

CHAPTER 16

Media Capture and Media Power

Andrea Prat

Columbia University, New York, NY, USA

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Abstract

This chapter studies situations where media sources deliberately deviate from truthful reporting in order to manipulate electoral outcomes. Media capture occurs when the government actively attempts to influence the media industry. We instead speak of media power when news organizations engage in biased reporting for political reasons. Existing theories identify factors that make these phenomena more likely to occur, suggest ways of measuring them, and study their welfare effect and policy implications.

Keywords

Media capture, Media power, Media concentration, Biased news, Political economy

JEL Codes

D03, D72, H5, L82

16.1. INTRODUCTION

This chapter surveys models of media capture and media power. In both cases, media sources deliberately deviate from truthful reporting in order to affect electoral outcomes. We will speak of media capture when the government has an active role: it uses threats and promises to suppress unfavorable information. We will instead speak of media power when the government has a passive role, while politically driven media organizations use reporting strategically to manipulate electoral outcomes. Theories of media power and media capture identify circumstances when news manipulation is more likely to succeed and electoral outcomes are more likely to be distorted. Both phenomena are facilitated by the presence of a concentrated media industry and we will review ways to quantify. As

both media capture and media power can reduce citizens' welfare, the chapter also discusses how media regulation can reduce the extent of these two phenomena.

In modern democracies, citizens receive information about the behavior of their government through the media. Very few of us get a chance to observe government in action directly. Mostly, we rely on the press, television, radio, the Internet, and other forms of mass communication to learn about the behavior of our policy-makers. This information is crucial to the functioning of democracy because citizens use it to keep elected officials accountable.¹ Without it, we do not know how our current rulers have behaved and it is more difficult for us to discipline them. Canonical agency theory predicts that the principal's welfare increases when she has more information about her agent because the agent behaves better (Holmström, 1979; Prat, 2006).

In an ideal world, the government and the media act independently. The former exercises its constitutionally defined powers, the latter engages in truthful and vigorous reporting. As Jefferson (1792) put it: "No government ought to be without censors, and where the press is free, no one ever will. If virtuous, it need not fear the fair operation of attack and defence. Nature has given to man no other means of sifting out the truth whether in religion, law or politics. I think it as honorable to the government neither to know nor notice its sycophants or censors, as it would be undignified and criminal to pamper the former and persecute the latter." This chapter studies situations when this ideal independence is violated, and the media industry and the government interact in ways that undermine democratic accountability.

News manipulation can take many forms (see Chapter 17 for a survey of the empirical literature on media capture). In particular, the government may play an active role or a passive role. A stark example of active capture—which we refer to as media capture—is the one documented by McMillan and Zoido (2004) through a forensic approach. In the 1990s the government of Peru made monetary transfers to most mainstream media sources on the understanding that they would provide positive coverage and suppress damaging news. Freedom House (2014) documents its presence in a large number of countries. Capture can occur through bribery or threats. For instance, Freedom House (2014, p. 10) concludes: "The media environment in Russia [...] is characterized by the use of a pliant judiciary to prosecute independent journalists, impunity for the physical harassment and murder of journalists, and continued state control or influence over almost all traditional media outlets."

To engage in media capture, the government must be able to single out individual organizations for reward or punishment. This becomes more difficult in political systems with strong checks and balances and an independent judiciary system. In such a system, news manipulation takes a different form. The government is unable to influence the

¹ See Persson and Tabellini (2002) for an in-depth analysis of the role of information in political accountability models.

media through bribes and threats, but powerful media organizations can choose to bias reporting in order to influence government policy or even affect electoral outcomes. We refer to this situation as media power.

The canonical example of media power goes back to the end of the nineteenth century. William Randolph Hearst, the source of inspiration for Orson Welles' *Citizen Kane*, inflamed American public opinion against Spain through highly biased coverage of the Cuban Rebellion. Hearst's propaganda is cited as a key cause of the Spanish–American War of 1898. In more recent times, Silvio Berlusconi, after developing the largest commercial television network in Italy in the 1980s, went on to exert a major influence on Italy's democratic process, becoming Prime Minister three times over two decades. [Durante and Knight \(2012\)](#) document the reporting bias in Berlusconi's television channels.²

Obviously, media capture and media power are two stylized extremes. Often the interaction between government and news takes the form of a complex, mutually beneficial agreement between politicians and the media, where the bargaining power is shared between the two parties. However, for the purpose of building a theoretical framework to analyze capture, it is useful to focus on the two extreme formulations.

Methodologically, the analysis of the interaction between media, government, and electorate requires concepts from both industrial organization and political economy. The media industry is modeled as an oligopoly where firms may be pursuing both standard commercial revenues, which can be based on pay-per-view, subscriptions, or advertising, and “non-standard” benefits coming from politics, which take the form of bribes or other policy benefits in media capture, or the form of direct political payoffs in media power. Voters are modeled as Bayesian but with limited information.

