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Serving the Public Interest

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We present a model of political selection in which voters elect a president from a set of candidates. We assume that some of the candidates are benevolent and that all voters prefer a benevolent president, i.e. a president who serves the public interest. Yet, political selection may fail in our model because voters cannot easily tell benevolent from egoistic candidates by observing their pre-election behavior. Egoistic types may strategically imitate benevolent types in the pre-election stage to extract rents once in office. We show that strategic imitation is less likely if the political system is likely to produce good governance. That is, if benevolent candidates are common, if the president has little discretionary power, and if the public sector is effective. We analyze the role of institutions like investigative media and re-election and show that they can improve or further hamper political selection, depending on the parameters of the political game.

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1   Introduction

Economists have traditionally assumed that all players in the political process, including political leaders, are strictly self-interested. According to this view, political leaders are not intrinsically benevolent but their policy choices may or may not be in line with public interest, depending on how the political institutions shape their incentives. It is therefore crucial to impose institutional rules that restrain egoistic leaders from extracting rents (e.g. Brennan and Buchanan 1980). We agree that political leaders often behave in self-serving ways and that institutions need to be set appropriately. However, we disagree with the standard assumptions which, in the words of James M. Buchanan[1], are that all "individuals must be modeled as seeking to further their own narrow self-interest, narrowly defined, in terms of measured net wealth position, as predicted or expected" and that "there is no suggestion that improvement lies in the selection of morally superior agents who will use their powers in some 'public interest'". In fact, the purpose of our paper is exactly to analyze the difficulties of selecting "morally superior" candidates – we call them benevolent – into office. As explained below, our focus builds on insights from behavioral economics showing that people have heterogeneous social preferences, and contributes to an emerging literature on political selection.

In this paper, we assume that some of the candidates for political office are benevolent and that many are egoistic. Once elected, the "president" has much discretionary leeway over a budget, and can use it to provide a public good or for his private benefit. By assumption, egoistic presidents seek "to further their own narrow self-interest" which, at least in the baseline version of our model, means total rent appropriation by the president. In contrast, a benevolent president spends the entire budget to provide a public good which is both efficient and fair. In that sense, a benevolent president uses his powers to serve a well-defined "public interest". Given these assumptions, egoists prefer to govern rather than to be governed, and all voters obviously prefer to be governed by a benevolent rather than an egoistic president. However, the voters' problem is that candidates' types cannot be directly observed, but must be inferred from their behavior. And this inference is imperfect due to strategic behavior by egoistic candidates. We analyze when strategic imitation by

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[1] Quoted after Besley (2006: 29).

egoistic types hampers the ability of the political system to vote benevolent leaders into office.

The baseline version of our model has three stages. In stage 1, candidates choose whether to make an "anti-social" action which is beneficial to the candidate but moderately costly to society. Examples could be tax-evasion, cheating on an exam, or employment of an illegal immigrant as a nanny. Choices in stage 1 can be observed by voters with some probability which depends, for example, on the effectiveness of investigative media. In stage 2, a leader called "president" is elected, and in stage 3, the president is in control of a budget. The president chooses between providing a public good, i.e. a policy which is in the "public interest" in the sense that it is efficient and fair, and a policy which only benefits the president but not the rest of society.

We assume two "types" of candidates and that the shares of these types among candidates are common information. Benevolent types are non-strategic and find it optimal not to pick the anti-social action in stage 1 and to provide the public good in stage 3. Egoistic types face a trade-off between taking the anti-social action in stage 1 to obtain immediate benefits, and abstaining from taking it, in order to appear as a benevolent type in the eyes of the voters and thus to increase the chances of rent appropriation in stage 3. We say that "strategic imitation" prevails if an egoist *does not* pick the anti-social action in stage 1. The incentives for strategic imitation are straightforward in the baseline model. Intuitively, an egoist balances the costs of behaving pro-socially in stage 1 against the expected benefits of rent appropriation in stage 3. The difficulty in this calculus is that the expected rent in stage 3 depends on the imitation behavior of the other egoistic candidates which in turn depends on the share of benevolent types.

The baseline model yields two main insights. First, we show that strategic imitation is less likely if the political system is likely to produce good governance. On average, the governed fare well if the share of benevolent candidates is high, the president has little discretion over the budget, and the public sector is effective in the sense that public goods provision yields large efficiency gains. In this case, the net gain from governing rather than being governed is relatively low, and strategic imitation is therefore relatively unattractive. Second, we find that more effective investigative media which foster "transparency" in the sense of improving voters' information about candidates' pre-election behavior, have

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ambivalent effects on political selection. While higher transparency improves the chances of telling benevolent from non-imitating egoistic candidates, it also provides incentives for egoistic candidates to pose as benevolent types. We find that more transparency improves selection at low levels, but hampers political selection if the level of transparency is already high.

We extend the baseline model by allowing incumbents to be re-elected to investigate if re-election is a remedy against the failure in political selection diagnosed above. In line with an extensive literature in political economy (e.g. Austen-Smith and Banks 1993, Besley and Case 1995), we find that incentives to seek re-election tend to discipline egoistic presidents. However, the effects of re-election are ambiguous and depend on how far-sighted candidates are. If candidates are relatively patient, the incentive to seek re-election disciplines egoistic presidents in the first term and decreases the amount of strategic imitation. If candidates are relatively impatient, the possibility of re-election further aggravates the problem. In this case, the incentive to seek re-election does not curb rent extraction and may induce more strategic imitation.

The basic assumptions of the model are that (i) presidential candidates are heterogeneous with respect to social preferences, (ii) policy choices are in important ways shaped by the social preferences of presidents, and (iii) candidate's social preferences cannot be directly observed, and inferring them from behavior is fraught with difficulties. We now discuss these assumptions in turn by relating them to the literature and to empirical observations.

Assumption (i) is that people, including voters and political candidates, are heterogeneous with respect to social preferences. Mounting evidence from experimental economics suggests that pro-social preferences exist and that individuals are heterogeneous with respect to their concern for others (see Camerer 2003: Ch. 2 for a survey). Recent evidence shows that this also holds for representative samples of the general population (e.g. Bellemare, Kröger and van Soest 2008). While we assume that benevolent candidates exist, we consider the possibility that their share is small. Papers studying selection into the political arena (e.g. Mattozzi and Merlo 2007, Caselli and Morelli 2004, Messner and Polborn 2004) emphasize that "bad" types may select into the pool of candidates, perhaps because they find a career in the political arena more attractive than one in the market

place. As a result of adverse selection, the share of benevolent types among candidates is likely to be smaller than in the general population.

Assumption (ii) is that policy choices depend on the "type" of the president selected. This assumption is well in line with empirical studies showing that the identity of policy makers shapes policy choices and economic outcomes (e.g. Jones and Olken 2005, Lee, Moretti and Butler 2004, Chattopadhyay and Duflo 2004). Assumption (i) that candidates are heterogeneous together with assumption (ii) that voters care about this heterogeneity is consistent with the observation that "personal qualities" like the "integrity" of political candidates often play an important role in political campaigns. For example, in exit polls taken in connection with the Republican presidential primary elections in the U.S. in 2008, around 45 percent of voters stated that "personal qualities" were more important for their vote than "issues"[2] (see also Mondak 1995).

Assumption (iii) is that political selection through elections is hampered because of strategic imitation. Our paper complements the literature on political selection through elections (e.g. Brollo et. al. 2010, Corazzini et. al. 2009, Beniers and Dur 2007, Besley and Smart 2007, Besley 2006: Ch. 3, Fearon 1999, Coate and Morris 1995, Banks and Sundaram 1993). We add to this literature in several ways. First, in most models of political selection through elections, the utility of a candidate who loses an election is exogenous, typically normalized to zero (e.g. Fearon 1999, Besley 2006, Besley and Smart 2007, Brollo et. al. 2010). In or model, on the other hand, the utility of losing candidates equals the utility of ordinary citizens and is endogenously determined. Concerns about utility in case of electoral defeat are an important determinant of candidates' imitation behavior in our model. If egoistic candidates expect governance to be bad, and therefore the utility of ordinary citizens to be low, they are more likely to make costly investments in reputation in order to increase their chances of holding office. This behavior, in turn, hampers the political selection process. The model in Ferraz and Finan (2009) shares this feature with our paper but focuses on the effects of politicians' wages on politician quality and performance.

