Government Control of the Media

Scott Gehlbach and Konstantin Sonin*

April 1, 2008

Abstract

Under what conditions are private media more independent than their state-owned counterparts? Does growth in the advertising market lead unconditionally to greater media independence? We explore these and related questions in a formal model of government control of the media, contrasting state ownership, where the government chooses media bias directly, and private ownership, where the government induces bias through the provision of subsidies. We show that under both state and private ownership, an increase in the size of the advertising market reduces media bias. In general, however, the effect is greater for private than for state-owned media, implying that the government may be motivated to seize direct control of the media when the advertising market is large. We illustrate our model with a case study of media freedom in postcommunist Russia. Consistent with our theoretical framework but counter to conventional perspectives on media freedom, Kremlin control over the media has grown in tandem with the size of the advertising market.

Preliminary and incomplete.

*Gehlbach: University of Wisconsin–Madison and CEFIR, gehlbach@polisci.wisc.edu. Sonin: New Economic School, CEFIR, and CEPR, ksonin@gmail.com.

1 Introduction

A substantial literature ties media freedom to democratic performance and good governance.[1] Yet relatively little is known about the determinants of media freedom. Cross-country empirical work suggests that media freedom may be greater when the media are privately owned, yet case studies of particular countries stress that government officials can subvert private media through the provision of government subsidies and even outright bribes.[2] Similarly, a growing empirical literature ties the independence of private media to the availability of advertising revenue but leaves unanswered how advertising might affect media controlled by the state.[3] Under what conditions are private media more independent than their state-owned counterparts? Does growth in the advertising market lead unconditionally to greater media independence? We develop a formal model of government control of the media to address these and related questions.

Our modeling approach highlights a fundamental constraint facing any media owner: bias in reporting reduces the informational content of the news, thus lowering the likelihood that individuals who need that information to make decisions will read, watch, or listen to it. One consequence of this relationship is that bias reduces advertising revenue. The extent of media bias depends on the degree to which the government internalizes this effect. When the government may costlessly transfer subsidies to private media owners, media bias is identical under state and private ownership: under state ownership the government chooses this level of bias directly, whereas under private ownership the government subsidizes the private owner to achieve the same outcome. Under the more realistic assumption that subsidization is inefficient, i.e., entails transaction costs, media bias is less under private ownership. The cost of compensating the private owner for lost advertising revenue keeps the government from inducing the level of bias it would if it were the owner.

Given the centrality of advertising revenue to our analysis, an important question is how media bias evolves as the advertising market changes in size. Consistent with a substantial body of empirical evidence, we show that private media are generally less biased when the advertising market is large, as the opportunity cost of foregone advertising revenue makes purchasing influence relatively expensive for the government. We advance on this understanding with two additional results. First, we show that growth in the advertising market can also reduce media bias under state ownership, though the absence of transaction

[1] Much recent work on the topic is in the political economy literature. Representative papers include Besley and Burgess (2002); Brunetti and Weder (2003); Reinikka and Svensson (2005); Prat and Strömberg (2006). The idea that media freedom may affect political outcomes rests implicitly on the assumption that individuals' beliefs and preferences can be affected by what they see, read, and hear in the media. Numerous studies, most employing survey data, have examined and generally affirmed this proposition in the American context; see Kinder (1998) and Goldstein and Ridout (2004) for reviews of the literature. For more recent work exploiting various field and natural experiments, see Ansolabehere, Snowberg, and Snyder (2004); Della Vigna and Kaplan (2007); and Gerber, Karlan, and Bergan (2007). Studies in immature democracies have found media effects that, if anything, are stronger than those typically identified in the U.S. See, for example, White, Oates, and McAllister (2005) and Enikolopov, Petrova, and Zhuravskaya (2007) on Russia; Lawson and McCann (2007) on Mexico; and Gentzkow and Shapiro (2004) on the Mideast.

[2] For cross-country evidence, see Djankov, McLeish, Nenova, and Shleifer, 2003. Lawson (2002) and Hughes and Lawson (2007) discuss subversion of the media in Mexico, Mickiewicz (1999) and Oates (2006) in Russia, and McMillan and Zoido (2004) in Peru.

[3] See, for example, Hamilton, 2004; Gentzkow, Glaeser, Goldin, 2006; Petrova, 2007.

costs when the state owns the media implies that this effect will be comparatively small. Second, and more important, we demonstrate that the government may seize ownership of the media for itself when the advertising market is large. Not only can the government implement a higher level of bias when it owns the media—an advantage that grows with the size of the advertising market—but it can economize on subsidies and acquire advertising revenue for itself. A surprising implication of this analysis is that the relationship between media freedom and the size of the advertising market may be nonmonotonic. Holding ownership constant, growth in the advertising market reduces media bias, regardless of whether the media are private or state-owned. However, the same growth may prompt the government to seize direct control of the media, which leads to a discontinuous jump in media bias.

Most of the analysis in this paper explores the relationship between the government and a single media outlet. In an extension, we examine the nature of government control when a second media firm may compete for viewers. Intuitively, competition among media may lead to less aggregate bias, as each additional media outlet provides another signal that viewers may use to infer the state of the world. At the same time, the government may benefit from the existence of competition to the extent that additional media outlets attract viewers who would otherwise never be exposed to information the government wants them to hear. As we show, it is easy to construct examples whereby the government benefits from more or fewer media outlets, implying no simple relationship between competition and government control of the media.

We illustrate our theoretical model with a case study of government control of the media in postcommunist Russia. Largely created from scratch after the collapse of communism, Russia's advertising market has grown dramatically in recent years, a development that would seem to bode well for media freedom. Yet by most accounts, Russia has seen an equally dramatic decline in media independence, as the Kremlin has seized direct control of large segments of the Russian media market. Although some of this evolution may be due to differences in the leadership style of Russian presidents Boris Yeltsin and Vladimir Putin, our analysis suggests that the Kremlin may also have been motivated to prevent private media, newly flush with advertising revenue, from asserting their independence. In addition, our model provides a theoretical framework for understanding other developments in the relationship between media and the state in postcommunist Russia, such as the convergence in bias among private and state-owned media prior to the 1996 presidential election and the decision to shut down rather than take over independent television station TV6.

Our theory builds on two modeling traditions in the political economy literature. First, we follow the approach pioneered by Shleifer and Vishny (1994) in modeling a bargaining relationship between a politician and a firm, which in our case corresponds to a media outlet. As in Shleifer and Vishny, we emphasize the allocation of control rights, which in our setting is the ability to decide what to report. Under state ownership, the government possesses this right. We refer to this environment as "direct government control" of the media, to emphasize that the government chooses media bias directly. In contrast, under private ownership, a private owner possesses the right to choose what to report. We term this situation "indirect government control," as the government may still induce media bias but must pay for it by providing subsidies to the private owner.

Second, we build on a growing body of work that attempts to explain the origins of media bias. Relative to most of this literature, the key distinction of our approach is that we model the government as a strategic actor. Besley and Prat (2006) do consider government influence over the media, but in a reduced-form approach that emphasizes the impact of media freedom on government accountability rather than the relationship between government and the media itself. In particular, Besley and Prat only implicitly compare direct and indirect government control of the media (via differences in transaction costs); do not endogenize control over the media, and so miss the nonmonotonic effect of advertising revenue that we identify; and do not model viewership directly, which we show can imply a government preference for more rather than less competition among media outlets.

Other models stress the inherent biases of media owners (Gabszewicz et al., 2001) or journalists (Baron, 2006; Puglisi, 2006); the market response to consumer demand for bias, which arises either for exogenous reasons (Mullainathan and Shleifer, 2005) or because firms skew their reporting toward consumer priors to build a reputation for quality (Gentzkow and Shapiro, 2006);[4] the interaction of market forces and the internal structure of the media (Bovitz, Druckman, and Lupia, 2002); and the purchase of journalists by special interests (Petrova, 2007). Among these contributions, our theoretical framework builds especially on Gentzkow and Shapiro (2006): as in their work, we model Bayesian citizens who may use information reported by the media when making a costly decision whose outcome depends on the state of the world. The questions we explore in this framework, however, are very different from those that Gentzkow and Shapiro pose. Our approach is also similar in some respects to Petrova (2007), who like us examines the tradeoff between advertising revenue and bias. In our case, however, we treat the government as the relevant special interest, an important distinction since the government may acquire control of the media by force. As we show, the government may be more motivated to seize private media when the advertising market is large, implying a relationship between advertising revenue and media freedom counter to that predicted by Petrova and observed in the Russian case that we discuss.

The paper proceeds as follows. In Section 2, we examine media bias under direct government control, i.e., when the media are state-owned. In Section 3, we analyze the case of indirect government control, i.e., state subsidization of privately owned media. We endogenize government control in Section 4, asking when the government would choose to take over privately owned media. Section 5 considers competition among media outlets. We illustrate our model with a case study of media freedom in postcommunist Russia in Section 6. Section 7 concludes.

