lesseqgtr g(\gamma)$ since

$$g'\left(\gamma\right) = \frac{\kappa\delta\left(\beta_0-\beta_1\right)f\left(\gamma\right)}{\left(1-\delta B\left(\gamma\right)\right)^2}\left(-\gamma\left(1-\delta B\left(\gamma\right)\right) + \kappa\delta\left(\beta_0-\beta_1\right)\nu(\gamma)\right).$$

Also, $g'\left(\hat{\gamma}\right) = 0$, implying that g has a unique fixed point, namely $\hat{\gamma}$. Let θ be any parameter of g. The fact that $g'(\hat{\gamma}) = 0$ also implies that

$$\frac{\mathrm{d}\hat{\gamma}}{\mathrm{d}\theta} = \frac{\partial g}{\partial \theta} \tag{26}$$

because $\frac{\mathrm{d}\hat{\gamma}}{\mathrm{d}\theta} = \frac{\partial g}{\partial \theta} + g'(\hat{\gamma}) \frac{\mathrm{d}\hat{\gamma}}{\mathrm{d}\theta}$. Differentiating g with respect to each beta in turn, we get

$$\frac{\mathrm{d}\hat{\gamma}}{\mathrm{d}\beta_1} = -\delta\kappa\nu(\gamma) \frac{1-\delta\beta_0}{(1-\delta B)^2} < 0 \tag{27}$$

and

$$\frac{\mathrm{d}\hat{\gamma}}{\mathrm{d}\beta_0} = \delta\kappa\nu(\gamma) \frac{1-\delta\beta_1}{(1-\delta B)^2} > 0, \tag{28}$$

as asserted. □

Proof of Proposition 2. Any prior η_t transforms after type revelation into either $\underline{\eta}_t = 0$ or $\underline{\eta}_t = 1$. In turn, at the electorate's time of choice either the bribe taking act was revealed ($k_t = 1$) or not ($k_t = 0$). The value function $w(h_t, k_t)$ in Eq. (10) thus becomes:

$w(h_t, k_t)$	$(\beta = 0),\ (\beta = 1)$
$w(1,0) = \max\{$	$-c + \delta W(\eta_0),\ \delta W(\lambda)\}$
$w(0,0) = \max\{$	$-(1-\delta)(\sigma\nu_0 + c) + \delta W(\eta_0),\ -(1-\delta)\sigma\nu_0 + \delta W(0)\}$
$w(0,1) = \max\{$	$-(1-\delta)(\sigma\nu_1 + c) + \delta W(\eta_0),\ -(1-\delta)\sigma\nu_1 + \delta W(0)\}$

where $\nu_0 \equiv E[ua|k=0]$, $\nu_1 \equiv E[ua|k=1]$, $\nu \equiv E[ua]$ and

$$W(\eta) = \eta w(1,0) + (1-\eta)\left((1-(1-F(\gamma))\kappa) w(0,0) + (1-F(\gamma))\kappa w(0,1)\right). \tag{29}$$

Observe that:

The state $(h_t, k_t) = (1,1)$ is a zero probability event - it is impossible for Nature to expose a bribe that was not taken, since honest politicians do not take bribes. Hence, $w(1,1)$ is not part of $W(\eta)$.

The functions $w(1,0)$, $w(0,0)$, and $w(0,1)$ are all independent of η; hence, the value function $W(\eta)$ in (29) is linear. Moreover, $W'(\eta) = W(1) - W(0)$. This is to say, the value function is increasing if and only if the value of facing a honest politician is greater than that of facing a corruptible one - a fact that we will prove shortly.

A sufficient condition for keeping the known honest politician is $\lambda > \eta_0$, which what we assumed. Indeed, at states $(h_t, k_t) = (1,0)$, $\beta = 1$ is optimal if $-c + \delta W(\eta_0) \leq \delta W(\lambda)$.

If $W(\eta)$ is increasing, $\lambda > \eta_0 \implies \delta W(\lambda) > \delta W(\eta_0) > \delta W(\eta_0) - c$. Hence, the honest politician is reelected.

