Essays on Political Corruption and Media Freedom

Piero Stanig

Submitted in partial fulfillment of the
Requirements for the degree
of Doctor of Philosophy
in the Graduate School of Arts and Sciences

COLUMBIA UNIVERSITY

2009

ABSTRACT

Essays on Political Corruption and Media Freedom

Piero Stanig

This dissertation focuses on the role of the media in the provision of information that citizens can use to monitor the behavior of politicians and bureaucrats.

The first chapter presents a formal model of electoral control that takes into account campaign finance and personal consumption as motives for corruption, and analyzes the role of the press in helping voters hold politicians accountable. The theoretical model predicts that the corruption-reducing effect of a free press is conditional on the proportion of voters affected by campaign messages. The chapter also provides cross-country empirical support for this prediction.

The second chapter presents a general theoretical framework to understand when the media are able and willing to provide information regarding political malfeasance. Competition among a generic number of publishers and newspapers is modeled. Politicians can affect media content in two ways: through legal sanctions against editors, or through pressure on publishers. If a politician sues a journalist, the case is decided by a court that might be more or less independent from the politician. Publishers vary in the relative weights they assign to market profits and to rewards derived from loyalty to politicians. Equilibria in which information is revealed or remains undisclosed are characterized. The economic and legal preconditions for a well-functioning media market are analyzed.

The third chapter shows empirically how legal regulation of speech affects how newspapers report sensitive political information. Exploiting the variation in the legal restrictions to speech across states in a federal country, the reduction in coverage of political and bureaucratic corruption associated with regulation of speech is estimated, using an original dataset based on the content analysis of local newspapers in Mexico. Many articles on

corruption are "missing" in newspapers from states with more punitive defamation law. Instrumental variable models — in which the severity of criminal statutes for unrelated offenses is used as an instrument— estimate the causal effect of regulation. Restrictions to media freedom significantly reduce coverage of corruption.

Contents

List of Tables

List of Figures

Acknowledgements

I thank my advisor, John Huber, for all he has taught me and all the opportunities he has provided me through the years. His scientific integrity and curiosity, paired with an impressive intellect and exceptional human qualities, set an example that I won't ever be able to match.

Shigeo Hirano helped me mature as a researcher and a teacher, and provided guidance as well as words of encouragement in times of (mild) despair. Greg Wawro taught me a lot of the quantitative methodology I know, and encouraged me to pursue my interests in the field. The other members of my dissertation defense committee, Massimo Morelli, Alastair Smith, and Mike Ting, provided extremely valuable constructive criticism that will help me revise these essays for publication. Eduardo Leoni has been a helpful and competitive peer since the first week of graduate school.

The students and faculty in the Department of Political Science and the Institute for Social and Economic Research and Policy at Columbia have given me friendship, advice, and respect; have challenged me; and have pushed me forward. The research presented here was greatly improved by discussions, criticism, and the odd word of praise. A special mention goes to the Quantitative Political Science group at Columbia, among whom I have learned more than I had ever thought possible.

In the past few years, my girlfriend Iara has filled my life with more sweetness, beauty and passion than I could have ever asked for. My mother Lucia — after bringing me up with affection and very high expectations— supported me, emotionally and, often, financially, throughout the many years of my adult life that I devoted to learning. My late father Rino taught me to question the motives of every social actor, and to focus on self-interest and strategic behavior when trying to explain the world. Probably unintentionally, he instilled in me the passion for politics. I remember the heated discussions we had —I was just a middle school kid— while watching Italian election debates on television. He is deeply

missed, and the void he left haunts me every day of my life.

The boroughs of Manhattan and Brooklyn have been my home while I was writing the words, scribbling the equations, and running the regressions, of which this dissertation is composed. I cannot think of a better place to live. From day one, I knew I had found a new home, a better one than I had ever had. Those who have lived there know that words are not sufficient to explain how I feel.

The Institute for Social and Economic Research and Policy at Columbia University hosted me (and my legendarily messy desk) for two years while I was working on this dissertation. The Alexander Hamilton Center for Political Economy at New York University hosted and supported me for a year while I was giving what I thought would be the final touches to these essays.

Finally, after mentioning all that made my life better, a few negative words, and an exhortation. Border control officials and immigration restrictions enforcers, the most despicable among the servants of the foolishness of nationalism, have made and continue to make my life unnecessarily difficult. They inflict pain on many millions of people across the world. A special thought goes to the hundreds of refugees that the government of Italy —in violation of Italian and international law, and in violation of the basic ethical principles that should apply universally regardless of the law— deported, in the month of May 2009, to Lybia, where their basic human rights and dignity were abused, their physical integrity put in danger. Let's all hope that one day, in a really cosmopolitan world, the word "immigration" will become meaningless and will be remembered with the same disgust that accompanies the word "Inquisition" in our time. We are all human beings, and should be able to go wherever our legs and our ingenuity can take us.

Chapter 1

A Formal Model of Corruption, Campaign Finance, and the Media, with Cross-National Evidence

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.[1](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

[1]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.

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.

1.1 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 chapter 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 chapter 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.

1.2 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.[2]

There is a continuum of voters, normalized to 1. In the electorate there are α 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 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

[2]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.

decision regarding whether the incumbent is reelected is more likely made by an impressionable voter: the probabilities of recognition are respectively α 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 η 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 additional material to this chapter.[3]

The politician can use the corrupt funds to pay for her campaign. The effect of legally-

[3]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.

funded campaign is abstracted away.[4] 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 γ 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 γ 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 ρ regarding whether the incumbent has respected the

[4] 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 the she controls (at least in part) the public budget or can sell favors to private agents.

retrospective rule s^T

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

1.2.1 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 $\rho(m) \leqslant s^{\text{sop}}$, 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 $\rho \leqslant r^E$. 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. Subsection 1.6.2 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. Subsection 1.6.2 shows how a press that lies by over- or under-reporting corruption with some probability μ 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 $m = r \leqslant s^{\text{SOP}}$.

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 is 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 $r \leqslant s^{\text{SOP}}$, while it is $1 - \psi(r)$ if $r > s^{\text{SOP}}$.

To sum up, if the prior of the voter is that $r^E \leqslant s^{\text{SOP}}$, 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^{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 $r^E \leqslant s^{\text{sop}}$ 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 $r^E \leqslant s^{\text{imp}}$. Given the budget constraint the incumbent, after observing the story m published by the press, must choose a γ 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 γ 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

$$E(U_p) = U_p((1-\gamma)r) + P(\text{in}|\gamma, r, s^T, m)\delta V \qquad (1.1)$$
$$\text{s.t.}\gamma \leqslant 1$$

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.[5]

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

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

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

$$\phi'(\gamma r)(1-\alpha)\delta V = U'((1-\gamma)r) \qquad (1.2)$$

[5] 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 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 α 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.

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

Proof. See Section 1.6.1. □

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 subsection 1.6.3, while the substantive implication is briefly analyzed in the conclusions.

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 $\rho(0) = s^{\text{sop}}$ 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.[6] 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 $0 < m \leqslant s$, then $\rho(m) = \rho_c(m, I_c = 0) = m \leqslant s$ 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

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

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* $(s^{\text{imp}}, s^{\text{sop}})$ *is given by*

$$BR(s^{\text{imp}}, s^{\text{sop}}) = \begin{cases} r = r^* \text{ if } U(s) + \delta V < U_O(r) \\ r = s \text{ if } U(s) + \delta V \geqslant U_O(r) \end{cases} \tag{1.3}$$

[6]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.

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:

$$\psi'(r)[U(r)-U((1-\gamma)r)+\delta V(1-(1-\alpha)\phi(\gamma r))]+\psi(r)U'(r)+(1-\psi(r))[U'((1-\gamma)r)(1-\gamma)+(1-\alpha)\phi'(\gamma r)\gamma\delta V]=0 \quad (1.4)$$

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*

$$U(s^{\text{sop}}) + \delta V = U_O(r^*) \tag{1.5}$$

where

$$U_O(r^*) = \begin{cases} \psi(r)[U(r^*) + \delta V] + (1 - \psi(r^*))[\dot{U}((1-\gamma)r^*) + (1-\alpha)\phi(\gamma r^*)\delta V] \text{ if } r^E \leqslant s^{\text{sop}} \\ U(1) \text{ if } r^E > s^{\text{sop}} \end{cases} \tag{1.6}$$

Proof. See Section 1.6.1. □

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^{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 1.5: both types of voters set the same retrospective rule.

1.2.2 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 1.5 and Proposition 3 characterize the optimal retrospective rule that voters can set and that in equilibrium is adopted by both types of vot-

ers. Equation 1.4 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.

1.3 Some illustrative simplified versions of the model

To understand how the different components of the model work together in layers, what would happen if the press always reported exactly the amount stolen by the incumbent, and there were no impressionable voters (call this the **Perfect Monitoring** case)? This corresponds to the model with constant $\psi(r) = 0$ and with $\alpha = 1$. The incumbent can be reelected only if she respects the retrospective rule (the full information model in Persson et al. (1997) analyzes this case). The optimal level of corruption for an incumbent that decided to overlook the retrospective rule would be $r^* = 1$. The voter would set the rule

that makes the incumbent indifferent between stealing 1 this period, and be out forever, and stealing s and be reelected. Therefore, the voter would set a rule such that $U(s) + \delta V = U(1)$.

Assume now that there are no impressionable voters ($\alpha = 1$) and therefore no campaign concerns for the incumbent but the information regarding the level of corruption is revealed with (exogenous) probability $1 - \widehat{\psi}$. Given a rule s, the expected utility of an incumbent who steals everything (i.e. sets $r^* = 1$) would be $U(1) + \widehat{\psi}\delta V$, i.e. the incumbent could steal the maximum possible, and hope to be reelected if the information is not revealed. In this case, the strictest rule that the incumbent would respect is such that $U(s) + \delta V = U(1) + \widehat{\psi}\delta V$. The voter must offer the incumbent something more than in the Perfect Monitoring case, because the incumbent has some chances of being reelected even if she overlooks the retrospective rule.

Assume now that there are $1 - \alpha$ impressionable voters, that can be convinced with (exogenous) probability $\widehat{\phi}$. The information regarding corruption if revealed for sure. The incumbent can hope to be reelected, if she steals more than s, is to be supported by the impressionable voters. Given a rule s, the expected utility for an incumbent that steals everything is given by $U(1) + (1 - \alpha)\widehat{\phi}\delta V$, which means that the rule must be such that $U(s) + \delta V = U(1) + (1 - \alpha)\widehat{\phi}\delta V$. The voter must be more tolerant when setting the rule, because the value to the politician of stealing the maximum possible is higher than in the Perfect Monitoring case.

To sum up, even if information were disclosed perfectly to voters every time the game is repeated, voters would not condition reelection to full probity. If they were to do so, the incumbent would steal as much as she could during her only period in office, and give up her hopes of reelection. If, on the other hand, information was never revealed to voters, it would not be possible for the voters to discipline the politician: the incumbent would set $r = 1$. The model I present is a combination of the two. With some probability $\psi(r)$

the situation faced by the incumbent is the "no discipline" one; otherwise, voters observe exactly how much the incumbent stole, and they can discipline her directly.

1.4 Comparative statics

Assume that the maximization problem in equation 1.1 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 γ^* (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 α (the proportions of types of voters in the electorate) and of the slopes of $\psi(.)$ (the reactivity of the press to corruption) and of $\phi(.)$ (the ability of a campaign to clean the reputation of an incumbent).

The three conditions are

$$G_1 = \phi'(\gamma r)(1-\alpha)\delta V - U'((1-\gamma)r) = 0 \quad (1.7)$$

$$G_2 = \psi'(r)[U(r) - U((1-\gamma)r) + \delta V(1-(1-\alpha)\phi(\gamma r))] + \psi(r)U'(r) + (1-\psi(r))[U'((1-\gamma)r)(1-\gamma) + (1-\alpha)\phi'(\gamma r)\gamma\delta V] = 0 \quad (1.8)$$

$$G_3 = U(s) + \delta V - \psi(r)[U(r) + \delta V] - (1-\psi(r))[U((1-\gamma)r) + (1-\alpha)\phi(\gamma r)\delta V] = 0 \quad (1.9)$$

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 Section 1.6.1. □

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. $1-\psi()$, 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.[7] 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 Section 1.6.1. □

1.4.1 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

[7] See Besley and Prat (2006) for an analogous formalization.

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.

Testing this implication using cross-country data presents a problem: the formal literature that introduces the concept of impressionable voter does not propose a direct way to operationalize it, and no direct measure of the proportion of impressionable voters is available.[8] I adopt a strategy based on a plausible proxy —level of education of the population— to test some of the implications of the model. Highly educated individuals are less easily persuaded (Milburn 1991), are less likely likely to change their mind regarding vote choice during a campaign (Finkel and Schrott 1995), have more accurate political knowledge (e.g., Bennet 1994), and tend to adopt a compensatory rule (analyzing trade-offs) when evaluating information about candidates during a campaign (Redlawsk 2004). In the empirical analysis that most directly tackles the issue of which voters are affected by campaign spending, Kenny and McBurnett (1994) show that, in a U.S. House race, the choices of voters with college degrees are unaffected by the amounts spent by the candidates, while spending exhibits very large associations with vote choice for voters without a college degree.

I provide further empirical justification for the use of education as a proxy for the prevalence of impressionable voters. Cross-national survey evidence shows that less educated voters have less accurate factual information about politics, and less accurate perceptions of the economic conditions. I first estimate country-by-country probit models, regressing indicators of factual political knowledge on a measure of education, from the data in the Comparative Study of Electoral Systems. The plot in Figure 1.1 displays the difference

[8]Some surveys, for instance the Mexican Election Panel Study (Lawson et al. 2000), ask voters whether they decide how to vote based on various sources, among which are the media and campaign ads. If voters are not able to recognize that campaign messages influence them, as the formal model assumes, then these measures might provide very little information.

in the expected probability of giving a correct answer between a college-educated and a high-school educated respondent, with 95% credible intervals.[9] Items 1-3 are factual questions about politics, specific to each country; the fourth item is the answer to a question regarding the recall of the last election candidates' names. In most countries, higher levels of education are associated with better factual knowledge; such relationship is significantly positive in a majority of the countries I analyze. Only in one country high-school educated voters have more accurate factual knowledge, and only for one of the four items.

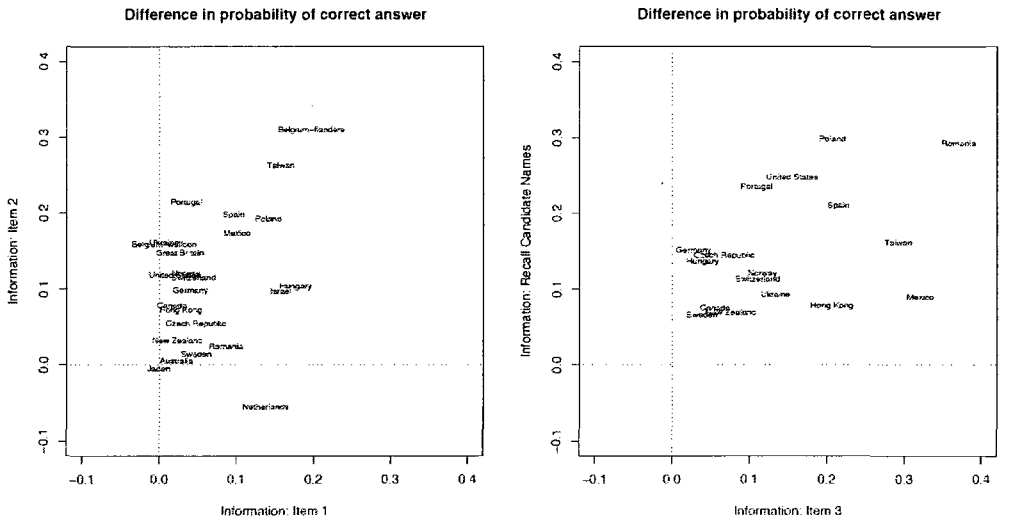

Figure 1.1: Probability of a correct answer for a college-educated respondent, minus probability of a correct answer for a high school-educated respondent, with 95% credible intervals, from country-wise probit regressions on CSES survey data.

The CSES also asks a question about the perceptions of the economy in the past 12 months, answered on a 5-point scale (from "very good" to "very bad"). The variable was rescaled so that higher values mean a better evaluation of the economy. I regress this measure on demographic controls (employment status, gender, and income quintile) and on

[9]One thousand draws from the posterior distribution of the coefficients were used to predict the probabilities and their difference. The credible intervals are based on the percentiles of the simulations from the posterior distribution.

education, unemployment rate in the year previous to the survey (from the World Development Indicators), and the interaction between unemployment rate and education of the respondent. There are 47830 respondents, from 41 countries, in the data used to estimate the models. The two panels in Figure 1.2 plot the expected evaluation of the economy for respondents with a college degree, a high school degree, and no education. The perceptions of more educated respondents are more strongly related to the actual macro-economic conditions than the perceptions of less educated ones. The regression used to predict the values in the left panel of Figure 1.2 includes a simple interaction of the ordinal education variable —that ranges from 1 (no education) to 8 (completed college)— with the unemployment variable in the year previous to the survey. The regression in the right panel interacts the dummies for the educational levels with the unemployment variable, and thereofore estimates a separate slope for each educational group.[10]

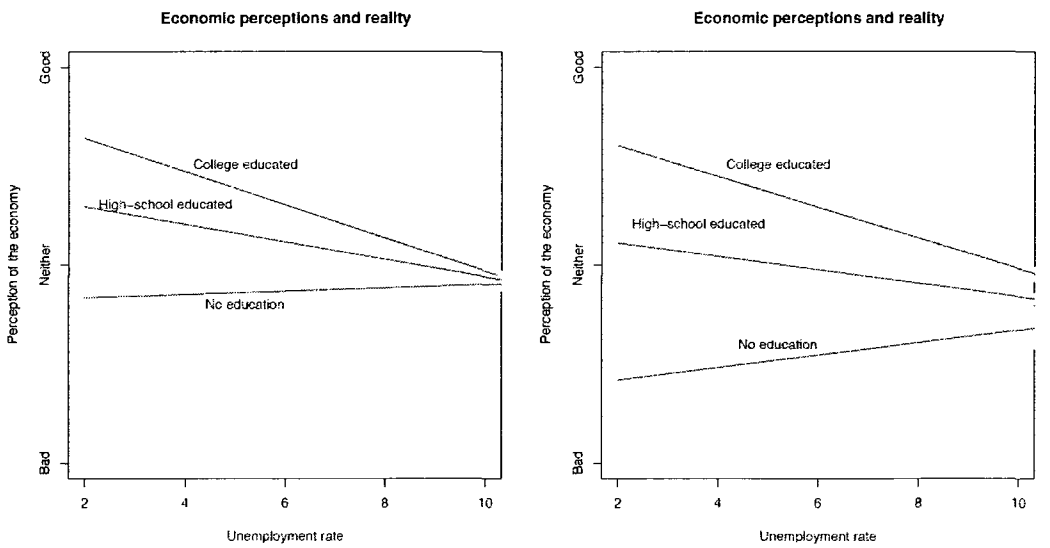

Figure 1.2: Expected values of economic perceptions and reality, based on CSES survey data. Left panel: interactive model treating education as a continuous predictor. Right panel: separate slopes for each education category.

[10]One thousand draws from the posterior distribution of the coefficients were used to calculate the credible intervals displayed in grey in the graphs.

The marginal change in the perception of the economy, following a change in the unemployment rate, is significantly larger among better educated voters. The perceptions of respondents with no education, on the other hand, do not seem to be associated with the actual macroeconomic conditions. This evidence corroborates the intuition that the degree to which voters are "impressionable" depends on their educational achievements. In the cross-country tests of the model's implications, 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 interdepence: 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.

1.5 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.[11] I use the Corruption Perception Index and the World Bank InstituteÒcontrol of corruptionÓ variable. 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: the Reporters Without Borders (RSF) index, and the Freedom House index. See subsection 1.6.4 for the variable descriptions. The indexes of corruption and of press freedom are rescaled to take values in the [0, 1] interval, with higher values associated to greater corruption and more freedom. 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 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 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

[11] See Golden and Picci 2005; Olken 2006, 2007; and Reinikka and Svensson 2005, for some proposals of objective measures of corruption across subnational units in single countries; Fisman and Miguel 2007 for a proposal based on the behavior of diplomats from several countries who happen to live in the same city.

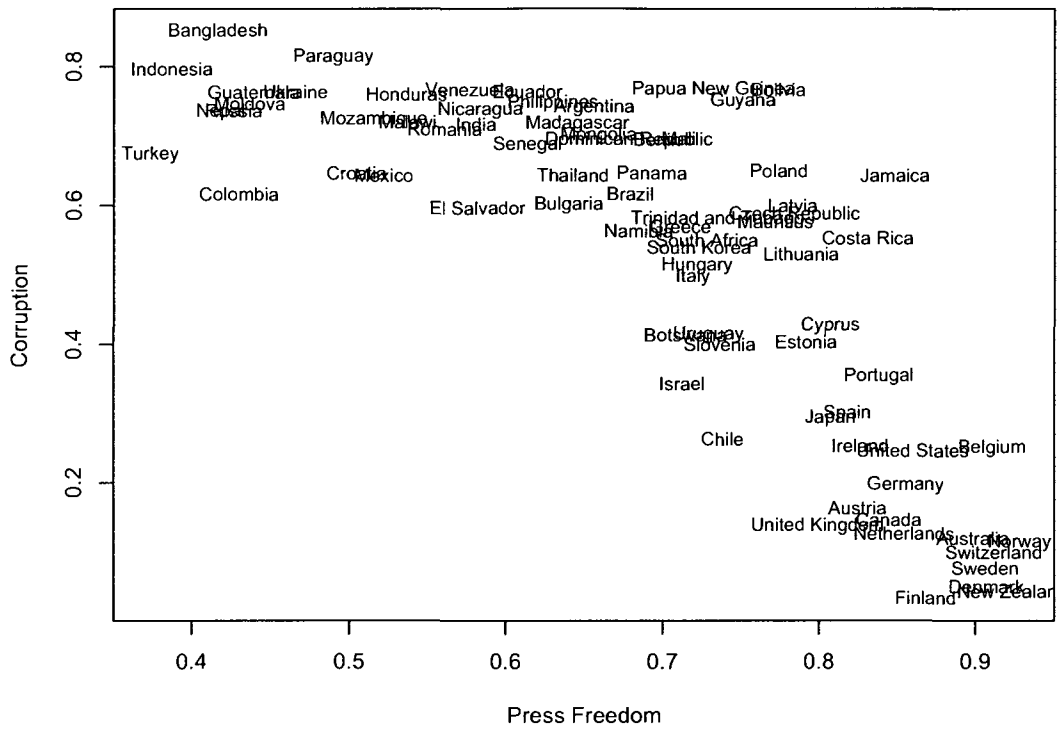

Figure 1.3: Corruption and Press Freedom, 1996-2004 averages, in democracies and quasi-democracies. Sources: Transparency International and Reporters Without Borders.

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 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 [12] for which the literacy data is not available, the most recent figure published in the C.I.A. World Factbook was used.

Corruption regressions include several control variables capturing factors that, even if not of immediate substantive interest, are potential confounders (e.g., Fisman and Gatti 2002). 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. In some of the models I estimate, I include a measure of democracy, population size, 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). Details regarding these variables are found in the additional material for this chapter.

1.5.1 Evidence

Figure 1.3 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 1.4 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, 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

[12] 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.

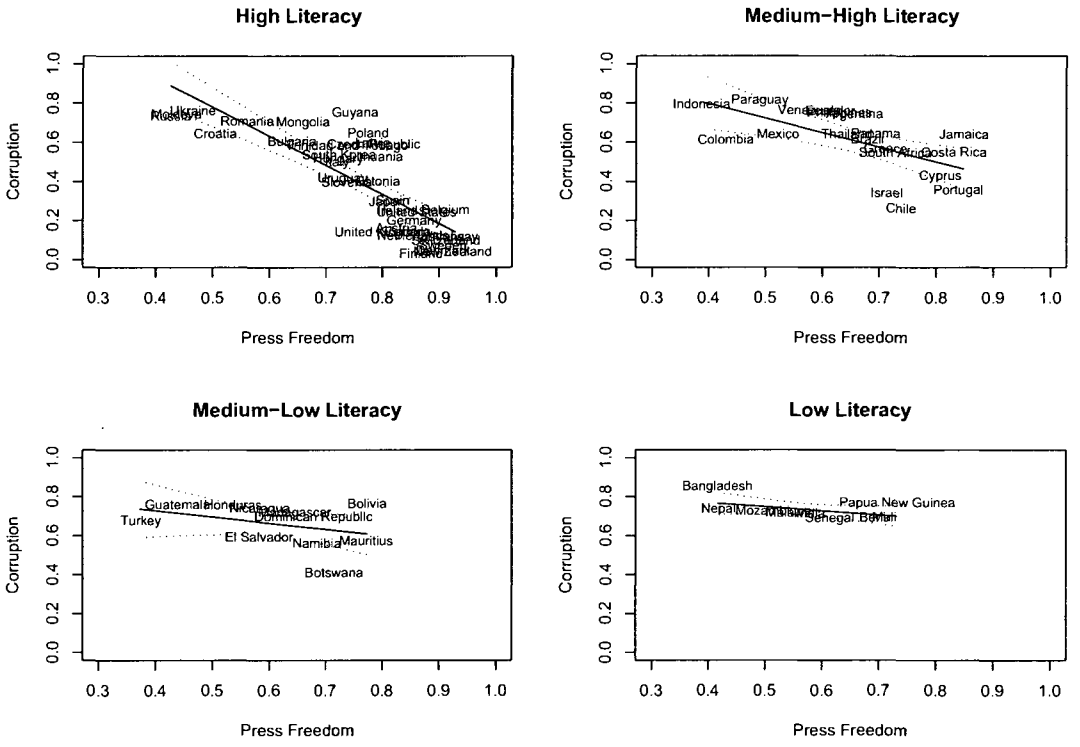

Figure 1.4: Corruption and Press Freedom, 1996-2004 averages, in democracies and quasi-democracies, by level of education of the population. The regression lines plot the predicted values from a bivariate regression of corruption on press freedom, with 95% confidence intervals. Sources: Transparency International, Freedom House, and UNESCO

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.

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.[13] 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. 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 additional material for this chapter. 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.

[13] 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 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.[14]

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 **X** is a matrix of control variables.

In model 1 (first column of table 1.1) 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.

At the mean of literacy, [15] 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 1.5 plots the marginal effects of an increase in

[14]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.

[15]Values of interest of literacy in these tests of conditional significance are calculated using all of the available data, not only the estimation sample.

