

Handcuffs for the Grabbing Hand? Media Capture and Government Accountability*

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Abstract

It has long been recognized that the media play an essential role in democracy. However, even in the absence of censorship, the government may influence news content by maintaining a “cozy” relationship with the media. This paper develops a simple model of democratic politics in which the actual freedom of the press is endogenous. In equilibrium, the features of the media market determine the ability of the government to capture the media and to control political outcomes. The main predictions of the model are consistent with stylized facts about corruption, political turnover, and perceived press freedom.

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1 Introduction

For over two centuries, political thinkers have recognized that the media play an essential role in democracy. Thomas Jefferson famously stated: “If it were left to me to decide whether we should have a government without a free press or a free press without a government, I would prefer the latter.” Jefferson’s views are enshrined in the First Amendment of the US Constitution which – among other things – categorically prohibits Congress from passing laws that abridge the freedom of the press. As countries around the world transition from autocracy to more or less democratic forms of government, they tend to affirm press freedom in equally strong terms. For instance, the 1993 Constitution of the Russian Federation (article 25.1) proclaims that: “The freedom of the mass media shall be guaranteed. Censorship shall be prohibited.”

Is formal media freedom enough to guarantee the free press that Jefferson envisaged? Russia is a case in point. Despite the lack of old-fashioned preemptive censorship, the Russian media are gravely hindered in other ways (Freedom House [14]). All national broadcasters are now owned by state-controlled companies. Most national newspapers are in the hand of a small number of wealthy individuals who are highly vulnerable to regulatory pressure. It is no surprise that the Russian media provide a sympathetic and sometimes incomplete account of government behavior. Freedom House reports a non-dissimilar combination of formal press freedom and substantial political influence in several other democracies around the world, from Thailand to Italy, from India to Mexico. If media capture is such a widespread phenomenon, development and politics scholars should ask themselves what its determinants and consequences are.

The goal of the present paper is to provide a simple theoretical framework to discuss how and when government captures the media and what the effect of such capture is on political outcomes. We begin with a canonical political agency model (Barro [4], Ferejohn [12]). Voters use available information to decide whether to keep the current party in power or replace it with the opposition. The innovation of the present model is that information is endogenously provided by the media industry. Each media outlet faces two possible sources of profit. One is simply audience-driven commercial revenue (which can take the form of sales, subscription, advertising, etc. according to the specific medium under consideration). The commercial revenue increases if the media outlet reports interesting information.

The other source of profit is less standard. The media outlet can strike a deal with the government. In exchange for suppressing embarrassing information, the government promises the media owner some form of compensation. It can be a direct monetary payment, of the kind that was reportedly

common in Peru during Alberto Fujimori's government.¹ Or it can take a more indirect form, like an administrative decision or a legislative intervention that benefits a firm controlled by the same owner of the media outlet under consideration. For instance, until 2003 two of the top three Italian national newspapers were controlled by the FIAT group, who could for instance benefit from a restriction on car imports from Asia, a subsidy for new car purchases, or heavy investment on freeway construction.²

Capture is in our model endogenous. In turn, the degree of media capture influences the information of voters and their voting decisions. We first analyze the simplest possible setting. We assume an exogenously given number of outlets, a homogenous electorate, and an exogenously given information gathering technology. We prove that:

1. Pluralism provides effective protection against capture. Even in the absence of any horizontal differentiation among media outlets, the existence of a large number of independent media organizations make it less likely that the government controls news provision in equilibrium. Every time the government pays an outlet to suppress its information, the commercial revenue of the other outlets goes up because they face less competition on the commercial side. If the government wants to buy out all the media, it has to pay each of them as if it were a monopoly provider of unbiased information.
2. Independent ownership reduces capture as well. While this is a commonly heard statement, our model leads to a precise definition of independence. The degree of independence of the media is given by the difficulty with which the state is able to transfer resources to the media. The higher the transaction cost between the government and the media industry, the less likely that in equilibrium the industry is captured. In the next section, we will examine in more detail how our results on transaction costs can be used to evaluate the effect of different modes of ownership on media independence. We also draw out implications for the optimal regulation of media ownership.

¹See McMillan and Zoido [21] for a unique account of media corruption in Peru. Montesino insisted on keeping detailed records, either written or videotaped, of his transactions with judges, politicians, and the media. As the amounts paid to the media were about 100 times larger than the amounts paid to judges and politicians, McMillan and Zoido argue that, by revealed preferences, the strongest check on government was represented by the media.

²All three of those policies were indeed in place at various stages of the Italian post-war history. The two newspapers, *La Stampa* and *Corriere*, have generally been regarded as pro-government or at least non-adversarial, independent of what parties are in power.

3. Media capture determines political outcomes. Our retrospective voting model leads to predictions on how government control of the news affects the equilibrium features of the political system. Media capture has two negative effects on the utility of voters. There is a moral hazard component: elected politicians are more likely to engage in rent extraction in the knowledge that they are less likely to get caught. There is also an adverse selection part: intrinsically bad politicians are less likely to be identified and thus replaced. This sorting failure leads to a prediction on one important observable: the presence of media capture reduces political turnover.
4. Putting together the three previous points, our model establishes a link between observable features of the media industry (concentration and ownership) and observable political outcomes (capture, corruption, and turnover).

These conclusions are reached in an extremely stylized model. To show that our findings are robust and to derive additional predictions, we study three natural extensions of the baseline model. First, we see what happens when the entry into the media industry is endogenous, i.e. potential entrants can become active by paying a fixed cost. Reducing barriers to entry has a positive effect on corruption, turnover, and media capture. Second, while the baseline model included only adverse selection, the main results go through even if there is also moral hazard (rent extraction, corruption, etc...). We discuss the presence of a non-monotonic relationship between media independence and the probability that the media report a political scandal. Scandal-free countries have either an extremely independent media industry or an extremely pliable one. Third, we consider a model in which each outlet chooses how much to invest in monitoring technology (e.g. number of reporters). We show that in equilibrium the media industry is vertically differentiated, with a handful of high-quality media organizations and a long tail of outlets with low-monitoring ability.

The contribution of the paper lies in developing a model of endogenous media capture. Prior literature has highlighted, both theoretically and empirically, the importance of media in guaranteeing political accountability (Besley and Burgess [6]) or in determining resource allocation (Stromberg [29, 30]).³ Those works study channels through which the media influence politics but they disregard the reverse relationship, namely, how government

³Hamilton [16] provides an extensive and systematic discussion of the economics of mass media. See also World Bank [32] for collected works on the role of mass media in economic development.

influences the media. There are also several empirical studies of cross-country evidence, such as Ahrend [1], Brunetti and Weder [8], and Djankov et al. [9], which are discussed in more detail in the next section.

The plan of the paper is as follows. Section 2 summarizes the cross-country evidence of media into a number of stylized facts. Section 3 presents the baseline model and proves the core results of the paper. It then discusses the link between the model and the facts. Section 4 extends the baseline model in several directions. Finally, Section 6 concludes with a look at potentially interesting research questions and policy issues.

2 Background Facts

This section lays out some of the important stylized facts on the media using cross-country data. These draw on some existing published studies as well as our own look at the data.

2.1 Press Freedom, Corruption and Turnover

Our three “core” facts link press freedom, corruption and political longevity. To measure press freedom, we use the index published by *Freedom House*. We use the data from 1999, which are available for 180 countries. It is important to note that Freedom House does not measure press freedom from a purely legal perspective. Rather, it gives a picture of the effective extent of media independence, which includes the lack of successful political pressure. The assessment for a particular country comes from a variety of sources who have detailed local knowledge, like media correspondents and staff of international organizations. We view the Freedom House index as a measure of media independence, as perceived by professionals with inside knowledge.

To measure corruption, we use data from three different sources.⁴ The first is the corruption perceptions index (CPI) developed by *Transparency International*. This is based on an amalgam of other corruption data and

⁴There is now a large empirical literature on the causes and determinants of corruption which is related to this paper. The empirical literature is expertly surveyed (and extended) in Triesman [31]. This paper takes a more detailed look at the political process underlying corruption. The paper is particularly related to studies of governance and corruption. Ades and DiTella [2] argue that more open countries are less susceptible to corruption. This type of analysis is expanded and developed in Bonaglia et al [7]. Persson, Tabellini and Trebbi [23] consider the link between corruption and political/constitutional variables. They test the idea that majoritarian systems and larger voting districts are less prone to corruption, finding strong evidence in favor of this. Both Triesman and Persson, Tabellini and Trebbi treat political turnover as an exogenous variable in explaining corruption.

is available for a cross section of 90 countries for 1999 . Our other measure comes from a study by Kaufman et al [17] which develops an index of efforts by governments to combat corruption using an unobserved components model. It is available for 156 countries . Finally, we use data from the International Country Risk Guide (ICRG) which measures corruption for 91 countries. The data on political longevity are derived from Beck et al [5]. They record the length of time in office for the incumbent who held power in 1997 for 172 countries. They also record the length of tenure of the party in office for 148 countries.

The correlations are presented in Table 1 – along with significance levels. These reveal the following three broad claims:

- Fact 1: Corruption is negatively correlated with press freedom.
- Fact 2: Corruption is positively correlated with political longevity.
- Fact 3: Press freedom is negatively correlated with political longevity.

The first of these facts bears out earlier work by Brunetti and Weder [8] and Ahrend [1] who find that press freedom is associated with lower levels of corruption.

