

Stealing to Buy a Reputation: A Model of Corruption and  
Campaign Finance, with Cross-National Evidence.

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## **Abstract**

I present a formal model of electoral control that takes into account campaign finance and personal consumption as motives for corruption. I analyze the role of the press in helping voters hold politicians accountable, and the effect of freedom of the press on the level of corruption that voters tolerate. The corruption-reducing effect of a free press is expected to be conditional on the proportion of voters whose vote decision is affected by campaign messages. I provide robust cross-country empirical support for this prediction: in countries with less educated population, the existence of a free press is expected to reduce corruption by a much smaller extent than in countries with a highly educated public.

Weyland (1998, 108) complains that explanations of political corruption tend to stress opportunities for extracting bribes more than incentives for doing so. Recent literature that has attempted to fill this gap has provided a wide array of often incompatible conclusions regarding which kind of institutional arrangements and structural factors create incentives for politicians to be corrupt. Ades and Di Tella (1999) and Treisman (2000) provide evidence regarding the effect of development, education and political rights, while Montinola and Jackman (2002) claim that democracy has an ambiguous effect on corruption. Persson, Tabellini and Trebbi (2003), Kunicova and Rose-Ackermann (2003), Chang and Golden (2004a) provide empirical evidence on the effects of some aspects of the electoral system, while Fisman and Gatti (2002) tackle the issue of decentralization of government with cross-national data, and Olken (2005) measures, through a field experiment, the respective roles of central government auditing and grassroots monitoring in controlling local government corruption. Brunetti and Weder (2003) provide some evidence on the effect of media independence on corruption, and Adserà, Boix and Payne (2003) relate corruption to the costs of removing the corrupt incumbent and to the chances, related to a well functioning press, that the public can ascertain the real costs of provision of public goods.

The existing literature does not explain well when corruption is beneficial for an incumbent's odds of reelection. Plausibly, in electoral regimes political corruption is related to the need to finance electoral campaigns and the expenses of political parties (Heywood 2002; von Alemann 2002). For example, between 6 and 47% of civil servants (depending on the agency) in Bolivia declare that the resources of their agency are commonly used for the benefit of political parties. (Gingerich 2004)

Survey research (e.g., Canache and Allison 2003) and aggregate electoral evidence (e.g., Peters and Welch 1980; Fackler and Lin 1995) show that voters dislike corruption. Why do politicians adopt a risky strategy, that allows them to dispose of large sums of campaign money but can also, if uncovered, jeopardize the re-election prospects and even abruptly end their career? Chang and Golden (see Golden and Chang 2001; Chang and Golden 2004a, 2004b; Golden 2003) have focused on campaign finance as the main motive behind political corruption, but their work is plagued by an inconsistency: they claim at the same time that competition induces factions in a party to collect bribes, and that a prospective corrupt politician must enjoy enough advantage as to not run the risk

of losing her post if her corrupt fund-raising were to be discovered.<sup>1</sup>( Golden 2003, 209) The two statements are incompatible. If the candidate enjoys enough advantage, she has *prima facie* scant incentives to amass campaign resources (why should one campaign if one is almost sure to win?); if on the other hand she does not enjoy enough advantage, she has incentives to raise campaign funds, but might be negatively affected by public charges of corruption. Even if she loses a relatively small portion of votes, she might lose her post.

This ambiguity, and the resort to a claim of imperfect political competition, has a long genealogy. Rundquist et al. (1977) claim that a voter might prefer a corrupt politician to a “clean” one if the corrupt one is closer to the voter’s position than the clean one. This begs the question of why a candidate with the same position as the corrupt one, but clean, does not step in the race, given that she could expect all prospective voters of the corrupt one to prefer her: this argument relies on an implicit assumption of imperfect competition.

Moreover, their explanation answers the question regarding why corruption does not harm the candidate’s chances of election too much. Yet, the collection of corrupt monies in order to fund a campaign is reasonable only if such a campaign *increases* the odds of election. Saying that voters tolerate a certain degree of corruption if no candidate with equivalent or close enough positions is available can be an explanation of corruption aimed at increasing the resources available for the private consumption of the politician, not an explanation of bribe-funded campaigns. Finally, as Chang and Golden (2004b) ask, how is it possible that politicians whose corrupt behavior is made public are able to retain office so frequently? They offer some conjectures, but claim that it is not possible to adjudicate among them.

My theoretical contribution sheds some light on the features of the electorate under which politicians have more or less incentives to be corrupt. I relate tolerance of corruption, and the long tenures in power at times enjoyed by politicians who are publicly depicted as corrupt, to two factors: the information regarding the behavior of the politician, and the ability of the electorate to use such information to evaluate the behavior.

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<sup>1</sup>Peters and Welch (1980) show that in the United States the disclosure of the involvement with corrupt transactions affects votes cast for an incumbent by up to dozen percentage points without affecting reelection due to the large advantage enjoyed by the incumbent.

## How the press and campaigns affect accountability

Since the seminal works by Barro (1973), Ferejohn (1986), Austen-Smith (1987), Myerson (1993) and Baron (1994) the formal literature on electoral control of politicians and on campaign spending has been developed extensively. Office-motivated politicians deviate from the policies preferred by a majority of voters either due to an asymmetry in the information accessible to voters and to politicians (Ferejohn 1986); or to the need to collect campaign funds from “special interests” to gain the support of voters. (Baron 1994, Grossman and Helpman 2001)

The campaign spending literature introduces the distinction between “sophisticated” and “impressionable” voters. The former make their decision based on the available unbiased information regarding the incumbent’s behavior or the candidates’ platforms, and do not take into account the information spread by the incumbent’s campaign. Impressionable voters are influenced by campaigns, and are usually modeled in reduced form rather than as decision-makers: more campaign spending increases their support for a candidate (e.g., Baron 1994).

In other models (e.g. Persson et al. 1997, Adserà et al. 2003), politicians are motivated by greed (i.e. they want to hold office in order to be corrupt) but the use of the illegally collected funds to finance a campaign war-chest is not taken into account.

Finally, the role of the press in helping establish political accountability is often considered crucial, but this aspect is analyzed more or less implicitly. Adserà et al. (2003) provide an intuitive, but informal, argument on how a free press improves the ability of voters to control the behavior of elected officials. The press is modeled explicitly only in few articles. Besley and Prat (2006) offer a series of formal models that provide some insights not only regarding how the media provide information regarding the quality of incumbents, but also what incentives and opportunities the incumbent has to manipulate media information regarding her quality; they do not take into account the role of impressionable voters and campaign-motivated illegal contributions.

My theoretical contribution considers impressionable voters individual decision makers, who differ from sophisticated voters because the former mislabel the information they receive: they take the information coming from the campaign (that claims that the incumbent is clean) as if it were accurate information coming from a neutral agent (the press). Moreover, both greed and campaign

finance are possible motives for corruption. Finally, the role of the press is analyzed explicitly, trying to capture how its freedom reflects on the information that voters can observe. In this paper, I subscribe to the (admittedly) cynical view that politicians are driven to politics by the opportunity to accumulate material wealth that being in power provides. Considerations of policy are abstracted away: the focus is on ex-post accountability, as opposed to representation of voters' preferences.

To provide a micro-foundation to the decision making of “impressionable” voters, I assume that campaign spending increases the probability that an impressionable voter ignores information that points towards “bad” behavior on the part of an elected politician. This is analogous to saying that campaigning can help a bad politician to create a good reputation. The aggregate effect of this choice in terms of proportions of impressionable voters who support a candidate is equivalent to the reduced-form behavioral expectation in Baron (1994) or Grossman and Helpman (2001), but the formal analysis in this paper is carried out at the level of the individual voter.

The press is modeled in reduced form: the internal workings of newspapers and publishing firms are blackboxed. I make some assumptions. The press can at times provide voters accurate information regarding the behavior of the incumbent, but might not always be able to do it. Journalists uncover corruption scandals, but there are cases of corruption that are never uncovered and never revealed to the public. A less free press is a press that is more often silent regarding the malfeasance of those in power. More corrupt politicians are more likely to have the press uncover and report news regarding political malfeasance, and an incorruptible politician would not run the risk of being described as corrupt in the press.