Media capture and media power imply manipulation of news. This can happen in a direct way through suppression of news, or even fabrication of false news, and in a more indirect manner through biased reporting. This chapter focuses mainly on the effect of news manipulation rather than the mechanisms through which it can be achieved. See [Chapter 13](#) for a survey of the influence of media coverage on government, [Chapter 14](#) for a survey of the theoretical work on media bias, and [Chapter 15](#) for a survey of the theoretical work on media bias.

[Section 16.2](#) will discuss media capture models like that of [Besley and Prat \(2006\)](#), where the government has the bargaining power and has instruments to affect the payoff of individual news sources. The government attempts to induce media outlets to suppress

² While media capture requires somewhat weak democratic institutions, media power can be present in countries with a tradition of checks and balances and journalistic independence. The Leveson Inquiry concluded: “Taken as a whole, the evidence clearly demonstrates that, over the last 30–35 years and probably much longer, the political parties of UK national Government and of UK official Opposition, have had or developed too close a relationship with the press in a way which has not been in the public interest” ([Leveson 2012](#)).

potentially damaging news. Capture arises when this attempt is successful. Two factors make capture harder: media plurality and transaction costs between the government and the media. Media plurality—namely the existence of a large number of independently owned outlets—raises the incentive for an individual outlet to publish information that voters find interesting and hence makes it more difficult for the politician to suppress a scandal. Transaction costs—akin to the checks and balances mentioned above—reduce the government’s ability to reward favorable media sources and punish critical ones.

Section 16.3 assumes that transaction costs are so high that the government cannot bribe and threaten the media. The focus of the analysis shifts to media power: media sources may want to bias reporting in order to affect policy (Anderson and McLaren, 2010; Chan and Suen, 2008; Duggan and Martinelli, 2011). Following Prat (2014), we discuss robust bounds to the ability of media organizations to affect electoral outcomes. Here again, media concentration plays a crucial role. A media organization operating in a pluralistic news landscape struggles to influence policy both because it reaches a lower number of citizens and because those citizens are more likely to receive information from other sources as well. The main goal of the section is to provide a relatively simple way of quantifying power as a function of media concentration that can be quantified with existing media consumption data.

Section 16.4 discusses possible regulatory responses to the risk of capture. As media capture and media power require a concentrated industry, mature democracies have put in place a number of provisions against excessive concentration, which fall into two categories: *ad hoc* platform-specific rules and general competition policy principles. We argue that both sets of provisions are insufficient both conceptually and practically, especially in a world characterized by the proliferation of new media platforms. We discuss the recent evolution of the regulatory framework in this area. Section 16.5 concludes.

16.2. MEDIA CAPTURE

Capture is a complex phenomenon that straddles political economy and industrial organization. However, we can identify some of the key determinants of capture with a relatively simple model (Besley and Prat, 2006). The setup combines a simple model of electoral politics with assumptions on the objectives of media companies and their possible dealings with political incumbents.

On the political side, consider a basic retrospective voting model where the quality of politicians is unknown. An incumbent is exogenously in power in the first period. The quality of the incumbent can be high, $\theta = g$, or low, $\theta = b$. The probability that quality is high is $\gamma = \Pr(\theta = g)$. A high-quality incumbent delivers a payoff of 1 to voters; a low-quality incumbent delivers a zero payoff. However, voters do not observe payoffs directly: they rely on media reporting. For example, voters may not know whether a certain public project was useful or whether it was developed in a cost-effective way.

At the end of the first period, the incumbent faces re-election against a challenger of unknown quality (for the challenger $\gamma = \Pr(\theta = g)$ as well).

There are n *ex ante* identical media outlets. As an incumbent would never have a reason to suppress positive news, we simplify the analysis by restricting attention to negative signals. If the incumbent is good ($\theta = g$), outlets receive no signals. If she is bad ($\theta = b$), they receive a negative signal with probability q . Again, for simplicity assume that either they all receive the signal or none of them does. The signal is verifiable: for instance, it is hard information that the project was useless or too expensive.

If there is no media capture, outlets will report a signal whenever they receive one. It is easy to see that voters prefer re-electing the incumbent rather than electing the challenger if and only if there is no negative signal. Hence, a bad incumbent is re-elected with probability $1 - q$ and the challenger wins with probability γq .

The possibility of capture comes by adding a stage, after the media observe their signal and before they report it, where the incumbent can attempt to silence them. The incumbent offers a vector of non-negative monetary transfers $(t_i)_{i=1, \dots, n}$ to every outlet. Transfer t_i costs t_i dollars to the incumbent but yields t_i/τ to the outlet that receives it.

The parameter τ can take any value between zero and infinity and represents the ease with which the government can make transfers that benefit the media. If τ is very low, the government can condition media decisions at a very low cost. This may represent a situation where the media is government-owned and the governance structure is so weak that the government can replace the director at any time. The incumbent can promise a large payoff to the media (the director is not removed) at a minimal cost. In the case of [McMillan and Zoido \(2004\)](#), the value of τ was arguably 1, as benefits took the form of cash. Other, more indirect benefits, may be more or less expensive. [Djankov et al. \(2003\)](#) report that a majority of private media organizations around the world are owned by families (rather than diffuse shareholders). Often those are powerful local families with other economic interests in the country. The incumbent can favor them with government contracts or beneficial legislation. We therefore view τ as the lack of transaction costs between the government and the media.

