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A Game-Theoretic Explanation for the Persistence of Political Corruption

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Abstract: Using a theoretical model of two-candidate competition, I study the political support for a fully effective and costless reform targeting high level political corruption. I find that when the candidates have a high discount factor, and when the level of political corruption is not too low, both corrupt and honest candidates have incentives to oppose the reform. I also find that a fully informed and fully coordinated electorate can change a candidate's incentives by bundling the reform with high wages and by voting strategically.

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1 Introduction

Voters dislike corruption and politicians desire reelection. Yet, in many democracies politicians who are considered as corrupt by many voters win the elections repeatedly. Several models of political agency study the conditions under which the elected politicians steal, –for a review, see Persson and Tabellini (2000, ch. 4). These models also help us understand which policies *should* be implemented, that is, which policies would be effective against high level political corruption when implemented. This paper, instead, studies when an effective reform may not be implemented due to lack of political support. I show that when the level of political corruption is high, and when the competing politicians care about their future rents, both corrupt *and* honest politicians have the incentives to block a fully effective and costless reform.

Like any other policy, an anti-corruption reform needs political support. As Rose-Ackerman (1999, p. 199) notes, "Realistically, reform will not occur unless powerful groups and individuals inside and outside government support it." As they do not benefit from high level political corruption, most of the voters would support an effective reform. This, in turn, implies that a political candidate can increase his vote share (or the probability of winning the election) by adopting the reform as part of his policy platform. But, the existence of widespread and persistent political corruption indicates that candidates are not simply tools for the median voter.

It is easy to see why a corrupt politician may have incentives to block the reform: although by supporting the reform he can increase his vote share in the current election, when the reform is implemented he will lose all of his future illegal rents. Thus, when the expected value of these rents is high, the increase in his current vote share is not worth the illegal rents given up.

One may think that since an honest politician has no illegal future rents to lose, he always adopts the reform. I show that this reasoning is false. For an honest candidate, too, the reform has a cost. His rival's corruption provides a positive externality for the honest candidate. That is, competing against a corrupt rival gives him a (valence) advantage in elections. Since the reform will turn the corrupt candidate into (practically) an honest candidate, it will eliminate not only the political corruption, but also the honest candidate's

advantage. Thus, when the honest candidate puts a sufficiently high weight on his future ego rents, and when his rival is sufficiently corrupt, the honest candidate, too, has incentives to block the reform.

To illustrate this point and derive the exact conditions under which all of the competing politicians have incentives to block the reform, I use a formal model. As Evrenk (2008) discusses in detail, the model captures the agency problem that occurs when a limited number of career politicians compete with each other repeatedly. Specifically, there are two candidates competing under probabilistic voting; the electorate is represented by a single voter. I consider two different sets of candidates: (i) both candidate are corrupt; and (ii) only one candidate is corrupt. An advantage of the model is that the equilibrium levels of tax rate, public good, and corruption are all determined endogenously. In that setup constitutional constraints that enforce an upper limit on taxes and a lower limit on public good level would eliminate all the corruption at no cost. Yet, as I discuss in Section 2.1, the results do not depend on the specifics of the reform; none of the results would change had I consider another effective and costless reform, such as fully effective and costless law enforcement.

To see when politicians will support the reform, I assume that the optimal constitutional constraints will be added to constitution if at least one of the politicians proposes them. Thus, at least one politician's support is needed to eliminate the corruption. The voter, I assume, is fully informed (she knows which reform would (not) work and will support only the effective reform). Further, she is fully rational (she is able to calculate her future benefits from the reform). Despite that, when the level of corruption is high and when the candidates put a high weight on their future rents, none of the candidates adopting the reform is a Nash Equilibrium.

In the second Nash equilibrium, both candidates adopt the reform. But, from the point of view of politicians the second equilibrium is Pareto dominated by the first one, so they have incentives to coordinate on the first equilibrium. In Section 3, I examine the effectiveness of strategic voting in giving incentives to at least one politician to support the reform. If one politician has incentives to deviate from the first equilibrium, then the only equilibrium of the game is the second one, (Adopt, Adopt). To increase, say, Candidate 1's

incentives to support the reform, the voter can commit (credibly) to vote for Candidate 2 when neither candidate supports the reform. Then, Candidate 1 has more to gain from the reform. Yet, strategic voting is a credible threat only when the reform is the main issue. When the electorate cares about other aspects of candidates's platform she cannot carry her threat. Further, even when she can carry it out, the threat of not being elected in just one period is not enough to convince Candidate 1 to give up his future rents if the expected value of these rents is high. Thus, only if the value of these rents are not high, strategic voting would work.

To be able to identify the politicians' support for the reform, I assume that no other obstacles to reform exist. In reality, there are many obstacles: the lack of voter support due to asymmetric information; high cost of the reform, etc. The main point of the paper is that even a fully effective and costless anti-corruption reform may not receive the required support from politicians. In Section 4, I discuss that under alternative and more realistic assumptions, the corrupt status quo is even more likely to persist.