The choice of reelecting or replacing the corruptible politician must be the same regardless of whether the politician was caught or not taking a bribe, that is: $\beta_0 = \beta_1$. This is because the conditions for firing the corruptible politician to be optimal are the same in both states in spite of the fact that the values are different:

$$-(1-\delta)(\sigma\nu_0 + c) + \delta W(\eta_0) \geq -(1-\delta)\sigma\nu_0 + \delta W(0) \iff$$
$$-(1-\delta)(\sigma\nu_1 + c) + \delta W(\eta_0) \geq -(1-\delta)\sigma\nu_1 + \delta W(0).$$

It follows then, that if $\beta_0 = \beta_1 = 1$ (the always replace strategy) were optimal when facing a corruptible politician, the value function would evaluate to

$$W(\eta) = \frac{\sigma\nu(1-\delta)}{1-\delta\lambda}\left(-\frac{1-\delta\lambda}{1-\delta} + \eta\right). \tag{30}$$

If $\beta_0 = \beta_1 = 0$ (the always keep strategy) were optimal when facing a corruptible politician, then

$$W(\eta) = \frac{(c+\sigma\nu)(1-\delta)}{1-\delta\lambda+\delta\eta_0}\left(-\frac{1-\delta\lambda}{1-\delta} + \eta\right). \tag{31}$$

Lastly, if $\beta_0 = 1,\ \beta_1 = 0$ (the incentive strategy) were optimal when facing a corruptible politician,

$$W(\eta) = \frac{(c\kappa(1-F(\gamma)) + \sigma\nu)(1-\delta)}{1-\delta\lambda+\delta\eta_0\kappa(1-F(\gamma))}\left(-\frac{1-\delta\lambda}{1-\delta} + \eta\right). \tag{32}$$

The three candidate value functions (30), (31), and (32) are strictly increasing in η. Moreover, they evaluate to zero at the same point ($W(\frac{1-\delta\lambda}{1-\delta}) = 0$, with $\frac{1-\delta\lambda}{1-\delta} > 1$) so that each function is greater than the other for all $\eta \in [0,1]$ if and only if its slope is smaller, as Figure 6 shows.

Hence, comparing slopes pairwise we deduce that:

$$(\beta_0, \beta_1) = (1,1) \succcurlyeq (1,0) \iff c \geq \frac{\delta\eta_0}{1-\delta\lambda}\sigma\nu(\gamma) \equiv \hat{c}(\gamma);$$

$$(1,1) \succcurlyeq (0,0) \iff c \geq \frac{\delta\eta_0}{1-\delta\lambda}\sigma\nu(\gamma);\ \text{and}$$

$$(1,0) \succcurlyeq (0,0) \iff c \geq \frac{\delta\eta_0}{1-\delta\lambda}\sigma\nu(\gamma).$$

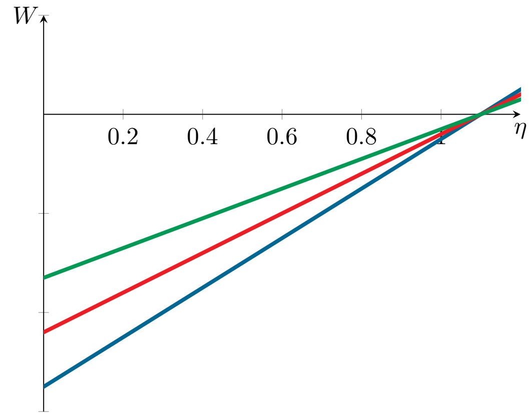


Figure 6: Electorate's value function

In other words: either the cost of replacing is too high ($c > \hat{c}$), and all politicians are always kept (policy $(1,1)$ is chosen), or it is low enough so that corruptible politicians are always replaced (policy $(0,0)$ is chosen). In particular, the incentive strategy is not optimal except when the cost is $\hat{c}$ and is indifferent among all strategies. $\square$

Proof of Proposition 3. The analysis is similar to that of Proposition 2 except that now the electorate takes into account the effect of its policy on the corruptible politician's behavior as per Proposition 1.