2 Direct Government Control of the Media

2.1 Environment

Consider a model with two sets of players: a continuum of citizens of mass one, indexed by i, and a government that directly controls, i.e., owns, a news outlet. For concreteness, we say that citizens "watch" the news, as when the news outlet is a television station. However, our arguments also apply to newspapers, radio, and other media.

[4] The latter paper builds on the insight that rational individuals may have a preference for biased information. See Calvert (1985).

At a cost normalized to one, each citizen i may "invest" in a single project, $\pi_i \in \{0,1\}$. The private return from investment depends on the state of the world $S \in \{L, H\}$, where L denotes a "low" state and H a "high" state. The government prefers more investment to less regardless of the state. A "political" example of such investment is participation in a state-sponsored rally, where turnout provides legitimacy to the regime but citizens prefer to participate only if the government is capable of sanctioning nonparticipation. An "economic" example is as follows: the government prefers that economic actors behave as if the central banker is conservative, whether he is or not, but economic actors prefer to forego price increases only if he is.

In particular, when $S = H$ the project yields a private return $r > 1$, whereas when $S = L$ the private return is equal to zero. Citizens do not know the state but have a common prior belief that the state is high with probability $\theta \in (0,1)$. We assume that $\theta r < 1$, which implies that in the absence of any additional information citizens do not invest.

Citizens may update their belief about the state of the world by watching the news. A news broadcast contains one of two messages, $\hat{S} \in \left\{\hat{H}, \hat{L}\right\}$. Rather than choosing the message directly, we assume that the government structures the news operation to attain the desired level of bias, with the message determined probabilistically by the structure after the state of the world has been realized. This assumption implicitly captures the need to delegate responsibility for the news to the reporters, anchors, and editors who make daily decisions about what to cover and how to cover it, with the government choosing the level of bias by who it hires. Importantly, we assume that this choice is observable to all citizens. This assumption seems especially compelling for broadcast media, the primary news source for citizens in most countries. For example, CNN programs hosted by Lou Dobbs and Anderson Cooper are easily distinguishable, and the replacement of conservative commentator Tucker Carlson on MSNBC was viewed by many (including Carlson himself) as a shift in editorial line.[5]

In particular, at the beginning of the game, prior to realization of the state of the world, the government publicly chooses a reporting strategy $\beta(S) \in [0,1] \times [0,1]$, which is the probability that the media outlet reports the message $\hat{H}$ when the state is S. We abuse notation slightly to denote any citizen's posterior belief about the state of the world, conditional on having received the message $\hat{S}$, by $\theta\left(\hat{S}\right)$.[6] Thus, conditional on having watched the news and received the message $\hat{S}$, any citizen prefers to invest if $\theta\left(\hat{S}\right) r > 1$.

Watching the news may therefore be profitable to citizens if the government's reporting strategy $\beta(S)$ is such that the news is sufficiently informative. Potentially offsetting this benefit, each citizen i has an exogenous idiosyncratic opportunity cost of watching the news μ_i, where μ_i is distributed uniformly on $[0, m]$. We assume for simplicity that $m > r - 1$, which implies that for all θ the proportion of individuals who watch the news in equilibrium is strictly less than one. We use the indicator variable $\omega_i \in \{0,1\}$ to denote the decision to watch the news.

Our assumption that this opportunity cost is exogenous applies most clearly to broadcast

[5]See, for example, "At MSNBC, 'Tucker' Is Out, and David Gregory Is In," *New York Times*, March 11, 2008.

[6]For those who do not watch the news, the posterior belief is equal to the prior belief.

media, where there is no purchasing decision to be made so long as a citizen already possesses a television or radio. In this context, the opportunity cost to watching the news may reflect a citizen's work schedule, family obligations, and similar considerations. For print media, the opportunity cost would also reflect the purchase price, which would be a choice variable of the media owner. We choose to leave that extension to future research.

Summarizing, the timing of events is:

1. The government chooses $\beta(S) \in [0,1] \times [0,1]$, which is observed by all citizens.
2. Each citizen decides whether or not to watch the news, $\omega_i \in \{0,1\}$.
3. The state of the world $S \in \{L, H\}$ is realized, with the message $\hat{S} \in \left\{\hat{H}, \hat{L}\right\}$ determined probabilistically according to $\beta(S)$. Only citizens who watch the news receive the message $\hat{S}$.
4. Each citizen decides whether or not to invest in the project, $\pi_i \in \{0,1\}$.

In general, we assume that the government may value viewership as well as investment, to the extent that viewership increases advertising revenue of the state-owned news outlet. We model this concern in a reduced-form way, assuming that total advertising revenue is proportional to viewership. Let γ denote the size of the market. Further, assume that the government's preferences over investment and advertising revenue are separable, such that those preferences can be represented by the following utility function:

$$U_G = \psi \int_0^m \omega_i(\mu_i) E\left[\pi_i\left(\hat{S}(S)\right)\right] d\mu_i + \gamma \int_0^m \omega_i(\mu_i) d\mu_i. \tag{1}$$

The first term is proportional to expected investment (recall that, by assumption, citizens choose to invest only if they watch the news, i.e., only if $\omega_i = 1$), with expectations over S, and the second term is advertising revenue. The parameter ψ denotes the weight that the government puts on investment relative to advertising revenue.[7] To establish intuition, we begin by deriving equilibrium media bias as $\frac{\psi}{\gamma} \to \infty$, i.e., when the government values only investment. We then examine the general case where the government values both investment and advertising revenue.

2.2 Equilibrium When Government Values Only Investment

We solve for a perfect Bayesian equilibrium of this dynamic game of incomplete information, assuming in this section that the government values only investment. To begin, note that the government wants citizens to believe that $S = H$, as it is profitable for citizens to invest only when the state is H. Therefore, in equilibrium, it must be the case that $\beta(H) = 1$.[8] However, it cannot be the case in equilibrium that the government always reports that the state is H, i.e., that it also chooses $\beta(L) = 1$, as then the news would be uninformative.

[7] Although mathematically superfluous, the second parameter aids interpretation.

[8] This assumes that messages have the "natural" meaning. Otherwise, the equilibria that we describe could be relabeled such that the message $\hat{H}$ is associated with the state L, and vice versa.

Regardless of the message $\hat{S}$, any citizen who watched the news would choose not to invest; given the opportunity cost of watching the news, all citizens would therefore choose not to watch. Thus, in equilibrium the media must truthfully report the state with some positive probability when the state is L, i.e., the government must choose $\beta(L) < 1$.

To solve for the equilibrium strategy $\beta^*(L)$, we begin by considering the beliefs and investment behavior of those who watch the news. Using the equilibrium condition that citizens update beliefs on the equilibrium path according to Bayes' rule, we can derive the posterior probability that the state is H, conditional on having received the message $\hat{H}$, as

$$\theta\left(\hat{H}\right) = \frac{\theta\beta(H)}{\theta\beta(H) + (1-\theta)\beta(L)} = \frac{\theta}{\theta + (1-\theta)\beta(L)}, \tag{2}$$

where the second equality follows from $\beta(H) = 1$. The higher is media bias $\beta(L)$, the less likely citizens are to believe that the state is H when they receive the message $\hat{H}$. Similarly, we can derive $\theta\left(\hat{L}\right) = 0$, which follows trivially from $\beta(H) = 1$. Thus, citizens would never invest after receiving the report $\hat{L}$, but might invest after receiving the message $\hat{H}$ if $\beta(L)$ is sufficiently small such that $\theta\left(\hat{H}\right) r > 1$. Intuitively, citizens invest after receiving the message $\hat{H}$ only if the government is sufficiently likely to tell the truth when the state is in fact L. In the analysis to follow, we assume preliminarily that that is the case and then show that this condition holds in equilibrium.

Given the preliminary assumption that $\theta\left(\hat{H}\right) r > 1$, which implies that citizens invest if (and only if) they receive the message $\hat{H}$, the expected payoff from watching the news is

$$[\theta + (1-\theta)\beta(L)] \cdot \left[\theta\left(\hat{H}\right) r - 1\right].$$

The term on the left is the probability that a citizen receives the message $\hat{H}$, conditional on watching the news, whereas the term on the right is the expected payoff from investing, having received the messsage $\hat{H}$. This expression is decreasing in $\beta(L)$: demand for the news is greatest when bias is least.

