

Democracy and Corruption: Invisible Hand or Iron Fist?

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Abstract

The effect of various features of democracy on corruption is most often assumed rather than carefully modeled. In the context of an infinitely-repeated political corruption game, we show that electoral competition alone does not limit corruption because politicians can collude, share rents, and simply alternate in office. Only in the presence of an outside monitoring agency will political competition work as a constraint on corruption. In this sense, there is no “invisible hand” of electoral competition that would act to reduce corruption; rather, it is an “iron fist” of monitoring institutions,

such as free press or grassroot anti-corruption watchdog organizations.

1. Introduction

Democracy is widely believed to limit political corruption (Key 1949; Huntington 1968; Mayhew 1986; Rose-Ackerman 1978, 1999; Klitgaard 1991, Kunicová 2005). However, the actual mechanisms of this effect are not well understood. Existing theoretical explanations concern democracy's ability to promote oversight and government transparency, thus increasing the probability of exposure and punishment of corrupt acts. Not only are voters more likely to learn about the abuse of political office, but they also have a chance to oust corrupt leaders come next election. Treisman (2000:7) summarizes various arguments as follows:

For a number of reasons, the risk of exposure [of corruption] may be higher in more democratic, open systems. Freedom of association and of the press engender public interest groups and reporters with the mission and the right to expose abuses. Greater civic engagement may lead to closer monitoring. In democratic systems, competitors for office have an incentive to discover and publicize the incumbent's misuse of office whenever election beckons.

With the availability of new measures that allow to analyze the nexus between corruption and democracy in large-n settings, researchers have established strong bivariate correlations between democracy and corruption, but once alternative

explanations are taken into account, this relationship usually unravels (Goldsmith 1999; Sandholtz and Koetzle 2000; Treisman 2000; Johnston 2002; Montinola and Jackman 2002; Hill 2003). For example, Treisman's (2000) measure of democracy loses significance as a determinant of corruption when the duration of democracy is controlled for. While this finding does not preclude a potential constraining effect of democracy on corruption, it invites a more thorough theoretical examination of its mechanisms.

Limiting political corruption is only one of many virtues ascribed to democracy. In broader terms, giving power to the people is associated with a host of desirable outcomes, such as "democratic peace" (Russett 1993, Bueno de Mesquita et. al. 2003), higher incomes (Przeworski et. al. 2000, Boix and Stokes 2003, Bueno de Mesquita and Downs 2005), and freer trade (Mansfield, Milner and Rosendorff 2000). Yet while many countries around the world have in recent years embraced democracy in the minimalist sense by holding periodic elections with reasonable electoral uncertainty (Przeworski 1999), we do not observe the above positive effects across the board, especially in new democracies. Then, the question becomes, what makes some democracies produce superior outcomes?

In this paper, we concentrate on one such outcome – the constraints on political corruption that can potentially be provided by democratic politics. We

ask whether rent-extraction will be constrained simply by the existence of an opposition who can win office with a positive probability and who therefore has incentives to expose a corrupt incumbent. In other words, once electoral institutions are introduced, will an "invisible hand" of democracy take over and reduce corruption? Or, alternatively, is there a need for an "iron fist", such as an independent monitoring agency, free press, or grassroot watchdog organizations, to place constraints on politicians' malfeasance?

In the context of an infinitely-repeated political corruption game, we show that electoral competition alone does not limit corruption because politicians can collude, share rents, and simply alternate in office. Only in the presence of an outside monitoring agency will political competition work as a constraint on corruption. The effect of various features of democracy on corruption is most often assumed rather than carefully modeled, and this paper fills an important theoretical void in this regard. Our concept of corruption is the "misuse of public office for private gain" that is now standard in corruption studies (Treisman 2000, Sandholtz and Koetzle 2000, Kunicová and Rose-Ackerman 2005, and others). Our model assumes the maximum possible electoral uncertainty in that it gives parties that compete in elections equal probabilities of winning. The corrupt incumbent can be exposed either by an independent anti-corruption actor, such

as a free press, or by the incumbent's political opponent. The model also assumes that voters will punish the perpetrators if they are exposed and will not re-elect them in the next period. In this setup, we show that in order for political competition to have a constraining effect, an independent monitor, such as a free press, must be present.

The paper proceeds as follows. In the next section, we describe the model in general terms, while Section 3 sets it up as an infinitely repeated stochastic game. Section 4 presents equilibrium results assuming stationary strategies, and then extends our discussion to symmetric strategies, including some numerical results. Section 5 discusses possible extensions, while Section is devoted to empirical implications. Finally, Section 6 concludes with broad implications of our model.

2. The Model

The game is played between two political parties and is repeated over infinite periods. Each period starts with an election, and the winning party comprises the government.

While benefits from officeholding accrue only to the members of the government, corrupt rents may be shared with the opposition. However, with the

financial reward of corrupt rents comes the risk of being caught. Evidence to convict the governing coalition can be obtained in four ways:

1. The government, as the entity distributing the benefits, has immediate access to such evidence.

2. The opposition, when receiving corruption benefits, also has immediate access to such evidence. However, note that after reaching an agreement to share corruption rents, those receiving the benefits have little incentive to reveal corruption, as in so doing the parties would implicate themselves.

3. The opposition, when not receiving corruption benefits, can use its government contacts and its familiarity with the political process to uncover the corruption of incumbents. However, the opposition must pay some cost in order to obtain that corruption evidence; furthermore, there is always a possibility that the cover-up mechanisms of the current regime are so effective that incontrovertible evidence cannot be gathered.

4. An anti-corruption agency, such as an independent magistrate or investigative free press, obtains such evidence with some probability. This agency is not elected. In essence, we assume that it is a perfect agent of the electorate, and its sole purpose is to uncover the corruption of elected officials. Thus, we do not endogenize the effort exerted by this agency, but instead consider it a parameter

in the model.

Although we assume that voters understand that corruption is likely to exist, only after factual evidence of wrong-doing is provided will the corrupt be subject to punishment. In the case that the corruption is exposed, every party receiving corruption rents will be implicated, while the non-offending party gains in two ways from its rival's exposure. First, the innocent party receives an immediate political boost due to its increased status relative to its opponent. Second, parties implicated in corruption are ineligible to run for office in the next period. This means that the opposition, while watching the government fall into corruption scandal, knows with certainty that it will emerge victorious in the subsequent election.