In the literature, Geddes (1991) studies the politicians's incentives to initiate an administrative reform such as replacing patronage in public sector with merit based hiring. She, too, considers two-party competition and models the support for the reform as a 2x2 game. The payoffs, the incentives and thus the results in her analysis differ from those in this paper because (i) the politicians's benefit from patronage is indirect and limited, and (ii) unlike direct theft, patronage does not produce a positive externality on the other party's equilibrium rents. Because of these differences, she finds that (i) the party which has less access to patronage always supports the reform, and (ii) whenever there is relatively large voter support for the reform,[1] the party which has more access to patronage supports the reform as well.

Caselli and Morelli (2004) provide a general equilibrium model of quality (honesty or ability) of political candidates. They note that when the legal rents are low, the high quality candidates will not run in the elections. Further, they note that the low quality (unable or dishonest) incumbents will keep the legal rents low to keep the high quality candidates out

[1]That is, when the number of voters who support the reform exceeds the number of voters who can be bought by distributing favors.

of politics. They consider a continuum of candidates, i.e., there is no strategic interaction among the candidates in their model. I show that when there is a limited number of candidates, (thus, there is strategic interaction among them) even a high quality (honest) candidate has incentives to block an effective reform.

2 The model

To model the corrupt status quo, I consider the following model. Two career politicians (candidates) compete with each other in elections that are held at the beginning of every period, $t = 1, 2, 3, ...$ In the election at a given t, each candidate $j \in \{1, 2\}$ proposes a tax rate, τ_{jt}, and a public good level, g_{jt}. During t, the winner implements the policy he proposed.

There is a single voter with unit income. Her[2] preferences over public and private good consumption are represented by utility function $U(\tau_t, g_t) = (1 - \tau_t) + 2\gamma\sqrt{g_t}$ where $\gamma \in (0, \frac{1}{\sqrt{2}})$. In addition to fiscal policies he proposes, each candidate has some fixed policies (or candidate characteristics) that are orthogonal to (τ_{jt}, g_{jt}). The fixed part of a candidate's platform may represent his position on issues such as abortion and gun control, or it may represent the candidate's characteristics, such as gender, religion, or ethnicity. The voter's preferences on these issues are subject to a period specific preference shock β_t. In each period, β_t is drawn from a uniform distribution with support $[-\frac{1}{2}, \frac{1}{2}]$. Although the candidates know that when $U(\tau_{1t}, g_{1t}) < U(\tau_{2t}, g_{2t}) + \beta_t$ she votes for Candidate 2, (and, when $U(\tau_{1t}, g_{1t}) = U(\tau_{2t}, g_{2t}) + \beta_t$, she tosses a coin), they cannot observe β_t when they formulate their policies. Thus, from their point of view, the voting is probabilistic; the probability that j is elected in t is given by[3]

$$\rho_{jt} = \frac{1}{2} + U(\tau_{jt}, g_{jt}) - U(\tau_{kt}, g_{kt}). \tag{1}$$

Each candidate's goal is to maximize present value of his expected rents. Winning the

[2]Throughout the paper, the candidates are male, and the voter is female.

[3]Note that Candidate 1 wins only when $U(\tau_{1t}, g_{1t}) > U(\tau_{2t}, g_{2t}) + \beta_t$. The probability that this happens is equal to $F(U(\tau_{1t}, g_{1t}) - U(\tau_{2t}, g_{2t})) = \frac{1}{2} + U(\tau_{1t}, g_{1t}) - U(\tau_{2t}, g_{2t})$. So, the probability that Candidate 2 wins is given by $1 - F(U(\tau_{1t}, g_{1t}) - U(\tau_{2t}, g_{2t})) = \frac{1}{2} + U(\tau_{2t}, g_{2t})) - U(\tau_{1t}, g_{1t})$.

election provides ego rents, $\eta \in (0, \frac{1}{2})$, to all candidates. In addition, if the winner is corrupt then he pockets the difference between the total tax revenue and the cost of the public good, that is, he steals $s_{jt} = \tau_{jt} - g_{jt}$. Let us normalize each candidate's outside option to zero. Then, j chooses his policy platform, (τ_{jt}, g_{jt}), to maximize

$$\sum_t \delta^t \rho_{jt}(\eta + \theta_j s_{jt}), \tag{2}$$

where δ is the (common) discount rate and $\theta_j \in \{0, 1\}$ indicates whether j is honest or corrupt. Without loss of generality, all possible candidate combinations can be represented by the following three mutually exclusive and collectively exhaustive cases:[4]

(i) *HH*, both candidates are honest, $\theta_1 = \theta_2 = 0$;

(ii) *CC*, both candidates are corrupt, $\theta_1 = \theta_2 = 1$;

(iii) *HC*, Candidate 1 is honest and Candidate 2 is corrupt, $\theta_1 = 0$, and $\theta_2 = 1$.