Table 2 reports the same correlations, but this time after conditioning out a number of important factors that are thought to influence the political and economic climate⁵ – region, income per capita, population and legal origin. While weakening the correlations with political longevity, the same patterns, broadly speaking emerge. While nothing causal can be inferred from this, in thinking about a theoretical model, it is important to provide an approach which is consistent with these findings. The bottom line is that countries with less press freedom also appear to have longer serving and more corrupt governments.

2.2 Ownership and Concentration

We now investigate how corruption, turnover, and press freedom relate to underlying features of the newspaper market, using data collected by Djankov et al [9]. These data are available for 98 countries.⁶ We use data on up to ten of the largest newspapers in each country. We create a measure of the

⁵See Triesman [31] for a discussion of the determinants of corruption where such factors are found to be important.

⁶Limits on market share data reduces the sample to 93 countries. We focus on newspapers as state ownership in this media sector is more powerfully correlated with outcomes in this sample of countries (See Djankov et al [9]).

(market share) weighted fraction of newspapers that are state owned. We also construct a measure of the extent of foreign ownership of newspapers. This is the fraction of the top five media (again weighted by market share) which is foreign owned. We use market share data to construct a measure of concentration – specifically, the number of newspapers needed to gain a 50% market share.

Table 3 shows that press freedom, corruption and political longevity are all significantly correlated with the extent of state ownership, foreign ownership and concentration in newspaper ownership. This is consistent with Djankov et al. who suggest that state ownership is correlated with “bad” outcomes. These basic findings suggest that greater foreign ownership tends to be correlated with “good” outcomes and having a less concentrated media (i.e. a larger number of outlets that needs to be silenced to affect half the market) is also “good”. Thus, we have:

- Fact 4: The share of state ownership of newspapers is positively correlated with corruption, negatively correlated with print freedom and positively correlated with political longevity.
- Fact 5: The share of foreign ownership of newspapers is negatively correlated with corruption and positively correlated with print freedom.
- Fact 6: Concentration of newspaper ownership is positively correlated with corruption, negatively correlated with print freedom and positively correlated with political longevity.

Our final fact concerns how the relationship between media characteristics and political outcomes varies with the degree of media independence. We divide our set into countries with high print freedom (above median level) and low press freedom (below median level), and we re-compute the correlations above separately for the two subsets. These are represented in the correlations in the upper and lower panels of Table 4. The main finding is that if print freedom is low, then there is no significant correlation between the ownership structure of the media market and the policy/political outcomes. However, this is not the case for high levels of print freedom where there are significant correlations with both state ownership and concentration. We will interpret this finding in light of the model that we present below. For the time being, we record this fact as:

- Fact 7: Ownership indicators (state, concentration and foreign ownership) are significantly correlated with corruption and political longevity only for countries with *high* levels of print freedom.

The data that we looked at here is very crude and the correlations should not be interpreted in a causal fashion. However, they give as a basis for pursuing a theoretical approach that is able to account for these facts.

3 The Baseline Model

The aim is to produce the simplest possible model to generate the main insights. It is apparent that many complications could be entertained and we pursue three extensions in the next section. The key feature of the model is the fact that it combines elections with a role for the media where capture is a possibility.

We use a two-period retrospective voting model. In the first period an incumbent is exogenously in power. There are two possible types $\theta \in \{b, g\}$ with $\Pr(\theta = g) = \gamma$, where g stands for “good” and b for “bad”. A good incumbent delivers a benefit of 1 to voters while a bad incumbent provides zero. At the beginning of time an incumbent is selected who is good with probability γ .

This is a pure adverse-selection model. The politician makes no choice and the political outcome is determined automatically by its type. The politician’s type can be interpreted as either intrinsic ability to produce public good or an ineluctable moral trait (a bad incumbent always steals, a good one is always honest). The next section will introduce moral hazard.

After observing the outcome, voters choose whether to re-elect the incumbent or a randomly selected challenger, i.e. one that is good with probability γ . To make the problem interesting, we suppose that voters do not observe these payoffs directly at the time of the election. This is reasonable if some of the incumbent’s decisions are long-lasting – such as the quality of infrastructure investments that will become apparent some way into the future.

There are n active media.⁷ If the incumbent is good, they observe no verifiable information. If the incumbent is bad, with probability $q \in [0, 1]$, they receive a verifiable signal that the incumbent is bad. In practice, the parameter q depends on technological and cultural characteristics and also on institutional variables such as the existence of censorship, the effectiveness of libel laws, and the extent of privacy protection regulation. Only verifiable information can be printed.

Implicit in this informational setup are three assumptions. First, news cannot be fabricated. If we allowed the media to print uncorroborated news,

⁷The next section extends the model to allow for endogenous entry.

and we wanted to maintain the assumption that voters are rational, we would get into a complex signalling game. Second, signals can only be bad. We could easily extend the model to have both good and bad signals, as long as the probability of good signals is lower than that of bad signals. Obviously, the incumbent would never want to suppress a good signal.⁸ Third, all media have the same information. This restriction is imposed for analytical convenience and will be relaxed in the next section.

The n media outlets are identical and their payoff depends on two components: audience-related revenues and policy-related revenues. Audience-related revenues are clearly central to for-profit media (sales, subscriptions, advertising receipts, cable fees, etc..) but they may also be relevant for non-profit or state-owned media, as long as their mission includes reaching as many viewers as possible. Viewers prefer informative news. We assume that they divide themselves equally among media that are reporting news. The audience-related revenue of an outlet is normalized to zero if the outlet has no news and it is $\frac{a}{m}$ if it has news, where a is a parameter that represents the maximum potential audience-related benefit and m is the number of outlets that are reporting news.⁹ Note that if at least one outlet has informative news, then all voters are informed.¹⁰

We allow incumbents to manipulate news. This is modeled as a bargaining game between the media and the politician. Our assumption that news cannot be fabricated means that the only strategy available to politicians is to hide bad news. The details of the bargaining game are as follows. The incumbent can make each outlet i a nonnegative offer of money t_i . A media outlet that accepts this offer will suppress his signal. Offers are simultaneous and private: the offer made to outlet i is not observed by voters or by the other outlets.¹¹ A transfer t_i costs t_i to the incumbent but yields $\frac{t_i}{\tau}$ to media outlet i . The parameter $\tau \in [0, \infty)$ is the transaction cost. The incumbent gets $r - \sum_{i \in I} t_i$ if she is re-elected and $-\sum_{i \in I} t_i$ if she is not, where I is the

⁸The crucial assumption is that not having a signal increases the probability that the incumbent is good. If this were not the case, a politician who manages to suppress bad information would still not be re-elected, and media capture would not occur in equilibrium.

⁹The functional form $\frac{a}{m}$ is assumed to get a simple closed-form solution, but the gist of the results depend only of the fact that audience-related revenues are decreasing in m .

¹⁰Again, the assumption that all voters watch informative news is not crucial. If only a fraction of voters were informed, jury theorems such as Feddersen and Pesendorfer [11] would guarantee that that fraction is pivotal in the election.

¹¹The Appendix shows that the assumption that the incumbent's offer is not observed by other outlets is not crucial. If outlets are able to observe the offers that the incumbent makes to other outlets, the results go through as stated. See the discussion in footnote 27 on page 29.

set of media outlets who accept her offer.

Transfers are to be understood in a wide sense. They range from direct instruments such as the cash bribes documented by McMillan and Zoido [21] to more subtle forms of influence such as enacting regulation that benefits firms owned by the same company that owns the media outlet. The cost of a transfer for the incumbent may be interpreted as the loss in terms of money, energy, or reputation that she has to incur to generate that transfer. The variable τ captures the existence of institutional transaction costs between the incumbent and the media. Legislative constraints and the risk of judicial prosecution may limit the channels through which the politicians can transfer funds to media. In the case where $\tau = \infty$, it is impossible for the policy maker to affect the revenues of the media.

For empirical purposes, it is important to observe that transactions costs depend on the form of ownership of the media. We would expect state-owned media to have the lowest transaction costs (unless they have a governance structure that guarantees actual independence, like the BBC). Privately owned media are mostly likely to receive benefits if their owners (families, trade unions, industrial groups etc.) have homogeneous interests. Cross-ownership of the media with other activities may be important too. For example, a broadcaster with diverse business interests may receive transfers through policy choices that are favorable to their non-media interests. We would expect independently-owned media to be more expensive to influence than media that are part of larger groups. Other things being equal, widely held private media are the hardest to influence. We might also expect media to be more independent when owned by foreign nationals who are less beholden to the government.

The timing of the game is as follows:

1. The incumbent's type $\theta \in \{b, g\}$ is realized ($\Pr(\theta = g) = \gamma$). If $\theta = g$, media observe no signal ($s = \emptyset$). If $\theta = b$, media observe $s = b$ with probability q and $s = \emptyset$ otherwise. The incumbent observes the media signal and selects a transfer $t_i \geq 0$, for each outlet i .
2. Media outlet i observes transfer t_i and decides to accept or reject t_i . If it accepts, it reports $s = \emptyset$ and receives $\frac{t_i}{\tau}$. If it rejects, it reports the true signal.
3. Voters observe the signals reported by the media and vote for the incumbent or a challenger of unknown type.