In sum, there are three types of benefits available to the political parties:

1. Political benefits, which are derived solely from the holding of office (i.e. cabinet seats).
2. Corruption rents, which are distributed by the governing party.
3. Exposure benefits, which are conferred upon the non-offending party whenever corruption is exposed.

Political parties and/or the anti-corruption agency might consider disintering evidence of corruption from prior periods. For example, a new government

would presumably have access to information regarding the previous government's misdeeds. However, in this model, we assume that incidents of corruption in the distant past bear no political consequences in the present or future periods. First, the electorate is more likely to question the motives for such "delayed" allegations and respond negatively toward those bringing the allegations as well as those accused. Second, it is quite likely that the persons (party leaders, ministers, etc.) involved with corruption in the distant past have now been replaced by their party, in which case those allegations would have no immediate bearing on the electorate's view of the current leadership of the implicated parties.

Finally, corruption scandals are likely to have negative consequences for all parties in the political system, as they reduce the confidence of the electorate in politics and politicians across the spectrum. We assume that these additional negative effects are distributed equally among parties. However, there is an advantage in being the party or organization that uncovers the corruption, since being the source that handed credible corruption evidence over to the media or the legal system should confer political benefits. As a result, it could be in the best interest of the opposition to uncover the corruption – despite the chances that a third-party agency may do the same.

3. Stochastic Form of the Game

The political corruption game described above will be represented as a stochastic game, using the following definition, which is motivated by McKelvey and Riezmann (1990):

Definition: Let N be a set of players, X be the set of possible outcomes, $u_i: X \rightarrow R$ a utility function over these outcomes for each player $i \in N$, and Y a set of states. Given these parameters, a stochastic game $\Gamma = \{\Gamma^y : y \in Y\}$ is a collection of game elements $\Gamma^y = (S^y, \pi^y, \psi^y)$ where:

$S^y = \prod_{i \in N} S_i^y$ is an n -tuple of pure strategy sets,

$\pi^y : S^y \rightarrow M(Y) = \Delta^{|Y|}$ is a transition function specifying for all strategy profiles a probability distribution on Y that determines for all strategy profiles and states the probability of proceeding to game element Γ^y , and

$\psi^y : S^y \rightarrow X$ is an outcome function that specifies for all strategy profiles an outcome $\psi^y(s^y) \in X$.

We let N be the set of political parties, so $|N| = 2$. We assume that the set of outcomes, X , is $X = X' \cup \{x_0\}$ and that $X' = \Psi \times \Omega \times \Theta$, where Ψ denotes the set of all possible allocations of cabinet seats, Ω the set of all possible corruption allocations, and Θ the set of political parties exposed for corruption. Elements

of X' are written in the form $x = (\mathbf{g}, \mathbf{c}, \mathbf{r})$, where

$$\mathbf{g} = (g_1, g_2) \in \Psi = \{\mathbf{g} : \sum_{i=1}^2 g_{t,i} = 1; g_{t,i} \geq 0\}$$
 for the current time period

$t = 1, 2, \dots, \infty$; these are the political benefits distributed between the parties.

$$\mathbf{c} = (c_1, c_2) \in \Omega = \{\mathbf{c} : \sum_{i=1}^2 c_{t,i} \leq \bar{C}; c_{t,i} \geq 0\}$$
 for the current time period

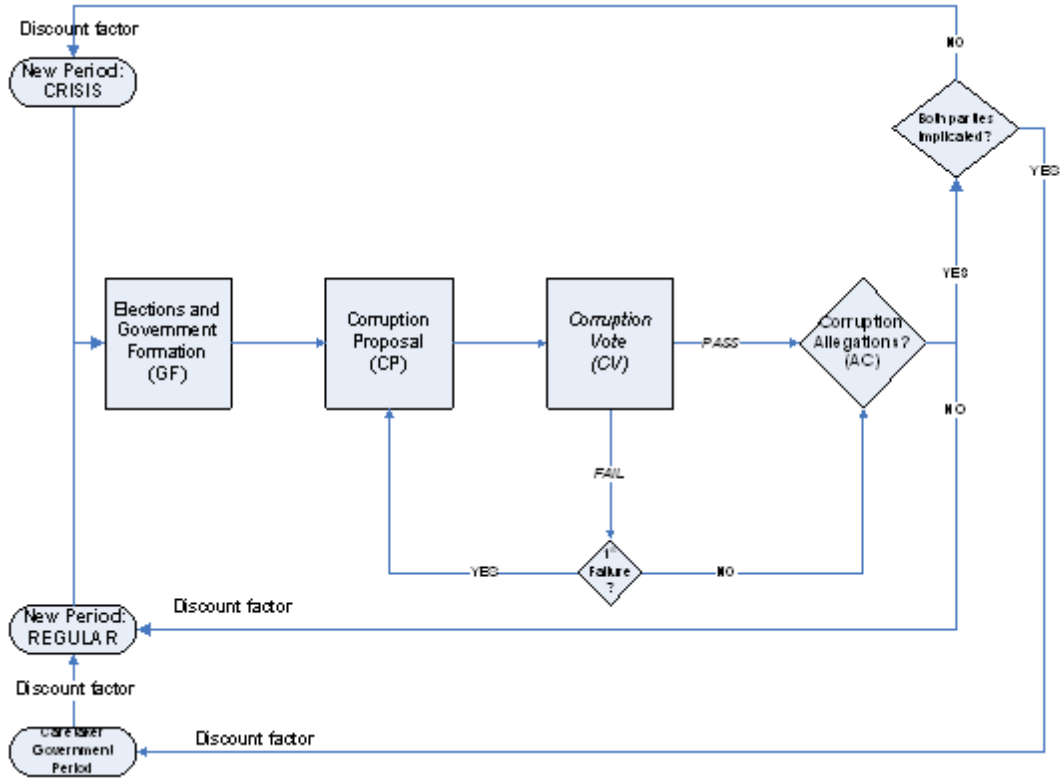
$t = 1, 2, \dots, \infty$; these are the corruption rents distributed between the parties.

$\mathbf{r} = (r_1, r_2) \in \Theta = \{0, 1\}^2$ for the current time period $t = 1, 2, \dots, \infty$; this represents whether or not each party was convicted of corruption.

