

Essays on News Media, Governance, and Political
Control in Authoritarian States

by

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Dissertation submitted in partial fulfillment of the requirements for the degree of
Doctor of Philosophy in the Department of Political Science
in the Graduate School of Duke University
2009

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ABSTRACT
(General)

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Abstract

This dissertation uses game-theoretic modeling, statistical testing, and case studies to analyze how authoritarian governments manage the news media to maintain regime stability, control local officials, and make reform. In the first essay, “Regime Competence and Media Freedom in Authoritarian States”, I explain why some authoritarian regimes allow more media freedom than others, as they tradeoff increased rents when the media is suppressed with the reduced risk of being misjudged by citizens when the media is free. In the second essay, “Local Media Freedom, Protest Diffusion, and Authoritarian Resilience”, I argue that media reports about citizen protests, which may lead to protest diffusion, do not necessarily destabilize authoritarian rule. If protests are targeted at local governments, the central government of an authoritarian regime can use media-induced protest cascades to force local officials to improve governance. In the last essay, “Central Rhetoric and Local Reform in China”, I address the puzzle of why the Chinese government would furnish the state media with conservative and dogmatic rhetoric on the one hand and allow reform on the other, by showing that this strategy is used to control local governments’ pace of reform.

To My Mother

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Introduction

Why do some authoritarian regimes allow more media freedom than others? Do media reports about citizen protests necessarily destabilize authoritarian rule since they can lead to protest cascades through the snowballing effect? Are stilted and clichéd official media articles in communist countries such as China entirely hollow and pointless, or can they nevertheless convey political meanings to government insiders and affect their behavior?

These are three important but rarely rigorously studied issues about the news media, governance, and political control in authoritarian states, and they constitute the central research questions of my dissertation, each investigated in a separate chapter. The first two questions examine different ways of how the media affects regime and social stability in authoritarian states; answering them can help explain the considerable variation of degrees of media freedom among such countries. The third question examines the role of the media as a communication and control device within the government. I develop formal models to put structure on each of the three questions. I then use cross-national data and/or case studies to empirically test the validity of the somewhat surprising results of my theoretical models.

The effects of the news media on political control in authoritarian states have gained wide attention in the social sciences literature, not least due to their presence in the third wave of democratization (Huntington 1991; Kuran 1991). Yet the conventional wisdom is too simplistically optimistic about the liberalizing effects of the news media and modern information technologies such as the internet (Kalathil and Boas 2003; cf. Norris 2006), neglecting the possibility that an authoritarian regime may allow some degree of media freedom or manipulate media content to enhance regime stability and affect social changes. Moreover, discussions on the news media and its relationship with social phenomena have largely been descriptive or informal, lacking a rigorous analytical structure. Although a literature has recently emerged in economics that investigates the behavior of the news media and its effects on social outcomes in democratic settings, only a small number of working papers have formally analyzed media control and propaganda in autocracies (Edmond 2008; Egorov, Guriev and Sonin 2007; Debs 2007; Gehlbach and Sonin 2008). My dissertation considerably expands this latter nascent literature on media in authoritarian countries.

The dissertation also contributes to the emerging literature on authoritarian governance. The classical view of authoritarian regimes is that they rely exclusively on repression (e.g., Friedrich and Brzezinski 1965). A more recent literature notes that rulers can also redistribute economic benefits to buy support (Wintrobe 1998), and has examined specific institutions of cooptation and rent sharing in authoritarian countries such as legislatures, political parties, and elections (Gandhi 2008; Magaloni 2006; Brownlee 2007), stressing that authoritarian rulers use these seemingly democratic institutions to distribute rents among elites and regime supporters, make policy concessions to important social groups, or identifying the bases of the regime's support and opposition. Similarly, the formal literature on authoritarian governance has also emphasized on managing conflicts within the government/elites and

cooptation of the opposition (Bueno de Mesquita, Smith, Siverson and Morrow 2003; Dal Bo and Powell 2009; Gandhi and Przeworski 2006; Svobik 2009; Tullock 1987). This dissertation does not examine authoritarian rulers' management of inter-elite conflicts or purchase of social support, but rather focuses on regimes' management of social information, and thus analyzes mechanisms of authoritarian governance previously unexamined.

My dissertation integrates serious game-theoretic modeling with empirical research. It is designed to help develop a research program on the political economy of news media in autocracies, which promises to enhance our understanding of the complex relationship between the authoritarian state, media, and society, as well as the working of autocracies. In what follows, I briefly describe each of the three central chapters of my dissertation.

1.1 Regime Competence and Media Freedom

By making corruption more difficult and forcing governments to be more responsive to citizen needs, media monitoring has long been detested by authoritarian rulers. Indeed, cross-national data have shown that higher media freedom and newspaper readership are associated with less corruption and more government accountability (Ahrend 2002; Brunetti and Weder 2003; Besley and Burgess 2002). A free media, by publicizing the prevalence of citizen grievances and willingness to revolt, can also enable disgruntled citizens to coordinate and challenge the regime. The wide student rebellion against the Chinese government in 1989, for example, was fuelled and sustained at least in part by the sympathetic or even encouraging Chinese media coverage (Berlin 1993; Zhao 2001).

But media monitoring also has a potential benefit to authoritarian rulers, which the conventional wisdom tends to overlook. Government legitimacy in authoritarian countries is often performance (output) based rather than procedure (input) based.

Citizens may support or oppose a regime based on its competence in generating economic growth and other desirable social outcomes, rather than whether the formulation of a law or policy follows a fair or democratic procedure (Zhao 2007). The monitoring of government performance by a free and independent media can help citizens ascertain the inherent quality or competence of a regime. Without such information, citizens may attribute bad social or personal outcomes that are caused by factors outside the government's control to bad governance, and mistakenly rebel against it. The summer 2008 riot in Weng'an, China, in which an estimated 30,000 people smashed government headquarters over the suspicious death of one schoolgirl, clearly showed how the lack of a free media could breed rumors about governmental malfeasance, leading to drastic consequences.

In this chapter I combine the global games methodology (Morris and Shin 2003) and a signaling game framework to investigate the tradeoffs of media freedom, and see when an authoritarian regime will allow (some) media freedom, and when it will not. My theoretical model predicts that both highly competent and incompetent regimes will ban media freedom but intermediate regimes will allow some degree of media freedom. Empirical analysis using panel data indeed shows a non-monotonic relationship between government competence and degrees of media freedom. This result helps us understand the considerable variation of degrees of media freedom among authoritarian countries, and the changing media policies in China in recent times.

1.2 Local Media Freedom, Protest Diffusion, and Authoritarian Resilience

A free media affects not only regime stability at the national level by revealing the central ruler's type, but also social stability at the local level by influencing local government behavior. While discussions of the news media's effects on local

governance often focus on its role as an information gatherer of local government behavior, this chapter shows a more novel mechanism by which authoritarian regimes may make use of the news media: let the media report protests against corruption, which are easier to observe and report than corruption itself.

Media reports of social protests are usually viewed as threatening to authoritarian regimes, since such reports have a snowballing effect and can incite more protests, as shown clearly in the dynamics of the Eastern European revolutions of 1989 (Kuran 1991; Lohmann 1994). While reports of social unrest at the national level are indeed destabilizing to authoritarian rule, the conventional reasoning is incomplete when it comes to protests at the local level. The tens of thousands of citizen protests each year in China, for example, are mostly targeted against local government malpractices (O'Brien 1996; Lorentzen 2006). Reports of such protests may indeed incite more protests, but precisely because of this, local officials may be forced to be less corrupt, especially if each incidence of social unrest will lead to punishment of local officials by the central authority.

With the aid of a simple game-theoretic model, I show that this is indeed the case in equilibrium: the news media's freedom in reporting local unrest generally increases the incidence of citizen protests, but always reduces the corruption level of local governments. Except for regimes that are highly secure from potential threats of regime overthrow, authoritarian regimes will generally benefit from allowing the media to report local protests, as long as such freedom does not spill over to reports on national affairs.

1.3 The Media's Role in Intra-Governmental Signaling and Control

No one who reads official newspapers in communist countries can fail to notice how stilted, dogmatic, and cliched their language and contents are (Kenez 1985). The reportage of preeminent Chinese governmental voices such as People's Daily and

Network News (Xinwen Lianbo), for example, is notoriously formalistic and ritual, which is in sharp contrast to the lively reporting and discussions of many social and economic issues in more commercialized media outlets. Lower status Party papers in China usually adopt a bizarre “socialist face and capitalist body” approach, filling the first two pages with government rhetoric and propaganda and using the rest for real social news and human-interest stories (He 2000a). Interestingly, while the dreariness of these Party mouthpieces usually drives away the masses, they are carefully monitored by many government officials.

Many scholars have explained the above phenomenon as either the expression of communist regimes’ desire for ideological or discourse control (Kenez 1985; Zhao 1998; Lynch 1999), or in the case of the former Soviet Union, the need for intellectuals and policy makers to conduct concealed debates about government policies in carefully coded and obscure language (Hough 1986). By contrast, I argue that in contemporary China, the use of dogmatic and conservative media articles serves an intra-governmental strategic function and that this strategy must be understood in conjunction with another puzzle of Chinese reform. This latter puzzle is that local governments in China often carry out measured but unauthorized reforms. How have local governments been able to break through the policy restrictions of the central government in a unitary and authoritarian political system, and can the central state nevertheless maintain its control of local governments?

Using a signaling game model, I argue that local governments in China often carry out unauthorized reforms because they know the central leadership overall might have a preference for reform and will accommodate local initiatives. The reformers at the center, however, do not want the reform to proceed too quickly, either to avoid regime collapse or to protect themselves from conservative attacks. Therefore a reformer-dominated center often imitates a conservative-dominated center by sticking to conservative rhetoric and dogmatic discourse. This pooling of signals makes it

difficult for local governments to distinguish a reformist center from a conservative center, and constrains the pace and scope of policy liberalization that they can undertake at any given point in time, hence gradualist reform in China. Several important reform cases examined in the chapter support my theory.

1.4 Conclusion

The three questions described above address different aspects of the media's relations with authoritarian regimes: the first two are about the government prohibiting or allowing citizens to learn certain information, and the third is about the government purposefully furnishing the media with particular rhetoric. While the analysis of each of the questions constitutes an independent paper by itself, together they form a coherent theme about how authoritarian regimes use the news media to affect the behavior of citizens or local officials in order to maintain their political control. The three analyses also paint a rich picture of the diverse mechanisms that associate the news media with authoritarian politics, and further our understanding of how authoritarian regimes work.

Regime Competence and Media Freedom in Authoritarian States

2.1 Introduction

On a late June night of 2008, a teenage girl was found dead in a river in Weng'an, a remote and poor county in southwest China. A few days later, an estimated 30,000 local residents rioted, setting fire to the county police headquarters and smashing dozens of official cars. Although social protests are common in China in recent years, a riot of such a scale has been rare. What enraged the local populace in Weng'an, besides accumulated grievances against the county government, were widespread rumors that the girl was sexually assaulted and then killed by local government officials' sons, and that the police had tried to cover up the case. The higher authorities conducted several autopsies after the riot. They found no evidences of sexual assault or murder and suggested that she committed suicide. Many of China's vocal internet users cannot believe that someone would suddenly committ suicide and find the official explanation ridiculous. As a result, the cause of the girl's tragic death has largely remained a mystery. But one thing has been undisputed after the riot, i.e.,

the three suspected youths who were with the girl around the time of her death were children of very ordinary farmers and had no government connections, and so it is hard to claim that the police released them because they were children of local senior officials¹.

While the Chinese government accused a few gangsters for organizing the riot, what it really paid in the riot was the price for the lack of a free media and credible public information in China. Before the riot, the local government had issued statements that no government officials were related to the case. But without a free media that monitors the government and enjoys public credibility, citizens distrust official statements and, recalling their unfortunate personal life experiences, assume the worst of the government. So they believed rumors, which, unchecked by an independent and credible media, spread like prairie fire and generated one of the most destructive riots in China in years.

The Weng'an riot is just an example of how the lack of a free media can sometimes hurt an authoritarian government by leading citizens to make unfavorable but inaccurate inferences about its quality and behavior. Government legitimacy in authoritarian countries is often performance (output) based rather than procedure (input) based. Citizens may support or oppose a regime based on its competence in generating economic growth, maintaining community safety, and bringing about other good social outcomes², rather than on the basis whether the formulation of a law or policy follows a fair or democratic procedure (Zhao 2007). Economic and social outcomes, however, depend not only on government competence but also on exogenous events that are out of a regime's control. The monitoring by a free and credible media can help citizens ascertain the inherent quality or competence of a

¹ The Weng'an riot has been widely reported in both Western and Chinese media. See, for example, Drew (2008), Reuters (2008), Luo (2008), Ding (2008).

² See Jones and Olken (2005) for evidence that changes in leader quality matter for a country's economic growth.

regime. Without a free media providing such information, citizens may attribute bad social or personal outcomes that are caused by events outside of the government's control to bad governance, and thus mistakenly judge a relatively high-quality regime to be a low-quality regime and turn against it³.

Of course, a free media is also costly to authoritarian regimes. A relatively free and credible media can inform citizens under an incompetent regime that their grievances are widely shared and then coordinate them in challenging the regime. The media's role in promoting regime changes and democratization movements have been clearly shown in recent decades from Eastern Europe to Central Asia to China (Huntington 1991; McFaul 2005; Zhao 2001). In addition, media monitoring would make government corruption harder to conceal and constrain rulers' rent seeking opportunities, therefore authoritarian rulers like to suppress the media when possible. Indeed, studies such as Ahrend (2002) and Brunetti and Weder (2003) have shown cross-nationally that a free press reduces corruption.

The conventional wisdom about media freedom, however, has been almost exclusively focused on its negative side for authoritarian regimes while neglecting its potential benefits. Thus measures of media liberalization and the spread of modern information technologies in authoritarian countries have been taken as harbingers of regime change and democratization (see Kalathil and Boas 2003 for a discussion). For example, President George W. Bush once spiritedly remarked: "Imagine if the Internet took hold in China. Imagine how freedom will spread" (Berke 1999). The number of internet users in China has recently surpassed that in the US, but while public opinions and exposures of government corruptions on the internet have brought considerable troubles for the Chinese government and in some cases forced

³ In an environment where the lack of media freedom is not a concern, voter irrationality can nevertheless leads to citizens mistakenly blaming the government for events beyond the government's control, such as natural disasters (Achen and Bartels 2002). But in an environment where the media freedom is restricted, even rational citizens will face difficulty in correctly judging the government.

it to be more accountable to citizens, freedom in China is still limited.

I argue in this paper that the costs of media freedom for authoritarian regimes must be balanced against its potential benefits. I build a simple theoretical model to explore the trade-off for authoritarian rulers between increased rents (and harder coordination for the citizens) when the media is suppressed with the reduced risk of being misjudged by citizens when the media is more free.

I test the model's central result, i.e., intermediately competent regimes will allow more media freedom than both highly competent and highly incompetent regimes, with a crossnational dataset on non-democracies. While countries with higher levels of democracy tend to have higher degrees of media freedom, countries with similar levels of democracy often display considerably different degrees of media freedom, as shown in Figure 2.1, which plots countries' levels of media freedom in 2006, as measured by the Freedom House, against their levels of democracy that year, as measured by the Polity IV project. The variation is puzzling given that the conventional wisdom would suggest all autocracies should restrict media freedom as much as possible. The theory of this paper will contribute to our understanding of this variation.

The paper builds on a small but growing literature on the political economy of media freedom, particularly in non-democracies. On the empirical front, Djankov, McLiesh, Nenova and Shleifer (2003) show that countries with higher state ownership of the media are associated with lower freedom of the press. Ahrend (2002), in analyzing the relationship between press freedom and corruption, argues that a higher education level in a country will reduce corruption if it is coupled with the monitoring capacity of a free media, and increase corruption if the media is not free. These empirical studies, however, stop short of asking why some countries choose higher state ownership than others in the first place, or if a regime in an authoritarian country with a high education level will suppress media freedom as much as possible.

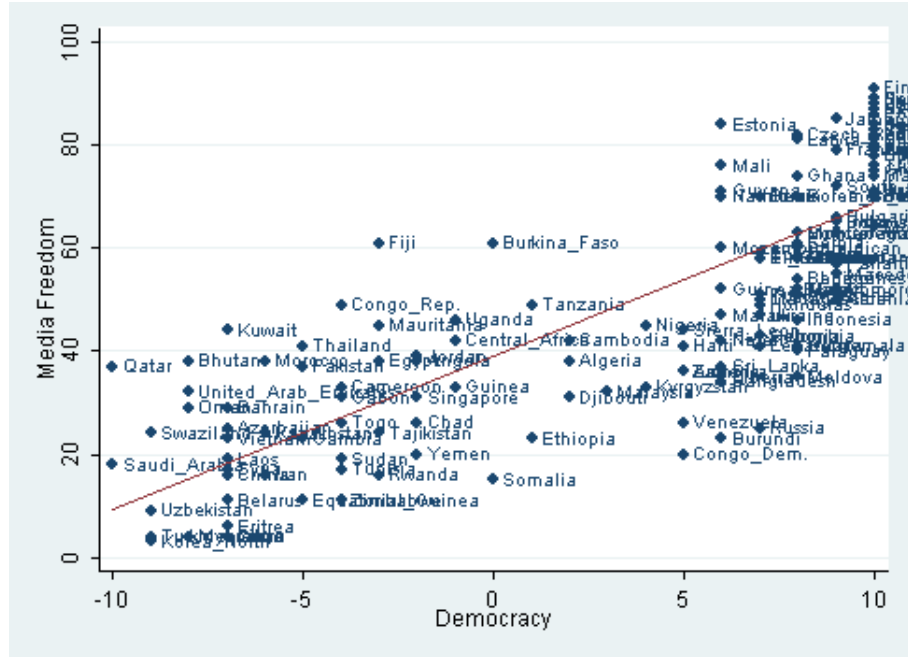


FIGURE 2.1: Media Freedom and Democracy, 2006

(Note: Higher scores mean higher levels of democracy and media freedom.)

With regards to the formal literature, Egorov, Guriev and Sonin (2007) analyze an authoritarian ruler’s choice between a free media and secret service in monitoring local bureaucrats, and find that oil-rich countries are more likely to suppress media freedom. Gehlbach and Sonin (2008) argue that there may be a non-monotonic relationship between advertising revenue and media freedom: increased advertising revenue may initially facilitate media independence but the government will be motivated to seize direct control of the media if the advertisement market continues to expand. Lorentzen (2009) constructs a model in which media freedom can be used to ensure honest behavior of local officials, but will destabilize the regime when citizens receive a negative economic shock and can learn the prevalence of social grievances through the media; he shows then that regimes with a high rent from remaining in power and a substantial risk of revolt will choose to allow partial media freedom.

Other formal models of media control in autocracies have analyzed the effectiveness of propaganda (Edmond 2008) and how media manipulation can change citizen

preferences (Debs 2007), but they do not explain the variation of degrees of media freedom among authoritarian countries per se. For democracies, Besley and Prat (2006) argue that the more media outlets, the more difficult it is for a government to capture the media. Petrova (2008) uses a similar model of media capture and finds that higher inequality is associated with lower media freedom as it gives the rich more incentive to influence media reports and affect public support of redistributive policies.

The spirit of this paper is related to Rosendorff's work 2004 on policy transparency, in which policy makers have to trade off the extraction income associated with less transparency with the risk of being unfairly evicted out of office due to economic malfunctioning outside of the policy makers' control. But the two papers differ in methodologies and results. Rosendorff's model is based on the electoral accountability framework developed by Barro (1973) and Ferejohn (1986), in which citizens are homogeneous and do not face a coordination problem in deciding whether or not to replace the government. In this paper citizens receive heterogeneous signals about the quality of the regime, and a key function of the degree of media freedom is in affecting the coordination of the citizens' actions. We thus use the the global game methodology developed by Carlsson and van Damme (1993) and Morris and Shin (2003). Rosendorff shows that democracies will provide more transparency than autocracies, whereas our result is that intermediately competent regimes will allow more media freedom than both highly competent and incompetent regimes.