Media outlets have two sources of revenues. Besides government transfers, they enjoy commercial revenue in proportion to their audience (or readership). Such revenues may come from subscription, sales or advertising. As there is a mass 1 of voters and the commercial revenue per individual is a , if outlet i receives a share s_i of the total audience, its revenue is as_i . Every media outlet maximizes $as_i + t_i/\tau$. The parameter a measures the relative strength of the commercial motive with respect to government-related revenues. The audience is attracted by informative outlets, namely those that are reporting a signal. If m of the n outlets report a signal, then each of them will receive a share $s = 1/m$ of the audience and the remaining outlets will have no audience.

To understand what happens in equilibrium, consider an outlet that has observed a negative signal and receives an offer of t_i to suppress the signal. The outlet will be willing

to accept if benefit of the transfer t_i/τ is at least as large as the foregone commercial revenue a/m , implying $t_i \geq a\tau/m$.

The incumbent is willing to pay an outlet to suppress its signal only if all the other outlets are quiet too. If the incumbent pays transfers in equilibrium, then an outlet who deviates and rejects her transfers will be the only one reporting the negative signal and will thus make a monopoly commercial profit. If in equilibrium all outlets are silenced, it must be that each of them receives a transfer $t_i \geq a\tau$. This implies that the minimal amount the incumbent spends to suppress the negative signal is $na\tau$. If we assume that the incumbent derives a benefit r from being re-elected, we get:

Proposition 16.1

The media is captured if and only if media plurality, the commercial motive, and transaction costs are sufficiently low, namely if $na\tau \leq r$.

Note that plurality here has a literal meaning of “quantity” of media outlets. Without capture, all outlets are reporting the same information. The only benefit of these otherwise redundant outlets is that they make capture harder for the incumbent because commercial revenue is higher if other outlets are captured. In this simple setup, the incumbent must compensate each outlet as if it were a media monopolist, because that is what it would be if it deviated. In a more general setting, the result may not be so stark but it will still be true that buying out multiple independent media with a certain total audience is more expensive than buying out one media outlet with the same total audience.

Capture is bad for voters because it makes them unable to distinguish between a good incumbent and a bad incumbent.³ As a result, incumbents are less likely to lose their job and the average quality of politicians decreases:

Proposition 16.2

Turnover of politicians and voter welfare are increasing in media plurality, the commercial motive, and transaction costs.

The last proposition is consistent with cross-country patterns observed by Brunetti and Weder (2003), Djankov et al. (2003), and Besley and Prat (2006). The political longevity of the country’s most important elected official (prime minister or president, depending on the constitutional system) is increasing in media owned by the government (which presumably decreases τ) and decreasing in media concentration (as measured by the share of audience controlled by the top five outlets). The effect is large: for example, the average political longevity in countries with “low” concentration (the top five

³ *Ex post*, voters are indifferent between re-electing the incumbent or not re-electing, yet they vote for her. It is easy to see that there is no (undominated) equilibrium where voters would vote for the challenger if there is no signal. In such an equilibrium, the incumbent would have no incentive to capture the media and hence the lack of a signal would be good news about the incumbent.

newspapers control less than 75% of the audience) is around 5 years; longevity in countries with “high” concentration is over 10 years.

The baseline model considers a homogeneous electorate and assumes that capture comes only from the government. [Corneo \(2006\)](#) allows voters to have heterogeneous preferences, reflected in the presence of different interest groups. The media can collude with the various interest groups. The media (a monopolist) can make a secret agreement with a particular interest group. This model highlights the role of ownership concentration. Media capture is more likely when there are a few large shareholders than when ownership is diffuse.

[Petrova \(2008\)](#) considers the effect of income distribution. The government uses taxes to provide a public good that is relatively more useful to the poor than to the rich. There is uncertainty about the usefulness of the public good and the media can provide voters with information. However, the rich may offer bribes to the media to understate the value of the public project. Media capture arises in equilibrium, and its extent is greater when society is more unequal. Media capture accomplishes its goal: a country whose media is captured has on average lower public good investment. As this effect is due to electoral incentives, one of the predictions is that the relation between media capture and public good provision is stronger in countries with stronger democratic institutions.

The baseline model can be extended to allow for media differentiation. Suppose individual outlets decide how much effort to put into government monitoring. Outlet i chooses investment level $q_i \in [0, 1]$ at cost $c(q_i)$, under the assumption that c is increasing and convex. The idea is that some negative signals are easy to uncover while others require extensive investigative journalism. Every bad incumbent produces a negative signal, characterized by a difficulty of detection $\nu \in [0, 1]$. A signal with value ν is observed only by outlets with an investment above that level: $q_i \geq \nu$.