$u_i = f(g_i, c_i, r_i, \beta)$, that is, utility is a function of political benefits, g_i , , corruption benefits, c_i , , exposure for corruption (or lack thereof), r_i , , and the costs and benefits of the corruption exposure process, β . The latter includes rewards for exposing an adversary, costs of attempting to expose an adversary, and penalties for being exposed.

We have a total of five game elements, referred to as *Government Formation*, *Corruption Proposal*, *Corruption Voting*, *Allegation of Corruption*, and *Termination*. These elements are indexed by the corresponding element in the set $\{GF, CP, CV, AC, T\}$. Each game element can be further indexed on a state variable. Utility for each time period is determined in the *Allegation of Corruption* stage. We now introduce the sequence of moves and the specifics of each game element.

Figure 3.1: Infinitely-Repeated Political Corruption Game



3.1. Sequence of Moves

Figure 3.1 depicts the flow of the game.

Elections and Government Formation Stage (GF) We distinguish between two basic types of periods: regular periods and political crisis periods. In a regular period, t , no corruption charges were brought against any parties in period $t - 1$.

In a crisis period, at least one party suffered corruption exposure in period $t - 1$.

Denote the set of parties that were *not* convicted in the previous period by

$$\Lambda_t = \{i \in \{1, 2\} : r_{t-1,i} = 0\}. \quad (3.1)$$

The *Elections and Government Formation* stage starts with a choice of the election winner by Nature. This choice is governed by a probability distribution over the set of parties, so that party i is chosen with probability $\frac{1}{|\Lambda_t|}$. For the party in power, $g_{t,i} = 1$. If both parties were convicted in the previous period ($\Lambda_t = \emptyset$), then a Caretaker Government, which cannot choose to be corrupt, forms with $\mathbf{g}_t = (0, 0)$. Given widespread corruption, it is plausible to assume that the political system is in such severe crisis that none of the established parties can assume the task to head a government. Only after some time has passed (i.e., in the next period) can existing parties again control the government (perhaps having been "transformed," changed names, etc.).

If a party holds any government seats in a given period, it is referred to as the incumbent government G_t ; otherwise, it is the opposition O_t .

Corruption Proposal Stage (CP) The *Corruption Proposal* stage starts with a corruption allocation proposal by the party with executive power, G_t . It proposes

an allocation $\mathbf{y} = (y_1, y_2)$ such that $y_1 + y_2 \leq \bar{C}$ and $y_i \geq 0$ for $i = 1, 2$. \bar{C} represents the exogeneously given upper bound on available corruption rents.

Corruption Voting Stage (CV) In the *Corruption Voting* stage, the political parties vote "yes" or "no" on whether or not to accept the allocation proposed in the previous stage. A party's eligibility to vote requires that it meet one of the following criteria:

1. The party is a member of government. That is, $i = G_t$.
2. The party is not a member of government, but is offered a share of the rents. That is, $i = O_t$ and $y_i \neq 0$.

If every eligible party votes "yes" on $\mathbf{y} = (y_1, y_2)$, then $\mathbf{c}_t = \mathbf{y}$.¹ We assume a maximum of two rounds of proposals. If the first unanimity vote fails, the parties revert to the Corruption Proposal Stage. If disagreement persists to the point of a second failed vote, $\mathbf{c}_t = (0, 0)$.

Allegation of Corruption Stage (AC) We denote the current level of corruption in the political system by a vector of benefits $\mathbf{c}_t = (c_{t,1}, c_{t,2})$. Given this level of corruption, all parties simultaneously choose the level of effort to under-

¹Note that at the exercise of corruption stage we require unanimity. Under majority rule, the minority party could be "forced" to take part in rent-extraction. Unanimity in this context only requires that any party offered a rent-sharing arrangement must accept it.

take in revealing that corruption. Formally, each party chooses its level of effort $R_i \in \{0, L, H\}$, where 0 means "no effort," L means "low effort", and H , "high effort". If $i = O_t$, effort comes at a cost, e_R , where

$$e_R = \left\{ \begin{array}{l} 0 \text{ if } R_i = 0 \\ e_L \text{ if } R_i = L \\ e_H \text{ if } R_i = H \end{array} \right\} \forall .i = O_t$$

Let $\eta(R_i, \mathbf{c})$ be the probability that the incumbent is exposed by an opposition party. We require that $\eta(R_i, \mathbf{c})$, is strictly positive and increasing with respect to $\sum_{i=1}^2 c_{t,i}$. Also, $\eta(H, \mathbf{c}) \geq \eta(L, \mathbf{c}) \geq \eta(0, \mathbf{c}) = 0$ for a given \mathbf{c} .² Finally, there is a third-party anti-corruption agency W . The probability $\xi(\mathbf{c})$ of corruption exposure by the external agency is strictly positive and increasing with respect to $\sum_{i=1}^2 c_{t,i}$.

The realized outcome of the revelation efforts is the function

$$\rho_t(\mathbf{c}) = \max\{\rho_t^n(\mathbf{c}), \rho_t^x(\mathbf{c})\} \quad (3.2)$$

where $\rho_t^n(\mathbf{c}) \in \{0, 1\}$ indicates the exposure by the political opponent (henceforth "endogenous exposure") and $\rho_t^x(\mathbf{c}) \in \{0, 1\}$ indicates the exposure by the external

²Note that when $i = G_t$, $e_R = 0$ for all levels of effort.

agency ("exogenous exposure").³

Whenever $\rho_t^n(\mathbf{c}) = 1$, the opposition party responsible for exposing the incumbent receives an additional benefit $B > 0$. In the case of corruption exposure by a third-party agency (i.e., $\rho_t^x(\mathbf{c}) = 1$), any non-implicated party receives a benefit of $B' < B$. If *both* the third-party agency and the opposition expose corruption, the non-offending side receives the larger of these two benefits, B .

If corruption has not been exposed, or if $\mathbf{c}_t = \mathbf{0}$, then the game moves to the *Government Formation* stage in period $t+1$, which is a regular period. Otherwise, all parties that were convicted of corruption (i.e., each party i such that $c_{t,i} > 0$) are penalized, and the game moves to the *Government Formation* stage in period $t + 1$, which is a crisis period.

Termination (T) This game element simply converts $\rho_t(\mathbf{c}_t)$ and \mathbf{c}_t into \mathbf{r}_t , which is then used as input for the *Government Formation (GF)* stage of the next period.