Variable	Model1	Model2	Model3	1996-1998	1998-2000	2000-2002
Press Freedom	0.228	0.399	0.051	1.35	0.648	0.157
	(0.26)	(0.303)	(0.158)	(0.73)	(0.416)	(0.235)
Press Freedom * Literacy	-0.008*	-0.009*	-0.005*	-0.021*	-0.012*	-0.008*
	(0.003)	(0.004)	(0.002)	(0.009)	(0.006)	(0.003)
Literacy	0.006*	0.011*	0.006*	0.015*	0.011*	0.007*
	(0.002)	(0.003)	(0.002)	(0.005)	(0.003)	(0.002)
Log GDP	-0.128*	-0.212*	-0.136*	-0.139*	-0.19*	-0.153*
	(0.023)	(0.027)	(0.028)	(0.042)	(0.046)	(0.025)
Polity		0.015*	0.002			0.007
		(0.007)	(0.003)			(0.004)
Log population		0.008	-0.01			0.007
		(0.008)	(0.014)			(0.08)
Ethnic fractionalization			-0.026			
			(0.057)			
Absolute latitude			-0.199			
			(0.108)			
Trade openness			-0.001			
			(0.0006)			
Intercept	1.434*	1.54*	1.696*	0.841	1.54*	1.46*
	(0.236)	(0.313)	(0.227)	(0.584)	(0.411)	(0.205)
N	98	81	83	66	72	89
R^2	0.74	0.78	0.77	0.71	0.70	0.80

Table 1.1: Cross-country regressions. The first three columns report the "between" estimates, the second three columns report the results of the estimation with three-year averages. Robust standard errors in parentheses. Coefficients marked with $*$ are significant at the 5% level.

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 computation of the averages of corruption and freedom of the press. The evidence in support of the hypothesis proposed in this chapter 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.

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. The three columns on the right of Table 1.1 reports the point estimates and the robust standard errors for three models. The main prediction tested, namely that the effect of freedom of the press is more negative in more literate countries, is replicated in all the specifications that were estimated.[16] The bottom two panels of figure 1.5 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 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.

[16]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.

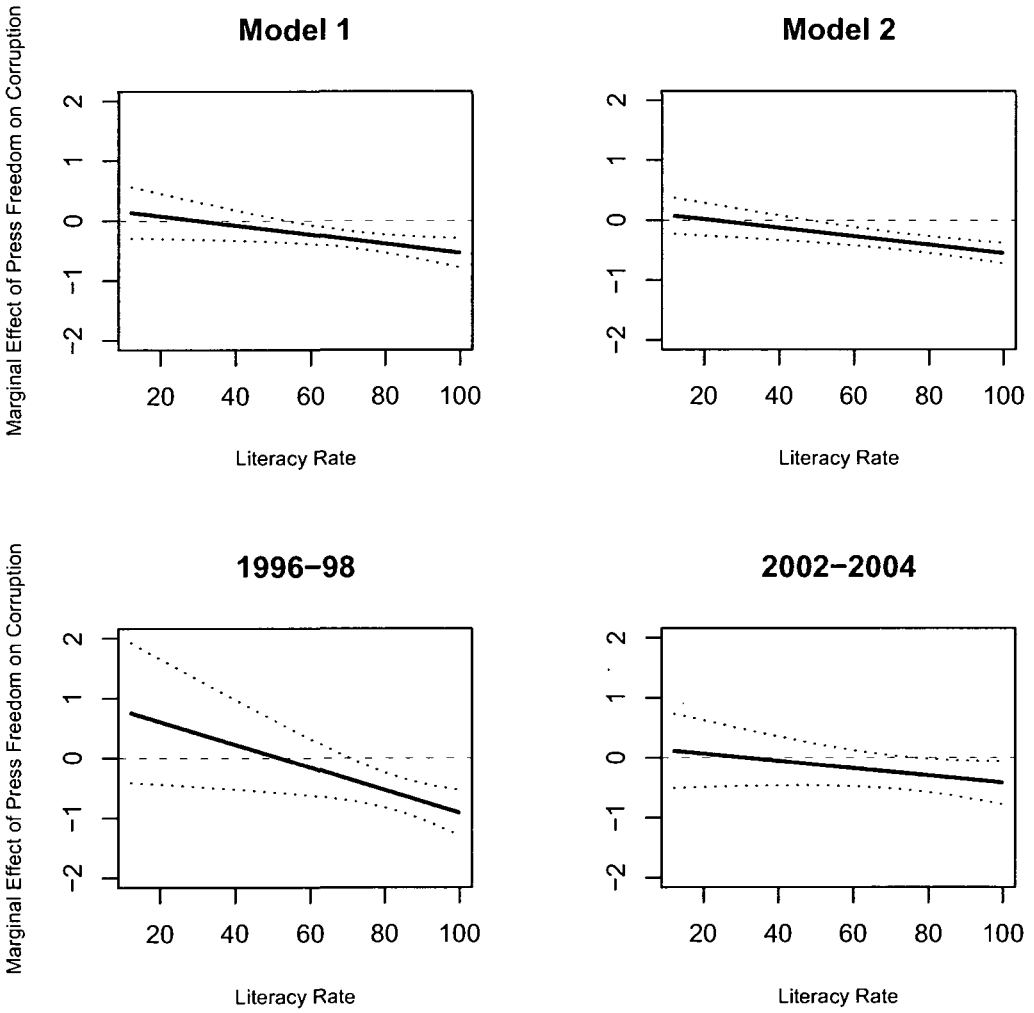

Figure 1.5: Marginal Effects of Press Freedom on Corruption, with 95% confidence bounds.

1.6 Additional material

1.6.1 Proofs

Proof of Proposition 1. If $r^E > s^{\text{imp}}$ then $P(\text{in})$ in equation 1 is not a function of γ while the utility from consumption is decreasing in γ, therefore 0 maximizes the expected utility. If $m = 0$, then $\rho_c(0, I_c = 1) = \rho_c(0, I_c = 0)$, therefore $P(\text{in})$ again is not a function of γ while the utility is decreasing in γ. To obtain equation 2, assume an interior solution and differentiate the expression for the expected utility in (1) with respect to γ. □

Proof of Proposition 3. The voter maximizes

$$D(s)$$
$$\text{subject to } U(s) \geqslant U_O(r) - \delta V$$

Given that $D()$ is strictly decreasing in r, $U(s)$ is strictly increasing in s, and the right-hand side in the constraint is not a function of s, the utility is maximized at the boundary where the constraint binds. If the belief of the voter after $m = 0$ is that the incumbent stole more than the retrospective rule, the incumbent can choose between respecting the rule (and be reelected) or stealing as much as possible and give up the hopes of reelection. Therefore the voter must set the rule that makes the incumbent indifferent between the two. □

Proof of Proposition 4. To calculate what the effect of changes in α is on the equilibrium level of corruption, I need to solve

$$\begin{pmatrix} \frac{\partial \gamma}{\partial \alpha} \\ \frac{\partial r}{\partial \alpha} \\ \frac{\partial s}{\partial \alpha} \end{pmatrix} = - \begin{pmatrix} \frac{\partial G_1}{\partial \gamma} & \frac{\partial G_1}{\partial r} & \frac{\partial G_1}{\partial s} \\ \frac{\partial G_2}{\partial \gamma} & \frac{\partial G_2}{\partial r} & \frac{\partial G_2}{\partial s} \\ \frac{\partial G_3}{\partial \gamma} & \frac{\partial G_3}{\partial r} & \frac{\partial G_3}{\partial s} \end{pmatrix}^{-1} \begin{pmatrix} \frac{\partial G_1}{\partial \alpha} \\ \frac{\partial G_2}{\partial \alpha} \\ \frac{\partial G_3}{\partial \alpha} \end{pmatrix}$$

The determinant of the square matrix in the above equation is given by

$$\det A = (\frac{\partial G_1}{\partial \gamma}\frac{\partial G_2}{\partial r} - \frac{\partial G_1}{\partial r}\frac{\partial G_2}{\partial \gamma})\frac{\partial G_3}{\partial s} \tag{1.11}$$

First of all, one can observe that

$$\frac{\partial G_3}{\partial s} = U'(s) > 0 \tag{1.12}$$

Therefore the sign of the determinant in equation 1.11 is the sign of the quantity in parenthesis.

Observe also that the two facts hold:

$$\frac{\partial G_3}{\partial \gamma} = -G_1 = 0 \tag{1.13}$$

This follows from observing that G_3 is simply the difference between the expected utility from s (which is not a function of γ) and the expected utility from r, whose derivative with respect to γ is the first order condition in the maximization described in proposition 1, i.e G_1;

$$\frac{\partial G3}{\partial r} = -G_2 = 0 \tag{1.14}$$

again because the terms that are functions of r in G_3 are those in the expected utility of r whose derivative is the first order condition in equation 4, i.e. G_2.

Rewrite the matrix of the derivatives of the equilibrium conditions with respect to the endogenous variables as

$$A = \begin{pmatrix} \frac{\partial G_1}{\partial \gamma} & \frac{\partial G_1}{\partial r} & 0 \\ \frac{\partial G_2}{\partial \gamma} & \frac{\partial G_2}{\partial r} & 0 \\ 0 & 0 & \frac{\partial G_3}{\partial s} \end{pmatrix}$$

from which follows that

$$\begin{pmatrix} \frac{\partial \gamma}{\partial \alpha} \\ \frac{\partial r}{\partial \alpha} \\ \frac{\partial s}{\partial \alpha} \end{pmatrix} = -\frac{1}{\det A} \begin{pmatrix} \frac{\partial G_2}{\partial r}\frac{\partial G_3}{\partial s} & -\frac{\partial G_1}{\partial r}\frac{\partial G_3}{\partial s} & 0 \\ -\frac{\partial G_2}{\partial \gamma}\frac{\partial G_3}{\partial s} & \frac{\partial G_1}{\partial \gamma}\frac{\partial G_3}{\partial s} & 0 \\ 0 & 0 & \frac{\partial G_1}{\partial \gamma}\frac{\partial G_2}{\partial r} - \frac{\partial G_2}{\partial \gamma}\frac{\partial G_1}{\partial r} \end{pmatrix} \begin{pmatrix} \frac{\partial G_1}{\partial \alpha} \\ \frac{\partial G_2}{\partial \alpha} \\ \frac{\partial G_3}{\partial \alpha} \end{pmatrix} \tag{1.15}$$

Observe that

$$\frac{\partial G_3}{\partial \alpha} = (1 - \psi(r))\phi(\gamma r)\delta V > 0 \tag{1.16}$$

To prove the proposition, the final step is to show that $\frac{\partial s}{\partial \alpha} < 0$. Observe that

$$\frac{\partial s}{\partial \alpha} = -\left[\frac{1}{\det A}\left(\frac{\partial G_1}{\partial \gamma}\frac{\partial G_2}{\partial r} - \frac{\partial G_2}{\partial \gamma}\frac{\partial G_1}{\partial r}\right)\right]\frac{\partial G_3}{\partial \alpha}$$

Regardless of the sign of the determinant, the product in brackets is positive because $\det A$ and $\frac{\partial G_1}{\partial \gamma}\frac{\partial G_2}{\partial r} - \frac{\partial G_2}{\partial \gamma}\frac{\partial G_1}{\partial r}$ have the same sign. Given that $\frac{\partial G_3}{\partial \alpha}$ is positive, $\frac{\partial s}{\partial \alpha} < 0$ is negative.

□

Proof of proposition 5. We need to sign the derivative of the equilibrium retrospective rule, $\frac{\partial s}{\partial f}$. First of all, observe that these identities hold:

$$\psi'(r) = -f\Psi'(r)$$

$$\psi''(r) = -f\Psi''(r)$$

Consequently, G_3 can be rewritten as

$$G_3 = U(s^{\text{sop}}) + \delta V - (1 - f\Psi(r))[U(r^*) + \delta V] - (f\Psi(r^*))[U((1-\gamma)r^*) + (1-\alpha)\phi(\gamma r^*)\delta V] = 0$$

and the partial derivative of the equilibrium condition with respect to f is given by

$$\frac{\partial G_3}{\partial f} = \Psi(r)\left[U(r) - U((1-\gamma)r) + \delta V\left(1-(1-\alpha)\phi(\gamma r)\right)\right] > 0 \tag{1.17}$$

By the implicit function theorem,

$$\begin{pmatrix} \frac{\partial \gamma}{\partial f} \\ \frac{\partial r}{\partial f} \\ \frac{\partial s}{\partial f} \end{pmatrix} = -\frac{1}{\det A} \begin{pmatrix} \frac{\partial G_2}{\partial r}\frac{\partial G_3}{\partial s} & -\frac{\partial G_1}{\partial r}\frac{\partial G_3}{\partial s} & 0 \\ -\frac{\partial G_2}{\partial \gamma}\frac{\partial G_3}{\partial s} & \frac{\partial G_1}{\partial \gamma}\frac{\partial G_3}{\partial s} & 0 \\ 0 & 0 & \frac{\partial G_1}{\partial \gamma}\frac{\partial G_2}{\partial r} - \frac{\partial G_2}{\partial \gamma}\frac{\partial G_1}{\partial r} \end{pmatrix} \begin{pmatrix} 0 \\ \frac{\partial G_2}{\partial f} \\ \frac{\partial G_3}{\partial f} \end{pmatrix} \tag{1.18}$$

from which follows that

$$\frac{\partial s}{\partial f} = -\frac{1}{\det A}\left(\frac{\partial G_1}{\partial \gamma}\frac{\partial G_2}{\partial r} - \frac{\partial G_2}{\partial \gamma}\frac{\partial G_1}{\partial r}\right)\frac{\partial G_3}{\partial f} = -\frac{\frac{\partial G_3}{\partial f}}{\frac{\partial G_3}{\partial s}} \tag{1.19}$$

As we have established that $\frac{\partial G_3}{\partial f} > 0$ in equation 1.17 and that $\frac{\partial G_3}{\partial s} > 0$ in equation 1.12, it follows that $\frac{\partial s}{\partial f} < 0$.

As for the second claim, differentiate $\frac{\partial s}{\partial \alpha}$ with respect to f and observe that $\frac{\partial^2 G_3}{\partial f \partial s} = 0$, therefore

$$\frac{\partial^2 s}{\partial f \partial \alpha} = -\left(\frac{\Psi(r)\delta V \phi(\gamma r)}{\frac{\partial G_3}{\partial s}}\right) \tag{1.20}$$

The second inequality in the proposition follows from the fact that all the terms in parenthesis in (1.20) are positive. □

1.6.2 "No news is good news": a motivation.

The way off-the-equilibrium-path beliefs are specified above can be the reduced form of an updating process in which the voter assigns some positive probability to the best action of an incumbent that has decided to deviate from equilibrium.

The press never lies in the sense of reporting a non-zero level of corruption which is not the one actually chosen by the politician. On the other hand, with some probability (given by $\psi(r)$) the reports a message $m = 0$ even if the action chosen by the politician is some $r > 0$. Therefore, regardless of his prior beliefs, after observing a message $m^* > 0$, the probability that the voter assigns to the state of the world $r = m^*$ is 1: the voter is sure that the politician stole m^*. On the other hand, after observing $m = 0$, the voter updates, using Bayes rule, his belief regarding the odds of facing a deviation in the sense of more corruption than the equilibrium level.

The off-the-equilibrium path assumed here are consistent, i.e. the belief regarding the probability of the occurrence of an event that should never take place in equilibrium is the limit of the sequence of beliefs as the event becomes increasingly unlikely. Assume that in equilibrium the incumbent sometimes did not respect the rule, and chose whatever were optimal for her after the decision to overlook the rule was made. Call this level of corruption r^D, and assume that the probability that the incumbent chooses this action is ϵ. Assume also that the action space is restricted to two values, $\{s, r^D\}$: the choices available to the incumbent are simply to respect the rule, or choose whatever is optimal if the rule is not respected. After observing a signal $m = 0$, the voter is going to update her belief regarding the action chosen by the incumbent using Bayes' rule. Therefore, after $m = 0$, the voter updates according to

$$P(r^D|m=0) = \frac{P(m=0|r^D)P(r^D)}{P(m=0|r^D)P(r^D) + P(m=0|s)P(s)} = \frac{\psi(r^D)\epsilon}{\psi(r^D)\epsilon + \psi(s)(1-\epsilon)} \tag{1.21}$$

Unless $\psi(s) = 0$, the limit of the updated probability as ϵ goes to 0 is defined, and is equal to 0. On the other hand, after $m = r^D$, the voter updates according to

$$P(r^D|m = r^D) = \frac{(1 - \psi(r^D))\epsilon}{(1 - \psi(r^D))\epsilon + P(m = r^D|s)(1 - \epsilon)} = 1 \tag{1.22}$$

because $P(m = r^D|s) = 0$, in other words the press by assumption can be inaccurate because it fails to report corruption, but if it reports corruption at all, it reports the correct level.

What happens if the press lies in the sense of over- or under-reporting corruption? Assume that the press, with probability $\mu > 0$ scrambles the signal, in the sense of reporting $m = s$ when the incumbent steals r^D and $m = r^D$ when the incumbent steals s; at the same time, the probability of not reporting remains the same as above (in the sense that the probability of a negative report is non-decreasing in corruption). In such a case, as long as the probability of deviation is not too large, it is still true that no news are good news. Indeed, $P(s|m = 0) = \frac{P(m=0|s)P(s)}{P(m=0|s)P(s)+P(m=0|r^D)}$ and $P(r^D|m = 0) = \frac{P(m=0|r^D)P(r^D)}{P(m=0|s)P(s)+P(m=0|r^D)}$. In order for the voter to believe that it is more likely that an incumbent has respected the rule than not, it is sufficient that $\psi(s)(1 - \epsilon) > \psi(r^D)\epsilon$. As long as the "tremble" takes place less than 50% of the times ($\epsilon < .5$) this is always true. Notice that this is not a necessary condition, just a sufficient one. In the limit, when ϵ becomes arbitrarily small, the only requirement is that the press issues a report $m = 0$ with positive probability when the incumbent follows the retrospective rule. In this framework, it is also true that, as long as the probability of a lie is a fraction of the probability of being caught stealing r^D, after a message $m = r^D$ the voter believes that it is more likely than not that the incumbent is indeed stealing r^D.

Clearly if the report issued by the press is completely (or almost completely) unrelated to the behavior of the politician, monitoring breaks down and the incumbent cannot be dis-

ciplined. In this case, the press, more than spreading lies, is simply spreading nonsense.[17]

1.6.3 Campaign spending limits

Do campaign spending limits reduce corruption? This section provides a tentative positive answer for enforced limits and in the absence of loopholes or diversion to non-monitored expenditures. See Christensen (1998) and de Sousa (2005) for recent qualitative accounts of campaign spending restrictions and their avoidance; Prat () for a general .

Take the case in which the campaign limit is some rule that states that a candidate cannot spend more than the upper ceiling C. Two cases are possible: either $\gamma^* r^* > C$ or $\gamma^* r^* \leqslant C$. The second case is not interesting because the constraint would not affect the decision of the incumbent. The first case is analyzed here. First of all, notice that when the incumbent is free to choose the optimal campaign spending, at equilibrium she equates the marginal loss in income she consumes and the the marginal gain in the probability of being in office next period (weighted by the value of being in office next period). If there is a spending cap that binds, the incumbent would spend more, if she could: when spending exactly the amount prescribed by the regulation, the marginal return to increased campaign spending more than offsets the marginal loss in consumption.

Assuming that a campaign spending cap C exists, it is not difficult to sign the comparative statics on it using the implicit function theorem. First one has to solve for the optimal corruption given that the campaign of an incumbent with a bad reputation is going to spend

[17] In the case in which the press smears with some probability the reputation of the incumbent that respects the rule, but does not lie regarding the more corrupt one, then the beliefs would be inverted, and a message $m = 0$ would lead the voter to think that he is more probably facing a bad incumbent. This happens because the voter discounts the press as being pro-corruption: somebody who has a good reputation with it is very likely to be sketchy. Clearly there would be no reason for anybody to desire to have a clean reputation in the press, at that point. In other words, a press that favors in a sustained way the more corrupt politician as opposed to the cleaner becomes counterproductive. The corrupt incumbent (i.e., the one who wants to deviate to a higher level of corruption) benefits the most from a press that either reports completely at random, or always reports 0. In this sense, censorship, silence, or sensationalism are more beneficial to corrupt incumbents than an active pro-corruption bias. This is due to the fact that systematic patterns are easier for voters to decode.

C, then implicitly differentiate r with respect to C. The first order condition now becomes

$$G_C = \psi'(r)\left[U(r) - U(r-C) + \delta V[1-(1-\alpha)\phi(C)]\right] + \psi(r)U'(r) + (1-\psi(r))U'(r-C) = 0$$

The comparative statics of interest is

$$\frac{\partial r}{\partial C} = -\frac{\frac{\partial G_C}{\partial C}}{\frac{\partial G_C}{\partial r}}$$

The denominator of the implicit derivative is the second order condition for the maximization of the expected utility with respect to r, which is negative at an interior maximum. The numerator is

$$\frac{\partial G_c}{\partial C} = \psi'(r)\left[U'(r-C) - (1-\alpha)\phi'(C)\delta V\right] - (1-\psi(r))U''(r-C)$$

From concavity of $U(\cdot)$ follows that the term $-(1-\psi(r))U''(r-C)$ is positive. The term $U'(r-C) - (1-\alpha)\phi'(C)\delta V$ is negative because, as claimed above, if the campaign spending limit does restrict campaign expenditures, the marginal return to campaign is higher than the marginal utility of consumption (i.e., the incumbent would prefer to spend a bit more in campaign and consume a bit less) and $(1-\alpha)\phi'(C)\delta V > U'(r-C)$. The term $\psi'(r)\left[U'(r-C) - (1-\alpha)\phi'(C)\delta V\right]$ is positive because $\psi'(\cdot)$ is negative. Therefore the derivative of corruption with respect to the campaign cap is positive.

Substantively, relaxing the campaign limit induces the incumbent to be more corrupt, tightening it induces her to reduce corruption, as long as the incumbent does not divert the funds —above the cap— to exchanges that are harder to monitor (e.g., vote-buying, clientelistic exchanges).

1.6.4 Variable definitions and inclusion criteria.

Here I provide the definitions of the variables that are not described fully in the body of the article. The two measures of the outcome are

- the Corruption Perception Index (CPI), compiled by Transparency International. This measure, based on 17 different surveys that garner the perceptions of both residents and expatriates, both business people, academia and risk analysts (Transparency International, 2003) is reported yearly starting with 1996, and the latest observations included in the sample are for 2005. I rescale the original values to make interpretation easier: the version I use varies between 0 and 1, with higher values associated to greater corruption.

- the "control of corruption"(KKZ) variable compiled by the World Bank Institute (Kaufman et al. 1999, 2005) . This measure of "the exercise of public power for private gain, including both petty and grand corruption and state capture" is available for even years from 1996. The most recent year included in the sample is 2004. I rescale it so it varies between 0 and 1, with larger values meaning more corruption.

The measure of income comes from the World Development Indicators (World Bank), and is averaged (over the years 1990-2004 in the long-horizon models, over the three-year periods in the short-horizon models) and logged. The specific measure used is GDP per capita converted to international dollars using purchasing power parity rates. Data are in constant 2000 international dollars: an international dollar has the same purchasing power over GDP as the U.S. dollar has in the United States. The specific measure of trade openness is *openk*, trade openness in 1996 constant prices, from the PWT 6.1 (Heston et al. 2002). I use three alternative criteria of inclusion of country-year observation in the computation of the means of the measures of corruption and freedom of the press:

1. competition in a given country-year is coded as at least "factional" in the Polity 4

dataset. (PARCOMP is greater than or equal to 3)

2. competitiveness of executive recruitment is coded as "dual-transitional" or "based on election" in the Polity 4 dataset (XRCOMP is equal to 2 or 3)

3. competitiveness of participation is coded as at least "suppressed" in the Polity 4 dataset (PARCOMP is greater than or equal to 2)

Detailed description of the coding procedures of the above variables can be found in Marshall and Jaggers (2002). 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, while for the measure of other features of a country, like trade openness, income and education, all the available data points were used in the computation of averages.

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.

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).

1.7 Conclusion

Scholars (e.g., Adserà et al. 2003) and international organizations (e.g., for a clear statement from the World Bank, see Stapenhurst 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 is 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 subsection 1.6.3 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.

1.8 References

Ades, Alberto, and Rafael Di Tella. 1997. "National Champions and Corruption: Some Unpleasant Interventionist Arithmetic." *The Economic Journal*107:1023:1042.

Ades, Alberto, and Rafael Di Tella. 1999. "Rents, Competition, and Corruption." *American Economic Review* 89:982-993.

Adserà, Alicia, Carles Boix, and Mark Payne. 2003. "Are You Being Served? Political Accountability and Quality of Government." *JLEO* 19:445-90.

Austen-Smith, David. 1987. "Interest Groups, Campaign Contributions and Probabilistic Voting." *Public Choice* 54:123-139.

Baron, David P. 1994. "Electoral Competition with Informed and Uninformed Voters." *APSR* 88:33-47.

Besley, Timothy, and Andrea Prat. 2006. "Handcuffs for the Grabbing Hand? The Role of the Media in Political Accountability" *American Economic Review* 96(3):720-36.

Barro, Robert J. 1973. "The Control of Politicians: An Economic Model." *Public Choice* 14:19-42.

Barro, Robert J. 2000. ŞInequality and Growth in a Panel of CountriesŤ. *Journal of Economic Growth* 5:5-32.

Brunetti, Aymo, and Beatrice Weber. 2003 . "A Free Press is Bad News for Corruption."

Journal of Public Economics 87:1801-24.

Canache, Damarys, and Michael Allison. 2003. "Corrupted Perceptions: The Effect of Corruption on Political Support in Latin America." Paper presented at the XXIV Congress of the Latin American Studies Association, Dallas, Texas.

Chang, Eric C.C., and Miriam A Golden. 2004a. "Electoral Systems, District Magnitude, and Corruption." Paper presented at a meeting on political accountability, Wasada University, Tokyo.

Chang, Eric C.C., and Miriam A. Golden. 2004b. "Does Corruption Pay? The Survival of Politicians Charged with Malfeasance in the Postwar Italian Chamber of Deputies." Paper presented at the Annual Meeting of the APSA, Chicago, 2-5 September 2004.

Christensen, Ray. 1998. "The Effect of Electoral Reforms on Campaign Practices in Japan: Putting New Wine into Old Bottles." Asian Survey 38: 986-1004.

de Sousa, Luís. 2005. "Challenges to Political Financing Regulation: Sound External Monitoring/Enforcement and Sensible Internal Party Accountability." Discussion paper 5-12, Asia Pacific School of Economics and Government, The Australian National University.

Easterly, William and Ross Levine. 1997. "AfricaŠs Growth Tragedy: Policies and Ethnic Divisions." *QJE* 112:1203-50.