Let us first see what happens in the media differentiation case when there is no capture. Higher levels of journalistic investment must be rewarded with higher marginal commercial revenues. In equilibrium, *ex-ante* identical media will choose different levels of journalistic investment. One outlet—let’s say $i = 1$ —will make the highest investment, and will equalize the marginal cost of investment, $q'(\nu)$, with the marginal revenue of investment under the assumption that it will be the only one to report a marginal signal, a . Another outlet— $i = 2$ —will make the second-highest investment, equalizing the marginal cost of investment with the marginal revenue of duopoly reporting: $q'(\nu) = a/2$. The k th outlet will choose ν to solve

$$q'(\nu) = \frac{a}{k}.$$

Thus, a non-captured media industry will exhibit vertical differentiation.

If we consider the possibility of capture, we must ask under what conditions the incumbent would be willing to put up the resources to silence the media. If the signal

is easy to detect, the incumbent would have to pay off a large number of outlets, while if ν becomes higher the number of media is smaller. In equilibrium there is a threshold $\bar{\nu}$ such that the media is captured if and only if $\nu \geq \bar{\nu}$. Obviously, if ν is very high, no outlet observes the signal and capture is not necessary.

With capture, vertical differentiation is reduced. The marginal revenue of the outlet with the highest investment does not come from commercial sources but from government transfers. As we saw in [Proposition 16.1](#), such revenue equals monopoly profit. But now there can be more than one top outlet. In fact, in equilibrium there will typically be multiple outlets with the highest level of investment. There is also a fringe of lower-investment media (with $q < \bar{\nu}$) who pursue commercial revenues in the case of easy-to-detect signals. The high-level outlets will report their signal if $\nu < \bar{\nu}$ and will conceal it in exchange for a transfer from the government if $\nu \geq \bar{\nu}$. From the point of view of the audience, which does not observe the unreported signals, the media landscape is composed of a number of equally mediocre media outlets. Thus, realized vertical differentiation is lower in a captured market than in a non-captured one.

So far, the only action that citizens could take was voting. [Gehlbach and Sonin \(2014\)](#) model a more general mobilizing role of the media. For instance, government may want citizens to support war efforts. Citizens make individual investment decisions based on the information they have. By manipulating news provision, the government can affect aggregate investments levels. Media bias is stronger in the presence of a mobilizing motive. The authors explore the difference between state-owned media and privately owned media. The bias difference between the two increases when a country becomes more democratic.

16.3. MEDIA POWER

The previous section offered a one-sided view of capture, where all the bargaining power is on the government's side. However, there are important examples of powerful media owners who have exerted influence on the political system of their countries.

To analyze phenomena like Hearst and Berlusconi, we must move beyond the assumption—made for analytical convenience in the first part of the chapter—that all media outlets are *ex ante* identical. On the contrary, we now begin from a situation where citizens are following specific media sources and we ask how much sway those sources have on the political process.

As [Polo \(2005\)](#) argued, market power notions do not fully capture the specificity of the media industry. Market power measures, like the Hirschmann–Herfindahl Index (HHI), define the relevant market in terms of cross-elasticity of demand. This leads to identifying markets in terms of technological platforms: newspapers, radio, television, social media, etc. This definition is both too broad because it includes a lot of activity that does not relate to political information (e.g., most television programs are not news) and too narrow because it segments political information by platform. In an attempt to

bridge this gap, in 2003 the US Federal Communications Commission proposed a cross-platform measure: the Media Diversity Index. The index assigned a weight to every platform: broadcast TV (33.8%), newspapers (20.2%), weekly periodicals (8.6%), radio (24.9%), cable Internet (2.3%), and all other Internet (10.2%). Within each platform, every outlet was given equal weight. The index was eventually struck down by the courts in *Prometheus Radio Project v. FCC* because of “irrational assumptions and inconsistencies.” In an attempt to overcome these issues, [Prat \(2014\)](#) develops a micro-founded model of media power.

Let us begin by describing the electoral part of the model. There are two candidates or parties, A and B . The relative quality of candidate B over candidate A is a random variable σ , uniformly distributed on $[0,1]$. In expectation, the two candidates are equally attractive, but a given σ voters prefer candidate B if and only if $\sigma \geq 1/2$. Specifically, voters’ payoff is $1/2$ if they elect A and σ if they elect B .

As in the first part of the chapter, voters rely on the media for information on σ . There is a set of media outlets that receive a number of binary signals drawn from a binomial distribution with parameter σ . As the goal of this analysis is to measure distortions due to bias rather than lack of information, we assume that the number of signals each outlet receives tends to infinity. Let \mathbb{M} denote the finite set of media outlets, with typical individual outlets denoted $1 \leq m \leq |\mathbb{M}|$. Let $x_m = (x_{m1}, \dots, x_{mN})$ denote a vector of N binary signals—*news items*—observed by outlet m , with $\Pr(x_{mi} = 1 | \sigma) = \sigma$. News items are, conditional on σ , independent within and across media outlets.