With the opportunity cost of watching the news μ_i distributed uniformly on $[0, m]$, the mass of all individuals who watch the news is given by

$$\int_0^m \omega_i(\mu_i)\, d\mu_i = \frac{1}{m}[\theta + (1-\theta)\beta(L)] \cdot \left[\theta\left(\hat{H}\right) r - 1\right]. \tag{3}$$

Because citizens invest if and only if they receive the message $\hat{H}$, the probability that any citizen invests, conditional on having watched the news, is equal to the probability that the government reports $\hat{H}$, $\theta + (1-\theta)\beta(L)$, which is increasing in media bias $\beta(L)$. Expected investment is then equal to the product of this probability and the mass of citizens who invest:

$$\frac{1}{m}[\theta + (1-\theta)\beta(L)]^2 \cdot \left[\theta\left(\hat{H}\right) r - 1\right]. \tag{4}$$

The government chooses $\beta(L)$ to maximize Expression 4, given the posterior belief $\theta\left(\hat{H}\right)$ (Equation 2):

$$\max_{\beta(L)} \frac{1}{m}[\theta + (1-\theta)\beta(L)]^2 \cdot \left[\frac{\theta}{\theta + (1-\theta)\beta(L)} r - 1\right].$$

This is a concave problem, the solution to which is

$$\beta^*(L) = \max\left[0, \frac{\theta(r-2)}{2(1-\theta)}\right] \tag{5}$$

Equation 5 says that when $\beta^*(L) > 0$, media bias is greater, i.e., $\beta^*(L)$ is larger, the larger is the payoff from investment r. Intuitively, when the payoff from making the right investment decision is relatively large, citizens watch the news even when news content is noisy. In addition, media bias is (weakly) increasing in θ, which measures the prior belief that the state is high. As Equation 2 shows, media bias plays a smaller role in determination of the posterior belief that the state is high when θ is large, implying that bias must be greater to have the same marginal impact on investment.

In deriving Equation 5, we assumed preliminarily that $\theta\left(\hat{H}\right) r > 1$. We may verify this by substituting $\beta^*(L)$ into $\theta\left(\hat{H}\right)$ (Equation 2). In particular, $\theta\left(\hat{H}\right) = 1$ when $\beta^*(L) = 0$—the message $\hat{H}$ is sent if and only if $S = H$—so that $\theta\left(\hat{H}\right) r > 1$ holds trivially given $r > 1$, which is an assumption of the model. For $\beta^*(L) > 0$, $\theta\left(\hat{H}\right) r > 1$ is equivalent to

$$\frac{\theta}{\theta + (1-\theta)\left[\frac{\theta(r-2)}{2(1-\theta)}\right]} r > 1,$$

i.e.,

$$\theta r > \theta + \frac{\theta(r-2)}{2} \Leftrightarrow 2\theta(r-1) > \theta(r-2).$$

Similarly, we may show that $\beta^*(L)$ is strictly less than 1:

$$\theta(r-2) < 2(1-\theta) \Leftrightarrow \theta r < 2,$$

which always holds given the assumption that $\theta r < 1$.

2.3 Equilibrium When Government Values Investment and Advertising Revenue

In Section 2.2, we analyze the special case of the model where the government values only "investment" by citizens. This case illustrates the tradeoff between raising bias to increase investment by those who watch the news and lowering bias to increase the proportion of citizens who watch the news and thus receive the government's message. In addition to these concerns, however, governments may be motivated to increase advertising revenue for media under their control. In Russia, for example, Channel One and Rossiya, the two most purely state-owned national television networks, run advertisements during their prime-time news broadcasts. Nonetheless, these advertisements generally appear at the "corners" of the broadcasts where viewership is less. In contrast, NTV, the somewhat more commercial network controlled by majority-state-owned Gazprom, typically runs advertisements in the middle of its main evening news broadcast, suggesting a greater emphasis on advertising revenue.

How does a concern for advertising revenue modify the results above? To answer this question, we examine the general case of the model, where the government chooses media bias $\beta(L)$ to maximize utility as in Equation 1. Using Equations 3 and 4, we may write this problem as

$$\max_{\beta(L)} \frac{\psi}{m}\left[\theta+(1-\theta)\beta(L)\right]^2 \cdot \left[\theta\left(\hat{H}\right)r-1\right] + \frac{\gamma}{m}\left[\theta+(1-\theta)\beta(L)\right] \cdot \left[\theta\left(\hat{H}\right)r-1\right],$$

where as before we assume preliminarily that $\theta\left(\hat{H}\right)r > 1$. This is a concave problem, the solution to which we provide in the following proposition, where for future reference we use the subscript G to denote direct government control.

Proposition 1. *Under direct government control of the media (i.e., state ownership), the equilibrium level of bias is*

$$\beta_G^*(L) = \max\left[0, \frac{\psi\theta(r-2)-\gamma}{2\psi(1-\theta)}\right]. \tag{6}$$

For $\beta_G^*(L) > 0$, media bias is less, the greater is γ, i.e., the larger is the advertising market.[9] This result supports the argument that the media may be less biased when the advertising market is large. As we discuss above, however, this argument is typically made in the context of private ownership of the the media, a case that we examine below. Our model shows that the same relationship may hold when the media are state-owned, so long as the government values advertising revenue from media that it owns. Intuitively, the equilibrium level of bias bias depends on the degree to which the government internalizes the negative effect of bias on viewership. That effect is greater when the advertising market is large, so long as the government places some value on advertising revenue.

In addition, Equation 6 shows intuitively that media bias is greater when the government places more value on "investment," as during an election campaign when state-owned media are used to increase support for government-backed parties and candidates. More interesting, the effect on $\beta_G^*(L)$ of a marginal increase in ψ is greater when the advertising market (measured by γ) is large.[10] Thus, we might expect greater fluctuations in bias on state-owned media in countries with relatively large advertising markets.

3 Indirect Government Control of the Media

In the previous section, we assume that the government has direct control over the news outlet. Even if the owner of the outlet is private, however, the government may be able to indirectly control news content through the promise of subsidies. The problem is analogous to a lobbying model, where the private owner acts as policy maker and the government as

[9] Note that because equilibrium bias is less when the government values advertising revenue, $\hat{\theta}\left(\hat{H}\right)$ is larger than in the baseline model. Thus, the preliminary assumption $\hat{\theta}\left(\hat{H}\right)r > 1$ must hold here, given that it does there.

[10] Formally, for $\beta_G^*(L) > 0$, $\frac{\partial^2 \beta_G^*(L)}{\partial\psi\partial\gamma} = \frac{1}{2\psi^2(1-\theta)} > 0$.

lobby. As is standard in the political-economy literature, we model this process as a menu auction à la Grossman and Helpman (1994, 2001), where the government offers a contribution schedule that promises a particular contribution for every level of bias that the private owner might in principle choose.

Formally, assume that the government has preferences over citizen investment and contributions represented by the utility function

$$U_G = \psi \int_0^m \omega_i(\mu_i) E\left[\pi_i\left(\hat{S}(S)\right)\right] d\mu_i - C, \tag{7}$$

where the first term is proportional to expected investment and C is a subsidy (contribution), defined below, from the government to the private owner. In this context, the parameter ψ measures the degree to which the government values investment relative to subsidies. Implicitly, we assume that subsidies and advertising revenue are denominated in the same units, so that ψ has the same meaning in Equations 1 and 7. Note that the government does not directly value advertising revenue received by the private owner.

The private owner, in contrast, has preferences over advertising revenue and contributions represented by the utility function

$$U_P = \gamma \int_0^m \omega_i(\mu_i)\, d\mu_i + C, \tag{8}$$

where the first term is advertising revenue and C is the subsidy from the government to the private owner. Analogous to the government's preferences, the private owner does not directly value citizen investment.

At the beginning of the game, the government names a contribution schedule $C(\beta(S))$ that promises a particular subsidy $C \geq 0$ for all $\beta(S) \in [0,1] \times [0,1]$, i.e., for any reporting strategy that could be chosen by the private owner. As in Grossman and Helpman (1994, 2001), we assume that this promise is binding. This can easily be motivated either on reputational grounds or because lobbying is a spot-market transaction with few dynamic considerations, similar to the exchange of money for goods in a retail environment. The private owner then chooses $\beta(S)$ to maximize Expression 8. The remainder of the game is identical to that in Section 2.1. Thus, the timing of events is:

1. The government names a contribution schedule $C(\beta(S))$, following which the private owner chooses $\beta(S) \in [0,1] \times [0,1]$, which is observed by the government and all citizens, and the government pays $C(\beta(S))$.

2. Each citizen decides whether or not to watch the news, $\omega_i \in \{0,1\}$.

3. The state of the world $S \in \{L, H\}$ is realized, with the message $\hat{S} \in \left\{\hat{H}, \hat{L}\right\}$ determined probabilistically according to $\beta(S)$. Only citizens who watch the news receive the message $\hat{S}$.