Second, most models in the literature study how an *incumbent* leader signals his or her type before an election. In this context, a "bad" leader imitating a "good" one has

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[2] Information found on the webpage "election center 2008" of CNN.com

ambiguous effects. On the one hand, imitation reduces the probability that a good type is elected in the next election, on the other it leads to better policies in the current period, since imitation consists in choosing the policies that a good leader would choose. In Besley (2006) and Brollo et. al. (2010) the net effect of imitation is positive, i.e. elections discipline bad politicians. In contrast, our model considers signaling of non-incumbent candidates in the pre-election period. We assume that the effects on society of actions taken before the election are small relative to those taken in office. Therefore, the main effect of imitation is the negative one of weakening political selection.

Third, most models consider the signaling behavior of only one agent, namely the incumbent leader. In contrast, we analyze the signaling decisions of several agents where the expected signaling behavior of other candidates is an important element in a candidate's optimization problem. Beniers and Dur (2007) share this feature with our paper but they consider incumbents in a coalition government while we focus on non-incumbent candidates. The model in Corazzini et. al. (2009) also features two candidates who can send signals to voters but in their model signaling comes in the form of materially costless, non-binding campaign promises. In contrast, we focus on costly signaling. Corrazini et. al. focus on "benevolence" in the guise of lying aversion whereas we model it as a preference for efficiency and fairness.

The paper is also related to the political science literature on "valence issues", i.e. issues all voters agree on. In our model, all voters agree that it is preferable to have a benevolent leader. Most papers in this literature study how valence issues affect policy. For example, Ansolabehere and Snyder (2000), Groseclose (2001) and Aragones and Palfrey (2001) provide models showing that candidates or parties with a valence advantage choose more moderate policies than candidates or parties with a valence disadvantage. In contrast, our model focuses not on policy but on the selection of benevolent candidates.

One implication of our model is that voters will often be disappointed about the "character" of a president in the sense that they inferred from his pre-election behavior that he was benevolent but discover that he is not when in office. Examples of such disappointment abound. Ferdinand Marcos, the notoriously corrupt president of the Philippines, was a decorated war hero from World War II. Haitian President Francois Duvalier earned his famous nickname, "Papa Doc", by serving as a successful doctor in a

campaign to eradicate tropical diseases. As president, he ran a highly repressive and corrupt government. Robert Mugabe, the president of Zimbabwe, was a widely admired hero of his country's liberation struggle but gradually revealed himself as one of the most self-serving leaders in Africa. Strategic imitation offers a potential explanation for such disappointment.
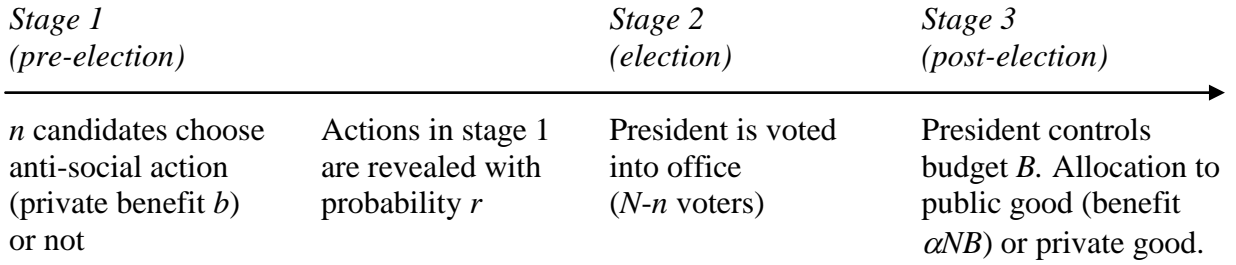
2   The model

The baseline model has three stages (see figure 1): In stage 1, n candidates out of a population of size N run for president. Since the present paper focuses on selection through voting rather than entry, the number of candidates is exogenous to our model and we assume that candidates are randomly selected from the population. Candidates can make an anti-social action at some benefit b to themselves (evading tax payment, cheating on an exam etc.) but with a cost c to society. We assume two types of candidates. Candidates of a given type are homogenous. Benevolent types never choose the anti-social action because they incur a psychological cost $\psi > b$ if they do. We can think of this as the cost of a "bad conscience". Egoistic types suffer no psychological cost from choosing the anti-social action. These types refrain from taking the anti-social action only if it maximizes their expected payoffs in the entire game. The share of benevolent types among the candidates is $\theta > 0$. Candidates' choices in stage 1 are observed by voters with probability $r \geq 0$. We assume that θ and r are public information. We refer to r as the "transparency of politics" which is shaped by, for example, the strength of investigative media or by legislation requiring politicians to disclose information.[3]

In stage 2, a president is voted into office by $N - n$ voters. Voting is compulsory and "sincere", i.e. voters cast their votes according to their material preferences. The president is elected by plurality vote or by random draw with probability $1/k$ if k candidates receive the highest number of votes.

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[3] Rather than letting candidates choose whether to take an *anti*-social action in period 1, we may assume that they decide about taking a *pro*-social action, such as volunteering for the army or performing charity work. Assume that the private, monetary cost of performing the pro-social act is b, and that benevolent candidates *always* take the pro-social action, while egoists only do so only if it maximizes their total, expected pay-off in the game. The results following from these assumptions are essentially the same as the ones presented below. When agents choose whether to take a pro-social rather than an anti-social action, the parameter r should be interpreted as the probability that acts can be *verified*, rather than the probability that they are *revealed*. The reason is that all agents who take the pro-social action have a incentive to voluntarily inform the public of their behavior.

Figure 1: Political selection game

Stage 1 (pre-election)		Stage 2 (election)	Stage 3 (post-election)
n candidates choose anti-social action (private benefit *b*) or not	Actions in stage 1 are revealed with probability *r*	President is voted into office (*N-n* voters)	President controls budget *B*. Allocation to public good (benefit αNB) or private good.

In stage 3, the president is in control of a budget *B* which can be used to fund a public good or be appropriated for the president's private benefit. We assume that the public good is linear, i.e. has constant returns to scale and benefits all voters equally. The effectiveness of the public sector is measured by α, the marginal per capita return of a dollar allocated to the public good, where $1/N < \alpha < 1$. Allocating the entire budget to the public good is both efficient and fair. It is efficient in the sense that the sum of payoffs to society is maximal ($\alpha NB > B$), and it is fair in the sense that all agents, including the president, receive the same payoff, αB. If an egoistic president is elected, the entire budget is pocketed by the president – kleptocracy prevails. Payoffs in stage 3 are discounted by a factor δ, $0 < \delta < 1$.

2.1. Equilibrium

We analyze the determinants of successful political selection in equilibrium, i.e. the equilibrium amount of strategic imitation and the resulting probability of selecting a benevolent president. We search for a perfect Bayesian equilibrium in which voters update their beliefs using Bayes' rule and each candidate chooses an optimal strategies given the choices of other candidates and voters. The main variables of interest determining equilibrium values are the share of benevolent candidates θ, the level of transparency *r*, the effectiveness of the public sector α, and the president's discretionary power over the budget *B*.

Given our assumptions, egoists prefer to govern rather than to be governed, and all voters prefer a benevolent rather than an egoistic president. The problem is that voters cannot directly observe candidates' types, and have to base their decision in stage 2 on beliefs about types. These beliefs are shaped by observed behavior in stage 1. By assumption, benevolent types refrain from choosing the anti-social action in stage 1 with certainty, and egoistic types may or may not strategically imitate the benevolent types,

depending on how much imitation increases their expected rent. We denote the share of all candidates who *do not* choose the anti-social action in stage 1 by $\sigma \geq \theta$. Upon observing each candidate's period 1 action, and therefore observing σ, voters update their beliefs about the type of each candidate. Bayes' rule implies that voters attach the probability θ/σ to a candidate being benevolent in case he has *not* taken the anti-social action in period 1, and a probability of zero if he has.[4] In line with intuition, voters always vote for a candidate who did not choose the anti-social act in period 1 (provided that they receive information about these acts).

A benevolent president is selected with certainty only if $\sigma = \theta$, i.e. if there is no strategic imitation. In contrast, if $\sigma > \theta$, a president may be voted into office who does not serve the public interest in stage 3.

From the perspective of an egoistic candidate, the benefits of strategic imitation depend on how much the signal increases the probability of being elected, on the difference in (discounted) expected payoffs between governing and being governed, and between good and bad governance if not elected. More specifically, if egoist i is voted into office, his payoff is B. If i is not elected, he earns 0 if the president is an egoist and $\alpha B > 0$ if the president is a benevolent type. We denote the conditional probability that an egoist is elected if he imitates by p_s and the probability if he does not by p_0. We denote the probability that a benevolent president is elected by p_A. These probabilities depend on the transparency of the political system (measured by r), i.e. on whether information about pre-election behavior is revealed at the election stage. The superscript r indicates that information is revealed, and the superscript u that it is not. For example, p_s^r is the probability that a candidate is elected if he imitates, and information about pre-election behavior is revealed.