Two assumptions are implicit in this set-up. First, the incumbent knows what signal the media have received. This is a useful simplification since it

avoids an asymmetry between the outlets and the incumbent. It is arguably quite natural given that only verifiable signals can be printed – before making an offer the incumbent can always ask the media to reveal their evidence. Second, the incumbent makes her offers after the signals are realized. If she made her offers before, she would need to give each outlet qa for certain instead of a with probability q . As everybody is risk neutral and the probability q is given, there would be no difference.

Equilibrium of the game has two key components. The first is the bargaining game between the politician and the media. The second is the equilibrium in the election game.

The bargaining game determines whether the media is an effective disciplinary mechanism in equilibrium. In situations where no transfer is made by the incumbent to the media, then the media reports any informative signal that it receives. In such circumstances, we will say that the media is *free*. When they receive transfers in exchange for silence, we will say that the media is *captured*.

To model equilibrium in the media market, we focus attention on perfect Bayesian equilibrium restricted to pure-strategy equilibria in which voters use undominated strategies, i.e., always vote for the candidate they prefer. The equilibrium conditions for a free press are given in:¹²

Proposition 1 *Equilibrium in the media market may be one of two kinds:*

1. *If $n > \frac{r}{\tau a}$, the media industry is free – media outlets report their information to voters.*
2. *If $n < \frac{r}{\tau a}$, the media industry is captured – each media outlet suppresses its information in exchange for a bribe $t_i = \tau a$.*

A key ratio is $r/\tau a$ – the level of rent enjoyed by an incumbent relative to the cost of silencing a media outlet. The Proposition says that media will be free if there is a large enough group of outlets relative to this ratio. Hence, it does predict that, *ceteris paribus*, media plurality is a good thing. Capture is most likely when rents from office holding are high. This is because the incumbent is willing to offer larger bribes to the media (other things being equal) when there is a larger rent associated with political survival. A more

¹²All proofs are in the Appendix. It is shown that there is a unique pure-strategy perfect Bayesian equilibrium in which voters do not use dominated strategies. The restriction to pure strategies excludes coordination problems among broadcasters at stage 2. There may be mixed-strategy equilibria in which broadcasters and the incumbent randomize at the bribing stage. The restriction to undominated strategies avoids the well-known coordination problems among voters.

commercialized media (as measured by higher a) is a safeguard against media freedom, making it more costly for government to silence the media.

To understand the equilibrium structure of bribes when the media is captured, observe that, although the incumbent has all the bargaining power, it is not enough for her to reimburse each broadcaster for his lost revenues, $\frac{a}{n}$. In order to buy his silence, the incumbent has to pay him the amount it would get *if it were the only broadcaster to bring news*. A lower amount is not acceptable since the incumbent makes positive offers only if it knows that everybody is going to accept. Thus at least a has to be offered to all active broadcasters, making the total cost of suppressing information $n\tau a$. The incumbent compares this with the forgone re-election benefit r to determine whether suppressing the media is a good idea. The media sector is corrupt if $n < \frac{r}{\tau a}$. The model makes precise why plurality can be a guarantee of independence. In our model, having numerous outlets is useful not because they lead to more information being generated but because multiplicity makes it harder for the incumbent to influence the whole industry.

There are two political consequences of media activism in this simple set-up: effects on turnover and effects on voter welfare. With captured media, bad politicians are never identified as voters have no ability to screen. Their expected utility is therefore γ in both periods. Turnover – defined as the probability that an incumbent is replaced by a challenger – is equal to zero (voters are indifferent between the incumbent and the challenger but they vote for the incumbent.)¹³

If the media are not captured, a bad incumbent is found out with probability q , in which case she is replaced with a challenger of unknown quality. Voters' expected utility is γ in the first term and $\gamma + q(1 - \gamma)\gamma$ in the second term and turnover is now $q(1 - \gamma)$. It is easily seen, therefore, that if the equilibrium is one with free media then turnover is higher than under captured media. It is also clear that voter welfare is higher.

Also, if we let A be the sum of expected audience-related revenues for all outlets, we have that $A = qa$ when media are free and $A = 0$ when media are captured. A by-product of capture is that the media industry alienates viewers by producing uninformative political news.

¹³If they voted for the challenger, a bad incumbent would have no incentive to buy off the media and the media will be informative, in which case the lack of signal would be a good signal. Thus, there cannot exist a pure-strategy equilibrium in which when there is no signal voters elect for the challenger for sure.

Still, there could exist a mixed-strategy equilibrium in which when $s = 0$ voters kick out the incumbent with positive probability. However, this equilibrium can only exist if information is completely suppressed (otherwise voters strictly prefer the incumbent). Hence, this equilibrium is analogous to the capture equilibrium.

The next result maps this finding into the underlying parameters that determine whether media is free.

Proposition 2 *Turnover of politicians, voter welfare, and total audience-related revenues are non-decreasing in q , n , a , and τ .*

These effects come through two distinct channels. Greater media independence (high τ), media commercialization (high a) and plurality (high n) influence whether or not the media is captured. Political transparency and efficient news production (high q) is valuable in societies with non-captured media, but does not directly influence media capture. We exploit this observation in interpreting the empirical results below.

Available data preclude a tightly defined test of the theory. However, a tentative comparison with the stylized facts above is insightful. In interpreting these, we assume that corruption is higher when the incumbent is bad, either because he is intrinsically dishonest or because he is unable to rein in misbehavior by government employees.

In terms of our model, facts 1-3 refer to correlations between the three key endogenous variables. Our model suggests a theoretical basis for these correlations – particularly the link to political turnover.¹⁴

Facts 4-6 can be interpreted in light of the predicted effects of variation in q , n , a , and τ . We would expect state ownership to lead to lower q , a and τ . In this way, our model is consistent with fact 4 and many of the empirical findings in Djankov et al (2003). Interpreted through the lens of our model, fact 5 suggests that foreign ownership could affect τ , i.e. foreign owners are harder to influence. We interpret Fact 6 as saying something about variation in n in our model. It is consistent with the model's prediction that great plurality reduces corruption, capture and hence increases turnover.

The present version of our model is too simple to capture Fact 7, but a straightforward modification will suffice. Suppose that the media outlets in our model receive imperfectly correlated signals – above, they were either all informed or all uninformed. Assume also that the signal precision is the same ex ante. As above, if the incumbent is bad, then each outlet has probability q of receiving hard information about the incumbent's type.

Capture is now stochastic from an ex ante point of view. It depends on how many outlets receive information. We have:¹⁵

Proposition 3 *Suppose that the incumbent is bad and let m be the number of informed media. The media industry is captured (free) if $m \leq (>) \frac{r}{\tau a}$.*

¹⁴ It would be hard to rationalize the habit of previous empirical studies that have tended to use turnover as source of exogenous variation in explaining corruption.

¹⁵The proof of the present Proposition is analogous to the proof of 1 and it is omitted.

The *ex ante* probability of capture is $\Phi \left(\text{mod} \left(\frac{r}{\tau a} \right) \right)$, where $\Phi(m)$ is the cumulative distribution of a binomial distribution with parameters n and q :

$$\Phi(m) = \binom{n}{m} q^m (1-q)^{n-m} \text{ for } m = 0, 1, 2, \dots, n$$

It is more useful to express the result in terms of the inequality $\frac{r}{\tau a} \geq n$, which we used earlier:

Corollary 4 *The probability of capture is 1 if $\frac{r}{\tau a} \geq n$, and it is non-increasing in q , τ , and a if $\frac{r}{\tau a} < n$.*

In this case, we would expect countries to be divided into two sets: the fully captured ones, and the partly free ones. Within the first set, transaction costs, commercial motive, and monitoring ability have no marginal effect. Within the latter set, these variables have a positive role. This is exactly fact 7 – characteristics of the media market only had a marginal effect if the media is free.

Overall, the agency perspective can provide an economical interpretation of the basic facts from cross-country data. Going forward, it is clear that we would need to find sources of exogenous variation in the determinants of media capture and quality. However, this would mean also endogenizing some of these variables rather taking them as given. We now offer some extensions of the base-line model which can enrich the empirical implications of the model.

4 Extensions

The baseline model that we have discussed so far makes use of several simplifying assumptions: the number of media firms was exogenously given, the agency problem was about adverse selection only, and all the outlets had the same exogenously given precision. This section eliminates, one at a time, these restrictions and uncovers additional implications of our model of media capture.

4.1 Moral Hazard

The model so far allows no means for politicians to disguise their type. We now add moral hazard. The incumbent can choose to engage in rent extraction. The more rent she extracts, the easier it is for the media to find out. This has the effect of deterring the incumbent from appropriating too much

rent, which is good for voters. However, the ability of the politician to hide her type by behaving well in the first term may make screening more difficult. This section studies how these two contrasting effects interact and shows in what ways they can be relevant empirically.

The amount of rent that the incumbent appropriates is $y \in [0, 1]$. The remainder, $1 - y$, goes to voters. As before, there are two types of incumbents. Type g has zero (or negative) benefit from rent and thus always chooses $y = 0$. Type b has a linear benefit from rent (and for simplicity we assume she has no re-election motive except the desire to get rent in the second term). The probability of detection now depends upon both q and y . The more the incumbent appropriates, the easier it is for the media to catch her. Let $\Psi(y)q$ be the probability of detection given y . We assume that $\Psi' \geq 0$, $\Psi'' > 0$, $\Psi(0) = 0$, $\Psi'(0) = 0$, $\Psi(1) = 1$, and $\lim_{y \rightarrow 1} \Psi'(y) = \infty$. As before, $q \in [0, 1]$.¹⁶

To illustrate the issues, we suppose that at least one media outlet is active and that there is no media capture. Appendix B outlines a full-fledged model with moral hazard and the possibility of corrupt media.