4. Each citizen decides whether or not to invest in the project, $\pi_i \in \{0,1\}$.

Given that subsidies enter linearly into both the government's and private owner's utility functions (i.e., because utility is freely transferable between the two actors), the equilibrium outcome is jointly efficient between the government and private owner, i.e., maximizes

$$\psi \int_0^m \omega_i(\mu_i) E\left[\pi_i\left(\hat{S}(S)\right)\right] d\mu_i + \gamma \int_0^m \omega_i(\mu_i)\, d\mu_i.$$

But this is precisely the government's maximization problem under direct control of the media, implying that the equilibrium level of bias is the same as in Proposition 1. Intuitively, in making its offer $C(\beta(S))$ to the private owner, the government fully internalizes the impact of bias on advertising revenue, as it must compensate the private owner for any advertising revenue lost due to bias in reporting.

The sharp prediction that media bias is the same under government and private ownership—a consequence of the Coase theorem—follows from the assumption that the government can costlessly transfer utility to the private owner. That assumption may fail for various reasons. For example, for political reasons the government may subsidize the private owner through non-monetary transfers, as when the government provides transmission frequencies to favored enterprises.[11] The opportunity cost to the treasury of providing those transfers may be greater than the benefit to the private owner. Alternatively, "subsidies" may actually be outright bribes from government officials, as in the well-documented case of payments made to the media by Peru president Alberto Fujimori's secret police chief Vladimiro Montesinos Torres (McMillan and Zoido, 2004). In the latter case, the effort to keep bribes secret might impose transaction costs.

We follow Besley and Prat (2006) in modeling these considerations in a reduced-form way, assuming that the private owner receives proportion $\frac{1}{\alpha}$ of any subsidy paid by the government, where the parameter $\alpha \geq 1$.[12] Thus, the private owner's utility (Equation 8 above) now takes the form

$$U_P = \gamma \int_0^m \omega_i(\mu_i)\, d\mu_i + \frac{C}{\alpha},$$

which is equivalent to

$$U_P = \alpha\gamma \int_0^m \omega_i(\mu_i)\, d\mu_i + C.$$

In inducing $\beta(L)$, the government therefore puts greater weight on advertising revenue than in the case of direct government control. The following proposition provides the optimum $\beta(L)$ under indirect government control of the media, where the subscript P denotes private ownership.

Proposition 2. *Under indirect government control of the media (i.e., private ownership and state subsidies) the equilibrium level of bias is*

$$\beta_P^*(L) = \max\left[0, \frac{\psi\theta(r-2) - \alpha\gamma}{2\psi(1-\theta)}\right]. \tag{9}$$

[11] In Russia, the allocation of spectrum was instrumental in the creation of the NTV television network during the 1990s, as well as in the consolidation of Kremlin control of the media during the Putin era.

[12] Shleifer and Vishny (1994) also assume that subsidization is inefficient in their canonical model of bargaining between a politician and a firm.

The equilibrium level of bias in Proposition 2 differs from that in Proposition 1 in the multiplier α on γ. Thus, to the extent that transaction costs prevent efficient bargaining between the government and the private owner, bias will be less under private than state ownership of the media.

An interesting implication of Propositions 1 and 2 is that the difference between direct and indirect government control of the media is greater, the larger is the advertising market. To see this clearly, focus on the case where $\psi\theta(r-2) > \alpha\gamma$, so that media bias is strictly positive even under private ownership. Then the additional bias under state ownership is

$$\frac{\psi\theta(r-2)-\gamma}{2\psi(1-\theta)} - \frac{\psi\theta(r-2)-\alpha\gamma}{2\psi(1-\theta)} = \frac{\gamma(\alpha-1)}{2\psi(1-\theta)},$$

which is increasing in γ. This has an important consequence for media freedom: the opportunity cost to the government of allowing private ownership of the media, in terms of foregone citizen investment, is greater when the advertising market is large. As we show in the following section, in such environments, the government may therefore be motivated to acquire direct control of the media.

Similarly, Propositions 1 and 2 show that a marginal change in ψ (the value the government attaches to citizen investment) affects media bias more for private media than for state-owned media, so long as $\alpha > 1$. Intuitively, the tradeoff between citizen investment and advertising revenue is starker for private media, such that an increase in the value attached to investment is magnified relative to the case of state ownership. As we discuss below, this may help explain the convergence in media bias on private and state-owned media in the run-up to the 1996 Russian presidential election.

We may use Equation 9 to derive the subsidy the government pays the private owner to represent its point of view. To do so, first note that were the private owner to reject the government's offer, it would choose the level of media bias that maximizes viewership, which is clearly $\beta(L) = 0$. Because the posterior belief $\theta\left(\hat{H}\right) = 1$ when $\beta(L) = 0$, this implies advertising revenue of

$$\frac{\gamma}{m}\left[\theta+(1-\theta)\beta(L)\right]\cdot\left[\theta\left(\hat{H}\right)r-1\right] = \frac{\gamma\theta(r-1)}{m}. \tag{10}$$

In contrast, advertising revenue in equilibrium is

$$\frac{\gamma}{m}\left[\theta+(1-\theta)\beta_P^*(L)\right]\cdot\left[\theta\left(\hat{H}\right)r-1\right] = \frac{\gamma\theta(r-1)}{m} - \frac{\gamma(1-\theta)\beta_P^*(L)}{m}, \tag{11}$$

where the equality uses the expression for the posterior belief $\theta\left(\hat{H}\right)$ given by Equation 2. Thus, the government must reimburse the private owner for lost advertising revenue, which is proportional to the equilibrium level of bias $\beta_P^*(L)$. Using Equation 9 and the assumption that the private owner receives proportion $\frac{1}{\alpha}$ of any subsidy paid by the government, we can write this as

$$C^*\left(\beta_P^*(L)\right) = \alpha\left(\frac{\gamma(1-\theta)\beta_P^*(L)}{m}\right) = \max\left[0, \alpha\gamma\left(\frac{\psi\theta(r-2)-\alpha\gamma}{2\psi m}\right)\right]. \tag{12}$$

The government subsidy is strictly increasing in the value the government places on citizen investment (measured by ψ) for all $\beta_P^*(L) > 0$. The more the government values investment, the greater the incentive to subsidize the private owner in return for favorable coverage. In contrast, the relationship between government subsides and the size of the advertising market (measured by γ) is nonmonotonic. To see this, note that an increase in the size of the advertising market has two effects. First, as the advertising market increases in size, the government must provide a larger subsidy for a given level of bias to compensate the private owner for lost revenue. Second, the government responds to the higher cost of bias by inducing a smaller $\beta(L)$. The second effect dominates the first when advertising revenue is especially important. Indeed, for γ sufficiently large there is no bias, and thus no subsidy, in equilibrium.

4 Endogenous Control of the Media

Thus far, we have treated control of the media as exogenous. As we discuss above, however, there is large and systematic variation across countries in state ownership of the media. What does our model say about the determinants of media control?

To answer this question, first recall that equilibrium media bias is the same under state and private ownership when the government may costlessly subsidize the private owner. In this case, if we assume that the government must purchase a news outlet to acquire control, our model offers no prediction about who owns the media. In principle, acquiring direct control provides two benefits to the government: it saves the cost of subsidization and acquires advertising revenue for itself. However, the private owner would accept nothing less than the value of government subsidies and advertising revenue in return for relinquishing control, thus eliminating the incentive for the government to pay for it.

As we discuss above, however, various transaction costs may prevent the government from costlessly subsidizing the private owner. In addition, the government differs from market actors in a crucial respect: it can acquire direct control of the media through force. Although this may come at some cost in political capital and international reputation, that cost is arguably unrelated to the market value of the news outlet.

Formally, assume that the media outlet is initially privately owned, but that at the beginning of the game the government may transfer the media outlet to state ownership at some fixed cost κ. The government thus acquires direct control if κ is small relative to the benefit of taking over the media outlet. As the analysis in the previous two sections demonstrates, this benefit comprises three elements: the greater bias, and thus citizen investment, under state ownership; the subsidy that the government need not pay if it chooses bias directly; and the advertising revenue that the government may keep for itself.