Voters choose a level of corruption that they tolerate, and promise to reelect the incumbent if she steals no more than the tolerable level. The incumbent decides how much to steal and indirectly also the maximum amount of campaign funds she disposes of if she needs them. The press with some probability (that depends on the level of corruption) reports news of corruption. After the press report, the incumbent decides whether to carry out a campaign to counteract the information spread by the press, and chooses what proportion of the corrupt funds she uses to finance the campaign.

Combining and extending the insights of different strands of the formal literature allows me to focus on the role of the interaction between freedom of the press and voters’ ability to evaluate information (i.e. news vs. campaign). I analyze the expected effects, in terms of corruption, of different proportions of “sophisticated” and “impressionable” voters in the electorate, and of a freer or more restricted press. I provide some insights on how these factors *jointly* affect the incentives incumbents and parties have to collect corrupt funds that can be used as illicit campaign money or as personal consumption resources.

## The model

A politician, whose preferences can be represented by an increasing, concave, continuously twice differentiable utility function  $U_p()$ , is in office, and chooses a level of corruption, i.e. an amount  $r \in [0, 1]$ , for instance an amount from the public budget that she diverts for her personal use or money received from private entrepreneurs in exchange for legislative favors or for awarding public contracts. The politician can use a part  $\gamma \in [0, 1]$  of the funds she has collected to pay for her campaign, and consumes directly the rest. Corruption is understood in the model as a source of funds that the incumbent can collect *because* she is in office, and that can be spent for campaign funding or for personal consumption.

Voters are corruption-averse: their preferences can be represented by a utility function  $D()$ , always non-positive, decreasing in  $r$ , and convex. Voters do not differentiate among campaign-related and personal gain-related corruption.<sup>2</sup>

There is a continuum of voters, normalized to 1. In the electorate there are  $\alpha$  sophisticated and  $(1 - \alpha)$  impressionable voters: sophisticated voters rely on the information spread by the press to form an opinion regarding the behavior of the incumbent in office while impressionable voters rely

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<sup>2</sup>If voters abhor corruption for personal gain but not illegal campaign finance, then the politician, if caught, has an incentive to claim that she got the money for the latter purpose. Depending on what kind of signal (e.g., evidence) on which the incumbent relies to substantiate her claim, a different kind of strategic interaction takes place. The ensuing signaling game is not the subject of this paper: it would be a model of “reactions of politicians to bad news” more than a model of political corruption. It is not implausible to consider that voters might adopt the simple cognitive criterion modeled here (“corruption is bad, regardless of the motive”), that saves them the effort to screen the claim that the politician, if caught, would make regarding the destination of the corrupt funds.

both on the information spread by the press and on the information spread by the campaign paid for by the politician. The composition of the electorate is known to all agents.

At every period, one voter gets to be decisive and cast a vote either for the incumbent or the challenger. The probability that the decisive voter is of one or the other type depends on the proportion of types in the electorate. If there are more impressionable voters, the decision regarding whether the incumbent is reelected is more likely made by an impressionable voter: the probabilities of recognition are respectively  $\alpha$  and  $(1 - \alpha)$ . Voters are unaware of their own type: impressionable voters do not know that they can be deceived, but know that there are voters in the electorate that can be deceived.

The press might report the level of corruption of the incumbent: the press publishes a story  $m$ . If the press decides to publish a corruption story,  $m = r$ , i.e. the actual level of malfeasance of the incumbent is disclosed to the public. If the press does not publish a story, the report is  $m = 0$ , i.e. the press cannot claim that the incumbent is corrupt. The probability that the voters read a story  $m > 0$  increases with the level of corruption of the politician, and increases at an increasing rate: if the level of corruption is  $r$ , the probability of *not* receiving a negative story,  $P(m = 0|r) = \psi(r)$  where  $\psi(r) : [0, 1] \rightarrow [0, 1]$  is such that  $\psi(0) = 1$ ,  $\psi'(r) < 0$  and  $\psi''(r) < 0$ . Notice that the probability of a story depends on the amount of corrupt funds that the politician “steals”, not on the use she makes of these funds. In this formulation, moreover, the press never lies in the sense of over-reporting corruption. What would happen otherwise? Imagine that the press reports a non-zero message with probability  $\eta$  even if the incumbent is clean: the results presented below are unchanged because it turns out that in equilibrium no incumbent ever sets  $r = 0$ . The possibility that the press over-reports or under-reports corruption, in the sense that it issues a report  $m = r + k$ , where  $k$  is a draw from some distribution, is briefly sketched when I discuss the beliefs of voters after a message; some examples are provided in the online appendix.<sup>3</sup>

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<sup>3</sup>If the press has an ideological bias, meaning that it has different propensity to report corruption depending on the identity of the incumbent, this pure accountability model is ill-suited to analyze the issue. See Puglisi 2006 for evidence regarding the changes in the behavior of a newspaper, relative to accountability-oriented information, depending on the party of the incumbent. A model with a spatial ideological framework is required to answer any question regarding the relationship between ideological media bias and political corruption.

The politician can use the corrupt funds to pay for her campaign. The effect of legally-funded campaign is abstracted away.<sup>4</sup> The campaign only affects impressionable voters. The effect of the campaign is of “buying” a good reputation for an incumbent: she can spend some proportion  $\gamma$  of the corrupt funds  $r$  to spread messages that counteract the story published by the press. The campaign has  $\phi(\gamma r)$  probability of succeeding, where  $\phi() : [0, 1] \rightarrow [0, 1]$  is a continuously twice differentiable function with  $\phi' > 0$  and  $\phi'' < 0$ : there are decreasing returns to campaign spending. A successful campaign makes impressionable voters believe that that  $m = 0$  even if the original report spread by the press was  $m > 0$ . The campaign either convinces all of the impressionable voters, or does not convince any. Once  $\phi(.)$  is realized, the probability that a given impressionable voter is chosen to be decisive is constant (they are equally likely to be chosen): therefore the substantive interpretation of  $\phi(.)$  as the proportion of impressionable voters that the incumbent successfully convinces is equally plausible.

The sequence of play of the stage game in this infinitely repeated game is:

1. each type  $T$  of voter sets a retrospective rule  $s^T$  regarding how much corruption on the part of the incumbent is tolerable
2. the elected politician decides a level of corruption  $r$
3. the press observes a corruption lead and with the technology described above publishes a story  $m$
4. the politician observes the story published by the press and decides whether to conduct a campaign, and the proportion  $\gamma$  of the available resources she devotes to this
5. a voter is randomly chosen to be decisive, and casts her vote for the challenger or the incumbent based on her belief  $\rho$  regarding whether the incumbent has respected the retrospective rule  $s^T$

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<sup>4</sup>One could think that both incumbent and challenger dispose of the same amount of legal funds, and therefore their respective campaigns balance each other: the incumbent has an advantage that derives from holding office, and from the fact she controls (at least in part) the public budget or can sell favors to private agents.

6. if the challenger is elected, the politician voted out of office gives up her political career, and can never run in elections again.

## Stationary strategy retrospective voting equilibrium

To solve the stage game, first analyze what the behavior of the voter is going to be, given the report of the press, the campaign spending by the politician, and the retrospective rule  $s^T$  with  $T \in \{\text{Impressionable}, \text{Sophisticated}\}$  that was set at the beginning of the stage game.

### Voting stage

At every period, a voter is randomly recognized to be decisive and must cast his vote for the incumbent or the challenger, based on the retrospective rule  $s^T$  set during the first stage of the game. If he believes that the politician has stolen at most the amount established by the rule  $s^T$ , he reelects her, otherwise he votes for the challenger.

**Sophisticated voters** Given a report of the press  $m$ , a sophisticated voter decides based on the belief  $\rho(m)$  regarding the value of  $r$ , i.e. checks whether the rule has been respected by the incumbent or not. The sophisticated voter reelects the politician if he believes that  $\rho(m) \leq s^{\text{sop}}$ , and vote the challenger in office if he believes that  $\rho(m) > s^{\text{sop}}$ .