It is obvious that a good incumbent chooses $y = 0$ in both terms. A bad incumbent appropriates $y = 1$ in the second term. Thus, the utility for a bad type from being re-elected is 1 while the voters receive zero. In the first term, for a given q , a bad incumbent's rent extraction decision solves $\max_y \{y + 1 - \Psi(y)q\}$. This yields an optimal \hat{y} satisfying

$$\Psi'(\hat{y})q = 1,$$

where the left-hand side is the marginal cost of rent extraction due to a higher probability of detection and the right-hand side is the marginal benefit. It is now easy to check that

$$\frac{d\hat{y}}{dq} = -\frac{\Psi'(\hat{y})}{\Psi''(\hat{y})q} < 0.$$

Naturally enough, greater media activism reduces rent appropriation by politicians.

The presence of moral hazard makes the effect of active media on turnover ambiguous. To see this, first observe that turnover is now $\rho(q) = \Psi(\hat{y}(q))q(1 - \gamma)$. As q increases, there are two effects. Holding rent extraction fixed, active media are more likely to detect rent appropriation as in the pure adverse

¹⁶As usual, a political accountability model with moral hazard and adverse selection has several interpretations. In the one we choose to use for concreteness, θ is honesty and y is rent. However, θ could be disutility of effort and y could be effort (the good type has no disutility for effort), or θ could be the degree to which the incumbent's policy preferences are similar to the voters' and y the policy enacted (a bad politician is one with different taste, who tries to introduce policies that voters do not like).

selection model. This is the *screening effect* of active media. However, there is also an effect due to reductions in y – more active media leads politicians to extract less from voters and makes it *less* likely that a bad incumbent is detected and removed from office. This is the *discipline effect* of media activity. This ambiguity can be seen analytically by observing that the sign of

$$\rho'(q) = \left(\Psi(\hat{y}) + \Psi'(\hat{y})q \frac{d\hat{y}}{dq} \right) (1 - \gamma)$$

cannot be determined in a general way.

To summarize, turnover is lower (higher) with increased monitoring if the discipline effect is more (less) important than the screening effect. While it is not possible to make sharp predictions unless specific functional forms are assumed, we would expect turnover to be decreasing in monitoring only for high levels of q . This is because, if q starts at a low level, an increase in it causes a large screening effect. Indeed, one can show that for a q that tends to zero turnover must be increasing.¹⁷

Even though effects on turnover are ambiguous, voter welfare is still higher from media activism. To see this, observe that expected voter welfare is

$$W(q) = 2\gamma + (1 - \gamma) [1 - \hat{y} + \Psi(\hat{y})q\gamma].$$

The first term refers to the case where a good incumbent is elected in period one and is returned to power for sure since no rent seeking is ever detected. The second term refers to electing a bad incumbent who will extract \hat{y} and be caught with probability $\Psi(\hat{y})q$, being replaced by a good incumbent with probability γ .

It is important to observe that a positive level of rent seeking by bad incumbents may be desirable to voters. This is because (in this model) rent-seeking is the only device for screening politicians. However, equilibrium

¹⁷To show that $\lim_{q \rightarrow 0^+} \rho(0) = 0$ and $\lim_{q \rightarrow 0^+} \rho'(0) > 0$, observe that $\lim_{q \rightarrow 0^+} \rho(q) = \lim_{q \rightarrow 0^+} \Psi(\hat{y}(q))q(1 - \gamma) = 0$ and $\lim_{q \rightarrow 0^+} \hat{y}(q) = 1$. Obviously, it cannot be the case that $\lim_{q \rightarrow 0^+} \rho'(0) < 0$. However, we can also exclude that $\lim_{q \rightarrow 0^+} \rho'(0) = 0$ as follows:

$$\lim_{q \rightarrow 0^+} \rho'(q) = \left(1 - \lim_{q \rightarrow 0^+} \frac{(\Psi'(\hat{y}(q)))^2}{\Psi''(\hat{y}(q))} \right) (1 - \gamma) = (1 - 0)(1 - \gamma) > 0.$$

A simple functional form is: $\Psi(y) = 1 - \sqrt{1 - y^2}$. In this instance, a bad incumbent chooses $\hat{y}(q) = \frac{1}{\sqrt{1 + q^2}}$, and turnover is

$$\rho(q) = (1 - \gamma) \left(1 - \sqrt{\frac{q^2}{1 + q^2}} \right) q$$

It is now easy to check that for high enough q this has a negative slope in q .

rent seeking always exceeds the level desired by voters. This makes greater media activism valuable on the margin.¹⁸

The same argument for why voter welfare is increasing in q implies that expected rents are decreasing in media activity. To see this, observe that rents can be written as:

$$R(q) = (1 - \gamma) [1 + \hat{y} - \Psi(\hat{y})q\gamma].$$

The incumbent always chooses a rent level below the expected rent maximizing level as he cares only about being re-elected himself rather than the total rents extracted from voters (by him and other bad incumbents). In general this makes him more cautious in rent seeking than rent maximization would imply. An increase in q accentuates this effect (through the discipline effect) as well as reducing rents via the screening effect.

Putting this discussion together, we have:

Proposition 5 *Suppose that there is both moral hazard and adverse selection. Then, the effect of media activity, as measured by q , has an ambiguous effect on turnover of incumbents. Voter welfare is increasing in q and expected rents are decreasing in q .*

The idea that media can discipline incumbent behavior is retained in the model with moral hazard. Voters prefer a more active media and rent appropriation is lower. This extension does, however, suggest that the relationship between turnover and media activity need not be monotonic.¹⁹

4.2 Endogenous Entry

The model is as before except that now the number of media is endogenous. There is a very large number of potential media outlets. Each of them can

¹⁸To see this, note that the marginal benefit of rent to a voter is $\Psi'(\hat{y})q\gamma$ while the marginal cost is 1. The incumbent sets $\Psi'(\hat{y})q = 1$ implying that the marginal cost must exceed the marginal benefit. Hence, the voter will always prefer a lower y at the margin.

A more formal proof is available in the Appendix.

¹⁹One could even go one step further by endogenizing the entry choice of politicians. A good politician receives a fixed ego rent, while a bad politician benefits from the rent he appropriates. Then, an increase in q decreases the expected benefit of a bad type but does not change the incentive of a good one. We should then expect the pool of potential candidates to improve, that is, the ratio γ should increase. This self-selection effect amplifies the positive consequences of an increase in monitoring activity.

become active by sustaining a fixed cost c , which may include hiring journalists, getting the appropriate technology, and securing all the necessary authorizations.²⁰

The timing of the game is modified by adding a Stage 0 in which each of the potential media outlets choose whether to enter or not. The decision is made simultaneously and non-cooperatively. The rest of the game is as before. In particular, the outlets that have paid c receive an informative signal with probability q . We assume that $qa > c$, so at least one outlet will find it profitable to enter.

As before, we focus on pure-strategy equilibria (in this case, this also excludes coordination failures at the entry stage):

Proposition 6 *Equilibrium in the media market may be one of two kinds:*

1. *If $\text{mod}\left(\frac{qa}{c}\right) > \frac{r}{\tau a}$, the media industry is free. The number of active media outlets is $m = \text{mod}\left(\frac{qa}{c}\right)$.*
2. *If $\text{mod}\left(\frac{qa}{c}\right) < \frac{r}{\tau a}$, the media industry is captured. The number of active media outlets is $m = \text{mod}\left(\frac{r}{\tau a}\right)$.*

Whether or not the media is free is now determined by comparing two ratios: $\frac{r}{\tau a}$ and $\frac{qa}{c}$. The former is the maximum number of media the incumbent is willing to pay off, as in Proposition 1. The latter is the equilibrium number of entrants (disregarding integer constraints) under the assumption that the media industry is free: it is derived from condition that equates the marginal revenue of the m th outlet that enters $\left(\frac{qa}{m}\right)$ with its marginal cost (c). The last outlet that enters is then $m = \text{mod}\left(\frac{qa}{c}\right)$. If this number is greater than the number of maximum number of outlets that the incumbent is willing to pay off, then the media industry is free. If the media industry is free, the number of outlets is then $\text{mod}\left(\frac{qa}{c}\right)$. If, however, the industry is captured, the number is $\text{mod}\left(\frac{r}{\tau a}\right) \geq \text{mod}\left(\frac{qa}{c}\right)$. This is because, in a captured industry the marginal revenue of the m th entrant is a as long as $m \leq \text{mod}\left(\frac{r}{\tau a}\right)$.

In the baseline model we found that media plurality was an effective defense against capture. This result still holds with free entry, except that

²⁰The assumption that there is no entry is not utterly unrealistic for television. The most common form of broadcasting is aerial television. At present, only in a handful of countries (like the US) other forms of broadcasting such as cable or satellite are more widespread. Aerial television presents great barriers to entry, both technological because a network of transmitters is needed and administrative because a broadcasting license is needed. As a consequence, many countries, including several well-established market-oriented democracies, have been characterized by a small, and extremely stable, set of broadcasting organizations.

now plurality is a consequence of entry cost. The higher the barriers to entry, the more likely that the incumbent captures the media. From Proposition 2, it is easy to see that an increase in the cost of entry reduces political turnover and voter welfare.