To analyze this tradeoff, consider first the payoff to the government from direct control:

$$\frac{\psi}{m}\left[\theta + (1-\theta)\,\beta_G^*(L)\right]^2 \cdot \left[\theta_G\left(\hat{H}\right) r - 1\right] + \left[\frac{\gamma\theta\,(r-1)}{m} - \frac{\gamma\,(1-\theta)\,\beta_G^*(L)}{m}\right]. \tag{13}$$

The first term is proportional to total expected investment, given that the government chooses bias directly, whereas the second is equilibrium advertising revenue (Equation 11 above). We adopt the notation $\theta_G\left(\hat{H}\right)$ to denote the posterior belief $\theta\left(\hat{H}\right)$ when $\beta(L) = \beta_G^*(L)$. In contrast, the payoff to the government from indirect control is

$$\frac{\psi}{m}\left[\theta + (1-\theta)\,\beta_P^*(L)\right]^2 \cdot \left[\theta_P\left(\hat{H}\right) r - 1\right] - \frac{\alpha\gamma\,(1-\theta)\,\beta_P^*(L)}{m}. \tag{14}$$

The first term is proportional to total expected investment, given that the government must subsidize the private owner to induce bias, whereas the second is the cost of the subsidy to the government (Equation 12 above). Analogously, we adopt the notation $\theta_P\left(\hat{H}\right)$ to denote the posterior belief $\theta\left(\hat{H}\right)$ when $\beta(L) = \beta_P^*(L)$.

The additional benefit to the government from acquiring direct control is the difference between Equations 13 and 14. To fix ideas, focus on the case where $\psi\theta\,(r-2) > \alpha\gamma$, which implies that both $\beta_G^*(L)$ and $\beta_P^*(L)$ are both strictly greater than zero. Then the additional benefit to the government of direct control is

$$\left(\alpha^2 - 1\right)\frac{\gamma^2}{4\psi m} + \frac{\gamma\theta\,(r-1)}{m} + \left[\alpha\gamma\frac{\psi\theta\,(r-2) - \alpha\gamma}{2\psi m} - \gamma\frac{\psi\theta\,(r-2) - \gamma}{2\psi m}\right].^{13} \tag{15}$$

The first term in this expression is the additional investment under state ownership, which results from the higher level of bias when the government chooses bias directly. The second term is total advertising revenue when the news is reported without bias. In equilibrium under private ownership, some portion of this advertising revenue is replaced with a government subsidy. Acquiring the news outlet saves the government that subsidy while providing the share of advertising revenue that remains. The third term reflects the elimination under state ownership of transaction costs associated with compensating the private owner for lost advertising revenue.

The government chooses to take direct control of the media outlet when Expression 15 is large relative to κ. Of particular interest is how the incentive to eliminate private ownership of the media depends on the size of the advertising market, which is measured by γ. If $\alpha = 1$, so that there are no transaction costs associated with subsidization, then the incentive for the government to acquire control is unambiguously greater when γ is large. Although bias is identical to that under private ownership, the government can save the cost of subsidization and acquire advertising revenue for itself. More generally, for all $\alpha \geq 1$, Expression 15 is increasing in γ. Indeed, as the following proposition establishes, the incentive for the government to acquire direct control of the media is increasing in the size of the advertising market, even when there is no media bias under private and/or state ownership.

Proposition 3. *The incentive for the government to acquire direct control of the media is increasing in the size of the advertising market.*

Proof. Consider the following three mutually exclusive and exhaustive cases:

[13] To see this, note that total investment under state ownership is $\frac{(\psi\theta r)^2 - \gamma^2}{4\psi m}$, whereas total investment under private ownership is $\frac{(\psi\theta r)^2 - (\alpha\gamma)^2}{4\psi m}$; that advertising revenue under state ownership is $\frac{\gamma\theta(r-1)}{m} - \gamma\frac{\psi\theta(r-2)-\gamma}{2\psi m}$; and that the subsidy under private ownership is $\alpha\gamma\frac{\psi\theta(r-2)-\alpha\gamma}{2\psi m}$.

1. $\beta_G^*(L) > 0$ and $\beta_P^*(L) > 0$: The derivative of Expression 15 with respect to γ is

$$\gamma\frac{\alpha^2-1}{2\psi m}+\frac{\theta(r-1)}{m}+\frac{\alpha\psi\theta(r-2)-2\alpha^2\gamma}{2\psi m}-\frac{\psi\theta(r-2)-2\gamma}{2\psi m}$$

   For $\alpha = 1$, this expression is clearly greater than zero. For $\alpha > 1$, this expression greater than zero for all $\gamma \in \left(0, \frac{1}{\alpha^2-1}\left[2\psi\theta(r-1)+(\alpha-1)\psi\theta(r-2)\right]\right)$ and therefore for all $\gamma \in \left(0, \frac{\psi\theta(r-2)}{\alpha}\right)$, i.e., for all γ such that $\beta_G^*(L) > 0$ and $\beta_P^*(L) > 0$.

2. $\beta_G^*(L) > 0$ and $\beta_P^*(L) = 0$: The payoff to the government from indirect control is constant in γ, so the derivative of the additional benefit of direct control with respect to γ is equal to the derivative of Expression 13 with respect to γ. Evaluating Expression 13 at $\beta_G^* = \frac{\psi\theta(r-2)-\gamma}{2\psi(1-\theta)}$ gives

$$\frac{(\psi\theta r)^2-\gamma^2}{4\psi m}+\frac{\gamma\theta(r-1)}{m}-\gamma\frac{\psi\theta(r-2)-\gamma}{2\psi m}.$$

   The derivative of this expression with respect to γ is

$$-\frac{\gamma}{2\psi m}+\frac{\theta(r-1)}{m}-\frac{\psi\theta(r-2)-2\gamma}{2\psi m},$$

   which is greater than zero.

3. $\beta_G^*(L) = \beta_P^*(L) = 0$: The additional benefit of direct control is equal to total advertising revenue, $\frac{\gamma\theta(r-1)}{m}$, which is increasing in γ.

□

The surprising implication of this analysis is that the relationship between the size of the advertising market and media freedom may be nonmonotonic. Holding ownership constant, growth in the advertising market reduces media bias, regardless of whether the news outlet is owned by the state (so long as the government places any value on advertising revenue) or a private entity. However, the same growth may prompt the state to seize direct control of the media, which leads to a discontinuous jump in media bias.

5 Competition Among Media Outlets

In the discussion above, we assume that there is one media outlet. How does the analysis change if there is competition among stations for viewers? Intuitively, competition among media may lead to less aggregate bias, as each additional media outlet provides another signal that viewers may use to infer the state of the world (Besley and Prat, 2006; Gentzkow and Shapiro, 2008). At the same time, however, allowing some competition might provide the government with the opportunity to reach citizens who would not otherwise watch the news. In principle, then, the government might choose to allow competition in some circumstances while restricting it in others.

To explore these issues, we assume that there are two media outlets, $j = 1, 2$, which for concreteness we refer to as stations. The two stations simultaneously and publicly choose a reporting strategy $\beta_j(L) \in [0, 1]$; assume for simplicity that $\beta_1(H) = \beta_2(H) = 1$. The process by which these strategies are chosen depends on ownership of the station, as in Sections 2 and 3 above. Following choice of $\beta_1(L)$ and $\beta_2(L)$, each citizen i decides whether to watch each station j, $\omega_{ji} \in \{0, 1\}$; in principle, a citizen might choose to watch both stations. Analogous to the baseline model, we assume that there is a continuum of citizens of mass one, where each i citizen has vector of opportunity costs (μ_{1i}, μ_{2i}), with μ_{ji} distributed independently across stations and uniformly on $[0, m]$ for each station j. The rest of the game proceeds as before, where we assume that messages $\hat{S}_j \in \left\{\hat{L}, \hat{H}\right\}$ are generated independently across stations j according to the reporting strategies $\beta_j(L)$.

Consider first the expected payoff to watching only one station. Let $\theta\left(\hat{S}_j\right)$ denote any citizen's posterior belief about the state of the world, conditional on having watched only station j and received the message $\hat{S}_j$. As before, $\theta\left(\hat{H}\right)$ is given by Equation 2. Then if $\theta\left(\hat{H}\right) r > 1$ when $\hat{S}_j = \hat{H}$, the expected payoff of watching station j, which we denote b_j, is

$$b_j = [\theta + (1-\theta)\beta_j(L)] \cdot \left[\theta\left(\hat{H}\right) r - 1\right] = \theta(r-1) - (1-\theta)\beta_j(L). \qquad (16)$$

Now consider the expected payoff from watching two stations. Let $\theta\left(\hat{S}_1, \hat{S}_2\right)$ be any citizen's posterior belief about the state of the world, conditional on having watched both stations and received messages $\hat{S}_1$ and $\hat{S}_2$. Then given $\beta_1(H) = \beta_2(H) = 1$ and the assumption that reports are generated independently across stations, $\theta\left(\hat{L}, \hat{L}\right) = \theta\left(\hat{L}, \hat{H}\right) = \theta\left(\hat{H}, \hat{L}\right) = 0$, i.e., citizens infer the state to be low if either station reports that it is. The posterior probability that the state is H, given that both stations report $\hat{H}$, is therefore

$$\theta\left(\hat{H}, \hat{H}\right) = \frac{\theta}{\theta + (1-\theta)\beta_1(L)\beta_2(L)}.$$

Then if $\theta\left(\hat{H}, \hat{H}\right) r > 1$, the expected payoff of watching both stations, which we denote a, is equal to

$$a = [\theta + (1-\theta)\beta_1(L)\beta_2(L)] \cdot \left[\theta\left(\hat{H}, \hat{H}\right) r - 1\right] = \theta(r-1) - (1-\theta)\beta_1(L)\beta_2(L), \qquad (17)$$

which is greater than b_1 and b_2.