There is a unitary mass of voters. Each voter follows one or more media sources according to the following media consumption matrix. Let $M \subset \mathbb{M}$ denote some subset of outlets. Then voters are partitioned into *segments*, indexed by the subset M of outlets they consume, and for each $M \subset \mathbb{M}$ let q_M be the fraction of voters who consume (exactly) the subset M . Clearly

$$\sum_{M \subset \mathbb{M}} q_M = 1.$$

(If some voters follow zero sources, we can disregard them under the assumption that their vote is random.) [Table 16.1](#) is an example of a media consumption matrix.

If a cell of the matrix contains a full square, it indicates that the voters in the segment of that row follow the media source in the column. For instance, voters in segment a follow Media 1 and Media 2. The reach is the percentage of the population that follows a particular media source: in this case all media outlets reach half of the population.

The example is designed so that all sources have the same reach. Does it mean they have the same power? Intuitively the answer is no. Compare for instance Media 3 and Media 4. They are both present in Segment d , and it is reasonable to expect that—barring other unmodeled factors—they should have the same influence on voters in d . However, Media 4 is the monopolist in Segment c , while Media 3 competes with three other sources for the attention of voters in Segment b . It is reasonable to expect that Media

Table 16.1 Media consumption matrix

Segment	Share	Media 1	Media 2	Media 3	Media 4	Media 5
a	25%	■	■			
b	25%	■	■	■		■
c	25%				■	
d	25%			■	■	■
Reach		50%	50%	50%	50%	50%

4 will have more influence on voters in *c* than Media 3 on voters in *b*. As we will see in what follows, this intuition is correct and can be quantified.

Voters have a potentially limited bandwidth. They only process or remember a certain number of news items. For now, assume they only remember an (odd) number K of news items for every source they follow. The items are chosen randomly among those published.

As in the first part of the chapter, let us first look at what happens when all media are unbiased. Each outlet reports all the signals it receives. Each voter remembers K signals and uses them to make decisions. If the majority of the binary signals are in favor of A , he votes for A . If the majority is in favor of B , he votes for B . The total share of votes for B is therefore σ , and B is elected if and only if her quality is greater than A . Thus, with unbiased media, elections produce an efficient outcome.

Now consider the possibility that media can be biased. Assume that a subset G of the set M of media sources is controlled by an owner whose only objective is to get A elected. He has no financial constraints or motive. The effect of the owner's bias depends on the response of voters. One approach is to estimate these factors carefully and find the exact effect of the bias given the estimates. However, if it is difficult to obtain reliable estimates, an alternative approach consists of considering a large set of possible parameter values and identifying an upper bound to the potential influence of biased media on the election. The latter approach is inspired by a recent literature on robust bounds in agency problems, which includes [Chassang \(2013\)](#), [Madarasz and Prat \(2010\)](#), and [Chassang and Padro i Miquel \(2013\)](#).

The biased media owner can report news selectively. While the set of signals his media outlets receive contains a share σ of items favorable to B , the owner reports only a share $s \in [0, 1]$ of signals favorable to B (while he reports all signals favorable to A). As the media consumers have limited bandwidth, they cannot count the number of items reported (which tends to infinity for both biased and unbiased media). Hence, in the spirit of analyzing the worst-case scenario, citizens have no direct way of ascertaining the presence of bias.

The difficult question is: how will voters process biased news? This depends on whether they understand the motives of the biased owner. Let $\beta \in (0, 1)$ be the prior

probability that voters assign to the presence of an evil media owner. This is a subjective parameter that captures the voters' views on the possibility that G is under the effective control of a unitary owner and that such an owner is biased in favor of candidate A . The value of β is hard to predict in practice, especially if we are considering a country that has hitherto had unbiased media.

As both the sophistication parameter β and the bandwidth parameter K are difficult to estimate, we will compute the maximal value of the power index over the whole parameter set. This will give us an upper bound on the ability of a media owner to influence the electoral system.

We begin by holding bandwidth K constant and by computing an upper bound to the power index over β . Consider a voter i in group M , who observes a particular realization of the K_M -sized signal vector y^i he receives from media outlets in M . The vector includes news items randomly drawn from outlets in M . Let y_k^i denote the k th realization of the vector and let $m(k)$ denote the media outlet it is drawn from. Suppose the voter believes that the evil owner would use reporting strategy $\hat{\sigma}$. Then, the probability of realization $y^i = Y$ would be given by:

$$\Pr(y^i = Y | \sigma, \hat{\sigma}) = \sigma^{N_1(M/G)} (1 - \sigma)^{N_0(M/G)} \left((1 - \beta) \sigma^{N_1(G)} (1 - \sigma)^{N_0(G)} + \beta (\hat{\sigma})^{N_1(G)} (1 - \hat{\sigma})^{N_0(G)} \right),$$

where $N_\gamma(M/G)$ is the number of signals with value γ coming from unbiased outlets, while $N_\gamma(G)$ is the same variable for potentially biased outlets.

The voter computes the posterior on candidate quality as follows:

$$E[\sigma | Y, \hat{\sigma}] = \frac{\int_0^1 \Pr(y^i = Y | \sigma, \hat{\sigma}) \sigma \, d\sigma}{\int_0^1 \Pr(y^i = Y | \sigma, \hat{\sigma}) \, d\sigma}$$

and votes for A if and only if $E[\sigma | Y, \hat{\sigma}] \leq 1/2$.