Call  $r^E$  the equilibrium level of corruption. Assume that the off-the-equilibrium-path beliefs are such that, if the report is 0, the sophisticated voter believes that the level of corruption is  $\rho \leq r^E$ . In other words, “no news are good news”: after a neutral report from the press, the voter is not going to think that he is facing an incumbent that deviates upwards from the equilibrium. On the other hand if the report is  $m \neq 0$  and  $m \neq r^E$  the voter is sure that the incumbent deviated from equilibrium. The appendix provides a more formal argument that justifies how the “no news is good news” belief could be originated in rational updating by voters. Notice also that, as long as voters consider that no news is good news, it is immaterial whether the press lies. Indeed, the crucial requirement for the following discussion to hold is that after a  $m = 0$  message, the voter’s belief is that the incumbent did not deviate from equilibrium. The online appendix shows how a

press that lies by over- or under-reporting corruption with some probability  $\mu$  can lead to such a belief, as long as the probability of a lie is small enough.

Sophisticated voters reelect the incumbent, if their prior regarding  $r^E$  is that the equilibrium level of corruption is at most equal to the rule they have set, and the press report is either  $m = 0$  or  $m = r \leq s^{\text{sop}}$ .

Otherwise, if their prior on  $r^E > s^{\text{sop}}$  the incumbent is out of office if the press does not issue an  $m > 0$ , while she is reelected if she steals no more than the retrospective rule and her actual level of corruption is disclosed by the press. The probability of having a report  $m = 0$  is 1 if  $r = 0$ , while it is  $\psi(r) < 1$  if  $r > 0$ . If the report is  $m > s^{\text{sop}}$ , the belief is going to be that  $\rho > s^{\text{sop}}$ . The probability of receiving a report in this range is 0 if  $r \leq s^{\text{sop}}$ , while it is  $1 - \psi(r)$  if  $r > s^{\text{sop}}$ .

To sum up, if the prior of the voter is that  $r^E \leq s^{\text{sop}}$ , the incumbent is going to be voted for sure by the sophisticated voter if she steals less than or equal to the retrospective standard, and she is going to be voted by the sophisticated voter with probability  $\psi(r)$  if she steals more than the retrospective standard. If the prior of the voter is that  $r^E > s^{\text{sop}}$ , the incumbent is going to be out of office, unless she steals  $r < s^{\text{sop}}$  and her actual level of corruption is disclosed to voters.

**Impressionable voters** Denote by  $I_c$  an indicator variable that takes the value of 1 if the campaign convinces the impressionable voters and 0 if the campaign does not succeed. Given a report of the press  $m$  and the campaign, the impressionable voter forms a belief  $\rho_c(m, I_c)$  regarding the level of corruption of the incumbent. Based on this belief, he decides whether the incumbent has respected the retrospective rule  $s^{\text{imp}}$ . Assume that the off-the-equilibrium-path beliefs are as above: after an observed report 0 (regardless of whether they receive an actual report  $m = 0$  from the press, or because the campaign convinces them and makes them overlook the report) they believe that the level of corruption is  $\rho_c = r^E$ . If the campaign is successful ( $I_c = 1$ ), regardless of the original report  $m$ , the belief is going to be  $\rho_c(m, 1) = r^E$ ; if the campaign is not successful ( $I_c = 0$ ), and  $m > 0$ , the belief is  $\rho_c(m, 0) = m$ . If  $m = 0$ , then  $\rho_c(0, I_c) = r^E$ . If the prior of the voter is that  $r^E \leq s^{\text{sop}}$  and the incumbent steals more than the retrospective standard, she is going to be voted by the impressionable voter either if the press does not report anything, or if the press

reports some  $m > 0$  but the campaign is successful. Therefore, the incumbent receives the vote of the impressionable voter with probability  $\psi(r) + (1 - \psi(r))\phi(\gamma r)$ . If the prior of the voter is that  $r^E > s^{\text{sop}}$ , on the other hand, the incumbent is going to be out of office for sure, unless she steals  $r < s^{\text{sop}}$  and her actual level of corruption is disclosed to voters by the press.

### The incumbent's decision regarding campaign spending

Assume that the prior of the impressionable voter is  $r^E > s^{\text{imp}}$ . Then, the incumbent sets  $\gamma = 0$ : she does not devote resources to a campaign that cannot positively affect the outcome of the election.

Assume now that the prior of the impressionable voters is  $r^E \leq s^{\text{imp}}$ . Given the budget constraint the incumbent, after observing the story  $m$  published by the press, must choose a  $\gamma$  to maximize her expected utility, which is given by the utility she can derive this period, plus the continuation value if she is reelected:  $E(U_p) = U_p((1 - \gamma)r) + P(\text{in}|\gamma, r, s^T)\delta V$  where  $P(\text{in})$  is the probability of being retained in office at the end of the period,  $V$  is the continuation value of the game, and  $\delta \in (0, 1)$  is a discount factor. If the report  $m \leq s^{\text{imp}}$  the politician sets  $\gamma = 0$  because she has no incentives to campaign, given that her reputation is already clean enough and does not need to convince the impressionable voters. On the other hand, if the report  $m > s^{\text{imp}}$ , the problem for the politician is to choose the proportion of resources  $\gamma$  that fund the campaign. At this stage the incumbent is facing a trade-off between the resources she can consume this period, and the increase in the probability of being in office in the future. The politician maximizes

$$E(U_p) = U_p((1 - \gamma)r) + P(\text{in}|\gamma, r, s^T, m)\delta V \quad (1)$$

$$\text{s.t. } \gamma \leq 1$$

The probability of being reelected,  $P(\text{in}|\gamma, r, s^T, m)$ , is the probability that an impressionable voter is recognized as decisive *and* the campaign is able to persuade impressionable voters,  $P(\text{in}) = (1 - \alpha)\phi(\gamma r)$  if  $m > s^{\text{imp}}$  and  $m > s^{\text{sop}}$ , i.e. if the level of corruption is higher than the level that both the retrospective rules.<sup>5</sup>

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<sup>5</sup>If the level of corruption chosen by the incumbent is higher than the retrospective rule set by impressionable voters, but not by sophisticated voters, then  $P(\text{in}) = \alpha + (1 - \alpha)\phi(\gamma r)$ , and the probability of being in office next

**Proposition 1.** *The best response correspondence for the incumbent at this stage is*

$$BR(m, s^{\text{sop}}, s^{\text{imp}}) = \begin{cases} \gamma = 0 & \text{if } r^E > s^{\text{imp}} \\ \gamma = 0 & \text{if } m \leq s^{\text{imp}} \text{ and } r^E \leq s^{\text{imp}} \\ \gamma = \gamma^* & \text{if } m > s^{\text{imp}} \text{ and } r^E \leq s^{\text{imp}} \end{cases}$$

If  $\gamma^* < 1$ , and  $r \neq 0$ , the proportion  $\gamma^*$  of funds devoted to campaign finance is implicitly defined by the first order condition for the maximization of the expected utility with respect to  $\gamma$ ,

$$\phi'(\gamma r)(1 - \alpha)\delta V = U'((1 - \gamma)r) \quad (2)$$

while if the constraint binds,  $\gamma^* = 1$ , i.e. all of the available resources are spent to campaign.

*Proof.* See Online Appendix. □

After being caught the politician chooses the proportion of funds she devotes to campaign so to equalize the marginal increase in the probability of convincing impressionable voters that she is clean (weighted by the value for her to hold office next period), and the marginal loss in utility that is a consequence of not consuming the resources she devotes to campaign finance. If the constraint does not bind, for any given  $r$ , the probability of a successful campaign is going to be  $\phi(\gamma^*r)$ . The decision regarding the overall amount  $r$  is made *before* the press issues its report. After a report, the politician can only decide the allocation of the available funds between current consumption and campaign finance. The case in which there is a legally mandated (and enforced) cap on campaign spending is analyzed formally in the online appendix, while the substantive implication is briefly analyzed in the conclusions.

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period is equal to the probability that an impressionable voter is recognized as decisive *and* the campaign is able to persuade impressionable voters, or a sophisticated voter is decisive. In equilibrium  $s^{\text{imp}} = s^{\text{sop}}$  therefore the case analyzed in this footnote never arises. Moreover, the first  $\alpha$  term does not affect the first order condition, in other words at the margin the existence of sophisticated voters does not affect the decision regarding campaign finance after a report  $m > s^T$ , because the voting behavior of sophisticated voters is not affected by campaign finance decisions.