From a practical standpoint, we are now in a position to argue that barriers to entry in the media market lead to more capture and worse political outcomes. As we shall see in the conclusions, some existing policies (restrictions on foreign ownership and cross-media ownership) create barriers to entry, and should be viewed with intrinsic suspect.

4.3 Endogenous Monitoring

We now assume that the difficulty of detecting a bad type is a random variable. Sometimes a minimum of information gathering is enough, other times it is necessary to have in place the resources to launch a journalistic investigation. Each media outlet chooses its own monitoring technology. As we shall see, in equilibrium outlets are now vertically differentiated. From an ex ante point of view, the media are captured only some of the time. While before the probability of capture was either 0 or 1, now this discontinuity disappears.

Each media outlet can, at a cost, improve its monitoring ability by hiring talented journalists and/or providing them with better resources. Hence, outlet i selects $q \in [0, 1]$ at cost of $c(q)$, where c is increasing, convex, and twice differentiable. (Corner solutions are avoided if we also assume that $c(0) = c'(0) = 0$ and $\lim_{q \rightarrow 1} c'(q) = \infty$.) There is a large group n of media entrants who, at stage 0, select their monitoring technologies simultaneously and non-cooperatively. The difficulty of detecting the incumbent's type is given by the random variable ν , which is uniformly distributed on the unit interval. The variable ν is realized after the media have chosen their q 's. An outlet with q_i receives verifiable information that an incumbent is bad if $\nu \leq q_i$. The rest of the game is as in the baseline model. We now characterize the equilibrium vector of quality investments and the probability of media capture.

The number of informed media outlets depends on the realization of ν . The incumbent will still want to buy off either all informed media outlets or none of them, and in equilibrium the cost of buying off one broadcaster is still τa . If m is the number of informed media, the incumbent chooses to bribe them if and only if $r \geq m\tau a$. This defines a maximum number of broadcasters $M = \text{mod} \left(\frac{r}{\tau a} \right)$ that the politician is willing to pay off. If more than M broadcasters turn out to be informed, the incumbent gives up.

Without loss of generality, broadcasters can be indexed in order of de-

creasing technology, so that $q_1 \geq q_2 \geq \dots \geq q_n$. The incumbent bribes the media if and only if $\nu > q_{M+1}$. There are thus three cases according to the realization of ν . If $\nu > q_1$, no broadcaster is informed and the incumbent gets re-elected. If $q_{M+1} < \nu \leq q_1$, informed media are bribed and the incumbent is re-elected. If $\nu \leq q_{M+1}$, no corruption occurs and the incumbent goes.

In equilibrium, broadcasters fall into two categories. The ones with $q > q_{M+1}$ are “potentially corrupt” and have a positive probability of being bought off. The ones with a lower q are always free and compete only for audiences. The equilibrium choices of q are thus as follows:

Lemma 7 *Let $M = \text{mod}(\frac{r}{\tau a})$ and let $\hat{q}(k)$ be the unique q such that $c'(q) = \frac{a}{k}$. In equilibrium, $q_1 = \dots = q_M = \hat{q}(1)$ and, for every $i \geq M + 1$, $q_i = \hat{q}(i)$. A bad incumbent is thrown out of office with probability $\hat{q}(M + 1)$.*

The proposition describes a pure-strategy equilibrium that is unique up to a renumbering of media. The choice of monitoring technology is determined by equating the marginal cost to the marginal revenue. If an outlet belongs to the potentially corrupt group, its marginal revenue is given by the monopoly profit of being bought off by the incumbent which is just a . If outlet i belongs to the down-market clean group of media, its marginal revenue is audience-related and it depends on how many outlets are more precise: $\frac{a}{i}$.²¹

This more complicated model yields similar basic predictions to the baseline model. Improved media efficiency is now best modeled as a fall in the cost of investment. Thus, let $c(q) = \kappa C(q)$, where κ is a positive number and the function C has the regularity properties discussed above. Voter welfare and turnover are determined by the probability that a bad incumbent is kicked out: $\hat{q}(M + 1)$, which by Lemma 7 is implicitly defined by

$$\kappa C'(q) = \frac{a}{\text{mod}(\frac{r}{\tau a}) + 1}.$$

This shows that $C'(\hat{q}(M+1))$ is non-decreasing in a and τ , and non-increasing in κ . Note that an increase in a has two effects, both positive: it increases the incentives for media to buy better monitoring technology and it increases the cost for the incumbent of buying off the media. As $C'(q)$ is increasing in q , we have:

Proposition 8 *Suppose the media choose their monitoring level endogenously. Turnover and voter welfare are non-decreasing in a and τ , and non-increasing in κ .*

²¹The proof of the lemma checks that (in this highly discontinuous problem) these first-order conditions are indeed necessary and sufficient for a pure-strategy equilibrium.

To sum up, in a model in which quality is endogenous we should expect vertical differentiation. Some outlets will invest heavily in monitoring capability which will often lead to journalistic scoops. Whether this additional insight is used to provide information to voters or to participate in rent extraction depends from the level of transaction cost and commercial motive.

It is interesting to note that countries with independent media will appear to have a more vertically differentiated media industry than countries with captured media. This is because the presence of capture leads to a truncation of the observed accuracy of the M highest-quality media. While we do not know of any systematic evidence, this appears to be in line with the observation that in two of the countries with the oldest tradition of media freedom, the US and the UK, there seems to be stark vertical differentiation. A very small number of newspapers (three in the US and at most five in the UK) are widely considered to be above the rest. Far from being a sign of crisis, this observation should be viewed as the result of endogenous vertical differentiation by independent media organization.

5 Implications for Media Regulation

The present model can also be used to re-visit the debate on optimal media regulation. Our analysis gives a sense of why “standard” competition policy prescriptions may not be enough when it comes to the media. In spite of there being special provisions in both Europe and the US, there is no discernible consensus on what the guiding principles of media policy should be. Our model gives some tentative suggestions. While these considerations apply to some degree in all situations, they are particularly relevant in less mature democracies where the traditions of media independence are less well established.

First, there are good reasons to limit entry barriers of the kind that are often observed in broadcasting. It is also rare to use transparent mechanisms to allocate aerial television licenses. Typically, the government fixes a number of licenses, which is often much smaller than the technological limit, and allocates it through some opaque administrative procedure (which is also used as a form of bribe/threat). This is a formidable barrier to entry in developing countries where aerial television is still the only economically viable form of broadcasting. The present model can be used to argue for a liberalization of broadcasting licenses in which the government sets the highest number of licenses that are technologically feasible and allocates them according to pre-established apolitical criteria.

Second, transaction costs between the government and media should be made as high as possible. The government should be stripped of powers that allow it to interfere with the operations of media firms in an arbitrary way. If the media firm is state-owned, there should be strong institutional guarantees that resource allocation and executive appointments are not under the direct control of the current government. If the media firm is private, the government should not be able to affect its profitability by controlling licensing, advertising, or other commercial factors.

Third, concentration in the media industry is dangerous. Moreover, when thinking about the “relevant market”, it is important to treat news as a separate entity for this purpose. Many countries have provisions against media concentration, but typically they are specific to one medium (aerial television, cable, daily newspapers, etc.). A medium is not the relevant market for two reasons: it may include media organizations that do not provide news (e.g. sport channels) and it is only a part of the relevant market, which is the whole news market. Our paper suggests that capture is more likely when news provision is concentrated in few hands. An optimal policy should begin by identifying the information sources of voters and then examining their ownership structure.

Fourth, there are grounds for being suspicious of state ownership. While some countries have developed public media organizations, such as the BBC, that are respected for the independence, available evidence indicates a strong relationship between the extent of state ownership and negative political outcomes. There is no doubt that in most developing countries state television and state press are just the mouthpiece of the ruling party. One solution is to change the governance structure of those media in order to guarantee their independence. Another solution is to privatize the state media, making sure that the resulting industry is not excessively concentrated.²²

Fifth, ownership by domestic industrial groups is a potential cause for concern. While the direct evidence is less compelling than for state ownership, the anecdotal evidence presented by Freedom House is quite large. Certainly, it is difficult to see what the industrial synergy is between a car manufacturer and a newspaper, and it is natural to presume that there is a political synergy. Clearly, more research is needed into this problem. It would be interesting to know if parent companies tend to subsidize their media subsidiaries, as that would indicate that there are indirect benefits accruing to parent companies.

²²It would also be important to look deeper in the role of public ownership of media. Prat and Stromberg [24] construct a political economy model of public broadcasting and use it to interpret evidence on the effect on voter information of the introduction of commercial television in Sweden.

Sixth, and finally, certain forms of ownership are *not* suspicious. We have already discussed the potential risks that arise when the media belong to the state or to domestic industrial groups. More interestingly, our model provides arguments against existing regulation which prevents two other forms of ownership: cross-ownership and foreign ownership. Cross-ownership occurs when the same entity controls outlets that use a different medium (such as a television station and a newspaper). There is nothing in our model that makes this form of ownership dangerous because concentration should be evaluated on the whole market for news. If anything, limiting cross-ownership is likely to create barriers to entry. Foreign ownership is good in principle (because transaction costs with non-domestic owners are likely to be higher) and evidence indicates that it is associated with positive political outcomes. While better evidence would be welcome, at this stage there is nothing to indicate that limits on foreign ownership – such as the one imposed by the United States – are a good idea.