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[4] Formally: $prob(type = \text{benevolent} \mid \text{prosocial action}) =$

$[prob(\text{prosocial action} \mid type = \text{benevolent}) * prob(type = \text{benevolent})] / prob(\text{prosocial action}) = \theta / \sigma.$

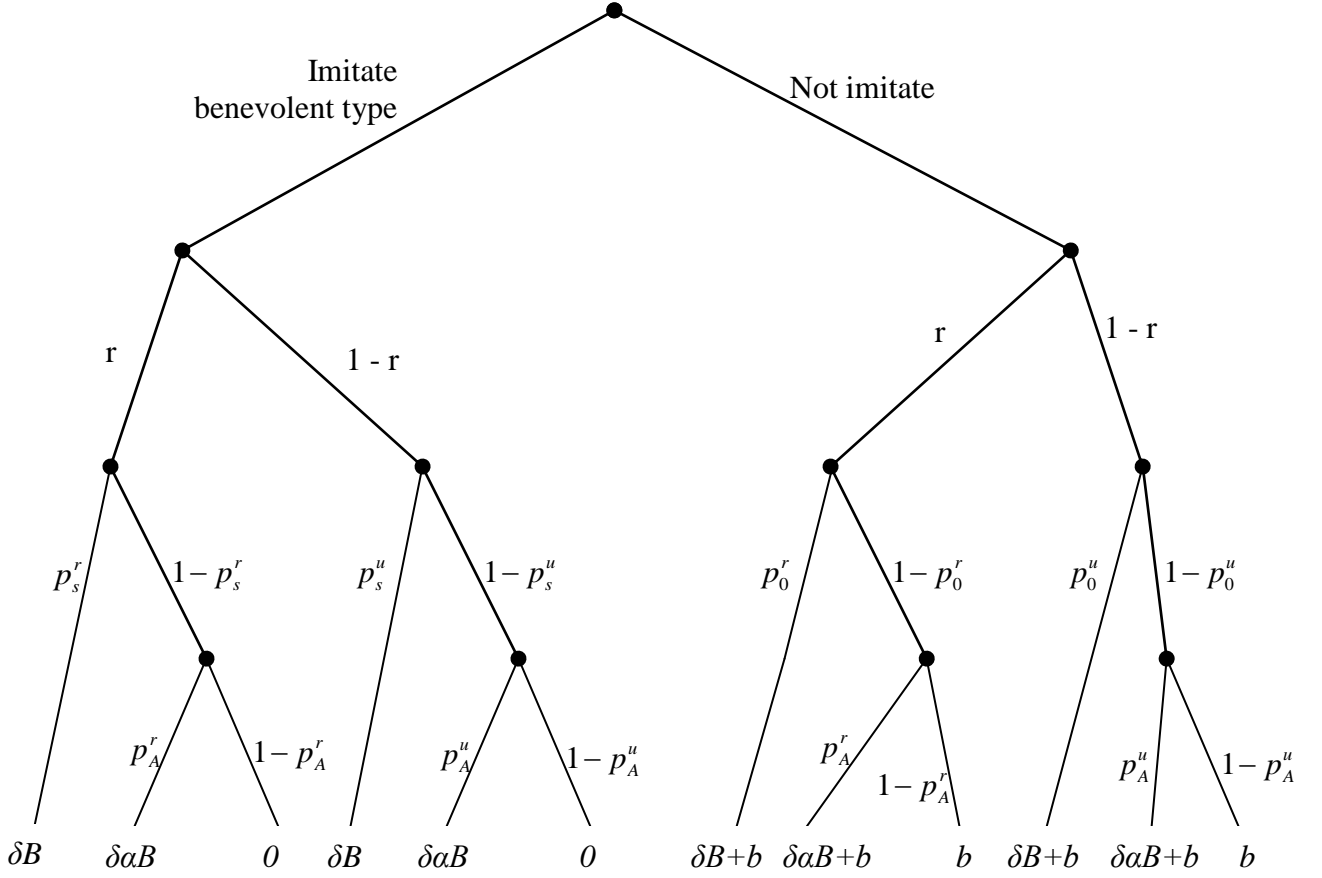**Figure 2:** Optimization problem for an egoistic type

Figure 2 shows the decision tree representing the optimization problem of an egoist. Total discounted payoffs are shown at the bottom of the figure. An egoist strategically imitates if the expected payoff is at least as big as when he does not:

$$r\left\{p_s^r(\delta B)+\left(1-p_s^r\right)\left[p_A^r(\delta\alpha B)-0\right]\right\} + (1-r)\left\{p_s^u(\delta B)+\left(1-p_s^u\right)\left[p_A^u(\delta\alpha B)-0\right]\right\}$$

$$\geq \tag{1}$$

$$r\left\{p_0^r(\delta B+b)+\left(1-p_0^r\right)\left[p_A^r(\delta\alpha B+b)+\left(1-p_A^r\right)b\right]\right\} + (1-r)\left\{p_0^u(\delta B+b)+\left(1-p_0^u\right)\left[p_A^u(\delta\alpha B+b)+\left(1-p_A^u\right)b\right]\right\}$$

Expression (1) can be considerably simplified by using the following facts. Imitation has no effect on the type voted into office if no information about pre-election behavior is available ($r = 0$) in the election stage. In this case, voters randomly select a candidate which means that $p_s^u = p_0^u = 1/n$ and $p_A^u = \theta$. Also, since we assume that there is at least one benevolent candidate ($\theta > 0$), an egoist is never selected if he does not imitate and information about pre-election behavior is available, i.e. $p_0^r = 0$. Thus, (1) reduces to

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$$r\delta B\left[p_s^r\left(1-\alpha p_A^r\right)\right] \geq b, \tag{2}$$

where the left-hand side is the expected discounted benefit and the right-hand side is the private cost of imitation.

Note that both p_s^r and p_A^r are functions of σ which, in turn, is a function of all parameters, including θ, r, α, and B. Remember that the symbol p_s^r is the probability that a candidate is voted into office in stage 2 given that he did not chose the anti-social action in stage 1 and that information about period 1 was revealed. This probability depends inversely on σn, i.e. on how many candidates choose the anti-social action in stage 1.

$$p_s^r = \frac{1}{\sigma n} \tag{3}$$

A key variable in our model is the probability of selecting a benevolent president, p_A. This probability depends on the share of benevolent candidates and the tendency of egoists to strategically imitate. In particular, when information about pre-election behavior is revealed, a benevolent president is elected for sure ($p_A^r = 1$) if egoists do not imitate (i.e. if $\sigma = \theta$). In contrast, a benevolent president is elected only by chance, i.e. $p_A^r = \theta$ if all egoists imitate (i.e. $\sigma = 1$). In general, it holds that