If we wanted to compute the equilibrium for a particular value of β we would now have to find a fixed point where the reporting strategy of the biased media does coincide with the voters' conjecture $\hat{\sigma}$. This is in general an untractable problem. Instead, we look for a lower bound to this expression and we show that this lower bound is indeed attained (see [Prat, 2014](#), for details of the derivation). Given the lower bound in posteriors, one can move to deriving an upper bound to the vote share of the candidate favored by the biased owner.

It can be shown that the upper bound to A 's vote share in a segment where G controls a share g_M of outlets and voters have bandwidth K_M is given by:

$$p_A(g_M, K_M, \sigma) = \sum_{k=0}^{\lceil K_M/2 \rceil - 1} \binom{K_M}{k} ((1 - g_M)\sigma)^k (1 - (1 - g_M)\sigma)^{K_M - k}. \quad (16.1)$$

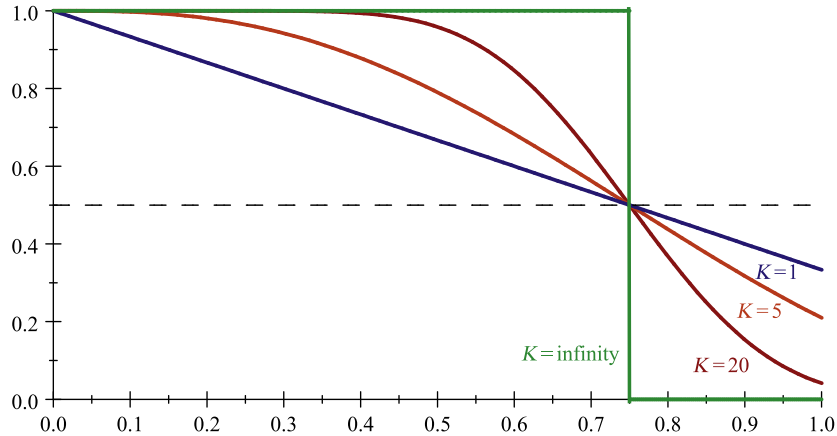


Figure 16.1 A 's vote share in segment M as a function of quality σ .

Figure 16.1 depicts a segment where 33.3% of the outlets are biased. This would correspond to Segment b in the example above under the assumption that exactly one of three outlets is biased. The x -axis represents σ , while the y -axis represents the share of voters who choose A . The figure depicts $p_A(1/4, K_M, \sigma)$ for various values of K_M .

In the plot, A 's vote share is a decreasing function of σ and it is more s-shaped as bandwidth increases. All curves intersect the $1/2$ horizontal line at $\sigma > 3/4$.

As one can see from the figure, the role of K on media power is ambiguous. If B is slightly better than A ($\sigma \in (0.5, 0.75)$), the biased owner has more power in a segment where K_M is high, because he manages to get an absolute majority of signals favorable to A . If instead the difference is large ($\sigma > 0.75$), the power is greater when bandwidth is minimal. We shall return to this point shortly when we analyze bandwidth.

The two extreme cases are particularly easy to characterize. When bandwidth is minimal, A 's vote share is a linear function of σ :

$$p_A(g_M, 1, \sigma) = (1 - g_M)(1 - \sigma) + g_M;$$

when bandwidth is maximal, the vote share is a step function

$$\lim_{K_M \rightarrow \infty} p_A(g_M, k_M, \sigma) = \begin{cases} 1 & \text{if } \sigma < \frac{1}{2(1-g_M)} \\ 1/2 & \text{if } \sigma = \frac{1}{2(1-g_M)} \\ 0 & \text{if } \sigma > \frac{1}{2(1-g_M)} \end{cases}.$$

We are now ready to define the media power index. Let $\bar{\sigma}$ be the highest value of σ such that the A -vote share is at least $1/2$, namely the solution to

$$\sum_{M \subset \mathbb{M}} q_M p_A(g_M, k_M, \bar{\sigma}) = \frac{1}{2}.$$

Let the power index be defined as

$$\pi = \min(2\bar{\sigma} - 1, 1).$$

The minimal value, zero, occurs when $\bar{\sigma} = 1/2$, meaning that A gets elected only when she would get elected if reporting were unbiased, in which case the media owner has no influence on elections. The maximal value occurs when $\bar{\sigma}(K) \geq 1$, meaning that A is always elected, regardless of how bad she is in comparison to B .

The power index π corresponds to the maximal welfare loss that voters can experience as a result of biased reporting: instead of having B elected and receiving σ , they receive $1 - \sigma$, generating a difference $2\sigma - 1$. This can be computed by summing the vote shares over all segments, as described by (16.1), and finding the maximal value of $\bar{\sigma}$ that still allows G to get A elected. This step yields the main result of this section:

Proposition 16.3

For a given bandwidth vector K , the power index of media group G is $\pi = (2\bar{\sigma} - 1, 1)$, where $\bar{\sigma}$ is the largest solution between $1/2$ and 1 of the following polynomial equation:

$$\sum_{M \subset \mathbb{M}} q_M \sum_{k=0}^{\lceil K_M/2 \rceil - 1} \binom{K_M}{k} ((1 - g_M)\bar{\sigma})^k (1 - (1 - g_M)\bar{\sigma})^{K_M - k} = \frac{1}{2}.$$

As one would expect, the index is monotonic in g_M . An increase in the attention share of biased media leads to more power.