3.2. Payoffs

In each time period, utility is calculated in the *Allegation of Corruption* stage.

For each player $i \in \{1, 2\}$, parties' utility functions over X' are of the form

³In all cases, a value of 1 means "exposure", while a value of 0 signifies "no exposure".

$$u_{t,i} = \left\{ \begin{array}{l} w(g_{t,i}, c_{t,i}) - e_{R_i} \text{ if } \rho_t(\mathbf{c}) = 0 \\ w(g_{t,i}, 0) + \max\{\rho_t^n(\mathbf{c})B, \rho_t^x(\mathbf{c})B'\} - e_{R_i} \text{ if } \rho_t(\mathbf{c}) = 1 \text{ and } c_{t,i} = 0 \\ w(g_{t,i}, c_{t,i} - k(c_{t,i})) - e_{R_i} \text{ if } \rho_t(\mathbf{c}) = 1 \text{ and } c_{t,i} > 0 \end{array} \right\} \quad (3.3)$$

The first component of the utility function is a function $w : [0, 1] \times [0, \overline{C}] \rightarrow \mathbf{R}$ that reflects utility from the divisible benefits of cabinet positions and corruption rents. We assume that w is increasing in both arguments, i.e. $w_1, w_2 > 0$, and that second derivatives are non-positive, i.e., $w_{11}, w_{22} \leq 0$.

The second component is a function $k : [0, \overline{C}] \rightarrow \mathbf{R}$ that captures the magnitude of the costs associated with being implicated in corruption. In these cases, if the amount of corruption benefit is $c_{t,i}$, the associated cost is $k(c_{t,i})$. We assume $k(0) = 0$, $k' > 0$, $k'' \leq 0$, and $k(c) > c$.

Parties discount the future with a common discount factor $0 < \delta < 1$ so that their payoff from the entire game is given by:

$$U_i = \delta^{t-1} \sum_{t=1}^{+\infty} u_{t,i} \quad (3.4)$$

4. Results

The solution concept that we use is a Markov-Perfect Equilibrium in stage-undominated stationary strategies. We also present numerical results so that we can consider a broader range of possible strategies.

4.1. Stationary Strategies

This stochastic game has many equilibria. In the Appendix, we describe how this game is solved, including the algorithm that can be used after appropriate functional forms are chosen. In this section, we select two strategy profiles and show that they constitute stationary equilibria in the political corruption game.

Applying Bellman's optimality principle (Sobel 1971, theorem 3), any stationary Nash equilibrium can be characterized by a set of values V^y —one for each game element Γ^y —and a strategy profile $s \in S$ that satisfy the following two properties:

(P1) For all $y \in Y$, s^y is a Nash equilibrium to the game with payoff function $U^y(s^y) = u(\psi^y(s^y)) + \sum_{t=0}^{+\infty} \pi_t^y(s^y)v_t$. That is, for each game element y , $U_i^y(s^y) \geq U_i^y(\hat{s}_i^y, s_{-i}^y)$ for all $i \in \{1, 2\}$ and $\hat{s} \in S$.

(P2) For all y , $v^y = U^y(s^y)$

Proposition 1. *Assuming that a monitoring agency will never expose corruption (for all c , $\xi(c) = 0$), and the opposition party can always expose corruption (for all c , $\eta(L, c) = 1$), the following is a stationary equilibrium to the stochastic game defined previously.*

Corruption Proposal Game:

$$s_{t,G} = (z_{t,G}, z_{t,O}) = (c_i^*, c_{-i}^*), \forall t, \text{ where } c_i^* + c_{-i}^* = \bar{c}; w(\beta, c_i^*) \geq w(0, c_{-i}^*)$$

Corruption Voting Game:

$$s_{t,i} = \left\{ \begin{array}{l} Y \text{ if } i = G \\ Y \text{ if } i \neq G \text{ and } c_{-i} \geq c_{-i}^* \\ N \text{ if } i \neq G \text{ and } c_{-i} < c_{-i}^* \end{array} \right\} \forall i \in \{1, 2\}, \forall t$$

Allegation of Corruption Game:

$$s_{t,i} = R_{t,i} = \left\{ \begin{array}{l} 0 \text{ if } c_i > 0 \\ H \text{ if } c_i = 0 \text{ and } c_{-i} > 0 \\ 0 \text{ if } c_i = 0 \text{ and } c_{-i} = 0 \end{array} \right\} \forall i \in \{1, 2\}, \forall t$$

Proof. In the Appendix.

This equilibrium describes the behavior of the two parties when the outside monitoring agency is either very inefficient or simply absent, but the opposition can expose the incumbent by exerting even minimal effort. In equilibrium, if

the government wishes to extract any rents, it is optimal to share these rents with the opposition to prevent it from exerting any effort. Without any outside monitoring, there is nothing stopping the two parties from colluding to extract the entirety of available rents. Maintenance of this equilibrium requires only that $w(\beta, c_i^*) \geq w(0, c_{-i}^*)$, i.e. the benefits from office combined with corruption rents should be worth more than the bribe for the opposition party.⁴

This result shows that democracy in the minimalist sense – as "institutionalized uncertainty" for the political competitors who face periodic elections and stand a fair chance of losing (Przeworski 1999) – is not sufficient to constrain corruption. We have started from the assumption that each party wins elections with the probability of $\frac{1}{2}$, which is the highest possible uncertainty about the outcome, and implies the fiercest competition. We have also assumed a severe punishment at the polls if either of the parties is implicated in corruption. However, if an outside monitoring agent is non-existent – for example, severe constraints on investigative journalists, or no independent magistrates – political competition between the two parties alone does not curb rent-extraction.