## The incumbent's decision regarding the overall level of corrupt resources

The decision regarding the overall level of corruption is chosen by the incumbent without knowing whether the press is going to reveal how corrupt she is, or whether it is going to write a non-informative story (i.e. issue a report  $m = 0$ .) The incumbent knows, for any  $r$  she chooses, how likely it is to be reported as corrupt and also knows what the retrospective rules  $s^T$  are. Assume that the prior belief of voters is that in equilibrium the incumbent respects the retrospective rules. The incumbent knows that, if she steals less than the retrospective rule  $s^T$ , she is going to obtain the favorable vote of group  $T$  for sure, regardless of whether the press remains silent ( $m = 0$ ) or the press reports the true level of corruption ( $m = r$ ). In equilibrium incumbents respect the rule, and a prior belief held by the voters different from this would not be consistent with the equilibrium strategy. If the prior is that  $r^E = s$  and the press reports  $m = 0$  both groups update and have beliefs  $\rho(0) = s^{\text{sup}}$  and  $\rho_c(0, I_C) = s^{\text{imp}}$ .

Call  $s^L$  the minimum of the two rules set by voters, and  $s^H$  the maximum of the two rules.<sup>6</sup> If the incumbent chooses a level of corruption  $r \leq s^L$  she is going to be reelected for sure, and will not need to devote any resources to campaign. Indeed, if  $0 < m \leq s$ , then  $\rho(m) = \rho_c(m, I_c = 0) = m \leq s$  and she will be reelected. In such a case, her expected utility is going to be  $U(r) + \delta V$ . Maximizing the expected utility is equivalent to stealing exactly up to the (stricter) retrospective rule, i.e. set  $r = s^L$ . If the incumbent chooses a level of corruption  $r > s^H$ , her expected utility is given by

- the consumption of the whole amount  $r$ , and the certainty to be in office, if the press does not catch her
- the consumption of  $(1 - \gamma)r$  and the probability of being in office  $(1 - \alpha)\phi(\gamma r)$  if she is caught by the press

This can be summarized as

$$E(U(r)) = \psi(r)[U(r) + \delta V] + (1 - \psi(r))[U((1 - \gamma)r) + (1 - \alpha)\phi(\gamma r)\delta V]$$

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<sup>6</sup>The distinction is made for the sake of rigor. It turns out that in equilibrium the two retrospective rules are equal, i.e. both types of voters condition reelection of the incumbent on the same retrospective rule.

Call  $U_O(r)$  the expected utility of an incumbent that decides to overlook the rule set by voters and steal  $r \in (s, 1]$ .

**Proposition 2** (Incumbent's Best Response). *The best response for the incumbent to a pair of rules  $(s^{\text{imp}}, s^{\text{sup}})$  is given by*

$$BR(s^{\text{imp}}, s^{\text{sup}}) = \begin{cases} r = r^* & \text{if } U(s) + \delta V < U_O(r) \\ r = s & \text{if } U(s) + \delta V \geq U_O(r) \end{cases} \quad (3)$$

where the value  $r^*$  maximizes  $U_O(r)$ , i.e. it is some level of corruption that, once the decision to overlook the standards set by voters has been made, is optimal.

The value  $r^*$  is the optimal level of corruption for the riskier, but immediately more rewarding, action. Assume for now that  $r^* < 1$ . Then it can be shown that  $r^*$  satisfies the first order condition:

$$\psi'(r)[U(r) - U((1-\gamma)r) + \delta V(1 - (1-\alpha)\phi(\gamma r))] + \psi(r)U'(r) + (1-\psi(r))[U'((1-\gamma)r)(1-\gamma) + (1-\alpha)\phi'(\gamma r)\gamma\delta V] = 0 \quad (4)$$

## The voter's optimal retrospective rule

**Sophisticated voters** The voter wants to choose a rule that at the same time minimizes corruption but is not strict to the point of inducing the incumbent to overlook it and choose  $r^*$  instead. The voter knows that he's going to receive  $D(r^*)$  if the incumbent steals  $r^*$ , and  $D(s)$  if the incumbent respects the rule. If the rule is  $s < r^*$ , then  $D(s) > D(r^*)$  because  $D()$  is strictly decreasing. It would never be optimal for the voter to set  $s > r^*$ , because this would mean to tolerate more corruption than necessary.

**Proposition 3** (Optimal Retrospective Rule). *The optimal retrospective rule for the sophisticated voter is implicitly defined by*

$$U(s^{\text{sup}}) + \delta V = U_O(r^*) \quad (5)$$

where

$$U_O(r^*) = \begin{cases} \psi(r)[U(r^*) + \delta V] + (1 - \psi(r^*)) [U((1 - \gamma)r^*) + (1 - \alpha)\phi(\gamma r^*)\delta V] & \text{if } r^E \leq s^{\text{sop}} \\ U(1) & \text{if } r^E > s^{\text{sop}} \end{cases} \quad (6)$$

*Proof.* See Online Appendix. □

In other words, under the assumption that  $r^E = s$ , the strictest rule that fulfills the second condition above is one that makes the incumbent indifferent between stealing  $s^{\text{sop}}$ , and be reelected for sure, and stealing  $r^*$ , and be reelected only either if not caught by the press, or if caught by the press and impressionable voters are decisive and are convinced by the campaign.

**Impressionable voters** By assumption impressionable voters are unaware of the fact that they belong to the group of impressionable voters. On the other hand, the proportion of impressionable and sophisticated voters is common knowledge. The impressionable voters set the strictest rule that is going to be respected. This must fulfill the two conditions above. Impressionable voters set a retrospective rule that makes the incumbent indifferent between respecting it and be reelected for sure, and overlooking the rule and maximizing her expected utility choosing  $r^*$ . Hence they set the rule the fulfills the condition in equation 5: both types of voters set the same retrospective rule.

## Equilibrium characterization

The discussion above characterizes an equilibrium. Proposition 1 identifies the optimal level of campaign expenditure for an incumbent, conditional on the press report. An incumbent about whom the press has published a negative story indicting her of corruption above the level tolerated by voters chooses to spend  $\gamma^*r$  and receives  $U((1 - \gamma^*)r) + \delta V$  with probability  $(1 - \alpha)\psi(\gamma^*r)$ ,  $U((1 - \gamma^*)r)$  with probability  $1 - ((1 - \alpha)\psi(\gamma r))$ ; an incumbent whose corruption is not uncovered sets  $\gamma = 0$  and receives  $U(r) + \delta V$ . Proposition 2 characterizes the optimal behavior of the incumbent given the retrospective rule set by voters. If the rule is too strict, the incumbent deviates, choosing a level of corruption above the rule, still hoping not to be caught and to be reelected in spite of the deviation. The optimal deviation in this case is  $r^*$ . Equation 5 and Proposition 3 characterize the

optimal retrospective rule that voters can set and that in equilibrium is adopted by both types of voters. Equation 4 implicitly defines the level of corruption that the incumbent would adopt if she were to overlook the rule set by voters. The maximizer  $r^*$  is determined by the probability of being caught by the press, and by the probability of convincing impressionable voters.

The incumbent always respects the retrospective rule, and she is always reelected. The press reports that the incumbent’s corruption is  $s$  with probability  $1 - \psi(s)$ , and campaigns are never carried out. In equilibrium, the continuation value  $V$  is defined by  $V = \sum_{t=1}^{\infty} U(s)\delta^t = \frac{U(s)}{1-\delta}$ .

This equilibrium is not “realistic”: it does not match our empirical knowledge of politics. Corrupt monies are often used to finance campaign; incumbents in democracies are often tainted by corruption scandals, and at times they lose their post as a consequence. This model takes into account “counteractive” campaign spending only as a counterfactual strategy that an incumbent can adopt if the voters set their standard of reelection too high (i.e. they set the level of corruption they tolerate too low). These counterfactual strategies and outcomes affect the level of corruption voters tolerate, and their effect is captured when the decision of voters regarding the retrospective rule is made. Some illustrative simplified versions of the model are provided in the online appendix. They help to understand how the different components of the model work together in layers.

## Comparative statics

Assume that the maximization problem in equation 1 has an interior solution  $r^* \in (0, 1)$ , and that the constraint in the maximization analyzed in Proposition 1 does not bind: it would not be optimal for the incumbent to steal everything, if she were to overlook the retrospective rule, and it would not be optimal to spend all of her resources to pay for campaign if she were caught by the press stealing. If these assumption are fulfilled the equilibrium is defined by three conditions, that implicitly define the endogenous variables  $\gamma^*$  (the proportion of resources that the incumbent devotes to campaign finance),  $r^*$  (the optimal level of corruption of an incumbent that deviates from a retrospective rule), and  $s$  (the retrospective rule on which voters condition reelection) as functions of  $\alpha$  (the proportions of types of voters in the electorate) and of the slopes of  $\psi(\cdot)$  (the

reactivity of the press to corruption) and of  $\phi(\cdot)$  (the ability of a campaign to clean the reputation of an incumbent).