The power index takes a particularly simple value when bandwidth is either minimal or maximal. When $K_M = 1$ in all segments the power index is simply

$$\bar{\sigma}(1) = \min\left(1, \frac{a_G}{1 - a_G}\right),$$

where $a_G = \sum_M q_M g_M$ is the average attention share of the biased owner.

For the maximal case, instead we have:

$$\lim_{K_M \rightarrow \infty, \text{ all } M} \bar{\sigma}(K) = \min\left(1, \frac{\text{median}(g_M)}{1 - \text{median}(g_M)}\right),$$

where $\text{median}(g_M)$ is defined as the g_M for the median voter.

One can go one step further and compute the maximal value of the power index over all possible values of the bandwidth vector K . This case is characterized in Prat (2014). In practice, the relative values of the index in the worst-case scenario are similar to the relative values in the minimal-bandwidth case. So from now on, we focus on the minimal-bandwidth case.

Table 16.2 Power indices

	Media 1	Media 2	Media 3	Media 4	Media 5
Attention share	18.75%	18.75%	14.58%	33.33%	14.58%
Minimal-bandwidth index	0.231	0.231	0.171	0.500	0.171

As an illustration, we can compute the minimal-bandwidth index of some outlets in [Table 16.1](#). All we need to know is the attention share of each outlet. For instance, Media 1 has 50% of the attention in Segment *a*, 25% of the attention in Segment *b*, and no attention share in the other two segments. The total attention share is therefore 18.75%. This yields a power index of

$$\bar{\sigma}(1) = \min \left(1, \frac{0.1875}{1 - 0.1875} \right) = 0.231.$$

The value $\bar{\sigma}(1) = 0.231$ can be interpreted as the maximal damage that Media 1 can inflict on the electorate if bandwidth is minimal in all segments. [Table 16.2](#) reports the minimal-bandwidth value of the index for all five media outlets. One could also compute the value of the maximal-bandwidth index, which in this case is zero for all media because no single media outlet is followed by a strict majority of voters. The values of the index for the five media outlets are reported in [Table 16.2](#).

Given any media consumption matrix, one can use [Proposition 16.1](#) to compute the power index of any media organization. [Prat \(2014\)](#) obtains power indices for major media organizations in the United States from 2000 to 2012. The relative rankings are quite stable across different specifications of the index. While a discussion of media power in the United States is outside the scope of this brief survey, the results highlight the continued importance of broadcasting. Three media conglomerates stand out in terms of power and all of them are mainly involved in television. New media and the press are ranked much lower because their attention share is much smaller than broadcasters, both because they have fewer followers and those followers tend to follow a larger number of sources. The media power index makes this relative ranking transparent.

16.4. IMPLICATIONS FOR MEDIA REGULATION

As we saw in the two previous sections, media manipulation is detrimental to citizens.⁴ Both media capture and media power lead to worse outcomes for the electorate. In this section, we explore regulatory approaches to reducing this type of effect. As we saw that plurality is an effective defense against capture and power, we will pay particular attention to regulation aimed at controlling media concentration levels.

⁴ For discussions of the welfare effects of media, see [Prat and Strömberg \(2013\)](#) and [Stromberg \(2015\)](#).

Existing media regulation falls under three broad categories: platform-specific regulation, general competition policy provisions, and direct provision. We examine them one by one, in light of the analysis of [Sections 16.2 and 16.3](#).

The first category comprises a large set of provisions that apply only to media and usually only to one particular platform, like newspapers or broadcast television. They can be limits on ownership of a single company (in France and Spain, no single entity can own more than 49% of the shares of a media company), cross-ownership (e.g., newspapers and TV stations), and foreign ownership. They can also be limits on individual media organizations, in terms of number of licenses, market shares, and advertising. Platform-specific rules appear increasingly outdated in a world where platforms are proliferating and the same content is often delivered through different platforms. At a normative level, why should the same news item be subject to a certain set of rules if it is delivered over aerial television as opposed to the Internet? At a positive level, how can governments effectively control a large set of news sources operating with a continuously evolving set of technologies? As [Section 16.3](#) argued, the relevant unit of analysis is not a particular media market but rather how individual voters aggregate political information coming from different sources. Two media sources may compete for the attention of voters even though they are in entirely different markets.

The second category of regulatory instruments comprises the standard set of competition rules that govern all industries. Those rules have the objective to protect consumer welfare measured in terms of price, quantity, and quality of products and services offered by firms. A highly debated question is whether such a set of rules is adequate for the media industry. [Noam \(2009\)](#) finds that most US media markets—including radio, newspapers, and television—have low levels of concentration, as measured by the HHI, lower than the threshold for regulatory scrutiny. Noam, however, argues that HHI misses an important element of plurality that is specific to the media industry: “As a citizen, I am better off if an alternative paper exists that keeps the city council and the big paper on their toes.”