We use Equations 16 and 17 to derive conditions for some citizen i to watch one or both stations, given her vector of opportunity costs (μ_{1i}, μ_{2i}). Citizen i (weakly) prefers to watch only station 1 if and only if $b_1 - \mu_{1i} \geq 0$ (so that watching station 1 is better than not watching) and $b_1 - \mu_{1i} \geq \max\{b_2 - \mu_{2i}, a - \mu_{1i} - \mu_{2i}\}$ (so that watching station 1 is better than watching station 2 alone or both stations). Similar conditions define when citizen i watches only channel 2. Finally, citizen i prefers to watch both stations if and only if $a - \mu_{1i} - \mu_{2i} \geq 0$ and $a - \mu_{1i} - \mu_{2i} \geq \max\{b_1 - \mu_{1i}, b_2 - \mu_{2i}\}$.

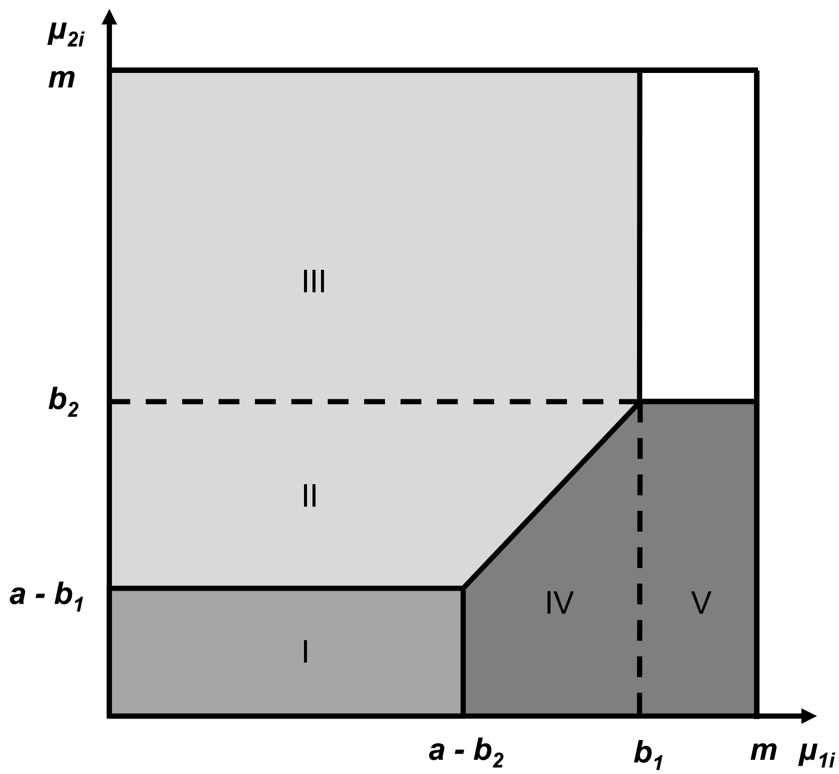

Figure 1: Viewership in a two-station model. Citizens in region I watch both stations, in regions II and III only station 1, and in regions IV and V only station 2.

Figure 5 depicts these conditions, showing how citizens divide into regions according to their opportunity costs of watching the two stations. Citizens in region I, for whom the cost of watching both stations is low, choose to watch both. In contrast, citizens in regions II and III watch only station 1, whereas those in regions IV and V watch only station 2. The remainder watch neither station.

Figure 5 illustrates the tradeoff for the government from allowing a second station to compete for viewers. On the one hand, holding bias for station 1 constant, total viewership is greater when station 2 enters the market: without station 2, viewers in regions I, II, III, and IV watch the news, whereas with station 2 viewers in region V also do so. On the other hand, viewers in region I now have two sources of information about which to infer the state of the world. These viewers are less likely to invest than if they only watch station 1, as with some positive probability station 2 (truthfully) reports that the state is L when station 1 (falsely) reports that it is H. Fixing $\beta_1(L)$, the increase in investment from adding a second station with bias $\beta_2(L)$ is therefore

$$[\theta + (1-\theta)\beta_2(L)]\frac{b_2(m-b_1)}{m^2} + [(1-\theta)\beta_1(L)\beta_2(L) - (1-\theta)\beta_1(L)]\frac{(a-b_1)(a-b_2)}{m^2}. \tag{18}$$

The first summand is the probability that viewers in region V invest, multiplied by the mass of viewers in that region, whereas the second is the (negative) change in probability that viewers in region I invest, multiplied by the mass of viewers in that region.

This analysis is incomplete, as the government may choose to induce a different level of bias (directly or indirectly) at the first station when a second station is also present. In doing so, the government must consider the impact of bias on advertising revenue and subsidies, depending on whether the stations are state-owned or private. However, one can easily construct scenarios under which the optimal media structure, from the government's perspective, is either one or two stations. Consider, for example, two private stations and transaction costs of subsidization (measured by α) sufficiently large such that the government would never choose to induce any positive level of bias, regardless of whether one or both stations was in the market. Then we may fix $\beta_1(L) = \beta_2(L) = 0$ in Expression 18 above, implying that the benefit from adding a second station is strictly positive. Intuitively, the entry of a second station does nothing to change the information available to those who already watch a news program that is impossible to influence (region V is empty—adding a second signal provides no value when a perfect signal is available), but it does increase the proportion of citizens who watch the news and consequently invest with some positive $(\theta > 0)$ probability.

For an example of an environment in which the government would want to restrict competition, assume that m is sufficiently small that *all* citizens watch the news when only a state-owned station is available and the equilibrium level of bias $\beta^*(L) > 0$. Then consider the addition of a second, private station, with transaction costs sufficiently large such that $\beta_2^* = 0$. All citizens migrate to the second, more informative station, investing with a smaller probability than before $(\theta < \theta + (1-\theta)\beta^*(L))$. Clearly, the government is better off without the private station, which steals market share from the less informative state-owned station without adding any new viewers. As we discuss below, this approximates the circumstances surrounding the closure of the Russian television station TV6, an independent media outlet with an editorial line very different from that on state-run television.

6 Illustration: Media Freedom in Postcommunist Russia

In this section, we briefly discuss the evolution of media freedom in postcommunist Russia. Our aim is not to provide a full history of the role of the media in Russian politics, a task that others have admirably undertaken.[14] Rather, it is to show how our model can help to illuminate an important case, and so to illustrate the contribution of our theoretical framework.

We focus here especially on television, which has been at the center of political conflict in Russia since the collapse of the Soviet Union in 1991. From the failed putsch that triggered the collapse (Bonnell and Freidin, 1993), through the pivotal 1996 presidential campaign (e.g., McFaul, 1997; Mickiewicz, 1999; Oates and Roselle, 2000), and into the Putin era (e.g., Oates, 2003, 2006), what is reported on national television news has been a primary concern of political actors. True or not, there is a widespread perception that control of the airwaves is the *sine qua non* in the struggle for power in Russia.

The belief that television has the power to win elections is based in part on the overwhelm-

[14]See especially Mickiewicz (1999) and Oates (2006).

ing reliance of the Russian public on television as an information source. Despite Russia's vast size, by 1990 television coverage extended to nearly 100 percent of the Russian population (White and McAllister, 2006). In contrast, national newspapers are much less widely circulated—the collapse of Soviet-era subscription systems led to a decline in circulation of national newspapers of approximately 95 percent during the 1990s (Koikkalainen, 2007)—and are expensive relative to other goods (Fish, 2005; Lipman, 2006). National television is particularly important, far surpassing local television in viewership (White, McAllister, and Oates, 2002).

Consistent with our general modeling approach, Russian viewers often seem to recognize the bias in news broadcasts and to filter reports through that understanding. Summarizing the results of focus-group studies, Ellen Mickiewicz writes, "Viewers *expect* commercial and governmental involvement in shaping the news. They believe it is the viewer's responsibility to extract significance and correct for bias" (Mickiewicz, 2006, p. 191; emphasis in original).

Nonetheless, as we emphasize, bias can be effective in shaping the beliefs of viewers, so long as there is some informational content in the news. This bias comes at a cost, however, as viewers turn away from broadcasts that are perceived to be insufficiently informative. The degree to which this reduces bias depends on whether a media outlet is private or state-owned, and thus on the extent to which the opportunity cost of lost advertising revenue is internalized. In Russia, these considerations were evident in the independent editorial line pursued by the television network NTV, a commercial entity launched in 1993. NTV aggressively reported on the war in Chechnya, drawing viewers and advertising revenue away from state-owned channels. The same was true at the smaller TV6, to which Eduard Sagalaev, a veteran of *perestroika*-era battles over television content, migrated after becoming convinced that the old system of censorship remained intact in the state-owned media (Benn, 1996).