We model an authoritarian state as a polity governed by a unitary ruler. This differs from some recent works on the political economy of autocracies that emphasize division among the elites (e.g., Bueno de Mesquita, Smith, Siverson and Morrow 2003, Gandhi and Przeworski 2006, Svobik 2009). In these models authoritarian regimes adopt some seemingly democratic institutions such as legislatures and party competition to impose institutional constraints on autocratic rule and facil-

itate power-sharing and co-optation among the elites. But since a free media's role is primarily to provide information to citizens rather than to promote transparency within the ruling circle (cf. Gehlbach and Keefer 2008), we can abstract away from considerations of intra-elite contestation and focus on the regime's relation with citizens.

In the following section, we set up the model. In section three we conduct equilibrium analysis. Section four presents panel and logit regressions on a cross-national dataset. The last section returns to the case of China and discusses some recent changes in the country's media policy in light of our model, and concludes with some thoughts on future research.

2.2 The Model

There are a ruler⁴ and a continuum of citizens, indexed by i . The ruler's innate competence in generating economic growth and delivering other social benefits to citizens is her private information and denoted as θ . The common prior distribution of θ is an (improper) uniform distribution over $(-\infty, \infty)$. Citizen i 's utility living under a ruler with competence θ is

$$x_i = \theta + \epsilon_i, \quad (2.1)$$

where ϵ_i is the exogenous noise affecting a citizen's welfare, which we can normalize to be a standard normal distribution with mean 0 and variance 1 (or precision 1). The noise ϵ is independently and identically distributed across individuals and time periods. Therefore, whether a citizen enjoys a good life at a particular time depends on both the government's competence and his personal luck at that time⁵ but a

⁴ In the paper we will use the terms "ruler", "regime", and "government" interchangeably.

⁵ Time periods do not explicitly enter our model, although we can think of citizens as living for two periods; in the first period they receive the signals about the ruler's type, and then decide to rebel or not in order to have a new regime in the second period.

citizen's current utility is a useful albeit noisy signal about the competence of the ruler.

Besides the signal from one's personal life, a citizen also obtains some information about the ruler's quality from the society. This second signal is

$$y_i = \theta + \eta_i, \quad (2.2)$$

and η_i is normally distributed with mean 0 and variance $1/\sigma$ (or precision σ). This means that what a citizen can potentially learn from the society about the government is also centered around the truth, but some citizens get a higher signal and others get a lower signal since different citizens have different social sources of information. A given ruler, with a fixed competence, cannot affect the distribution of x , but she can affect the precision of the distribution of y by deciding the degree of media freedom; the more free the media is, the higher the precision of the social information. The interpretation is that, in a country with a relatively free and credible media, citizens can learn from the media relatively precise information about the quality and performance of the regime, and so social opinions will be more narrowly centered around the truth about the government. When there is a more serious lack of media freedom, the distribution of social information is more flat, as there will be all sorts of social opinions ranging from anti-government rumors and messages to government propaganda that flow around the society and remain unchecked by a credible media. The ruler chooses the degree of media freedom in the country and hence the precision of the distribution of y . To simplify analysis, we dichotomize the ruler's choice—she can choose the precision of the distribution y to be either α or β , with $\alpha > \beta$ indicating a more free media system, as illustrated in Figure 2.2. The media itself is not a strategic actor in the model.

A ruler's payoff when staying in power is W . To capture the idea that an author-

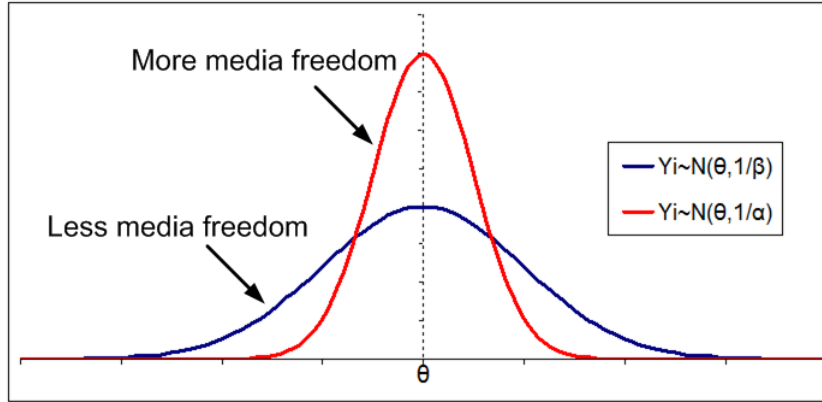


FIGURE 2.2: Less media freedom means a more flat distribution of social information.

itarian ruler can obtain more rents when the media is more suppressed, we assume she can earn a rent r in addition to w if she chooses a less free media and stays in power⁶. In other words she will prefer a less free media if her chance of staying in power is the same. The ruler's payoff if thrown out of the office is normalized to be zero.

Citizens, on the other hand, can rebel and overthrow the ruler if they think the ruler is of low competence, and an alternative regime will be better for their welfare. If the regime is not overthrown, each citizen continues to live under the original ruler and his expected utility for the future will continue to equal the competence of the ruler. If the current ruler is overthrown, a new regime will be established, which has a common expected value of d for each citizen. Participating in a rebellion involves a cost c , whether the rebellion succeeds or not. Furthermore, since there is a continuum of citizens, whether a particular citizen joins the rebellion or not does not affect the probability that the regime will be overthrown. On the other hand, if a citizen does not participate in the rebellion but the rebellion succeeds, there is a probability $1 - q$

⁶ Media monitoring can also generally be a hassle for politicians, even if rents are not an issue. Also, in the model whether the ruler engages in corruption and rent seeking or not does not affect citizen welfare. In other words the effects of a small number of officials' corruption on citizen welfare is not as significant as that of the country's GDP growth rate, for example.

($0 < q < 1$) that he will not be able to enjoy the benefits of the new regime (with probability $1 - q$ his utility will be the same as under the old regime). In other words, we assume the collective action problem of rebellion is solved by selective benefits, which is often the case in real revolutions and has been a standard assumption in the literature (see Acemoglu and Robinson 2005 for a discussion). Therefore each citizen faces the following expected payoffs when deciding to rebel or not to rebel.

	Regime Overthrown	Regime Not Overthrown
Rebel	$d - c$	$\theta - c$
Not Rebel	$q \cdot d + (1 - q) \cdot \theta$	θ

Each citizen makes the decision to rebel or not to rebel independently and simultaneously. For most regimes, the probability that the rebellion will succeed is equal to the proportion of citizens that rebel; so if every citizen rebels, the ruler is overthrown with certainty, and if half of the citizens rebel, the ruler will survive with a fifty percent chance⁷. For regimes with very low θ (i.e., regimes whose competence is lower than a sufficiently low $\underline{\theta}$), however, even a single revolter can overthrow the regime; in other words, regimes that are extremely ineffective in governing the country will also be so fragile that they cannot defend themselves against even small scale rebellions. Given that the support of the distribution of θ is over $(-\infty, \infty)$, the $\underline{\theta}$ can be assumed to be sufficiently low and will not otherwise enter our analysis.

The sequence of the game is as follows:

1. Nature chooses the ruler's competence θ , which is her private information;
2. The ruler chooses to allow more media freedom (α) or less media freedom (β);
3. Each citizens observe his signals x_i and y_i ;
4. Citizens simultaneously decide to rebel (with cost c) or not, with the probability that the rebellion succeeds and the ruler overthrown equal to the proportion

⁷ With the cost of additional algebra, we can also introduce the regime's cost for repressing any rebellion into the model. But the logic of the model will not change.

of citizens that rebel (unless $\theta < \underline{\theta}$, in which case any rebellion will succeed);

5. If the ruler is overthrown, a new regime is established, which will yield an expected value d for each participant of the rebellion; non-participants will receive d with probability q and their original payoff under the old regime with probability $1 - q$.

2.3 Analysis

2.3.1 Citizens' Rebellion Problem

To analyze the ruler's choice of degree of media freedom, we have to first examine citizens' rebellion problem. Since rebelling alone will not succeed (unless $\theta < \underline{\theta}$), citizens need to coordinate their actions if they are unsatisfied with the current regime. In standard coordination games, it is usually assumed that the parameters of the game is common knowledge, and as a result the games often has multiple equilibria. For example, suppose the competence of the ruler in the rebellion payoff table in the previous section, θ , is common knowledge to all citizens, then each citizen has a dominant strategy to rebel if $\theta < \underline{\theta}$, and a dominant strategy not to rebel if $\theta > d - \frac{1}{1-q}$. But if $\underline{\theta} < \theta < d - \frac{c}{1-q}$, then there are multiple equilibria. For example, if every citizen expects every citizen to rebel, then it is an equilibrium that every citizen rebels, and a new regime is established, yielding a payoff of $d - c$ to every citizen. If each citizen expects that no other citizen will rebel, then it is an equilibrium that no citizen rebels, and the current ruler continues to hold power with certainty.

But since neither a citizen's personal life experience nor his social information is perfectly informative, θ is not common knowledge. Instead, citizens face a game of incomplete information, in which they are sure of neither the ruler's θ , nor other citizens' signals of θ . In other words, this is a global coordination game, and because our game satisfies the five conditions (A1-A5) in Morris and Shin (2003), including the

limit dominance condition which is satisfied by our assumption about the existence of $\underline{\theta}$, we can follow the global game methodology to pin down the unique threshold equilibrium strategy for citizens⁸.

To find citizens' equilibrium strategy, first note that each citizen can construct a composite signal from his two private signals about the ruler's competence, x_i and y_i . We assume citizens place weight λ , $0 < \lambda < 1$, on their current personal welfare and weight $1 - \lambda$ on socially-learned information⁹. Call this composite signal ρ_i , then

$$\rho_i = \lambda x_i + (1 - \lambda)y_i. \quad (2.3)$$

Since x_i and y_i are both normally distributed around the true value of θ , and the prior distribution of θ is uniform over $(-\infty, \infty)$, when a citizen's composite signal is ρ_i , his posterior belief of θ is that it is normally distributed with mean ρ_i . Since the private signals of a citizen j , $j \neq i$, are $x_j = \theta + \epsilon_j$, $\epsilon_j \sim N(0, 1)$ and $y_j = \theta + \eta_j$, $\eta_j \sim N(0, \frac{1}{\sigma})$, citizen i , upon receiving signal ρ_i , believes that citizen j 's composite signal is also normally distributed with mean ρ_i , due to the properties of normal distributions.

Suppose all citizens follow a threshold strategy, namely, rebel if their respective composite signal is less than a certain ρ^* and not rebel otherwise. Then from the above discussion a citizen whose signal happens to be ρ^* will expect that exactly half of other citizens will receive a composite signal lower than ρ^* , and so exactly half of citizens will rebel. In other words, the regime will be overthrown with exactly proba-

⁸ Global games were first developed in economics to study macroeconomic crises such as currency attacks and bank runs, but have been recently used to study political regime changes (Atkeson 2000; Edmond 2008; Persson and Tabellini N.D.).

⁹ These exogenously given weights are the same for all citizens in a country. If citizens can observe the precise degree of media freedom (the value of σ), then they can use the two signals' relative precision as the weights, i.e., $\lambda = \frac{1}{1+\sigma}$ and $1 - \lambda = \frac{\sigma}{1+\sigma}$. But since citizens cannot observe whether the degree of media freedom is α or β , this is not possible. The weights may then come from culturally-induced belief about the relative importance of exogenous events as opposed to personal effort of government policy in determining a person's welfare. For example, in countries where people believe life is very capricious and volatile, the value of λ is small (see Benabou and Tirole 2006 for a model of the formation of such collective beliefs).

bility half. A citizen whose signal is the threshold signal must be indifferent between rebelling and not rebelling, and the expected value of the regime's competence is ρ^* , so the following equation must hold:

$$\frac{1}{2}(d - c + \rho^* - c) = \frac{1}{2}(qd + (1 - q)\rho^* + \rho^*), \quad (2.4)$$

which yields

$$\rho^* \equiv k = d - \frac{2c}{1 - q}. \quad (2.5)$$

Moreover, following the methods of Morris and Shin (2003) it can be shown that such a threshold strategy is the only equilibrium strategy that survives iterated deletion of dominated strategies.

The intuition of such a threshold k strategy is simple. If a citizen receives a signal that is lower than a threshold, he thinks that it is highly likely that the regime is of a low type, and further it is highly likely that other citizens have received similar signals, given that the noises are independently and identically distributed. Moreover, the first citizen thinks that it is highly likely that other citizens have reached the same inference about each other's inferences. So if every citizen follows the threshold strategy, then a citizen with a low signal knows that it is both safe and worthwhile to rebel.

2.3.2 Regimes' Choice of Media Freedom

A ruler's payoff is $W \cdot \text{Prob}(\text{not overthrown})$ if she chooses more media freedom (precision α for the distribution of signal y) and $(W + r) \cdot \text{Prob}(\text{not overthrown})$ if she chooses less freedom (precision β).

The probability of being overthrown depends on a ruler's θ and the degree of media freedom she chooses. Because a citizen's composite signal $\rho_i = \lambda x_i + (1 - \lambda)y_i$, When her competence is θ , she knows citizens' signals follow the distribution

$\rho \sim N(\theta, \lambda^2 + \frac{(1-\lambda)^2}{\sigma})$. Therefore given the rebellion threshold strategy k derived in the above subsection, she knows the probability that a particular individual citizen rebels, and hence the proportion of citizens that rebel (and the probability of the ruler being overthrown), is $\Phi(\frac{k-\theta}{\sqrt{\lambda^2 + \frac{(1-\lambda)^2}{\sigma}}})$, where Φ denotes the cumulative distribution function of a standard normal distribution. Her probability of staying in power is then $1 - \Phi(\frac{k-\theta}{\sqrt{\lambda^2 + \frac{(1-\lambda)^2}{\alpha}}})$, or $\Phi(\frac{\theta-k}{\sqrt{\lambda^2 + \frac{(1-\lambda)^2}{\alpha}}})$, if she chooses more media freedom and $\Phi(\frac{\theta-k}{\sqrt{\lambda^2 + \frac{(1-\lambda)^2}{\beta}}})$ if she chooses less freedom¹⁰. She will choose more media freedom α if the following inequality holds:

$$L(\theta) = W \cdot \Phi(\frac{\theta - k}{\sqrt{\lambda^2 + \frac{(1-\lambda)^2}{\alpha}}}) - (W + r) \cdot \Phi(\frac{\theta - k}{\sqrt{\lambda^2 + \frac{(1-\lambda)^2}{\beta}}}) \geq 0 \quad (2.6)$$

By examining the equation, it is immediately clear that regimes with θ less or equal to k , citizens' rebellion threshold, will never choose media freedom α , because with more media freedom they will lose the rent r , and the probability of being overthrown cannot be smaller if they reveal their low competence more clearly to the citizens. The equation will not hold for really high θ s either, because for these regimes, the probability of being overthrown will be similar whether they choose α or β , but they can get more rents with less media freedom.

But the tradeoff between more rents with less media freedom and lower probability of being overthrown with higher media freedom will bite for regimes with competence higher than the rebellion threshold k but not too high. By differentiat-

¹⁰ It is important to note that in the current model citizens cannot observe the regime's choice of degree of media freedom. If citizens can observe the choice, then the choice will be a public signal of the regime's type, in addition to citizens' private signals. This additional piece of information will considerably complicate citizens' inference problem about the regime's type, and lead to a complicated signaling game in a global game framework similar to the one in Angeletos, Hellwig and Pavan (2006). In previous versions of the paper I dealt with such a game.

ing equation 2.6 with respect to θ , we know the function is single-peaked at

$$\theta \equiv \theta^* = k + \sqrt{\frac{2(\alpha\lambda^2 + (1-\lambda)^2)(\beta\lambda^2 + (1-\lambda)^2)}{(\alpha-\beta)(1-\lambda)^2} \cdot \log \frac{W\sqrt{\lambda^2 + \frac{(1-\lambda)^2}{\beta}}}{(W+r)\sqrt{\lambda^2 + \frac{(1-\lambda)^2}{\alpha}}}, \quad (2.7)$$

provided the logarithm in the square root operation is positive. In other words, regimes with competence at and sufficiently close to θ^* will choose more media freedom, as long as the value of equation 2.6 is non-negative when $\theta = \theta^*$. This leads to the following proposition, as illustrated by Figure 2.3.

Proposition 1. *Regimes with $\theta \in [\theta', \theta'']$, where $\theta' \in (k, \theta^*)$ and $\theta'' \in (\theta^*, \infty)$ implicitly solve equation 2.6 with equality, will choose to have higher degree of media freedom (i.e., α), as long as $\frac{\sqrt{\lambda^2 + \frac{(1-\lambda)^2}{\beta}}}{\sqrt{\lambda^2 + \frac{(1-\lambda)^2}{\alpha}}} > \frac{W+r}{W}$ and $L(\theta^*) > 0$.*

Proof. Let $f(\alpha) \equiv \sqrt{\lambda^2 + \frac{(1-\lambda)^2}{\alpha}}$ and $f(\beta) \equiv \sqrt{\lambda^2 + \frac{(1-\lambda)^2}{\beta}}$. Then

$$\begin{aligned} \frac{\partial L(\theta)}{\partial \theta} &= W\phi\left(\frac{\theta-k}{f(\alpha)}\right)\left(\frac{1}{\alpha}\right) - (W+r)\phi\left(\frac{\theta-k}{f(\beta)}\right)\left(\frac{1}{\beta}\right) \\ &= \frac{W}{f(\alpha)} \frac{1}{\sqrt{2\pi}} e^{-\frac{(\frac{k-\theta}{f(\alpha)})^2}{2}} - \frac{W+r}{f(\beta)} \frac{1}{\sqrt{2\pi}} e^{-\frac{(\frac{k-\theta}{f(\beta)})^2}{2}}. \end{aligned} \quad (2.8)$$

To see when $L(\theta)$ increases and decreases with θ , we just need to know the sign of equation 2.8. To have equation 2.8 greater than zero, we need to have

$$\frac{W+r}{f(\beta)} \frac{f(\alpha)}{W} e^{-\frac{(\frac{k-\theta}{f(\alpha)})^2}{2}} - e^{-\frac{(\frac{k-\theta}{f(\beta)})^2}{2}} < 1,$$

or

$$(k-\theta)^2 \left(\frac{1}{2(\lambda^2 + \frac{(1-\lambda)^2}{\alpha})} - \frac{1}{2(\lambda^2 + \frac{(1-\lambda)^2}{\beta})} \right) < \log \frac{W\sqrt{\lambda^2 + \frac{(1-\lambda)^2}{\beta}}}{(W+r)\sqrt{\lambda^2 + \frac{(1-\lambda)^2}{\alpha}}}. \quad (2.9)$$

Requiring that the argument in the logarithm to be positive leads to the condition that $\frac{\sqrt{\lambda^2 + \frac{(1-\lambda)^2}{\beta}}}{\sqrt{\lambda^2 + \frac{(1-\lambda)^2}{\alpha}}} > \frac{W+r}{W}$. Because we are considering $\theta > k$, we know from equation 2.9 that $L(\theta)$ increases with θ when

$$\theta < k + \sqrt{\frac{2(\alpha\lambda^2 + (1-\lambda)^2)(\beta\lambda^2 + (1-\lambda)^2)}{(\alpha-\beta)(1-\lambda)^2} \cdot \log \frac{W\sqrt{\lambda^2 + \frac{(1-\lambda)^2}{\beta}}}{(W+r)\sqrt{\lambda^2 + \frac{(1-\lambda)^2}{\alpha}}},$$

and decreases with θ otherwise. Therefore $L(\theta)$ is single peaked at θ^* and this proves proposition 1. □

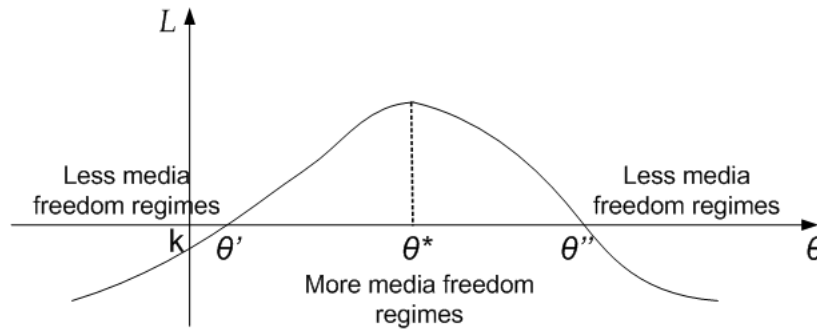


FIGURE 2.3: Moderately competent regimes are more likely to allow some media freedom than others

What we have shown is then a non-monotonic relationship between regime competence and media freedom. Both very incompetent regimes and very competent regimes will ban media freedom severely, but there will be parameter values with which moderately competent regimes will allow some degree of media freedom. The intuition is straightforward. Incompetent regimes cannot allow media freedom because it both reduces the rents they can extract and informs citizens of their low quality. Highly competent regimes are confident that most citizens will have a relatively good life under their rule, and so the chance that citizens will mistake their

types is low even if they severely restrict media freedom; therefore they choose less media freedom in order to extract more rents. But some intermediate regimes will have to sacrifice some rents and allow some media freedom to avoid citizen misjudgment.