$$p_A^r = \frac{\theta}{\sigma} \tag{4}$$

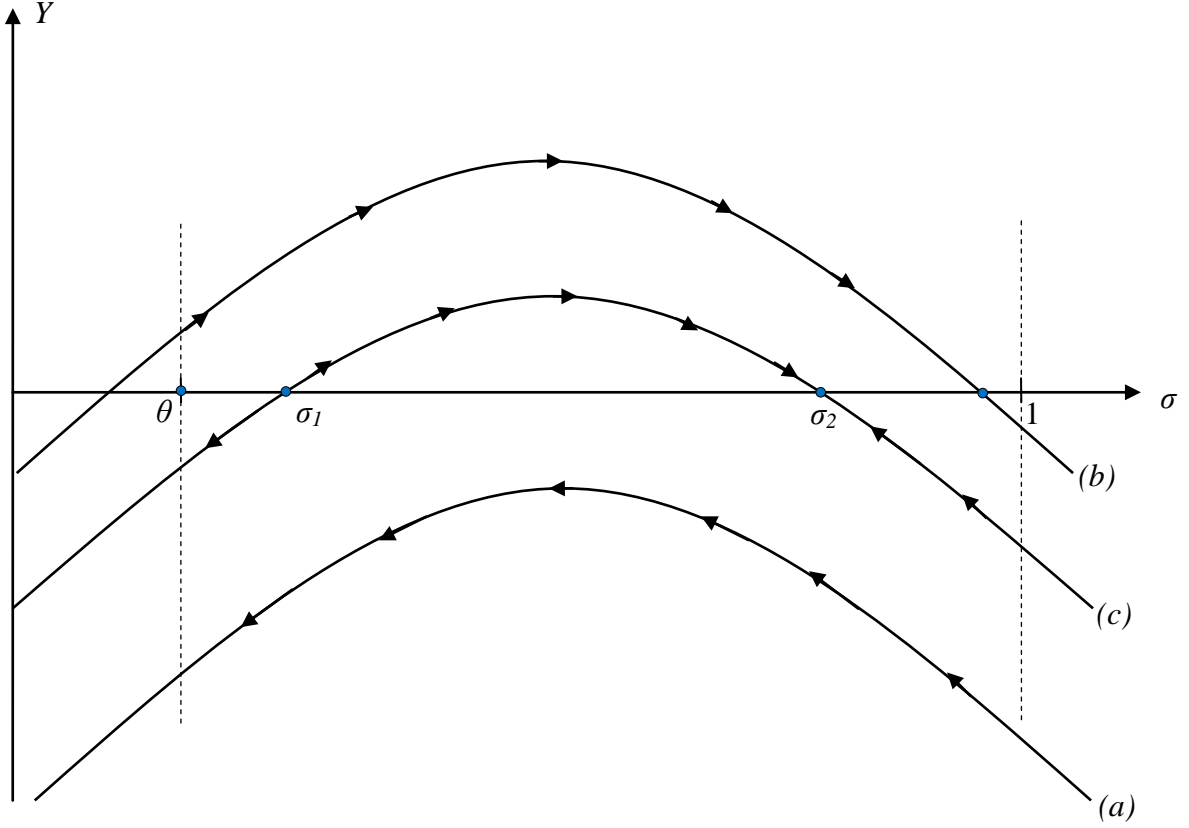Inserting (3) and (4) into (2) we get the following condition for strategic imitation:

$$r\delta B\left(\frac{1}{\sigma n}\right)\left(1-\frac{\alpha\theta}{\sigma}\right)-b \geq 0 \tag{5}$$

We re-write (5) as

$$Y(\sigma) \equiv -(bn)\sigma^2+(r\delta B)\sigma-r\delta B\alpha\theta \geq 0 \tag{6}$$

which can easily be represented by a parabola (see figure 3).

Figure 3: Strategic imitation equilibria

We denote the critical values yielding $Y(\sigma) = 0$ by σ_1 and σ_2 and distinguish 3 cases:

a) *No strategic imitation*: $Y(\sigma) < 0 \ \forall \ \sigma \in [\theta;1]$. In this case, the parabola in figure 3 is below 0 in the feasible range of σ. Therefore, strategic imitation never pays, and $\sigma^* = \theta$. A sufficient condition for this no-imitation equilibrium to occur is that the vertex of the parabola, Y_v, is below zero, i.e. that

$$Y_v = Y\left(\frac{r\delta B}{2bn}\right) = \frac{(r\delta B)^2}{4bn} - r\delta B\alpha\theta < 0 \ . \tag{6b}$$

Condition (6b) is more likely to be met and strategic imitation therefore less likely to occur at all if, for example, the number of candidates n is high or if imitation is very costly to the candidate (i.e. b is high). Interestingly, inspection of (6b) reveals that strategic imitation is less likely to be attractive if the public sector is very effective (α is large), if the president has little discretionary power of the budget (B is small), or if most candidates are

benevolent (θ is large). In other words, strategic imitation is discouraged if governance is likely to be good.

b) *Unique equilibrium with strategic imitation at $\theta < \sigma^* \leq 1$.* If the vertex of $Y(\sigma)$ is positive ($Y_v > 0$) and if $Y(\sigma)|_{\sigma = \theta} > 0$, a unique equilibrium obtains with a positive amount of strategic imitation of $\theta < \sigma^* \leq 1$. In figure 3, this case is illustrated for a situation in which only some egoists imitate in equilibrium ($\sigma^* < 1$). Since all egoists are identical in the model, it is natural to assume a symmetric equilibrium. The only symmetric Nash equilibrium implies that each egoist plays a mixed strategy, where he imitates with probability $(\sigma_2 - \theta)/(1 - \theta)$. If $Y(1) \geq 0$, imitation is dominant for an egoist, and the equilibrium is $\sigma^* = 1$. In this pooling equilibrium, incentives to imitate are so strong that all egoistic candidates behave as if they were benevolent before the election, but the elected president is unlikely to serve the public interest after the election (if θ is small). Note that if $Y(\sigma) > 0$ in the entire range, all egoists strategically imitate in equilibrium, and marginal changes in parameters do not reduce strategic imitation.

c) *Multiple equilibria.* If the vertex of $Y(\sigma)$ is positive ($Y_v > 0$) and if $Y(\sigma)|_{\sigma = \theta} < 0$, $Y(\sigma)$ intersects the horizontal axis twice in the feasible range of σ as illustrated in graph (c) of figure 3. Multiple equilibria prevail in this case, namely i) $\sigma^* = \theta$, ii) $\sigma^* = \sigma_1$, and iii) $\sigma^* = \min(\sigma_2, 1)$. However, only i) and iii) are stable equilibria, and beliefs about σ determine which equilibrium strategic candidates coordinate on. Suppose egoists hold an equilibrium common prior, σ_0 (see appendix A for a discussion of disequilibrium beliefs). If $\sigma_0 = \sigma_1$, then $\sigma^* = \sigma_1$ is an equilibrium, but it is unstable because if σ_0 deviates by ε from σ_1, the share of imitating candidates converges to either θ or $\min(\sigma_2, 1)$. This means that equilibrium σ_1 is unlikely to prevail, and we do not consider it in the remainder of our discussion.

In sum, cases *a)* and *ci)* provide a complete description of the conditions for the absence of strategic imitation. Thus, when information about pre-election behavior is revealed, the elected president serves the public interest with certainty in these cases. In all other cases, there is a risk that an egoist is voted into office.

2.2. Comparative statics

We now investigate how the extent of strategic imitation in equilibrium and the probability of selecting a benevolent president p_A, depend on changes in parameters. We concentrate on the equilibrium at σ_2. The reason is that the other equilibria are either unstable or involve full or no imitation as the discussion above has shown, and are therefore not sensitive to marginal changes in parameters. Since (6) is a second-degree polynomial in σ, σ_2 is given by:

$$\sigma_2 = \frac{r\delta B + \sqrt{(r\delta B)^2 - 4bnr\delta B\alpha\theta}}{2bn} = \frac{r\delta B + \sqrt{D}}{2bn} \tag{7}$$

where $D = (r\delta B)^2 - 4bnr\delta B\alpha\theta$. The comparative statics below are derived by differentiating (7) with respect to the parameter in question.

The effects of the first three parameters discussed below can be summarized in the statement that strategic imitation is less likely if governance is likely to be good. We show that a higher share of benevolent candidates, less discretionary power of the president over the budget B, and a higher effectiveness of the public sector all improve political selection, because they reduce the relative cost of being governed, rather than governing. We also discuss the effects of transparency (r) in the political process and find that the effect of transparency on the quality of political selection is ambiguous.

a) *Share of benevolent candidates (θ)*

A higher share of benevolent types decreases the incentives for strategic imitation [$\frac{\partial \sigma_2}{\partial \theta} = \frac{-r\delta B\alpha}{\sqrt{D}} < 0$, see eq. (7)]. The reason is that governance is likely to be good - a benevolent president is more likely to be selected - which reduces the cost for an egoist of not governing.

Figure 4 illustrates how the equilibrium probability of selecting a benevolent president, p_A, depends on the share of benevolent candidates (θ). Our result with strategic imitation is compared to a benchmark without imitation in which the cost of imitation b is high enough to deter any imitation. This implies that $p_A = p_A^{No\ imit.} = r + (1-r)\theta$ (see dashed line in figure 4). The figure shows that strategic imitation has the most adverse effects at low values of θ. Suppose, for example, that 1% of all candidates are benevolent and 99%

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are egoistic. If all egoistic types make anti-social choices in the pre-election stage, benevolent types are selected whenever their signal can be observed (r is assumed to be 50% in the figure). In contrast, if egoistic types strategically imitate, only about 1% of presidents will serve the public interest. It is only for unrealistically high values of θ (of around 60% in the figure) that strategic imitation by egoists ceases to be harmful.