[Polo \(2005\)](#) too concludes that competition policy cannot be used as a substitute for policies aimed at fostering media plurality. While both types of regulation focus heavily on market shares, they do so for different reasons. This becomes apparent when one considers standard competition policy efficiency arguments in favor of merger: “Regulation for pluralism, on the other hand, having as objective to preserve independent operators and access for political views, has no reason to consider these efficiencies in its evaluation: from the point of view of pluralism, the only relevant effect of such concentration would be that of extending the control of a company on more media, something dangerous if partisans or lobbying motivations condition the editorial choices of the company in political information.”

The analysis so far supports the view that competition policy is not sufficient to avoid media capture. In [Besley and Prat \(2006\)](#), the parameters that determine capture are *nat* (number of media sources, commercial revenue, transaction costs), and they cannot be

reduced to HHI. In [Prat \(2014\)](#), influence is determined by attention shares. These are different from the market shares used to compute HHI because they are not determined on the basis of markets but voter attention. This means that a given media landscape may generate no concerns from a competition policy viewpoint and still be dangerous from a capture viewpoint.

Capture models predict that concentration leads to a lower amount of political information and a higher level of bias. Both predictions are due to the desire of the media and the government to censor information that puts the government in a bad light, while still letting through favorable information. This leads to a reduction in the number of signals available to voters as well as a systematic distortion in favor of the incumbent.

[Anderson and McLaren \(2010\)](#) analyze the welfare effect of media mergers in the world with supply-driven media bias. Firms combine a profit motive and a commercial motive. Voters are rational. Media firms can withhold but not fabricate information. The authors show that citizen welfare is higher under duopoly than under monopoly, but that firms have an incentive to merge. There is therefore a role for regulation to prevent media mergers, beyond standard competition analysis.

The third category of regulatory instruments consists of direct news provision. Many countries, with the notable exception of the United States, have a large public service broadcasting (PSB) organization. In fact, in most countries the largest television network is publicly owned ([Djankov et al., 2003](#)). Can PSBs be a response to the risk of capture? The answer hinges on whether we think that a PSB has more or less incentives than private broadcasting organizations to engage in misreporting with the goal to affect the democratic process. One part of the literature, which begins with [Coase \(1950\)](#), and includes [Hargreaves Heap \(2005\)](#), [Armstrong \(2005\)](#), and [Armstrong and Weeds \(2007\)](#), abstracts from the risk of capture and focuses on different issues, such as the underprovision of socially desirable content and the interaction between public and private content provision. Other authors emphasize that PSB organizations can be biased too. [Durante and Knight \(2012\)](#) document stark changes in the bias of the Italian PSB when Silvio Berlusconi came to power. [Djankov et al. \(2003\)](#) find that high levels of public ownership of television networks are associated with negative political outcomes, such as less press freedom, fewer political and economic rights, and inferior governance.

Whether the presence of a PSB increases or decreases news manipulation depends on whether we face media capture or media power. In a country with low transaction cost (the τ parameter of [Section 16.2](#)), the presence of a large PSB is likely to make things worse because it makes it even easier for the government to control the media, both because it increases concentration and because, presumably, transaction cost is even lower in the interaction between the government and a government-controlled PSB organization. Indeed, in most early-stage democracies the PSB is simply a propaganda channel for the government. In a country with a high transaction cost, media power becomes the main issue. An independent PSB may give more guarantees of impartiality and

unbiasedness than a private broadcaster. The BBC may be the most successful example in this sense, where editorial independence is secured by a governance structure designed to make transaction costs extremely high. It is unclear whether the BBC example can be replicated in democracies with fewer checks and balances.

16.5. CONCLUSIONS

This chapter surveyed the burgeoning literature on media capture (situations where the government controls the media) and media power (situations where the government is controlled by the media). The former is more likely in countries with low transaction costs between the government and the media, while the latter can be found in highly established democracies. Models of media capture highlight the role of media plurality, transaction costs, and commercial revenues. Models of media power also uncover an important role for media plurality, which can be quantified by a media power index (Prat, 2014), which can be computed on the basis of existing media consumption data. Media capture and media power should be viewed as two extremes on a spectrum where the government and the media industry collude to manipulate electoral outcomes.

Can the risk of media capture be reduced by regulation? We reviewed three sets of existing regulatory instruments: platform-specific regulation, competition policy provisions, and PSB. In all three cases, we highlighted important limitations in their effectiveness. Platform-specific regulation is increasingly arbitrary and ineffective in a world where news platforms are proliferating. Competition policy targets the right phenomenon, concentration, but focuses on markets rather than the political arena: a media power measure would be more appropriate. Finally, public service broadcasting is an effective defense against capture only if transaction costs between government and media are high. If instead media capture is a possibility, it may actually be facilitated by the presence of a larger publicly owned media organization.

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