Fackler, Tim, and Tse-min Lin. 1995. "Political Corruption and Presidential Elections, 1929-1992." *The Journal of Politics* 57:971-93.

Ferejohn, John. 1986. "Incumbent Performance and Electoral Control." *Public Choice* 50:5-25.

Fisman, Raymond, and Roberta Gatti. 2002. "Decentralization and Corruption: Evidence across Countries." *Journal of Public Economics* 83.

Fisman, Raymond, and Edward Miguel. 2006. "Cultures of Corruption: Evidence from Diplomatic Parking Tickets". Unpublished manuscript, Columbia University Gradu-

ate School of Business.

Freedom House. Various years. *Freedom of the Press: A Global Survey of Media Independence.* New York: Freedom House.

Gerring, John, and Strom C. Thacker. 2004. "Political Institutions and Corruption: The Role of Unitarism and Parliamentarism."*British Journal of Political Science* 34:295-330.

Gerring, John, and Strom C. Thacker. 2005. "Do Neoliberal Policies Deter Political Corruption?" *International Organization* 59: 233-254.

Gingerich, Daniel W. 2004. "On Unstable Grounds: Parties, Patronage, and Political Corruption in Contemporary Bolivia." Paper presented at the 2004 Annual Meeting of the APSA.

Golden, Miriam A., and Eric C.C. Chang. 2001. "Competitive Corruption: Factional Conflict and Political Malfeasance in Postwar Italian Christian Democracy." *World Politics* 53:588-622.

Golden, Miriam A. 2003. "Electoral Connections: The Effects of Personal Vote on Political Patronage, Bureaucracy and Legislation in Post-War Italy." *BJPS* 33:189-212.

Golden, Miriam A., and Lucio Picci. 2005. "Proposal for a New Measure of Corruption, Illustrated with Italian Data." *Economics and Politics* 17:37-75.

Grossman, Gene M., and Elhanan Helpman. 2001. *Special Interest Politics.* Cambridge, MA: MIT Press.

Heywood, Paul. 2002. "Analysing Political Corruption in Western Europe: Spain and the UK in Comparative Perspective." in Donatella della Porta and Susan Rose-Ackermann (eds.), *Corrupt Exchanges: Empirical Themes in the Politics and Political Economy of Corruption.* Baden-Baden:Nomos.

Heston, Alan, Robert Summers and Bettina Aten. 2002. *Penn World Table Version 6.1.* Center for International Comparisons at the University of Pennsylvania (CICUP).

Kunicova, Jana, and Susan Rose-Ackerman. 2003. "Electoral Rules and Constitutional

Structure as Constraints on Corruption." Unpublished manuscript, Department of Political Science, Yale University.

Kaufmann, Daniel, Aart Kraay, and Pablo Zoido-LobatŮn. 1999. "Governance Matters." World Bank Policy Research Working Paper 2196.

Kaufmann, Daniel, Aart Kraay, and Massimo Mastruzzi. 2005. "Governance Matters IV: Governance Indicators for 1996-2004." Unpublished manuscript, World Bank Institute.

LaPorta, Rafael, Florencio Lopez-de-Silanes, Andrei Shleifer and Robert Vishny. 1999. "The Quality of Government." *JLEO* 15:222-279.

Lipset, Seymour Martin. 1960. *Political Man: The Social Bases of Politics.* Garden City, N.Y.: Doubleday.

Lerner, Daniel. 1958. *The Passing of Traditional Society : Modernizing the Middle East.* New York : Free Press.

Marshall, Monty G., and Keith Jaggers. 2002. *POLITY IV PROJECT: Dataset UsersŠ Manual.* Center for International Development and Conflict Management, University of Maryland, College Park. www.cidcm.umd.edu/inscr/polity

Montinola, Gabriella, and Robert Jackman. 2002."Sources of Corruption: A Cross-Country Study." *British Journal of Political Science* 32:147-70.

Myerson, Roger B. 1993. "Effectiveness of Electoral Systems for Reducing Government Corruption: A Game-Theoretic Analysis." *Games and Economic Behavior* 5:118-32.

Olken, Benjamin. forthcoming. "Corruption and the Costs of Redistribution: Micro Evidence from Indonesia." *Journal of Public Economics.*

Olken, Benjamin. 2005. "Monitoring Corruption:Evidence from a Field Experiment in Indonesia." Unpublished manuscript, Department of Economics, Harvard University.

Persson, Torsten, Gerard Roland, and Guido Tabellini. 1997. "Separation of Powers and Political Accountability." *Quarterly Journal of Economics* 112:1163-1202.

Persson, Torsten, Guido Tabellini, and Francesco Trebbi. 2003. "Electoral Rules and

Corruption." *Journal of the European Economic Association* 1(4):958-989.

Puglisi, Riccardo. 2006. "Being the New York Times: The Political Behaviour of a Newspaper." Unpublished manuscript, Department of Political Science, Massachusetts Institute of Technology.

Reinikka, Ritva, and Jakob Svensson. 2004. "Fighting Corruption to Improve Schooling: Evidence from a Newspaper Campaign in Uganda". Unpublished manuscript, Institute for International Economic Studies, Stockholm University.

Reporters Without Borders. Various Years. "Annual Worldwide Press Freedom Index." Internet site http://www.rsf.org.

Rundquist, Barry S., Gerry S. Strom, and John G. Peters. 1977. "Corrupt Politicians and Their Electoral Support: Some Experimental Observations." *American Political Science Review* 71: 954-963.

Stapenhurst, Rick. 2000. "The Media's Role in Curbing Corruption." Unpublished manuscript, World Bank Institute.

Treisman, Daniel. 2000. "The Causes of Corruption: A Cross-National Study." *Journal of Public Economics* 76:399-457.

Transparency International. Various years. *Corruption Perception Index.* Berlin: Transparency International.

UNESCO Institute for Statistics. 2004. Core Theme: Literacy.

Internet site http://www.uis.unesco.org.

von Alemann, Ulrich. 2002. "Party Finance, Party Donations, and Corruption." in Donatella della Porta and Susan Rose-Ackermann (eds.), *Corrupt Exchanges: Empirical Themes in the Politics and Political Economy of Corruption.* Baden-Baden:Nomos.

Weyland, Kurt. 1998. "The Politics of Corruption in Latin America." *Journal of Democracy* 9:108-21.

World Bank. 2004. *World Development Indicators.* Internet site devdata.worldbank.org

Chapter 2

Domesticated Publishers, Silenced Journalists: The Political Economy of Press Freedom and Press Subjugation

Abstract

I provide a general theoretical framework to understand when the media are able and willing to provide readers with information regarding potential political malfeasance of the incumbent politician. I model competition among a generic number of publishers and newspapers. Politicians can affect media content in two ways: they can use legal sanctions against editors, or they can exert pressure on publishers to induce them to "kill" a story. If a politician sues a journalist, the case is decided by a court that might be more or less independent from the politician. Publishers vary in the relative weights they assign to market profits and to rewards derived from loyalty to the politician. Equilibria in which information is revealed to voters/readers or remains undisclosed are characterized, and the economic and legal preconditions for a well-functioning media market are analyzed.

In this chapter, I provide a general theoretical framework that can be used to understand when the media are able and willing to provide readers with information regarding potential political malfeasance of the incumbent politician(s). I model competition among a generic number of publishers and newspapers. Politicians, that prefer newspapers to not report negative information regarding their behavior, can sue newspaper editors. If a politician sues a journalist, the case is decided by a court that might be more or less independent from the politician. Furthermore, the preferences of publishers might be influenced by political concerns, namely loyalty towards the incumbent administration, a factor that has been identified by the literature as a hindrance to the ability of privately-owned media to provide the information needed by citizens of democracies in order to hold politicians accountable (Fox 1998; Hughes and Lawson 2004, 2005; Lawson 2002; Waisbord 1998, 2000). Publishers vary in the relative weights they assign to market profits and to rewards derived from loyalty to the politician: some are more profit-minded, while some are driven mainly by political loyalty.

More specifically, in the model there are N newspapers, and each newspaper has an editor and a publisher. I analyze the strategic interaction that takes place inside the newspaper. The preferences of the editor and the publisher might be not aligned for two reasons: (i) editors that work for profit-minded publishers might want to censor themselves out of fear of a legal action initiated by the politician whose malfeasance they report; (ii) politically loyal publishers might want the newspaper not to disclose information which could harm the politician, even if the editor has a story worth publishing. On the other hand, the preferences of publisher and editor might be aligned if the publisher is profit-oriented and the editor has a story worth publishing, or if the editor does not want to write a story (for fear of legal consequences) and the publisher is politically loyal.

All the N pairs of editors and publishers solve their strategic problem; moreover, both categories of players take into account the sanctions and rewards that the politician can

provide them. In turn, the market aggregates their decisions —that affect the content of the newspaper— and allocates revenues to each newspaper according to its informative content, and the number of competitors that a newspaper faces. Each publisher-editor interaction is in turn affected by the expectations regarding market revenues, and therefore the expectations regarding the behavior of the $N-1$ other newspapers.

Some of the predictions of the model are intuitive and in line with the conventional wisdom: market competition, larger potential market revenues, and legal protection of freedom of speech increase the amount of information that the public receives. Moreover, it is more difficult for the incumbent politicians to buy the silence of the press when the market is more competitive. Yet, neither market competition nor legal protection are one-size-fits-all solutions to the problem of lack of quality information regarding the behavior of politicians. The most important insight that the model provides has to do with the observational equivalence of equilibria sustained by legal restrictions to the freedom of the press and those sustained by the fact that rewards to political loyalty are more attractive for publishers than market profits. While observationally equivalent, those I call "silenced" (i.e., legally restricted) and "domesticated" (i.e., politically loyal) media markets require, in the light of the model, very different policy interventions if the goal is to turn them into well-functioning media markets, that provide information to readers / voters. If the restrictions to freedom of the press are due to the political loyalty of publishers, then changes in the legal (i.e. freedom of expression) environment might be fruitless, while improving competition might break a "domesticated" equilibrium. If the restrictions are due to the legal harassment of journalists, policies that try to enhance the quality of the information available to readers by improving competition among outlets might have no effect, or, under certain conditions, might make it harder for media outlets to break out of a "silenced" equilibrium. It is therefore important to focus on these two different reasons why the press is limited when analyzing real-world cases. If the origin of the imperfect functioning of the

press is not understood, policy advice cannot be provided.

The model also points to some pessimistic conclusions regarding the media as providers of useful political information. The most general is that a well-functioning media market, i.e., one that provides readers with *reliable* information, requires very specific condition to be sustained, and it is (in an informal sense) unstable: markets that are too profitable might, under certain conditions, create incentives to resort to sensationalism (i.e. publish unreliable information in order to attract readers); markets that are too crowded (in other words, populated by outlets that are very small in size) might be silenced more easily using legal harassment (e.g., defamation lawsuits).

Finally, rewards to the political loyalty of publishers usually work in the direction one intuitively expects them to work: they allow politicians to buy the silence of newspapers. Yet, in some given conditions, they might have a perverse effect: they eliminate some competitors from the market for informative newspapers, and indirectly create incentives to become informative (or sensationalist) for those newspapers that do not value loyalty rewards very much.

This model contributes to the recent thread of formal theory on the media. The main focus in many of the contributions is ideological bias in news coverage (Baron 2006; Gentzkow and Shapiro 2006; Mullainathan and Shleifer 2005; Petrova 2006, 2008; Strömberg 2004). This is not the focus of the present paper. Some contributions, on the other hand, analyze the relationship between accountability-oriented information and economic and political incentives of media outlets (Besley and Prat 2006; Egorov, Guriev, and Sonin 2006; Gentzkow, Glaeser, and Goldin 2006; Supachalasai 2005). Suphachalasai (2005) and Egorov et al. (2006) focus on how the media can monitor bureaucratic corruption, while Besley and Prat (2006) analyze the media in the context of an accountability model of elections, and Gentzkow et al. (2006) present a model in the context of the historical analysis of the emergence of an independent press in the United States.

The model presented here is similar in focus to, and complements the findings of the one presented in the additional material for Besley and Prat (2006). There are many important differences. Besley and Prat (2006) do not take into account the conflict between journalists and owners of the newspapers, and they model censorship as an all-of-nothing probabilistic event (i.e., with some probability the politician can censor *all* the newspapers). Here legal actions against journalists are modeled, and court independence is treated as a parameter. In Besley and Prat (2006), the politician observes the quality of the signal received by the newspaper, while in the model presented here, the quality of the signal (the lead) is private information of the newspaper editor. In this chapter, the loyalty rewards are selectively withdrawn based on the *content* of the newspaper while in Besley and Prat (2006) the politician bribes the newspapers conditioning on the *signal* received by the newspaper. More substantively, I highlight the effects of legal protection (and curtailment) of freedom of expression on media market outcomes, and analyze the incentives for self-censorship, while in Besley and Prat's (2006) analysis, censorship is modeled in reduced form. The model presented here identifies three families of equilibria of the news market and links them to different regimes of legal protection of freedom of expression.

2.1 The model

2.1.1 Players

The market To keep the model focused on the main issues, that are the legal environment in which newspapers operate and the possible ownership-related bias in reporting, in the body of the paper I provide a very simple characterization of the market for newspapers: an oligopoly model with a linear demand (price) function. In subsection 2.4.2, I provide an alternative characterization of the market, that resonates with the claims of some of the qualitative literature cited above and constitutes a formalization of an intuition derived from

the historical evidence of some Latin American cases.

In the simple formalization presented here, newspapers can either be **informative**, if they feature a corruption story, or **uninformative** otherwise. The demand for informative newspapers is represented by a price $p = V_0 - \beta X$ where X is the total quantity supplied. The revenues for non-informative newspapers are normalized to 0. If a newspaper is informative, it supplies one unit and therefore receives p as revenue. Moreover, I assume that $V_0 - \beta N > 0$, where N is the number of *potential* competitors on the market for informative newspapers. Formally, a market is a mapping from w, the number of informative newspapers, to Π, the revenues of an informative newspaper.

Editors Editors (female in the following) control the content of newspapers, and decide whether to write a story or not. At the beginning of the game, they are provided a lead, that links the politician to one specific corruption event. The lead can be thought of as a piece of information reported by someone who has special access to the politician. For instance, in 2004 one of the leaders of a dissident faction of the Green Environmental Party of Mexico (PVEM) secretly filmed the head of the party requesting a multi-million dollar bribe to influence Cancun city officials to facilitate the concession of a construction permit. The video was then made available to TV stations (Sourcemex 2004). In Brazil in 2005, the weekly *IstoÉ* interviewed the former personal assistant of an entrepreneur that allegedly managed the illegal accounts of the Workers Party. She declared that she had seen her former employer handling large amounts of cash, and that he had frequent contacts with the presidential chief of staff José Dirceu and other top officials of the Workers Party.

As in these examples, the potential sources have personal motivations to speak: they might come from a faction hostile to the politician they are revealing information about, or they might be disgruntled former employees. Hence, they might have incentives to misrepresent reality. A journalist can never be sure whether the facts that are reported to her are true. Still, she can assess, using her professsional skills, the probability that the

allegations are factual. Formally, the editor observes a signal $S \in \{S^H, S^L\}$ where S is the probability that the events mentioned in the lead are true. In particular, S represents the probability that a story based on the lead would be ruled to be truthful by an independent court if a legal action were initiated by the politician. A journalist can never be sure whether the facts that are reported to her are true. Still, she can assess, using her professsional skills, the probability that the allegations are factual. The signal is private information inside the media outlet, but the probabilities of a signal S^H or S^H are common to all outlets, and known by all agents. A strategy for an editor is a mapping from the signal S to a story $\omega \in \{0, 1\}$.

The salary the editor receives is some share α of the revenues Π of the newspaper she edits. The parameter is exogenous and depends on the bargaining power of editors, that in turn depend on outside opportunities in other jobs, etc. This simple formulations captures the main intuition, namely that an editor prefers, all else equal, to head a newspaper that is informative and successful from the point of view of readership. Assume also that, when indifferent between writing and not writing, editors do not write a story.

Editors can be brought to court by a politician if they write a story. If the court rules against the editor, she is inflicted a sanction $P > 0$. The briefs issued by international organizations of reporters, as well as historical accounts, are packed with examples of politicians that decide to bring to court journalists who uncover corruption scandals. The following are some examples, drawn, like the rest of the examples throughout the paper, from Latin American cases. The Reporters Sans Frontières annual reports on Mexico feature lists of journalists victims of legal harassment. In many cases, legal complaints are filed by local level politicians and bureaucrats. A reporter for the daily *Cuarto Poder* was arrested three times over the years, after having been accused of libel by a member of the Chiapas School Building Committee: in 2003 (Reporters Sans Frontières 2004), in 2005, and again in 2006 (Reporters Sans Frontières 2007). According to the 2007 report, forty

reporters were being prosecuted for libel just in the state of Chiapas (Reporters Sans Frontières 2007). A reporter for the daily *Milenio* in the state of Chihuahua was charged with libeling a state prosecutor and arrested (Reporters Sans Frontières 2004). The managing editor of the magazine *Bi* and the daily *Imagen* in Zacatecas was held by the police for a libel complaint filed against him by a city council official. (Reporters Sans Frontières 2004) Higher level politicians resort to the same type of strategy: in 2005, a member of President Fox's family filed a complaint against the author of two books investigating the presidential family and their entourage. The journalist was then put under house arrest (Reporters Sans Frontières 2005b). A columnist for the Ecuadorian daily *El Comercio* accused former President Febres-Cordero and other politicians of favoring the interests of the local oligarchy and was sentenced to 6 months in prison (Committee to Protect Journalists 2003). President Menem of Argentina and the members of his staff flooded journalists with lawsuits when several corruption scandals and other negative information were reported in newspapers (Verbitsky 1997).

Publishers Risk-neutral publishers (male in the following) assign value both to market profits and to the rewards provided to them by politicians in exchange for their loyalty. Each publisher owns a newspaper, and publishers have control of the content of the newspaper, in the sense that the agreement of both editor and publisher are required for a story to be published: if publisher i thinks that it is in his interest not to publish a story written by editor i, he can "kill" it. Denote the decision of the publisher as $K_i = 1$ if the editor kills the story, $K_i = 0$ if the editor does not kill it, and lets the story be released to the public. If the publisher kills the story, then the newspaper is non-informative. Call **supportive** a publisher that would not kill a story, if his editor were to write one. Call w^* the number of supportive publishers.

The $N > 1$ publishers vary in their preferences: some value political rewards more, other are more profit-oriented. Their preferences can be represented, for the generic pub-

lisher i, by a combination of political rewards $R > 0$ and profits $(1 - \alpha)\Pi$ of the form $\gamma_i R + (1 - \alpha)\Pi_i$. The parameter γ_i ranges in the $(0, 1]$ interval.[1]

In this model, the reward for political loyalty R is not some transfer payment from the politician to the publisher (as for instance the "bribes" that politicians in Besley and Prat 2006 can use to silence press outlets), because it does not enter the utility function of the politician. Moreover, the political reward R cannot be transferred to the editor, i.e. cannot be used by a publisher to buy the editor's silence. It is more akin to an ideological preference. For instance, the family that owns the major TV network in Mexico, *Televisa*, was considered politically close to the dominant PRI. The generational change and the takeover of the management by a younger member of the family, more interested in increasing the company's profits than in cultivating political connections, lead to a change in the outlook in the political news coverage and in particular to the hiring of a professional editorial staff and a more balanced coverage of political parties in the 1997 elections (Lawson 2002 p.109). Similarly, in Brazil, broadcasting and publishing conglomerate *Globo* is usually regarded to be close to the conservative political establishment (Fox 1998).

Yet, the interpretation of R can be broad, to encompass any (costless) way in which a politician can reward or punish, by withdrawing a reward, a publisher. For instance, in the early 90s in Argentina, President Menem resorted to intimidation, such as selectively cutting government advertising, in retaliation for negative press coverage (Financial Times, 24 June 1993). Menem justified the cuts in government advertisment declaring that he was not willing to "pay them to hit me" (Waisbord 2000, p.65). Similar allegations regarding skewed purchases of government advertising in Argentina were made for president Kirchner (Committee to Protect Journalists 2004) and for provincial governors (Reporters Sans

[1]The assumption that rewards and weights are positive restricts the analysis to political loyalty of publishers. If R or γ were allowed to be negative, the model would be one of publishers' hostility against the politician: publishers might want their newspapers to feature stories that negatively depict politicians not because the public (from which profits come) wants to read them, but because publishers themselves receive a reward from being hostile to the politician regardless of the market revenues that this stance generates.

Frontières 2005a).[2]

The different weights assigned to political rewards might originate, in the simplest interpretation, from an ideological preference, or, as suggested by Waisbord (2000, p.85), from the fact that independent dailies, owned by media-only firms, might be less amenable to political pressures, and therefore less dependent on political connections than news outlets owned by wide-ranging business holdings. Indeed, one of the ways in which politicians might withdraw the reward R if a newspaper publishes negative information regarding them is by damaging the conglomerate's interests in some other economic activity.

The publisher does not pay the political cost (i.e. the withdrawal of the political rewards R) for the mere fact that the editor writes a story. But if the publisher demonstrates that he backs the editor's decision to feature a negative story regarding the politician (be it true or false, based on reliable or unreliable sources), then the publisher has to give up the political loyalty reward. An example of a direct intervention to induce the owners of the news outlet to "kill" a story is provided by Verbitsky (1998, p.329-331): a television station canceled the broadcast of a documentary about the sources of funding for the construction of Menem's vacation house. After the decision of the station management not to air the reportage, the secretary of the presidential press office, in a phone conversation with one of the journalists that ran the program, allegedly asked whether the journalist knew "how many favors" the station manager owed the president's administration.

The assumption that loyalty takes the form of silence is consistent with some historical accounts of Latin American cases. For instance, in Mexico the political loyalty of newspapers, prior to the entry of investigative newspapers like *Reforma*, and television news

[2]The reward to loyalty R could be capturing the fact that politicians can control the allocation of advertisement for state-owned corporations or official government campaigns. In this case, the initial allocation across outlets in this model is considered exogenous, but politicians manipulate whether the reward is actually provided or it is withdrawn. At the same time, the withdrawal is not considered a strategic decision of the politician: it is simply a consequence of the fact that the publisher decides not to kill a story that negatively portrays the politician. For this reason, I prefer to interpret it as a political preference. Nonetheless, variations in the size of R relative to potential market profits might be capturing the variations of the dependence of publishers on politicians and government-funded advertisement for their survival.

broadcast prior to the change in the editorial line of the *Televisa* newscast, took the form of a simple lack of investigative or original informational content about politics. (Lawson 2002) Similarly, in Argentina prior to the success of *Pagina 12*, the daily that started "watchdog" journalism after the transition to democracy, the main newspapers, *Clarín* and *La Nación*, simply did not feature original content on politics, much less investigative content on political malfeasance. (Waisbord 2000).

For convenience, in the following I adopt a simplified formalization for the distribution of the γs. Rank the N publishers in descending order according to their preferences for profits compared to political rewards, give them order numbers $1, 2, \ldots, N$ and assume that the distribution of the γs is such that for the publisher i, $\gamma_i = \frac{i}{N}$. This choice regarding the distribution of the γs embeds the assumption that in a context in which there are more publishers (i.e. N is larger) the most profit-oriented publisher values political loyalty less than the most profit-oriented publisher in a context in which there are fewer publishers (i.e. N is smaller). This assumption seems intuitively reasonable: for instance, a larger number of publishing firms might lead to more diversity in the political outlook of the publishers and therefore to a larger spread of the weights assigned to profits and loyalty rewards around the mean. Moreover, the assumption greatly simplifies the explicit solution.

The politician The politician does not observe the signals S received by the editors, but observes the newspaper contents, and knows whether the events reported in a story are true or false. If negative news are reported on the politician, he suffers a fixed and exogenous political consequence, V_{Rep}. Initiating legal action and obtaining a ruling against the editor allows the politician to avoid the political consequences derived from the publication of negative news regarding him. The cost that a politician must pay to make the court inflict a sanction on the editor is a function of legal protection of press freedom and independence of the courts of law, which are modeled here as non-strategic actors. Formally the politician can "buy" a verdict at a price $C(t)\phi$ where $t \in \{\text{True}, \text{False}\}$, and ϕ is a parameter that

captures some general dimension of freedom of expression. Politicians know whether the story the editor decided to write is based on true facts or not: after the case is initiated by the politician, the court observes whether the story is true or not and issues a ruling. The decision of the court, and the political pressure exerted on it by the politician, are black-boxed here. The cost, for the politician, of inducing the court to rule against an editor, conditional on the truthfulness or falsity of the story, is assumed to be the following:

- if the story the editor writes is truthful then the politician can induce the court to rule against the editor at a cost $C(T)\phi$
- if the story the editor writes is a hoax, then the cost of a ruling against the editor is $C(F)\phi < C(T)\phi$

The model captures different dimension of freedom of the press in its meaning of freedom from direct political pressure enjoyed by journalists (as opposed to indirect pressure that might come from politically-minded publishers). The first dimension has to do with the cost paid by the politician to obtain a ruling against the editor. Substantively, the cost depends on court independence and on the details of the legal provisions that regulate freedom of speech. In the model, if ϕ is low, then a) it is cheaper for a politician to induce the court to rule against the editor b) the difference between the cost of obtaining a ruling against an editor that wrote a truthful story and an editor who wrote a hoax is smaller.

The second dimension of freedom of the press is the harshness of the sanction for an editor following a ruling, captured by P. An example of a low P is the right of the politician to reply, or the declaration by the court that the allegations are "null and void", as happens in some northern European democracies (Amponsah 2004); a fine or the payment of reparations is an example of a medium-low P. Criminal defamation involving prison sentences is at the opposite extreme, representing a very high P. Legal regimes differ along these two dimensions: probability of an unfavorable ruling given a certain behavior, and consequences of such a ruling.

2.1.2 Sequence of play

1. Nature randomly selects the N independent signals S_i
2. Each editor i observes her S_i and decides whether to write a story or not, unaware of what other editors observe and decide
3. Each publisher i decides whether to kill the story or not
4. The politician observes the content of the newspaper and decides whether to bring to court the editors or withdraw the loyalty rewards
5. Newpapers are printed and readers make their purchasing decision; revenues are realized.

2.2 Equilibria

An equilibrium to this game is a profile of strategies such that:

- the strategy of the editor is optimal given the expected market revenues, the strategy of the publisher, and the strategy of the politician;
- the strategy of the publisher is optimal given the expected market revenues, the strategy of the editor, and the (automatic) loss of the loyalty rewards if the newspaper is informative;
- the strategy of the politician regarding legal action is optimal given the strategy of the editor and the publisher;
- the revenues are allocated by the market based on the informational content of the newspapers.

In the remainder of the paper, I focus on pure strategy equilibria. In subsection 2.4.3 I provide a sketch of a mixed-strategy equilibrium for one of the two configurations of parameters such that pure strategy equilibria do not exist.