Now, let us calculate the pure strategy Nash Equilibrium, PSNE, for each case. As a benchmark, whether the candidates are honest or not, the first-best fiscal policy (the policy that maximizes the voter's welfare) is $\tau^0 = g^0 = \gamma^2$. Obviously, there is no corruption in the first-best. Note that due to our assumption that $\gamma \in (0, \frac{1}{\sqrt{2}})$, the first-best tax rate is always less than fifty percent.

There are two types of games in the model: the stage game (the competition between the candidates at a given t) and the supergame, i.e., the stage game repeated infinitely many times. For the stage game(s), we have the following result.[5]

Lemma 1 *In all cases, there exists a unique PSNE for the stage game. In equilibrium, (i) each candidate proposes* (τ^0, g^0) *in HH; (ii) each candidate proposes* $(\tau^0 + \frac{1}{2} - \eta, g^0)$ *in CC; and (iii) Candidate 1 proposes* (τ^0, g^0)*, and Candidate 2 proposes* $(\tau^0 + \frac{1}{4} - \frac{\eta}{2}, g^0)$ *in HC.*

[4]We need the qualifier, as the other possibility *CH* with $\theta_1 = 1$, and $\theta_2 = 0$ is fully symmetrical to *HC*, and thus the results for this case are the mirror image of the results for *HC*.

[5]To obtain the equilibrium levels of corruption in Lemma 1, note that (due to quasi-linearity) the first order condition with respect to tax rate implies that $\frac{\partial \rho_j}{\partial g_j} = 1$. In *CC*, the first order condition with respect to public good level is given by $(\eta + s_j)\frac{\partial \rho_j}{\partial s_j} - \rho_j = 0$. This is a symmetric game; in equilibrium we have $\rho_j = \frac{1}{2}$. Thus, $s_j^* = \frac{1}{2} - \eta$ in *CC*. In *HC*, Candidate 1 is honest; he provides the first-best policy. Thus, $\rho_2 = \frac{1}{2} + (1 - \gamma^2 - s_2) - (1 - \gamma^2)$. So, s_2^* solves for $\frac{1}{2} - s_2 - (\eta + s_2) = 0$, i.e., $s_2^* = (\frac{1}{2} - \eta)\frac{1}{2}$.

Due to our assumption that $\eta \in (0, \frac{1}{2})$, a corrupt candidate always steals in the PSNE of the stage game, (and, due to our assumption that $\gamma \in (0, \frac{1}{\sqrt{2}})$, we always have an interior solution). Equilibrium level of corruption is determined through strategic interaction: a corrupt candidate steals $s_{CC} = \frac{1}{2} - \eta$ in *CC* but only half of it $s_{HC} = \frac{1}{4} - \frac{\eta}{2}$ in *HC*. Also note that the lower the (legal) ego rents, the higher is the equilibrium level of political corruption.

An honest candidate always proposes the first best policy: as he receives no utility from the illegal funds, (2) implies that he maximizes the probability that she votes for him. In both *CC* and *HH* the PSNE is symmetric, thus both candidates win the election with the same probability, $\rho_1 = \rho_2$. In *HC*, on the other hand, the corrupt candidate, Candidate 2, proposes a tax rate higher than the cost of the public good where the honest candidate, Candidate 1, proposes the first-best policy platform.[6] Thus, Candidate 1 wins more often in *HC*, $\rho_1 = \frac{1}{2} + s_{HC}$ and $\rho_2 = \frac{1}{2} - s_{HC}$.

Now, let us consider the PSNE of the supergames in cases *HH*, *CC*, and *HC*. Since the policy platforms in Lemma 1 are PSNE of the stage games for each case, a strategy profile in which each candidate proposes these policies in every period is a stationary and subgame perfect PSNE of the corresponding supergames. For the rest of the paper, I focus on these PSNE, i.e., I assume that, in *CC* the winner of the election steals s_{CC} in every period; in *HC*, Candidate 2 steals s_{HC} in the periods that he wins; and in *HH* none of the candidates steal. As the careful reader notes, in cases *CC* and *HC* the supergames has infinitely many other PSNE, supported, for instance, by trigger strategies, (Friedman, 1971).[7] All such PSNE, however, involves even larger equilibrium levels of corruption, and, as I discuss following Proposition 1, had we considered those PSNE, the main result of this paper would hold under even a larger set of parameters.

Before calculating the support for a fully effective reform, I need to clarify one of the assumptions. I assume that a corrupt politician is an honest thief, i.e., he keeps his promises after winning the election. As Barro (1973) notes, however, a corrupt politician may find

[6]Both candidates proposes first-best public good, see footnote 5 for the derivation. This is due to our assumption that $U(\tau_t, g_t)$ is quasi-linear. Quasi-linear utility allows us to obtain closed form solutions, but it has no qualitative effect on the results.