2.4 Empirical Evidence

In this section we provide empirical evidence for the result of our theoretical model, namely, intermediately competent regimes will more likely allow media freedom than both poorly and well governing regimes. We construct a (panel) dataset on non-democratic regimes from several sources. For data on media freedom we use the Press Freedom Index of the Freedom House, which includes both print and broadcast media. Early data from the Freedom House only categorized countries' media systems as free, partly free, or not free. Since 1994, however, Freedom House has given every country's degree of media freedom a score from 0 to 100, with 0 corresponding to perfect media freedom and 100 corresponding to a complete lack of media freedom¹¹. We reverse the scores to facilitate interpretation, so a higher score means more freedom. The Freedom House classifies countries with a score of 0-30 as free, those with 31-60 as partly free, and those with 61-100 as not free. With our reversed scores, countries with scores 0-39 are not free, and countries with scores 40 or above are partly free or free.

As a proxy for our main explanatory variable, regime competence, we use the government effectiveness index from the Governance Matters dataset of Kaufmann, Kraay and Mastruzzi (2008), which is an aggregation of various datasets measuring the quality of policy formulation and implementation, and the quality of public services and the civil service. The government effectiveness data are available starting

¹¹ Another widely used media freedom index is constructed by Reporters without Borders. We do not use their index because it only started in 2002. The correlation of the two indexes is fairly high.

from 1996¹². The indicators include both negative and positive values, with the mean at zero. To test whether intermediate regimes will allow more media freedom than others, we check if the coefficients of the squared values of government effectiveness in the regressions are significantly negative. We use contemporaneous values of government effectiveness in our main regressions, but also (one period) lagged values for robustness checks to avoid potential endogeneity problems (this is particularly because the government effectiveness index includes the quality of bureaucracy, and media monitoring may affect the quality of public service if not the innate ability of the ruler).

To control for a country's level of democracy, we use the polity2 score from the Polity IV dataset. The Polity IV project scores a country's level of democracy and autocracy on a scale from 0 to 10, and then subtracts the autocracy score from the democracy score to obtain an overall polity score on a 21-point scale, ranging from -10 (hereditary monarchy) to +10 (consolidated democracy). Countries with a score of -6 or less are categorized as autocracies, those from -5 to +5 are called anocracies, and countries with a score of 6 or higher are categorized as democracies. To test our theory on authoritarian regimes, we use observations in the Polity IV dataset with polity2 scores less than 6. The last year of observation in the Polity IV dataset is 2006.

Other control variables include logged GDP per capita (purchasing power parity), logged population, logged land area, and education. We also control for resource abundance and inequality that Egorov, Guriev and Sonin (2007) and Petrova (2008) have found to be important in determining degrees of media freedom. We do not have data on countries' advertisement markets. GDP, population, land area, and education are from the World Bank's World Development Indicators. For education

¹² From 1996 to 2006 the indicators are available only biannually, and we fill in the in-between year values by taking the mean value of the two adjacent years. Results without the this interpolation are similar.

we use the net secondary school enrollment data in our main regressions and tertiary school enrollment data in robustness checks. Egorov, Guriev and Sonin (2007) argue that the amount of oil reserve is a more reliable measurement of resource abundance than fuel export as a percentage of GDP, which is widely used in the resource curse literature (e.g., Ross 2001). We accordingly use the amount of oil reserve (obtained from the BP) to measure resource abundance in our main regressions, plus time dummies to control for changes in oil prices. But we also use the export of fuel as a percentage of GDP, available in the World Development Indicators, for robustness checks. The inequality data is obtained from the UNU-WIDER.

We first run (country) fixed effect regressions to see if countries with intermediate levels of government competence will have higher degrees of media freedom. The fixed effect estimation is used because the expected value of a new regime for citizens—the variable d in our theoretical model—may vary from country to country; it also controls for other unobserved heterogeneity among countries.

The main result from the panel regression models are reported in Tables 1 of the Appendix A, with Table 2 containing robustness checks. In Table 1, regression 1 includes the standard controls: democratic level, GDP per capita, land area, and population. Regressions 2 to 4 respectively adds education, natural resources, and inequality. The last regression excludes countries with population less than one million. In all regressions, the coefficients of interest, those of government effectiveness-squared, have the correct negative sign, and they are all statistically significant, at least at the 10% level. A country's democratic level remains a strong predictor of that country's degree of media freedom. Land area is also significantly correlated with higher degrees of media freedom, perhaps because it is technologically more difficult to control the media over a geographically more expanded country, other things equal. In contrast, variables that have been identified by other authors to be important determinants of media freedom largely lose statistical significance once

we include government competence in the analysis. Results of the robustness checks reported in Table 2 are qualitatively similar.

The panel regressions use continuous degrees of media freedom. Next we run logit regressions to see if regimes with intermediate levels of government effectiveness are more likely to fall in the category of “partly free” countries, as defined by the Freedom House. Such models may be particularly appropriate given that in our theoretical model we only allow two degrees of media freedom. The variables and model specifications are otherwise the same with the panel regressions. The results are reported in Tables 3 and 4. Results are broadly similar to those of the panel regressions but more significant, partly due to the fact that we have excluded country fixed effects in the logit models. Figure 2.4 shows the probability of a regime allowing a partly free media, after controlling the effects of democratic levels, GDP, land, and population sizes. As the figure shows, a country with intermediate level of government effectiveness has about 30% higher chance of allowing a partly free media those regimes at either end.

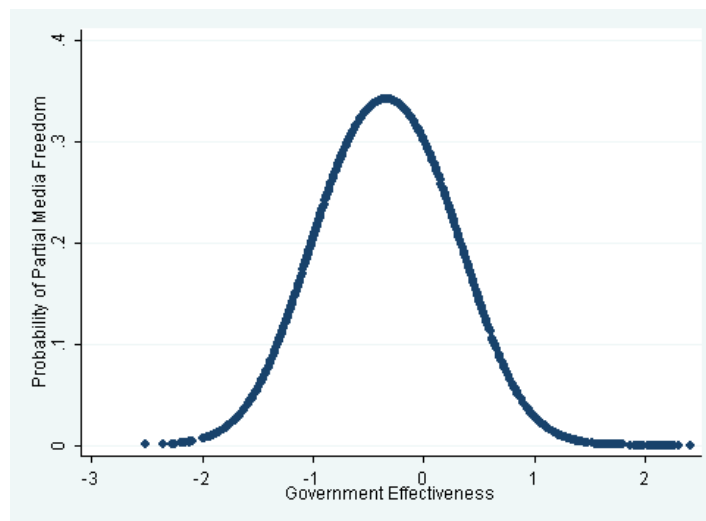


FIGURE 2.4: Regime Competence and Probability for Choosing Partly Free Media (holding level of democracy, GDP, land, and population constant)

2.5 Conclusion

Many studies have emerged in recent years analyzing the social effects of news media and media freedom (e.g., Besley and Burgess 2002; Stromberg 2001, 2004). From the theoretical perspective, the first order question is why do different countries choose different media policies in the first place.

Our analysis shows that while a free media poses clear dangers for an authoritarian regime in that it can help disgruntled citizens coordinate to challenge the regime, and that media monitoring will reduce the rents authoritarian rulers can obtain, it also has its beneficial side: media monitoring can prevent citizens from mistaking a relatively competent and benign regime for a bad one. The crucial factor in determining an authoritarian regime's choice of degree of media freedom is its competence in providing economic and social benefits to citizens. More specifically, we have identified a strong non-monotonic relationship between regime competence and media freedom: intermediate regimes will have incentives to allow more media freedom than both competent and incompetent regimes. The conventional wisdom that equates the degree of media freedom with the quality of the regimes and the common intuition that treats measures of media liberalization and applications of information technologies such as the internet as harbingers of regime change are thus flawed.

China's case also shows that even a country that usually tightly controls its media may have moments at which it finds that a more liberal media policy is beneficial. During the crisis in Tibet in 2008 and the ensuing world wide protests against China's Tibet policy, a crucial issue surrounding the controversy was what really happened in Tibet during the crisis. Early media reports (with lasting ramifications) focused heavily on China's crackdown, with many media outlets suggesting that perhaps dozens of or even over a hundred protesters were shot dead in Lhasa, the capital

of Tibet. The Chinese government accused many Western media of exaggerating the brutality of China's crackdown while neglecting the violence of the rioters. Indeed, according to *The Economist*, the only foreign media organization with an accredited journalist in Tibet during the turmoil, allegations of police killings in Lhasa were quite inaccurate, even though those same reports correctly highlighted the lack of religious freedom and widespread economic grievances in Tibet (Economist 2008a,b). Frustrated that its own media's accounts were not deemed credible, the Chinese government allowed *The Economist's* correspondent to stay in Tibet during the unrest, apparently hoping that his reports could help get the scale of the rioters' violence across and put the Chinese government in a more positive light¹³. While the existence of sloppy journalism in the Tibet coverage has been widely acknowledged, an important cause of the alleged bias lay with the Chinese government itself: by closing Tibet off from most journalists (Human Rights Watch 2008), many media organizations had to suspect the worst of the Chinese government and rely on alternative sources and sometimes unconfirmed information to meet the demands of a 24-hour news cycle, thus preventing the entire picture of the crisis from getting across.

The Chinese government seemed to have learned a lesson from the Tibet debacle when a great earthquake struck Sichuan province in May 2008. By offering unprecedented transparency and media access to the disaster zone, it garnered considerable international sympathy and domestic support during the process of earthquake relief (Jacobs 2008), even though the news coverage also highlighted the issue of shoddy construction of school buildings due to corruption (Cha 2008). Following the Weng'an riot, Chinese journalists were also allowed to provide extensive coverage of the incident to establish more credible and authoritative reporting, while free-wheeling blogging and postings in bulletin board systems continued to be censored

¹³ See CNN's interview with James Miles, *The Economist's* correspondent, on March 20, 2008, <http://edition.cnn.com/2008/WORLD/asiapcf/03/20/tibet.miles.interview/#cnnSTCText>, accessed on July 20, 2008.

(Elegant 2008). Reflecting on the regime's past failures in media policies, the Chinese president Hu Jintao delivered a speech to the government's premier media and propaganda organization *People's Daily* in June 2008, and stressed the need for the country's state media to report on breaking news such as disasters at the earliest time¹⁴. Although this is not only about providing information but also putting a positive spin on social events from early on, it is a clear break from the regime's past practice of strict censorship of any negative news, and has been widely noted as representing the beginning of a new and more nuanced media policy in China. Note also this policy only applies to reports on social and natural emergencies and is therefore not the same as allowing the media unbridled freedom to report on politics—for example, there will still be significant news censorship around political sensitive anniversaries such as June 4, the date of Tiananmen crackdown in 1989.

Finally, besides explaining some of the variations in media freedom in the world, this paper also suggests several lines of future research. First, in the current paper news is defined as something that reveals the ruler's competence, and the index on media freedom is an aggregated measure. But there are various kinds of news in the world, and different countries may allow different degrees of media freedom for different types of news. A more nuanced empirical study would therefore look at what kind of news are more likely suppressed by what kind of regimes. Secondly, in the current model a government's competence is exogenously given and not affected by degrees of media freedom. It is theoretically possible, however, that media monitoring can affect the effectiveness of government leadership and policies, either positively by forcing officials to be more diligent, or negatively by tying the government's hand. Endogenizing (at least partially) the regime's governing capacity will be an important extension of the current theoretical model. Finally, countries with similar

¹⁴ The speech is available at <http://politics.people.com.cn/GB/1024/7408514.html> (accessed on June 20, 2009).

levels of democracy not only differ in degrees of media freedom, but also in such matters as governments' regular releases of economic and social data (Rosendorff 2004) and disclosure requirements on politicians' income (Djankov, McIlesh, Nenova and Shleifer 2009). It will be a useful exercise to see if our framework of the trade-off between rents and citizen misjudgments can be applied to study these issues.

Local Media Freedom, Protest Diffusion, and Authoritarian Resilience

3.1 Introduction

On the morning of November 3, 2008, some 8,000 taxis in Chongqing, China, stopped work to protest excessive management fees, fuel shortage, and the competition from unlicensed taxis, stranding rush-hour commuters in the fourth largest city in China. Within hours, several national-level media outlets published eyewitness reports of the strike, followed by in-depth and generally sympathetic coverage of media outlets across the country. Three days later, the city's Communist Party chief, a member of China's Political Bureau—the highest governing body of the country, held a dialogue with the strikers and listened to their grievances, and the two-and-a-half hour meeting was live televised and available online across China through major web portals.

Within a month of the Chongqing strike, taxi drivers in 18 other cities across China followed suit and held similar strikes (Liu 2008). The strikes seemed to have worked, as officials in various cities vowed to eliminate extra fees, provide more fuel supplies, and crack down on unlicensed taxis; several local officials also stepped

down or received administrative admonitions (Liu 2008; Wong 2008). While the grievances of the Chinese taxi drivers are not something new, and they had held strikes before, the large scale, nation-wide protest cascade in the end of 2008 was unprecedented. It is apparent that the media coverage of the first strike in Chongqing and the government's positive response were a factor in encouraging the later strikes (Canaves 2008).

Contrast China's media openness on the taxi strikes with its earlier policy of banning media reports on social unrests, such as the bloody conflict in Dongzhou in 2005. A series of protests over the span of several months took place that year in Dongzhou, a village in south China's Guangdong Province, in opposition to the local government's plan to build a new power plant. Villagers feared the plant would cause serious pollution, and they were angry that they had not been compensated for the use of their land for the plant. The protests culminated on December 6, when protesters threw explosives at the police and the police opened fire. The Chinese press were ordered by the government to keep silent on the incidence. As a result, the exact death toll remained unknown to the outside world, with the Chinese government saying three people were killed (Xinhua 2005) while foreign media put the number as up to 20 (French 2005b).

By the Chinese government's own account, each year there are tens of thousands of mass protests in China¹. Like the taxi drivers' strikes and the Dongzhou incident, the vast majority of these protests are targeted at abusive or incompetent local governments (O'Brien 1996; Guo 2001; Lorentzen 2006). Prior to 2008, most of these protests are not reported by the Chinese state media either, because the government feared that open media reports of such "mass incidents", as they are called in China, may encourage citizens to launch more protests to address government misbehavior

¹ The official account for 2005, the latest year for which the figure is available, was 87,000, although the way the statistic was calculated was not made public.

(French 2005*a*).

Such a reasoning is shared by the academic literature on protest cascades. An important reason that a free media has usually been viewed as threatening to authoritarian regimes is that media reports of social protests have a snowballing effect and can incite more protests, which was shown clearly in the dynamics of the Eastern European revolutions of 1989 (Kuran 1991; Huntington 1991; Lohmann 1994). But if media reports on social protests are so dangerous for authoritarian regimes, why did the Chinese government recently adopted a more open policy toward news reports of the many social protests, such as the taxi drivers' strikes? The media's open coverage of these strikes is not an anomalous event, but rather a policy shift. In the drafts of China's Emergency Response Law, there were stipulations that forbade journalists from reporting riots, disasters, and other kinds of emergencies without government authorization. When the law was finally promulgated in August 2007, however, such stipulations were deleted, which was widely seen as a relaxation of media control in China. Although journalists still face de-facto pressures and constraints in reporting "mass incidents", such reports are no longer illegal or forbidden a priori. As we will show in the discussion section of the paper, the Chinese government has also in recent years adopted a relatively liberal policy toward online discussions of local government affairs, which has allowed China's vocal Internet users (also known as netizens) and active online vigilantes to expose and denounce many cases of local official corruption and malfeasances.

Clearly media reports of local protests involve trade-offs for the government. What are the dynamics of this trade-off? When would authoritarian governments allow more media freedom to report local protests? In this paper we construct a simple model to investigate the effects of the media's freedom in reporting protests on the behavior of local governments and the payoff of the regime. Our results indicate that allowing news media the freedom in reporting local unrests generally

increases the incidence of social protests, but reduces the corruption level of local governments. In fact, corruption will be reduced to such an extent that allowing such local media freedom generally provides an overall net benefit to the regime.

The paper is related to the work of Egorov, Guriev and Sonin (2007) and Lorentzen (2009). Egorov, Guriev and Sonin (2007) consider the role of news media in directly gathering information about local bureaucrats' performance for the central ruler. They show then that oil-rich countries are more likely to ban media freedom than other regimes. Lorentzen (2009) constructs a model in which media freedom can be used to ensure honest behavior of local officials, but will destabilize the regime when citizens receive a negative economic shock and can learn the prevalence of social grievances through the media; he shows then that regimes with a high rent from remaining in power and a substantial risk of revolt will choose to allow partial media freedom. Our model differs from these papers in that in our paper the media does not observe corruption directly, but only protests. The corruption-observing mechanism is what usually comes to people's mind when they talk about the media's role in corruption reduction. What we consider in the paper is a more novel mechanism: rather than having the media inform the ruler, the media can be used to empower citizens to rein in corrupt local officials. Though the mechanism may appear somewhat unusual at first glance, we note that citizen protests are easier to observe and report than government corruption, which actually makes the mechanism we identify easier to have an effect in reality.

In the following section, we present the model. In section three we analyze the model to see the effects of allowing the media to report local protests. We will then discuss a number of high-profile Internet frenzies in China as evidences consistent with our model to show how a authoritarian regime can use some degree of media freedom on local affairs to enhance its ruling of a country. The last section concludes with brief discussions about future research.

3.2 Model

There are a central ruler or regime (R), a unit mass of communities (C) indexed by $i \in [0, 1]$, and a unit mass of ex-ante identical local bureaucrats (B), each governing one community. Each local bureaucrat selects a level of extraction (e) from the community under his jurisdiction, $e \in [0, 1]$, but will be punished if his extraction leads to community protest and the regime decides to address the protest. The punishment will be proportional to the level of extraction and is equal to αe , with α being the scalar that measures the capacity of the regime in punishing corrupt local officials. We require $1 \leq \alpha \leq 2$, namely that the punishment a bureaucrat will receive, if he is punished, will be at least as severe as the extraction (otherwise the punishment will be hardly effective in constraining the bureaucrats' behavior), but will not be more than twice as severe as the extraction (i.e., the bureaucrats have some kind of limited liability). Therefore a bureaucrat's objective function is to maximize the extraction from citizens, minus the likely punishment he will receive for the extraction. We assume the extraction is consumed by the bureaucrats and cannot be returned to the community; in other words, the luxurious houses, lavish banquets, overseas trips, etc., that the bureaucrats have engaged in with the extraction income cannot be returned to the community for productive use.