First of all, notice the following feature shared by all equilibrium strategies of the publishers. In equilibrium, if a publisher with $\gamma_i > \gamma_j$ is supportive, then also the publisher with γ_j is supportive. In other words, if it is optimal for a given publisher to enter the market for informative newspapers, then it is optimal also for all those that assign less value than i does to political rewards. This follows from the fact that, at an equilibrium, if the expected value of the market revenues, $E(\Pi)$, is such that $(1-\alpha)E(\Pi) \geqslant \gamma_i R$ (which is the condition for publisher i to enter) then the condition holds also for all the publishers that have lower γ. Then, a pure strategy equilibrium is characterized by a threshold γ^* such that the publishers with $\gamma \leq \gamma^*$ enter and the other keep the political rewards. The result is analogous to that for oligopoly (and auction) models with random cost of entry that is private information of the entrant (bidder) (Kaplan and Sela 2003, 2006). Here, the "cost of entry" (the loss of the political reward) is known. The only element of private information has to do with the fact that (in some situations) the publisher might want to publish informative content but the editor does not want to write a story, because she is deterred by the threat of legal harassment. Hence each publisher is uncertain regarding whether the other potential competitors are going to enter the market for informative newspapers.

Court rulings If the newspaper does not report any negative information about the politician, then the politician is not going to take any action. On the other hand, after observing that an editor has written a story on him, the politician must choose whether to start legal action against the editor. The politician knows whether the news story is truthful or not. It is more costly to induce a court to rule against an editor who wrote a truthful story, than against an editor who followed a lead that turned out to be a hoax. Legal actions against

editors are handled by a court that might be more or less independent. [3]

The politician chooses to start a legal action following a story containing false allegations only if the value of his reputation (that is salvaged by the ruling against the editor) is higher than the cost of a ruling against the editor. Formally, the politician chooses to pursue legal remedy after false allegations only if $V_{\text{Rep}} > C(F)\phi$ and after true allegations only if $V_{\text{Rep}} > C(T)\phi$. Three regimes of legal protection of freedom of journalists from direct political pressure can be identified [4]:

1. a **repressive** legal regime, such that initiating legal action against the editor is the optimal action for the politician even if the information reported is true, formally, $\phi \leqslant \frac{V_{\text{Rep}}}{C(T)}$

2. a **truth-seeking** legal regime, which is such that only hoaxes induce the politician to initiate legal action, formally $\frac{V_{\text{Rep}}}{C(T)} < \phi < \frac{V_{\text{Rep}}}{C(F)}$

3. a **libertarian** legal regime, in which it is so costly for a politician to induce the court to issue a ruling against a newspaper editor, that it is optimal for the politician to not initiate legal action even if the allegations published are clearly false, formally $\phi \geqslant \frac{V_{\text{Rep}}}{C(F)}$

As a consequence, the probability ξ of a ruling against the editor, given a signal S, the decision to write a story, and the decision of the publisher not to kill the story, in the three

[3]Equivalently, if the allegations made by the newspaper are true, the public could consider the legal action as an act of arrogance of the politician, while if the allegation are false, the public might think that the politician has a right to protect his reputation. I do not analyze here formally what might be the mechanism that insures that there is a different cost to obtain a ruling against an editor following the publication of truthful vs. false stories, I simply assume that some mechanism in this direction exists.

[4]One could also identify a fourth regime, that does not emerge from the simple characterization of court decisions provided here. Assume that the court rules against the editor only if she decided to write a story based on the weak signal, and the story turns out to be a hoax. Regardless of truthfulness, the court never rules against an editor that wrote a story based on a strong lead. This is similar to the standard followed in the contemporary United States, according to which courts have to take into account both the falsity of the story and the information that the journalist has about its potential falsity. Then, the probability of a ruling against the journalist is $1 - S_L$ if the editor writes after a weak signal, 0 after a strong signal. This case is analyzed separately below.

regimes is

$$\xi = \begin{cases} 1-S & \text{if} \quad \frac{V_{\text{Rep}}}{C(T)} < \phi < \frac{V_{\text{Rep}}}{C(F)} \\ 1 & \text{if} \quad \phi \leqslant \frac{V_{\text{Rep}}}{C(T)} \\ 0 & \text{if} \quad \phi \geqslant \frac{V_{\text{Rep}}}{C(F)} \end{cases}$$

In a repressive (truth-seeking) regime an editor that publishes a negative (false) story about the incumbent politician is always punished. The substantive implications that are drawn from this analysis would be unchanged if it were the case, for instance, that even in a repressive regime an editor was punished only with some probability, *as long as the probability of being punished does not depend on the truthfulness of the allegation reported.* In this case, P can be considered the expected value of the lottery that decides the sanction.

The Editor's choice. Call the probability of a ruling against the editor ξ. Denote by $K_i \in \{0,1\}$ the decision of publisher i to kill ($K = 1$) or not kill ($K = 0$) the story that the editor writes. If the editor writes a story, her expected utility is

$$E(U) = \begin{cases} \alpha E((V)) - \xi P & \text{if} \quad K_i = 0 \\ 0 & \text{if} \quad K_i = 1 \end{cases}$$

while she receives 0 for sure if she does not write a story.

Therefore the optimal choice for the editor is

$$\omega = \begin{cases} 1 \quad \text{if} \quad \xi \leqslant \frac{\alpha E((V))}{P} \quad \text{and} \quad K_i = 0 \\ 0 \quad \text{if} \quad \xi > \frac{\alpha E((V))}{P} \\ 0 \quad \text{if} \quad K_1 = 1 \end{cases}$$

The decision of the editor depends on the expectations regarding the market revenues of the newspaper she heads and the behavior of the publisher, and on the probability of being punished. The editor writes a story only if she expects the publisher not to kill the story, and also if the expected monetary rewards compensates the risk of being sanctioned by a court.

Having characterized the strategies of the players, I can now analyze different types of equilibrium.

2.2.1 Domesticated equilibrium

For some combination of parameter values, there is an equilibrium in which even the most profit-oriented publisher is not willing to publish a story, regardless of the decision of the editor. Therefore, the number of "supportive" publishers is given by $w^* = 0$ and the number of informative newspapers is $w = 0$.

This equilibrium is sustained if the payoff of a deviation from uninformative to informative *for the most profit-oriented publisher*, i.e. the publisher with $\gamma = \frac{1}{N}$, is not optimal, formally

$$(1 - \alpha)(V_0 - \beta) < \frac{R}{N} \tag{2.1}$$

The domesticated equilibrium is sustained only if the potential revenues from the mar-

ket are small compared to the political rewards, and if the the number of potential competitors is small. Equation 2.1 defines a threshold of potential profitability of the market, $V_0^*(R, N, \alpha) = \frac{R}{N(1-\alpha)} - \beta$, above which the domesticated equilibrium is not sustained.

Equation 2.1 also defines, for every potential profitability of the market V_0, every amount of political rewards R and every compensation to editors α, a threshold N^* according to

$$N^*(V_0, \beta, R, \alpha) = \frac{R}{(1-\alpha)(V_0 - \beta)} \tag{2.2}$$

If the number of potential competitors is larger than N^*, it is not sustainable to domesticate a news market, keeping the potential profitability of the market and of the rewards fixed.

2.2.2 Silenced equilibrium: sheer repression vs. the "chilling effect" of sanctions

In subsection 2.2.1 I explore the equilibrium in which no newspaper is informative, as a consequence of the political loyalty of publishers, and I call this a domesticated news market. In this subsection I explore the case in which the fear of legal consequences induces editors to practice self-censorship, i.e. not write a story regardless of the reliability of the lead they receive.

If the editor writes a story, she receives her share α of the market revenues, and a potential sanction P with probability ξ, while she receives 0 if she remains silent, therefore she writes if

$$\alpha E(\Pi) - \xi P > 0$$

The silenced equilibrium is sustained if no editor finds it in her interest to write, given that no other editor writes and therefore no newspaper is informative. Therefore, in a

repressive regime, where $\xi = 1$, this equilibrium is sustained if

$$P > \alpha(V_0 - \beta) \tag{2.3}$$

and in a truth-seeking regime, in which the probability ξ of being sanctioned is equal to 1 minus the reliability of the lead received S, it is sustained if

$$P > \frac{\alpha}{(1 - S^H)}(V_0 - \beta) \tag{2.4}$$

while it is never an equilibrium in a libertarian regime. Equation 2.3 defines a threshold $P_r^* = \alpha(V_0 - \beta)$ such that, if the actual harshness of punishment is $P > P_r^*$, the silenced equilibrium is sustained in a repressive regime. Equation 2.4 defines a threshold $P_t^* = \frac{\alpha}{(1-S^H)}(V_0 - \beta)$ such that if the actual harshness of punishment for writing a hoax is $P > P_t^*$ the silenced equilibrium is sustained in a truth-seeking regime.

Notice that the lack of information in the repressive legal regime is due to the fact that the editor who dares to report negative information is sanctioned with certainty. It has to do, in a sense, with the arrogance of political power. On the other hand, in the truth-seeking legal regime, silence is motivated by the editor's fear of writing a hoax: the sanction for a hoax is so heavy that even reliable (but incompletely verified) leads are ignored. This is what is commonly referred to as the "chilling effect" of draconian defamation laws: even if sanctions are conditioned on truthfulness, journalists prefer not to write for fear of a sanction that, albeit unlikely if the lead is reliable, is highly undesirable.

For any harshness of punishment P, the conditions stated in (2.3) and (2.4) define also the thresholds $\tilde{V_0}^r(P, \alpha, S^H) = \frac{P}{\alpha} - \beta$ in a repressive and $\tilde{V_0}^t(P, \alpha, S^H) = \frac{P(1-S^H)}{\alpha} - \beta$ in a truth-seeking legal regime, such that if the size of the market is above the threshold, the silenced equilibrium is not sustained: when the threshold is crossed, the equilibrium breaks down. These thresholds do not depend on the political rewards that circulate, and

the threshold is always higher (i.e. the market must be potentially more profitable to make silencing unattainable) in a repressive regime than in a truth-seeking regime.

2.2.3 Well-functioning media market.

Assume that we are in a " truth-seeking" regime of rule of law: an editor can be sanctioned only if the story she wrote was a hoax. A well-functioning equilibrium is one in which at least one publisher is supportive, and an editor that receives a reliable lead (the strong signal) writes a story.

In this case, the probability ρ that a supportive outlet is informative is equal to the probability that an editor receives a strong signal, $\Pr(\mathrm{S} = \mathrm{S^H})$. The threshold of political loyalty above which publishers are not supportive (and below which they are supportive) is given by

$$\gamma^* = \frac{(1-\alpha)(V_0 - \beta(1 - \Pr(\mathrm{S} = \mathrm{S^H})))}{R + (1-\alpha)\beta\Pr(\mathrm{S} = \mathrm{S^H})\mathrm{N}} \tag{2.5}$$

In equilibrium, it must be that each editor with a supportive publisher finds it in her interest to write a story only when observing the strong signal. Hence, it must be that the compensation for the editor, given that a proportion[5] γ^* of entrants is going to share the profits, is high enough for her to write after the strong signal, and not write after the weak signal. Hence, it must be that

$$(1 - S^H)P \leqslant \alpha(V_0 - \beta\rho w^*) < (1 - S^L)P$$

Call $P^L = \frac{\alpha E(\Pi)}{1-S^L}$ the sensational threshold below which, in a truth-seeking legal regime, the sensational market is an equilibrium; call $P^H = \frac{\alpha E(\Pi)}{1-S^H}$ the threshold above which the expected rewards do not compensate the risk of writing a story after the strong lead. If the

[5]Here and in the following, I abuse language slightly and I refer to γ^* as a "proportion" of supportive publishers, even though the actual proportion of publishers is the largest γ_i such that $\gamma_i \leqslant \gamma^*$.

expected salary of the editor does not lie in this range, the well-functioning equilibrium is not sustained. The implications of this fact are analyzed at the end of this section. Observe also that in repressive and libertarian regimes, the payoffs of the editor are independent of the signal they receive. Hence they won't separate based on the signal and the well-functioning equilibrium never obtains.

Notice also that the equilibrium expected market revenues of an informative newspaper are given by $\Pi^* = V_0 - \beta\gamma^*\rho N$. Plugging in the expression for γ^* yields

$$\Pi^* = \frac{V_0 R + (1-\alpha)\beta^2\rho(1-\rho)N}{R + (1-\alpha)\beta\rho N} \tag{2.6}$$

2.2.4 Sensationalistic equilibrium

In a sensationalistic equilibrium, there is at least one supportive publisher, and editors who work for supportive publishers write a story regardless of the quality of the lead they receive. This type of equilibrium obtains in the three legal regimes. In the libertarian legal regime, it is the only alternative to a domesticated equilibrium. [6]

In a repressive regime, the editors overlook the signal and write a story regardless of the reliability of the signal if the expected market reward for the editor is large enough that even the *certainty* of a punishment is compensated. Formally, this equilibrium obtains when $\alpha(V_0 - \beta w) > P$.

In a truth-seeking regime, the editors overlook the signal and write a story regardless of the reliability of the signal if the expected market reward for the editor is large enough that even the *risk* of writing a hoax, based on the weak signal, is compensated. Hence, this happens when $\alpha E(\Pi) > \xi P$. In this equilibrium, all the editors that work for a supportive

[6] In this model readers do not take into account the reliability of the news. The only factor that affects their decision is whether there are news or not. Yet, if readers were picky when it came to reliability (i.e. market rewards were a function of reliability) then the returns to sensationalism would be smaller, and therefore some sort of "well-functioning" equilibrium could be sustained also in a libertarian legal regime. A "picky" market would be a substitute for courts.

publisher write a story. Hence $\rho = 1$, and the threshold of entry is given by

$$\gamma^* = \frac{(1-\alpha)V_0}{R + (1-\alpha)\beta N} \tag{2.7}$$

It can be shown that this equilibrium is sustained only if

$$V_0 > \frac{(1-S^L)P}{\alpha}\left(1 + \frac{(1-\alpha)\beta N}{R}\right) \tag{2.8}$$

The substantive interpretation of this inequality is relatively straightforward. If the punishment is relatively mild, compared to the possible revenues, this equilibrium is more likely to be sustained. Well-paid editors (i.e. editors with a large α) are more likely to support a sensationalistic news market. Sensational markets are less likely in a more competitive environment: competition reduces equilibrium revenues for every newspaper, and therefore reduces the temptation of editors to gain the market rewards in spite of a weak lead and in the face of a possible sanction.

One interesting remark can be made about the political rewards. Indeed, the condition above is more likely to hold when political rewards to publishers are more generous. This happens because rewarding some publishers (and buying their silence) reduces competition on the market and therefore increases the revenues of the informative newspapers: as a consequence, it creates incentives for editors to become sensationalistic. In this case, the influence exerted by the loyalty rewards is perverse, indirectly increasing the amount of negative coverage about the politician.

2.2.5 Summary of equilibria

From the discussion above, the following proposition follows.

Proposition 6 (Equilibria). *If $V_0 < V_0^*$, the news market is domesticated. Otherwise, if*

$V_0 \geqslant V_0^*$ *and:*

- $P > P^*$ *and* $\phi < \frac{V_{\text{Rep}}}{C^F}$ *the news market is silenced*
- $P \in (P^L, P^H)$ *and* $\phi \in (\frac{V_{\text{Rep}}}{C^F}, \frac{V_{\text{Rep}}}{C^H})$ *the news market is well-functioning*
- $P \leqslant P^H$ *and* $\phi \leqslant \frac{V_{\text{Rep}}}{C^T}$ *the news market is sensationalistic*
- $P \leqslant P^L$ *and* $\phi \in (\frac{V_{\text{Rep}}}{C^F}, \frac{V_{\text{Rep}}}{C^H})$ *the news market is sensationalistic*
- $\phi \geqslant \frac{V_{\text{Rep}}}{C^F}$ *the news market is sensationalistic*

The following summaries describe substantively the equilibria characterized in proposition 6.

Domesticated Equilibrium If the political rewards are large compared to the profits that publishers can reap from the market if they decide to publish an informative newspaper, no newspaper provides information. An editor has no incentive to write stories because she knows that the publisher would kill it to please the politician and receive the political reward.

Silenced Equilibrium and Chilling Effect This equilibrium obtains under two different legal regimes. In a repressive legal regime, the harshness of the sanction for an editor who dares to write about the politician is such that she prefers to practice self-censorship. She knows that she would be sanctioned for sure. Regardless of what the publishers might desire: even in the absence of political rewards to publishers, no newspaper provides negative coverage of the behavior of politicians. In a truth-seeking legal regime, this equilibrium obtains when the harshness of the sanction for an editor who writes a hoax is very high. The risk of being sanctioned if a story based on a reliable lead turns out to be a hoax deters editors from writing. Again, regardless of the preferences of publishers, no newspaper provides information on political malfeasance. Notice that a news market can be silenced and

domesticated at the same time. This case is discussed in some more detail in the section devoted to the empirical implications.

Sensational Equilibrium In a sensational equilibrium, the reliability of the leads does not affect the editor's decisions. This equilibrium obtains in the three legal regimes. In a libertarian regime, this is the only type of equilibrium other than the domesticated one.[7] In a repressive regime, this is the alternative to a silenced market equilibrium and to a domesticated equilibrium. If the expected market rewards from being informative offset the relatively mild sanction that follows (from sure) a court ruling, then the editor prefers her share of market revenues *and* the sure sanction to no money and no sanction. Given that the court does not decide whether to inflict a sanction based on the truthfulness of the story, editors disregard this piece of information. In a truth-seeking legal regime, this equilibrium obtains if the sanction for writing a hoax is small. An editor who receives an unreliable lead prefers the likely sanction and her share of the market profits to no sanction and no profits. Even unreliable leads might turn out to be based on true facts: an editor who writes a story based on a lead that is unlikely to be true can still hope that it is actually true.

Well-functioning Equilibrium Editors publish only stories based on the high-reliability leads; at least one publisher is supportive and does not kill the story written by the editor. This equilibrium is sustained only in a truth-seeking legal regime, i.e. when courts inflict sanctions only for writing hoaxes. This induces the editor to take into account the information regarding the reliability of the lead. Moreover, this equilibrium is sustained only if the sanction lies in a relatively small range. The sanction cannot be so low as to induce editors

[7]The model assumes that readers do not care about the quality of the information provided (i.e. the reliability of the leads on which a story is based). If one were to incorporate this feature in the model, then market-driven, as opposed to court-driven, well-functioning equilibria would be possible. In other words, editors would take into account the reliability of the lead they receive not for fear of being brought to court: rather, they would provide reliable information —and would try to avoid writing hoaxes— to avoid being punished by readers on the market. This could be related to the need to build a reputation of reliability in a repeated interaction model.

to disregard the reliability of the lead. At the same time, the sanction for writing a hoax cannot be so harsh as to "chill" the press, i.e. to induce editors to self-censor themselves for fear of getting it wrong, an event that is unlikely (after receiving the reliable lead) but not impossible (as long as the reliability of the strong lead S^H is less than 1).

No pure strategy equilibrium In two regions of the parameter space, there is no pure strategy equilibrium. In a truth-seeking legal regime, if P lies between P_n^* and P^H, the silenced equilibrium is not sustained. An editor would find it in her interest to provide an informative newspaper, because the benefits she derives from heading *the only* informative newspaper would compensate the loss that derives from the punishment she receives after a ruling of the court. Yet, if all the editors that work for the w^* supportive publishers *and* receive the strong lead decide to write a story, then the salary (i.e. the share of market revenues that goes to the editor) does not compensate, on expectation, the cost of the sanction inflicted by the court. Therefore, this would not be an equilibrium, and editors would prefer not to write a story.

In a repressive regime, similarly, if P lies between P_r^* and P^S one editor would be tempted to write, if no one is writing, because she would head the only informative newspaper on the market. At the same time, if P is this range, the equilibrium with w informative newspapers is not sustained either: the salary one editor receives if there are $w-1$ other informative newspapers does not compensate the sure sanction she is going to receive.

Clearly, there exist mixed strategy equilibria in these cases: after receiving their lead, the editors randomize and decide to write a story according to a mixing probability σ. In subsection 2.4.3, I provide a characterization of such an equilibrium for the repressive regime.

Figure 2.1 provides a graphic representation of the different equilibria sustained, in a truth-seeking legal regime, at different levels of harshness of punishment P and market

competition (captured by N).[8] In the shaded area at the top of the graph, the silenced equilibrium is sustained. In the shaded area at the left of the graph, the domesticated equilibrium obtains.

Depending on the harshness of punishment, if the number of potential competitors increases and crosses the threshold N^* of domestication, the market might switch to a sensational or a well functioning equilibrium. Notice that empirically, the behavior of newspaper actors in the top right shaded area, in the bottom left shaded area, and in the double-shaded area, from the point of view of an outside observer, might seem equivalent. Yet, the reason why there are no newspapers that provide information regarding political malfeasance is different. In the "silenced" area, the only reason why the press is not free is the editor's fear of being sanctioned; in the "domesticated" area, the only reason is the editor's knowledge that the politically loyal publisher would kill any story. In the double-shaded area, the press is silent for both reasons: both the silenced and the domesticated equilibria obtain. This means that an exogenous decrease in P in that region would not induce any observable change in the behavior of the media. Similarly, an increase in market competition in this region would not have any effect. Only concomitant changes in *both* these restraints would make the press become informative.

2.3 Comparative statics and empirical implications

From the characterization of the equilibria outlined above, the following comparative statics results and empirical implications can be deduced.

Proposition 7 (Ownership of the media and freedom of the press)**.** *In a well-functioning equilibrium and in a sensational equilibrium, the expected number of informative outlets*

[8]The figure is relative to a calibrated version of the model with potential profits and political rewards fixed at $V_0 = R = 20$ and with a demand function with slope $\beta = .8$. The share of market revenues that the editor receives is fixed at $\alpha = .4$. The probability that an editor receives a strong lead is $\rho = .6$ and the respective reliabilities of the leads are assumed to be $S^L = .3$ for the less and $S^H = .8$ for the more reliable lead.

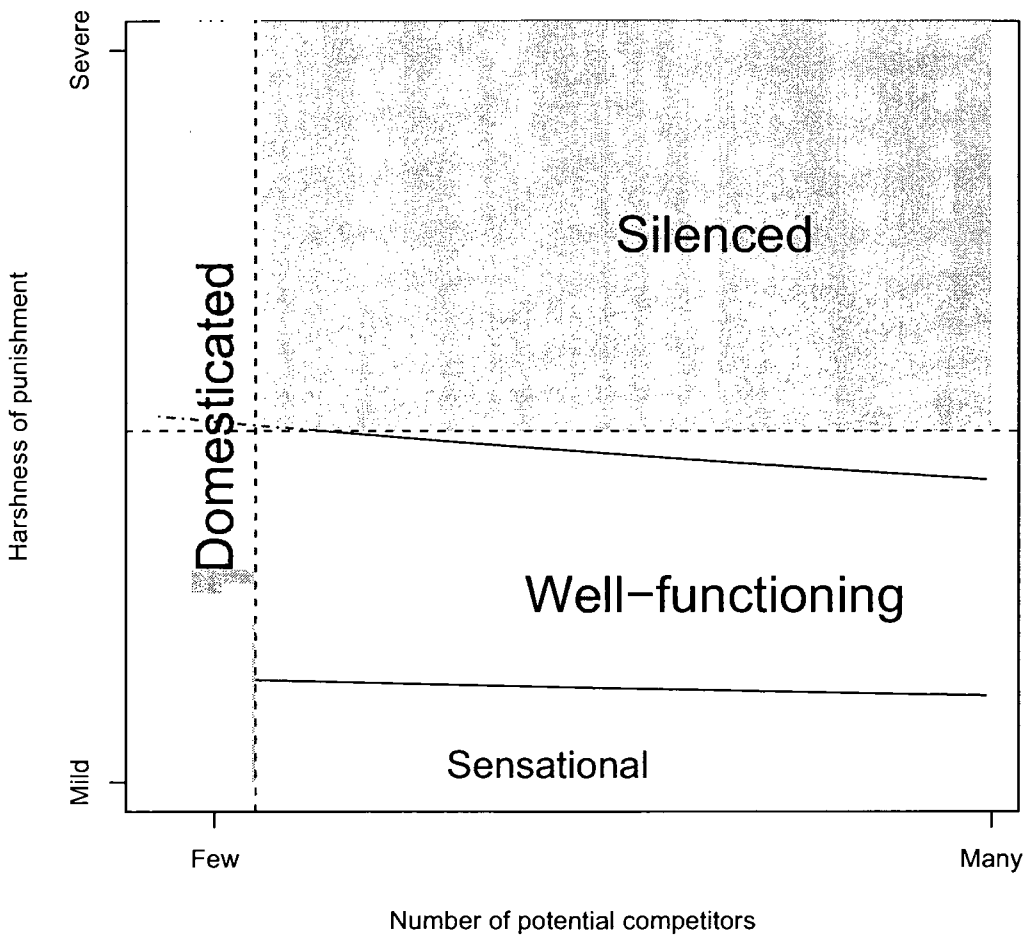

Figure 2.1: Equilibria in parameter space N, P

is larger if ownership is more diffuse. All else being equal, the potential profitability above which the domesticated equilibrium is not sustained becomes smaller when there are more competitors.

Proposition 8 (Size of the market and freedom of the press). *In a well-functioning and in a sensational equilibrium, larger potential profits lead to a greater number of informative newspapers. More profitable markets make domesticated and silenced equilibria more difficult to sustain.*

Proof. See Section 2.4.4. □

In other words, if the potential profits become larger, the political rewards affect the behavior of those publishers that assign a large weight to them. In more profitable markets the threshold N^* is smaller. Similarly, increases in potential profits might break down a domesticated equilibrium, keeping N constant.

Remark 1 (Silenced equilibrium). *The thresholds P^* below which the silenced equilibrium is no longer sustained do not depend on the number of potential competitors N, on the number of actual competitors w, or the rewards to political loyalty R.*

As a consequence, if a news market is not providing information regarding political malfeasance because journalists fear to be sued or jailed or fined (or, in the extreme, killed), policies that promote competition and pluralism in media ownership, or policies aimed at reducing dependence of publishers on political rewards, are not going to affect the news market outcome at all. A reduction in the harshness of sanctions, on the other hand, might disrupt a silenced equilibrium.