[7]The PSNE of the supergame is unique in *HH*.

a hit-and-run strategy, (imposing taxes as high as possible, and then stealing as much as possible), as more profitable. Repeated elections may discourage a hit-and-run strategy. Because, then, a candidate who failed to deliver what he promised loses his credibility and thus his future rents.[8] The loss of future rents, however, is an effective deterrent only when a corrupt politician puts a sufficient weight on his future rents. More precisely, in *CC*, the hit-and-run strategy does worse than keeping the election promises when[9] $1+\eta < \eta + s_{CC} + \frac{\delta}{1-\delta}\frac{\eta+s_{CC}}{2}$, i.e., when

$$\delta > \frac{6+4\eta}{7+6\eta}. \tag{3}$$

Similarly, in *HC*, Candidate 2 keeps his promises when $1+\eta < \eta + s_{HC} + \frac{\delta}{1-\delta}(\eta + s_{HC})\rho_2$, i.e., when

$$\delta > \frac{12+8\eta}{12+8\eta+(1+2\eta)^2}. \tag{4}$$

Below, I focus on the set of parameters (δ and η) under which corrupt candidates keep their promises. That is, I assume that (3) holds in *CC*, and that (4) holds in *HC*.

2.1 Political support for the reform

Although a fully informed voter always supports an effective reform targeting high level political corruption, the politicians may not. The existence of political corruption implies that there is an agency problem in politics (the elected politician can get away with behaving against the wishes of the electorate). Thus, the voter support for the reform is not sufficient; the conditions under which the politicians support the reform need to be examined.

To study the politicians' incentives to support the reform, note that in the model of political agency presented above, constitutional constraints enforcing both an upper bound on the tax rates, $\overline{T} = \tau^0$, and a lower bound on the public good level, $\underline{G} = g^0$, would

[8] Corruption does not rule out credibility: in his biography of Mayor Curley, Beatty (2000, p.264) observes, "[T]he chance to get rich from public office gave Curley an incentive to deliver on his promises so that he could be returned to office to get richer."

[9] I assume the worse case scenerio, i.e., when he plays hit-and-run, the corrupt candidate imposes a tax rate of hundred percent and steals all tax revenue.

eliminate all political corruption at no cost.[10] It is worth noting that what matters for our analysis is not the specifics of the reform, but its effectiveness and its cost. So, had we considered another fully effective and costless reform (such as, severe legal penalties) under the assumption that legal enforcement is costless, all of the following results would apply.

To be able to see the incentives of the candidates more clearly, I assume that no other obstacles for the reform exists and the reform is the only issue. For this, consider a referendum for the constitution at the initial (constitutional) period, $t = 0$.[11] Assume that the constraints $\overline{T}$ and $\underline{G}$ can be added to the constitution *only if* a politician proposes a draft that includes these constraints. There are no other policy issues: the drafts of the candidates may differ only in whether they include both of these constraints or not. To assume away other obstacles, assume that the voter is well aware of the benefits of the reform. So, when a candidate adopts the reform single-handedly, his draft wins certainly. To simplify the trade off that a candidate faces, assume that at $t = 0$ there is no taxation and public good provision, thus there is no opportunity to steal. That is, the reform threatens only the illegal future rents.[12] If a candidate's draft becomes constitution, however, he still receives ego rents, η, at $t = 0$.[13] So, adopting the reform provides (short-term) legal rents for a politician. Yet, as (2) makes clear a politician maximizes his lifetime (expected) rents.

Below, Game 1 (2) presents the payoffs for the candidates at $t = 0$ for case CC (HC), –when both candidates are honest, HH, there is no need for the reform. In both payoff matrices, M stands for $\frac{\delta}{1-\delta}\frac{\eta}{2}$. Each candidate has to decide simultaneously whether to adopt the reform or not. If both candidates adopt the reform or if neither candidate does, then each candidate's proposal wins with equal probability. Consequently, each receives the ego rents, η, with equal probability ($\rho_{j0} = \frac{1}{2}$ for each $j \in \{1, 2\}$). If only j adopts the reform, then we have $\rho_{j0} = 1$. If at least one candidate adopts the reform, then the reform will be (irreversibly) implemented: at any $t > 0$ each candidate will have to propose the first-best

[10] The constitutional reforms may be ineffective in a more general setup, i.e., when the candidates differ in their ability. My goal here, however, is not to identify the best possible reform in the most general setup, but to study if a reform will be supported by politicians when it is fully effective.

[11] The timing of the reform has no significance. As in our analysis time has no end, any period can be the initial period; one can consider a referandum between any t and $t + 1$ as well.

[12] In Section 4, I discuss how the results change, when one removes this assumption.

[13] Because, for instance, he will be called as a founding father.

fiscal policy, (τ^0, g^0). So, there will be political corruption, only if neither candidate adopts the reform. Then, the equilibrium tax rate, public good, and corruption levels at any $t > 0$ are as calculated in Lemma 1.