6 Conclusions

The main contribution of this paper is to fashion a simple model of media capture based on re-election incentives. The model provides a framework for thinking about the role of media freedom in politics. Despite its simplicity, the model produces a number of predictions on the relationship between features of the media industry, media capture, and political outcomes. Such predictions are consistent with stylized facts obtained from cross-country evidence.

The model is simple and there is much scope for future theoretical and empirical developments. Many media outlets have a particular ideological bias.²³ It is also important to consider the implications of cognitive biases, such as the confirmatory bias (as when people like to watch news that agrees with their prior views). A model in that direction is developed by Mullanathan and Shleifer [22].²⁴

The model could also be enriched to consider a richer array of instruments to influence the media. For example, trouble making reporters could be harassed or denied access to briefings.²⁵ In some countries, journalists are

²³See Appendix C for a simple extension in this direction. The main result is that ideological polarization in the media market may be a good thing (provided voters are flexible in their choice of media) because it makes it more expensive for the incumbent to silence the whole media industry.

²⁴In similar vein, Groseclose [15] combines content analysis from press articles and politicians' speeches to evaluate the ideological position of leading US periodicals.

²⁵Reich [26] contends that the current US administration has received mostly positive

imprisoned and in others threatened with violence.

Finally, media capture need not be for political reasons. Dyck and Zingales [10] show evidence consistent with a quid pro quo relationship between newspapers and corporations. Clearly, much more work needs to be done, both empirical and theoretical.

On the empirical side, there is scope to study the introduction of new forms of media, such as satellite TV and the internet, in different contexts. To the extent that they may make it more difficult to capture the media, we would expect them to have the biggest impact on politics and policy where the initial conditions are not propitious for media freedom.

coverage from the media also because “Bush’s White House press operation has been one of the most disciplined and effective in American history - rewarding friendly reporters with access and scoops, freezing out unfriendly ones.”

References

- [1] Ahrend, Rudiger, [2000], “Press Freedom, Human Capital and Corruption,” typescript
- [2] Ades, Alberto and Rafael di Tella, [1999], “Rents, Competition and Corruption,” *American Economic Review*, 89(4), 982-993.
- [3] Anderson, Simon and Stephen Coate, [1999], “Market Provision of Public Goods: The Case of Broadcasting,” typescript.
- [4] Barro, R. J. [1973]: “The control of politicians: An economic model,” *Public Choice*, 14, 19–42.
- [5] Beck, Thorsten, George Clarke, Alberto Groff, Philip Keefer, and Patrick Walsh, [2000], “New Tools and Tests in Comparative Political Economy: The Database of Political Institutions”, The World Bank Development Research Group, Working Paper No. 2283.
- [6] Besley, Timothy and Robin Burgess, [2002], “The Political Economy of Government Responsiveness: Theory and Evidence from India,” *Quarterly Journal of Economics*, 117(4), 1415-1452.
- [7] Bonaglia, Federico, Jorge Braga de Macedo, and Maurizio Bussolo, [2001], “How Globalization Improves Governance,” typescript, OECD Development Centre, Paris.
- [8] Brunetti, Aymo, and Beatrice Weder, [2003], “A free press is bad news for corruption,” *Journal of Public Economics*, 87(7-8), 1801-1824.
- [9] Djankov, Simeon, Caralee McLeish, Tatiana Nenova, and Andrei Shleifer [2003], “Who Owns the Media?” *Journal of Law and Economics* 46(2), 341–382.
- [10] Dyck, Alexander and Luigi Zingales [2003], “The Media and Asset Prices”, in World Bank Institute, *The Right to Tell: The Role of Mass Media in Economic Development*, Washington DC: The World Bank.
- [11] Feddersen, Timothy and Wolfgang Pesendorfer [1997], “Voting Behavior and Information Aggregation in Elections with Private Information,” *Econometrica*, 65(5): 1029–1058.
- [12] Ferejohn, John [1986]: “Incumbent performance and electoral control,” *Public Choice*, 50, 5–25.

- [13] Freedom House, [2000], *Press Freedom Survey 2000*, available at <http://www.freedomhouse.org/pfs2000.pdf>.
- [14] Freedom House, [2001], *Press Freedom Survey 2001*, available at <http://www.freedomhouse.org/pfs2001.pdf>.
- [15] Groseclose, Timothy and Jeff Milyo [2003] “A Measure of Media Bias.” Working paper, UCLA.
- [16] Hamilton, James T., [2003], *All the News That’s Fit to Sell: How the Market Transforms Information into News*. Princeton: Princeton University Press.
- [17] Kaufmann, Daniel, Aart Kray and Pablo Zoido-Lobaton [1999], “Aggregating Governance Indicators”, World Bank Policy Research Department Working Paper No. 2195.
- [18] La Porta, Rafael, Florencio Lopez-de-Silanes, Andrei Shleifer and Robert Vishny, [1998], “Law and Finance,” *Journal of Political Economy*, 106(6), 1113-1150.
- [19] La Porta, Rafael, Florencio Lopez-de-Silanes, Andrei Shleifer and Robert Vishny, [1999], “The Quality of Government,” *Journal of Law, Economics and Organization*, 15(3), 222-279.
- [20] Mauro, Paolo, [1995], “Corruption and Growth,” *Quarterly Journal of Economics*, 110, 681-712.
- [21] John McMillan and Pablo Zoido, [2004], “How to Subvert Democracy: Montesinos in Peru,” Working paper, Stanford University.
- [22] Mullainathan, Sendhil and Andrei Shleifer [2003], “The Market for News,” Working paper.
- [23] Persson, Torsten, Guido Tabellini and Francesco Trebbi, [2001], “Electoral rules and corruption” CEPR Discussion Paper No. 2741.
- [24] Prat, Andrea and David Strömberg [2004], “The Political Economy of State Television.” Working paper.
- [25] Przeworski. Adam, Susan C. Stokes and Bernard Manin, [1999], *Democracy, Accountability, and Representation*, Cambridge: Cambridge University Press.

- [26] Reich, Robert. "The honeymoon continues for George." *The Observer*, Sunday August 3, 2003.
- [27] Segal, Ilya [1999], "Contracting with Externalities," *Quarterly Journal of Economics*, 114(2), 337–388.
- [28] Shleifer, Andrei, [1998], "State v. Private Ownership," *Journal of Economic Perspectives*, 12, 133–50.
- [29] Strömberg, David, [2004], "Mass Media Competition, Political Competition, and Public Policy," *Review of Economic Studies*, forthcoming.
- [30] Strömberg, David, [2004], "Radio's Impact on Public Spending," *Quarterly Journal of Economics*, forthcoming.
- [31] Triesman, Daniel, [2000], "The Causes of Corruption: A Cross National Study," *Journal of Public Economics*, 76, 399-457.
- [32] World Bank Institute, [2003] *The Right to Tell: The Role of Mass Media in Economic Development*, Washington DC: The World Bank.

Appendix A: Proofs of Results

Proof of Proposition 1

The equilibrium strategies and beliefs are:

1. Voters believe

$$\Pr(\theta = g) = \begin{cases} 0 & \text{if } s = b \\ \gamma & \text{if } s = \emptyset \end{cases}$$

2. Voters vote for the challenger if $s = b$ and re-elect the incumbent if $s = \emptyset$.
3. Outlet i accepts t_i if and only if $t_i \geq \tau a$.²⁶
4. The incumbent offers $t_i = \tau a$ to all outlets if: (a) outlets have observed $s = b$; (b) $n\tau a \leq r$. The incumbent offers 0 to all outlets otherwise.

It is easy to check that this is a perfect Bayesian equilibrium of the baseline game.

We now prove that this is the unique pure-strategy perfect Bayesian equilibrium in which voters do not play weakly dominated strategies (PSPBEW).

Begin with voter behavior. The only information voters receive is the signal s . Thus, their strategy can only be conditioned on s . Kicking out the incumbent if $s = b$ is a strictly dominant strategies. The only question is whether there can be a pure-strategy equilibrium in which the incumbent is kicked out if $s = \emptyset$. But this is impossible because if that were the case, the incumbent would not suppress information and hence the posterior when the voters observe $s = \emptyset$ would be strictly greater than γ , and voters should actually re-elect the incumbent whenever they observe $s = \emptyset$. Thus, in every PSPBEW the incumbent is re-elected if and only if $s = \emptyset$.

Now, consider the interaction between the incumbent and the outlets. We show that in every PSPBEW an informed outlet accepts $t_i > a$ and rejects $t_i < a$. First, the commercial revenue of i cannot be higher than a . Thus, in any equilibrium i must accept offers above a . Second, given any reply function on the part of outlets, in equilibrium the incumbent buys off either all the informed outlets or none of them. Suppose that there exists an equilibrium in which i accepts an offer strictly below a . This must be an

²⁶Technically, we should also specify the belief of outlet i on the offers made to other outlets, but this is not necessary because the reasoning below shows that the equilibrium strategy is essentially unique.

equilibrium in which all outlets are silenced. But then, if i rejects the offer, it is the only outlet to break news and he gets a : a contradiction.²⁷

The fact that outlets accept $t_i > a$ and rejects $t_i < a$ means that in every PSPBEW the incumbent silences the media if $n\tau a < r$ and does not silence them if $n\tau a > r$.