Proposition 2. *Assuming that a monitoring agency will always expose corrup-*

⁴ Otherwise, it would be more beneficial to be the opposition party, and as a result, parties would prefer to lose elections!

tion when the maximum amount of rents are extracted ($\xi(\bar{c}) = 1$) and the opposition party can always expose corruption (for all c , $\eta(L, c) = 1$):

(i) The following is a stationary equilibrium to the stochastic game defined previously:

Corruption Proposal Game:

$$s_{t,G} = (z_{t,G}, z_{t,O}) = (c_i^*, c_{-i}^*), \forall t$$

where

$$(1 - \xi(\mathbf{c}))(w(\beta, c_i^*)) + \xi(\mathbf{c})(w(\beta, c_i^* - k(c_i^*))) > (1 - \xi(\mathbf{c}))(w(\beta, c_{-i}^*)) + \xi(\mathbf{c})(w(\beta, c_{-i}^* - k(c_{-i}^*)));$$

$$(1 - \xi(\mathbf{c}))(w(\beta, c_i^*)) + \xi(\mathbf{c})(w(\beta, c_i^* - k(c_i^*))) > (1 + \delta)w(0, 0) - \delta(1 - \xi(\mathbf{c}))w(0, 0);$$

$$(c_i^*, c_{-i}^*) \text{ maximizes game value for all } 0 \leq c_i \leq \bar{c} - c_{-i}$$

Corruption Voting Game:

$$s_{t,i} = \left\{ \begin{array}{l} Y \text{ if } .i = G \\ Y \text{ if } i \neq G \text{ and } c_{-i} \geq c_{-i}^* \\ N \text{ if } i \neq G \text{ and } c_{-i} < c_{-i}^* \end{array} \right\} \forall i \in N, \forall t$$

Allegation of Corruption Game:

$$s_{t,i} = R_{t,i} = \left\{ \begin{array}{l} 0 \text{ if } c_i > 0 \\ H \text{ if } c_i = 0 \text{ and } c_{-i} > 0 \\ 0 \text{ if } c_i = 0 \text{ and } c_{-i} = 0 \end{array} \right\} \forall i \in N, \forall t$$

(ii) Furthermore, in this equilibrium, $c_i^* + c_{-i}^* < \bar{c}$.

Proof. In the Appendix.

This equilibrium describes the behavior of the two parties when both the outside monitoring agency and opposition are efficient at exposing the incumbent. Similar to the previous equilibrium, the government needs to offer the opposition some "silencing bribe" in order to prevent it from exerting effort. However, with the outside monitoring "watchdog," the total level of rent-extraction will be less than the maximum. As a result, the equilibrium defined in Proposition 1 no longer exists.

4.2. Symmetric Strategies

The restriction to stationary strategies, while analytically tractable, requires that each time period be a stand-alone equilibrium. This means that neither punishment nor rewards for past behavior can be characteristic of such equilibria. Consider the following simple example. Suppose that both parties have implic-

itly agreed that in every period, the government should take the entirety of the available corruption rents, \bar{c} , and that the opposition should exert no effort to uncover corruption. Suppose now that the current opposition reneges on the deal and exposes the government's stealing. What will happen in the subsequent period? Will the former governing party allow its rival to extract \bar{c} with impunity? Clearly they would have no incentive to remain silent.

If we restrict our analysis to stationary strategies, however, we allow the players no choice in this case. The threat to reciprocate cannot even be part of a party's strategy. The effect is to eliminate altogether any equilibria with single-period temptations for defection. However, what if we deem that such equilibria, like the one describe above, are plausible? The concept of *symmetric strategies* allows us to account for these occurrences.

Any Nash equilibrium in symmetric strategies can be characterized by a set of values V^y — one for each game element Γ^y — and a strategy profile $s \in S$ that satisfy the following two properties:

(P1) For all $y \in Y$, s^y has payoff function $U^y(s^y) = u(\psi^y(s^y)) + \sum_{t=0}^{+\infty} \pi_t^y(s^y)v_t$, and, for each game element y , $U_i^y(s^y) \geq U_i^y(\hat{s}^y)$ for all $i \in \{1, 2\}$ and $\hat{s} \in S$.

(P2) For all y , $v^y = U^y(s^y)$.

In other words, if one party changes its strategy, it should assume that the

other party will switch to the new strategy as well. This allows us to incorporate the idea of simple "grim trigger" punishment into our game.

To update the above example, the current opposition is now aware that, as a direct consequence of its exposing the government for \bar{c} , the opposition must alter its strategy to also expose \bar{c} . The first exposure would cause a crisis period and bring the opposition into power. However, the new government is now compelled to take \bar{c} , get exposed, and pay the consequences. Such considerations by definition cannot be part of a world with stationary strategies.

At this stage, we are interested in how the parameters of the model affect the equilibrium level of corruption. This type of comparative statics is very difficult to obtain analytically in this game due to the relative complexity of its continuation values. Therefore, we perform numerical simulations of the algorithm described in the Appendix, choosing some reasonable values for the parameters of the model. We fully parameterize the model by choosing functional forms, which we describe in the Appendix, along with the continuation values for the incumbent and the opposition in terms of these parameters. Numerically, having chosen values for these parameters, we can now compute the equilibrium level of corruption in this game.

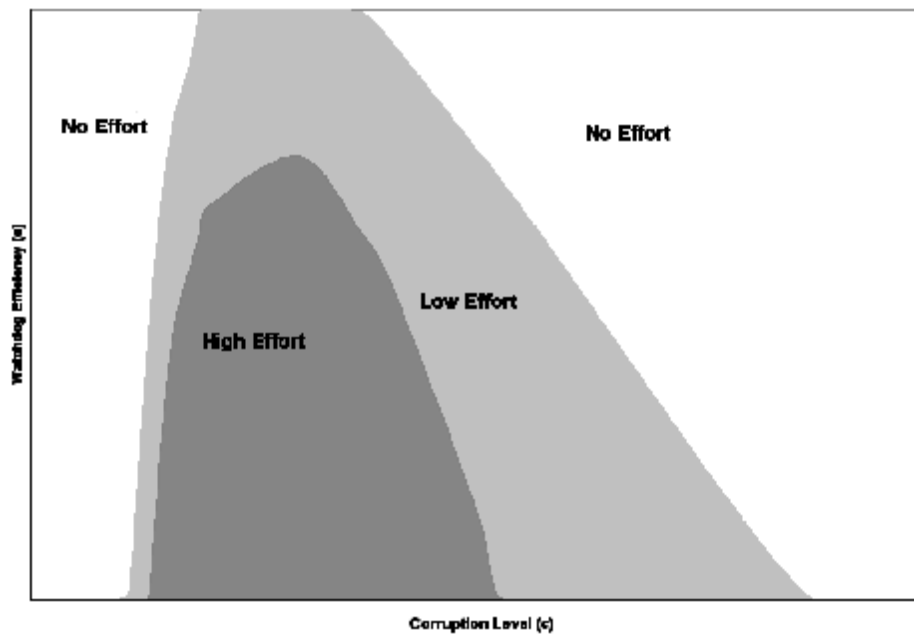
Thus, we are better prepared to answer the following two questions: How

does the equilibrium level of corruption depend on the existence of political competition? Also, under what conditions will the opposition exert effort to gather corruption evidence against the incumbent? We now explore these questions graphically, plotting the overall corruption as a function of several key parameters of the model.