Figure 4: Probability of voting a benevolent president into office (p_A) as a function of θ
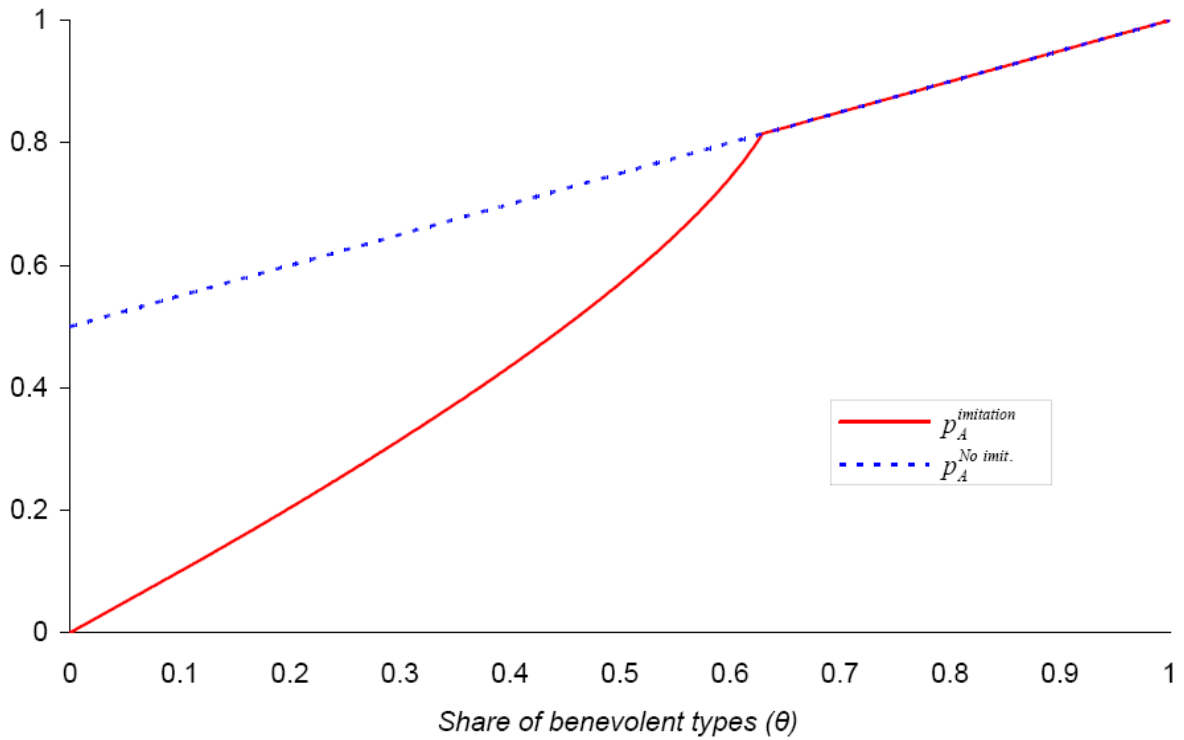
Note: The figure is drawn assuming equilibrium σ_2 prevails and falls between θ and 1. We illustrate for parameters $n = 10$, $r = 0.5$, $\delta = 0.9$, $\alpha = 0.4$, $b = 0.3$, $B = 7$.

b) *Budget size* (B)

Control of a higher budget makes governing, and therefore strategic imitation for egoists more attractive $[\dfrac{\partial \sigma_2}{\partial B} = \dfrac{r\delta}{2bn} + \dfrac{D + (r\delta B)^2}{4bnB\sqrt{D}} > 0$, see eq. (7)]. A higher share of strategic imitators reduces the probability of selecting a benevolent type. Brollo et. al. (2010) also present a model where an exogenous increase in the public budget damages

political selection. They find support for this hypothesis in an empirical study of municipal governments in Brazil.

c) *Efficiency of public goods production (α)*

The incentives for strategic imitation fall with $α$, the effectiveness of the public sector [$\frac{\partial \sigma_2}{\partial \alpha} = \frac{-r\delta B\theta}{\sqrt{D}} < 0$, see eq. (7)]. The reason is again that the expected cost of being governed rather than governing is decreasing in $α$. The result is that the probability of selecting a benevolent president increases with the efficiency of public goods production. This resonates well with a number of empirical studies which have found a negative correlation between corruption and the effectiveness of public bureaucracies. These correlations are usually interpreted as indicating that corruption reduces this effectiveness (e.g. Bardhan 1997, Shleifer and Vishny 1993). Our model provides a rationale for why the causality may run the other way. If the public administration is ineffective, selfish individuals are attracted to seeking political office because life without political power is unpleasant. This surprising conclusion might help to explain why countries with highly ineffective public bureaucracies, e.g. in some African countries, also seem to attract a higher share of corrupt politicians than countries with more effective public administrations.

Besley and Smart (2007) also consider the effect of public sector effectiveness on political selection, but whereas we focus on the effectiveness of public goods production, they look at technologies for raising government revenue. They point out that more efficient means of raising revenue means that more resources are available for rent seeking. Therefore, a more efficient revenue raising technology may attract corrupt candidates and therefore *worsen* political selection. Hence, Besley and Smart focus on another aspect of public sector effectiveness than we do and reach very different conclusions.
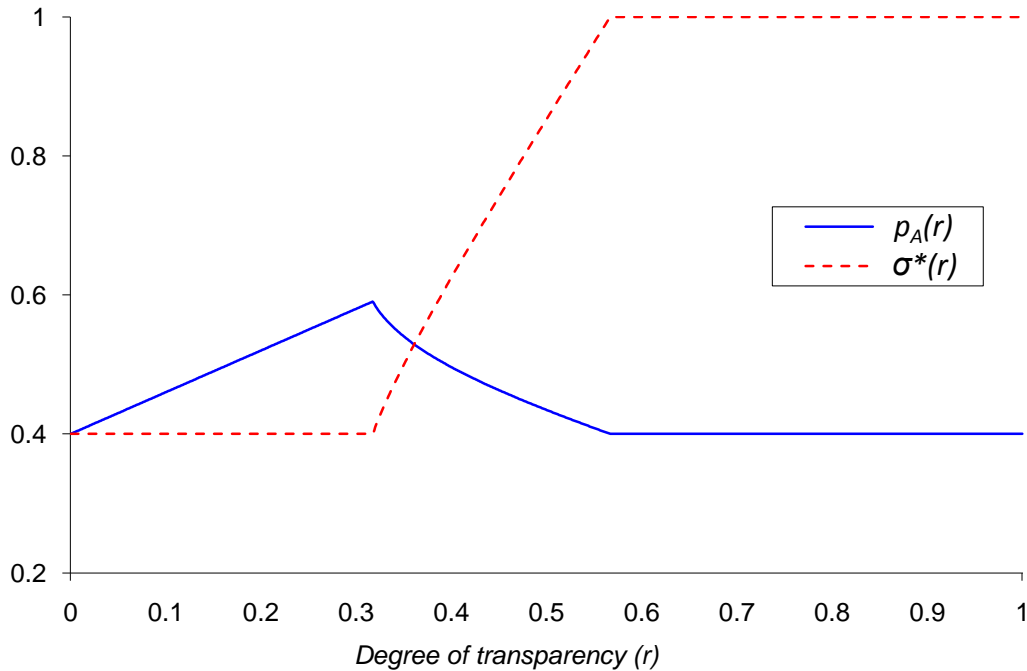
d) *Transparency (r)*

Strategic imitation is more attractive if actions in the pre-election stage are more likely to be revealed [$\frac{\partial \sigma_2}{\partial r} = \frac{B\delta}{2bn} + \frac{D + (r\delta B)^2}{4bnr\sqrt{D}} > 0$, see eq. (7)]. More strategic imitation means that the informativeness of the signal to voters is low. On the other hand, a higher value of r also means that a benevolent candidate is more likely to be detected at all. Therefore, the

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overall effect of *r* on political selection is non-monotonic. The probability that a benevolent president is elected is

$$p_A = rp_A^r + (1-r)p_A^u = \frac{r\theta}{\sigma^*} + (1-r)\theta = \theta + r\theta\left(\frac{1}{\sigma^*}-1\right) \tag{8}$$

If no information is revealed, $r = 0$, voters pick a candidate at random which means that the probability of electing a benevolent president is θ. For sufficiently low values of *r* ($r < 4bn\alpha\theta/\delta B$), imitation is not profitable, i.e. $\sigma^* = \theta$. In this case, p_A is increasing in *r*. However, at some point imitation becomes attractive (around $r = 0.3$ for the specific parameters in figure 5). When all egoists imitate ($\sigma^* = 1$), voters cannot extract useful information from stage 1 signals, no matter how high *r* is, and p_A again drops to θ. Hence, increasing transparency has positive effects at low levels of transparency, but negative effects if the level is already high.