The three conditions are

$$G_1 = \phi'(\gamma r)(1 - \alpha)\delta V - U'((1 - \gamma)r) = 0 \quad (7)$$

$$G_2 = \psi'(r)[U(r) - U((1 - \gamma)r) + \delta V(1 - (1 - \alpha)\phi(\gamma r))] + \psi(r)U'(r) + (1 - \psi(r))[U'((1 - \gamma)r)(1 - \gamma) + (1 - \alpha)\phi'(\gamma r)\gamma\delta V] = 0 \quad (8)$$

$$G_3 = U(s) + \delta V - \psi(r)[U(r) + \delta V] - (1 - \psi(r))[U((1 - \gamma)r) + (1 - \alpha)\phi(\gamma r)\delta V] = 0 \quad (9)$$

**Proposition 4** (Composition of the Electorate and Corruption). *An increase in the proportion of impressionable voters leads to an increase in the level of corruption that both groups tolerate:  $\frac{\partial s}{\partial \alpha} < 0$*

*Proof.* See Online Appendix. □

The level of corruption that voters are willing to tolerate makes the incumbent indifferent between respecting it, and stealing up to the level that is optimal once the decision to overlook the rule has been made. This level increases as it becomes more likely that the decisive voter is going to be an impressionable one.

The function that determines the probability of bad coverage of the incumbent circulates, i.e.  $1 - \psi(\cdot)$ , can be rewritten as  $1 - \psi(r) = f\Psi(r)$  where  $f \in [0, 1]$  is a constant that captures the overall freedom of the press.<sup>7</sup> Then  $\Psi' > 0$  and  $\Psi'' > 0$ . If  $f = 0$ , there is no freedom of the press, i.e. the press is silenced and the probability of negative coverage is 0 regardless of the level of corruption. If  $f = 1$  the probability of negative coverage increases quickly when the level of corruption increases. This reformulation makes it possible to derive the following results.

**Proposition 5** (Press Freedom and Composition of the Electorate). *An increase in freedom of the press reduces the amount of corruption tolerated by voters. The reduction, following an improvement in press freedom, in the level of corruption tolerated by voters is larger when the proportion of sophisticated voters in the electorate is larger:  $\frac{\partial s}{\partial f} < 0$  and  $\frac{\partial^2 s}{\partial f \partial \alpha} < 0$ .*

*Proof.* See Online Appendix. □

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<sup>7</sup>See Besley and Prat (2006) for an analogous formalization.

## Empirical implications

Proposition 5 establishes that increased freedom of the press helps reduce the level of political corruption tolerated by voters. The reduction is dependent on the composition of the electorate: freedom of the press is more effective at helping voters to control political corruption when the electorate is better able to ignore the (misleading) information that corruption-financed political campaigns spread. Therefore, one expects that, all else being equal, countries with a well-functioning free press, but with a larger proportion of “impressionable” voters, are more corrupt than countries with a well-functioning free press but an electorate with a larger proportion of “sophisticated” voters. If freedom of the press is restricted, on the other hand, there should be less variation in corruption among countries with electorates with more or less impressionable voters.

The obstacle one faces when trying to test this implication is that no direct measure of the proportion of “impressionable” voters is available. Education is a factor that might allow voters to better evaluate the information available when making their voting decisions, and to discount the possible bias of the information spread by the incumbent’s own campaign messages. I proxy the proportion of impressionable voters in the electorate with measures of level of education. I expect the coefficient on the interaction between education and press freedom to be negative and significant: freedom of the press reduces corruption by a greater extent in countries where the population has a higher level of education. Countries that have limited freedom of the press should show levels of corruption closely clustered; in countries with more freedom of the press, the composition of the electorate matters much more. I expect countries with a freer press to show much more variation in their level of political corruption conditional on the level of education of the population.

The idea that the imbalance between literacy and press freedom has potentially negative consequences can be traced back to the classics of modernization theory. (Lerner 1958; Lipset 1960). In the intellectual context of modernization theory, the thesis was deduced from a functional requirement of interdependence: imbalance between two variables would negatively affect stability and accelerate social disorganization. I derive my claim from a model of individual political decisions.

The potential negative effects of the imbalance between literacy and media freedom are a consequence of the fact that incumbents with damaged reputations in the media can more easily resort to appeals to less sophisticated voters if these are a large group in the electorate.

## Some cross-country evidence

Corruption is a hard-to-measure phenomenon, because by its own nature the actors that engage in it try to conceal it: the available cross-country measures are based on surveys and are measures of *perceptions* of corruption.<sup>8</sup> I use the Corruption Perception Index and the World Bank Institute “control of corruption” variable. Variable definitions and sources are found in the appendix. I rescale the original values to make interpretation easier: the versions I use vary between 0 and 1, with higher values associated to greater corruption. The two measures are highly correlated ( $r=.97$ ) because they are based on the same primary sources. See Gerring and Thacker (2004) for a more extended discussion of the similarity between the two measures.

I use two indexes of freedom of the press. One, based on subjective coding, is available from 1994 and is compiled by the Freedom House. (Freedom House, various years) The other, available from 2002 and compiled by Reporter Without Borders (RSF), is based on surveys of “[RSF’s] partner organizations (14 freedom of expression groups from around the world) and its network of 130 correspondents, as well as journalists, researchers, legal experts and human rights activists”. Both measures were rescaled so that they vary between 0 and 1, larger values meaning more freedom.

[Figure 1 about here.]

The proxy for the proportion of impressionable voters in the electorate is the literacy rate, collected yearly for several countries by UNESCO (2004) and reported in the United Nations Common Database. Measures of enrollment ratios in primary or secondary education are often used as proxies for the level of human capital or the level of education found in a country. The enrollment measures are flows, not stocks, and a country with a very uneducated public might carry out an aggressive

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<sup>8</sup>See Golden and Picci 2005; Olken 2005, forthcoming; and Reinikka and Svensson 2004, for some proposals of objective measures of corruption across subnational units in single countries; Fisman and Miguel 2006 for a proposal based on the behavior of diplomats from several countries who happen to live in the same city.

policy of education of the younger generations, hence showing high enrollment ratios. A measure of the stock of education is more appropriate. The measures of educational attainment compiled by UNESCO seem, from a casual inspection, to be quite unreliable, in that several advanced countries have values well below those of developing countries. The rate of literacy is a better candidate, being closely associated with the stock of education in a country, and being available for a large set of countries in the period of interest. Unfortunately, figures for some advanced countries are not reported by the UNESCO. For those advanced countries<sup>9</sup> for which the literacy data is not available, the most recent figure published in the C.I.A. World Factbook was used.

To account for the effects of development and international trade on corruption, real GDP per capita and trade openness (exports+imports as a fraction of GDP) are included. The measure of income comes from the World Development Indicators (World Bank 2004), and the measure of trade openness is from the Penn World Table 6.1 (Heston et al. 2002). The measure of population comes from Heston et al. (2002) and the measure of democracy, *polity2* is taken from the Polity IV dataset. The measures of geography (absolute latitude) and ethnic fractionalization are reported in the replication dataset for Laporta et al. (1999): the original source for the fractionalization variable is Easterly and Levine (1997). See the appendix for variable definitions.

## Evidence

Figure 1 plots the average level of corruption against the average measure of freedom of the press, for countries that were relatively democratic in 2000. This provides some preliminary evidence consistent with the expectation derived from the theoretical model: countries at low and middle levels of the freedom index show much less variation in their level of corruption than countries with more liberal press freedom regimes.