Figure 4.1 shows the regions of no effort, low effort, and high effort as a function of the equilibrium corruption level and the efficiency of the outside monitoring agent. At very low levels of corruption, it is not very beneficial for the opposition to expose the incumbent, and the more efficient the outside monitoring agency is, the higher the level of corruption needed to make it worth the opposition's while to expend some effort. On the other hand, at very high levels of corruption and high watchdog efficiency, the watchdog is nearly certain to expose the government, so no effort is expended by the opposition.

Note that even when the watchdog is extremely inefficient, or nonexistent, the opposition eventually stops expending effort at high levels of corruption. We begin to isolate this effect in Figure 4.2. With independent monitoring present, point B will be the corruption level chosen. Note that each discontinuity in this figure is a result of a change in the opposition's effort level. At points A and B, the opposition switches from no effort to low effort; at points C and

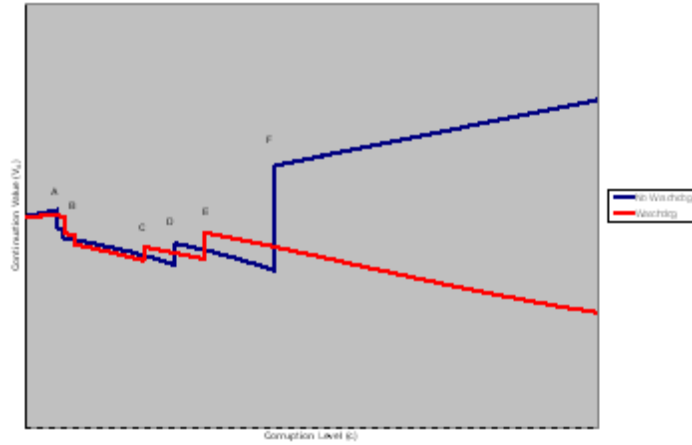
Figure 4.1: Opposition's Effort Level as a Function of Watchdog Efficiency and Corruption Level



D, they move from high effort to low effort; and at points E and F, from low effort to no effort. Without outside monitoring, high levels of corruption can confer large benefits upon both parties, as neither party will exert effort to expose the other's corruption. In essence, they will take turns holding office, stealing large amounts, and always "ignoring" the corrupt nature of the system. With a watchdog present, this opportunity no longer exists. At high levels of corruption, the government will be exposed regardless of the opposition's actions. In other words, in the absence of third-party monitoring, it might well be that both parties like the system, and do not want to "rock the boat." Here, the opposition party knows that if it keeps quiet, it will also get to reap huge benefits once it inevitably takes office. If the opposition resorts to exposure, it "spoils the system," and the potential future corruption benefits are not available any longer.

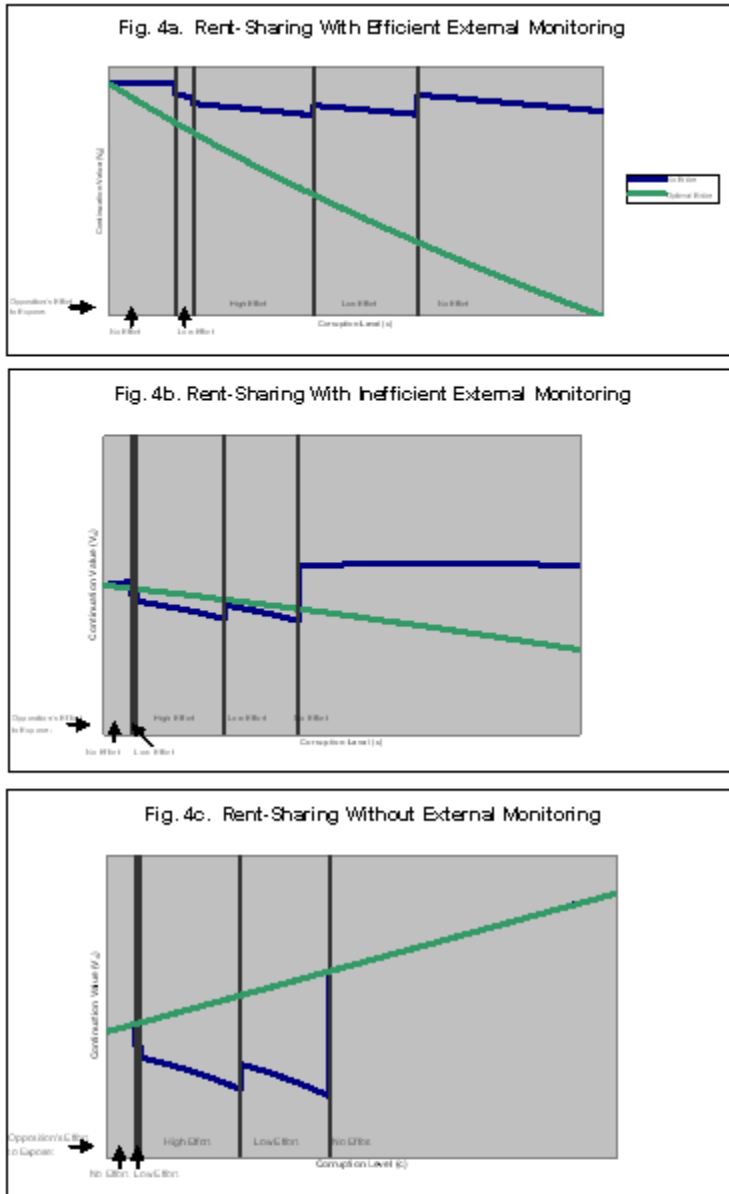
Now, let us look more closely at the conditions under which the incumbent party will resort to rent-sharing with the opposition in order to reduce the opposition's effort in uncovering its corruption. Figures 4.3a-c show the incumbent party's continuation values for any given level of corruption it chooses. Figure 4.3a reflects the scenario in which the monitoring agency is quite efficient, in which case rent-sharing with the opposition will be suboptimal. By contrast, without an outside monitoring agency, rent-sharing can only improve the situation, as Figure

Figure 4.2: Equilibrium Corruption vs. Overall Game Value



4.3c illustrates. The story is more ambiguous as the efficiency of the watchdog decreases. Figure 4.3b shows the results of having a moderately efficient monitoring agency. Here, as common sense would dictate, it is suboptimal for the government to bribe an opponent that had no intention of exposing governmental corruption. Note that a slightly more effective watchdog than depicted in Figure 4.3b would induce rent-sharing with the opposition only if the opposition had been planning to exert high effort to expose the government.