Figure 5: Investigative media and the quality of political selection

Note: Illustration is based on same parameter values as Figure 4, and $\theta = 0.4$.

The intuition for this result is that higher transparency increases the cost of acting selfishly in the pre-election stage and therefore increases incentives for egoists to behave as

if they were benevolent. This, in turn, decreases the quality of information available to voters about the type of the candidates.

The finding that higher transparency of politics does not necessarily improve political economic outcomes resonates well with Mattozzi and Merlo (2007) who find that higher transparency can lead to less competent politicians, because it increases the opportunity cost of political activity for highly competent agents. Besley (2006) also finds that the effect of transparency on political selection is ambiguous. He assumes that voters receive an exogenous signal about an incumbent leader's type and shows that a stronger signal might lead to worse outcomes because it weakens the incentive for a bad incumbent to mimic a good one by choosing good policies. Empirical studies mostly find a negative effect of media freedom on corruption (e.g. Brunetti and Weder 2003, Freille et. al. 2007), but typically do not test for non-linear effects.

3 Re-election: A cure for corruption?

We now extend our baseline model to investigate re-election as a constitutional constraint on rent extraction by egoistic (corrupt) presidents. While the analysis of incentives from re-election has been a recurrent theme in the public choice literature (e.g. Barro 1973, Ferejohn 1986, Smart and Sturm 2006), our analysis complements that literature by allowing for a (small) share of benevolent candidates for political office. As in Coate and Morris (1995), incentives from re-election serve two roles: to curtail rent-extraction by egoistic incumbents − a moral hazard aspect − and to select a benevolent candidate − an adverse selection aspect.

We analyze if re-election is an effective constitutional constraint to rent extraction by adding a stage 4 and 5 which essentially replicate stages 2 and 3 in the baseline game of figure 1. A key difference is that at the beginning of stage 4, voters learn how much of the budget the incumbent allocated to public goods in stage 3.

The main results of our analysis depend on egoistic candidates' patience, i.e. by how much they discount payoffs accruing in later periods, and are as follows. If candidates are sufficiently patient, incentives to seek re-election discipline egoistic presidents and improve political selection. More specifically, we show that if re-election incentives discipline

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egoistic presidents in stage 3, they also tend to reduce strategic imitation, because the benefits from imitation are reaped only with a delay, i.e. after the second election. However, if agents are impatient, the incentive to seek re-election might not be strong enough to discipline incumbents and the introduction of a second election might lead to further deterioration of political selection. Strategic imitation is now more attractive because imitators get two, rather than one, chances of winning the presidency and capturing the budget. We now deduce these results by solving the game backwards.

In stage 5, egoistic presidents appropriate the entire budget while benevolent presidents allocate B to public goods.

In stage 4, voters choose between the incumbent and a "challenger". We assume that voters prefer the incumbent over a challenger if the incumbent is equally or more likely to be benevolent than the challenger. This is the case if the incumbent allocates B to public goods in stage 3. If not, it is clear that the incumbent is an egoist and he would not be re-elected in stage 4.

Stage 3 outcomes can be understood as follows. We denote by p_{A5} the probability that a benevolent type is elected in the stage 4, given that an egoist was elected in stage 2. We assume that $p_{A5} = \theta$ when no information is revealed, and $p_{A5} = p_A^r$ when it is (for simplicity, we do not take into account that the particular egoist who won the first election is not a viable candidate in the second election. Unless n is small, this changes the results only slightly). If an egoistic president allocates B to public goods, his payoff is αB in stage 3, and δB in stage 5. If instead he pockets the budget B in stage 3, his expected payoff in stage 5 is $p_{A5}\delta\alpha B$. An egoistic president therefore chooses the benevolent policy in stage 3 if and only if $\alpha B + \delta B \geq B + p_{A5}\delta\alpha B$, i.e. if:

$$\delta \geq \frac{1-\alpha}{1-p_{A5}\alpha} \equiv \delta^* \tag{9}$$

Note that the threshold value for impatience δ^* is decreasing in α and increasing in p_{A5}. A more efficient public sector increases the president's incentive to act in the public interest because he himself benefits from the goods produced by the public sector. A higher probability of a benevolent president taking office in period 5, on the other hand, decreases

the expected loss from giving up the chance of re-election. Since $p_A^r \geq \theta$, more patience is required to prevent an egoistic president from capturing the rent when information about stage 1 actions is revealed than when it is not. Note that δ^* is endogenous. It depends on p_{A5}, and therefore on the amount of strategic imitation.

In stage 2, a candidate who chose the benevolent action in stage 1 is elected, whenever information about pre-election behavior is revealed. Even if voters realize that an egoistic president is going to allocate B to the public good in stage 3, they also know that he will be re-elected and keep the entire budget in stage 5. Therefore, voters still have an incentive to favor the candidates they believe are most likely to be benevolent.

In stage 1, an egoist's incentive to choose the anti-social action depends on his policy plans if elected president, and on his beliefs about the policy choices of other egoistic presidents.[5]

(i) $\delta \geq \delta^*$. If an egoist is sufficiently patient, he allocates B to public goods in stage 3 according to eq. (10) (below we check if the assumption $\delta \geq \delta^*$ is consistent with the equilibrium level of strategic imitation). Strategic imitation affects the probability of winning the election in stage 2 in exactly the same way as in the baseline game, but the discounted gains from winning the presidency are smaller. In stage 3, all agents earn αB, and there is no benefit from holding office. However, the president is re-elected with certainty, and earns B in stage 5. The probability that a benevolent president holds office in stage 5 is the same as in the baseline game. Hence, the expected gain from imitation is the same as in the baseline case, except that it is discounted by δ^2 rather than δ. In this case, therefore, the introduction of a second election leads to (weakly) less strategic imitation than in the baseline case. Denote by σ' the equilibrium value of σ in the case where the egoist intends to allocate B to the public good, and expects other egoists to do the same. The resulting value of p_{A5} is denoted by $p'_{A5} = \theta/\sigma'$, and the resulting value of δ^* by

$$\delta' = \frac{1-\alpha}{1-p'_{A5}\alpha} \,.$$

(ii) $\delta < \delta^*$. The problem of a not sufficiently patient egoist is more complicated and analyzed in detail in appendix B. Egoistic presidents now grab the public budget in stage 3.

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[5] Appendix C shows that the optimal strategies derived here are consistent with the assumptions about δ^* used in their derivation.

The gains from imitation which are captured in stage 3 are therefore the same as in the original game, for a given value of σ (see appendix B for a proof). The additional benefit captured in stage 5 can be positive or negative. On the one hand, imitation provides a chance to win the second election, even if information about stage 1 actions is revealed. In this sense, imitation buys the egoist an additional chance of capturing the public budget. On the other hand, imitation slightly decreases the probability that a benevolent type holds office in stage 5, which has a negative effect on the egoist's expected payoff in that period.[6] The appendix shows that the net effect might be positive or negative. Denote the equilibrium value of σ in this case by σ''. The resulting value of p_{A5} is denoted

$p''_{A5} = \theta / \sigma''$, and the resulting value of δ^* by $\delta'' = \dfrac{1-\alpha}{1 - p''_{A5}\alpha}$.

If imitation increases expected earnings in stage 5, i.e. if the effect from two rather than one chance of winning the presidency dominates, the total incentive for strategic imitation is stronger than in the case with only one election. Hence, the introduction of a second election leads to more strategic imitation and therefore less effective political selection compared to the situation with only a single election. Figure B2 in appendix B illustrates that this is the case.