Proposition 9 (Political rewards). *The number of supportive publishers and the number of informative newspapers in a sensational and in a well-functioning market are smaller when political rewards are more generous. When political rewards are larger, the domesticated market is sustained for larger market size and for more competitive markets.*

Proof. See Section 2.4.4. □

Remark 2 (On the relationship between market profits and political rewards). *The partial cross-derivative* $\frac{\partial^2 N^*}{\partial R \partial d} = -\frac{1}{(1-\alpha)(V_0-\beta)^2}$ *is negative: the increase in the domestication threshold following an increase in the size of political rewards is mitigated when markets are more profitable.*

The difference between the size of the political rewards R and the magnitude of the potential market revenues captures, among other things, the ability of publishing firms to rely on private-sector rather than government-funded advertisement. In Brazil, thanks to the existence of a large private advertising market, the media have been able to collect resources from the private sector. (Waisbord 2000 p.69) This has enabled the press and the news broadcast market to take oppositional stances towards the government. On the other hand, the Argentine press freedom group Periodistas claims that "nearly all provincial governments use the purchase of public advertising space to reward or punish the media according to their editorial line (...) in the current economic climate, such advertising is an ever more important part of media revenue."(Reporters Sans Frontières 2005a) It is reasonable to think that the larger the share of the economy the state controls through state-owned enterprises, the larger the size of the rewards R it can allocate. Privatization of state owned enterprises might help increase freedom of the media because it increases the resources controlled by the private sector and reduces the share of rewards that the government is able to allocate to political friends, for instance through the control of advertising contracts for state owned enterprises. Economic crisis, on the other hand, might increase the reliance of publishers on government handouts, hence making R increase compared to V_0 and increasing the number of outlets that are uninformative because of politically loyal publishers.

A well functioning market is sustained for $P \in (\frac{\alpha E(\Pi)}{1-S^L}, \frac{\alpha E(\Pi)}{1-S^H})$ where $E(\Pi)$ are the equilibrium market revenues of an informative newspaper, as defined in equation (2.6).

Call $P^L = \frac{\alpha E(\Pi)}{1-S^L}$ the sensational threshold below which, in a truth-seeking legal regime, the sensational market is an equilibrium; call $P^H = \frac{\alpha E(\Pi)}{1-S^H}$ the well-functioning threshold, below which the well-functioning market is an equilibrium. Define also the range of P for which the well-functioning equilibrium is sustained, i.e. $\Delta P = P^H - P^L = \alpha \Delta S \left(\frac{V_0 R + (1-\alpha) N \beta^2 \rho (1-\rho)}{R + (1-\alpha)\beta\rho N} \right)$ where $\Delta S = \frac{S^H - S^L}{(1-S^H)(1-S^L)}$. Some comparative statics results can be derived for the two thresholds P^L, P^H and for the range ΔP, conditional on market size and competition, for which a well-functioning news market is supported.

Proposition 10 (Well-functioning equilibrium). *An increases in the potential profits V_0 widens the range of severity of sanctions for which the well-functioning equilibrium is sustained. Increases in the number of potential competitors narrow the range of sanctions for which the market functions well.*

Proof. See Section 2.4.4. □

A small market depresses the potential rewards for an editor, and therefore makes the threshold P^H decrease. The same logic applies to the number N of publishers: the returns to being informative are higher if the potential competitors on the market are fewer. As an intuition, think of what happens if the market is small and highly fragmented: the profits of every newspaper are small and therefore the compensation of the editors is also small. For instance, part of the compensation of an editor might be an insurance policy that covers the risks of damage repayment if the editor is found liable of defamation. However, small newspapers (i.e. newspapers whose revenues are small) cannot afford to buy a good insurance for the editor. If an editor, on the other hand, works for one of the few supportive publishers she knows that the rewards are high. Many of the potential competitors are kept silent with the political rewards, and the few informative newspapers share the whole market revenues. In that case, the insurance can cover even larger demands, and therefore an editor is willing to run the risk even if the punishment for a mistake —writing a hoax in

spite of a high-reliability lead— can be relatively serious. In other words, the chilling effect is mitigated when a small number of large newspapers competes on a profitable market. This is consistent with the recent history of Argentina. The attempts to silence the press through a large number of lawsuits initiated by President Menem and his staff, described in Verbitsky (1998), did not achieve the goal of chilling the media. Indeed, the national daily press was dominated by three large newspapers, that attracted many lawsuits but were also able to sustain their costs.

Remark 3. *The expected market revenues Π^*, and the range ΔP in a well-functioning media market, are increasing in R.*

Proof. Differentiating Π^* with respect to R yields

$$\frac{\partial \Pi^*}{\partial R} = \frac{(1-\alpha)\beta\rho N(V_0 - \beta(1-\rho)N)}{(R+(1-\alpha)\beta\rho N)^2}$$

which is positive by construction of the demand function. □

Political rewards induce some of the publishers to drop out of the market for informative newspapers: therefore, the effect of an increase in such rewards is equivalent to an exogenous decrease in N. With fewer potential competitors, the expected market revenues increase.

Proposition 11 (Sensational threshold). *The threshold P^L, above which the sensational equilibrium is not sustained, decreases as the number of potential competitors N increases. The threshold increases when market size increases, and it increases faster when political rewards are larger.*

Proof. See Section 2.4.4. □

One policy implication of the first part of proposition 11 is the following. Assume that it is desirable to create incentives for editors to discriminate between reliable and unreliable

leads. The expectation that publishing unfounded news story carries costs makes journalists take into account the reliability of the leads they receive, and publish only the reliable stories. If there are no consequences for the editor that writes a hoax, the information regarding how reliable the lead is will be discarded. Some sort of "sanction" is needed so that editors base their decision to write a story on how reliable the lead is. This sanction can be much milder in highly competitive markets than in markets with few potential competitors, in which the returns to sensationalism are larger. This result implies that more competitive markets require milder sanctions to sustain a well-functioning press. The court order to publish a retraction might be enough to induce editors to disregard less reliable leads and therefore make the news content in general more reliable. The criminal defamation laws (that are often used to silence the press) are not justifiable in general, but they are much less justified in a competitive and differentiated news market.[9] The second part of proposition 11 establishes that if profits are larger, editors might be willing to risk more and publish stories that are based on unreliable leads. At the same time, if political rewards do not induce many publisher to "kill" the stories written by their editors, the extra benefits are going to be smaller, because more editors would follow the same strategy, making it less appealing. The interference of politics with the media industry has this unintended consequence: by altering (i.e. reducing) competition through a policy of domestication, they create incentives, for the few editors that work for non-domesticated publishers, to write sensational stories, i.e. stories that are based on unreliable leads.

An exogenous increase in the number of competitors has different effects depending on the legal regime and the size of punishment P. If the level of punishment P is above

[9]The most common legal restriction to press freedom, namely defamation laws, are usually justified through appeals to the individual right of the politician to a reputation. The focus of this paper is how legal provisions might contribute to the protection of a public interest, namely that the media report reliable news as opposed to unfounded hoaxes. Yet, the latter goal is indirectly achieved if competition reduces sensationalism, as long as the right to a good reputation is interpreted as the right to avoid *false* allegations as opposed to the more extensive interpretation of the concept of reputation as the right to avoid *any* negative information.

the threshold of silencing P^*, an increase in competition will not produce any effect: the market will switch from being silenced and domesticated to being simply silenced.

On the other hand, if the sanction P is small, and in libertarian legal regimes (where the sanction is never administered), the market would switch from domesticated to sensationalistic when competition increases. This implies that the market is expected to shift from an equilibrium with no news on political malfeasance to an equilibrium in which some newspapers report corruption, and report the stories regardless of whether they are based on reliable sources or not.

Only if P already lies in the (P^L, P^H) range, and the legal regime is truth-seeking, an increase in competition is going to make a domesticated equilibrium switch to a well-functioning one. Substantively, this requires a system of independent courts and sanctions for defamation in a middle range: not too harsh but not as mild as to be negligible.

2.4 Additional material

2.4.1 A remark on the *Sullivan* standard

Assume that, instead of working according to one of the three legal regimes identified above, the court, after a lawsuit, follows this rule:

- rule in favor of a journalist that wrote a story based on a reliable lead, regardless of the truthfulness of the story
- rule against a journalist that wrote a hoax based on an unreliable lead
- rule in favor of a journalist that wrote a truthful story based on an unreliable lead

This is a formalization close to the standard followed by U.S. courts after the *New York Times Co. v. Sullivan*, 376 U.S. 254 (1964) ruling of the Supreme Court: it's not the falsity of the story, but the falsity combined with the disregard for the fact that the story is based

on probably false information, that makes a journalist liable.[10] The Court justified the decision claiming that conditioning liability on falsity would chill the press, and that this standard would balance the interest of spreading information with the interest of protecting reputation from false news reports. What are the effects of the rules laid out above, in the framework introduced in this chapter?

First of all, the editors that receive the reliable lead and work for a supportive publisher are going to write a story, because they face no danger of lawsuit. The editors that receive the unreliable lead (and work for a supportive publisher) face a trade-off between the expected sanction $\xi P = (1 - S^L)P$ and their share of market revenues $\alpha E(\Pi)$. Notice that a silenced equilibrium is never sustained in this regime. Indeed, the expected punishment for the editors that receive the strong lead is 0. On the other hand, what are the threshold above and below which the sensational and the well-functioning equilibrium are sustained? In a sensational equilibrium, all leads are turned into stories, regardless of their reliability. In the legal regime presented in this section, this requires that

$$P < \frac{\alpha E(\Pi)}{1 - S^L}$$

where $E(\Pi) = V_0 - \beta w^*$ are the expected market revenues of an informative newspaper. The number of entrants is given by $w^* = \frac{N(1-\alpha)}{R+(1-\alpha)\beta N}$ and this is sustained if

$$V_0 > \frac{(1 - S^L)P}{\alpha}\left(1 + \frac{(1-\alpha)\beta N}{R}\right)$$

which is exactly the same condition for the sensational equilibrium under a truth-seeking legal regime as expressed in (2.8). Hence, the two standards do not differ in the consequences they have for the sustainability of a sensationalistic media market: they create the

[10] In the words of the *Sullivan* ruling, what matters is the "knowledge that it was false or [the] reckless disregard of whether it was false or not."

same incentives to engage in sensationalism. But the standard that decides for or against the editor based both on the truthfulness of the story and the quality of the lead prevents the silenced equilibrium. This goal is achieved at no cost: it is not achieved by creating any incentive for sensationalism above and beyond those that exist also in a truth-seeking legal regime.

2.4.2 An alternative model of the market

Assume that, instead of the linear demand function faced by publishers above, the market works in the following manner. There is continuum of readers, normalized to 1. Readers have a taste for informative news as opposed to non-informative publications. Given the budget d allocated to news buying, readers are going to pay a price to buy newspapers. This budget is exogenous and fixed: therefore, this is a model of competition among newspapers and publishers to obtain a share of an existing market, rather than a model in which newspapers try to offer a product that makes consumers divert their resources from other goods to buy newspapers. For this reason, I also assume that if no newspaper provides informative coverage, readers are going to split their resources across the non-informative newspapers. If more than one newspaper is equally informative, readers randomize across newspapers assigning equal probability to each of the informative ones, and the readers are split in equal proportions among papers. Denote by w the number of newspapers that are informative. There are $N - w$ uninformative newspapers. Let $V(\cdot,\cdot) : \{0,1\} \times [0,N] \rightarrow \mathbb{R}$ be a mapping from the informational content of the newspaper and the number of informative newspapers to revenues. The market revenues, as a function of whether the newspaper is informative, are

$$V(1,w) = \frac{d}{w}$$

and

$$V(0,w) = \begin{cases} \frac{d}{N} \text{ if w} = 0 \\ \\ 0 \text{ if w} > 0 \end{cases}$$

Indeed, if there is at least one informative newspaper (i.e. $w > 0$), the revenues are going to be divided among the w informative newspapers. The uninformative newspapers are going to receive the political reward, that the informative newspapers do not receive). If there is no informative newspaper, the N newspapers are going to share equal portions of the market revenues d, and receive the political reward R.

The expected market revenues for an informative newspaper are $E(\Pi) = E(\frac{d}{w})$. Observe that, if the decision of the editor to write a story is conditional on the signal received, w is distributed as a truncated (non-zero) binomial with parameters w^* and ρ. The expectation of a truncated reciprocal binomial has no simple formulation, yet from the fact that $V(1,\cdot)$ is a concave function of w, it follows that, by Jensen's inequality, $E(V(1,w)) \leqslant V(1,E(w))$. Hence, one can establish an upper bound on γ^*. This is the strategy I adopt here. Moreover, this more realistic model of the market allows me to formalize an intuition regarding how an increase in the number of potential competitors (i.e. an increase in the number of newspapers that compete on the market and might become informative) can break down a domesticated equilibrium. In general, the marginal publisher m faces this problem: choose between the expected profits from being informative, i.e. $E(\frac{(1-\alpha)d}{w})$, and $\gamma_m R + (1-\alpha)P(w=0)\frac{d}{N}$, where the first term in the summation represents loyalty rewards, and the second, the probability that no one else is informative multiplied by $V(0,0)$, the revenues of an uninformative newspaper when all the outlets are uninformative.

As said above, by concavity of $\frac{d}{w}$ and Jensen's inequality follows that $E(\frac{(1-\alpha)d}{w}) \leqslant (1-\alpha)\frac{d}{E(w)}$.

Then, if the market is not domesticated, from the entry condition for the marginal publisher m follows that

$$\gamma_m \leqslant \frac{d}{R}\left(\frac{1}{\gamma^* N\rho} + (1-\rho)^{(\gamma^* N)-1}\right)$$

I'll focus now on the case of a domesticated equilibrium, that is simple but quite interesting because it allows to highlight the potential cascading nature of the adjustment to equilibrium when an exogenous increase in the number of potential competitors makes the domesticated equilibrium no longer sustainable. In a domesticated equilibrium, even the most profit-minded publisher is kept silent through the provision of the loyalty rewards. This equilibrium is sustained if the payoff of a deviation from uninformative to informative *for the most profit-oriented publisher*, i.e. the publisher with $\gamma = \frac{1}{N}$, is not optimal, formally

$$(1-\alpha)d < \frac{(1-\alpha)d + R}{N}$$

which can be rewritten as

$$d < \frac{R}{(1-\alpha)(N+1)} \tag{2.9}$$

The domesticated equilibrium is sustained only if the potential revenues from the market are small compared to the political rewards, and if the the number of potential competitors is small. Equation 2.9 defines a threshold $d^*(R, N, \alpha) = \frac{R}{N(1-\alpha)-1}$ above which the domesticated equilibrium is not sustained.

Equation 2.1 also defines, for every size of the market d, every amount of political rewards R and every compensation to editors α, a threshold N^* according to

$$N^*(d, R, \alpha) = \frac{d + R}{d(1-\alpha)}$$

If the number of potential competitors is larger than N^*, it is not sustainable to domesticate a news market, keeping the size of the market and of the rewards fixed. Substantively, the

model leads us to expect that, starting in a domesticated market, when the least politically loyal newspaper finds in its interest to become informative, the equilibrium breaks down. The least loyal newspaper can break the equilibrium, but this might induce also the second-least loyal, the third- least loyal, etc. to step in the informative market: the choice they face is between commercial failure and political rewards, given that they can no longer rely on the share of market revenues they receive when they faced no competition. Historical accounts are consistent with the the intuition. In Argentina in the 1980s *Pagina/12*, a daily newspaper offshoot of a radical weekly, entered the market practicing a new style of investigative journalism, and it started a cascade effect. Its informative style allowed it to quickly capture a large share of the market, and it was often sold out early in the day in Buenos Aires. This affected the decision of the publishers and editors of other newspapers, in particular the established *Clarín* and *La Nación*, that felt the need to start to feature investigative journalism stories. Investigative journalism was not part of Argentine tradition and was not practiced in the first years after the latest democratic transition.(Waisbord 2000) A similar pattern can be noticed in Mexico after the success of *Reforma* and *La Jornada* on the newspaper market, and probably even more clearly in the TV market with the change in the attitude of *Televisa*, that induced the second largest TV station, *Azteca*, to give up its more traditional uninformative style. (Lawson 2002) Given that the profits from the deviation (becoming informative in a market in which all the other outlets are uninformative) are not shared with anyone, while the profits from the domesticated market are shared with all the other $N-1$ publishers, an increase in N makes the option of deviating more appealing. Yet, in equilibrium, the profits are very likely going to be shared with more outlets. Notice that in the model with linear demand function, an increase in N causes the domesticated market to break down simply by making the most profit oriented publisher value loyalty rewards less. Here, on the other hand, an increase affects the decision of the most profit oriented publisher by reducing the revenues that can be obtained from sharing the total

revenues of the (uninformative) market with the other $N-1$ publishers.

2.4.3 Mixed strategies equilibrium in the linear oligopoly model

I provide the characterization of a mixed strategy equilibrium under a repressive legal regime when the harshness of punishment P lies in the interval in which, as claimed above, there is no pure strategy equilibrium because it is optimal for a given editor (that works for a "supportive" publisher) to deviate from the silenced strategy, given that all other editors are silenced, but it is not optimal for the editor who works for a supportive publisher to write a story, if all other editors that work for a supportive publisher write a story. The characterization for the mixed-strategy equilibrium in a well-functioning equilibrium is analogous. This proof is provided for sake of completeness, and does not imply that the idea of mixed strategies has any intuitive appeal in this context.

Assume that P lies in the range in which the following two hold:

$$\alpha(V_0 - \beta) - P > 0$$
$$\alpha(V_0 - \beta w) - P < 0$$

where w is the number of informative newspapers. The first equation says that it is optimal for an editor to deviate from a silenced equilibrium (i.e., the profits of the only informative newspaper compensate the sanction P) while the second equation says that the equilibrium in which every newspaper with supportive publishers is informative is not sustained (the equilibrium profits do not compensate the editor for the cost of the -sure- sanction P). Hence there is no pure strategy equilibrium in this range. If each editor that works for a supportive publisher mixes with probability σ between writing and not writing a story, the equilibrium has the following properties.

In order to mix between the two pure strategies, the editor that works for a supportive

publisher must be indifferent between writing and not writing. It must be that $E(\alpha V_0 - \beta\tilde{w}) = P$, from which follows (remembering that the number of expected informative outlets is σw, and by linearity of the demand function) that $\alpha(V_0 - \beta\sigma w) = P$. Hence the mixing probability σ must be a solution for

$$\sigma = \frac{\alpha V_0 - P}{\alpha\beta w}$$

What is the number of supportive publishers w? The publisher, when deciding to kill a story or not, compares the expected value of publishing it with the loss in the loyalty rewards R. Formally, a publisher is supportive as long as the expected revenues compensate the loss of the reward. For publisher i, this means that

$$(1-\alpha)(V_0 - \beta(1 + (\sigma(w-1))) - \gamma_i R \geqslant 0$$

These two equations define a mixed strategy equilibrium. The choice faced by the publisher when the editors follow mixed strategies is analogous to what happens in the "thruth-seeking" regime, when editors separate according to the quality of the lead they received: he can observe the action of "his" editor, but can only have an expectation of what is the number of editors that are going to write a story. The threshold of loyalty below which a publisher is supportive is

$$\gamma^* = \frac{(1-\alpha)(V_0 - \beta(1-\sigma))}{R + (1-\alpha)\beta\sigma N}$$

It follows that all the implications analyzed above have analogous counterparts in the mixed strategy equilibrium. Notice that in the mixed strategy equilibrium, only the editors that work for supportive publishers mix, while those that work for politically loyal publishers adopt the pure strategy of not entering. This is analogous to what happens

in the (maximal Nash) mixed strategy equilibrium of costly oligopoly entry presented in Thomas(2002), where a subset of all potential competitors adopts mixed strategies, while a second subset follows the pure strategy of not entering. Notice that here the mixing is done by the editors, that are homogeneous with respect to their preferences, hence the strategy σ is common to all editors that work for a supportive publisher, while in Thomas (2002) the mixing is done by the firms (analogous to publishers here) that differ in their entry cost and therefore follow firm-specific mixing probabilities.

2.4.4 Proofs

Proof of Proposition 7. I prove the first part for the sensational equilibrium. The proof for the well-functioning equilibrium is analogous. Let $w(N)$ be the number of supportive publishers for a given choice of parameters of the model, as a function of the number of potential competitors. Given that N varies in discrete changes, we need to evaluate $\Delta w = w(N+1) - w(N)$. In a sensational equilibrium, this is

$$\Delta w = \frac{(1-\alpha)V_0(N+1)}{R+(1-\alpha)\beta(N+1)} - \frac{(1-\alpha)V_0 N}{R+(1-\alpha)\beta N} = \frac{(1-\alpha)V_0 R}{(R+(1-\alpha)\beta(N+1))(R+(1-\alpha)\beta N)} > 0$$

so the increment is positive.

The second part of the proposition follows from the fact that $V_0^* = \frac{R}{N(1-\alpha)} - \beta$ is strictly decreasing in N. □

Proof of Proposition 8. The first part follows from the fact that the proportion of supportive publishers, as characterized in (2.5) and (2.7), is increasing in V_0. The second part follows from (2.1), (2.3) and (2.4). In particular, notice that $\frac{\partial N^*}{\partial V_0} = -\frac{R}{(1-\alpha)(V_0-\beta)^2} < 0$; $\frac{\partial P_n^*}{\partial V_0} = \frac{\alpha}{1-S^H} > 0$ and $\frac{\partial P_r^*}{\partial V_0} = \alpha > 0$. □

Proof of Proposition 9. Part 1 follows from the fact that γ^* as characterized in (2.5) and (2.7) is decreasing in R. The second part follows from differentiating N^* with respect to R and observing that $\frac{\partial N^*}{\partial R} = \frac{1}{(1-\alpha)(V_0-\beta)} > 0$, □

Proof of Proposition 10. The first part follows from the fact that ΔP is strictly increasing in Π^*, and in turn Π^* is strictly increasing in V_0. The second part follows from the fact that ΔP is strictly increasing in Π^* and Π^* is decreasing in N. We now prove this last fact. Remember that N changes in discrete increments. Define a function $\Pi^*(N)$ that, for a given configuration of parameters, maps N into the equilibrium expected revenues of an informative newspaper. I need to evaluate

$$\Delta\Pi^* = \Pi^*(N+1) - \Pi^*(N) =$$

$$= \frac{V_0 R + (1-\alpha)\beta^2\rho(1-\rho)(N+1)}{R + (1-\alpha)\beta\rho(N+1)} - \frac{V_0 R + (1-\alpha)\beta^2\rho(1-\rho)N}{R + (1-\alpha)\beta\rho N} =$$

$$= \frac{(1-\alpha)\rho\beta R\,(\beta(1-\rho) - V_0)}{(R + (1-\alpha)\beta\rho(N+1))(R + (1-\alpha)\beta\rho N)}$$

The sign of this expression depends on the sign of $\beta(1-\rho) - V_0$ which is negative because $V_0 - \beta k$ is not negative: by construction market revenues are positive. Therefore increases in N decrease ΔP. □

Proof of Proposition 11. Notice that P^L is strictly increasing in Π^*. The first two claims follow from the behavior of Π^* as a function of N and V_0. The third claim follows from differentiating Π^* with respect to R and V_0 and observing that $\frac{\partial^2\Pi^*}{\partial R \partial V_0} = \frac{(1-\alpha)\beta\rho N}{(R+(1-\alpha)\beta\rho N)^2} > 0$

□

2.5 Conclusion

In this chapter, I offer a general formal theoretical framework to analyze the interaction between media ownership, legal protection of speech, and political loyalty of the owners of newspapers in shaping the amount and quality of news of political malfeasance that are

written and published.

I model competition among a generic number of publishers and newspapers. Politicians, that prefer newspapers not to report negative information regarding their behavior, can initiate legal action against newspaper editors. If a politician initiates legal action against a journalist, the case is decided by a court that might be more or less independent from the politician. Furthermore, the preferences of publishers might be influenced by political concerns, namely loyalty towards the incumbent administration, a factor that has been identified by the literature as a hindrance to the ability of privately-owned media to provide the information needed by citizens of democracies to hold politicians accountable. Publishers vary in the relative weights that they assign to profits from the market and rewards derived from loyalty to the politician: some are more profit-minded, some are driven mainly by political loyalty.

Modeling lawsuits not only allows me to analyze when and how legal limitations of press freedom affect the decisions of journalists but also how these limitations alter the incentives of profit-oriented publishers. Based on the independence of the courts (a factor that affects the cost for the politician to "punish" a journalist), I identify various possible regimes of legal protection of freedom of the press: in a repressive regime politicians are always able to inflict a sanction to journalists who write about their malfeasance; in a libertarian regime, politicians never use legal action against journalists; in a truth-seeking regime, journalists are sanctioned only if they write hoaxes. The comparative statics of the model yield predictions regarding the effects of rule of law, market size, and concentration of ownership of publishing firms on the ability of journalists to spread information that indicts politicians and on the standards of fact-checking adopted by editors. Property structure and market competition affect the probability that negative information regarding the politician is disclosed to the public; they also determine whether publishers back editors who choose a "muckraking" strategy. Political loyalty of publishers might induce editors to practice

self-censorship for fear of the publishers' retaliation.

I identify different types of news market equilibria. In a "domesticated" market, negative news are not published because of the political loyalty of publishers, that exert pressure on editors. In a "silenced" market, it is the fear of being brought to court by politicians that induces editors to adopt a line of self-censorship. In a "sensationalistic" news market, the higher or lower reliability of the leads received by the editor does not affect the decision regarding whether to write a story involving the politician. In what I call a "well-functioning" news market, only reliable leads are used by editors to write stories that indict a politician, and some publishers support the editors and prefer market profits to the rewards related to political loyalty. The model allows to identify the joint political and economic conditions under which these news market equilibria are sustained, and what variables are expected to induce a news market to switch from one equilibrium to another.

2.6 References

Amponsah, Peter Nkrumah. 2004. *Libel Law, Political Criticism, and Defamation of Public Figures : The United States, Europe, and Australia.* New York: LFB Scholarly Publishing.

Baron, David P. 2006. "Persistent Media Bias." *Journal of Public Economics* 90(1-2):1-36.

Besley, Timothy, and Andrea Prat. 2006. "Handcuffs for the Grabbing Hand? The Role of the Media in Political Accountability" *American Economic Review* 96(3):720-36.

Committee to Protect Journalists. 2003. "Rodrigo Fierro Benítez, El Comercio: Legal Action." Electronic source. Retrieved at `http://www.cpj.org/cases03/americas_cases03/ecuador.html`

Committee to Protect Journalists. 2004. *Attacks on the Press 2004. Argentina.* Elec-

tronic resource. Retrieved at http://www.cpj.org/attacks04/americas04/argentina.html

Egorov, Georgy, Sergei M. Guriev, and Konstantin Sonin. 2006. "Media Freedom, Bureaucratic Incentives and the Resource Curse." CEPR Discussion Paper No. 5748.

Fox, Elizabeth. 1998. "Latin American Broadcasting and the State: Friend and Foe." In Patrick H. O'Neil (Ed.), *Communicating Democracy : The Media and Political Transitions.* Boulder: Lynne Rienner Publishers.