Each community has a number of citizens but is treated as a single actor in the model. Since a community consists of several citizens, however, the community needs to overcome a transaction cost in organizing a collective action against government misconducts. This transaction cost, t , varies from community to community and is a community's private information². We assume a community's type t follows a uniform distribution with support on $[0, 1]$, and the communities' types are independent

² We can also interpret this cost as a community's level of tolerance for government abuses. Even though citizens can inform local officials of their tolerance levels, they have incentive to under-report the true level and therefore their reports will not be viewed as credible by local officials.

from each other. After observing the level of local extraction, a community decides whether or not to launch a protest against the local bureaucrat; i.e., a community chooses $a \in \{0, 1\}$, with $a = 1$ indicating action. If a community protests and the regime decides to address the protest, the community will be compensated with what is extracted from its citizens, e . Indeed, Wallace (2007) finds that local instability usually leads to fiscal transfer from the central government to the instable regions. Therefore a community i will protest if the extraction (e_i) times the probability that the regime will address the protest exceeds the community's cost for launching a protest, t_i . If a community's transaction cost t_i is lower than the level of official extraction in that community (e_i), we say the community has actionable grievances against the government, or $g_i = 1$. Otherwise $g_i = 0$, meaning the community's transaction cost of organizing collective action is so high that they will not protest against the government abuses. It is important to note that even though a precondition for a community to launch a protest is $g_i = 1$, a community with $g_i = 1$ will not automatically protest against local extraction since the probability of the regime responding to its protest may not be one.

The regime is endowed with a resource that is normalized to be one. After local protests occur, the regime observes which (and how many) communities have protested, and decides the proportion π of protests to address³. If the regime decides to address a protest, it will punish the local bureaucrat and compensate the citizens for their losses due to local extraction. Since the extracted income of the local officials have already been consumed, the regime has to spend its own resources to compensate the protesters, and the compensation will be equal to the level of the extraction. If the regime decides to ignore local grievances, the grievances against local officials will change into resentment against the national regime, from which a national revolt

³ In equilibrium, the extraction level in each community is the same since the bureaucrats are symmetric, and so the regime cannot condition whether or not to address a particular protest according to the level of extraction in that protesting community.

threatening regime overthrow may emerge. If the regime is overthrown, its payoff will be zero. Otherwise it enjoys its endowed resources, minus any cost it incurs while addressing local protests.

Regimes vary with regards to their vulnerability (v) to the threat of regime overthrow, $0 \leq v \leq 1$. We do not explicitly model the emergence of the national revolt and the participation of local communities in the revolt; instead, we assume in a reduced form way that at the end of the game that we model in this paper, the regime will be overthrown with a probability equal to the vulnerability of the regime times the share of all communities that have unaddressed actionable grievances and the level of extraction. So if a fraction g of communities have actionable grievances not addressed by the regime, and the level of local extraction is e , then a regime with a degree of vulnerability v will be overthrown with a probability of $v \cdot e \cdot g$. Importantly, this means that communities with high transaction costs and hence no actionable grievances (those with $g_i = 0$) will not participate in the revolution, and so can be safely ignored from the perspective of the regime. Note v is a composite measure that incorporates a regime's inherent strength and capacity for repression, likelihood of the emergence of effective opposition leaders, strength and quality of potential opposition groups, and the international environment (e.g., how strong the international pressure on the regime is), etc.

With the above discussion, we can write each actor's utility function. The regime's utility is

$$U^R = (1 - \pi \int_0^1 e_i a_i di) \cdot (1 - v(\int_0^1 e_i g_i di - \pi \int_0^1 e_i a_i di)), \quad (3.1)$$

with the first parenthesis being the regime's resources after addressing some (or all) protests, and the second parenthesis being the probability of staying in power. Let the probability that a community i will launch a protest as p , then a bureaucrat i 's

expected utility from choosing extraction e_i is

$$U_i^B = e_i - \alpha e_i p \pi, \quad (3.2)$$

and a community's expected utility from launching a protest is

$$U_i^C = e_i \pi - t_i. \quad (3.3)$$

Besides choosing the proportion of protests to address, at the beginning of the game the regime also selects whether or not to give the media the freedom to report local protests. The media does not directly observe the level of extraction in each community, but it does observe whether a community has protested (i.e., social protests are much easier to observe than the corruption of government officials), and whether the regime has responded to the protest by punishing the bureaucrat and compensating the community. Once there are reports about community protests, other communities learn from these earlier protests lessons and inspirations about launching a protests, which reduces their own transaction costs. We assume that after learning some other communities' protests and the regime's response to the protests, the transaction costs of those communities that have not protested will go down by $(1 - k)t$; that is, a community whose original transaction cost is t will now have a transaction cost of kt , with $0 < k < 1$ measuring the contagiousness of the protest, the lower k , the higher contagiousness. This is a simple and straightforward representation of the snowballing effect of media reports of protests.

Earlier we have discussed how the copy-cat strikes by Chinese taxi drivers in late 2008 were apparently inspired by the first strike in Chongqing and how the government positively responded to the protest. For another example, think about Chinese local residents that go to Beijing to petition the central government to deal with their corrupt local governments and remedy their plights. Obviously some people are more willing to travel to Beijing to petition than others (and it may

be less costly for them to do so), and so their tolerance levels vary. When a citizen knows another citizen has gone to Beijing for a petition, she learns about the method of petition (e.g., where to send the petition, how to obtain the attention of central government officials, etc.), and that the petition can lead to the central government's interference and punishment of local officials. Thus her cost of petition decreases.

Besides lowering communities' transaction cost for launching a collective action, media reports of social protests also commit the regime to respond to every protesting community by punishing the responsible bureaucrat and compensating for the community's loss. In other words, when the media has the freedom to report social protests, the regime is forced to choose $\pi = 1$.

We assume that once the regime has made a decision to let the media report local protests, it can commit to the policy. This is because once protests occur, journalists will utilize the freedom and rush to the scene without much fear of being punished. China's journalists, for example, rush to airports immediately after the Sichuan earthquake occurred in May 2008; it was too late for the central government's propaganda department to issue directives cautioning reporters not to visit the earthquake scene, and as a result, Chinese media's coverage of the earthquake was largely uncensored (French 2008; Jacobs 2008).

The sequence of the game is as follows.

1. The regime (R) chooses whether or not to adopt a system whereby the media have the freedom to report local protests.
2. Each community (C_i) learns of its transaction cost (t_i).
3. The bureaucrats simultaneously choose their levels of extraction (e).
4. Each community decides whether or not to protest against the bureaucrat that governs it ($a = 0, 1$); call this the first wave protests, or the first period.
5. The regime decides the proportion of the protests to respond to (π).
6. If the media is not free, the game ends here; if the media is free, it reports on

the protests and the regime's response.

7. Some of the communities that did not protest in the first wave may protest now; call this the second wave protests, or the second period.

8. The regime responds to the second wave of protests.

9. The game ends, and payoff is assigned (the regime's utility would incorporate its vulnerability v).

To ensure that not all communities with actionable grievances before the media has reported any protest to postpone their protests until they have learned something from other protesters and reduced their own transaction cost, we assume that there is a discount factor δ that will apply to the benefit and cost of second wave protests. In other words, if a community postpone its protest until the second wave, the extraction income it will get back if the regime responds to its protest will be only worth δe in the first period, so other things equal, the community would rather to protest in the first wave and put the compensation to productive use.

Since this is an extensive-form game, we look for the sub-game perfect equilibrium. We also restrict attention to symmetric strategies of the bureaucrats.

3.3 Analysis

3.3.1 No Media Freedom

We first consider the case when the media is not allowed to report on local protests. We use backward induction, starting with the choice of the regime after it has observed the share of communities that have protested. Given that the regime's utility is

$$U^R = (1 - \pi \int_0^1 e_i a_i di) \cdot (1 - v \int_0^1 e_i (g_i - a_i \pi) di), \quad (3.4)$$

by the first order condition we know the proportion of protests that the regime will choose to address is

$$\pi = \begin{cases} \frac{v \int_0^1 e_j g_j d_j - (1-v)}{2v \int_0^1 e_j a_j d_j} \equiv \hat{\pi}, & \text{if } 0 < \hat{\pi} < 1; \\ 0, & \text{if } \hat{\pi} \leq 0, \text{ or } e_i = 0 \forall i, \text{ or } a_i = 0 \forall i; \\ 1, & \text{if } \hat{\pi} \geq 1. \end{cases} \quad (3.5)$$

A bureaucrat i 's utility with an extraction of e_i depends on the probability that he expects to be punished when he chooses e_i , which in turn depends on the probability that the community will protest against e_i , and the expected probability that the regime will address the protest and punish the responsible bureaucrat. Because both the bureaucrats and the communities move before the regime, the two types of actors will have the same expectation of the probability that the regime will address a protest. Call the regime's expected probability of addressing a protest $E(\pi)$, then the probability that a community will protest when the extraction is e_i is $e_i E(\pi)$, and a bureaucrat will be punished if he chooses e_i will be

$$\begin{aligned} Prob(\text{punishment}|e_i) &= Prob(a_i = 1) \cdot E(\pi) \\ &= e_i E(\pi)^2. \end{aligned} \quad (3.6)$$

The following proposition shows that regimes with $v \leq \frac{1}{2}$ will choose to address none of the protests. The intuition is that such regimes are not very vulnerable to potential national revolt even if they do not address any protest, so they will simply ignore all protests to save the expenditure of addressing protests.

Proposition 2. *If no local media freedom is allowed, in equilibrium if a regime's vulnerability $v \leq \frac{1}{2}$, then it will always choose $\pi = 0$. All bureaucrats will choose $e = 1$, but no community protests. The regime's utility will be $1 - v$.*

Proof. First we note that in equilibrium all bureaucrats choose the same e due to the symmetry. When $v \leq \frac{1}{2}$, if in equilibrium $e = 0$, then obviously no community

protests and there is no protest to address. If $e \neq 0$ but $a_i = 0 \forall i$, then obviously $\pi = 0$ too. If $e > 0$ and there is a positive proportion of communities that protest, then the denominator of $\hat{\pi}$ is positive, and yet the nominator of $\hat{\pi}$ is non-positive because $v \leq \frac{1}{2}$ and the integral is at most 1. Therefore $\pi = 0$

If the regime is not to going to address any protest, then every bureaucrat will choose the maximum possible extraction; i.e., $e_i = 1 \forall i$. And because no protest will be addressed, no community will be willing to protest, even though all of them have actionable grievances ($g_i = 1 \forall i$). By equation 3.4, the utility of the regime when $v \leq \frac{1}{2}$ and it chooses to ban local media freedom will be $1 - v > \frac{1}{2}$.

□

Regimes with $v \geq \frac{1}{2}$ will always address some protests but not all, as the following proposition shows. In other words, in equilibrium it cannot happen that $\pi = 1$ when there is no local media freedom.

Proposition 3. *If no local media freedom is allowed, a regime with $v \geq \frac{1}{2}$ will always choose a strictly positive π , but no regimes will choose $\pi = 1$ in equilibrium.*

Proof. First suppose that for a regime with $v \geq \frac{1}{2}$, there is an equilibrium in which $\pi = 0$. Then all bureaucrats will choose $e = 1$. But if $e = 1$ for all communities, then some communities will protest given $v > \frac{1}{2}$ and the regime will choose to address some of the protests when it comes to the regime's move in the extensive game. To see this, suppose all communities with $t \leq \theta$ protest. Then $\hat{\pi} = \frac{2v-1}{2v\theta} < 1$ or $\hat{\pi} = \frac{2v-1}{2v\theta} \geq 1$. Suppose $\hat{\pi} \geq 1$, then all communities will protest and $\theta = 1$ and $\hat{\pi} = \frac{2v-1}{2v} < 1$. This is a contradiction, hence $\hat{\pi} < 1$. If $\hat{\pi} = \frac{2v-1}{2v\theta} < 1$, in order for communities with $t < \theta$ to be willing to protest, $\theta = e\hat{\pi} = 1 \cdot \frac{2v-1}{2v\theta}$, which means $\theta = \sqrt{\frac{2v-1}{2v}} < 1$. And we can verify that in this case $0 < \hat{\pi} < 1$, which means $\pi = \hat{\pi}$, and it contradicts with our assumption that $\pi = 0$. Therefore in equilibrium it cannot be that $\pi = 0$.

Next suppose that for a regime with $v \geq \frac{1}{2}$, there is an equilibrium in which $\pi = 1$. If $\pi = 1$, then all bureaucrats will choose $e = 0$ given that the punishment scalar $\alpha \geq 1$. And then no community will bother to protest. But this cannot be a subgame perfect equilibrium. Suppose the bureaucrats deviate and choose $e > 0$, because $\pi = 1$ all communities with $t < e$ will protest. And then $\hat{\pi} = \frac{ve^2 - (1-v)}{2ve^2} = \frac{1}{2} - \frac{1-v}{2ve^2} < 1$. This means if the bureaucrats choose a positive extraction, the proportion of protests that the regime will address has to be smaller than one, and so as long as the level of extraction is small enough, it will be worthwhile for the bureaucrats to do so. \square

Proposition 1 has pinned down the behavior of the regime, the bureaucrats, and the communities if the regime chooses to have no local media freedom. With Proposition 2, we know that $0 < \pi = \frac{v \int_0^1 e_j g_j d_j - (1-v)}{2v \int_0^1 e_j a_j d_j} < 1$ for regimes with $v \geq \frac{1}{2}$ if they choose not to have local media freedom. In the rest of the subsection we will consider the players' strategies when $v \geq \frac{1}{2}$.

Because $0 < \pi < 1$ when $v \geq \frac{1}{2}$, from equation 3.5 we know

$$E(\pi) = \frac{v \int_0^1 e_j g_j d_j - (1-v)}{2v \int_0^1 e_j^2 E(\pi) d_j},$$

hence

$$E^2(\pi) = \frac{v \int_0^1 e_j^2 d_j - (1-v)}{2v \int_0^1 e_j^2 d_j}. \quad (3.7)$$

Therefore

$$\begin{aligned} U_i^B &= e_i - \alpha e_i \cdot \text{Prob}(\text{punishment}|e_i) \\ &= e_i - \alpha e_i^2 E^2(\pi) \\ &= e_i - \alpha e_i^2 \cdot \frac{v \int_0^1 e_j^2 d_j - (1-v)}{2v \int_0^1 e_j^2 d_j} \end{aligned} \quad (3.8)$$

Given there is a unit mass of continuous communities and bureaucrats, a single bureaucrat's extraction and his community's protest decision will not affect the regime's choice with regards to the proportion of protests to address. Therefore from the perspective of a bureaucrat i , $E(\pi)$ can be taken as given. Therefore the first order condition of the bureaucrat's utility function is

$$\frac{\partial U_i^B}{\partial e_i} = 1 - 2\alpha e_i \cdot E(\pi),$$

hence the optimal e_i is

$$e_i^* = \frac{v \int_0^1 e_j^2 dj}{\alpha(v \int_0^1 e_j^2 dj - (1-v))}. \quad (3.9)$$

In equilibrium every bureaucrat's conjecture about other bureaucrats' extractions is correct, hence $e_j = e_j^* = e_i^*$. With this fact in hand, we can substitute e^* for the e_i and e_j in equation 3.9, and obtain

$$2\alpha v e^{*2} - 2v e^* - 2\alpha(1-v) = 0.$$

Therefore the equilibrium extraction when there is *no* media freedom to report local protests, e_n^* , is

$$e_n^* = \min\left\{\frac{v + \sqrt{v^2 + 4\alpha^2 v(1-v)}}{2\alpha v}, 1\right\}. \quad (3.10)$$

And the regime's equilibrium utility if it does not allow media the freedom to report local protests, U_n^R , is

$$\begin{aligned} U_n^R &= (1 - e_n^{*2} \pi^2) \cdot (1 - v e_n^{*2} (1 - \pi^2)) \\ &= \frac{1}{4} \left(2 + v + \frac{1}{v} - 2(1+v)e_n^{*2} + v e_n^{*4} \right) \end{aligned} \quad (3.11)$$

3.3.2 Local Media Freedom

Now we consider the case that the media is given the green light to report local protests, which is much easier to analyze. Let t_{m1} be the maximum type that will protest in the first wave under the extraction e_i , then due to the continuity of types and utility functions a community with transaction cost t_{m1} must be indifferent between protesting in the first wave or the second wave. That is,

$$\delta(e_i - kt_{m1}) = e_i - t_{m1},$$

and so

$$t_{m1} = \frac{e_i(1 - \delta)}{1 - \delta k}. \quad (3.12)$$

It is easy to verify that indeed all communities with $t < t_{m1}$ will all protest in the first wave and those with $t > t_{m1}$ will not protest in the first wave.

The maximum type t_{m2} that will protest in the second wave when the extraction is e_i , after it has learned useful information from media reports about the first wave protests and so has a reduced transaction cost, must be indifferent from protesting or not protesting. That is,

$$e_i - kt_{m2} = 0,$$

and so

$$t_{m2} = \frac{e_i}{k}. \quad (3.13)$$

This means that given an extraction level e_i , those communities with transaction costs below $t_{m1} = \frac{e_i(1-\delta)}{1-\delta k}$ will protest in the first wave, while those with transaction costs greater than t_{m1} but lower than $t_{m2} = \frac{e_i}{k}$ will protest in the second wave. Due to the continuity of community types in $[0, 1]$, there will always be protests in the first wave regardless of the amount of extraction other bureaucrats have chosen (as long as not all bureaucrats choose zero extraction). Therefore the probability that

a community will protest (in either the first wave or the second wave) will always be $\frac{e_i}{k}$, given the uniform distribution of community types. Since a bureaucrat whose community protests will be punished for sure when the media is free, a bureaucrat's utility function, then, is

$$U_i^B = e_i - \alpha e_i \frac{e_i}{k}. \quad (3.14)$$

Simply by applying the first order condition, we know that the equilibrium extraction of all communities when the media has the freedom to report on local protests is

$$e_f^* = \frac{k}{2\alpha}. \quad (3.15)$$

Since all bureaucrats are symmetric, all bureaucrats will choose this level of extraction under local media freedom.

Since all protests are compensated, all actionable grievances are addressed when there is local media freedom. The share of communities that will protest and need the regime to compensate is then $\frac{e_f^*}{k}$. The regime's utility, given it allows local media freedom, U_f^R , is then

$$\begin{aligned} U_f^R &= (1 - e_f^* \frac{e_f^*}{k}) \\ &= 1 - \frac{k}{4\alpha^2} \end{aligned} \quad (3.16)$$

It is obvious from equation 3.16 that the higher the regime's capacity to punish erring local officials, the higher the regime's utility if it allows media freedom in reporting local protests. The regime would also like to enlarge the size of k , the contagiousness of the protests, once it allows local media freedom. Both a higher punishment capacity and higher contagiousness of media reports of local protests serve the regime by scaring the local officials and reducing their extractions.

3.3.3 Regime's Choice

To see when will the regime choose to allow news media the freedom to report on local protests, we need to compare equation 3.11 and equation 3.16. The regime will choose local media freedom if

$$ve_n^{*4} - 2(1+v)e_n^{*2} - 2 + \frac{k}{\alpha} + v + \frac{1}{v} < 0.$$

The examination of this inequality with general α is very messy, except when $v \leq \frac{1}{2}$. So we will take two particular values of α : $\alpha = 1$ and $\alpha = 2$. We use $\alpha = 1$ to represent a case when the regime's capacity to punish the bureaucrat is low—the punishment (if the bureaucrat is punished) is only equal to what the bureaucrat has extracted, and use $\alpha = 2$ to represent the case when the regime has a strong capacity to punish local bureaucrats—a bureaucrat will be punished twice as severely as his extraction if the community under his jurisdiction protests against his extraction.

When $v \leq \frac{1}{2}$, $U_n^R = 1 - v$, and $U_f^R = 1 - \frac{k}{4\alpha^2}$. It is immediate that the regime will choose to allow local media freedom when $v > \frac{k}{4\alpha^2}$. When $\alpha = 1$, this means regimes with $\frac{k}{4} < v \leq \frac{1}{2}$ will choose local media freedom, and when $\alpha = 2$, regimes with $\frac{k}{16} < v \leq \frac{1}{2}$ will choose local media freedom. Therefore only regimes that highly secure will ban local media freedom. The higher the regime's punishment capacity, the more regimes will allow local media freedom.