C\C	Adopt	Don't
Adopt	$\frac{\eta}{2} + M, \frac{\eta}{2} + M$	$\eta + M, 0 + M$
Don't	$0 + M, \eta + M$	$\frac{\eta}{2} + \frac{\delta}{1-\delta}\frac{(\eta + s_{CC})}{2}$, $\frac{\eta}{2} + \frac{\delta}{1-\delta}\frac{(\eta + s_{CC})}{2}$

Game 1: Payoffs from adopting the reform when both candidates are corrupt.

H\C	Adopt	Don't
Adopt	$\frac{\eta}{2} + M, \frac{\eta}{2} + M$	$\eta + M, 0 + M$
Don't	$0 + M, \eta + M$	$\frac{\eta}{2} + \frac{\delta}{1-\delta}\rho_1\eta$, $\frac{\eta}{2} + \frac{\delta}{1-\delta}(\eta + s_{HC})\rho_2$

Game 2: Payoffs from adopting the reform when only one candidate is honest.

Now we study the PSNE of each game. The reform will be implemented when it is adopted by one candidate. Thus, by deviating from (Adopt, Adopt) a candidate only reduces his current payoff, his future payoff is unaffected; the reform will still be implemented. So, with one hundred percent voter support behind the reform, if one candidate thinks that the other candidate will adopt the reform, then he will adopt it as well. More formally,

Lemma 2 *In both Games 1 and 2, (i) (Adopt, Adopt) is always a PSNE, and (ii) an asymmetric strategy profile is never a PSNE.*

Now, we check if (Don't Adopt, Don't Adopt) can ever be a PSNE. First, consider the case in which both candidates are corrupt, *CC*. Given that k does not adopt the reform, j can adopt it and increase his payoff (at $t = 0$) from $\frac{\eta}{2}$ to η. But, then the reform will pass, and j loses all the illegal rents that he would have received in the future had the corrupt status quo persisted. Thus, given that k does not adopt the reform, j will not adopt it either as long as $\frac{\eta}{2} + \frac{\delta}{1-\delta}\frac{(s_{CC} + \eta)}{2}$ is larger than $\eta + \frac{\delta}{1-\delta}\frac{\eta}{2}$, i.e., as long as

$$\delta > 2\eta. \tag{5}$$

Second, consider the case in which only one candidate is corrupt, *HC*. The corrupt candidate in *HC* faces a trade-off similar to the trade-off that a corrupt candidate faces in

CC. He does not deviate from (Don't Adopt, Don't Adopt) as long as $\frac{\eta}{2} + \frac{\delta}{1-\delta}\rho_2(s_{HC} + \eta)$ is larger than $\eta + \frac{\delta}{1-\delta}\frac{\eta}{2}$, i.e., as long as

$$\delta > \frac{2}{3 - 2\eta}. \tag{6}$$

One may readily think that (Don't Adopt, Don't Adopt) cannot be a PSNE in *HC*, as the honest candidate does not have any illegal future rents to lose. Formally modelling the decision problem helps us to see that this reasoning is false. When $\frac{\eta}{2} + \frac{\delta}{1-\delta}\rho_1\eta$ is larger than $\eta + \frac{\delta}{1-\delta}\frac{\eta}{2}$, i.e., when

$$\delta > \frac{8\eta}{(1 + 2\eta)^2}, \tag{7}$$

the honest candidate, too, is better off by not deviating from (Don't Adopt, Don't Adopt). The intuition is that the honest candidate, too, has future rents to lose if the reform is implemented. The reform turns the corrupt candidate into a (practically) honest one; removing the honest candidate's (valence) advantage makes him less electable in future elections. So, when the parameters of the model, δ and η, satisfy both (6), and (7), (Don't Adopt, Don't Adopt) is a PSNE in *HC*.

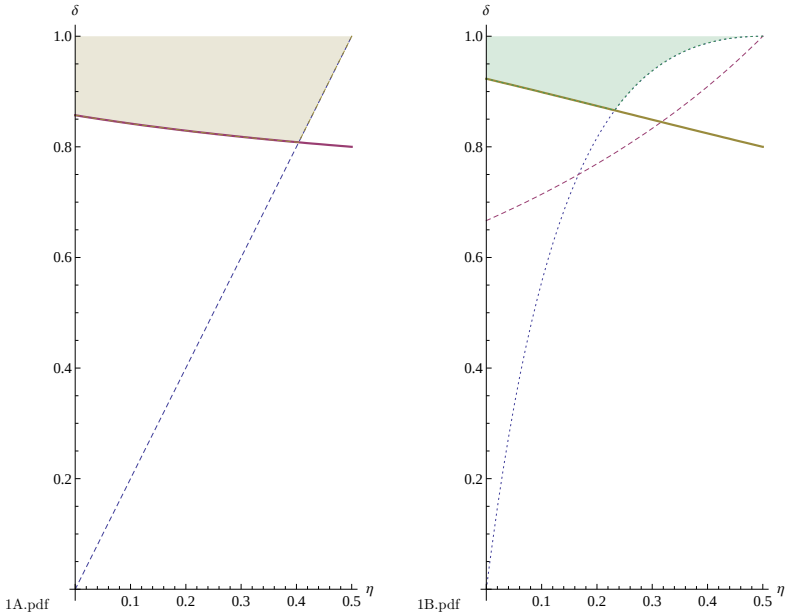
Below, I first state the main result of the paper, and then discuss it.