Sagalaev later returned to run state television during the 1996 presidential election campaign, a period when the broadcast media—state and private—swung overwhelmingly behind incumbent president Boris Yeltsin. Oates and Roselle (2000) examine election coverage during this campaign on NTV and state-controlled ORT, finding little difference between the two and concluding that "[a]lthough NTV was not under the direct control of the government, it still 'promoted' Yeltsin in its coverage" (p. 46). The emergence of pro-Kremlin bias at NTV is consistent with the prediction of our model that an increase in ψ, the value the government attaches to citizen "investment" (here, voting for Yeltsin), should disproportionately affect private media. At the same time, it is likely that the owners of commercial media shared the Kremlin's preference that Yeltsin win, given the fear that a victory by Communist Party candidate Gennady Zyuganov would spell the end of independent media. In terms of our model, private owners also directly valued citizen "investment," which increased bias relative to the case where private owners only value advertising revenue.[15]

Throughout the 1990s, the broadcast media remained heavily reliant on the state for

[15]Formally, assume that the private owner has preferences represented by

$$U_P = \lambda \int_0^m \omega_i(\mu_i) E\left[\pi_i\left(\hat{S}(S)\right)\right] d\mu_i + \gamma \int_0^m \omega_i(\mu_i) d\mu_i + \frac{C}{\alpha},$$

where $\lambda \geq 0$. Then equilibrium bias is equal to $\max\left[0, \frac{(\psi+\alpha\lambda)\theta(r-2)-\alpha\gamma}{2(\psi+\alpha\lambda)(1-\theta)}\right]$, which is (weakly) increasing in λ.

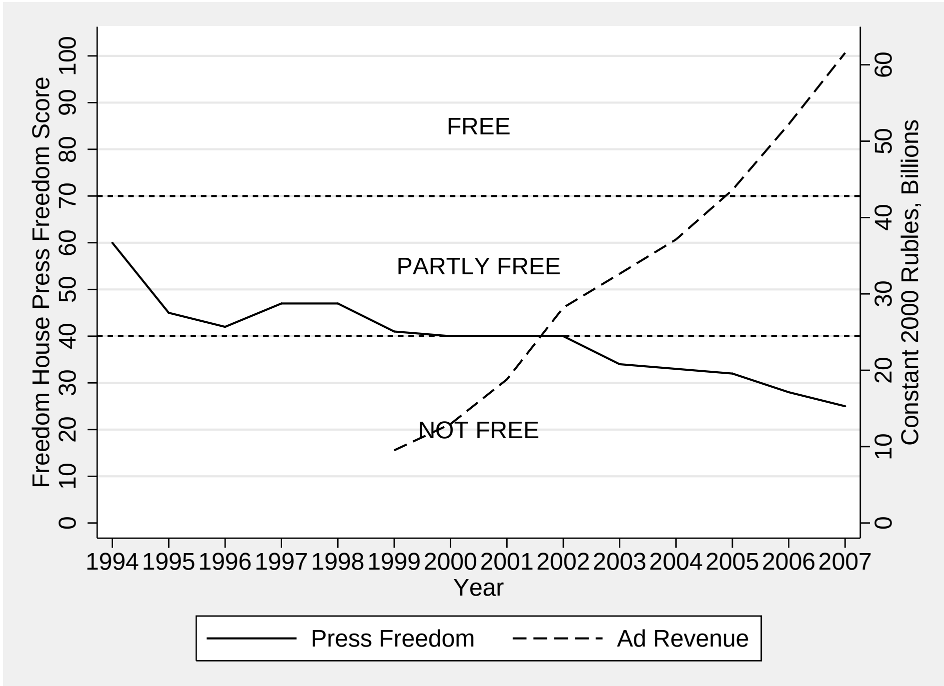

Figure 2: Press freedom and advertising revenue in Russia. Freedom House Press Freedom Score reordered so that higher values correspond to greater media freedom. Freedom House classifies countries as "Free," "Partly Free," and "Not Free," as indicated. Advertising revenue for television, radio, and newspapers in billions of constant 2000 rubles, Video International and Association of Communication Agencies of Russia.

financial support. The advertising market was essentially non-existent under communism, and could not develop quickly in the turbulent conditions that followed that system's collapse. The reliance on state subsidies provided considerable leverage to state officials. This financial dependence situation was, and is, especially severe at the regional level: "As much local media funding comes from the local government (and its very existence often depends on the goodwill of local leaders), the media are quite vulnerable to local legislation" (Oates, 2007, p. 1287).

By the turn of the century, however, the advertising market was growing quickly. Figure 6 shows that between 1999 and 2007, advertising revenue for television, radio, and newspapers sextupled in size in real terms, a growth rate roughly three times larger than that for GDP over the same period. With 80 percent of all advertising revenue centered in Moscow (Azhgikhina, 2007), and with the proportion of all advertising revenue earned by television networks increasing over time, this development promised greater independence for the national broadcast media.[16] Yet media freedom declined sharply over the same period, counter to what the conventional understanding of the relationship between advertising revenue and media freedom would suggest. Figure 6 provides a rough measure of this decline, plotting

[16] Television's share of television, radio, and newspaper advertising revenue increased from roughly 60 percent in 1999 to approximately 80 percent in 2007. Data on advertising revenue are from Video International, Russia's largest advertising marketer, and the Association of Communication Agencies of Russia. Revenue from advertising-only circulars (i.e., "shoppers") are not included in newspaper advertising revenue.

the evolution of the Freedom House Press Freedom Score for Russia over the postcommunist period.

Earlier declines in press freedom in Russia, such as that which accompanied the 1996 presidential election campaign, can largely be attributed to changing incentives within a given media structure. The strengthening of government control of the media under Russian president Vladimir Putin was different. Precisely as our model would predict, the Kremlin took over and closed down previously independent media outlets. Although an absence of transparency makes it impossible to confirm that the motivations for these actions are those that we describe, the timing of the Kremlin assault coincided precisely with the growth in advertising revenue that could have reduced state influence over private media.

The particular methods used to assert direct government control of the media are also consistent with our theoretical perspective.[17] After taking over ownership of previously independent NTV (through state-controlled Gazprom), the Kremlin replaced the existing management. The new management in turn forced the removal of the station's best-known journalists, replacing them with individuals presumably comfortable with the new owner's preferences. Much of the NTV news operation subsequently migrated to TV6, which in turn attracted the Kremlin's attention. At first it seemed as though a compromise might be reached, whereby ownership of TV6 would be transferred from Russian billionaire and Putin opponent Boris Berezovsky to a collective of establishment figures. In the end, however, TV6 was simply shut down, its frequency transferred to a 24-hour sports channel. As we show above, the government may prefer to limit competition in the media market when additional media reduce aggregate bias without markedly increasing the number of viewers. TV6, with its independent editorial line and relatively limited transmission network, met these criteria. Indeed, while the number of television channels in Russia has exploded in recent years, news broadcasts are today largely the preserve of three national networks under direct government control.

7 Conclusion

In this paper, we provide a theoretical framework to analyze government control of the media. A first contribution of this model is to provide a microfoundation for the argument that state media are more biased than are private media. As we show, this is generally the case to the extent that transaction costs prevent efficient subsidization of private firms. However, the difference in bias depends critically on the size of the advertising market and consequently the opportunity cost of bias. This implies a second contribution, which to show that the government may be motivated to seize direct control of the media when the advertising market is large, implying a nonmonotonic relationship between advertising revenue and media freedom. A final contribution is to show that, in principle, the government may benefit from either more or less competition in the media market, depending on whether the benefit of reaching more viewers outweighs the reduced ability to influence those who would watch the news in any event.

Our case study of media freedom in postcommunist Russia helps to illustrate these results. Under communism, the advertising market was essentially nonexistent, implying a strong

[17]For a detailed chronology of these events, see Lipman and McFaul (2005).

dependence of private media in the postcommunist era on government subsidies and other forms of support. In recent years, the advertising market has grown strongly. Rather than guaranteeing media independence, however, as the conventional wisdom would suggest, this growth has coincided with the takeover and closure of private media by the Kremlin. Our analysis provides a framework for understanding this and related developments in media-state relations in postcommunist Russia.