We have thus shown that in every PSPBEW, players behave as in the equilibrium discussed above (with the proviso that if $n\tau a = r$, the incumbent may or may not silence the media).

Proof of Proposition 5

The ambiguity in the turnover effect is explained in the text. For voter welfare observe that

$$\begin{aligned} W'(q) &= (1 - \gamma) \left((-1 + \Psi'(\hat{y}(q))q\gamma) \frac{d\hat{y}}{dq} + \Psi(\hat{y}(q))\gamma \right) \\ &= (1 - \gamma) \left(\frac{\Psi'(\hat{y})(1 - \Psi'(\hat{y})q\gamma)}{\Psi''(\hat{y})q} + \Psi(\hat{y}(q))\gamma \right) \\ &= (1 - \gamma) \left(\frac{(\Psi'(\hat{y}))^2 q(1 - \gamma)}{\Psi''(\hat{y})q} + \Psi(\hat{y}(q))\gamma \right) > 0, \end{aligned}$$

where the third equality is due to the first order condition for the incumbent. The effect on expected rent is confirmed by observing that $R'(q) = -W'(q)$.

Proof of Proposition 6

Stages 1, 2, and 3, are as in proof of Proposition 1. For stage 0, hold the entry choices of the other broadcasters fixed. Suppose that exactly $m - 1$ broadcasters are entering. If $m \leq \frac{r}{\tau a}$, an additional broadcaster who enters receives expected revenue qa . Thus he enters if and only if $c \leq qa$ (and we assumed $qa > c$). If instead $m > \frac{r}{\tau a}$, the expected revenue is $\frac{qa}{m}$, and the broadcaster enters if $c \leq \frac{qa}{m}$. In this case, the equilibrium number of entrants is $m = \text{mod} \left(\frac{qa}{c} \right)$. If $\text{mod} \left(\frac{qa}{c} \right) < \frac{r}{\tau a}$, then, when $m - 1 = \text{mod} \left(\frac{r}{\tau a} \right)$, an additional broadcaster would get a negative revenue by entering, and the equilibrium m is $\text{mod} \left(\frac{r}{\tau a} \right)$. If $\text{mod} \left(\frac{qa}{c} \right) > \frac{r}{\tau a}$, then the equilibrium m is $\text{mod} \left(\frac{qa}{c} \right)$.

²⁷The results that in every PSPBEW an informed outlet accepts $t_i > a$ and rejects $t_i < a$ holds also if the incumbent's offers are observed by all outlets. The line of reasoning above is entirely independent from the information that outlets have about transfers made to other outlets. Therefore, a PSPBEW of a game with offers that are public among outlets is identical to the equilibrium discussed above.

It is also easy to see that this is the only pure-strategy equilibrium of the entry game.

Proof of Proposition 7

Formally, the timing of the game is as follows:

1. Broadcasters choose their q 's and incur cost q . Without loss of generality, index them in order of decreasing q .
2. The incumbent's type $\theta \in \{b, g\}$ is realized ($\Pr(\theta = g) = \gamma$). The difficulty ν is realized. Broadcaster i observes signal

$$s_i = \begin{cases} b & \text{if } \theta = b \text{ and } \nu \leq q_i \\ \emptyset & \text{otherwise} \end{cases} .$$

The incumbent observes ν and selects a transfer $t_i \geq 0$, for each broadcaster i .

3. Broadcaster i observes t_i and decides to accept or reject it. If he accepts, he reports $s = \emptyset$ and receives t_i . If he rejects, he reports the true signal. Signals cannot be fabricated.
4. Voters observe the signals reported by broadcasters and vote for the incumbent or a challenger of unknown type.

The following is a pure-strategy perfect Bayesian equilibrium. $M = \text{mod} \left(\frac{r}{\tau a} \right)$ and let $\hat{q}(k)$ be the unique q such that $c'(q) = \frac{a}{k}$.

1. Broadcaster i selects $q_i = \hat{q}(1)$ if $i \leq M$ and $q_i = \hat{q}(i)$ otherwise.
2. If the signal is good or $\nu \leq q_{M+1}$ or $\nu > q_1$, the incumbent offers no transfers. If the signal is bad and $\nu \in (q_{M+1}, q_1]$, the incumbent offers a transfer $t_i = \frac{a}{\tau}$ to all informed broadcasters.
3. An informed broadcaster accepts a transfer t_i if and only if $t_i \geq a$.
4. Voters re-elect the incumbent if and only if $s = \emptyset$.

It is immediate to check that 2, 3, and 4 are best responses. Given 2, 3, and 4, we now check point 1. Let $(\hat{q}_1, \dots, \hat{q}_n)$ be the strategies of the n outlets according to point 4. Holding the other q 's fixed, we consider a deviation $q_i \neq \hat{q}_i$ by player i . For $j = 1, \dots, n$, let

$$k(j) = \begin{cases} j & \text{if } j \geq M + 1 \\ 1 & \text{if } j \leq M \end{cases} .$$

The payoff to an informed outlet, if m outlets are informed is then written as $\frac{a}{k(j)}$.

Given ν , let $w(\nu)$ be the highest $j \neq i$ such that $\nu \leq \hat{q}_j$. Then, given a realization ν , if $q_i \geq \nu$, the payoff of i given q_i is

$$r(q_i, \nu) = \begin{cases} \frac{a}{k(w(\nu)+1)} & \text{if } q_i > \hat{q}_i \\ \frac{a}{k(w(\nu))} & \text{if } q_i < \hat{q}_i \end{cases} .$$

This is because, if $q_i > \hat{q}_i$, the informed outlets are $1, \dots, w(\nu)$ plus outlet i . If instead $q_i < \hat{q}_i$, the informed outlets are $1, \dots, \hat{q}_{i-1}, \hat{q}_{i-1}, \dots, \hat{q}_n$ plus outlet i .

The expected profit of i if he chooses q_i is $\int_0^{q_i} r(q_i, \nu) d\nu$. To prove that a deviation is not profitable it is sufficient to show that $r(q_i, q_i) \leq 0$ whenever $q_i > \hat{q}_i$ and $r(q_i, q_i) \geq 0$ whenever $q_i < \hat{q}_i$. The former is true because, if $q_i > \hat{q}_i$ (note that by definition $q_i \in (\hat{q}_{w(q_i)+1}, \hat{q}_{w(q_i)})$),

$$r(q_i, q_i) = \frac{a}{k(w(q_i) + 1)} = c'(\hat{q}_{w(q_i)+1}) \leq c'(q_i) .$$

The latter is true because, if $q_i < \hat{q}_i$,

$$r(q_i, q_i) = \frac{a}{k(w(q_i))} = c'(\hat{q}_{w(q_i)}) \geq c'(q_i) .$$

7 Appendix B: Media Competition in the Presence of Moral Hazard

The timing of the game is as follows:

1. Broadcasters choose whether they want to become active at cost c .
2. The incumbent's type $\theta \in \{b, g\}$ is realized ($\Pr(\theta = g) = \gamma$). If $\theta = g$, the incumbent chooses $y = 0$ and broadcasters observe no signal ($s = \emptyset$). If $\theta = b$, the incumbent selects $y \in [0, 1]$ and broadcasters observe $s = b$ with probability $\Psi(y)q$ and $s = \emptyset$ otherwise.
3. The incumbent observes s and selects a transfer $t_i \geq 0$, for each broadcaster i .
4. Broadcaster i observes t_i and decides to accept or reject it. If he accepts, he reports $s = \emptyset$ and receives $\frac{t_i}{\tau}$. If he rejects, he reports the true signal. Signals cannot be fabricated.
5. Voters observe the signals reported by broadcasters and vote for the incumbent or a challenger of unknown type.

Proposition 9 *Let $\hat{y}(n)$ be the unique solution of*

$$\Psi'(y)q \left(r - \max \left(0, 1 - \frac{na}{\tau} \right) \right) = 1$$

for any n . Let $\pi_{clean}(n) \equiv (1 - \gamma) \Psi(\hat{y}(n))q \frac{a}{n}$ and let \hat{n}_{clean} be the unique integer n such that $\pi_{clean}(n+1) \leq c < \pi_{clean}(n)$. Similarly, Let $\pi_{corrupt}(n) \equiv (1 - \gamma) \Psi(\hat{y}(n))qa$ and let $\hat{n}_{corrupt}$ be the unique integer n such that $\pi_{corrupt}(n+1) \leq c < \pi_{corrupt}(n)$. Then, in a pure-strategy equilibrium, the number of active broadcasters is

$$\hat{n} = \max \left(\min \left(\hat{n}_{corrupt}, \text{mod} \left(\frac{1}{\tau a} \right) \right), \hat{n}_{clean} \right)$$

and a bad incumbent selects $y = \hat{y}(n)$.

Proof. Start from the last stage. The proof of the last three stages is identical to Proposition 1

5. Voters re-elect the incumbent if and only if $s = \emptyset$.
4. An active broadcaster accepts t_i if and only if $t_i \geq \frac{a}{\tau}$.

3. A bad incumbent who gets caught find it profitable to silence broadcasters if and only if $n \leq \frac{1}{\tau a}$.
2. When choosing y , the expected payoff of a bad incumbent is

$$(1 - \Psi(y)q)(y + r) + \Psi(y)q \left(y + \max \left(0, 1 - \frac{na}{\tau} \right) \right)$$

yielding the first-order condition

$$\Psi'(y)q \left(r - \max \left(0, 1 - \frac{na}{\tau} \right) \right) = 1$$

which determines the unique $\hat{y}(n)$.