Next we consider the case when $v > \frac{1}{2}$. Note when $\alpha = 1$, from equation 3.10 we will have a corner solution for e_n^* : $e_n^* = 1$, since the maximum e a bureaucrat can take is one. And $\pi = \frac{2v-1}{2v}$. Therefore $U_n^R = \frac{4v-1}{16v^3}$, which is a decreasing function of v , and hence has the supremum of $\frac{1}{2}$ (when $v = \frac{1}{2}$). But $U_f^R = 1 - \frac{k}{4}$ when $\alpha = 1$, which is always greater than $\frac{1}{2}$. Therefore when $\alpha = 1$ and $v > \frac{1}{2}$, the regime will always have a higher utility from allowing local media freedom.

If $\alpha = 2$, by inspecting equation 3.10 we know $e_n^* = 1$ when $v \leq \frac{2}{3}$, and the

analysis of the previous paragraph carries through, i.e., regimes with $\frac{1}{2} < v < \frac{2}{3}$ will have a higher utility from allowing local media freedom when $\alpha = 2$.

If $\alpha = 2$ and $v > \frac{2}{3}$, $e_n^* = \frac{v + \sqrt{v^2 + 16v(1-v)}}{4v} < 1$ and we need to compare $U_f^R = 1 - \frac{k}{4\alpha^2}$ with $U_n^R = \frac{1}{4}(2 + v + \frac{1}{v} - 2(1 + v)e_n^{*2} + ve_n^{*4})$. It can be shown that $U_f^R > U_n^R$ if $v > \frac{1}{120}(120 - 7k - \sqrt{240k - k^2})$, which is greater than $\frac{2}{3}$ for any $k \leq 1$; otherwise $U_f^R < U_n^R$.

It is straightforward to see that the level of equilibrium extraction will always be lower when the regime allows local media freedom than if it does not, i.e.,

$$\min\left\{\frac{v + \sqrt{v^2 + 4\alpha^2v(1-v)}}{2\alpha v}, 1\right\} > \frac{k}{2\alpha}, \forall k, \alpha.$$

In terms of the proportion of citizens that protest, there will always be a share of $e_f^*/k = \frac{1}{2\alpha}$ communities that protest when the local media is free. When there is no local media freedom, no protest will occur if $v \leq \frac{1}{2}$. If $v > \frac{1}{2}$ and $\alpha = 1$, the share of protesting communities will be equal to $e_n^* \cdot \pi = \frac{2v-1}{2v}$, which is lower than $\frac{1}{2\alpha} = \frac{1}{2}$ given $v > \frac{1}{2}$. When $\alpha = 2$ and $\frac{1}{2} < v \leq \frac{2}{3}$, the same result holds. When $\alpha = 2$ and $v > \frac{2}{3}$, calculations show that the share of protesting communities when there is no media freedom will be even higher than that when there is local media freedom.

The above discussion can be summarized in the following propositions.

Proposition 4. *Allowing local media freedom would always reduce the level of bureaucratic extraction. The incidence of local protests will be higher under local media freedom if the regime's vulnerability is lower than $\frac{2}{3}$, or if the capacity of the regime to punish local bureaucrats is relatively low (e.g., $\alpha = 1$). The frequency of protests can be lower under local media freedom if the regime's punishment capacity is very high (e.g., $\alpha = 2$) and the regime is highly vulnerable to potential national revolts (i.e., $v > \frac{2}{3}$).*

Proposition 5. *Regimes that are highly secure (i.e., $v < \frac{k}{4\alpha^2}$) would not allow local media freedom. Regimes highly vulnerable to potential national revolts (i.e., $v > \frac{1}{120}(120 - 7k - \sqrt{240k - k^2})$) will always allow media freedom regardless. All other regimes will allow local media freedom unless the regimes' capacity to punish local bureaucrats is very high (i.e., $\alpha = 2$) and at the same time the regime's vulnerability is between $\frac{2}{3}$ and $\frac{1}{120}(120 - 7k - \sqrt{240k - k^2})$.*

In other words, by reducing the transaction cost of potential protesters, local media freedom generally increases the frequency of local protests, and always reduces the extent of bureaucratic extraction. Highly secure regimes will not allow local media freedom, however, as they can simply ignore local protests. But highly vulnerable regimes will allow media freedom so that they can reduce the level of local extraction and reduce actionable grievances as much as possible. Other regimes will also generally benefit from allowing the media the freedom to report local protests since local media freedom reduces the extent of bureaucratic extraction, unless the regime has a combination of extremely high punishment capacity and being relatively (but not extremely) vulnerable, in which case the trade-off is such that the regime would not allow local media freedom.

3.4 Local Media Freedom, the Internet, and China's Authoritarian Resilience

Ever since the Tiananmen crisis in 1989, the Chinese government has been haunted by the fear of being overthrown. Initially many observers expected the regime to soon fall to the "third wave" of democratization. But instead the regime has consolidated its power and met many challenges in the ensuing years with broad effectiveness (Nathan 2003; Blecher 2009), partly due to the roaring economy that has brought unprecedented prosperity to many of the country's urban residents, and partly due to the regime's resilience and adaption to changing social conditions

(Nathan 2003; Shambaugh 2008). Such adaptive measures have included co-opting various social groups, institutionalization of personnel management and leadership succession, modernization of propaganda work, etc. More recently, however, mounting social inequality and unemployment, abusive government officials, rising citizen awareness for rights and demands for freedom, and economic hardships brought about by the international financial crisis have made the regime increasingly fragile domestically even though it appears more and more powerful internationally (Shirk 2007). Hundreds of dissidents even became bold enough as to openly and collectively call for the end of the one party rule in a document called “Charter 08” (Link 2009). Some observers are even asking “[I]s 2009 the year that China’s government collapses? Or is it just another year in which there will be a crackdown of a mass uprising? Because those may be the only two options” (Drezner 2009).

In light of our model, the current situation means that the regime’s vulnerability v to potential national revolt has increased to such an extent that existing measures of adaptation have proven inadequate to solve prevalent social grievances. It is in this background that the Chinese government is now increasingly relying on the media and the Internet to check on its many government bureaucrats and alleviate social grievances, particularly those at the local levels.

To be sure, both the traditional media and the Internet are still heavily censored in China. The regime continues to use and expand on one of the largest and most sophisticated online filtering systems in the world (MacKinnon 2008; Fallows 2008). But so long as the online discussions do not directly challenge the central leadership or openly call for abolishing of the current political system, there is significant space for criticism of government policies and local officials as well as citizen journalism (Chung 2008; Esarey and Xiao 2008). As the number of China’s Internet users (netizens) surpasses 300 million, with 80 percent of them relying on the Internet rather than traditional media for news and information and over 40 percent having a

web log or personal space (Zhu, Shan and Hu 2009), the Internet has become China's closest form of public sphere. As a saying in China goes, a piece of news is not news unless it generates online comments.

China's online speech and protests concentrate in three avenues: forums/bulletin board systems, web logs/personal spaces, and comments following news posts (Chung 2008; Zhu, Shan and Hu 2009). News about a mass incident or other important events would literally collect millions of hits and comments across the Web (Dai, Guo, Ji and Huang 2009; Zhu, Shan and Hu 2009). As an observer notes, in China "a single blog can start a prairie fire" (Kristof 2006), and hardly a day would go by without heated debates about certain social events on the Internet. The Chinese leadership is very responsive to online public opinion on local affairs. The State Council, China's cabinet, has a special office devoted to monitoring "Internet incidents" and collecting online discussions of current events. There are cases in which the government appears to have been too responsive to media coverage and online opinions that court trials are determined not by legal principles but by public outrages (Liebman 2005). In the following we will briefly discuss some prominent Internet incidents to show how China's vocal Internet users and online vigilantes have provided a check on the corruption and incompetence of government officials, particularly at the local level.

- *The Sun Zhigang case*: This is one of the earliest and most prominent cases of how online popular outcry led to the change of a government policy. Sun Zhigang was a graphic designer working in Guangzhou City. In March 2003, he was beaten to death in the city's Custody and Repatriation Center after being taken into police custody because he did not carry with him the temporary resident card and was suspected as an illegal migrant. The news was first reported by a local newspaper, and immediately generated an online uproar. After the story was posted on Sina.com, one of China's leading web portals, it generated

4,000 comments within two hours (Chung 2008). Months of online frenzy on the incident and petitions by legal scholars not only led to imprisonment of several people responsible for the death of Sun and one execution, but also the abolishing of the migrant permit system, on the basis of which Sun was taken into custody.

- *The Xiamen Paraxylene Project*: The city of Xiamen, a seaside metropolis, planned to build a huge chemical plant to manufacture para xylene, a petrochemical used to make synthetic fabrics. In the spring of 2007, a well known blogger named Lian Yue started an online campaign to warn citizens of the environmental danger of the plant to the seaside city and called for the government to stop the project. Partly due to Lian's efforts, cell phone text messages about the issue started circulating among about one million local residents, and a two-day demonstration involving about 10,000 people occurred, which eventually forced the government to halt the project, pending further environmental impact studies (Esarey and Xiao 2008).
- *Official overseas trips*: In November 2008 a netizen anonymously posted in an online forum a series of travel expense reports and receipts that were claimed to have been found on a Shanghai subway. According to the documents, local officials in Wenzhou and Xinyu had used public money for sightseeing tours of the United States and Canada including Las Vegas and the Niagara Falls, both disguised as "study trips". Amid the public outcry, two officials were fired and several others were given disciplinary warnings. This incident also led other netizens to expose similar overseas tours by local officials, with the latest one being a trip taken by several judges in the city of Guangzhou.
- *The Zhou Jiugeng incident*: Zhou Jiugeng was a real estate management official

in Nanjing. In December 2008 a photo was posted online showing him wearing a Vacheron Constantin, a Swiss luxurious watch, and smoking Nanjing 95 Imperial cigarettes. An entry-level Constantin watch costs at least 100,000 yuan (\$14,600) in China while a small pack of Nanjing 95 Imperial costs 150 yuan. Later Zhou was also found to drive a Cadillac car to work. This flamboyant lifestyle for a public servant earned Zhou newspaper headlines and condemnations in over 4,600 blogs (Tan 2008). Facing the mounting online exposure, authorities promptly launched an investigation of Zhou's finances and removed him from his post within a week.

- *Hidden Cat*: A 24-year-old prisoner named Li Qiaoming died in Jinning, Yunnan Province, from a severe brain injury four days after being sent to the hospital in February 2009. Local police claimed that the injury occurred when Li bumped into a wall while playing a hide-and-catch game called "hidden cat" with other prisoners. The official explanation of the cause of the death was rejected by Li's family, and drew widespread online mockery and denunciations. In an effort to quench the Internet outcry, the authorities organized a team of netizens to look into the matter, but the team was quickly discredited on the Internet as several members seemed to have former official connections. In the end, it was revealed that Li bumped into the wall after being beaten by another prisoner, and the two negligent prison cops were detained and charged.

Online exposures and uproars like the above fill the Chinese Internet all year round, and officials at all levels have been warned to be prepared for Internet monitoring and censure (Dai et al. 2009). These incidents fit our model not only because the exposure of one overseas sightseeing trip triggers the exposure of another similar trip, but more importantly, exposures of government corruption and the ensuing punishment of involved officials have made it popular to resist misbehaving officials,

regardless of the specific nature of the misbehavior. Some observers have commented that the existence of relatively free Internet monitoring on local government officials in China is simply because of technological impossibility of controlling a big and complex Web, rather than because the Chinese government allows it, and that the broadband is digging the Communist Party's grave (Kristof 2005). Even though China's Internet filtering Great Firewall can indeed be porous at times, that mockeries and denunciations of local officials are allowed to exist ubiquitously while attacks on the central leadership or the overall political system are rarely tolerated shows that the former is a deliberate choice of the government, which can be understood in the framework of our model.

3.5 Conclusion

The previous literature on media in authoritarian countries have argued that allowing the media to report social grievances and protests will trigger protest cascades and thus endanger the authoritarian regime. While reports of social unrest at the national level are indeed destabilizing and feared by authoritarian rulers, the conventional reasoning should go one step further when it comes to protests at the local level. Reports of such protests may indeed incite more protests in elsewhere, but precisely because of this, local officials may be forced to be less corruptive and extractive, particularly when each incidence of social unrest will lead to punishment of local officials by the central government. Our model has shown that except for regimes highly secure from the threats of potential national revolt, authoritarian regimes can generally benefit from allowing media freedom to report on local protests. In the absence of elections, the media, particularly the Internet, can become a safety valve for relieving social anger and a monitoring device checking on official misconducts.

It is important to note that in our model the media's freedom is constrained at the local level, i.e., it can only report freely on local affairs and local protests. This

may have given local media freedom more benefits for authoritarian regimes than it does in reality. In the real world local media freedom will have spillovers—journalists given the freedom to monitor local officials will sometimes write on national affairs, or a story of ostensibly local nature may really have implications about national politics. Moreover, allowing local media freedom will induce citizens to demand media freedom at the national level, which can often be seen on the Chinese Internet. Incorporating these spillover effects of local media freedom will enable us to construct a more realistic model, which will be left for future research.

Our model also assumes that the punishment a regime metes out for corrupt local officials is a fixed capacity rather than a choice variable, and that it is costless for the regime to punish local bureaucrats. Relaxing either assumption will lead to a richer model. For example, there may be different combinations of degrees of media freedom and degrees of severity of punishment, depending on the cost function of punishing local bureaucrats. Extending the current model on these lines will also be left for future research.

But even with the current simple game-theoretic model, we have shown that media freedom in reporting local affairs is not necessarily detrimental to autocratic regimes. In equilibrium, such a freedom increases the frequency of citizen protests, but reduces the corruption level of local governments. The conventional wisdom with regards to the danger of media-induced protest cascades, then, is incomplete if protests are targeted at local officials, and authoritarian regimes do sometimes have an incentive to allow some local media freedom. Chinese government's tolerance in the last couple of years of more media freedom in reporting local corruption and local unrests does not reflect the regime's loss of control, but rather a deliberate strategy that it adopts to maintain power in the face of mounting political threats.

Central Rhetoric and Local Reform in China

4.1 Introduction

Many reform measures during China's economic and social transformation in the last three decades were initiated or protected by local officials without the central government's prior authorization. The central government may endorse such reforms ex post or even popularize them to the entire country, but they often contradicted the central government's regulations when they were first put forward. As will be discussed in more detail later, state enterprise privatization, agricultural de-collectivization, and township-level direct election are prominent examples of this phenomenon. This immediately leads to two puzzles. The first one is straightforward: how have local governments been able to break through policy restrictions of the central government in a unitary and authoritarian political system, especially when local officials' career prospects are at the center's mercy? Why does the central government allow local breaches of its policies to happen?

The second puzzle, which requires more narration, is the following: while the Chinese central government has accepted and promoted reform in the last 30 years, in-

cluding permitting unauthorized local reforms, the official discourse about the country's political and economic developments, whether in leaders' speeches or newspaper editorials, is often full of conservative ideological rhetoric that is not only unfavorable to reform, but sometimes sharply contradicts with reality. For example, by 2005 the number of state enterprises in China had fallen to about 6% of all enterprises, while those explicitly registered as private enterprises had increased to 61%; the state sector's share in industrial output had fallen to 15.2%, and its nonagricultural employment had declined to 13.1% (State Council Economic Census Group 2005; National Bureau of Statistics 2006)¹. Politically, the Communist Party of China has also tried to co-opt a broad range of social groups, and now even private entrepreneurs can join the Party. Despite this scale of capitalistic transformation, President Hu Jintao iterated as usual in a December 2008 speech marking the 30th anniversary of the start of the reform that China will “unwaveringly uphold the Four Cardinal Principles” (i.e., the socialist path, people's democratic dictatorship, leadership of the Communist Party, and Marxism-Leninism-Mao Zedong Thought), and “will never embark on the evil road of changing the flag, but will unswervingly adhere to the path of socialism with Chinese characteristics”². By one account, Hu used the term “socialism” close to 160 times in his speech, “socialism with Chinese characteristics” close to 60 times, and “Marx” over 30 times³. Why does the Chinese government

¹ The number of state enterprises reported here includes those registered as “state-owned enterprises”, “state joint-ownership enterprises”, and “state sole-proprietary firms” in the 2005 national economic census of the State Council Economic Census Group. Besides state enterprises and explicitly private enterprises, types of enterprises in the survey include other joint-ownership firms, shareholding enterprises, collective enterprises, and foreign-invested enterprises (FIEs). Some of these enterprises have mixed ownership and may be controlled by the state, but many (particularly the explicitly collective enterprises) are de-facto private enterprises. Even some state enterprises that had been privatized still retain their original registration status (Haggard and Huang 2008). It should be noted that despite the growth of the number of private enterprises, they still face considerable policy constraint, especially in financing (Huang 2008).

² The translation is by the author. The full text of the speech is available at <http://politics.people.com.cn/GB/1024/8543584.html> (accessed December 22, 2008).

³ “Hu Bows to the Left in 30th Anniversary Speech”, by David Bandurski, China Media Project,

still stick to orthodox socialist rhetoric when, after three decades of reform, there is a near social consensus that the reform has no turning-back? Why does it implement a broadly-participated stock market, which by now has over 100 million accounts⁴, and call it Marxism (Kluver 1996)?

The seemingly stubborn insistence on orthodoxy and dogmatism is reflected not only in the content of the official discourse, but also in its style, as reflected in the starchy reportage of some foremost state media programs in China. Media commercialization—the cutting of state subsidies and intense market competition—has bred very market-oriented print and broadcast media outlets in the country, which produce lively coverage of social and economic issues as well as human interest stories to meet audience needs and generate revenues, even though political discussions are still censored (Lynch 1999; Polunbaum 2008; Zhao 1998). Against this sea change of the media sector, however, there exist some notable anomalies: the reportage of the most preeminent official newspaper, People’s Daily, and the country’s prime-time television news program, China Central Television (CCTV)’s 7 PM news program “Xinwen Lianbo” (Network News), had remained notoriously formalistic, ritual, and ideological.

Consider the “Xinwen Lianbo”, which remains the most watched television news program in China despite the considerable decline of its viewership in recent years⁵. In contrast to the tremendous changes in the society that the news program is supposed to cover, and even in many other programs of the CCTV itself, the content, the University of Hong Kong, December 20, 2008, <http://cmp.hku.hk/2008/12/20/1447/> (accessed on December 21, 2008).

⁴ The translation is by the author. The full text of the speech is available at <http://politics.people.com.cn/GB/1024/8543584.html> (accessed on December 22, 2008).

⁵ A 2006 survey in 35 major cities in China showed that the program enjoyed a 5.6% viewership share. If the share is representative of the whole country, roughly 72 million people watch the program each day. See http://news.xinhuanet.com/newmedia/2006-06/15/content_4701917_1.htm (accessed on December 24, 2008). Another indication of its viewership size is that the 15 seconds slot for commercials immediately after the program is by far the most expensive television commercial slot in China.

language, and format of “Xinwen Lianbo” have remained relatively unchanged. Its coverage have invariably focused on Party leaders having meetings, attending ceremonies, receiving foreign guests, or touring local areas, often without reporting the substance of those activities. The use of stilted, formulaic, and ideological prose glorifying the government has made the program a constant target of mockery among ordinary viewers⁶. The strict rules on the sequence and lengths of the reports, and even the news anchors’ dress and hair styles stress continuity and stability of the program and what it represents (Guo and Huang 2006; Shi 2008). Why are rigid and dogmatic Party “eight-legged essays” (dang bagu), long opposed by Mao Zedong himself in one of his essays, well and alive in the reform era? Why would so many people watch a television program that is notoriously stilted and empty?