Figure 4.3: The Effect of Independent Monitoring on Rent-Sharing



5. Possible Extensions

In the model presented above, we made a simplifying assumption that political competition in our model takes place between two parties. While this approximates those political systems that use some form of plurality electoral rule leading to two-party systems, the dynamics are likely to differ in the multi-party PR systems. Although full treatment of this question is a subject for future research, the setup of our model provides a framework for analysis of these systems. The sequence of game elements is the same as in the two-party setup, but suppose that N parties are competing for office. Then, in the Government Formation stage, each party has the $\frac{1}{N}$ probability of being chosen to become a formateur of the government. Once chosen, the formateur faces the choice of how to distribute the government benefits as well as the corrupt benefits. Of course, the Government Formation stage in the multi-party scenario is likely to be less trivial than in the two-party case, and coalitions are likely to be formed (Baron 1993, Austen-Smith 2000) in accordance with a spatial model. Yet the endogeneity of corruption distribution as well as exposure is likely to shape the size and form of such coalitions. For example, there may be an equilibrium in which minority governments form because the formateur is not willing to risk his proposal rights over the distribu-

tion of corrupt benefits, but then the same formateur may distribute these rents widely in order not to be exposed by his rivals. Another question concerns the collective action problem that multiple parties in opposition may face. Kunicová and Rose-Ackerman (2005) argue that in multi-party systems, the opposition is less efficient in monitoring the incumbent because scandals are "public goods"; the benefits of exposing corrupt incumbents accrue not only to the party that took trouble to uncover the malfeasance, but also to its rivals. The analysis of our model in the multi-party scenario could shed light on the conditions under which this argument holds, and also how the presence of an independent monitoring agency exacerbates or alleviates such problems.

In another possible extension, we could vary the intensity of political competition. As in the case of Mexico's PRI or Japan's LDP, one could imagine a system with periodic elections in which the same party wins office for an indefinite number of periods. Note that these cases do not constitute dictatorship, where leadership can be changed only by only extra-constitutional means. Rather, in the systems with one party in office for a prolonged period of time, political competition is not particularly intense, because the incumbent party enjoys a significantly higher probability of winning office than its rivals. In this case, possible equilibria will depend on our assumptions about the opposition, the electoral benefits of exposing

the incumbent, and the strength of the outside monitoring agent. If we assume that the exposure of corruption will bring down an entrenched single-party government, this obviously gives the opposition very strong incentives to exert effort to expose the incumbent. In addition, the opposition becomes very expensive to "buy" with rent-sharing arrangements, since the electoral benefits of blowing the whistle are very high. On the other hand, in comparison to a more intense political competition, it is also reasonable to assume that in this case, the entrenched party will lose office only with a certain probability if exposed. In such a case, possible outcomes include a rent-sharing scenario as well as scandals that, with some probability, cost the party its tenure in office.

Finally, one could imagine a model in which we start out with two parties having equal probabilities of winning office, but where every exposure decreases the exposed party's probability of winning in the next period(s). This would add another parameter to the model – voters' forgiveness. In such a case, equilibria would depend on how strong the repercussions of corruption scandals are and how long those repercussions last. The case analyzed in this paper was an extreme in which the repercussions were very strong and very short-lived – the incriminated party lost office with certainty, but only for one period.

6. Empirical Implications

Our main theoretical result is that the minimalist concept of democracy is not enough to provide a constraint on corruption in the absence of other autonomous checks. This implies that the relationship between democracy and corruption in the cross-national data depends on the type of the data used to code democracy. For example, Przeworski et al. (2000), as well as Cheibub and Gandhi (2004), provide dichotomous codes for democracy and dictatorship, whereas Freedom House Index (Freedom House n.d.) approximates a rich definition of democracy, including the political and civil liberties as well as freedom of the press and independence of the judiciary. The problem for any econometric testing using these datasets is that they are highly correlated, so we lack pure cases where the freedom of press is high, but competition is non-existent, or where competition for office is intense, while the press is stifled. In addition, while the democracy datasets are available for a large number of countries over time, the same is not true for corruption indices, which are not comparable over a long enough time span to allow for panel analysis.

However, our model is consistent with the existing empirical results obtained by other researchers. For example, Ahrend (2002) finds that the lack of press

freedom leads to higher levels of corruption, while there is no evidence that corruption decreases press freedom. On the other hand, Treisman (2000) finds that the current degree of democracy does not significantly increase or reduce the level of corruption; instead, what matters is the duration of democracy. Thus, the longer the country has been an uninterrupted democracy, the lower the level of corruption. Consistent with our model, one could argue that while it is relatively straightforward to institute the recurring elections, building up civil and political freedoms that lead to unfettered investigative journalism, independent judiciary, and grassroot monitoring groups takes much longer.

What if the "watchdog" agencies are not independent? In our setup, the incumbents can only share rents with the opposition, while the independent monitoring agencies are uncorruptible by definition. Yet one could imagine that the incumbent is "buying off" the media and/or the judges. McMillan and Zoido (2004) use a peculiar dataset from Peru, in which President Fujimori's security chief Vladimiro Montesinos recorded his bribes to opposition, judges, and the press. The authors find that Montesinos paid television-channel owners about 100 times what he paid judges and politicians. One single television channel's bribe was four times larger than the total of the opposition politicians' bribes. While this shows that the newsmedia are certainly corruptible, in the context

of our model this situation is simply equal to the non-existence of an independent watchdog agency. In addition, the authors use their result to argue that by revealed preference, the strongest check on the government's power was the independent news media. This is also consistent with our theoretical result.