Proposition 1 *When the candidates' discount factor, δ, is larger than 2η in CC, and when it is larger than $\max\{\frac{2}{3-2\eta}, \frac{8\eta}{(1+2\eta)^2}\}$ in HC, there exists a PSNE in which none of the candidates adopts the reform.*

Figures 1.a and 1.b depict the sets of parameters under which Proposition 1 holds. In each figure, the area above the thick line is the relevant parameter space: the set of the parameters under which a corrupt candidate keeps his election promises.[14] In each figure the parameters under which a corrupt candidate does not deviate from (Don't Adopt, Don't Adopt) lie above the dashed curve: in Figure 1.a inequality (5), and in Figure 1.b inequality (6) holds above the dashed curve. Similarly, the area above the dotted curve in Figure 1.b depicts the set of parameters under which the honest candidate does not deviate from (Don't

[14]That is, the set of parameters under which inequality (3) holds in *CC*, and inequality (4) holds in *HC*.

Adopt, Don't Adopt), that is, where inequality (7) holds. Thus, in each figure, the shaded area depicts the set of the parameters under which (Don't Adopt, Don't Adopt) is a PSNE.



(a) (b)

Figure 1: Panel a (b) depicts the set of parameters under which (Don't Adopt,Don't Adopt) is a PSNE in case CC (HC).

We derive the conditions (5), (6), and (7) using the equilibrium levels of corruption stated in Lemma 1. As we discuss following Lemma 1, the supergame has other equilibria in which the level of corruption is higher. It is straightforward to show that if one assumes that the candidates play the other equilibria of the supergame in the status quo, then, Proposition 1 would hold under even a larger set of parameters. The intuition is that under such equilibria the corruption levels and thus the future rents would be higher. Then, deviating from (Don't Adopt, Don't Adopt) would be even less attractive.

Proposition 1 heavily depends on the assumption that there are future rents, and that the candidates care about these future rents. As we discuss above, the assumption that there are infinitely many future periods allows us to construct a model in which politicians both steal from the public budget and keep their election promises. Alternatively, one can assume that each candidate has a finite life, but the party (or, the family) that he represents

has an infinite horizon. As Barro (1973 p.28) suggests, if the party can align the incentives of the candidate,[15] then (2) becomes party j's objective function, and Proposition 1 still applies.

It is not difficult to argue that a corrupt politicians may have incentives to block the reform. The second part of Proposition 1, that even an honest politician may have such incentives, requires more discussion. First of all we do not observe honest (or even dishonest) politicians openly opposing anti-corruption reforms. Let us note that Proposition 1 is about the incentives of the candidates, not about their rhetoric. Thus, it should not be interpreted as when the reform becomes an issue, the politicians will announce that they are against the reform. I consider a very simple world in which a politician either says yes or no; real world politicians have more options. When he realizes that the reform will reduce his future rents, a politician may argue that the reform will not be as effective as expected, or he may propose a different and ineffective policy as the truly effective reform (such as *only* a constitutional constraint on public good levels).

Second, note that unlike political competition without corruption, political competition with corruption is not a zero-sum game. Both corrupt and honest politicians benefit from political corruption, and thus, both have incentives to oppose a reform that will eliminate these benefits. Further, the honest candidate's loss due to reform also increase in the level of corruption. When the ego rents are not too low, –that is, when the level of corruption, $s_{HC} = \frac{1}{4} - \frac{\eta}{2}$, is not too high– his loss from the reform is actually larger than the loss of the corrupt candidate.[16]

Still, one may ask if an honest politician makes any personal cost-benefit calculations when deciding which policies to support. Does an honest politician not always support any policy that is good for the society no matter how much it costs him personally? It is quite possible that there exist politicians who find it unethical to oppose any welfare increasing

[15] That is, if it can solve the last-period problem, by offering rewards during his retirement based on how obedient the candidate was in the office.