This paper shows that the two seemingly distinct puzzles are components of a game between China’s central leadership and local officials during the country’s gradualist reform; and we build a simple, heuristic model to analyze the game. In a nutshell, the paper argues that the existence of a reformist faction in the central leadership (or the possibility of the center being reformist overall) has enabled local officials to carry out reforms. The reformist central leadership, however, does not want the reform to go too fast, either to ensure an orderly and gradual social transition, or to protect themselves from potential conservative attacks. So it often imitates the rhetoric of a conservative center, both in general and abstract discourses and sometimes in specific policy articulations. It also maintains some high profile dogmatic newspapers and television news programs, since not only the content of discourse, but the medium of discourse can serve as a message. The use of similar rhetoric by different types of central leadership makes it difficult for local govern-

⁶ A widely circulated joke deriding the language of “Xinwen Lianbo” goes as follows: “No opening (of meetings) is not solemn, and no closing is not victorious; no speech is not important, and no applause is not enthusiastic; no leader is not attentive, and no visit is not cordial;...” The full text can be read at <http://www.wangxiaofeng.net/?p=1731> (accessed on December 24, 2008).

ments to know exactly if the center is reformist or conservative, constrains the pace and scope of policy liberalization that local officials could undertake at a time, and often forces them to shield their reform measures from publicity or cover them with labels that conform to existing central decrees. Central rhetoric is not always pooled, since sometimes the reformist center feels compelled to separate its proclamations from those of the conservative center, but the pooling equilibrium has characterized a great part of Chinese reform so far. Although not explicitly discussed in this paper, central rhetoric can have similar effects on the society at large, not just local officials.

While addressing the two aforementioned puzzles, our model also helps explain the nature of the gradualist reform in China, which has distinguished China's reform from that of countries of the former Soviet bloc (Naughton 2007, Roland 2000; but see Sachs and Woo 2000) and sparked debates about the relative virtues of "big bang" versus "gradualist" modes of reform. By 2008, the reform era of the People's Republic of China (1978-2008) has been longer than its pre-reform period (1949-1978), and the reform is not over. An important but rarely explicitly asked question is why it takes China more time departing from the socialist system than it was governed under that system?

A standard answer is that China's reform does not have a blue print and is heavily experimental and exploratory in nature, as the widely cited saying "crossing the river by feeling the stones" indicates. While the policy-exploration explanation has many merits, it is more suited for the 1980s and early 1990s, when China first started reform and its eventual goal was not distinct, than the period afterwards, when the goal of economic reform has arguably become very clear—establishing a competitive market economy (Naughton 2007; Wu 2005). Even in the political dimension, there is an implicit social consensus that political reform and democracy are inevitable⁷.

⁷ As president Hu Jintao acknowledged when meeting with the US President George W. Bush on April 20, 2006, "we've always believed in China that if there is no democracy, there will be

But China's reform can still be characterized as "gradualism" in general, and so demands an explanation beyond "crossing the river by feeling the stones".

This paper provides a complementary answer: China's gradualism has as much to do with politics (both between the reformist center and conservative center and between the center and local governments), as with policy exploration per se, particularly when it comes to reforms initiated at the local level. From this perspective, while China's reform appears to be "crossing the river by feeling the stones" in a pure policy perspective, in the political sense central and local reformers are actually playing the time-honored stratagem of deception—"crossing the sea by deceiving the sky" (man tian guo hai), with the central reformers engaging in conservative rhetoric, and local reformers making guarded or concealed reform.

This paper not only contributes to our understanding of the reform in China, but also post-communist transitions in general. Early works on post-communist reform, whether those following the "J-Curve" tradition (Przeworski 1991) or the "partial reform equilibrium" argument (Hellman 1998), look at liberalization as decisions solely made by central governments. The advice this literature gives to overcome oppositions to reform is usually to insulate the state (often the technocrats) from the interferences of interest groups or electoral pressures. Only recently have scholars paid attention to the role of local governments in making reform. Malesky (2008) shows that foreign direct investment increases Vietnamese local governments' bargaining power vis--vis the central government in conducting autonomous reform experiments. Jones-Luong (2003) notes that in Kazakhstan local governments can enjoy de facto policy-making autonomy due to the weakness of the central state. China's experience shows, however, that local governments can push for reform even when the central state is strong, and without relying on external resources such as foreign investment.

no modernization." See White House news release (accessed on May 15, 2006), <http://www.whitehouse.gov/news/releases/2006/04/20060420-1.html>.

In fact, reformers in the central government can utilize local officials' initiatives to overcome oppositions to reform.

At the same time, our theory differs from much of the decentralization thesis such as the "market-preserving federalism" argument (Montinola, Qian and Weingast 1995), which has credited institutionalized authority allocation favoring local governments as the driving force of China's reform performance. We argue that China's transformation is not due to such institutional arrangements; on the contrary, local governments are still subject to the control of the central leadership, which can push and pull the former to manage the pace and direction of reform. Administrative and fiscal decentralization are not the same as political decentralization, let alone federalism (Cai and Treisman 2006; Rodden 2004). Local policy autonomy in authoritarian countries is often a result of political games rather than formal institutional provisions.

The following section discusses related literatures. Next we present and analyze the central-local reform game, which incorporates several stylized features of Chinese politics relevant to our research questions. Then we discuss some important empirical phenomena and examples in Chinese reform as evidences consistent with our theory. The last section concludes the paper and suggests a direction of future research.

4.2 Related Literature

This paper addresses two distinct streams of literature. The first and smaller literature is about the persistence and prevalence of conservative discourse and rhetoric in Chinese politics, which has been described as "doing things with words" (Schoenhals 1992) and a "language game" (Link 1992). One obvious potential explanation is the government's continued need for propaganda (Brady 2007; Lynch 1999). But citizens in authoritarian countries often know that their governments are propagandizing and discount the messages (Geddes and Zaller 1989). Even when television viewers re-

gard certain news programs as trustworthy, they often do not pay attention to such news reports therein or forget their content soon after watching them if the style of reporting is propagandistic and old fashioned, as surveys of Russian television viewers have shown (Mickiewicz 2006). Since the official socialist discourse and rhetoric have been rendered largely obsolete in social life and have been widely received with cynicism and mockery (Link 1992), it is difficult to argue that outdated dogmatic rhetoric is used only or even mainly for ideological indoctrination.

A more applicable explanation is the Chinese government's concerns for legitimacy. During the reform process the country has introduced one policy after another that had been renounced as immoral in the past, thus forcing itself to invent various new and vague concepts such as "Deng Xiaoping Theory" and "Three Representations" to attach to the Marxism-Leninism-Mao Zedong Thought orthodoxy and accommodate the social changes. But as a regime that had justified its rule on a communist revolutionary narrative for decades, divesting itself of socialist ideology altogether would amount to rejecting the Party's *raison d'être* (Creek 2006; Kluver 1996; Shambaugh 2008). Pressures from the more traditional, left segment of the Party and the need to maintain continuity of policies and unity of the leadership in appearance have contributed to this consideration (Ding 1994; Misra 1998; Solinger 1993, chapter two).

This explanation no doubt has important and valid points. But if legitimacy of the Party rule is the only concern, the Party can just pay some lip service to socialist slogans, hoping that with the passing of time its ideological legacy and burden can fade away, particularly because the Party's current legitimacy is largely dependent on delivering economic growth rather than serving as a revolutionary vanguard party. China, however, devotes enormous resources on the daily basis for the production and reproduction of official discourse and various ideological campaigns (Holbig 2008; Shambaugh 2008), far more proactive than a mere defensive lip service requires.

Therefore the persistence and prevalence of obsolete ideological rhetoric is not merely out of consideration of the legitimacy of Party rule. This paper argues that, an important use of this rhetoric is that it serves as a powerful admonition to the society about who is in control, so that any local initiatives and societal demands for reform have to be cautious. Maintaining some staple dogmatic newspapers and news programs and requiring local television stations to relay “Xinwen Lianbo” at 7 PM each day serves the same function: even though viewers and readers may not pay attention to any specific news reports therein, their conspicuous existence delivers one unmistakable message: the Party is still in charge. This is similar to candidates in electoral competitions signaling their quality by publicly “burning money” with expensive but information-poor political advertisements (Prat 2006).

The second and much larger literature that this paper speaks to deals with how reforms are conducted in China, especially local reforms. One influential argument about China’s reform is the “market preserving federalism” thesis (Montinola, Qian and Weingast 1995; Weingast 1995), according to which China is a de facto, although not de jure, federal state (see also Zheng 2007). Local reform policies can emerge because local governments enjoy the institutional freedom over their activities: “[e]xperimentation, learning, and adaptation all follow from the inception of local political freedom over the economy” (Montinola, Qian and Weingast 1995, p. 78).

The “market preserving federalism” argument, though not without insights, has some major drawbacks. According to Weingast (1995), a crucial condition of the market-preserving federalism is that the authorities allocated to sub-national governments must be institutionalized or at least durable, and when the central state transgresses against one local constituency, there is a coordination device such as a political constitution with stipulations on the rights of citizens (and by extension, sub-national governments) that lead all local constituencies to cooperate and chal-

lunge the central state together. But there are no such democratic constitutional coordination devices to guide local populations in the one-party state of China. More importantly, China's decentralization is not institutionalized or firmly durable. China indeed has devolved considerable fiscal and administrative powers to local governments, particularly in the 1980s, but the central authority has never let loose the control of the hierarchy of authority and careers of local officials (Landry 2008; Shirk 1993; Solnick 1996), and it has always retained the power to change central-provincial relations as it sees fit. For example, the central government has utilized personnel management power to control excessive local investment and fend off centrifugal challenges risen from trade openness (Huang 1996; Sheng 2007); and it has reconfigured the sharing arrangement of several tax revenues and tax rebate responsibilities between itself and local governments to its own favor even after the 1994 fiscal reform has tried to stabilize central-provincial fiscal relations (Yang 2006). If anything, what is institutionalized through party discipline, control of the military, or even the constitution is centralism. In fact, China's fiscal decentralization might have worked only because it comes with political centralization and control (Blanchard and Shleifer 2001).

Related to the federalism/decentralization thesis is the cross-regional competition argument. When regions compete for economic development or market shares, local governments are forced to liberalize prices in order to avoid resources flowing to other regions that have liberalized (Yang 1997), or privatize state enterprises in order to boost managerial incentives (Li, Li and Zhang 2000). While local competition certainly played a part in China's reform process, both Yang (1997) and Li, Li and Zhang (2000) take account of only local incentives for economic efficiency, and not the central government's preferences. They simply assume that local reforms will always be accepted by the center without punishment. But the center has political and ideological concerns besides economic considerations, and so whether it will

accommodate local initiatives or not depends on the type of the center and the nature of the local reform. As Chung (1995) notes, the center will be less tolerant of local discretions when policies are encompassing or of political, ideological or administrative nature rather than about resource allocations. Many local reforms including those examined in this paper are not only encompassing, non-allocative, but often illegal in the beginning. Yang (1997) and Li, Li and Zhang (2000)'s arguments, therefore, provide a (local) economic logic but not political logic for reform.

Some other studies have stressed the interactions and bargaining between the central and local governments in explaining China's local reform. Fewsmith (1994), Yang (1996a), and Zweig (1997), for example, contain vivid descriptions of interactions between government officials of various levels over agricultural reforms. Such interactions, however, often occurred after local governments had already initiated the new policies. Similarly, the "fragmented authoritarianism" argument that has stressed bargaining and persuasion in the Chinese policy making process (Lieberthal and Oksenberg 1988), and accounts about local lobbying (Zweig 2002) or policy disputes within the central leadership and associated scholars (Baum 1994; Fewsmith 1994), cannot explain how some of the reform measures first emerged without explicit involvement of the central government.

It is also widely known that Chinese leadership often experiment new policies in some localities before promoting them to the entire country. Examples include the policy to give state enterprises enhanced operational autonomy and the decision to establish Special Economic Zones in the early years of the reform. But many other reform policies emerged without first being approved by the center as experiments. Of course, once reforms by local governments had been made and turned out to be successful, they may be rationalized and presented by the central government as experiments. But this does not mean that these reforms were initiated by the center as experiments, or they had open backers in the center all along. In fact, often it is

local resisters of a new policy that seek conservative backers in the center, after the central government has decided to promote it nationwide (Chung 2000).

So what has enabled local governments to reform? Works on power competition within the central leadership may shed some light. Shirk (1993) argues that China's top leaders have a "reciprocal accountability" relationship with their Central Committee selectorate, many of whom are provincial cadres. Thus policy makers competing for top central positions must play to the selectorate by promoting reform policies or particularistic contracting with provinces. Factions also play a role in our argument. Shirk's theory, however, does not deal directly with local reforms, which is our main concern, and has been disputed by Yang (1996*b*) who finds that provinces with more seats in the Central Committee actually obtain fewer financial favors from the center. In a more recent paper, Cai and Treisman (2006) argue that rival factions in the center sought to win competition by appointing their supporters to certain provinces to initiate new policies and demonstrate the effectiveness of such policies. While explicit backing of central leaders will certainly embolden local governments and may indeed be the reason behind some local reforms, our theory does not rely on it. More importantly, in many reforms such as those cited in this paper local officials do not have obvious patrons at the center; they in fact shield their reforms with much secrecy, apparently not trying to impress any central bosses as Cai and Treisman have argued. In fact, municipality or lower level officials that are often at the reform front are not appointed by the central authority, although they are ultimately controlled by the center. The theory in this paper is therefore more encompassing.

4.3 The Game of Rhetoric and Reform

In this section we first explain the basic parameters of the game, and then lay out the game procedure and solve for its equilibria. There are two players: a local government

and the central government (the center). The two-level government system is an abstraction of the multi-layer system in reality; no matter which specific level of sub-national government initiates a reform in China, ultimately the reform will be subject to the verdict of the center. Further, since China's central government inhibits lateral communication and coordination between local governments (Pye 1992; Zhu and Huang 2002), the local government can be treated as a singular player rather than being plural in number in this reform game with the center.

The center can be either reformist or conservative, and its type is private information, unknown to the local government. A natural interpretation of the center's type is that there are two factions in the central leadership, the reformist faction and the conservative faction, but the local government does not know for certain which faction is in the dominant position at a particular time or over a particular policy issue. Depending on which faction has the upper hand, the center is reformist or conservative in type. Factions in Chinese elite politics may be only loosely structured and fluid in membership over time and across policy issues, but their existence as well as the continuous conflicts and constant changes of relative power between them have been well documented (Baum 1994; Fewsmith 1994; Shih 2007). Another interpretation is that the center is relatively unified, but sometimes the leadership has reformist tendencies, and other times it has conservative tendencies. The local government does not know perfectly the center's current leaning. Regardless of the interpretation, what the assumption about the center's type captures is the uncertainty that a reforming local government has about whether its unauthorized reform will be accepted by the center or not.

To be sure, in reality some central leaders' preferences may be well known, but the aggregation of central preferences over a particular policy and the relative power between different factions (when they exist) is a different matter. Some local officials may have contacts in the center, but this does not mean all local officials are always

well informed about the inner situations there. Policies may also serve as instruments of power competition, and so the risk that a “wrong” policy initiative can be picked up as a target for political attacks also will propel local governments to be cautious.

There are three levels of reform that can be taken, high (H), medium (M), and low (L). High reform refers to open and uncompromised departures from existing policies. Low reform involves making minimal changes with the current system. The medium level is something in between, i.e., moderate or disguised/concealed reform. As explained below, different players have different preference orderings about the levels of reform. A player receives a direct benefit of $2b$ for his favorite level of reform, b for the second preferred level, and zero from his least preferred reform level.

The conservative center would naturally prefer the reform to be as low as possible, either because the conservatives have a more orthodox socialist ideology or because they have significant vested interests in the old system. Hence this center’s preference ordering is $L \succ M \succ H$; i.e., it receives a benefit of $2b$ if the reform is L, b if M, and 0 if H.

The reformist center wants reform but would like the pace of reform to be controlled, either because the reformers have a concern for maintaining order and stability and fear of regime collapse if the reform goes too fast, or they are fearful of attacks from the conservatives⁸. Therefore we assume this center prefers M the most. Between H and L we assume it prefers H. This is because, as intelligent political players, reformist leaders know that moderate reforms will accumulate into a large transformation, so from their preferring M to L it can be inferred that they also prefer H to L—they just want the reform process to be gradual and controlled. This is essentially the same assumption as that in Przeworski’s pioneering study of post-communist democratization and reform (1991, pp. 62-64), where he argues that

⁸ In this simple model we abstract away from considerations of reformist-conservative interactions in the center, but use the reduced form assumption that the reformist faction has incorporated potential conservative attacks into its preference.

liberalizers (equivalent to the reformist center here) will adopt broadened dictatorship if they prefer democratic transition to status quo dictatorship.

The local government has yet different preferences. While China is a large country and local officials can differ with each other greatly in terms of ideological persuasions and benefits from particular reforms, we model the emergence of local reforms rather than the diversity of local behaviors in this paper, and so has a very reform-minded local government as a player in the game; i.e., its preference ordering is $H \succ M \succ L$. Reform-minded officials abound in China, given the significant changes in the incentive structure of Chinese local bureaucracy in the reform era. The sharing of fiscal revenues and the need to self-finance local expenditures following fiscal decentralization have given local governments a tremendous motivation to support local economic development and build up their own revenue basis (Zhang 1999; Jin, Qian and Weingast 2005). Local development also provides officials or their family members more opportunities to participate in business activities or rent seeking (Li 1998), and helps in career promotions (Li and Zhou 2005; Bo 2002), which is reasonable for an era with economic growth as the top national priority. Even if they also have concerns for socialist ideology and regime/social stability in China, each local leader has incentive to free ride on other regions' restraints in reform in assuring that China as a whole remains a "socialist" country or maintains national stability. Therefore local officials can often be more liberal-minded than central leaders.

Since the paper models local reforms, the level of reform is chosen by the local government. The center, on the other hand, can engage in rhetorical proclamations about the country's general directions and/or specific policy issues. Such rhetoric conveys signals about the center's type, although the two types of center may choose the same proclamations, in which case the signals from the two types of the center are "pooled" and the local government cannot learn precisely the type of the current center. The center's rhetoric comes in various shapes and hues. To simply

analysis, we assume there are only two kinds of rhetoric possible: the pro-reform rhetoric and the pro-status quo/anti-reform rhetoric. The center, for example, can tout the urgency of reform, as in Deng Xiaoping's famous slogan "be braver, go faster" (danzi da yidian, buzi kuai yidian) during his 1992 tour of south China, or stress the supremacy of maintaining social stability ("wending yadao yiqie"). These rhetoric/signals often appear in leaders' speeches and commentaries in Party newspapers, sometimes in an opaque and elliptical manner, and local governments are supposed to read between the lines to "comprehend the spirit of the center" (linghui zhongyang jingshen). For example, with the notion "socialism with Chinese characteristics", the center makes a pro-status quo proclamation if it emphasizes the "socialism" part of the phrase, and makes a pro-reform proclamation if it emphasizes "Chinese characteristics". For concreteness, we use "socialism" to represent the pro-status quo rhetoric in the model, and "Chinese characteristics" the pro-reform rhetoric. Rhetorical activities incur a small but positive cost, especially if one makes a proclamation that he dislikes. Naturally, the reformist center likes to talk up the reform while the conservative center likes to make the pro-status quo proclamation. We normalize the cost of making one's preferred proclamation to zero, while that of making a proclamation one dislikes is c , with $c < b$. This can reflect the extra efforts it takes the reformist (conservative) center to pretend that they are pro-status quo (pro-reform), or simply the psychological dissonance cost of saying what one does not want to say (He 2000b; Kuran 1995).

Besides engaging in rhetoric, the center can also punish the local government if its action digresses too much from the preference of the center. In particular, the local government in the model will receive a punishment of p if it chooses the center's least preferred reform level. Thus the local government will be punished if it chooses H when the center is conservative, or L when the center is reformist. Given the size of China and the limited monitoring capacity of the center, it is reasonable to assume

that local officials will be punished only if their digression is large and obvious. It also means that local policy deviations are more likely to occur in relatively small and remote localities, where reforms will be less eye-catching, hence the lower probability of punishment⁹.