Figure 2 plots the average level of corruption against the average degree of freedom of the press, for the countries that in 2000 were democratic or almost democratic, grouped by level of education of the population (where low literacy is average literacy rate below 64% of the adult population,

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<sup>9</sup>These countries, that have full *polity* score and log GDP greater than 9, are Australia, Austria, Belgium, Canada, Czech Republic, Denmark, Finland, Germany, Ireland, Japan, Netherlands, New Zealand, Norway, Sweden, Switzerland, United Kingdom, and United States.

medium-low is between 64 and 84%, medium-high is 84 to 97%, and high literacy is above 97%). The graph also plots the estimated line for a bivariate regression of corruption on press freedom for each group. The line is almost flat in the low and medium-low literacy groups: variations in freedom of the press do not affect the level of corruption much. The lines are steeper in the medium-high and high literacy groups: improvements in freedom of the press are associated with a reduction in the expected level of corruption. This constitutes further evidence in support of the claim that the effect of freedom of the press is conditional on features of the population (and the electorate) of each country.

[Figure 2 about here.]

I now provide some evidence based on simple linear regression models that account for some of the confounding factors which influence the phenomenon. Several annual observations of the outcome variable exist, but a cross-sectional estimation using averaged values of the variables is more appropriate than a cross-sectional time series estimation. The use of so-called “fixed effects” cross-sectional time-series estimators exacerbates measurement error problems. A “fixed effects” estimator exploits only the variation of corruption in every country around its mean in the estimation of the coefficients on the predictors. If the measure of corruption for each country is on average unbiased, but every yearly measure differs from the real value by a random component, due to measurement error, the variance used to estimate the coefficients is due only (or mainly) to measurement error and the regression yields potentially meaningless coefficients. On the other hand, if multiyear averages are used, and the measure of corruption is noisy but unbiased, the averages, as well as the regression coefficients, are on target.<sup>10</sup> In the first three models reported here, I average over all the available observations of the corruption index. In the second group of regressions, I use three-year averages and treat the observations for each three-year period as a cross-sectional dataset.

Given that the hypotheses I am testing assume that an electoral mechanism is in effect it would be inappropriate to include in the sample observations where electoral incentives can hardly matter.

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<sup>10</sup>See Barro 2000 for a similar argument with respect to other outcome variables that might be plagued by measurement error, and Kaufmann et al. 2005 for a discussion of the interpretation of changes across time in their governance indicators

The criteria for a country-year observation to be included in the computation of mean values are based on the coding of competitiveness of political participation provided in the Polity 4 dataset (Marshall and Jaggers 2002) and are described in the appendix. These criteria allow to distinguish between semi-democracies (i.e. countries that have, albeit malfunctioning, democratic-like institutions) and authoritarian regimes where electoral incentives play no role. The inclusion criteria only affect the computation of the means of the political variables (corruption and press freedom), while for the measure of other features of a country, like trade openness, income and education, all the available data points (from 1990 in the long-run regressions, over three-year periods in the short-run regressions) are averaged.

The rationale for including in the estimation sample also non-fully democratic observations is twofold: a) there might be too little variance in the freedom of the press measures if only full democracies were included b) the issue of corruption is more relevant in those non-democratic regimes (e.g., “electoral autocracies”) that generate incentives for corruption and in which, on a certain level, the non-fully-democratic quality is preserved exactly through widespread corruption and corruption-related modes of production of mass political support.<sup>11</sup>

I estimate a set of models of the form

$$Corr = \beta_0 + \beta_1(Freepress) + \beta_2(Literacy) + \beta_3(Free \times Lit) + \gamma\mathbf{X} + \epsilon$$

where  $\mathbf{X}$  is a matrix of control variables.

In model 1 (first column of table 1) corruption is measured with the Transparency International index and freedom of the press with the Freedom House index; criterion 1 is adopted to include observations in the computation of the means; the regression accounts for differences in level of development as measured by GDP.

[Table 1 about here.]

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<sup>11</sup>The results are robust to different combinations of measures and inclusion criteria, and are available upon request from the author, as is the replication dataset.

At the mean of literacy,<sup>12</sup> the marginal effect of an increase in freedom of the press is negative (-.38) and significantly different from 0 ( $|t| = 5$ ). The effect is larger in absolute value (-.54) and significantly different from 0 ( $|t| = 4.4$ ) at the maximum level of literacy, while it is not statistically different from 0 ( $|t| = .63$ ) at the minimum level of literacy. In a country in which the population has an average level of education an increase in freedom of the press reduces the expected level of corruption by a much smaller extent than in a country with a high level of education. In a country at low levels of education, on the other hand, the effect on corruption of an improvement in freedom of the press is not statistically distinguishable from 0. The graph in Figure 3 plots the marginal effects of an increase in freedom of the press conditional on literacy for four different model specifications. The top left panel plots the effect estimated from model 1. The effect is not significantly different from 0 (the confidence interval contains the horizontal 0 line) for low levels of literacy, while it is significantly negative (the confidence interval lies completely below 0) at higher levels of literacy.

I estimate model 2 using “control of corruption” as the measure of corruption, the RSF index as a measure of freedom of the press, and criterion 2 for the inclusion of observations in the averaging. This specification accounts for more possible confounders: log of population and level of democracy in 2000, as measured by the *polity* index. The marginal effect of an increase in freedom of the press is -.48 (with  $|t| = 4.3$ ) at maximum literacy while it is not significantly different from 0 at the minimum level of education and at one standard deviation below average education. The coefficient on population size is not statistically distinguishable from 0, while development, measured by GDP, is associated with a reduction in the expected level of corruption. The *polity* index is computed only based on the institutional features and the operation of the political system, and does not take into account media freedom when assigning a score to a country. A higher degree of democracy is associated with increased corruption *if freedom of the press is held constant*, pointing to a possible complementarity of political freedoms and freedom of the press.

In the estimation of model 3, I measure corruption with the World Bank index, freedom of the press with the RSF index, and I adopt criterion 3 for the inclusion of observations in the

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<sup>12</sup>Values of interest of literacy in these tests of conditional significance are calculated using all of the available data, not only the estimation sample.

computation of the averages of corruption and freedom of the press. The evidence in support of the hypothesis proposed in this paper is robust to the inclusion of the measure of democracy, population size, and other confounders that, even if not of substantive interest here, are often included in corruption regressions (e.g., Fisman and Gatti 2002): a measure of ethnic fractionalization (Mauro 1995; Shleifer and Vishny 1993), the absolute latitude of the country (Gerring and Thacker 2005), and trade openness (Ades and di Tella 1997). At the average and maximum level of literacy, the marginal effects of an increase in freedom of the press are respectively  $-.33$  and  $-.43$ , and these estimates are statistically different from 0 (respectively  $|t| = 3.35$  and  $|t| = 3.50$ ), one standard deviation below the mean the effect is significantly negative but smaller,  $-.22$  ( $|t| = 2.47$ ) and at the minimum level of literacy the expected decrease in corruption is not statistically distinguishable from 0. The coefficient on development is negative and significant, implying that countries that are less developed are expected to be more corrupt. None of the coefficients on the other controls is statistically distinguishable from 0 at the conventional level.

[Figure 3 about here.]

As a robustness check, instead of the long-term averages used to estimate the models above, I compute three-year averages. The criteria to include an observation in the computation are the same as above. Table 2 reports the point estimates and the robust standard errors for three models.

[Table 2 about here.]

The main prediction tested, namely that the effect of freedom of the press is more negative in more literate country, is replicated in all the specifications that were estimated.<sup>13</sup> The bottom two panels of figure 3 report the marginal effects of press freedom conditional on literacy according to two specifications. The first one averages over the period 1996-98, includes observations according to criterion 1, measures the outcome with the Transparency International Index and press freedom with the Freedom House index; it also controls for GDP, the degree of democratization (polity index) and population. The second averages over the period 2002-2004, includes observations according to

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<sup>13</sup>These are all the possible combinations of three-year averages, criteria, measures of corruption and of press freedom, and inclusion and exclusion of the measures of democracy and population. The results, as well as the code to replicate them, is available upon request.

criterion 2, measures the outcome with the World Bank index and press freedom with the Freedom House index; it controls for GDP. Even if the estimates from the shorter time spans are less precise, the substantive inference remains the same.

## Conclusion

Scholars (e.g., Adserà et al. 2003) and international organizations (e.g., for a clear statement from the World Bank, see Staphenurst 2000) have been suggesting that increasing transparency is sufficient to increase accountability and reduce political corruption. This prescription is somewhat simplistic: the relationship between accountability and transparency is mediated by the ability of the public to evaluate information. I present a formal model of electoral accountability that analyzes the joint effect of freedom of the press and political campaigns funded through corruption. The comparative statics of the equilibrium suggest that transparency helps to increase accountability and reduce corruption substantially only if the proportion of “impressionable” voters in the electorate is not too large.