Starting from a given electorate's strategy (β_0, β_1) we may compute an electorate's value function from Eq. (11) as

$$\begin{aligned} P(\beta_0, \beta_1, \eta) = (1-\delta)\Big(&-(1-\eta)\left(\sigma\nu(\gamma) + (1-B)\,c\right)\Big) \\ &+ \delta\Big(\eta P(\beta_0, \beta_1, \lambda) + (1-\eta)\left(BP\left(\beta_0, \beta_1, 0\right) + (1-B)P(\beta_0, \beta_1, \eta_0)\right)\Big), \end{aligned}$$

where $P(\beta_0, \beta_1, \eta)$ is the lifetime discounted average payoff from following a fixed strategy (β_0, β_1) with an initial reputation η, $B(\gamma, \beta_0, \beta_1) \equiv (1 - F(\gamma))\left(\kappa\beta_1 + (1-\kappa)\,\beta_0\right) + F(\gamma)\,\beta_0$ or equivalently

$$B(\gamma, \beta_0, \beta_1) = \beta_0 - (1 - F(\gamma))\,\kappa\,(\beta_0 - \beta_1) \tag{33}$$

is the expected probability of reelection of a corruptible politician, and γ is understood as the equilibrium best response $\hat{\gamma}\,(\beta_0, \beta_1)$. Maximizing $P(\beta_0, \beta_1, \eta)$ with respect to (β_0, β_1) would yield the value function $W(\eta)$. Evaluating $P(\beta_0, \beta_1, \eta)$ at $\eta = 0$, $\eta = \lambda$, and $\eta = \eta_0$, and solving the resulting system of equations, we get

$$P(\beta_0, \beta_1, \eta) = \frac{(\sigma\nu(\gamma) + (1 - B)c)}{1 - \delta\lambda + \delta\eta_0(1 - B)}(1 - \delta)\left(-\frac{1 - \delta\lambda}{1 - \delta} + \eta\right). \tag{34}$$

Let

$$T(\eta) \equiv (1 - \delta)\left(-\frac{1 - \delta\lambda}{1 - \delta} + \eta\right) < 0$$

be the second term, so that

$$P(\beta_0, \beta_1, \eta) = S(\beta_0, \beta_1)T(\eta)$$

where

$$S(\beta_0, \beta_1) \equiv \frac{\sigma\nu(\hat{\gamma}(\beta_0, \beta_1)) + (1 - B(\hat{\gamma}(\beta_0, \beta_1), \beta_0, \beta_1))c}{1 - \delta\lambda + \delta\eta_0(1 - B(\hat{\gamma}(\beta_0, \beta_1), \beta_0, \beta_1))} \tag{35}$$

is the slope of the value function. The maximization of $P(\beta_0, \beta_1, \eta)$ requires minimizing $S(\beta_0, \beta_1)$.

Evaluating, we see that $S(1, 0) < S(0, 0)$ obtains if and only if

$$c > \frac{\sigma}{1 - \kappa(1 - F(\gamma^*))}\left(\nu(\gamma^*)\left(1 + \frac{\delta\eta_0}{1 - \delta\lambda}\right) - \nu(0)\left(1 + \frac{\delta\eta_0}{1 - \delta\lambda}\kappa(1 - F(\gamma^*))\right)\right) \equiv c_0. \tag{36}$$

Similarly, $S(1, 0) < S(1, 1)$ obtains if and only if

$$c < \frac{\sigma\delta\eta_0}{1 - \delta\lambda}\nu(0) + \frac{\sigma}{\kappa(1 - F(\gamma^*))}(\nu(0) - \nu(\gamma^*)) \equiv c_2. \tag{37}$$

By the same token, $S(0, 0) < S(1, 1)$ if and only if $c > c_1$. It is easy to verify that $c_0 < c_1$ and $c_1 < c_2$ if and only if $\gamma^* > 0$, which indeed holds true. The optimal policy is thus

$$(\hat{\beta}_0, \hat{\beta}_1) = \begin{cases} (0, 0) & \text{if } c < c_0, \\ (1, 0) & \text{if } c_0 < c < c_2, \\ (1, 1) & \text{if } c_2 < c, \end{cases} \tag{38}$$

as asserted. □

Proof of Proposition 4. The interval (c_0, c_2) is nonempty and it contains c_1^*. Indeed, since $\nu(\gamma)$ is decreasing, $\nu(0) > \nu(\gamma^*)$ and therefore

$$\begin{aligned} c_0 &= \frac{1}{1-\delta\lambda}\frac{\sigma}{1-\kappa(1-F(\gamma^*))}\big(\nu(\gamma^*)(1-\lambda\delta+\delta\eta_0) - \nu(0)(1-\delta\lambda+\delta\eta_0\kappa(1-F(\gamma^*)))\big) \\ &< \frac{\sigma\delta\eta_0}{1-\delta\lambda}\nu(\gamma^*) = c_1^*, \end{aligned} \tag{39}$$

while

$$c_2 = c_1 + \frac{\sigma}{\kappa(1-F(\gamma^*))}(\nu(0) - \nu(\gamma^*)) > c_1 > c_1^*. \tag{40}$$