[16] More precisely, $(\frac{1}{2} + s_{HC})\eta - \frac{\eta}{2}$ is larger than $(\frac{1}{2} - s_{HC})(\eta + s_{HC}) - \frac{\eta}{2}$, when $\eta > \frac{1}{6}$. The intuition is that, although the reform brings both a gain (higher probability of getting elected in future elections) and a loss (illegal rents) to the corrupt candidate, it brings only a loss to the honest candidate: when the reform is implemented, the probability that the honest candidate wins the future elections decreases by $s_{HC} = \frac{1}{4} - \frac{\eta}{2}$.

policy. Casual observation, however, suggests that sacrificing a large personal gain for the public good is not common even among politicians who do not steal. Also note that the honest candidate may be able to justify his opposition to reform to himself by considering it as an attack to his valence. After all, if the voter wants a clean government, then she can vote for him; one does not need a reform for this. In *HC*, the reform is welfare increasing only because it allows the voter to elect (corrupt) Candidate 2 when $\beta_t > 0$, that is, when the honest candidate's fixed policies, or, even worse, his personal characteristics are less appealing to voter than these of the corrupt candidate.

To summarize, for most of the parameter space, (Don't Adopt, Don't Adopt) is a PSNE as well. More important, it is a PSNE when the ego rents, η, are small, that is when the equilibrium level of corruption is high. Although one cannot assert that the politicians will always play (Don't Adopt, Don't Adopt) when there are multiple equilibria, let us note that they do have incentives to coordinate on (Don't Adopt, Don't Adopt): it Pareto dominates (Adopt, Adopt).[17] In any case, the voter would want to make sure that the candidates do not coordinate on (Don't Adopt, Don't Adopt). Since all she can do is to vote, next, I study if she can achieve this by voting strategically.

3 Political support when the voting is strategic

Assume that at $t = 0$, the voter knows what type of candidates that he will face in future, i.e., that he knows both θ_1 and θ_2. Let us examine if she can make Adopt a dominant strategy[18] for at least one candidate by voting strategically at $t = 0$.

When neither candidate adopts the reform at $t = 0$, the voter is indifferent between them. In Section 2, we assume that in this case she votes for each candidate's proposal with equal probability. The voter, however, can credibly threaten candidate j at $t = 0$ with voting for candidate k if neither candidate adopts the reform.[19] Let us calculate the

[17]For this reason, (Don't Adopt, Don't Adopt) would be the unique PSNE had candidates announced their support for the reform sequentially.

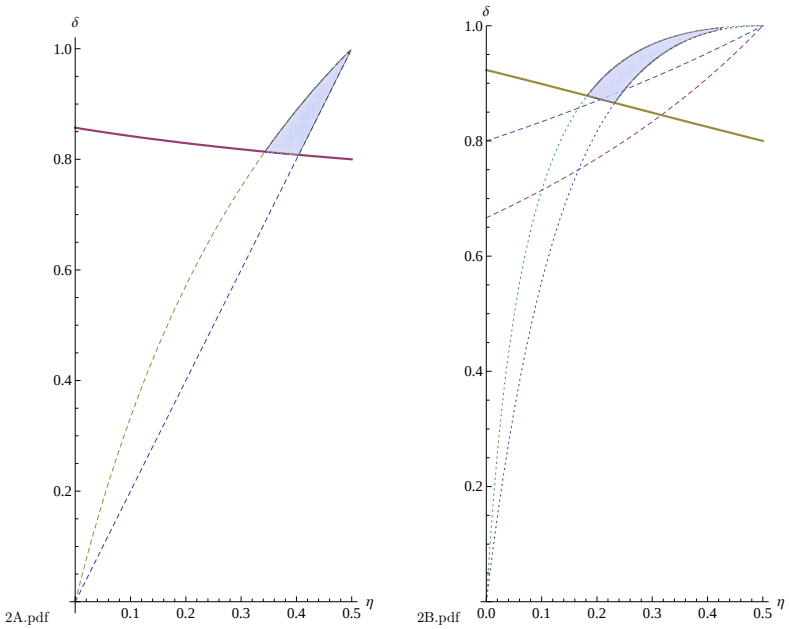
[18]If Adopt is a dominant strategy for one candidate, then the only PSNE of Games 1 and 2 is (Adopt, Adopt), cf. Lemma 2.

[19]Note that strategic voting, (voting for k if j steals more than a certain amount), is not credible in regular elections at $t > 0$; then, the voter always votes for the candidate whose policy platform she strictly prefers,

optimal voting strategy and its effectiveness.

With strategic voting, only the payoffs from (Don't Adopt, Don't Adopt) change in Games 1 and 2. It is straightforward to show that, Lemma 2 still applies under the modified payoffs. Since the game is symmetric in CC, voting strategically for either candidate has the same level of effectiveness in this case. Thus, without loss of generality, assume that she votes for Candidate 2 (the column player) when neither candidate adopts the reform. Then, Adopt is the dominant strategy for Candidate 1 when $\frac{\delta}{1-\delta}\frac{(s_{CC}+\eta)}{2} < \eta + \frac{\delta\eta}{2(1-\delta)}$, i.e., when

$$\delta < \frac{4\eta}{1+2\eta}. \tag{8}$$



(a) (b)

Figure 2: Panel a (b) depicts the set of parameters under which strategic voting eliminates (Don't Adopt,Don't Adopt) in case CC (HC).