Empirically, this leads to expect that in relatively advanced countries improvements in freedom of the press help reduce corruption but in democratic developing countries, it might be insufficient: reform-minded anti-corruption policy-makers should assign a high priority to the creation of the conditions for voters to make informed choices, for instance increasing the level of education of the population and investing in a well-functioning system of public schools.

The empirical evidence supports my claim. According to the estimates of model 2, if low-literacy India were to establish the best possible regime of freedom of the press, it would reduce its level of corruption by a mere .04 on the unit scale of corruption, reaching the still fairly high corruption level of Brazil. On the other hand, in Turkey, a country with a more educated population and a level of corruption similar to India, the same improvement in freedom of the press would reduce corruption by .1, achieving the (relatively moderate) level of corruption found in South Korea.

Policy efforts designed to improve the ability of voters to make informed decisions take longer to produce their effects than improvements, for instance, in the legal protection of freedom of speech,

which in turn affects the freedom of the press.

A reform-minded policymaker might be tempted to focus on measures that could more quickly exert their effect on an urgent problem like political corruption in many countries. Yet, if the preconditions for transparency to effect change are absent, the result of policies that try to reduce corruption by improving the information available might produce very modest successes. In the online appendix to this paper, I briefly analyze how stricter limits to campaign spending might reduce the level of corruption chosen by the incumbent. These limits, if enforceable, might be a better short-term solution to the problem of political corruption.

This does not imply that *well-targeted* programs to increase transparency do not work in less educated countries, simply that the efficacy of transparency cannot be taken for granted, because the link between information and accountability is not trivial. For instance, Reinnikka and Svensson (2004) show how a program of disclosure of central government transfers to schools in Uganda greatly reduced the amount of corruption in the disbursement at the local level. In that case stakeholders (in particular head teachers and organized groups of parents) were in a particularly good position to monitor the transfer their schools were supposed to receive. Notice that in the framework of the model I present, the reason why impressionable (or less educated) voters tolerate corruption is not that they do not *understand* the message about corruption that the press issues. The reason is that they are more likely to *believe the self-defense* of the politician. The information made available in Reinnikka and Svensson's (2004) study had to do with the (ex ante) amount of the transfer rather than with the behavior (ex post) of the local officeholders that divert a part of the transfer for their private gain: a self-defense might be harder to believe in such a case.

The results presented also confirm that several countries would derive immediate benefits from increases in transparency. For instance, if Russia establishes a regime of freedom of the press comparable to those found in the Northern European democracies, its level of corruption is expected to be reduced by .25 on the unit scale, achieving a level of corruption lower than that found in the Czech Republic.

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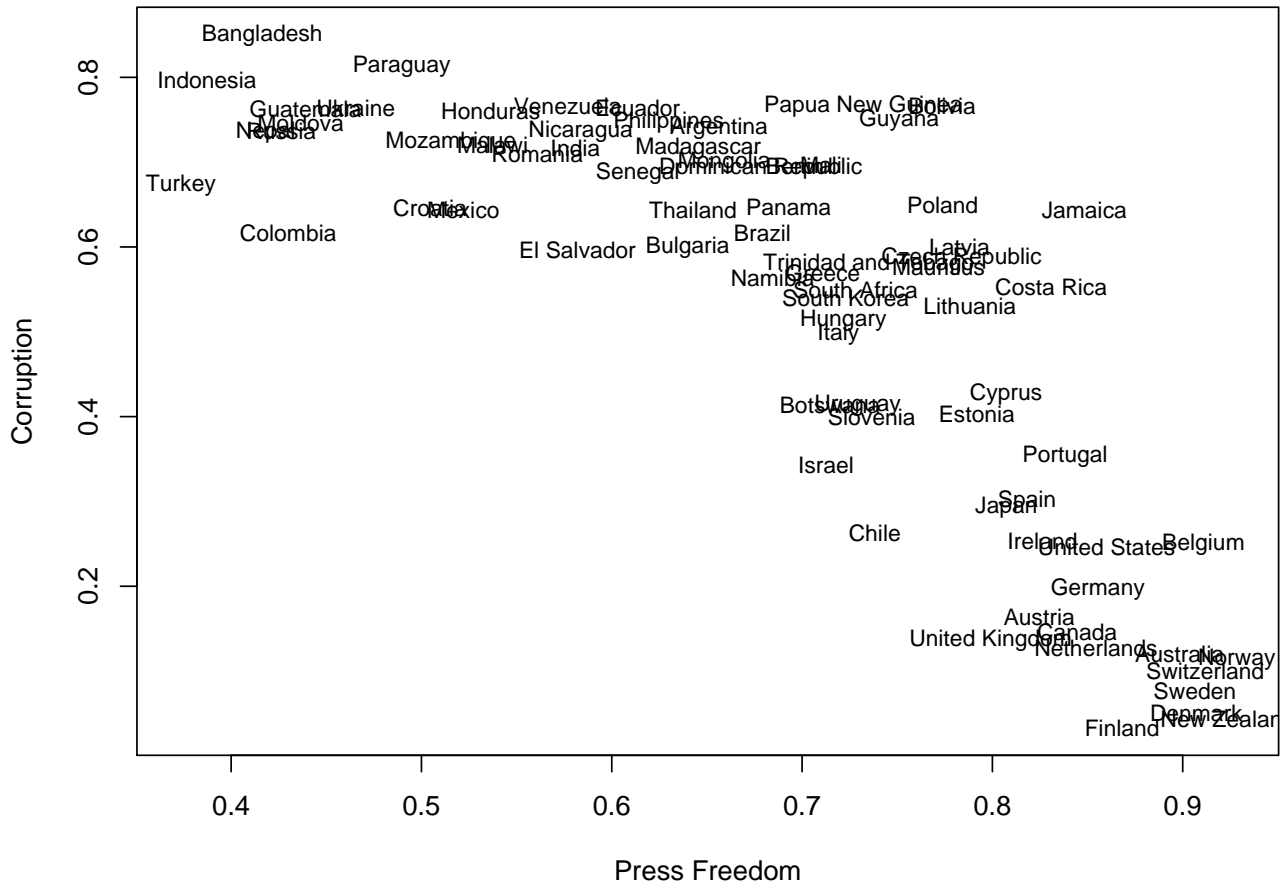


Figure 1: Corruption and Press Freedom, 1996-2004 averages, in democracies and quasi-democracies. Sources: Transparency International and Reporters Without Borders.