The fact that c_0 and c_2 are both proportional to σ is evident from Eqs. (15a) and (15b). On the other hand,

$$\frac{\partial c_0}{\partial \eta_0} = \frac{1}{1-\delta\lambda}\frac{\delta\sigma}{1-\kappa(1-F(\gamma^*))}\big(\nu(\gamma^*) - \nu(0)\kappa(1-F(\gamma^*))\big).$$

We can write

$$\nu(\gamma) \equiv \int_\gamma^1 uf(u)\,du = \int_0^1 uf(u)\,du - \int_0^\gamma uf(u)\,du$$

Recognizing that the first integral is $\nu(0)$ and integrating by parts the second integral, we get

$$\int_0^\gamma uf(u)\,du = \gamma F(\gamma) - \int_0^\gamma F(u)\,du < \gamma F(\gamma)$$

where the inequality follows from the fact that the second integral in this latter expression is positive. Hence,

$$\nu(\gamma) + \gamma F(\gamma) > \nu(0).$$

Evaluating $\gamma = \gamma^*$, using Eq. (9), and simplifying we see that

$$\nu(\gamma^*) > \nu(0)\frac{1-\delta+\delta\kappa(1-F(\gamma^*))}{1+\delta+\delta\kappa} > \nu(0)(1-F(\gamma^*)) > \nu(0)\kappa(1-F(\gamma^*)).$$

It follows that $\frac{\partial c_0}{\partial \eta_0} > 0$. Also, $\frac{\partial c_0}{\partial \lambda} > 0$ follows the same fact since

$$\frac{\partial c_0}{\partial \lambda} = \frac{\delta^2}{(1-\delta\lambda)^2}\frac{\sigma\eta_0}{1-\kappa(1-F(\gamma^*))}\big(\nu(\gamma^*) - \nu(0)\kappa(1-F(\gamma^*))\big).$$

On the other hand, $\frac{\partial c_2}{\partial \eta_0} > 0$ is immediate from Eq. (15b).

Finally, since $\lim_{\delta\to 0}\gamma^* = 0$, we have

$$\lim_{\delta\to 0} c_2 = \frac{\sigma}{\kappa\left(1-F\left(\gamma^*\right)\right)}\left(\nu\left(0\right)-\nu\left(\gamma^*\right)\right) = 0.$$

$\square$

Proof of Proposition 5. The electorate's policy is $\beta_0 = 1$ and $\beta_1 = 0$, since $c \in (c_0, c_2)$. Specializing Eq. (25) to it, we get

$$\frac{\mathrm{d}\hat{\gamma}}{\mathrm{d}\delta} = \frac{\partial g}{\partial \delta} = \frac{\kappa}{1-\delta+\delta\kappa\left(1-F\left(\gamma^*\right)\right)}\nu\left(\gamma^*\right) > 0. \tag{41}$$

As for the second part, observe that taking limits at both sides of (9), we get

$$\lim_{\delta\to 1}\gamma^* = \lim_{\delta\to 1} g(\gamma^*) = \frac{\nu\left(\gamma^*\right)}{\left(1-F\left(\gamma^*\right)\right)} = E\left[u|u\geq\gamma^*\right].$$

The resulting equation requires $\gamma^* = 1$ because f has full support. Finally, $\lim_{\delta\to 0} g(\gamma^*) = 0$. $\square$

Proof of Lemma 3. The Markov chain on moral types induced by the strategies $(\gamma, \beta_0, \beta_1)$ is characterized by the following transition matrix

$$\begin{pmatrix} 1-\eta_0+\eta_0\left(\beta_0\left(1-\kappa\left(1-F(\gamma)\right)\right)+\beta_1\kappa\left(1-F(\gamma)\right)\right) & 1-\lambda \\ \eta_0-\eta_0\left(\beta_0\left(1-\kappa\left(1-F(\gamma)\right)\right)+\beta_1\kappa\left(1-F(\gamma)\right)\right) & \lambda \end{pmatrix}, \tag{42}$$

where the columns are the states at t (corruptible, honest), and the rows at $t+1$ (corruptible, honest).