Gentzkow, Matthew, and Jesse M. Shapiro. 2006. "Media Bias and Reputation." *Journal of Political Economy* 114:280Ű316.

Gentzkow, Matthew, Edward L. Glaeser, and Claudia Goldin. 2004. "The Rise of the Fourth Estate:How Newspapers Became Informative and Why it Mattered." NBER Working Paper 10791.

Hughes, Sallie, and Chappell Lawson. 2004. "Propaganda and Crony Capitalism: Partisan Bias in Mexican Television News."*Latin American Research Review* 39(3):81-105

Hughes, Sallie, and Chappel Lawson. 2005. "The Barriers to Media Opening in Latin America." *Political Communication* 22:9-25.

Kaplan, Todd, and Aner Sela. 2003. "Auctions with Private Entry Costs." CEPR Discussion Paper No. 4080

Kaplan, Todd, and Aner Sela. 2006. "Second Price Auctions with Private Entry Costs." Unpublished manuscript, Department of Economics, University of Exeter, UK.

Lawson, Chappell H. 2002. *Building the Fourth Estate : Democratization and the Rise of a Free Press in Mexico.* Berkeley: University of California Press.

Mullainathan, Sendhil, and Andrei Shleifer. 2005. "The Market for News." *American Economic Review* 95:1031-53.

Petrova, Maria. 2006. "Mass Media and Special Interest Groups." Unpublished manuscript, Program in Political Economy and Government, Harvard University.

Petrova, Maria. 2008. "Inequality and Media Capture". *Journal of Public Economics*

92 (1-2):183-212.

Reporters Sans Frontières. 2004. *Mexico. Annual Report 2004.* Electronic source. Retrieved at http://www.rsf.org/article.php3?id_article=9979

Reporters Sans Frontières. 2005a. *Argentina. Annual report 2005* Electronic source. Retrieved at http://www.rsf.org/article.php3?id_article=13213

Reporters Sans Frontières. 2005b. "Son of president's wife sues journalist." Electronic source. Retrieved at http://www.rsf.org/article.php3?id_article=13714

Reporters Sans Frontières. 2007. *Mexico. Annual Report 2007.* Electronic source. Retrieved at http://www.rsf.org/article.php3?id_article=20539

Sourcemex. 2004. "Spotlight shines on political corruption ahead of state elections this year &2006 presidential race". Electronic source. Retrieved at http://ladb.unm.edu/sourcemex/

Strömberg, David. 2004. "Mass Media Competition, Political Competition, and Public Policy." *Review of Economic Studies* 71:265-284.

Suphachalasai, Suphachol. 2005. "Bureaucratic Corruption and Mass Media." Environmental Economy and Policy Research Discussion Paper Series, University of Cambridge.

Thomas, Charles J. 2002. "The Effect of Asymmetric Entry Costs on Bertrand Competition." *International Journal of Industrial Organization* 20:589-609

Verbitsky, Horacio. 1997. *Un Mundo sin Periodistas: Las Tortuosas Relaciones de Menem con la Ley, la Justicia y la Verdad.* Buenos Aires: Planeta.

Waisbord, Silvio R. 1998. "The Unfinished Project of Media Democratization in Argentina." In Patrick H. O'Neil (Ed.), *Communicating Democracy : The Media and Political Transitions.* Boulder: Lynne Rienner Publishers.

Waisbord, Silvio R. 2000. *Watchdog Journalism in South America : News, Accountability, and Democracy.* New York: Columbia University Press.

Chapter 3

Regulation of Speech and Accountability-Oriented Information: An Empirical Study of Corruption Coverage in Mexican Newspapers.

Abstract

Legal regulation of speech might affect how newspapers report sensitive political information, and in particular political and bureaucratic corruption. I exploit the variation in the legal restrictions to speech across states in a federal country to estimate the reduction in coverage that follows from regulation, using an original dataset based on the content analysis of local newspapers in Mexico. Many articles on corruption are "missing" in newspapers from states with more punitive defamation law. I estimate instrumental variable models in which the severity of criminal statutes for unrelated offenses is used as an instrument for the severity of regulation of speech. The causal effect of regulation of speech on coverage of political and bureaucratic corruption is estimated: restrictions to media freedom signifi-

cantly reduce coverage of corruption.

3.1 Introduction

Political and bureaucratic corruption have important consequences: countries plagued by corruption grow more slowly, invest less in certain types of public goods (Mauro 1995, 1998), have less egalitarian income distributions, and more widespread poverty (Gupta et al., 2002). Corruption can be understood in a principal-agent framework (e.g., Persson et al., 1997). Citizens can condition re-election of politicians on their behavior and on the performance of the bureaucratic agencies that elected politicians control. Unfortunately, citizens cannot (always) observe directly the performance of the incumbent administration: such an asymmetry in information can be exploited by the agents, politicians and bureaucrats. Corruption is one of the types of behavior of public servants and elected officials that are harder for citizens to monitor: the actors that engage in it have incentives to conceal their dealings.

A specialized set of organizations, the news media, tries to uncover scandals, and spread them among the public, often for a profit. If the media face restrictions, they are less able to provide useful information to readers /voters. Macro (cross-country) evidence shows that "a free press is bad news for corruption" (Brunetti and Weder 2003; Adserá et al., 2003). Press freedom is a particularly pressing issue in younger democracies. The status quo, in terms of information available to citizens, might be satisfactory —albeit very far from optimal— in advanced and stable democratic countries. The experience of younger democracies in Eastern Europe (e.g., Hall and O'Neil 1998), Latin America (Fox 1998; Waisbord 1998, 2000; Hughes and Lawson 2005) and East Asia (e.g., Kim 2003) points to a stylized fact: democratization is not a sufficient condition to eliminate restraints and insure that the press performs its role of providing citizens with accountability-oriented

information.

The cross-country evidence treats press freedom as an aggregate phenomenon, summarized by an index or proxies. The potential constraints on press freedom include regulation of speech, owners interference in editorial decisions, and direct extra-legal threats to investigative journalists. I unpack the concept of press freedom and focus in particular on one of the ways in which the media might be prevented from playing their "watchdog" role in politics: legal regulation of speech. Legal and media scholars (Barendt et al. 1997; Walden 2000; Scott 2002) as well as practitioners and commentators (e.g., for Mexico, Simon 1997; Reporters Sans Frontiers 2004) claim that libel and defamation laws are one of the factors that limit public debate and the diffusion of information about the behavior of elected politicians and bureaucracies. In a democracy, self-censorship has negative aggregate consequences in terms of reduced accountability: its costs might be borne by a large majority of citizens. Punitive defamation law discourages investigative or irreverent journalism, and indirectly reduces the amount of information available to the public. Due to decreased monitoring and less effective accountability, the prevalence of corruption increases and imposes costs, potentially on the whole of society. The lists, issued by the journalists' associations, reporting cases of legal harassment of their members, tend to focus on the private costs paid *ex post* by reporters who deal with sensitive topics. Yet, restrictions to media freedom not only inflict costs to information professionals: they also create incentives to practice self-censorship. In this study, the amount of information that might be withheld from the public due to strict defamation laws — more precisely, due to *ex ante* fear of its consequences— is estimated.

Self-censorship for the fear of a lawsuit or criminal prosecution is not the only factor that influences the coverage that the press devotes to sensitive topics like political and bureaucratic malfeasance. Collusion between publishers and politicians might affect the content of a newspaper: journalists might be prevented from seeking or pressured to avoid report-

ing information that damages the reputation and the career of the political friends of the publishers. Sutter (2001) argues that political preferences of owners affect media content, and Besley and Prat (2006) suggest that politicians may offer rewards to media owners in exchange for favorable coverage. The issue of ownership has been analyzed empirically by Djankov et al.(2003), who detect a relationship between press freedom and the overall structure of ownership in a given national market; in particular, government ownership is related to reduced press freedom. Another phenomenon that might limit the freedom to report corruption scandals, especially those related to the ties between government actors and criminal organizations, is the threat of physical violence against journalists. Violence against journalists and interference of owners are not the topic of this analysis, but measures that try to capture the prevalence of these phenomena are included in the empirical models as potential confounders.

3.1.1 A preview of the results

Coverage of corruption in Mexican newspapers is studied through the content analysis of a random sample of newspapers from each of the 32 federal units in Mexico. The sample is relative to the year 2001. The outcome of interest is coverage of corruption, measured as the number of articles that mention acts of corruption attributed to identifiable political, bureaucratic, and law enforcement agents. The analysis shows that newspapers published in the Mexican states that have stricter defamation law feature fewer articles on corruption. The robustness of the result regarding regulation of speech to the inclusion of several confounding factors highlights the chilling effect as a very plausible candidate for a causal explanation.[1] An instrumental variable model corroborates the interpretation of the

[1] A study of a non-random sample of Latin American journalists finds that 51 percent of the respondents said that they have been censored or forced to withdraw a piece by their supervisors, and 47 percent claim that they have practiced self-censorship. (ICJ 2003) The potential ambiguity of the questions (from what is possible to infer from the press release) might inflate these numbers. See also Bajomi-Lazar (1999) for anecdotal evidence from Hungary that points to the same phenomenon.

negative association between severity of defamation law and the coverage of corruption in the printed media as a causal "chilling effect".

This study joins a very small set of other works that try to quantify the "chilling effect" of defamation law on the press. Dent and Kenyon (2004) use content analysis of newspapers in Australia and the United States and a simple subjective coding of defamation law as stricter in the former than in the latter, and show that newspapers in Australia are more reluctant to publish stories on potentially sensitive topics, in particular concerning the behavior of private corporations. Renas et al. (1989) survey editors of U.S. daily newspapers asking them about their willingness to publish some potentially libelous articles under different standards of proof, and conclude that the chilling effect is substantial. Barendt et al. (1997) carry out structured interviews with the staff of national newspapers and a survey study of the regional newspapers in Great Britain and show that the local and regional media in the U.K. are inhibited by chilling effect considerations more than the large national media. They also provide an estimate of the number of articles of local interest that newspapers did not publish because of concerns with defamation lawsuits, based on the recollection of the respondents to the survey. Rather than relying on an N of 2, like Dent and Kenyon (2004), this study exploits the variation in legal protection of speech that follows from the federal structure of Mexico; rather than relying on survey data and scenario questions, as Renas et al. (1989) and Barendt et al. (1997), in this study self-censorship is inferred from observed patterns in the publication of news pieces about corruption.

The focus of this study is the freedom of the press to report corruption, in the broad sense of office-related illegal behavior. Insights are provided about how political, legal and economic factors affect the provision of the information that citizens need in order to hold government actors accountable. These same factors have an important effect on the diversity of opinions regarding policy, parties, and individual politicians, or the views

regarding how society should be organized.[2] The two problems are analytically distinct. In the language of democratic theory, this study explores the behavior of the media as instruments of accountability, not representation (Przeworski, Stokes, and Manin 1999) or deliberation (Elster 1998).

3.2 Measuring coverage of corruption

The empirical data on the coverage of corruption in the Mexican daily press comes from the content analysis of the newspapers in the collection of the Hemeroteca Nacional of the National Autonomous University of Mexico in Mexico City. The sample of fifty-four local (i.e. state- level) dailies, from each of Mexico's thirty-two federal units, includes two newspapers for most states (18), three newspapers in two states, and one in the remaining twelve states. In the case of fifteen states, the sample includes a pair of newspapers, one controlled by a large chain, the Organización Editorial Mexicana (OEM), and one not owned by the chain.[3] To obtain the sample, a list of local dailies was compiled, based on the information available in a directory generated and maintained by a third party.[4] The list includes almost four hundred dailies. The collection in the Hemeroteca Nacional is not equally extensive.

Two newspapers for each state, one not owned by OEM and, if it existed, one owned by OEM, were chosen at random from the list. When a newspaper chosen by the original randomization was not available in the collection of the Hemeroteca, a random order was imposed to the complete list of newspapers from a state. If none of the newspapers on the list was available, a further simple randomization procedure was used to select among one of those available at the Hemeroteca.[5] The content analysis of the hard copies was

[2]See Parenti (1986) and Herman and Chomsky (1988) for classic statements of the ideological —world-view— bias of the media and Gabszewicz et al. (2000) for a formal model. Sutter (2002) provides a critical review of such theses.

[3]Ownership of a newspaper by the Organización Editorial Mexicana was ascertained from the web page of the firm, `http://www.oem.com.mx/oem/`, accessed on June 2nd, 2006.

[4]The list is available at `http://www.prensaescrita.com`, downloaded on June 1st, 2006.

[5]In many cases, this amounted to choosing the only available newspaper from that state.

complemented, in the case of a few newspapers, with newspaper-days retrieved from the electronic archives.[6]

An efficient scheme to infer the yearly content of a newspaper is the "reconstructed week" (Riffe et al. 1993; Lacy et al. 2001; see Hansen et al. 1998 and Riffe et al. 2005 for textbook treatments.). The sample analyzed here includes a set of six non-consecutive daily observations: a Monday,a Tuesday, etc., are chosen at random from the universe of days of the year for each newspaper.[7] This sampling scheme accounts for potential day-to-day variation in the content of a newspaper, but most importantly, avoids to introduce dependence among individual (newspaper-day) observations. If the news content is sticky from day to day, for instance because newspapers write follow-up stories in the days after a scandal emerges, coverage in day $t + 1$ is not independent of coverage in day t: if the quantity that needs to be measured is the content of an outlet over a longer period (e.g., a year) sampling non-consecutive days (in this study, nine weeks apart from each other, on expectation) provides much more information than sampling consecutive days.[8]

The year 2001 was chosen because it is the first after the change of party control of the presidency, and is considered by many as the first year of full democracy for contemporary Mexico. The political system was at the time permeated by an anti-corruption atmosphere fueled by the party that had just gained control of the presidency: the conservative *Partido Acción Nacional* (PAN), finally in control of the country's highest office, had incentives to set scores with the previously ruling party, the *Partido de la Revolución Institucional* (PRI),

[6]These are *El Universal* and *La Jornada* (published in Mexico City), available for free, and *Diario de Yucatán*, *Diario de Chihuahua* and *Diario de Juarez*, available through the ISI Emerging Markets news service (`http://site.securities.com`). The selection of the dates was performed following the same scheme used for the hard copy newspapers.

[7]The rationale for restricting the sample to 6, rather than 7, observations per newspaper is due to the fact that the Hemeroteca Nacional limits each borrowing request to 3 volumes of a single newspaper. Therefore, sampling one further day according to the scheme above would have required approximately half of the time required to sample the 6 days, and was judged not cost-effective. When a date that was sampled was unavailable in the Hemeroteca, the next available volume was chosen, and the same day of the week in the date farthest from any date already sampled was chosen.

[8]To assess *how much* more information this scheme provides, the day-to-day auto-correlation of the content would have to be estimated.

and consolidate its new position of power.

A precondition to assess the relationship between legal regulation of speech and coverage of corruption is variation in how punitive the law is. In Mexico, the criminal code (Código Penal) of each state, along with federal law, regulates defamation law.[9] The intervention by the Supreme Court in freedom of speech cases is not pervasive as in the United States, and therefore does not create uniformity of the law across states.[10]

Criminal defamation law in Mexico varies along various observable dimensions. Here two aspects that seem *prima facie* the most relevant are considered. The first is the maximum prison term prescribed if the defendant is found guilty: the source of the information is the Penal Code of each state and the variable name is *Maximum Sentence*. The second dimension of severity has to do with the requirements for indictment. An important component of the cost inflicted on journalists is the physical and pecuniary costs of the pre-trial arrest and the defense, regardless of the final outcome of a trial. Zepeda Lecuona (2005) documents the widespread use of pre-trial detention in the Mexican legal system. As a measure of how easy it is to indict someone for defamation, the variable *Defamation Indictments* was computed as the log average (over the years 1998-2000) per capita indictments for defamation in the state, as reported in the Estadísticas Judiciales 1998-2004 published by the Instituto de Estadística, Geografia e Informática (INEGI). The states that have the longer prison terms (e.g., Chiapas, Veracruz) have higher per capita indictments for defamation. Similarly, the states with shorter prison terms have lower rates of indictment. The simple correlation between Maximum Sentence and Defamation Indictments is

[9]The crime of defamation was expunged from the federal criminal code in March 2007, following a vote in the Senate. The House of Deputies had first passed the bill in April 2006. It is still treated as a criminal offense in the state criminal codes.

[10]Due to the civil law system that Mexico inherited from the Spanish colonizers, the ruling of the Court applies to the individual case referred to it but does not set a precedent automatically: a set of several decisions that uphold the same interpretation of the law are needed for precedent to be set and bind all courts of the nation. The Mexican Supreme Court does not have the power —granted to the Constitutional Courts of some Western European countries— to declare null and void a provision of statutory law when deciding an appeal of a lower court decision. See Navia and Ríos-Figueroa (2005) for a description of constitutional adjudication in Mexico.

0.42 ($p < .02$). Plausibly, both are affected by the same underlying dimension, the severity of the law itself.

3.2.1 Details of the content analysis

The main section of the newspaper, the local section(s) (e.g., "Estado" and "Municipios"), and the crime and judicial section (e.g., "Policiaca") were explored in full. The articles were identified based on the inspection of the title and the first two paragraphs. If they made references to politics, they were read in full, and were included in the count if they mentioned any illegal act of a bureaucrat, politician, judge or law enforcement officer, as long as it is related to the public position held or sought by the person described in the article.

The dataset includes all the articles that mention acts of corruption that took place in the state in which the newspaper is published. In order to make sure that the same class of objects is coded in all the states, the stories published in the Federal District about facts that took place locally but related exclusively to the federal administration were not counted. For example, some articles in *El Sol de México* that alleged a bribing scheme organized by President Fox to some opposition federal legislator to obtain their compliance, were not counted. They would have been counted as local if the legislator had been a representative of the Federal District in the Congress.

Restricting the focus to local events has two purposes. First of all, it bypasses the issue of news stories shared by different newspapers owned by the same firm. If that was the case, similarities across newspapers in the same chain or conglomerate could emerge from the fact that they share a national newsroom and publish the same articles. In the design of this research, on the other hand, similarities across newspapers with the same owner in different states can be attributed to an ownership-related style of reporting.[11] The second

[11]This is true either if similarities in the demand for articles on corruption across neighboring states are

reason for restricting attention to local stories is that it makes possible to control for a potential confounder, the level of corruption in the state. If the articles on malfeasance are affected by the amount of raw material available, variation across states in the prevalence of corruption affects local coverage, but does not affect national coverage (that depends on the availability of stories at the national level, and therefore on the average prevalence of corruption in the whole country, but not on corruption in the state of publication). One could claim that analyzing news from all the country would control for the national level of corruption, which is clearly constant. Yet, newspapers in a given state might pay more attention to news of events that take place in contiguous states, or states in the same region (e.g., north, Yucatán peninsula): the availability of potential stories in a state becomes difficult to capture.

For each article, information was recorded on the type of illegal act mentioned (e.g., extortion, vote buying); the source; the position (e.g., politician, bureaucrat) and the level of power (federal, state, local) of the alleged main culprit and of the possible accomplices mentioned in the story.[12] The definition of corruption adopted —alleged crimes committed by elected and career government actors, related to their public position— encompasses acts such as embezzlement, illegal campaign finance, bribe-taking, vote-buying, electoral fraud, and irregularities in the awarding of public contracts. Cases of human right abuses are included when the subject of the article is the behavior of law enforcement officers. Information regarding the section, page, and an abbreviated version of the title were recorded to ensure that the data collection is replicable. An article is included in the count if it refers to an identified or identifiable person or bureau: for example, an article that mentions a campaign to reduce corruption but fails to reference actual instances of the phenomenon

uncorrelated or if multi-newspaper publishers are not regionally specialized, or if both are true. In other words, it would be false if publishers were regionally specialized and readers were similar across states in the same region. See Gentzkow and Shapiro (2006) for some remarks about such a phenomenon in the United States.

[12]The information on the position held by the culprit is objective. The coding of the allegation in a category, albeit accurate and potentially replicable, is based on a qualitative judgment.

would not be included; similarly, an article that complains about widespread corruption in a given city, but fails to refer to specific bureaus or individuals, would not enter the counts. There is a total of 324 newspaper-day observations (6 daily observations for 54 newspapers) and a total of 467 articles included in the counts.[13]

A total of 23 newspapers in the sample belong to the Organización Editorial Mexicana (OEM). This firm currently owns 68 newspapers, 20 radio stations, 1 TV station, and other business in industries unrelated to publishing; moreover, it controls the news agency Informex and is the largest publishing firm in the Spanish-speaking world, the third largest publisher in the world. Lawson's (2002) content analysis places the Mexico City daily controlled by OEM, *El Sol*, in the category of government-dependent (i.e., PRI-controlled) newspapers. Three newspapers, all named *Novedades*, are controlled by the firm Grupo SIPSE, which is related to the major television network Televisa. Three more belong to a consortium, the Asociación de Editores de los Estados (AEE); two are owned by the group Asociación Periodística Síntesis, and two to Editorial Paso del Norte. Finally, the remaining 21 newspapers are either independently-owned or belong to chains that only have one newspaper in the sample.

3.2.2 Exploratory analysis

I focus on the consequences of regulation of speech on one dimension of news output: the quantity of news released to the public. The quality (e.g., reliability vs. sensationalism, article- specific bias vs. balance) of the reporting of such an information is not analyzed. The Mexican press might be creating unfounded scandals rather than reporting useful information on malfeasance. Measuring systematically the reliability of the stories published would require one to check their truthfulness, something that is impractical in the case of a

[13]An additional sheet was filled for every newspaper-day observation. It records the date, information on the editor and the publisher (when available) and a provisional count of the total number of articles coded. This is the record for those newspaper-day observations for which no articles on corruption were found and coded.

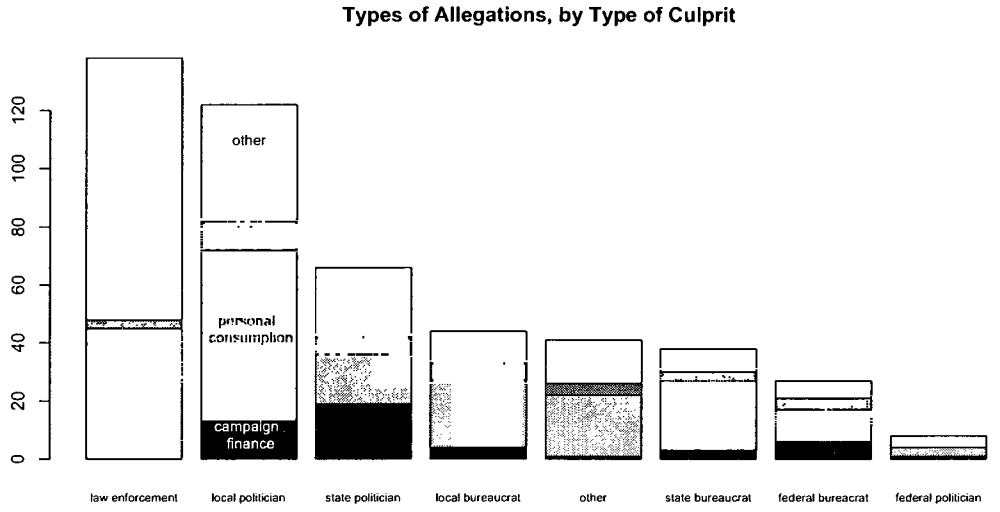

Figure 3.1: Number of articles of local interest, broken down by category of culprit and type of allegation. The residual category of culprits includes court actors (e.g., judges, prosecutors) and the military. The residual category of allegations includes, among others, human rights violations committed by law enforcement agents, and electoral irregularities in which are allegedly involved bureaucrats and politicians.

large sample of local newspapers.

Figure 3.1 breaks down the allegations by type and culprit. Most of the culprits are law enforcement agents and local politicians, followed by state politicians and local bureaucrats. Federal level politicians are referred to only in a minority of the articles. Allegations of illegal campaign finance (e.g., using public funds for partisan campaigns) is more common among state-level politicians (governors and members of the state congresses); local politicians are accused more often of using public resources for their private gain. Allegations categorized as "undue influence of private interests" (that encompass nepotism or favoritism) make up a relatively small proportion of allegations, and affect local bureaucrats and politicians the most. Unsurprisingly, illegal campaign finance is not practiced by law enforcement officers; the residual category, that includes human rights abuses, torture, abuse of power, etc., is the modal category. In the "personal consumption" category are

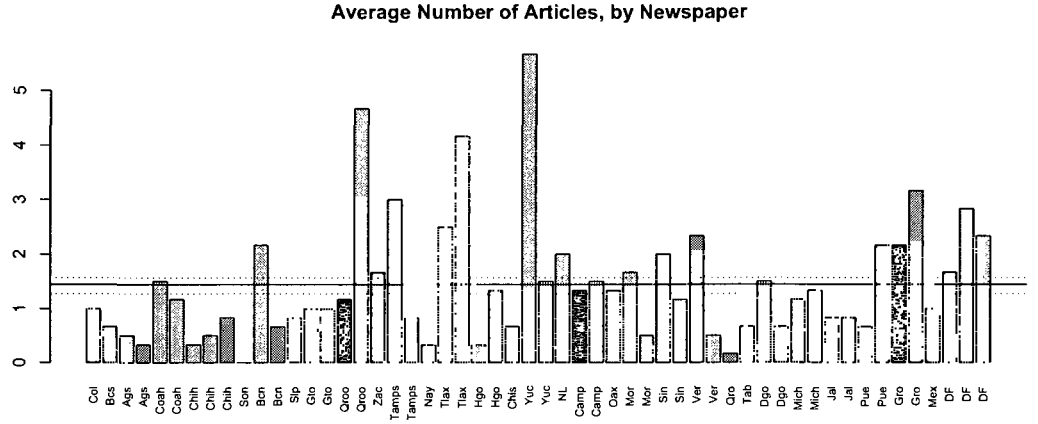

Figure 3.2: Average number of articles, by newspaper, sorted from left to right by the increasing level of corruption in the state, measured by the Transparencia Mexicana index. The light gray bars represent non-OEM newspapers, the dark gray bars the OEM newspapers, and the black bars the Novedades newspapers. The solid line is the overall average, the lower (upper) dashed lines are the mean for the OEM (non-OEM) newspapers. The mean for non-OEM newspapers includes the three *Novedades* papers.

included allegations of petty extortion, as well as more serious allegations like "being in the pockets of the *narcos*". For example, one of the cases reported by *Noroeste Sinaloa* in September 2001 is the police complicity in the cover-up of the visit paid by a fugitive *narco* boss to the hospitalized son.