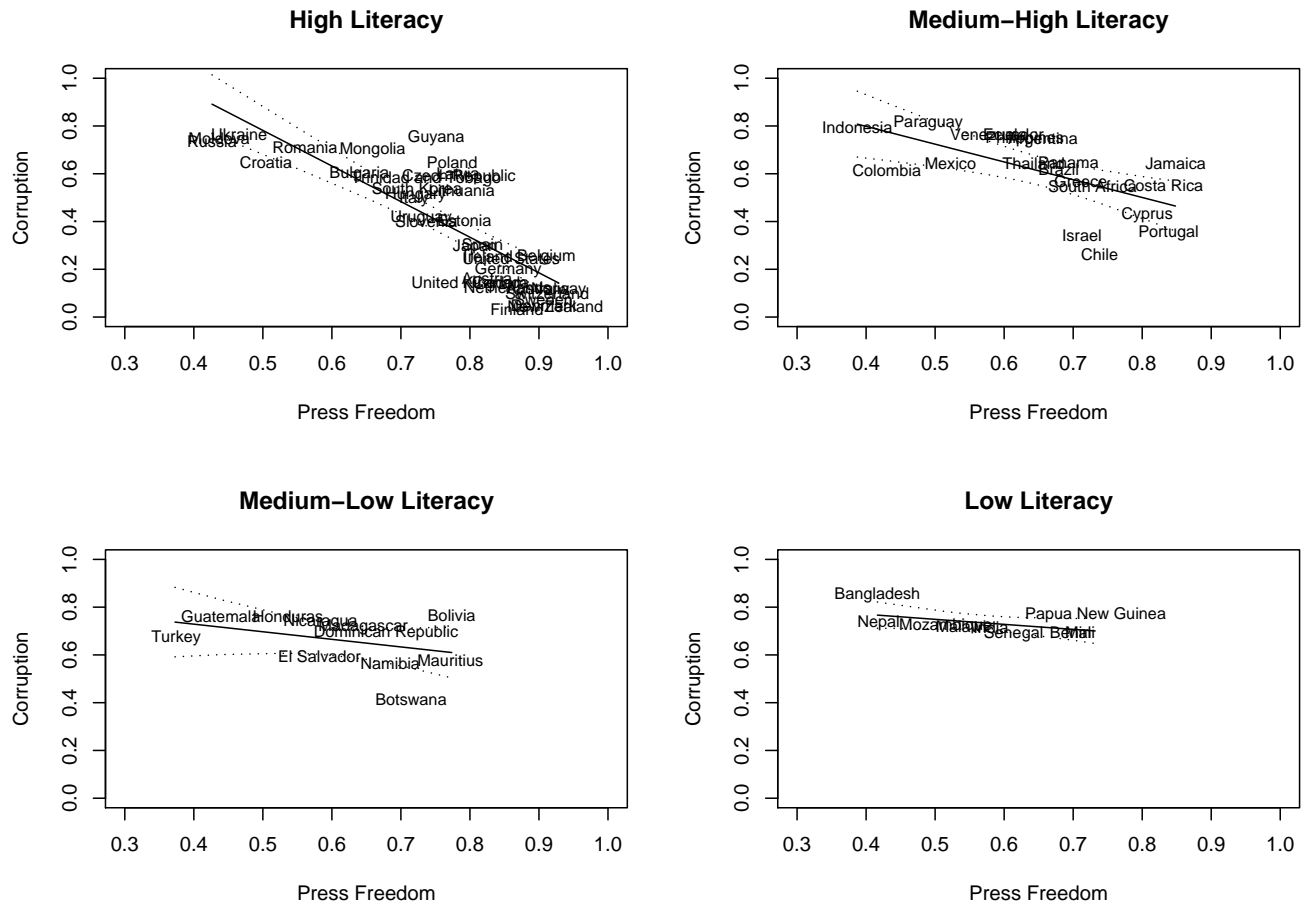


Figure 2: Corruption and Press Freedom, 1996-2004 averages, in democracies and quasi-democracies, by level of education of the population. The regression lines plot the predicted values from a bivariate regression of corruption on press freedom, with 95% confidence intervals. Sources: Transparency International, Freedom House, and UNESCO

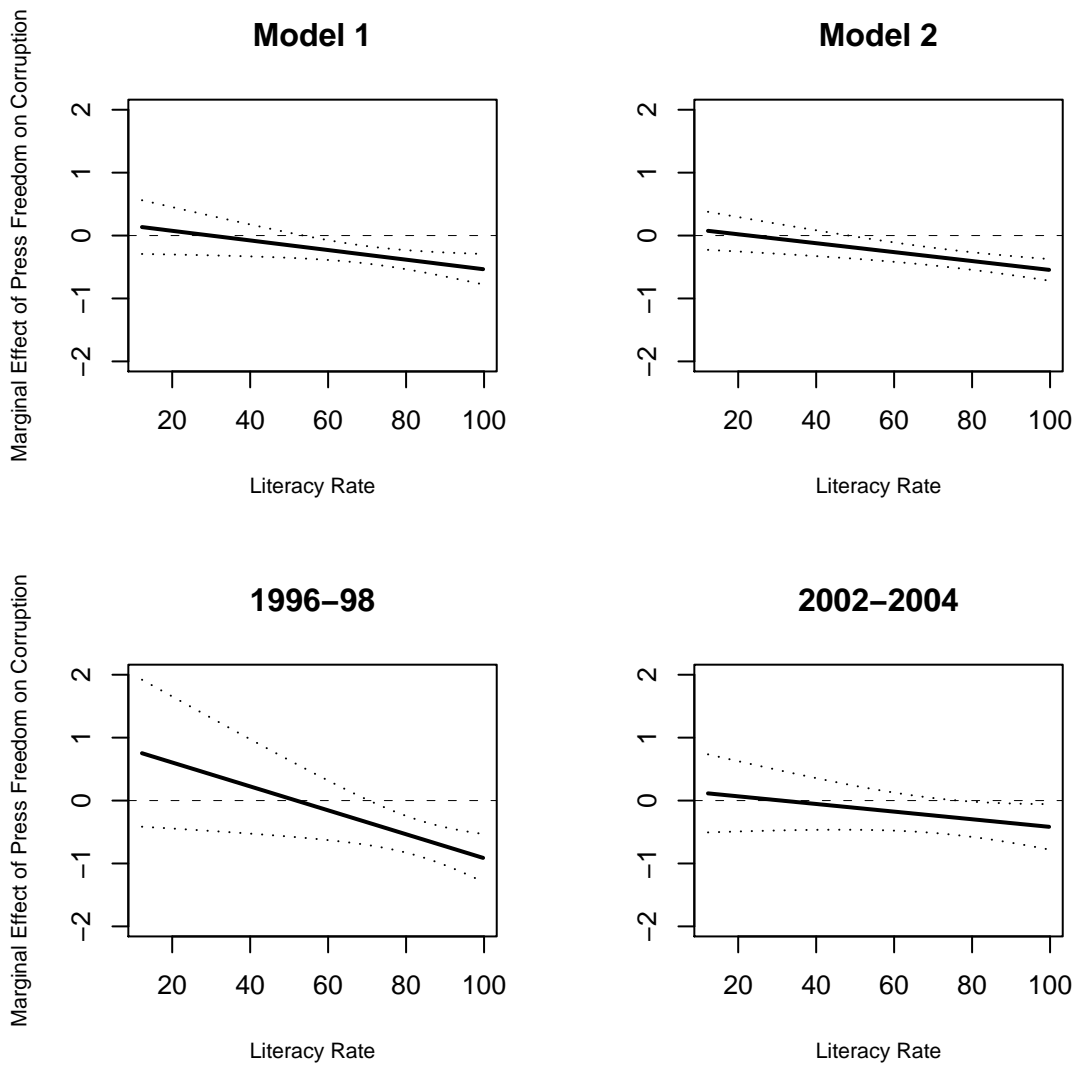


Figure 3: Marginal Effects of Press Freedom on Corruption, with 95% confidence bounds.

Variable	Model1	Model2	Model3
Press Freedom (RSF)	0.228 (0.26)	0.399 (0.303)	0.051 (0.158)
Press Freedom * Literacy	-0.008* (0.003)	-0.009* (0.004)	-0.005* (0.002)
Log GDP	-0.128* (0.023)	-0.212* (0.027)	-0.136* (0.028)
Literacy	0.006* (0.002)	0.011* (0.003)	0.006* (0.002)
Polity		0.015* (0.007)	0.002 (0.003)
Log population		0.008 (0.008)	-0.01 (0.014)
Ethnic fractionalization			-0.026 (0.057)
Absolute latitude			-0.199 (0.108)
Trade openness			-0.001 (0.0006)
Intercept	1.434* (0.236)	1.54* (0.313)	1.696* (0.227)
N	98	81	83
R <sup>2</sup>	0.74	0.78	0.77
F	53.29	41.76	32.36

Table 1: Regressions of long-term averages of the corruption indexes and the predictors. Robust standard errors in parentheses. Coefficients marked with \* are significant at the 5% level.

Variable	1996-1998	1998-2000	2000-2002
	CPI (1)	CPI(2)	KKZ(1)
Press Freedom(FH)	1.35 (0.73)	0.648 (0.416)	0.157 (0.235)
Press Freedom * Literacy	-0.021* (0.009)	-0.012* (0.006)	-0.008 * (.003)
Log GDP	-0.139* (0.042)	-0.19* (0.046)	-0.153* (0.025)
Literacy	0.015* (0.005)	0.011* (0.003)	0.007* (0.002)
Polity			.007 (0.004)
Log population			.007 (0.008)
Intercept	0.841 (0.584)	1.54* (0.411)	1.46* (0.205)
N	66	72	89
R <sup>2</sup>	0.71	0.70	0.80
F	32.57	32.29	49.81

Table 2: Regressions of three-year averages of the corruption indexes and the predictors. Standard errors in parentheses. Coefficients marked with \* are significant at the 5% level.