Indeed, if the politician at t is honest ($h_t = 1$), she gets reelected with probability 1 and Nature keeps her honest with probability λ. If she is corruptible, she takes the bribe and is caught with probability $\kappa\left(1-F(\gamma)\right)$, and she is reelected with probability β_1 or replaced by another corruptible politician with probability $(1-\beta_1)(1-\eta_0)$. With probability $(1-\kappa\left(1-F(\gamma)\right))$ she is not caught (either because she didn't take the bribe or because she did but was not caught), and is reelected with probability β_0 or replaced by another corruptible politician with probability $(1-\beta_0)(1-\eta_0)$. Hence,

$$\begin{aligned}\Pr(h_{t+1}=0|h_t=0) = {} & \kappa\left(1-F(\gamma)\right)\left(\beta_1+(1-\beta_1)(1-\eta_0)\right) \\ & + \left(1-\kappa\left(1-F(\gamma)\right)\right)\left(\beta_0+(1-\beta_0)(1-\eta_0)\right).\end{aligned} \tag{43}$$

Simplifying, we get

$$\Pr(h_{t+1}=0|h_t=0) = 1-\eta_0+\eta_0\left(\beta_0\left(1-\kappa\left(1-F(\gamma)\right)\right)+\beta_1\kappa\left(1-F(\gamma)\right)\right). \qquad (44)$$

On the other hand, it is a well known property of two-state Markov chains that the long run frequency of each state is given by the ratio of the probability of a switch from the opposite state over the sum of the two switching probabilities. Hence, the long run (or steady state) probability that the politician in office is honest is given by the probability that the honest becomes corruptible, over the probability that either type is replaced by a politician of a different type the next period. From the constructed transition matrix we select the anti-diagonal terms. After simplifying the denominator, we get:

$$\pi(\gamma,\beta_0,\beta_1) \equiv \frac{1-\lambda}{1-\lambda+\eta_0(1-B)},$$

as asserted.

Finally, the probability of a corrupt act is the product of the probability of a corruptible politician being in office π and the probability that a corruptible politician commits a corrupt act $(1-F(\gamma))$. $\square$

B Non strict equilibria without commitment

In the no commitment case, the electorate is indifferent among all behavior strategies (β_0,β_1) if the cost of replacing the politician is exactly as in Eq. (13), namely

$$\hat{c}\left(\gamma\right) = \frac{\delta\eta_0}{1-\delta\lambda}\sigma\nu\left(\gamma\right).$$

On the other hand, $\hat{\gamma}$ is determined as a best response to the strategy (β_0,β_1) by the implicit Eq. (24), namely

$$\hat{\gamma} = \frac{\kappa\delta\left(\beta_0-\beta_1\right)}{1-\delta\left(\beta_0-\left(1-F\left(\hat{\gamma}\right)\right)\kappa\left(\beta_0-\beta_1\right)\right)}\nu\left(\hat{\gamma}\right).$$

Then, each (β_0,β_1) determines a unique $\hat{\gamma}\left(\beta_0,\beta_1\right)$. This function has associated level curves $\gamma=\hat{\gamma}\left(\beta_0,\beta_1\right)$ ranging from 0 to γ^* (its image set). In turn, as we just said, each $\hat{\gamma}$ makes the electorate indifferent among all strategies only at the unique cost $\hat{c}\left(\gamma\right) = \frac{\delta\eta_0}{1-\delta\lambda}\sigma\nu\left(\hat{\gamma}\left(\beta_0,\beta_1\right)\right)$. Figure 7 depicts the intersection, or equilibrium correspondence.