We let p be greater than b , a player's direct payoff from the intermediately preferred reform level, otherwise the punishment will be completely ineffective in restraining the local government's ambitions. At the same time, we let $p < 2b$, which reflects the limit to the severity of central punishment over local policy digressions in the reform era (as long as such digressions do not involve power struggles against the center). An important lesson that the Chinese Communist Party has learned from the Cultural Revolution is to refrain from using cruelty in dealing with within-Party policy conflicts. In 1985, for example, Party general secretary Hu Yaobang explicitly stated that although local officials might be fired for committing mistakes, they would "normally not be deprived of their material privileges, nor would their family members and relatives be discriminated against" (quoted in Cai and Treisman 2006). For some officials, being fired from government jobs in the reform era is also not as costly as it was in the past—they have plenty of options outside the government sector (Li 1998; Montinola, Qian and Weingast 1995).

Besides the likely punishment, another factor that may affect the local government's policy choice is the award that the conservative center can give it for playing L, which we will call the "conservative award". This award (denoted a) can be either purely honorary—the local government may be praised for "adhering to the socialist road"—or it may involve an office promotion. Although the reformist center can also award the locals for playing the reformers' favorite option M (e.g., honoring them for both implementing reform and "adhering to the socialist road"), such an honor

⁹ In the formal model the punishment is deterministic when policy deviation is large. But a probabilistic interpretation is equally admissible since all that matters is the expected punishment.

is outweighed by the material benefits a local government can reap from local development as long as it is not punished for reform, and hence will be assumed away for expositional simplicity. We let $a < 2b$ because if the award is purely honorary, then it is simply a compensation for playing low reform and so should not mean as much as what the local government can get from its favorite reform level. If it involves office promotion, the number of higher-level offices is always smaller than the number of lower-level officials, and so a lower-level official that chooses the conservative center's favorite reform level cannot be guaranteed of promotion; but the benefit of reform can be enjoyed by every reforming locality. We do not assume a priori the relationship between a and b .

The sequence of the game is as follows (see Figure 4.1). Nature moves first, choosing a reformist center with probability π and a conservative center with probability $1 - \pi$. Then the center chooses to make a conservative proclamation "socialism" or a reformist one "Chinese characteristics"; the letters q and r in the figure respectively refers to the local government's posterior belief of the probability that a center that proclaims "socialism" and "Chinese characteristics" is reformist. Finally the local government selects a level of reform, and payoffs are assigned, with the first belonging to the center and the second to the local government. The players' final payoffs include their direct benefits from the level of reform adopted by the local government, plus the rhetoric cost, the punishment for policy deviation, and the conservative award, when applicable.

This is a signaling game of incomplete information, for which we use the solution concept of perfect Bayesian equilibrium, plus the "intuitive criterion" refinement due to Cho and Kreps (1987). Solving the game leads to the following result (see Appendix B for proof):

The game has a pooling equilibrium and a separating equilibrium. In the pooling equilibrium both types of center proclaim "socialism", and the local government

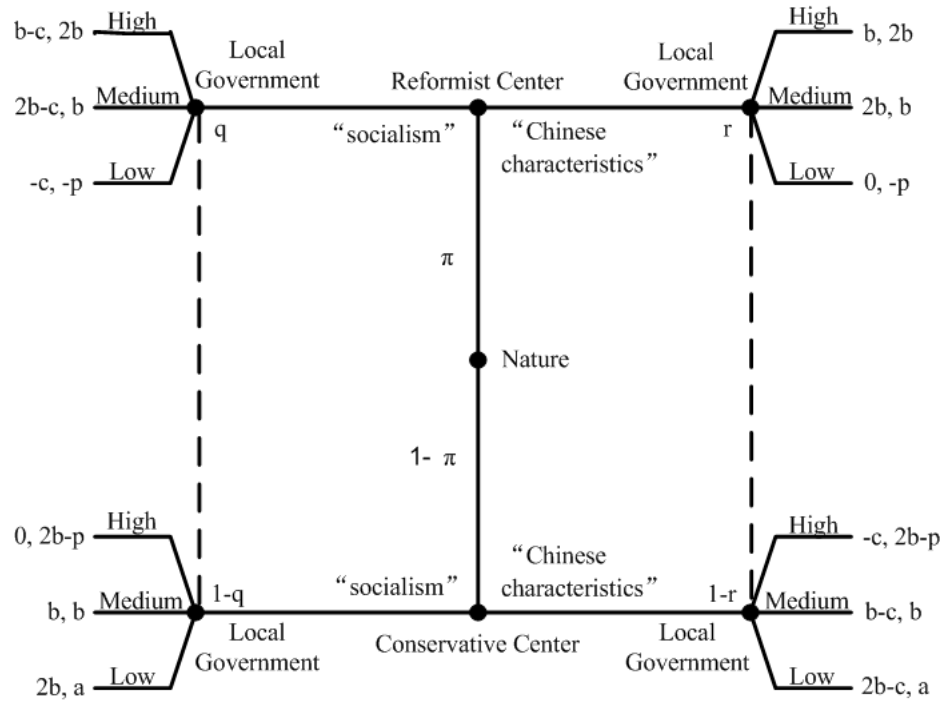


FIGURE 4.1: The Central-Local Government Signaling Game

chooses M upon the signal "socialism" and H upon "Chinese characteristics". When $a < b$, this equilibrium is sustained by beliefs $\pi < (p - b)/p$ and $r > (p - b)/p$; when $a > b$, the equilibrium is sustained by beliefs $(a - b)/(a + p) < \pi < (p - b)/p$ and $r > \max\{(p - b)/p, (a + p - 2b)/(2p + a)\}$, provided that $p^2 > ab$. In the separating equilibrium, which can occur only when $a > b$, the reformist center proclaims "Chinese characteristics", the conservative center proclaims "socialism", and the local government chooses H upon the signal "Chinese characteristics" and L upon "socialism".

In other words, in the pooling equilibrium path, both types of central government will engage in pro-status quo rhetoric, and the local government will choose the medium level of reform. This equilibrium is obtained when the local government's prior belief about the probability of the center being reformist is positive but has an upper bound; a center that deviates from the equilibrium strategy and makes the pro-reform proclamation, however, is believed to be highly likely a reformist center.

Notably, this equilibrium can be sustained whether the value of the conservative award (a) is greater or smaller than b , although in the former case both the prior and off-equilibrium posterior beliefs about the probability of the center being reformist are more stringent than in the latter case. The separating equilibrium can only occur when the social environment (or a particular local government's preference) is such that the conservative award is well valued ($a > b$). In this equilibrium the reformist center distinguishes itself from the conservative one and engages in pro-reform rhetoric, leading the local to play high reform, while the conservative center sticks to pro-status quo rhetoric, leading the local to play low reform.

The intuition behind the result is simple. The conservative center will always signal "socialism". When the ideological award for playing conservative is not well valued ($a < b$), the local government will choose its top preference high reform if it knows the center is reformist and its second preference medium reform if it knows the center is conservative (to avoid punishment); low reform is a dominated choice. Because the reformist center prefers medium reform the most, it will pretend to be the conservative center and proclaim "socialism". When the prior probability that the center is reformist is below an upper bound, this pooling of rhetoric will make the local government think that the probability of the center being reformist is still below that bound, and will therefore choose medium reform to be safe; this is indeed be an equilibrium as no player can do better by deviation. If this prior probability is high, however, the pooling of rhetoric cannot be equilibrium because the local government will turn to high reform. Then the reformist center would rather save the rhetoric cost and proclaim "Chinese characteristics" instead; but this cannot be equilibrium either since then the local government would believe a "socialism" proclaiming center is conservative, and the reformist center again has an incentive to deviate and mimic the conservative center.

When the ideological award is relatively highly valued ($a > b$), two things may

happen. Either the reformist center distinguishes itself from the conservative center and proclaims “Chinese characteristics” to induce the local government to play high reform (the local government will play low reform if the rhetoric is “socialism”), or, when the local government’s prior belief about the center being reformist is neither very high nor very low, the reformist center knows that the local government will play medium reform if the type of the central government is not revealed, and so decides to keep the local government’s belief that way by again mimicking a conservative center’s rhetoric.

In the above model we have assumed that the local government will be punished when it chooses the center’s least preferred reform level, regardless of the center’s rhetoric. Sometimes it may be more reasonable to assume that the local government will be punished only if it has chosen the center’s least favored outcome and, at the same time, the center had already signaled the local not to do so. In other words, the local will be punished only if it chooses L when the center is reformist and has proclaimed “Chinese characteristics”, or if it chooses H while the center is conservative and has proclaimed “socialism”. With this modified assumption the same equilibria still obtain, except for some minor adjustments in the beliefs supporting the pooling equilibrium¹⁰.

The above equilibria occur when the local government preference ordering is $H \succ M \succ L$. Generally speaking, when the local government is less reform minded (i.e., when its preference ordering is either $M \succ H \succ L$ or $L \succ M \succ H$, there is no pooling equilibrium. The only equilibrium is a separating one in which the reformist center proclaims “Chinese characteristics”, the conservative center proclaims “socialism”, and the local government chooses M unless its top preference is L and the center has proclaimed “socialism”. Although these results are not part of our model here, they suggest that the rhetoric-reform framework can also help explain the diverse

¹⁰ Proofs for this result and the ones in the following paragraph are available upon request.

behaviors of local governments in China; in particular, for less liberal-minded local governments to adopt reform, the center must send strong and explicit instructions urging reform.

4.4 Empirics and Interpretation

The most conspicuous feature of the central-local game is that in the pooling equilibrium the reformist center mimics the conservative center and proclaims “socialism”. This accords well with the prevalence of conservative socialist rhetoric in the reform era, recurring ideological campaigns, and the existence of news programs such as “Xinwen Lianbo” with their obsolete reporting styles. This pooling of rhetoric is usually reflected in general and abstract discourses, but sometimes in discussions about specific policy issues too, as shown in some examples below. Given the pooling of rhetoric, local governments cannot tell precisely if the center is reformist or conservative. A reformist local government will still carry out reform, but has to choose medium reform to be safe. This leads to a gradual and sporadic style of local reform in China.

While a systematic empirical testing of the theoretical model is beyond the scope of this paper, this section will discuss several examples of local reforms to illustrate the pooling equilibrium of the model: state enterprise privatization, agricultural de-collectivization, and township-level elections. Although these reform cases have been well documented in the literature, we provide a coherent analytical explanation here. The cases demonstrate how local governments can carry out reforms even though they may contradict with existing central policies, and how central rhetoric is often unfavorable to reform. Consistent with the model’s prediction of medium reform, in each example the local government is careful not to contradict the center too openly. By concealing reform from publicity or making it appear moderate, local governments gave the reformist center its favorite outcome—reform with guarded demonstration

effects, and gave themselves the benefits of reform even though they cannot push reform as directly and claim national reputation as quickly as they would prefer.

Local reforms without central authorization are ubiquitous in China and these three cases are just some of the more prominent examples. A 1989 conference minute of the State Council, China's cabinet, even explicitly encouraged local officials to adopt a "doing without asking" tactic: "[w]hile implementing the coastal economy development strategy, many policy issues will be involved. [Local governments] should do more and say less, act first and speak later, or not talk at all about certain things"¹¹. Note that the State Council encouraged local officials to reform, but also asked them to conceal it.

The pooling equilibrium of the model explains our research puzzles well, and arguably characterizes the greater part of Chinese reform so far. But the model also generates an unexpected separating equilibrium, which does not speak directly to our initial research questions. It, however, provides a good leverage for model testing: if we can find empirical evidences for this observable implication, our confidence in the theoretical model will increase (King, Keohane and Verba 1994). We will therefore also provide an example of the separating equilibrium in this section.

4.4.1 State Enterprise Privatization

China's privatization of state-owned enterprises (SOE) began as early as 1992-1993 in pioneering localities such as Yibin of Sichuan Province, Zhucheng of Shandong Province, and Shunde of Guangdong Province (Cao, Qian and Weingast 1999). Locally managed SOEs had suffered significant financial losses at the time, and so privatization could relieve local governments of a heavy financial burden (Guo and Yao 2005). But although individuals had been allowed to set up small private busi-

¹¹ See "Circular of the State Council for Approving and Transmitting the Minute of the Conference on the Opening-up of Coastal Areas" (Guowuyuan Guanyu Pizhuan Yanhai Diqu Dui Wai Kaifang Gongzuo Huiyi Jiyao de Tongzhi), Jan. 13, 1989.

nesses in the 1980s, privatizing SOEs was very much a taboo in the early 1990s. Even Deng Xiaoping's southern tour in 1992 did not touch on privatization. The first sign of relaxation in ideological constraints came only at the end of 1993, after the reform had already started in the aforementioned localities, when the Third Plenary Session of the Fourteenth Party Congress allowed some small SOEs to be contracted out, leased, or sold.

The aforementioned local governments nevertheless pushed the reform, privatizing most of their SOEs, with some officials conscientiously comparing their action to the agricultural de-collectivization in late 1970s. But consistent with our model's prediction, the local governments also tried to make the reform (appear) moderate. Officials in Shunde, for example, adopted a "four no's principle": no report, no promotion, no review, and no publicity (Cao, Qian and Weingast 1999). This strategy had occurred earlier. In the 1980s when private businesses were discriminated against if not illegal, local governments often gave them a "red hat" by registering them as "collective enterprises" or enterprises "affiliated" with governmental entities, hence privately encouraging the emergence of private businesses in China before the SOE privatization.

To control the pace of reform, however, the central government did not endorse privatization even after the practice had become more widespread in the country in 1994. Limited and vague endorsement from the center came in 1995, when General Secretary Jiang Zemin stated in a Party congress session that "we should concentrate our energy in helping the large state enterprises do well, and the sector of small and ordinary state enterprises can be further opened". The slogan "grasping the large and letting go the small" was then put forward, but what "let go the small" really meant was not clearly specified by the center (Zhao 1999). Even in 1996 vice Premier Li Lanqing declared that "China will never go in for privatization, though it supports the development of a private economic sector" (Beijing Review 1996, quoted in Sun

and Pannell 1999). Only in 1997 during the Fifteenth Party Congress did the central authority make it a national policy that the state should divest itself of the majority of small and medium-sized state enterprises by sales, mergers, or bankruptcy (Cao, Qian and Weingast 1999; Morris, Hassard and Sheehan 2002).

But even after 1997, the central authority did not officially acknowledge the country's relatively gradual but massive privatization; instead, it insists that "keeping public ownership as the mainstay" is still a basic principle of China's economic reform. In official discourses and media articles, privatization is usually not called privatization, but "zhuan zhi" (ownership change), or in the 1990s, "corporatization", the conversion of a state enterprise into a shareholding company (which was usually followed by securitization and subsequent sale of shares on the stock market)¹². Private enterprises, at the same time, were routinely called "min qi" (people-run enterprises)¹³ rather than "private enterprises". And the debate on public versus private ownership is couched in terms of the survival of Chinese national industry amidst the competition with foreign firms (Gallagher 2002). All these language games are puzzling, but can be understood in light of the pooling equilibrium of our model.

4.4.2 *Agricultural De-collectivization*

China's agricultural de-collectivization (and China's reform process) started in 1978, when desperate farmers in the Xiaogang Village of Anhui Province divided their team land into separate plots to be farmed by individual households. This household responsibility system, called "baochan daohu" or "baogan daohu", was almost heretical at the time and the farmers promised in a written agreement to take care

¹² When former US President George H.W. Bush met Chinese Premier Zhu Rongji in late 1998 in London, Zhu told Bush that corporatization was only one of the many ways that China was doing to realize public ownership, and Bush replied, "Well, no matter how you describe it, we know what is going on." See "Full Text of Premier Zhu Rongji's Press Conference", http://english.people.com.cn/200103/16/eng20010316_65206.html, People's Daily website, accessed on Mar. 18, 2007.

¹³ Literally speaking, "minqi" can refer to any non-state enterprise, including collective enterprises. But in practice the term is usually used for private enterprises.

of the production team leader's children until age eighteen if the leader was to be jailed for what they were doing. The central leadership immediately and explicitly prohibited the new practice through policy circulations such as the "New Sixty Articles" of the communist party's Third Plenum of the Eleventh Central Committee¹⁴. Even more moderate forms of reform such as "contracting everything to the group" (baogan dao zu) was warned as contravening central regulations by the People's Daily in the form of an editor-endorsed "letter from readers". Local officials could have bowed to such pressures and stopped the farmers' initiative, but they instead lent their backing. Provincial Party Secretary Wan Li, for example, told his subordinates that "I myself support baochan daohu and think it can be fully experimented with. Some are worried that this might violate the center's decision, but in fact it is in line with the center's 'spirit' that stresses practice as the only criterion of truth" (Chung 2000, p. 97). Thus with local protection, household farming diffused rapidly in Anhui, and over time received central approval and spread to the whole country (see Chung 2000, Fewsmith 1994, Yang 1996a, and Zweig 1997 for detailed accounts of the agricultural reform).

Many scholars explained the reform by noting that Wan Li was an ally of Deng Xiaoping, who was then emerging as China's paramount leader. But there was no evidence that Deng played a role in setting agricultural policy at the time or even favored household farming initially. Different studies have put the time Wan first talked to Deng about Anhui's reform as either 1979 or 1980 (Chung 2000; Yang 1996a), after it had already started. Besides, agricultural de-collectivization without central authorization was not an idiosyncratic event unique to Anhui; other provinces such as Guizhou and Gansu had also consistently gone ahead of official regulations in implementing the household responsibility system.

¹⁴ The formal name of the "New Sixty Articles" is "Regulations on the Work in Rural People's Communes (Draft for Trial Use)".

What emboldened local officials, in light of the present model, was that the Cultural Revolution was over at the time and the central leadership was split into two factions, the conservative “whatever” faction associated with Hua Guofeng and the more reformist group associated with Deng Xiaoping and Chen Yun, with a large number of pragmatic cadres stigmatized or persecuted in earlier political campaigns being rehabilitated. In addition, the attack on “ultra-leftism” in official news media and the “truth criterion” debate after the fall of the “Gang of Four” has somewhat opened the social and political environment (Chung 2000). Therefore local officials began to perceive that the likely punishment for policy innovation would be less harsh than before. Further, provincial leaders such as Wan were careful not to challenge the center too aggressively; he sometimes toned down the reform and instead of promoting household farming, he merely encouraged loosening control of rural production (Yang 1996*a*). All these evidences are consistent with the present model about how local reform could be possible even though it was not authorized by the center.

4.4.3 Township-Level Elections

The logic of our model can be applied not only to China’s economic reform, but also to the political arena. Township-level direct election is a case in point. At present China’s grass-root elections are limited at the village level. Township heads are selected by the county Party committee, although it goes through the formality of an election in the township’s people’s congress. In December 1998, however, officials of the Shizhong District of Suining City, Sichuan Province, organized China’s first widely known direct election of a township head in its Buyun Township (see He and Lang 2001, Li 2003, and Li 2002 for detailed accounts of the Buyun election). Besides the obvious unlawfulness of such an election, local officials also knew that the Political Bureau Standing Committee of the Party, the country’s highest decision-

making body, had discussed the issue not long before and had decided against it. The National People's Congress had also rejected an appeal from Shenzhen City to hold direct township elections.

What drove local officials to undertake the reform was its potential benefit—besides trying to alleviate local governance crisis resulting from serious corruptions among appointed officials, throughout the process they were conscientiously aiming at having China's first government executive election (village committees are formally considered self-governing organizations in China), just like Anhui's Xiaogang Village had been immortalized as the pioneer of economic reform. They also knew the likely punishment from the center would not be too severe—they were prepared to enter the private sector in case they would be labeled as “counter-revolutionary elements” and lose government jobs (Li 2003). But local officials were also careful not to publicize the election and defy the central authority openly. They chose Buyun for the election because it was small and remote from urban areas, and so would attract less attention. They packaged the election in such rhetoric that it followed the “spirits” of the Party leadership and the constitution such as “people are the masters of the country” (Zhang 2002; Zhang and Ma 2004). And they banned outside journalists and “anyone from Beijing” to be present at the election. After the election, however, the news still broke out due to local media competition. A commentary in Legal Daily, the newspaper of the Ministry of Justice, immediately criticized Buyun's election as violating the constitution, although the central government stopped short of nullifying the election result.