Future work might use our framework to explore other elements of government control of the media. In many countries, for example, the media are owned by individuals close to the government rather than by the state directly. An interesting question is why governments rely on this intermediate form of control of the media. In addition, media differ greatly within and across countries in the extent to which they provide "infortainment" rather than information. In terms of our model, the broadcast of human-interest stories rather than hard news might encourage viewership at the expense of reducing the time available to influence those who do watch the news. Intuitively, this strategy may have less appeal for state-owned media, which as we show place less emphasis on viewership for its own sake.

References

Ansolabehere, Stephen, Eric C. Snowberg, and James M. Snyder, Jr. 2004. "Television and the Incumbency Advantage in U.S. Elections." Mimeo, Massachusetts Institute of Technology.

Azhgikhina, Nadezhda. 2007. "The Struggle for Press Freedom in Russia: Reflections of a Russian Journalist." *Europe-Asia Studies*. 59(8):1245–1262.

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

Benn, David Wedgwood. 1996. "The Russian Media in Post-Soviet Conditions." *Europe-Asia Studies*. 48(3):471–479.

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.

Besley, Timothy, and Andrea Prat. 2006. "Handcuffs for the Grabbing Hand? Media Capture and Political Accountability." *American Economic Review*. 96(3):720–736

Bonnell, Victoria E. and Gregory Freidin. 1993. "Televorot: The Role of Television Coverage in Russia's August 1991 Coup." *Slavic Review*. 52(4):810–838.

Bovitz, Gregory L., James N. Druckman, and Arthur Lupia. 2002. "When Can a News Organization Lead Public Opinion? Ideology versus Market Forces in Decisions to Make News." *Public Choice*. 113(1–2):127–155.

Brunetti, Aymo, and Beatrice Weder. 2003. "A Free Press is Bad News for Corruption." *Journal of Public Economics*. 87(7–8):1801–1824.

Calvert, Randall. 1985. "The Value of Biased Information: A Rational Choice Model of Political Advice." *Journal of Politics*. 47:530–555.

Della Vigna, Stefano, and Ethan Kaplan. 2007. "The Fox News Effect: Media Bias and Voting." *Quarterly Journal of Economics*. 122(3):1187–1234.

Djankov, Simeon, Caralee McLeish, Tatiana Nenova, and Andrei Shleifer. 2003. "Who Owns the Media?" *Journal of Law and Economics*. 46(2):341–381.

Egorov, Georgy, Sergei Guriev, and Konstantin Sonin. 2006. "Media Freedom, Bureaucratic Incentives, and the Resource Curse." Unpublished manuscript.

Enikolopov, Ruben, Maria Petrova, and Ekaterina Zhuravskaya. 2007. "Television and Political Persuasion in Young Democracies: Evidence from Russia." Mimeo, CEFIR.

Fish, M. Steven. 2005. *Democracy Derailed in Russia: The Failure of Open Politics*. Cambridge: Cambridge University Press.

Gabszewicz, Jean, Didier Laussel, and Nathalie Sonnac. 2001. "Press Advertising and the Accent of the Pensée Unique." *European Economic Review*. 45(4–6):641–651.

Gentzkow, Matthew, Edward L. Glaeser, and Claudia Goldin. 2006. The Rise of the Fourth Estate: How Newspapers Became Informative and Why it Mattered. In *Corruption and Reform: Lessons from America's Economic History*, ed. Edward L. Glaeser and Claudia Goldin. Cambridge, MA: National Bureau of Economic Research.

Gentzkow, Matthew, and Jesse M. Shapiro. 2004. "Media, Education, and Anti-Americanism in the Muslim World." *Journal of Economic Perspectives*. 18(3):117–133.

Gentzkow, Matthew, and Jesse M. Shapiro. 2006. "Media Bias and Reputation." *Journal of Political Economy*. 114(2):280–316.

Gentzkow, Matthew, and Jesse M. Shapiro. 2008. "Competition and Truth in the Market for News." *Journal of Economic Perspectives*. Forthcoming.

Gerber, Alan, Dean S. Karlan, and Daniel Bergan. 2007. "Does the Media Matter? A Field Experiment Measuring the Effect of Newspapers on Voting Behavior and Political Opinions." Mimeo, Yale University.

Goldstein, Kenneth, and Travis N. Ridout. 2004. "Measuring the Effects of Televised Political Advertising in the Unitied States." *Annual Review of Political Science*. 7:205–226.

Grossman, Gene M., and Elhanan Helpman. 1994. "Protection for Sale." *American Economic Review* 84(4):833–850.

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

Hamilton, James T. 2004. *All the News That's Fit to Sell: How the Market Transforms Information Into News*. Princeton, NJ: Princeton University Press.

Hughes, Sallie, and Chappell Lawson. 2007. “Propaganda and Crony Capitalism: Partisan Bias in Mexican Television News.” *Latin American Research Review*. Forthcoming.

Kinder, Donald R. 1998. “Communication and Opinion.” *Annual Review of Political Science*. 1:167–197.

Koikkalainen, Katja. 2007. “The Local and the International in Russian Business Journalism: Structures and Practices.” *Europe-Asia Studies*. 59(8):1315–1329.

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

Lawson, Chappell, and James A. McCann. 2007. “Television News, Mexicos 2000 Elections, and Media Effects in Emerging Democracies.” *British Journal of Political Science*. Forthcoming.

Lipman, Masha. 2006. “Svoboda Pressy v Usloviiakh Upravliaemoi Demokratii.” *Carnegie Moscow Center Briefing*. 8(2).

Lipman, Masha and Michael A. McFaul. 2005. Putin and the Media. In *Putin's Russia: Past Imperfect, Future Uncertain*, ed. Dale R. Herspring. Lanham, MD: Rowman and Littlefield.

McCann, James A., and Chappell Lawson. 2007. “An Electorate Adrift? Public Opinion and the Quality of Democracy in Mexico.” *Latin American Research Review*. 38(3):60–81.

McFaul, Michael. 1997. *Russia's 1996 Presidential Election: The End of Polarized Politics*. Stanford: Hoover Institutions Press.

McMillan, John, and Pablo Zoido. 2004. “How to Subvert Democracy: Montesinos in Peru.” *Journal of Economic Perspectives*. 18(4):69–92.

Mickiewicz, Ellen. 1999. *Changing Channels: Television and the Struggle for Power in Russia*. Durham, NC: Duke University Press.

Mickiewicz, Ellen. 2006. Does “Trust” Mean Attention, Comprehension and Acceptance? Paradoxes of Russian Viewers' News Processing. In *Mass Media and Political Communication in New Democracies*, ed. Katrin Voltmer. London: Routledge.

Mullainathan, Sendhil, and Andrei Shleifer. 2005. “The Market for News.” *American Economic Review*. 95(4):1031–1053.

Oates, Sarah. 2003. Television, Voters, and the Development of the “Broadcast Party.” In *The 1999–2000 Elections in Russia: Their Impact and Legacy*, ed. Vicki L. Hesli and William M. Reisinger. Cambridge: Cambridge University Press.

Oates, Sarah. 2006. *Television, Democracy and Elections in Russia*. New York: Routledge.

Oates, Sarah. 2007. “The Neo-Soviet Model of the Media.” *Europe-Asia Studies*. 59(8):1279–1297.

Oates, Sarah, and Laura Roselle. 2000. "Russian Elections and TV News: Comparison of Campaign News on State-Controlled and Commercial Television Stations." *Harvard International Journal of Press/Politics*. 5(2):30-51.

Petrova, Maria. 2007. "Newspapers and Parties: How Advertising Revenues Created an Independent Press." Unpublished manuscript.

Petrova, Maria. 2008. "Inequality and Media Capture." *Journal of Public Economics*. 92(1–2):183–212.

Prat, Andrea, and David Strömberg. 2006. "Commercial Television and Voter Information." Mimeo, London School of Economics.

Puglisi, Riccardo. 2006. "Being the *New York Times*: The Political Behavior of a Newspaper." Mimeo, Massachusetts Institute of Technology.

Reinikka, Ritva, and Jakob Svensoon. 2005. "Fighting Corruption to Improve Schooling: Evidence from a Newspaper Campaign in Uganda." *Journal of the European Economic Association*. 3(2–3):259–267.

Shleifer, Andrei, and Robert W. Vishny. 1994. "Politicians and Firms." *Quarterly Journal of Economics*. 109(4):995–1025.

White, Stephen, and Ian McAllister. 2006. Politics and the Media in Post-Communist Russia. In *Mass Media and Political Communication in New Democracies*, ed. Katrin Voltmer. New York: Routledge.

White, Stephen, Ian McAllister, and Sarah Oates. 2002. "Was it Russian Public Television That Won It?" *Harvard International Journal of Press/Politics*. 7(2):17–33.

White, Stephen, Sarah Oates, and Ian McAllister. 2005. "Media Effects and Russian Elections, 1999-2000." *British Journal of Political Science*. 35(2):191–208.