Figure 2.a depicts the voter's gain from strategic voting in CC. It replicates the constraints in Figure 1.a, and shows the new constraint, –the upper dashed curve depicts $\delta = \frac{4\eta}{1+2\eta}$: the area below the upper dashed curve in Figure 2.a is the set of the parame-

i.e., the probability that $\beta_t = U(\tau_{1t}, g_{1t}) - U(\tau_{2t}, g_{2t})$ is equal to zero.

ters under which (8) holds, that is, in this set the only PSNE is (Adopt, Adopt). Thus, the shaded area represents the voter's gain, i.e., the set of parameters under which (Don't Adopt, Don't Adopt) is a PSNE when voting is not strategic, but not a PSNE when voting is strategic.

In *HC*, if she votes for the corrupt candidate's proposal when neither candidate adopts the reform, then Adopt is a dominant strategy for the honest candidate only when $\frac{\delta}{1-\delta}(\frac{1}{2} + s_{HC})\eta < \eta + \frac{\delta}{(1-\delta)}\frac{\eta}{2}$, i.e., when

$$\delta < \frac{4}{5-2\eta}. \tag{9}$$

If she, on the other hand, votes for the honest candidate's proposal when neither candidate adopts the reform, then Adopt is a dominant strategy for the corrupt candidate only when $\frac{\delta}{1-\delta}(\frac{1}{2} - s_{HC})(\eta + s_{HC}) < \eta + \frac{\delta}{(1-\delta)}\frac{\eta}{2}$, i.e., when

$$\delta < \frac{16\eta}{16\eta + (1-2\eta)^2}. \tag{10}$$

Figure 2.b replicates the constraints in Figure 1.b and it depicts the new constraints, (9) and (10), for case *HC*. The shifted dashed curve represents the boundary for (9) and the shifted dotted curve represents the boundary for (10). In the relevant parameter space, (above the thick line), when binding, (10) is always weaker than (9). Thus, voting for the corrupt one's proposal when neither candidate adopts the reform is a more effective strategy. In Figure 2.b, too, the shaded area depicts the gain from strategic voting.

To summarize,

Proposition 2 *By voting strategically at $t = 0$, the voter can secure the needed political support for the reform when $\delta < \frac{4\eta}{1+2\eta}$ in CC, and when $\delta < \frac{4}{5-2\eta}$ in HC. Her most effective voting strategy in HC is to vote for the corrupt candidate when neither candidate adopts the reform.*

Thus, as Figures 2.a and 2.b make clear, in either *CC* or *HC*, strategic voting is effective only over a small subset of the parameter space. Intuitively, the voter can (credibly) threaten one of the politicians by the loss of ego rents in constitutional period. Yet, if the future rents are high enough (that is, if the expected level of corruption is high), this threat is not effective.

4 Discussion and Conclusion

In this section I discuss the assumptions of the model, and conclude. To summarize, the main result of this paper is that when the level of corruption is high, and the politicians put a high weight on their future rents, both corrupt and honest politicians have incentives to block a fully effective anti-corruption reform. If the electorate is fully informed and fully coordinated, then (only under a small set of parameters) the voter(s) may alter these incentives by voting strategically.

One may think of several obstacles to the anti-corruption reform. In this paper, I assume that there are no obstacles except the one that I study: opposition by politicians. To make the conditions as favorable as possible for the reform, I made many simplifications. For instance, I assume that the reform is the only issue in the referendum. This assumption implies that, a candidate who adopts the reform single-handedly receives the ego rents certainly, $\rho_j = 1$. Alternatively, and more realistically, one may assume that the reform is one of the many issues in the general elections, that is, each candidate presents a multidimensional policy platform where his support for the reform is only one of the dimensions, –the other two dimensions is fiscal policy τ_j and g_j. In this case, adopting the reform single-handedly increases j's probability of winning only by the present discounted value of the increase in voter's welfare due to reform, ΔW_t. That is, adopting the reform does not always guarantee an election victory. To obtain an analytical solution to this version of the model is difficult. I run numerical simulations, and find that then the honest candidate never deviates from (Don't Adopt, Don't Adopt). The intuition is that since he already proposes a policy platform with lower taxes and thus receives a high vote share in the corrupt status-quo, the increase in his vote share due to adopting the reform never compensates for the future rents lost.[20]

I consider an ideal reform, and ignore all other obstacles to the reform not because I think that always (or, even sometimes) there are fully effective and costless anti-corruption reforms lacking only the political support. The point of the paper is that even when there are no other obstacles, the politicians may still have the ability and the incentives to block the reform. This result may help explain the persistence of widespread political corruption

[20]The Mathematica notebooks for these simulations are available from the author upon request.

in countries where a small group of career politicians compete with each other repeatedly. And the analysis in this paper, I hope, can be helpful to design a successful anti-corruption reform in such countries.

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