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[6] The probability that a benevolent type holds office in the last stage is higher when the egoist chooses not to imitate than when he does. To see that this is the case, denote the probability that a particular egoistic agent is elected president in stage 2 when information about pre-election behavior is revealed by p^r_j, $j=s,0$. The probability that a benevolent type holds office in period 5 is $p^r_j p_{A5} + (1 - p^r_j) p_{A5} + (1 - p^r_j)(1 - p_{A5}) p_{A5}$ where the first term is the probability that the egoistic agent is elected in the first election, and a benevolent type replaces him. The second term is the probability that a benevolent type is elected in the first election and becomes re-elected. The third term is the probability that an egoist other than the one we are considering is elected in the first election, and that he is replaced by a benevolent type in the second election. Since $p^r_0 = 0$, it follows:

$$p^r_0 p_{A5} + (1 - p^r_0) p_{A5} + (1 - p^r_0)(1 - p_{A5}) p_{A5} = p_{A5} + (1 - p_{A5}) p_{A5}$$
$$> p^r_s p_{A5} + (1 - p^r_s) p_{A5} + (1 - p^r_s)(1 - p_{A5}) p_{A5} = p_{A5} + (1 - p^r_s)(1 - p_{A5}) p_{A5}$$

4   Concluding remarks

This paper illustrates that political selection may fail even if benevolent candidates exist and all voters prefer to have benevolent presidents. We show that whether selection succeeds or fails depends on institutional and social factors like the discretionary leeway of the president, possibilities for re-election and the strength of investigative media. Strategic imitation by corrupt politicians has clearly adverse welfare effects in our model because imitation hampers political selection.[7]

Our model sheds new light on the relation between good governance and the selection of corrupt politicians ("egoistic presidents" in our terminology). While it is natural to assume that corrupt politicians are a cause of bad governance, our results suggest that causality may also run the other way. If governance is poor, life as a citizen is unpleasant and egoists have a strong incentive to seek a career in politics to reap the rents available to office holders. Thus, poor governance breeds corrupt politicians. If, on the other hand, governance is good, rent seeking is relatively less attractive, and only individuals with intrinsic preferences for serving the public interest strive for public office. Thus, good governance enables voters to select virtuous politicians. The parameters of good governance, i.e. the high efficiency of the public sector, the lack of discretionary power of the president, and a high share of benevolent types in the pool of candidates, determine which outcome obtains. In our simple model, these factors are exogenous. However, it seems plausible that the causation runs both ways because these factors would be affected by the character of the president in power. Presidents with a flawed character may generate ineffective administration, raise taxes to increase the size of the budget they control, and destroy social capital in the pool of candidates. A vicious circle is set off where bad governance breeds bad politicians who, in turn, breed more bad governance.

Our assumption that some candidates are benevolent relates our model to the issue of how "social capital" and "political culture" (e.g. Hillman and Swank 2000) shape policy outcomes. If benevolence among candidates is a positive function of benevolence in the population at large, the share of benevolent candidates θ can be interpreted to reflect social capital in a society. Putnam (1993) argues that differences in the quality of governance

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[7] However, the welfare effects of strategic imitation would be ambiguous if the social cost of the anti-social act in stage 1 (*c*) was assumed to be sufficiently high (see Cugno and Ferrero 2004 for a related case).

between Northern and Southern Italy mirror variations in civic culture between the two regions. Our model offers a direct and an indirect explanation for such data patterns. Not only are there fewer benevolent candidates around in places with weak civic culture (direct effect); our model also shows that strategic imitation is more common when θ is low, and strategic imitation makes it more difficult for voters to pick the benevolent candidates out (indirect effect).

While our simple model of political selection yields a number of interesting results, we believe that the model could be fruitfully extended to capture additional aspects of selection. First, while we focus on political selection of "character", selection of competence may be equally important (e.g. Acemoglu, Egorov and Sonin 2009, Besley 2005, Messner and Polborn 2004, Mattozzi and Merlo 2007). The model may be extended to allow candidates to differ in competence as well as character, as in Gersbach (2004) and Beniers and Dur (2007). Second, we investigate political selection through elections from a given pool of candidates but the process of recruiting candidates, i.e. who selects into the political arena, is clearly also interesting to study. These two selection processes may interact in important ways as demonstrated in the models of Besley (2006), Ferraz and Finan (2009) and Brollo et al. (2010). For example, if egoistic types are more likely than benevolent types to enter the political game, as argued by Caselli and Morelli (2004), the share of candidates with benevolent preferences (the parameter θ in our model) is small, and strategic imitation is common.

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Appendix A: Disequilibrium beliefs

Consider case *c)* in section 4, where $Y(\theta) < 0$ and $Y_v > 0$ and $\sigma_1 \leq 1$. Suppose egoists hold the common prior σ_0, where $\theta \leq \sigma_0 \leq 1$. In contrast with the main text, assume that σ_0 might deviate from the equilibrium values. We distinguish three cases depending on how the initial belief relates to the critical values σ_1 and σ_2.

c1) $\sigma_0 < \sigma_1$. In this case, $Y(\sigma_0) < 0$ and the best reply to the belief is therefore not to imitate. Since this holds for all egoists, the equilibrium is $\sigma^* = \theta$. The equilibrium is stable because it is strict (i.e. a deviation by *i* reduces *i*'s payoff).

c2) $\sigma_0 \geq \sigma_2$. As in the previous case, $Y(\sigma_0) < 0$ and the best reply is therefore not to imitate. However, when sufficiently many agents refrain from imitating, σ falls below σ_2, and imitation is again a profitable strategy. The only stable equilibria are $\sigma^* = \sigma_2$ and $\sigma^* = \theta$.

c3) $\sigma_1 \leq \sigma_0 \leq \sigma_2$. In this case $Y(\sigma_0) \geq 0$ and imitation is the best strategy. However, when the share of agents who refrain from choosing the anti-social action rises above σ_2, non-imitation again becomes attractive for egoists. The only stable equilibrium occurs at $\sigma^* = \min(\sigma_2, 1)$.

The equilibria obtained coincide with those derived in section 4. Therefore, the predictions of the model are the same, whether or not we assume that the common prior is equal to the equilibrium value of σ.


Appendix B: Incentives for imitation with re-election

Here we analyze the problem for an egoist who intends to pocket the entire budget if elected president in stage 3 and expects that all other egoists do the same, even when there is a second election. Assume that information about behavior in stage 1 is revealed before the first election. Note, first, that an egoist who does not imitate a benevolent type has no chance of winning either the first or the second election. Second, if the egoist is elected in the first election, he will not be re-elected since extracting *B* will reveal him as an egoist. If a benevolent type is elected in the first election, she is re-elected with certainty, since she allocates *B* to the public good. If egoist *i* is not elected in the first election and the elected

president j is an egoist, then i's probability of winning the second election is assumed to be p_s^r, which is equal to his probability of winning the first election. Similarly, we assume that the probability that a benevolent type wins the second election is p_A^r if an egoist won the first election.

Figure B1 illustrates the optimization problem for an egoist who is committed to extract B if elected in the first election, and assumes that other egoistic presidents will do the same. Note that if $r = 0$, imitation at cost b does not improve chances to be elected. Therefore, the cases for "$(1-r)$" are omitted in the figure.

Figure B1: Optimization problem for an egoistic candidate when there are two elections and egoists appropriate the entire budget
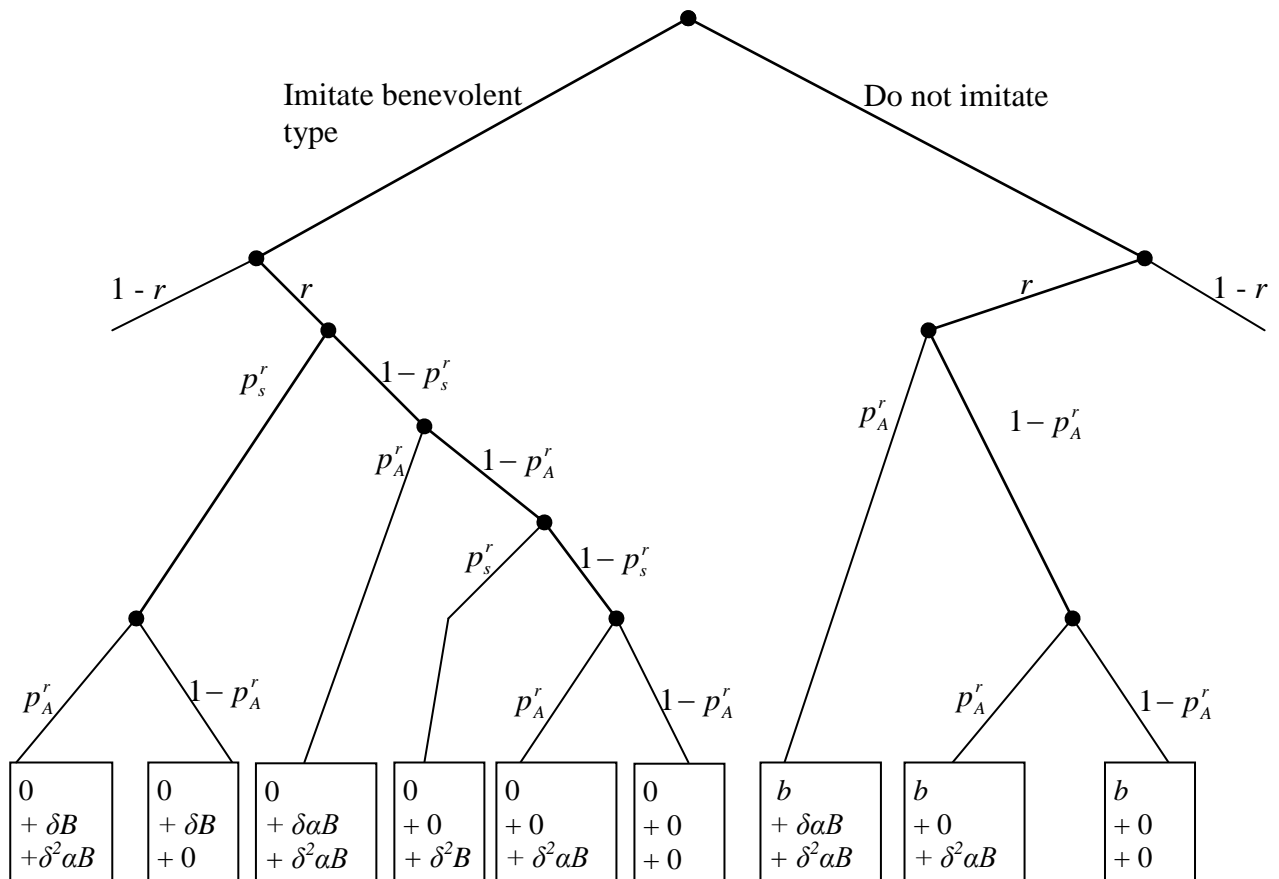
The boxes at the bottom of the figure show payoffs in stage 1 in the first line, payoffs in stage 3 in the second line, and payoffs in stage 5 in the third line. It follows from the figure that imitation is optimal if:

$$\tilde{X} \equiv r p_s^r \left[p_a^r \left(\delta B + \delta^2 \alpha B \right) + (1 - p_A^r) \delta B \right]$$
$$+ r(1 - p_s^r) \left\{ p_A^r \left(\delta \alpha B + \delta^2 \alpha B \right) + (1 - p_A^r) \left[p_s^r \delta^2 B + (1 - p_s^r) p_A^r \delta^2 \alpha B \right] \right\} \qquad (10)$$
$$- r \left\{ p_A^r \left(\delta \alpha B + \delta^2 \alpha B \right) + (1 - p_A^r) p_A^r \delta^2 \alpha B \right\} - b \geq 0$$

Inserting eq. (3) and (4) into (11) allows us to re-write the expression as a fourth-degree polynomial in σ. Hence, multiple equilibria continue to exist when a second election is introduced but a unique equilibrium prevails for some parameters, as figure B2 illustrates.

Consider the benefits from imitation which are captured in stage 3 and denoted by X_3 (see figure B1):

$$X_3 = r \left\{ p_s^r \left[p_A^r \delta B + (1 - p_A^r) \delta B \right] + (1 - p_s^r) p_A^r \delta \alpha B - p_A^r \delta \alpha B \right\} = r \delta B \left\{ p_s^r \left(1 - \alpha p_A^r \right) \right\} \quad (11)$$

which is the same as the left-hand side of eq. (2). Therefore, the payoff from strategic imitation in stage 3 is independent of having a second election (as claimed in the main text).

Consider the benefits captured in stage 5, denoted as X_5:

$$X_5 = r \left\{ p_s^r p_A^r \delta^2 \alpha B + (1 - p_s^r) \left[p_A^r \delta^2 \alpha B + (1 - p_A^r) \left(p_s^r \delta^2 B + (1 - p_s^r) p_A^r \delta^2 \alpha B \right) \right] \right\}$$
$$- r \left\{ p_A^r \delta^2 \alpha B + (1 - p_A^r) p_A^r \delta^2 \alpha B \right\} \qquad (12)$$
$$= r \delta^2 B (1 - p_A^r) \left\{ (1 - p_s^r) p_s^r + p_A^r \alpha \left[(1 - p_s^r)^2 - 1 \right] \right\}$$

This expression is positive if and only if $(1 - p_s^r) p_s^r + p_A^r \alpha \left((1 - p_s^r)^2 - 1 \right) > 0$, i.e. if:

$$(1 - p_s^r) + p_A^r \alpha \left(p_s^r - 2 \right) > 0 \qquad (13)$$

Insert eq. (3) and (4) into (13) and rewrite to obtain:

$$n \sigma^2 - (1 + 2 \alpha \theta n) \sigma + \alpha \theta > 0 \qquad (14)$$

Hence, depending on parameter σ, the benefits from imitation captured in stage 5 are positive, for other values they are negative. The left-hand side of expression (14) is falling in α and θ, and in that sense higher values of those parameters therefore make it less likely that re-election increases the amount of strategic imitation.

Figure B2 illustrates the case where the possibility of re-election deteriorates political selection with unique equilibrium values of σ.

Figure B2: Net benefit from imitation, with and without re-election
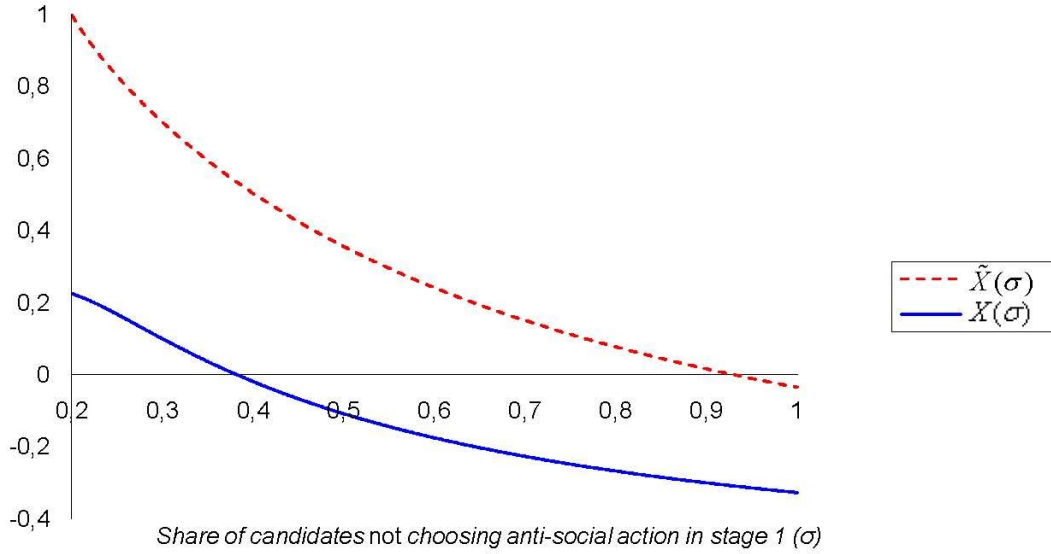
Note: $\tilde{X}(\sigma)$ shows an egoist's net benefit from imitation when re-election is possible and when he intends to appropriate the entire budget if elected president. $X(\sigma)$ shows the net benefit from strategic imitation when there is only one election. The parameters are: $\delta = 0.4$, $\theta = 0.3$, $n = 10$, $b = 0.6$, $\alpha = 0.3$, $r = 0.5$, $B = 15$.

Appendix C

This appendix shows that stage 1 strategies derived in section 3 are consistent with the assumptions about δ^* used in their derivation. We use the fact that $\sigma' \leq \sigma''$ implies $\delta' \geq \delta''$ and distinguish three cases:

1. $\delta \geq \delta' \geq \delta''$. An egoistic president allocates B to public goods in stage 3. In this case, therefore, the incentive to seek re-election fully disciplines egoistic presidents in stage 3.

2. $\delta \leq \delta'' \leq \delta'$. An egoistic president captures the public budget in both stage 3 and stage 5. Now, the possibility of re-election might lead to more imitation than in the original game, and therefore actually worsen the outcome in stage 3, by decreasing the probability that a president is elected who serves the public interest.

3. $\delta'' < \delta < \delta'$. In this case there is no equilibrium in pure strategies in stage 3. If all egoists base their stage 1 behavior on the assumption that egoists capture the budget in stage 3, they will prefer to allocate B to public goods when they observe the resulting value of p_{A5}, and vice versa if they base their stage 1 behavior on the assumption that egoistic president allocate B to public goods. The only symmetric equilibrium is a mixed one, where each egoist allocates the entire budget to public goods with some probability ρ, and pockets B with probability $1 - \rho$, $0 < \rho < 1$.