The daily counts range between 0 and 8, with a mean of 1.4; the newspaper averages range between 0 and 5.7; the state averages range between 0 and 3.6. Figure 3.2 shows that the average number of articles in the sample varies substantially across newspapers. Newspapers are sorted by the increasing level of *Corruption* in the state of publication, as captured by the survey-based measure published by Transparencia Mexicana for 2001 (Transparencia Mexicana 2001). The survey asks respondents whether they had to pay a "mordida" (a bribe) to obtain the provision of a public service. This index measures petty corruption rather than high-end political corruption (e.g., kickbacks in public contracting, illegal campaign finance) while the articles deal with both types of corruption. Yet, it is

plausible that the prevalence of high-level corruption is highly correlated with the prevalence of its low-level counterpart. Most importantly, this is a victimization measure rather than a perception measure, hence it is not affected by the attention that the media give to the phenomenon.

The coverage does not merely track differential levels of corruption. A good amount of variation takes place from state to state, but the variation across newspapers is large. In Yucatán *Diario* has the highest average count of the whole country, while *Mundo al Dia* is just above the overall national average. In Baja California, the non-OEM *El Mexicano* is well above the national average while the OEM-owned *Sol de Tijuana* is well below the national average. In Veracruz, the pattern is reversed: *Gráfico de Xalapa* is much below, and the OEM-owned *Diario de Xalapa* is well above, the national average. If most of the variation were due to differential levels of corruption, it would be taking place at the state level, with modest variation between newspapers in the same state.

A first simple systematic analysis of the variation observed can be carried out by looking at the newspaper mean number of articles as a function of some state-and newspaper-level predictors. In the first three panels of figure 3.3 the average count for each newspaper is plotted against Corruption, Maximum Sentence, and Defamation Indictments. The black line is a least squares fit. Corruption is positively related to the amount of coverage, and regulation of speech is negatively related to coverage. The relationship is not driven by outliers: the grey lines in the plots are least square fits with iterative exclusion of one observation (i.e., one newspaper) from the sample: the slopes vary very little whatever newspaper is dropped from the sample. The bottom right panel plots the residuals from a regression of mean counts on Corruption, against the residuals from a regression of Defamation Indictments on Corruption. On the vertical axis is the amount of coverage in excess of what is expected given the level of corruption in a state: newspapers with positive values feature more news about corruption than expected; newspapers with values close to 0 have ap-

proximately the coverage one would expect given the prevalence of the phenomenon in the state; newspapers with negative values under-report corruption.[14] A negative association between how strict defamation law is, and coverage of corruption, is apparent in the plot. Again, the association does not seem to be driven by any one outlier, as the slopes of the grey lines (the least squares fit with iterative exclusion) exhibit very little variation.

3.3 A multi-level model of corruption coverage

The outcome of interest is a vector of counts, one entry for each newspaper-day observation. The daily counts are nested within newspapers, which in turn are nested within states and within groups of newspapers owned by the same publisher. There are more than 300 newspaper-day observations of the outcome variable, but the predictors of main interest are observed only at the state and newspaper level.

Several sources of variation affect the outcome variable. The number of stories worth considering varies from day to day. Given the sampling scheme adopted here, the newspaper-day observations are independent, conditional on being nested in a newspaper. The individual newspaper-day counts are modeled as draws from a Poisson distribution. Leads regarding events worth turning into a story do not necessarily happen every day, but the rate at which they reach the reporters is affected by observable factors. The prevalence of corruption in a state affects the availability of stories. The criteria regarding what is acceptable for publication are affected by the legal environment, the extra-legal incentive structure (e.g., probability of being victimized by private or privately-acting public agents), as well as local demand for informative newspapers. Newspaper-level factors affect the standards of what is a publishable story, and the editor's priorities.

Index the newspapers by k, the states by j, and the days by i. The counts can be modeled

[14] Due to the Frisch and Waugh (1933) theorem, the slope of the least squares fit in the fourth panel of figure 3.3 is the coefficient on the measure of the severity of defamation law in the multiple regression that controls for corruption.

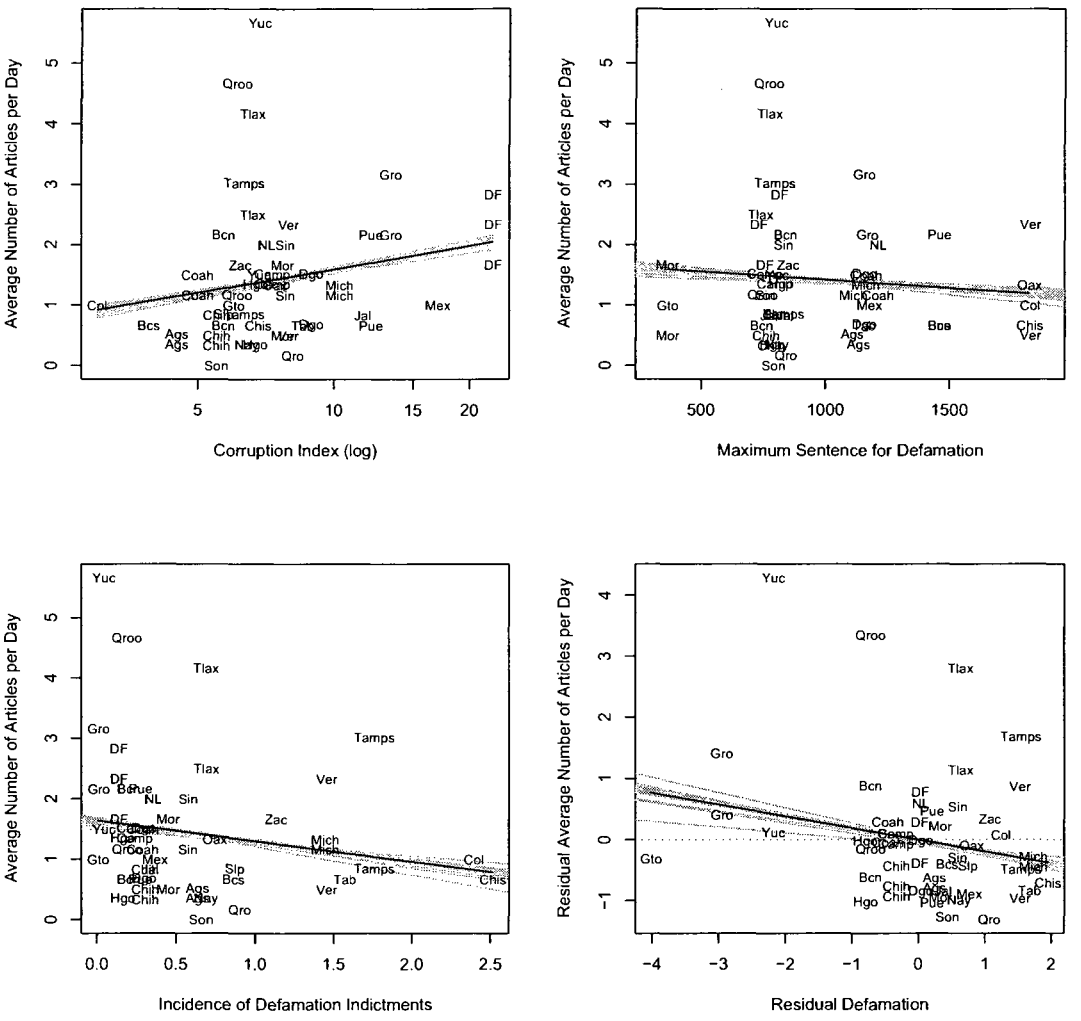

Figure 3.3: Average number of articles, by newspaper, against the corruption index and the measures of the legal environment. Each data point is a newspaper; the letters are the code for the state of publications. The black line is the least squares fit for the whole sample; the light grey lines are least squares fits with iterative exclusion of one newspaper. In the bottom left panel, incidence of defamation indictments is the average number of indictments between 1998 and 2000, over population. The bottom right panel plots the residuals from regressing average number of articles on the corruption index, against the residuals of a regression of indictments on the corruption index. (Sources: Transparencia Mexicana; INEGI, Estadisticas Judiciales and Census 2000.)

as

$$y_{ijk} \sim \text{Poisson}(\lambda_{ijk}) \tag{3.1}$$

where the parameter of the Poisson distribution is $\lambda_{ijk} = \exp(\mu_j + \nu_k + \upsilon_{ijk})$. Linear regression models can be set up for the state-specific parameter μ_j, the newspaper-specific parameter ν_k and the newspaper-day specific parameter υ_{ijk}. Among other advantages, directly modeling the nested structure avoids the problem of adjusting the estimates of uncertainty (e.g., computing clustered standard errors) to account for the fact that the observations of multiple newspapers in a given state, and of multiple days in a given newspaper, are not unconditionally independent. Of particular interest are the vectors β_{State}, $\beta_{\text{Newspaper}}$, and β_{Day} of regression coefficients to be estimated.

3.3.1 Estimating the chilling effect

The state-specific parameter $\mu_j = \beta_{\text{State}} X_{\text{State},j} + \epsilon_j$ is a function of state-level predictors: Corruption, *Per Capita Income* (log of Gross Domestic Product by state in 2001 as published by INEGI, divided by state population from the 2000 census data), and one of the the measures of severity of defamation law (Defamation Indictments in the reported estimation, and Maximum Sentence in alternative specifications). The models also include a measure of extra-legal risk. The Inter American Press Association proposed a five-categories ranking of the states according to the extra-legal risks for investigative journalists. The states ranked as posing very high risk are Tamaulipas, Baja California, and Sinaloa; high risk states are Sonora, Chihuahua, and Guerrero; Veracruz, México, Nuevo León, Coahuila, Chiapas, Michoacán, and Oaxaca are ranked as risky while Distrito Federal, Jalisco, Morelos, Campeche, and Yucatán are ranked as difficult. *Extra-legal Risk* is a variable that takes the values 0 to 4 in ascending order of risk.

The regression model for μ_j incorporates a state-specific random intercept ϵ_j that ac-

counts for "overdispersion": substantively the random components take into account the fact that there is variation across states not captured by the predictors. The newspaper-specific parameter $\nu_k = \beta_{\text{Newspaper}} X_{\text{Newspaper},k}$ is a function of newspaper level predictors: in the main specification presented here, two indicator variables, *OEM Newspaper* and *Novedades*. Finally, the newspaper-day specific parameter $\upsilon_{ijk} = \beta_{\text{Day}} X_{\text{Day},ijk}$ is modeled as a function of an indicator that takes the value of one if an election for the state legislature is taking place in the next 30 days, *Election Month*, and an indicator that takes the value of one if an election for the state legislature is taking place in the next 6 months, but not in the next month, *Election Semester*. The salience of local and state politics can be reasonably expected to increase in the proximity of an election. Half of the states held elections around the period under analysis: four states[15] had gubernatorial elections, and twelve more[16] had elections for the state legislature. Twelve of the newspaper-day observations in the sample are relative to the month prior to an election; 76 observations are relative to the period between six and one month before an election. Given that the dates of the elections are not concurrent across states, the indicators for observations before an election are not capturing potential national level time-specific shocks, as for instance a nation-wide month of special attention to corruption.

In the main specification reported here, the newspaper-day parameter is also a function of *PRI Governor*, an indicator that takes the value of one if the governor in power at the time of publication is a member of the PRI, as reported by the Electoral Institute of each state, and the interaction between this indicator and OEM Newspaper.[17] These are not modeled as a state-level predictors because the PRI loses two governorships in 2001: in Michoacán to the leftist *Partido de la Revolución Democratica* (PRD) and in Yucatán to the PAN. In

[15]Baja California, Michoacán,Tabasco and Yucatán.

[16]Aguascalientes, Baja California Sur, Chiapas, Chihuahua, Durango, Hidalgo, Puebla, Quintana, Sinaloa,Tamaulipas, Tlaxcala and Zacatecas.

[17]The Mexican Federal Electoral Institute provides links to the Electoral Institutes of each state at `http://www.ife.org.mx/portal/site/ife/menuitem.817e056eb3040a830465237d100000f7`, accessed on August 13, 2006.

the robustness checks (not reported), *PRI Vote*, the percentage of votes for the PRI in the 2000 presidential election, as reported by the Mexican Federal Electoral Institute, and the interaction between OEM Newspaper and PRI Vote are included. These are modeled as state-and newspaper-level predictors.

The regression coefficients β_ℓ were assigned independent normal priors with mean 0 and variance $\sigma^2_{\beta_\ell}$; the parameters σ_{β_ℓ} were assigned a non-informative uniform prior on the support [0,1000]. To mildly constrain the values of the variance of the distribution from which the random intercepts are drawn, the variance parameter of the random intercept, σ_ϵ, was assigned a weakly informative folded Cauchy prior distribution, with scale s equal to 2 in the main specification.[18] Sensitivity to the prior was assessed by setting the scale s equal to 1 and 5 and re-estimating the model. The results (not reported) are not sensitive to the scale of the prior.

The continuous inputs of the regression were standardized by subtracting the mean and dividing by two standard deviations, while binary indicator variables were left untouched. This makes interpretation easier (Gelman 2008); moreover, the MCMC sampler runs faster if all the variables are on the same scale. (Spiegelhalter et al. 2003) All the models were fit in `WinBUGS` (Spiegelhalter et al. 2003) called from `R` (R Development Core Team 2004) using the `bugs()` function (Sturtz et al. 2005). Three chains of 15.000 simulations each were run. The second half of the chain was saved (with thinning), leading to a total of 1023 draws from the posterior distribution. The $\hat{R}$ statistics took the value of one for all the parameters: the variance between chains is the same as the variance within each chain, and this fact is compatible with convergence being achieved. (Gelman and Rubin 1992)

[18]The model was reparametrized by setting $\epsilon_j = \xi\eta_j$ and then assigning a normal prior $\eta_j \sim N(0, \frac{1}{\tau^2_\eta})$, a normal prior $\xi \sim N(0, s^2)$ and a prior $\tau \sim \text{Gamma}(0.5, 0.5)$. The standard deviation of the random effects is $\sigma_\epsilon = \frac{|\xi|}{\sqrt{\tau_\eta}}$ (Gelman 2006).

3.4 Results of the basic analyisis: the chilling effect

The result of the simple regression, displayed in the scatterplot with least-squares fit above, is replicated in a model of the newspaper-day counts. Its qualitative inference is robust to controls for a set of potential confounders: stricter defamation law is associated with a decrease in the expected number of articles that mention acts of corruption.

	Posterior Mean	80% c. i.	p-value
PRI Governor	-0.36	[-0.65, -0.06]	0.06
	(0.24)		
OEM Newspaper: PRI Governor	0.18	[-0.08 , 0.47]	0.21
	(0.22)		
OEM Newspaper	-0.01	[-0.2 , 0.19]	0.46
	(0.16)		
Novedades	-0.36	[-0.6 , -0.12]	0.03
	(0.19)		
Election Month	0.47	[0.11 , 0.82]	0.04
	(0.27)		
Election Semester	0.16	[-0.01 , 0.34]	0.11
	(0.14)		
Corruption	0.23	[-0.08 , 0.56]	0.18
	(0.27)		
Per Capita Income	-0.17	[-0.5 , 0.15]	0.25
	(0.26)		
Extra-legal Risk	0.07	[-0.04,0.19]	0.23
	(0.09)		
Defamation Indictments	-0.47	[-0.82 , -0.12]	0.04
	(0.27)		
R^2_λ	0.52		
$N = 324$	$K = 54$	$J = 32$	

Table 3.1: Posterior mean, standard deviation, credible intervals and p values for the estimates of the coefficients of the Poisson model with random state intercepts.

Bayesian estimation does not simply provide point estimates of the parameters of interest and their variance; rather, the result of an estimation is the posterior distribution of the parameters, that contains all the current information regarding them. Table 3.1 reports the mean and the standard deviation of the posterior distribution, the 80 percent highest

posterior density intervals for the parameters, and the one-tailed probability values. The posterior mean and standard deviation can be considered roughly equivalent to point estimates and standard errors in a classical framework. The q-percent highest posterior density interval of an estimate is the region of the parameter that contains q percent of the posterior probability and is such that the density inside the region is never lower than the density outside. (Gelman et al. 2005) These credible intervals are not equivalent to confidence intervals: rather, they are reported to provide the range of values in which the "true" value of the coefficient is very likely to lie. Hence the 80% —and in the plots and the verbal reports of substantive significance, the 50%— probability levels chosen, rather than the usual 95% adopted when classical confidence intervals are reported. The probability values report the probability that the sign of the coefficient is the opposite of the sign of its posterior mean: formally, I report $\Pr(\beta > 0)$ for parameters with negative posterior mean, $\Pr(\beta < 0)$ for parameters with positive posterior mean. (Gill 1999) The p-values convey information regarding the reliability of inferences based on the sign of the posterior mean, and are used to assess the statistical significance of the coefficients.

The measure of fit R^2_λ is an extension to multi-level models of the familiar R^2 in linear regression: it is defined as one minus the ratio of the variance of the λ parameter of the Poisson model over the variance of the random intercept ϵ. Around 52% of the variation across states in the latent parameter λ (the expected value of the Poisson process, or the mean number of articles) is explained by the model. (Gelman and Hill 2007) The posterior distribution of the regression coefficient on Defamation Indictments has mean -0.47, standard deviation 0.27, and the probability that the coefficient is not negative is 4%. To assess the substantive meaning of this finding, the non-linearity of the model has to be taken into account. The Poisson parameter, which is also the expected value of the counts, is modeled as the exponential of the linear predictor. The top left panel of figure 3.4 plots the expected number of articles against the measure of severity of defamation law, for a representative

newspaper. The median newspaper has $\lambda_{ijk} = 1.2$ and is expected to feature approximately one article a day, or eight a week. Two newspapers, published in a state one standard deviation below the mean and one standard deviation above the mean of Defamation Indictments are expected to differ by between an article a day and three articles a week.[19]

As for the potential confounders, the coverage of corruption increases when elections approach. The increase is mild six to one month prior to the election, and inferences regarding the sign of the coefficient on Election Semester might be somewhat unreliable ($p = 0.11$). The increase is sharp (and reliably positive: $p = 0.04$) in the last month before the election. The median newspaper is expected, all else equal, to increase its average coverage of corruption by up to one article every three days in the semester prior to the election, and by between an article every three days and an article a day in the month before the election. This is probably due to the fact that an important proportion of articles about corruption report mutual accusation by politicians: these increase during the electoral campaign. Moreover, before elections the attention to politics increases.

The newspapers owned by SIPSE are expected to feature substantially fewer articles on corruption than newspapers not owned by SIPSE or OEM. The posterior mean of the coefficient on the Novedades indicator is -0.36 and the probability that the coefficient is negative is 0.97. For the median newspaper, ownership to this firm is associated with a reduction in coverage by one article every two or three days. An explanation based on demand effects and geographic specialization of this firm —explored in the United States case by Gentzkow and Shapiro (2006)— can be excluded: two of the newspapers are published in southern states in the Yucatán peninsula and one in the Pacific state of Guerrero. According to this analysis, the newspapers owned by OEM, in states not governed by the PRI, are not different from non- OEM newspapers, once the features of the state are accounted for: the posterior distribution of the coefficient on OEM Newspaper is centered at 0.

[19] All the calculation of the substantive magnitude and significance of the detected relationships are based on the 50% credible intervals for the coefficients.

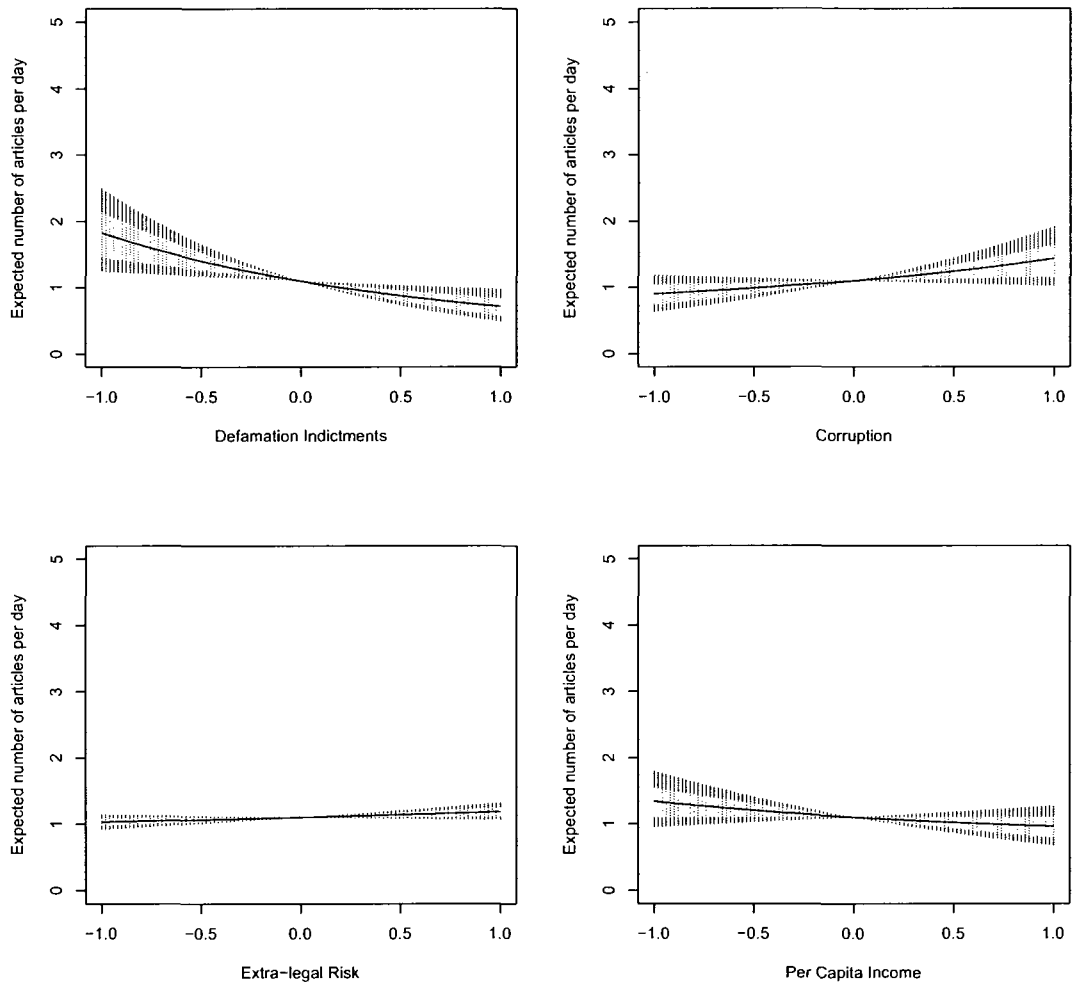

Figure 3.4: Expected number of articles, in the median newspaper, as a function of regulation of speech, corruption, extra-legal risk, and average income, from the estimates of basic model. The predictors are standardized so they have mean zero and standard deviation equal to 0.5. The darker segments display the 80% credible interval and the lighter segments the 50% credible interval.

In states ruled by a PRI administration, the coverage in non-OEM newspapers is on average lower. The coefficient on the PRI Governor indicator has mean -0.36, with standard deviation 0.24, and the posterior probability that the coefficient on PRI Governor is negative is 94%. A non-OEM newspaper in a PRI-governed state is expected to publish between one article less every two days and one article less every five days, all else equal. For OEM newspapers in PRI- governed states, the relationship is still negative (the mean of the coefficient on PRI Governor plus the interaction is -0.17, with standard deviation 0.27) but inferences regarding the sign of the association are not reliable: the probability that the association is negative is only 0.75. All else equal, an OEM newspaper published in a state with a PRI governor is expected to feature something between the same number of articles as, and an article every three days more than, a non-OEM newspaper published in a state governed by the PRI. Where does the association between the partisanship of the state administration and coverage of corruption come from? A candidate explanation might be demand effects: readers in states that have high support for the old ruling party are less interested in reading about corruption. When the indicator for the partisanship of the governor is replaced with the presidential returns for the PRI in the state in the 2000 election, no reliable inference can be made regarding the sign of the association. The posterior of both the coefficient on partisanship and the interaction with OEM ownership are centered approximately around 0 and span positive and negative values. The measure of electoral support for the old ruling party should be better suited at detecting demand effects. One might conjecture that governors have at their disposal instruments other than legal harassment (that is accounted for in the regression model) to control the press. Alternatively, PRI state administrations resort more than other parties to legal regulation of speech to silence the press.

The mean of the coefficient on Corruption is 0.23 (with standard deviation 0.27), and the probability that it is not positive is 18%. Corruption coverage is positively associated

to the prevalence of the phenomenon, but the association is substantively relatively small and inferences regarding the sign are not reliable. All else equal, a median newspaper published in a state one standard deviation above the mean of Corruption is expected to feature something between the same number of articles as, and one article every two days more than, a newspaper in a state one standard deviation below the mean of Corruption. The coefficient on Extra-legal Risk is positive, against the theoretical expectation that journalists in riskier environments display less of a propensity to report about sensitive topics. Yet, the posterior mean is very close to zero, and no reliable inference regarding the sign of the association can be made: the posterior probability that the coefficient is negative is only 0.23. Similarly, no reliable inference can be made regarding the relation between GDP and coverage of corruption: the posterior mean is negative, but a fourth of the posterior distribution lies above 0.

3.5 Instrumental variable regression model

The result regarding the association between punitive defamation law and corruption coverage might be driven by a strong confounder. The severity of the law itself might be affected by an unobserved "aggressive" tradition of the newspapers in a given state. Legislators might stiffen the law that regulates speech, in order to protect themselves from "watchdog" journalists. As a consequence the severity of the law is endogenous to the coverage that politicians expect: the law might be more punitive when the unobserved "style" of the newspapers is aggressive. Moreover, the variable included in the models presented here, Defamation Indictments, is a measure of past enforcement rather than a measure of the law as recorded in the statutes. For such a reason, the results of the regression presented above might underestimate the chilling effect. An instrumental variable model can overcome these potential problems to support the interpretation of the negative relationship between

defamation law and coverage of corruption as a causal "chilling effect". The Penal Codes provide potential instruments for the severity of defamation law: the severity of criminal law for other offenses cannot affect directly the coverage of corruption, but it is related to the overall severity of the Penal Code in a state. There is a "natural" ranking of the seriousness of crimes: legislators and citizens can be reasonably expected to believe that the more serious crime must be punished with longer prison terms. For instance, once the mininum mandatory sentence for homicide is chosen, it bounds from above the punishment for offenses (like crimes against reputation) that are naturally ranked as less serious than homicide. Similarly, if the requirement for indictment vary with the severity of the law for a given crime, and the severity of the law for a given crime is predicted from the severity of criminal law in a given state, measures that capture the latter can be used as instruments for the former.