7. Conclusion

In this paper, we provided a new and extendable formal framework for the analysis of various features of democracy on corruption. We developed a model in which political corruption can be uncovered by political opponents or by an independent monitoring agency. We have demonstrated that political competition alone is unlikely to constrain corruption, unless it is complemented by an outside watchdog agency. This result stems from the possibility of rent-sharing between the incumbent and the opposition, which is easier in the absence of an independent monitor. In other words, there is no such thing as a democratic "invisible hand" that would constrain corruption as soon as the uncertainty about who will hold office in the next period is institutionalized. Other safeguards, such as free press, grass-root monitoring agencies, independent magistrates, or an autonomous judicial system must act concurrently as an "iron fist," by aiding and abetting the efforts of the opposition to uncover corrupt incumbents.

An important implication of our result is that the situation in which corrupt politicians are democratically elected is not a transitional state from which an uncorrupt democracy will eventually develop; instead, it can be an equilibrium with no impetus for change unless the system is perturbed in some way. In this sense, the results in this paper are in line with the arguments made by scholars of democratic transitions who emphasize the traps of the rampantly corrupt "partial reform equilibria" in new democracies in Eastern Europe (Hellman 1998) and similarly unaccountable "delegative democracy" in Latin America (O'Donnell 1996). Implanting democratic institutions of electoral competition and leadership change will not suffice for achieving positive outcomes associated with democracy. Our results imply that electoral competition will have a limiting effect on corruption only if formal electoral institutions go hand in hand with social characteristics that allow for civil liberties, free press, and grassroots monitoring organizations.

References

- [1] Ahrend, Rudiger. 2002. Press Freedom, Human Capital and Corruption: OECD.
- [2] Austen-Smith, David. 2000. Redistributing Income under Proportional Rep-

- resentation. *Journal of Political Economy* 108 (4):1235-1269.
- [3] Baron, David. 1993. A Spatial bargaining theory of government formation in parliamentary systems. *American Political Science Review* 85 (1):137-64.
- [4] Boix, Carles, and Susan C. Stokes. 2003. "Endogenous Democratization." *World Politics* 55 (4): 517-549.
- [5] Bueno de Mesquita, Bruce, Alastair Smith, Randolph M. Siverson, and James D. Morrow. 2003. *The Logic of Political Survival*. Cambridge, MA: MIT Press.
- [6] Cheibub, José Antonio, and Jeniffer Gandhi. 2004. *Classifying Political Regimes: A Sixfold Classification of Democracies and Dictatorships*: Yale University and Emory University.
- [7] Freedom House. n.d. *The Annual Survey of Political Rights and Civil Liberties*.
- [8] Goldsmith, A. A. 1999. Slapping the Grasping Hand: Correlates of Political Corruption in Emerging Markets. *American Journal of Economics and Sociology*, 58 (4): 865-883.
- [9] Hellman, Joel S. 1998. "Winners Take All: The Politics of Partial Reform in Postcommunist Transitions." *World Politics* 50(2): 203-234

- [10] Hill, Kim Q. 2003. Democratization and Corruption: Systematic Evidence from American States. *American Politics Research* 31 (6): 613-628.
- [11] Huntington, Samuel P. 1968. *Political Order in Changing Societies*. New Haven, CT: Yale University Press.
- [12] Johnston, Michael. 2002. Party Systems, Competition, and Political Checks Against Corruption. In A. J. Heidenheimer and M. Johnston (eds.), *Political Corruption* (3rd ed., 777-796). New Brunswick, NJ: Transaction Publishers.
- [13] Key, V. O. 1949. *Southern Politics in State and Nation*. New York: Knopf.
- [14] Klitgaard, Robert. 1988. *Controlling Corruption*. Berkeley: University of California Press.
- [15] Kunicová, Jana. 2005. *Democracy and Corruption: Are Rules Made To Be Broken?* Book manuscript, California Institute of Technology.
- [16] Kunicová, Jana, and Susan Rose-Ackerman. 2005. Electoral Rules and Constitutional Structures as constraints on corruption. *British Journal of Political Science* 35 (4):573-606.

- [17] Mansfield, Edward, Helen Milner, and B. Peter Rosendorff. 2000. Free to Trade: Democracies, Autocracies, and International Trade. *American Political Science Review* 94 (2):305-22.
- [18] Mayhew, David. 1986. *Placing Parties in American Politics*. Princeton, NJ: Princeton University Press.
- [19] McKelvey, Richard D., and Raymond Riezman. 1992. Seniority in Legislatures. *American Political Science Review* 86 (4):951-965.
- [20] McMillan, John, and Pablo Zoido. 2004. How to Subvert Democracy: Montesinos in Peru. *Journal of Economic Perspectives* 18 (4):69-92.
- [21] Przeworski, Adam. 1999. Minimalist Conception of Democracy: A Defense. In *Democracy's Value*, edited by I. Shapiro and C. Hacker-Cordon. Cambridge, UK: Cambridge University Press.
- [22] Przeworski, Adam, Michael E. Alvarez, José Antonio Cheibub, and Fernando Limongi. 2000. *Democracy and Development: Political Institutions and Material Well-Being in the World, 1950-1990*. Cambridge, UK: Cambridge University Press.

- [23] O'Donnell, Guillermo A. 1996. "Illusions About Consolidation," *Journal of Democracy*, 7 (2), 34-51
- [24] Rose-Ackerman, Susan. 1978. *Corruption: A Study in Political Economy*. New York: Academic Press.
- [25] Rose-Ackerman, Susan. 1999. *Corruption and Government: Causes, Consequences, and Reform*. Cambridge: Cambridge University Press.
- [26] Russett, Bruce. 1993. *Grasping the Democratic Peace: Principles for a Post-Cold War World*. Princeton, NJ: Princeton University Press.
- [27] Sandholtz, Wayne, and William Koetzle. 2000. Accounting for Corruption: Economic Structure, Democracy, and Trade. *International Studies Quarterly* 44 (1):31-50.
- [28] Sobel, Matthew J. 1971. Noncooperative Stochastic Games. *Annals of Mathematical Statistics* 42:1930-1935.
- [29] Treisman, Daniel. 2000. The Causes of Corruption: A Cross-National Study. *Journal of Public Economics* 76 (3):399-457.