1. Given the strategies used in the following stages, the expected revenue of broadcasters is a function of n :

$$\pi(n) = \begin{cases} \pi_{\text{corrupt}}(n) \equiv (1 - \gamma) \Psi(\hat{y}(n))qa & \text{if } n \leq \frac{1}{\tau a} \\ \pi_{\text{clean}}(n) \equiv (1 - \gamma) \Psi(\hat{y}(n))q\frac{a}{n} & \text{if } n > \frac{1}{\tau a} \end{cases} .$$

As $\hat{y}(n)$ and $\frac{a}{n}$ are non-increasing in n , the functions $\pi_{\text{corrupt}}(n)$ and $\pi_{\text{clean}}(n)$ are both non-increasing in n . Let \hat{n}_{corrupt} be the unique integer n such that $\pi_{\text{corrupt}}(n+1) \leq c < \pi_{\text{corrupt}}(n)$. Similarly, \hat{n}_{clean} is the unique n such that $\pi_{\text{clean}}(n+1) \leq c < \pi_{\text{clean}}(n)$. It is easy to check that $\hat{n}_{\text{corrupt}} \geq \hat{n}_{\text{clean}}$. Let \hat{n} be the equilibrium number of entrants. There are three cases: (i) If $\hat{n}_{\text{clean}} > \text{mod} \left(\frac{1}{\tau a} \right)$, then $\hat{n} > \frac{r}{\tau a}$ and $\hat{n} = \hat{n}_{\text{clean}}$; (ii) If $\hat{n}_{\text{clean}} \leq \text{mod} \left(\frac{1}{\tau a} \right)$ and $\hat{n}_{\text{corrupt}} \geq \text{mod} \left(\frac{1}{\tau a} \right)$, then $\hat{n} = \text{mod} \left(\frac{1}{\tau a} \right)$; (iii) If $\hat{n}_{\text{corrupt}} < \text{mod} \left(\frac{1}{\tau a} \right)$, then $\hat{n} = \hat{n}_{\text{corrupt}}$. These conditions are summarized by

$$\hat{n} = \max \left(\min \left(\hat{n}_{\text{corrupt}}, \text{mod} \left(\frac{1}{\tau a} \right) \right), \hat{n}_{\text{clean}} \right) .$$

■

8 Appendix C: Ideological Media

We now consider the possibility that the media and citizens are ideologically motivated. This is important in practice, since we observe political alternatives and the media organized along these lines. We are primarily interested in how this affects the likelihood that media can hold politicians to account.

We model ideology in a very simple way. There are two positions: left and right with the right wingers being a fraction $\pi > \frac{1}{2}$ of the population. The right wingers, therefore determine the election outcome if they vote on purely ideological grounds. We assume, however, that voters' ideological benefits are not sufficient to persuade them to vote for an incumbent of their own ideology who has been shown to be corrupt. Thus, incumbent quality (i.e., whether they are good or bad) is assumed to be a salient issue for right wingers. We revert to the pure adverse selection model and suppose that a right wing incumbent is in office and she will face a left wing challenger at the next election.

We suppose that there is one media outlet of each ideology that attaches a benefit of $\Lambda > 0$ from having a politician of their preferred type in office. A key issue is whether voters' media habits are polarized on ideological grounds. Suppose that a proportion $\rho \in [0, 1]$ of voters value ideology over information, i.e. they prefer to read an uninformative newspaper with their ideology rather than an informative paper on opposite positions. The other $1 - \rho$ voters are "flexible" – if both papers are informative or both are uninformative, they buy the one with their ideology. If only one is informative, they buy that one. Such voters will play a key role in making the media an effective force for monitoring.²⁸

Given this set-up, there are four types of voters, depending on their ideological positions and their degree of flexibility. If inflexible right wingers make up 50% of the electorate, then a bad incumbent only needs to bribe the right wing media. If this group is not a majority – which happens when $\rho < \frac{1}{2\pi}$ – then the incumbent must also silence the left wing media.

For simplicity, fix both the potential audience-related revenue a and the transaction cost τ at 1. If both media outlets are informative, their respective revenues are equal to the proportions of left wingers and right wingers. If only one is informative, then it gains the share of flexible voters with the opposite ideology. In equilibrium, an incumbent wants to buy off the media only if her type is bad and she would buy off exactly those outlets that are needed to guarantee re-election. Then, in equilibrium an outlet realizes that

²⁸Results would be analogous, but slightly more complicated, if we assumed that voters do not buy newspapers if they are both uninformative.

suppressing information determines the victory of the incumbent. The cost of silencing the right wing media alone is $\max((1 - \rho)\pi - \Lambda, 0)$. For both media, the cost is $\max((1 - \rho)(1 - \pi) - \Lambda, 0) + (1 - \rho)\pi + \Lambda$. It is then easy to determine the cost of re-election as a function of ρ and Λ :

Lemma 10 *The transfer to media that a bad right-wing incumbent must make to ensure re-election is:*

$$\left\{ \begin{array}{lll} 1 - \rho & \text{if } \Lambda < (1 - \rho)(1 - \pi) & \text{and } \rho < \frac{1}{2\pi} \\ (1 - \rho)\pi + \Lambda & \text{if } \Lambda \geq (1 - \rho)(1 - \pi) & \text{and } \rho < \frac{1}{2\pi} \\ (1 - \rho)\pi - \Lambda & \text{if } \Lambda < (1 - \rho)\pi & \text{and } \rho \geq \frac{1}{2\pi} \\ 0 & \text{if } \Lambda \geq (1 - \rho)\pi & \text{and } \rho \geq \frac{1}{2\pi} \end{array} \right. .$$

The more inflexible are voters (higher ρ), the cheaper it is for the incumbent to get re-elected. This is due to two effects that go in the same direction. The first effect operates at the level of media competition. Flexible voters are potential “cross-over” readers. If there are few of them, newspapers have less incentive to compete on information provision. The second effect affect the electoral stage. If there are few flexible voters, the incumbent can afford to let the left wing media be informative. She will still enjoy a majority of uninformed right-wingers.

The other ideological variable, Λ , has a mixed effect. If the readership is flexible enough that the incumbent must bribe both papers ($\rho < \frac{1}{2\pi}$), then a high Λ can only make bribing more expensive. An increase in Λ makes it cheaper to buy off the right wing paper and more expensive to buy the left wing paper. If Λ is low, these effects cancel out. If Λ is high enough that the right wing media needs no bribe to keep quiet, then increasing Λ makes the total bribing cost higher. If instead the readership is inflexible, the incumbent buys only the right wing paper, and the bribe she needs to pay is decreasing in Λ . We summarize this discussion in:

Proposition 11 *Suppose that the voters and the media are ideologically polarized. Then media are less likely to be captured if voters are more flexible in their media habits, i.e. are willing to read newspapers of the opposite ideology. More media polarization makes it more difficult to capture the media when voters are flexible in their media habits, i.e. if $\rho < \frac{1}{2\pi}$, but reduces the cost of capturing the media when voters are inflexible in their media habits.*

Of course, in reality, Λ and ρ should not be considered in isolation. One would expect that countries with an electorate polarized along ideological lines will have ideological newspapers and inflexible readers. The main point of this section is that, unless one is able to disentangle media polarization and readership flexibility, introducing ideology in the model has an inherently ambiguous effect.

9 Appendix D: Data Sources

- Newspaper and television ownership: from [9]. The raw data give details on ownership of the largest five television, newspaper and radio outlets at December 1999 for 98 countries. The sample includes the five largest daily newspapers, as measured by share in the total circulation of dailies, and the five largest television stations, as measured by share of viewing. Entertainment, sport media and foreign owned media are excluded if they do not provide local news content. Details on the sources are given in [9].
- GNP per capita comes from the World Development Indicators database, very few data come from the National Statistical Offices and a few others have been computed by the author based on previous years' figures.
- Corruption: We measure all three indicators so that a higher score denotes more corruption. Data come from three sources
 - The corruption perceptions index (CPI) from *Transparency International* available at <http://www.transparency.de/documents/cpi/2000/cpi2000.html>.
 - The World Bank Corruption Index in the text is the Graft index taken from [17]. They use 31 indicators of governance grouped into three clusters. (The set of indicators does not include the CPI index nor the ICRG data). The exact methodology is described in detail in [17]. The variable takes values in the interval [-2.5; 2.5], where a high ranking means high control of corruption.
 - The ICRG corruption index comes from the International Country Risk Guide and measures corruption on 1-6 scale.
- Press freedom: press freedom index from *Freedom House* Press Freedom Survey available at <http://www.freedomhouse.org/pfs2000>. Details are provided there. There are three main dimensions of press freedom considered: legal, political, and economic. Violations such as repression of journalists are also measured. Here, we use only the scores for newspapers to get our measure of print freedom.
- Years in office: this is the number of years that the party in power/chief executive has been in office in 1997. It is taken from [5].

- Legal origin: there are five classifications – British, French, German, Scandinavian, and Socialist. Landlocked: is a dummy variable equalled to one if there is no opening. Tropical: is a dummy variable equal to one if some part of the country lies between the tropic of cancer and the tropic of capricorn. These come from the “World Data” set from the World Bank.
- Population is taken from the World Development Indicators 2000, published by the World Bank.