The instrumental variable model might not rule out endogeneity completely. While violations of the exclusion restriction —direct effects from criminal statute law to coverage of corruption— seem extremely implausible, violations of the ignorability assumption (exogeneity of the instrument) can never be ruled out when instruments are not randomly assigned: there might be some unobservable trait (for instance, a more traditionalist or authoritarian political culture) that affects the instruments (how punitive a state's criminal justice system is), the treatment (regulation of speech), and newspapers attitudes regarding their "watchdog" role with respect to politicians and bureaucrats. Yet, the set of variables that affect all three phenomena is a proper subset of the set of confounders: there are fewer factors that affect criminal justice, regulation of speech, and corruption coverage than factors that affect only regulation of speech and corruption coverage.

I estimate a simultaneous equations model for μ_j, the state-level component of the Pois-

son parameter, and D, the severity of defamation law.[20] The reduced form I estimate is

$$\mu_j = \xi X_j + \beta\gamma Z_j + \epsilon_j \tag{3.2}$$

$$D_j = \delta X_j + \gamma Z_j + \eta_j \tag{3.3}$$

where μ is the state-level component of the Poisson parameter, D is the severity of defamation law, Z are the instruments, X is a matrix with the remaining state-level covariates, and β is the structural parameter that captures the effect of defamation law on coverage of corruption. Two instruments are included in the matrix Z: *Homicide Law*, the minimum mandatory sentence for homicide, and *Prison Escape*, the maximum sentence for aiding and abetting the escape of a prisoner. The sources are the Penal Codes of each state. The errors $[\epsilon_j, \eta_j]$ are modeled as draws from a bivariate normal distribution with mean 0 and precision matrix Θ.

Table 3.5 reports summaries of the posterior distributions of the coefficients for three models. Models 2 and 3 include the measure of extra-legal risk, which is excluded in model 1. In model 2 (second column of table 3.5), the coefficients in the outcome equation are modeled as draws from a normal distribution with zero mean and common standard deviation σ_β, which in turn is assigned an uninformative uniform prior. In models 1 and 3(first and third column of table 3.5), the coefficients in the outcome equation are modeled as draws from a multivariate normal distribution. Formally, $[\xi, \beta] \sim \mathcal{MVN}(0, \Omega_\beta^{-1})$. The coefficients in the assignment equation are modeled as $[\delta, \gamma] \sim \mathcal{MVN}(0, \Omega_\gamma^{-1})$ in the three models. The priors on the precision matrices Θ, Ω_β, and Ω_γ are Wishart distributions.

For each of the models, three chains of 100.000 simulations were run in WinBUGS, and the second half of each chain was saved (with thinning).

The measure of fit R^2_λ is again the extension to multi-level models of the familiar R2 in linear regression, following the definition in the previous section. Around 65% of the vari-

[20] See Lancaster (2004) for an introduction to instrumental variable models in a Bayesian framework.

	IV-Model 1		**IV-Model 2**		**IV-Model 3**	
	Posterior Mean (S.D.)	p	Posterior Mean (S. D.)	p	Posterior Mean (S.D.)	p
Outcome equation						
PRI Governor	-0.16	0.23	-0.27	0.13	-0.21	0.17
	(0.23)		(0.24)		(0.23)	
OEM:PRI	0.20	0.18	0.21	0.17	0.15	0.22
	(0.21)		(0.22)		(0.20)	
OEM Newspaper	-0.06	0.35	-0.07	0.33	-0.04	0.39
	(0.16)		(0.16)		(0.14)	
Election Month	0.42	0.05	0.40	0.06	0.38	0.08
	(0.25)		(0.25)		(0.26)	
Election Semester	0.14	0.15	0.13	0.18	0.10	0.22
	(0.13)		(0.13)		(0.12)	
Novedades	-0.35	0.03	-0.35	0.02	-0.32	0.06
	(0.20)		(0.18)		(0.20)	
Corruption	0.53	0.01	0.62	0.01	0.68	0.00
	(0.24)		(0.25)		(0.26)	
Per Capita Income	0.01	0.49	-0.02	0.48	0.01	0.50
	(0.21)		(0.21)		(0.18)	
Extra-legal Risk			0.26	0.11	0.26	0.13
			(0.22)		(0.23)	
Defamation Indictments	-0.99	0.03	-1.12	0.02	-1.63	0.02
	(0.56)		(0.50)		(0.97)	
Assignment equation						
Homicide Law	0.13	0.16	0.15	0.10	0.12	0.14
	(0.13)		(0.12)		(0.12)	
Prison Escape	0.46	0.01	0.55	0.00	0.49	0.00
	(0.17)		(0.18)		(0.18)	
R^2_λ	0.63		0.66		0.67	

Table 3.2: Posterior mean, standard deviation, and p values for the estimates of the coefficients of the instrumental variables model.

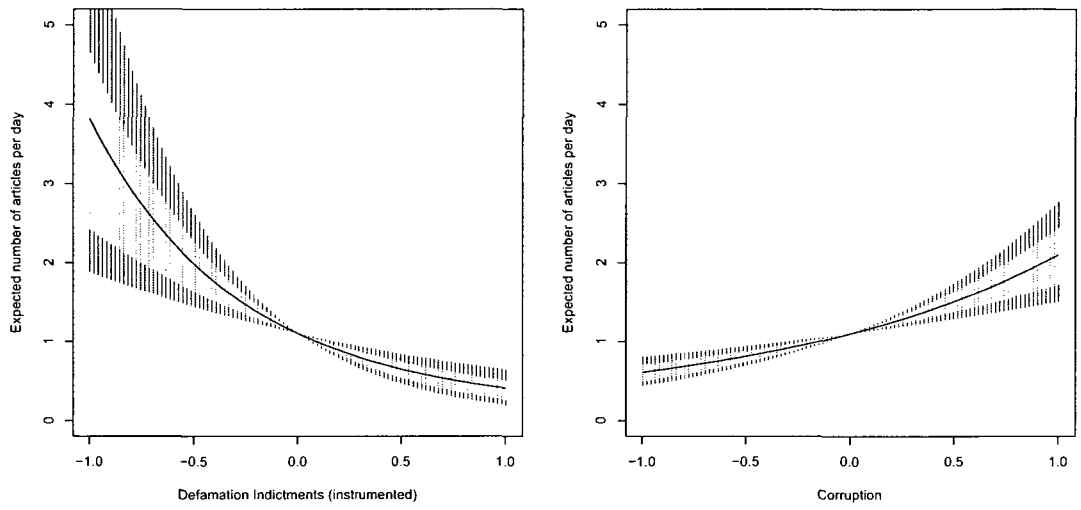

Figure 3.5: Expected number of articles, in the median newspaper, as a function of regulation of speech and corruption, from the estimates of model 2. The predictors are standardized so they have mean zero and standard deviation equal to 0.5. The darker segments display the 80% credible interval and the lighter segments the 50% credible interval.

ation across states in the latent parameter λ (the expected value of the Poisson process, or the mean number of articles) is explained by the outcome equation in the three instrumental variable models. (Gelman and Hill 2007)

According to the estimates of Model 2, the mean of the posterior distribution for the structural parameter is -1.1, with standard deviation 0.5, and the 80% central posterior interval is [-1.74, -0.54]. The probability that the coefficient is negative is 0.98. The instrumental variable model corroborates the negative relationship between severity of defamation law and corruption coverage, and supports an interpretation of the negative association as a causal "chilling effect". The left panel of figure 3.5 plots the expected number of articles for a median newspaper, as a function of Defamation Indictments, according to the estimates of model 2. All else equal, a newspaper published in a relatively more repressive state (one standard deviation more repressive than average) is expected to feature between one and almost two articles a day fewer than a newspaper published in a relatively

libertarian state (one standard deviation less repressive than average).

When the potential endogeneity of the severity of defamation law is accounted for, coverage is predicted more closely by the prevalence of corruption in the state as captured by the Transparencia Mexicana index: according to the Model 2 estimates, the posterior of the coefficient on Corruption has mean 0.6, with standard deviation 0.25, and with 80% probability it lies between 0.3 and 0.9. The probability that the coefficient is not positive is just 1%. The right panel of figure 3.5 plots the expected number of articles for a median newspaper, as a function of corruption: all else equal, a newspaper published in a relatively more corrupt state (one standard deviation more corrupt than average) is expected to feature between one article every three days and six articles every five days more than a newspaper published in a relatively cleaner state (one standard deviation cleaner than average).

The results for the other predictors are largely consistent with those of the basic analysis. The electoral effects emerge: the means of the coefficients on the indicators for Election Month and Election Semester are respectively 0.4 and 0.13, and the probabilities that the coefficient is positive are respectively 94 and 82%. Newspapers of the Novedades group feature less coverage of corruption: the posterior mean is -0.35 (with standard deviation 0.18) and the probability that the coefficient is negative is 98%. Non-OEM newspapers in states with a PRI governor feature slightly fewer stories of corruption than those in states governed by the former opposition: the posterior mean of the coefficient on PRI Governor is -0.27, with standard deviation 0.24. Inferences about the sign might be relatively unreliable: according to the estimates of model 2, the probability that the coefficient is not negative is 13%. OEM newspapers, on the other hand, are not expected to differ in their coverage according to the partisanship of the governor: the mean of the coefficient on PRI Governor plus the interaction is -0.06, with standard deviation 0.25, and the probability that the coefficient is positive is 0.4. Per Capita Income again does not predict coverage: the posterior distribution of the coefficient is centered around zero. Finally, the coefficient on

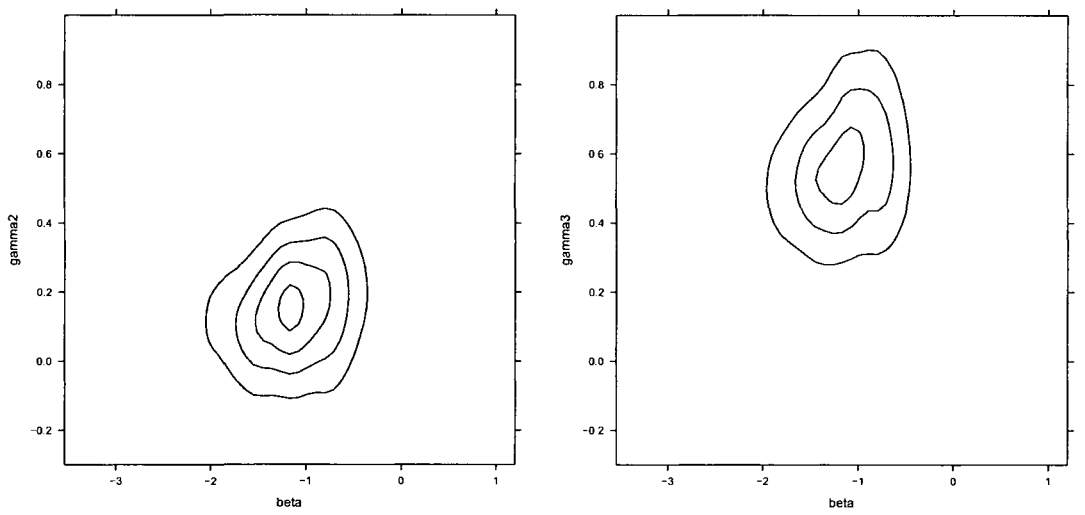

Figure 3.6: Joint posterior distribution of the structural parameter β and respectively the coefficient on Homicide Law(γ_2) in the left panel and Prison Escape (γ_3)in the right panel. From the posterior of model 2.

Extra-legal Risk has positive mean (0.26), and the probability that it is positive is 89%. In the most risky environment (e.g., Tamaulipas) coverage is expected to be higher than in a state at the lowest level of risk (e.g., Guanajuato). This contradicts the expectation derived from the conventional wisdom, and casts doubt on the quality of the ranking. Very likely, more than capturing risk itself, the index captures also the opportunities and past propensity of reporters to talk about "shady" topics, and the overall degree of lawfulness of the state. The increase in the fit of the model following the inclusion of the measure of extra-legal risk is non-negligible; yet, the results regarding the other predictors are substantially unchanged if Extra-legal Risk is omitted.

In the assignment equation, according to the estimates of model 2, the coefficients for the two instruments have posterior mean respectively 0.15 and 0.55, with 80% central posterior intervals [0, 0.3] and [0.33, 0.78]. The two panels of figure 3.6 plot the joint posterior distribution of the coefficients on the instruments in the assignment equation and the structural coefficient, according to the estimates of model 2. There is no hint that local

non-identification (which happens when the posterior of the coefficients in the assignment equation has mass in a neighborhood of 0) is a problem.

In order to check whether the results are driven by the choice of priors, I re-estimated the model in equations 2 and 3, replacing the two instruments described above with two vectors of draws from two (independent) normal distributions with mean 0 and standard deviation 0.5. These variables are on the same scale of the instruments in Z, but by construction they are unrelated to the assignment of the treatment and to the outcome. If the finding above were replicated when using these "fake" instruments, one would conclude that the results presented above are driven by the choice of the prior distribution.[21] The posterior distribution for the coefficients on the fake instruments in the assignment equation are centered approximately at 0; moreover, the posterior distribution of the coefficient on the structural parameter β is also centered approximately at 0, with standard deviation 1.6. Then, the estimates presented above are not driven simply by the choice of priors: with fake instruments, designed to be unrelated to the treatment and the outcome, the model does not detect any effect of defamation law on the coverage of corruption.

3.6 Conclusions

Regulation of speech reduces the amount of accountability-oriented information spread by the media: conditioning on several potential confounders, there is a systematic negative association between how punitive defamation law is and the number of articles that mention events of political and bureaucratic corruption and police misconduct in Mexican newspapers. According to the estimates of the basic analysis, up to one article a day is "missing" in newspapers published in the states with a more repressive legal environment, compared to those published in more permissive states. The result survives if the severity of defama-

[21] See Bound, Jaeger, and Baker (1995) and Chamberlain and Imbens (1996) fora discussionof this technique.

tion law is instrumented for with the severity of criminal law for other offenses: restrictive regulation of speech substantially reduces the coverage of corruption in the media.. The estimate of self-censorship provided here can be compared to those for England and Wales —where defamation is no longer a criminal offense— that can be inferred from the survey results in Barendt et al. (1997). The estimate is based on the self-reported number of stories of local interest that a newspaper did not run in the 1988-93 period because of concerns with defamation liability. Around 44% of the newspapers claimed that they had decided not to cover between 1 and 5 stories that otherwise would have been of public interest; 4% claimed that they had not covered between 6 and 10 stories, and 7% claimed that they had not covered between 11 and 20 stories; finally, 45% claimed that they had not suppressed any story of local interest. A back-of-the-envelope calculation, assigning midpoints as values to the intervals, would conclude that on average around 3 articles every 5 years are suppressed due to the fear of a defamation lawsuit. The estimate I propose for Mexico is much higher, and seems to be consistent with the findings of a survey of a non-random group of Latin American journalists, according to which amost half of the reporters have practiced self-censorship.[22] Two remarks are in order. First of all, if regulation of speech only affects the behavior of some newspapers (for instance, those that do not have friendly relationships with the government or with prosecutors), the results provided here are underestimating the effects of regulation on coverage. Moreover, even in the states with the most permissive regime of regulation of speech, the existence of criminal laws on the book might affect the decisions regarding what is to be published. For these reasons, the estimates provided here represent a lower bound to the "chilling effect" of punitive regulation of speech in Mexico.

Some more general conclusions for the study of the media and government accountability, in particular in young democracies, can be drawn. First of all, the concerns voiced by

[22]See footnote 1 above for the reference and a caveat.

scholars, as well as by practitioners and activists, regarding the chilling effect of criminal defamation legislation is not unfounded. The role of the media in providing information that allows citizens to control political and bureaucratic corruption is relatively well understood. Adserá et al. (2003) and Brunetti and Weder (2003) provide cross-country evidence on the relationship between freedom of the press and corruption; Gentzkow et al. (2004) relate the decline of the corruption that had been prevalent during the Gilded Age in the United States to the success of the independent and informative newspapers at the end of the XIX century. Restrictions to press freedom might have very visible negative consequences for the functioning of democracies and the quality of government. Legislation that treats defamation as a criminal offense shields politicians and public servants from reports of their malfeasance, and indirectly creates incentives for office-holders to engage in profitable illegal activities.

The debate on the establishment of a free press in new democracies has been at times plagued by misunderstandings. On the one hand, some have raised often unjustified a priori skepticism regarding the ability of markets and private ownership of media outlets to provide citizens with the information needed to insure accountability. Moreover, the critics of private ownership have often failed to propose a clear alternative arrangement. The other side of the debate has relied on the unqualified prescription that private ownership of the media per se leads to a well-functioning press.[23] The debate has at times overlooked or underemphasized how other factors affect both the amount and the quality of the information that the media spread regarding the behavior of elected officials and public servants. This paper measures the amount of corruption coverage in a sample of newspapers, exploits the variation in regulation across states in a federal country, and contributes to the debate by showing systematically that the aggressive or more conciliatory stance of newspapers towards politicians and bureaucrats is substantially affected by the legal environment in

[23]Iosifides (1999) provides a summary of the debate, focused more on diversity of opinions rather than accountability-oriented information.

which the news media operate. Estimates of the amount of coverage that is suppressed because of regulation are provided.

The evidence also suggests that the poor performance of the judicial system often noticed in developing countries (Djankov et al. 2001), and in Latin America in particular (Becker 1999, Prillaman 2000, Staats et al. 2005), might not affect to the same extent different spheres of operation of courts and prosecutors. When at stake is the reputation of well-positioned actors like politicians and bureaucrats, the threat of judicial prosecution is sufficiently credible to have an observable —both statistically and substantially significant— deterrence effect on the behavior of reporters and editors. In this sense, it seems plausible to conjecture that judicial institutions are malfunctioning on purpose: uninterested, for instance, in enforcing the property rights of less powerful actors, they are effective when they shield government officials from public scrutiny.

3.7 References

Adserá, Alicia, Carles Boix, and Mark Payne. 2003. "Are You Being Served? Political Accountability and Quality of Government." *JLEO* 19:445-90.

Barendt, Eric, Laurence Lustgarten, Kenneth Norrie,and Hugh Stephenson. 1997. *Libel and the Media: The Chilling Effect.* New York: Oxford University Press.

Becker, David G. 1999. "Latin America: Beyond 'Democratic Consolidation' ." *Journal of Democracy* 10(2):138-51.

Besley, Timothy, and Andrea Prat. 2006. "Handcuffs for the Grabbing Hand? The Role of the Media in Political Accountability." *American Economic Review* 96(3):720-36.

Bound, John, David A. Jaeger, and Regina M. Baker. 1995. " Problems with Instrumental Variables Estimation When the Correlation Between the Instruments and the Endogeneous Explanatory Variable is Weak." *Journal of the American Statistical Association*

90:443-450.

Brunetti, Aymo, and Beatrice Weber. 2003. "A Free Press is Bad News for Corruption." *Journal of Public Economics* 87:1801-24.

Chamberlain, Gary, and Guido W. Imbens. 1996. "Hierarchical Bayes Models with Many Instrumental Variables." NBER Working Paper T0204.

Dent, Chris, and Andrew T. Kenyon. 2004. "Defamation Law's Chilling Effect: A Comparative Content Analysis of Australian and US Newspapers." *Media and Arts Law Review* 9:89-113.

Djankov, Simeon, Rafael La Porta, Florencio Lopez-de-Silanes, and Andrei Shleifer. 2001. "Legal Structure and Judicial Efficiency: The Lex Mundi Project." Unpublished manuscript, World Bank.

Djankov, Simeon, Caralee McLeish, Tatiana Nenova, and Andrei Shleifer. 2003. "Who Owns the Media?" *JLEO* 46:341-81.

Elster, Jon. 1998. *Deliberative Democracy.* New York: Cambridge University Press.

Fox, Elizabeth. 1998. "Latin American Broadcasting and the State: Friend and Foe." In Patrick H. O'Neil (Ed.), *Communicating Democracy : The Media and Political Transitions.* Boulder: Lynne Rienner Publishers.

Frisch, Ragnar, and Frederick V. Waugh. 1933. "Partial Time Regressions as Compared with Individual Trends." *Econometrica* 1(4):387-401.

Gabszewicz, Jean J., Didier Laussel, and Nathalie Sonnac. 2000. "Press Advertising and the Ascent of the 'Pensée Unique'." Paper presented at the 15th Annual Congress of the European Economic Association, Bolzano, Italy.

Gelman, Andrew. 2006. "Prior Distributions for Variance Parameters in Hierarchical Models." *Bayesian Analysis* 1(3):515-533.

Gelman, Andrew. 2008. " Scaling Regression Inputs by Dividing by Two Standard Deviations." *Statistics in Medicine.*

Gelman, Andrew, John B. Carlin, Hal S. Stern, and Donald B. Rubin. 2004. *Bayesian Data Analysis.* Boca Raton, Fla.: Chapman& Hall/CRC.

Gelman, Andrew, and Jennifer Hill. 2007. *Data Analysis Using Regression and Multilevel / Hierarchical Models.* New York: Cambridge University Press.

Gelman, Andrew, and Donald B. Rubin. 1992. "Inference from Iterative Simulation Using Multiple Sequences." *Statistical Science* 7(4):457-472.

Gentzkow, Matthew, Edward L. Glaeser, and Claudia Goldin. 2004. "The Rise of the Fourth Estate:How Newspapers Became Informative and Why it Mattered." NBER Working Paper 10791.

Gentzkow, Matthew, and Jesse M. Shapiro. 2006. "What Drives Media Slant? Evidence from U.S. Daily Newspapers." NBER Working Paper 12707.

Gill, Jeff. 1999. "The Insignificance of Null Hypothesis Significance Testing." *Political Research Quarterly* 52: 647-674.

Groseclose,Tim, and Jeffrey Milyo. 2005. "A Measure of Media Bias." *Quarterly Journal of Economics* 120(4):1191-1237.

Hall, Richard A., and Patrick H. O'Neil. 1998."Institutions, Transitions, and the Media: A Comparison of Hungary and Romania." In Patrick H. O'Neil (Ed.), *Communicating Democracy: The Media and Political Transitions.* Boulder: Lynne Rienner Publishers.

Hansen, Anders, Simon Cottle, Ralph Negrine, and Chris Newbold. 1998. *Mass Communication Research Methods.* New York: New York University Press.

Herman, Edward S., and Noam Chomsky. 1988. *Manufacturing Consent: The Political Economy of the Mass Media.* New York:Pantheon Books.

Hughes, Sallie, and Chappel Lawson. 2005. "The Barriers to Media Opening in Latin America." *Political Communication* 22:9-25.

ICJ. 2003."ICFJ Survey Finds Alarming Conditions for Latin American Journalists." Latin American Newsletter 3, retrieved at http://www.ifj-europe.org/pdfs/LatinAmericanNewsletter.

pdf

Iosifides, Petros. 1999. "Diversity Versus Concentration in the Deregulated Mass Media Domain." *Journalism and Mass Communication Quarterly* 76:152-62.

Kim, Hun Shik. 2003."Media, the Public, and Freedom of the Press." *Social Indicators Research* 62,63:345-364.

Lacy, Stephen, Daniel Riffe, Staci Stoddard, Hugh Martin, and Kuang-Kuo Chang. 2001. "Sample Size for Newspaper Content Analysis in Multi-Year Studies." *Journalism and Mass Communication Quarterly* 78(4):836-845.

Lancaster, Tony. 2004. *An Introduction to Modern Bayesian Econometrics.* Malden, MA: Blackwell Publishing.

Lawson, Chappell H. 2002. *Building the Fourth Estate : Democratization and the Rise of a Free Press in Mexico.* Berkeley: University of California Press.

Mauro, Paolo. 1995. "Corruption and Growth." *Quarterly Journal of Economics* 60 (3):681:712.

Mauro, Paolo. 1998. "Corruption and the Composition of Government Expenditure." *Journal of Public Economics* 69:263-279.

Navia, Patricio, and Julio Rios-Figueroa. 2005. "The Constitutional Adjudication Mosaic of Latin America." *Comparative Political Studies* 38: 189-217.

Parenti, Michael. 1986. *Inventing Reality: The Politics of the Mass Media.* New York: St. Martin's Press.

Prillaman, William C. 2000. *The Judiciary and Democratic Decay in Latin America: Declining Confidence in the Rule of Law.* Westport: Praeger.

Przeworski, Adam, Susan C. Stokes and Bernard Manin. 1999. *Democracy, Accountability, and Representation.* New York: Cambridge University Press.

R Development Core Team. 2006. *R: A Language and Environment for Statistical Computing.* Vienna, Austria: R Foundation for Statistical Computing.

Renas, Stephen M., Charles J. Hartmann, and James L. Walker. 1989. "An Empirical Analysis of the Chilling Effect." In Everette E. Dennis and Eli M. Noam (Eds.), *The Cost of Libel: Economic and Policy Implications.* New York: Columbia University Press.

Reporters Sans Frontiers. 2004. *Mexico. Annual Report 2004.* Electronic source. Retrieved at http://www.rsf.org/article.php3?idarticle=9979.

Riffe, Daniel, Charles F. Aust, and Stephen R. Lacy. 1993. "The Effectiveness of Random, Consecutive Day and Constructed Week Sampling in Newspaper Content Analysis." *Journalism Quarterly* 70(1):133-139.

Scott, Colin. 2002. "Private Regulation of the Public Sector: A Neglected Facet of Contemporary Governance." *Journal of Law and Society* 29:56-76.

Simon, Joel. 1997. "Breaking Away: Mexico's Press Challenges the Status Quo". *Attacks on the Press in 1997.* New York: Committee to Protect Journalists.

Spiegelhalter, David, Andrew Thomas, Nicky Best and Dave Lunn. 2003. *WinBUGS User Manual.* Institute of Public Health, Cambridge, UK.

Staats, Joseph L., Shaun Bowler, and Jonathan T. Hiskey. 2005. "Measuring Judicial Performance in Latin America." *Latin American Politics and Society* 47(4):77-106.

Sturtz, Sibylle, Uwe Ligges, and Andrew Gelman. 2005. "R2WinBUGS: A Package for Running Win BUGS from R." *Journal of Statistical Software* 12(3).

Sutter, Daniel. 2001. "Can the Media Be So Liberal? The Economics of Media Bias." *Cato Journal* 20(3):431-451.

Sutter, Daniel. 2002. "Advertising and Political Bias in the Media: The Market for Criticism of the Market Economy." *American Journal of Economics and Sociology* 61(3):725-744.

Waisbord, Silvio R. 1998. "The Unfinished Project of Media Democratization in Argentina." In Patrick H. O'Neil (Ed.), *Communicating Democracy: The Media and Political Transitions.* Boulder: Lynne Rienner Publishers.

Waisbord, Silvio R. 2000. *Watchdog Journalism in South America: News, Accountability, and Democracy.* New York: Columbia University Press.

Walden, Ruth. 2000. *Insult Laws: An Insult to Press Freedom.* Reston, Va. : World Press Freedom Committee.

Zepeda Lecuona, Guillermo. 2005. *Myths of Pretrial Detention in Mexico.* Monterrey, Nuevo León, Mexico: Open Society Institute.