The vertical axis shows costs c and the horizontal axes the electorate strategies (β_0, β_1). The correspondence is the set of all electorate strategies that are best responses to the induced $\hat{c}\left(\hat{\gamma}\left(\beta_0, \beta_1\right)\right)$ all cost levels at which the electorate is indifferent among all strategies a subset of strategies, intersected with the strategies that generate the said indifference. When more than one strategy

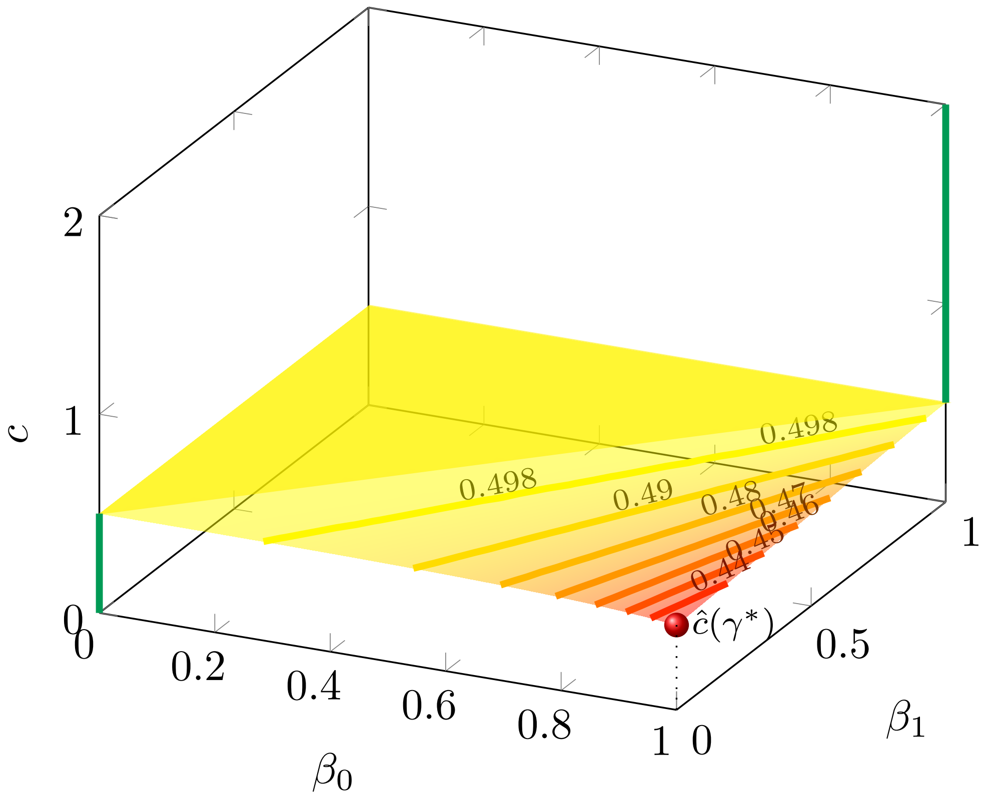


Figure 7: Equilibrium correspondence, no commitment game
This example assumes a uniform distribution over u and parameters $(\kappa, \delta, \eta_0, \sigma, \lambda) = \left(\frac{1}{2}, \frac{8}{10}, \frac{1}{2}, 1, \frac{3}{4}\right)$, from which $c_1 = 0.5$. For each cost of replacement $c \in (0, 2)$ the plot shows the equilibrium pairs (β_0, β_1). Strict equilibria are shown in green solid lines.: if $c < \frac{1}{2}$ the electorate strictly prefers the behavior strategy $(0, 0)$ and the corruptible politician strictly prefers $\hat{\gamma} = 0$; if $c > \frac{1}{2}$ the electorate strictly prefers the behavior strategy $(1, 1)$ and the corruptible politician strictly prefers $\hat{\gamma} = 0$. If $c_1^* = 0.427051 < c < 0.5 = c_1$ there are equilibria in which the electorate is indifferent among all strategies, including some that would induce positive levels of γ on the politician. In particular, if $c = \frac{1}{2}$ the electorate is indifferent among all strategies but among them, all such that $\beta_1 \geq \beta_0$ induce the corruptible politician to choose $\hat{\gamma} = 0$ (the yellow triangle); by the same token, the strategy $(\beta_0, \beta_1) = (1, 0)$ induces $\gamma = \gamma^*$ at which the electorate is indifferent among all strategies if $c = c_1^* = 0.427051$ (the red dot). Observe that all equilibria in combinations of red and yellow occur with the electorate under complete indifference and therefore are not strict.