Such a reform was not unique to Buyun but was more general. In fact, it turned out that the township's 1998 election was technically speaking not the first one in China—Sichuan provincial government had organized a similar election a few weeks earlier in a township named Nancheng. That election was held with even more secrecy so that it was not known to outsiders until 2001. Since the practice started

in Sichuan, a number of other local governments have followed suit and let the masses participate in the election of township-level heads, although they modified the election method in various ways to nominally satisfy the central regulation so that there was a final formal voting in the local people's congress (Li 2002; Dong 2006). All these occurred when the central government had not permitted direct township-level elections.

With regard to central rhetoric, although there have been advocates of direct township elections among intellectuals, the center's lid on township reform had been tight. The most relevant central policy articulation prior to the Buyun election was Jiang Zemin's report to the 15th Party congress in September 1997, in which he vaguely stated that China should "further extend the scope of socialist democracy and improve the socialist legal system" (Cheng 2001; Li 2002). Not only did this call lack concrete terms and was really a cliché, it came with "the precondition of adhering to the Four Cardinal Principles". In the more concrete sentence including "grassroots organs of power and self-governing mass organizations in both urban and rural areas should establish a sound system of democratic elections", the emphasis was on promoting administrative and financial transparency of such local organs and citizens' supervision of local cadres. Because Jiang was a beneficiary of post-Tiananmen palace politics, and he himself was reportedly responsible for inserting the article into the village election law that affirms the village party branch rather than the elected village committee chairperson as the leadership core in villages, most observers and local officials perceived the center as encouraging administrative reform and organizational streamlining rather than promoting grassroots elections to higher levels (Cheng 2001; Li 2002).

4.4.4 *An Example of the Separating Equilibrium*

China's experience in the wake of Tiananmen (1989-1992) was consistent with the separating equilibrium in our model. Following the crackdown on the democracy movement in 1989, the reformers were basically pushed out of the central leadership. Economically the conservative premier Li Peng carried out a retrenchment program. Politically the General Secretary of the Party Jiang Zemin decided to err on the "left" rather than "right" (ning zuo wu you). More than the usual rhetoric, ideological preaching of antiquated or cold war slogans such as "class struggle" and "struggle with peaceful evolution" were reemphasized in official news media, and ideological adherence and Marxist morality became the leading criterion again in evaluating cadres (Zhao 1993). With the central rhetoric being a strong "socialism", and with $a > b$, local governments opted to play low. This was the period when China's economy hit record low growth rates in the entire reform period.

Frustrated by the retreat of the reform and stagnation of economic development, Deng Xiaoping made a famous "southern tour", in which he rallied local reformist forces and pushed for bolder reforms and faster growth, and threatened that anyone who obstructed reform should be removed from power (Yang 1997). He also publicly declared that there should be no debate about whether the reform was socialism or capitalism in nature ("xing she xing zi"), but rather whether the reform can strengthen the country and improve people's livelihood. After a blizzard of media reports of Deng's speeches, particularly catchy proclamations such as "be braver, go faster", and the relay of his remarks to party cadres at various levels, local governments received a strong signal that the reformist center was now in control, and reacted emphatically even when central bureaucrats' responses had been more mute (Zhao 1993). Economic activities surged and a fever of development zones swept China, with many localities ignoring relevant central regulations in their haste to

reform and to attract investments, which soon led to serious macroeconomic overheating in the country (Yang 1997).

This experience is consistent with the signaling game's separating equilibrium, in which the conservative center proclaims "socialism", leading local governments to play low, and the reformist center proclaims "Chinese characteristics", leading local governments to rush to reform. That Deng was not able to push for reform in Beijing but had to leave Beijing to rally local forces also illuminates our point that the reformist center uses local initiatives to circumvent conservative opposition to reform. And consistent with the prediction of the model, this equilibrium occurred during a period when the conservative award was relatively highly valued.

4.5 Concluding Remarks

China's reform process has often been described as mysterious and confusing, and scholars have called for a general model of reform, Chinese style (Cao, Qian and Weingast 1999). Although a general model will be difficult to build due to the complexity of macro processes and the multitude of different circumstances under which new policies can and do emerge, our signaling model has provided a theoretical framework for understanding one important pattern in China's reform, i.e., the center's rhetoric is often unfavorable to reform, but local governments nevertheless carried out or protected unauthorized reforms, with the associated covertness, jerkiness, and incoherence of various local reforms (as well as many problems that this lack of coordination and overarching design often create). Sometimes, however, the central leadership would depart from usual practices and send clear instructions urging reform, which this framework has also accounted for. A considerable part of China's reform experience in the past three decades can be interpreted as a repeated version of the game modeled in this paper, with the result of each previous game constituting the status quo for a new stage game, and as the supergame plays on,

the reform continuously deepens.

This analysis shows that both the center and local governments are instrumental in China's reform, with local governments carrying out many actual reforms and the center selecting its rhetoric/signals to manage the pace of reform. While many have lamented about the inability of the Chinese center in controlling "unruly" local officials, our analysis shows that sometimes seeming local breaches of central decrees and rhetoric are in fact tolerated or even quietly welcomed by the center. As (Chung 2000, p. 58) puts it, China's "cautious approach was a calculated choice on the part of the 'reformist' center without the prestige of Mao to solicit provincial initiatives in popularizing the policy whose potential impacts (and costs), in both ideological and economic terms, could be enormous". At the same time, local governments are "important as actors in a game directed from Beijing" (Cai and Treisman 2006). This paper has developed a simple model of such a game and advanced these insights.

Our model has also addressed another perplexing feature of China's reform era: the prevalence of conservative rhetoric and persistence of outdated news styles. We show that this is not just for the purpose of propaganda or Party legitimacy building; it is also aimed at preventing local initiatives and social demands for reform from being too radical.

Finally, this paper's assumption that the central leadership's rhetoric is either pro-reform or pro-status quo, made for analytical simplicity, suggests a direction for future research. We have mentioned earlier that in reality the center's rhetoric may not be clearly pro-reform or pro-status quo, but is often shrouded in a vague and opaque language. The center may also proclaim "socialism with Chinese characteristics" in a well-balanced way, without emphasizing one part or the other of the phrase. Why does the center want to make ambiguous and/or mixed proclamations, and require the locals to guess at its "spirit"? One hypothesis is that this allows the center to claim credits for successful local initiatives by claiming the locals have cor-

rectly understood the central spirit, and to avoid the responsibility for local failures by arguing that the locals have failed because they have misunderstood the central spirit. To what extent is this true? And what are local governments' responses to such ambiguous signals? A research into such questions will enrich our current model and will be pursued in the future.

Appendix A

Regression Results of Chapter 2

Table 1: Panel Regression with Country Fixed Effects

DV: Media Freedom	1	2	3	4	5
	All Non-Democracies (Polity2 ≤ 5)				Population > 1million
Government Effectiveness	-3.617 (3.372)	-8.045* (4.190)	-4.485 (3.406)	2.066 (3.628)	-2.903 (3.612)
Government Effectiveness Squared	-4.010** (1.801)	-6.893** (2.897)	-4.085** (1.849)	-3.475* (1.742)	-3.701* (1.981)
Democracy (Polity2)	.810*** (.296)	.303 (.549)	.890*** (.305)	.586*** (.147)	1.003*** (.306)
Log GDP Per-Cap (PPP)	-3.132 (1.948)	.582 (1.38)	-.840 (1.715)	-2.214 (.529)	-2.723 (1.828)
Log Land	3.193*** (.977)	2.126 *** (.349)	3.267*** (.624)	4.50*** (.519)	3.218*** (.998)
Log Population	1.196 (.778)	.816 (1.311)	1.428* (.736)	-73.681 (27.046)	1.290* (.765)
Education (Secondary School Enrollment)		-3.92e-07 (6.63e-07)			
Natural Resources (oil reserve, w/ time dummy)			.069 (.139)		
Gini				-.14 (.108)	
Observations	719	272	719	79	649
R-squared	.11	.08	.13	.53	.15

Note: Robust standard errors in parentheses. * significant at 10%; ** significant at 5%; *** significant at 1%.

Table 2: Robustness Checks

DV: Media Freedom	1	2	3	4
	Government Effectiveness	Government Effectiveness Lagged	Alternative	Control Variables
Government Effectiveness	-4.237 (3.829)	.784 (6.329)	-8.415** (3.988)	-2.063 (3.568)
Government Effectiveness Squared	-6.078* (3.316)	-5.962* (3.101)	-8.365*** (2.901)	-4.173** (2.080)
Democracy (Polity2)	.514 (.613)	.648*** (.188)	.667*** (.250)	.899** (.402)
Log GDP Per-Cap (PPP)	2.176 (1.636)	-2.308*** (.753)	-1.426 (1.576)	-3.47** (1.592)
Log Land	2.075*** (.673)	4.152*** (.288)	2.890 (.247)	3.337** (1.313)
Log Population	.694 (1.074)	-81.375*** (23.298)	.120 (.286)	1.415 (.902)
Education (Secondary School Enrollment)	2.11e-07 (5.76e-07)			
Education (Tertiary Enrollment)			-7.80e-08 (5.00e-07)	
Natural Resources (oil reserve, w/ time dummy)	.002 (.168)			
Fuel Export/GDP				-3.48e-07* (1.93e-07)
Gini		-1596806 (.1099985)		
Observations	272	69	327	433
R-squared	.11	.65	.12	.15

Note: Robust standard errors in parentheses. * significant at 10%; ** significant at 5%;
*** significant at 1%.

Table 3: Logit Model

DV: Media partly free (1) or not free (0)	1	2	3	4	5
	All Non-Democracies (Polity2 ≤ 5)				Population > 1million
Government Effectiveness	-1.087802*** (.3697186)	-2.075188** (.9650038)	-1.19845*** (.3885707)	-17.55838** (7.59424)	-.9858357*** (.3846303)
Government Effectiveness Squared	-1.609191*** (.2817235)	-5.300564*** (1.106525)	-1.60477*** (.2868952)	-17.57485** (7.400637)	-1.644052*** (.2998205)
Democracy (Polity2)	.2452164*** (.0252963)	.3319362*** (.0568931)	.2541411*** (.0259718)	.3302563*** (.1174955)	.234808*** (.0265754)
Log GDP Per-Cap (PPP)	.2153063 (.2737017)	2.221227*** (.8332754)	.3098633 (.3188302)	-1.317794 (1.584422)	.3059224 (.2883951)
Log Land	-.0086342*** (.0019262)	-.0138739*** (.0039993)	-.0094226*** (.0019734)	-.0120014 (.0148776)	-.0084348*** (.0021493)
Log Population	.366361* (.1987246)	.4985536 (.369623)	.4342136** (.2029493)	3.573606** (1.743815)	.3416361* (.2069574)
Education (Secondary School Enrollment)		-.0650685*** (.0152915)			
Natural Resources (oil reserve, w/ time dummy)			.0022956 (.0037494)		
Gini				.2305458** (.1035495)	
cons.	1.124286 (1.478281)	-.3166358 (3.148201)		-29.54673** (12.74419)	.9767927 (1.554762)
Observations	719	272	719	79	649
Pseudo R2	.2413	.3915	.257	.4311	.2235

Note: * significant at 10%; ** significant at 5%; *** significant at 1%. Standard errors in parentheses.

Table 4: Logit Regression Robustness Checks

DV: Media partly free (1) or not (0)	1	2	3	4
	Government Effectiveness Lagged	Government Effectiveness Lagged	Alternative Control Variables	Alternative Control Variables
Government Effectiveness	-.9929167 (.8796992)	-15.5502* (7.909108)	-.3800828 (.5176801)	-1.16399** (.5164705)
Government Effectiveness Squared	-4.469298*** (.9626795)	-15.49555** (7.757246)	-1.282905*** (.4311723)	-2.780563*** (.5269601)
Democracy (Polity2)	.362392*** (.063511)	.2540408** (.1243397)	.1867532*** (.0365134)	.2070748*** (.031457)
Log GDP Per-Cap (PPP)	1.362598 (.8706309)	-1.084773 (1.60667)	-5.041492 (.4307526)	-5.5819706 (.3647417)
Log Land	-.0154102*** (.0045368)	-.0072933 (.0152434)	-.0087819 (.0029812)	-.0059025** (.0025635)
Log Population	.7062361* (.4018168)	2.540674 (1.706076)	.4733162*** (.2919331)	.3065571 (.2453925)
Education (Secondary School Enrollment)	-.0661765*** (.0159652)			
Education (Tertiary Enrollment)			-2.98e-07 (5.07e-07)	
Natural Resources (oil reserve, w/ time dummy)	.0127359* (.0063595)			
Fuel Export/GDP				-2.94e-06 (.0000461)
Gini		.1774627* (.0987891)		
cons.		-22.95812* (13.25058)	2.656882 (2.322359)	3.129938* (1.878648)
Observations	272	69	327	433
Pseudo R2	.4113	.3192	.1764	.2439

Note: *significant at 10%; ** significant at 5%; *** significant at 1%. Standard errors in parentheses.

Appendix B

Proof of the Solution to the Game in Chapter 4

B.1 Potential separating equilibrium

The natural potential separating equilibrium is the reformist center signaling “Chinese characteristics” and the conservative center signaling “socialism”¹.

If “Chinese characteristics” is from the reformist center and “socialism” is from the conservative center, then the local government will choose H when receiving the signal “Chinese characteristics” and M or L when receiving “socialism”, depending on the relative values of a and b . If $a < b$, the local will choose M when receiving “socialism”, but then the reformist center will deviate and send a signal of “socialism” too, since that way the local government’s choice of M would give it a higher payoff ($2b - c > b$). Therefore there is no separating equilibrium when $a < b$. When $a > b$, the local government will choose L upon signal “socialism”, and neither the reformist center nor the conservative center has incentives to deviate. Thus the reformist center signaling “Chinese characteristics”, the conservative center signaling “socialism”, and

¹ The two types of center can exchange the two signals, with the reformist center sending pro-status quo signals and the conservative center sending pro-reform signals, and the local still knows which center is reformist. This is technically possible but weird in reality.

the local government chooses H upon signal “Chinese characteristics”, and L upon signal “socialism” constitute a separating equilibrium when $a > b$.

B.2 Potential pooling equilibrium I

The first potential pooling equilibrium is both types of center signal “Chinese characteristics”. Because signals are pooled, the center signaling “Chinese characteristics” is reformist with probability π and conservative with probability $1 - \pi$. The local government cannot choose H in this potential equilibrium. Suppose it does, then the conservative center will deviate and signal “socialism” instead, as its payoff can be strictly improved regardless of what action the local government will choose then ($-c < 0 < b < 2b$).

Now suppose that the values of the parameters in the model are such that the local government will, upon receiving the signal “Chinese characteristics”, choose M over H and L in equilibrium (i.e., $2b\pi + (2b - p)(1 - \pi) < b$, and $-p\pi + a(1 - \pi) < b$). If the conservative center deviates and signals “socialism”, and is recognized by the local government with probability one, the local would choose L or M, depending on the relative values of a and b , and the conservative center will achieve a strictly higher payoff than if it sticks to the original strategy ($2b > b > b - c$). The reformist center, however, can never benefit from deviating to a signal of “socialism”, as it has obtained the highest possible payoff from the outcome of medium reform plus a signal of “Chinese characteristics”, thus it should have zero probability of deviation. By the “intuitive criterion”, therefore, the conservative center will indeed deviate and this pooling equilibrium collapses.

Finally, suppose that in equilibrium the local government chooses L. This can only occur if $a > b$, because otherwise L is strictly dominated by M and will never be chosen by the local government. If q , the posterior probability that the center that sends the off-equilibrium signal “socialism” is reformist, is such that the local

government will choose L over H and M upon receiving the off-equilibrium signal, i.e., $2bq + (2b - p)(1 - q) < b$ and $-pq + a(1 - q) > b$, then the conservative center will deviate and signal “socialism”, as it can improve its payoff from $2b - c$ to $2b$. If q is such that the local government will choose H or M over L upon receiving signal “socialism”, then the reformist center will deviate, as $2b - c > b - c > 0$. Therefore either the reformist center or the conservative center will want to deviate if the local government chooses L. Both types of center signaling “Chinese characteristics” cannot be an equilibrium.

B.3 Potential pooling equilibrium II

The only pooling equilibrium of this game turns out to be the second one, namely both types of center signal “socialism”, and the local chooses M. Consider the two different scenarios:

a) Case one: $a < b$

In this scenario, L is a dominated strategy for the local and will never be chosen. Upon receiving signal “socialism”, the local will choose H if $\pi > (p - b)/p$, and M otherwise. But if the local government will choose H, the reformist center will deviate and signal “Chinese characteristics” instead, as it can improve its payoff regardless of the local government’s choice between H and M upon signal “Chinese characteristics” ($2b > b > b - c$).

Now consider the case that $\pi < (p - b)/p$ and the local government chooses M upon signal “socialism”. For this to hold in equilibrium, the local must threaten to play H when it is signaled “Chinese characteristics”, which will indeed deter both the reformist and the conservative centers from sending that signal. Now we only need to make sure that the local government’s posterior belief at the off-equilibrium path is such that the local government’s threat of choosing H upon receiving “Chinese characteristics” is credible. In other words, we want $2br + (2b - p)(1 - r) > b$, which

reduces to $r > (p - b)/p$. Therefore, the strategy profile (“socialism”, “socialism”, M) with beliefs $\pi < (p - b)/p$ and $r > (p - b)/p$ indeed constitutes a perfect Bayesian equilibrium when $a < b$.

b) Case two: $a > b$

When $a > b$, it cannot happen that the local government chooses L in equilibrium, since this gives the reformist center the worst possible payoff in the game(-c), and it can strictly improve its payoff if it deviates and signals “Chinese characteristics”, regardless of the local government’s choice upon that signal.

Next consider the case that the parameter values are such that the local government will choose H in equilibrium upon receiving signal “socialism”. Then the reformist center receives a payoff of $b - c$, and the conservative center receives a payoff of 0. If the local government’s belief at the off-equilibrium path is such that the local government prefers H over M and L upon receiving signal “Chinese characteristics”, the reformist center will have an incentive to deviate and signal “Chinese characteristics” ($b > b - c$). If the off-equilibrium belief is such that the local government would prefer M or L over H, the conservative center will want to deviate and signal “Chinese characteristics” ($b - c > 0$ and $2b - c > 0$). Therefore either the reformist center or the conservative center has an incentive to deviate.

Finally, consider the case that the local government chooses M over H and L upon receiving signal “socialism”. This will occur when $b > 2b\pi + (2b - p)(1 - \pi)$ and $b > -p\pi + a(1 - \pi)$, i.e., when $(a - b)/(a + p) < \pi < (p - b)/p$, which further requires that $p^2 > ab$. For this to be a perfect Bayesian equilibrium, the off-equilibrium belief of the local government must be such that the local government will not choose M or L upon receiving signal “Chinese characteristics” (otherwise either the reformist center or the conservative center will want to deviate and signal “Chinese characteristics”). In other words, the off-equilibrium belief must be such that the local government will choose H when signaled “Chinese characteristics”. Simple calculations yield that the

condition is $r > \max\{(p - b)/p, (a + p - 2b)/(2p + a)\}$.

Therefore, the strategy profile (“socialism”, “socialism”, M), with belief systems that $(a - b)/(a + p) < \pi < (p - b)/p$ and $r > \max\{(p - b)/p, (a + p - 2b)/(2p + a)\}$, constitute a Perfect Bayesian Equilibrium when $a > b$.

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Haifeng Huang was born in Wenzhou, China, in 1976. He has a Bachelor of Arts from Zhejiang University, a Master of Public Policy from the University of California, Berkeley, a Master of Arts in Economics from Duke University, and a Doctor of Philosophy in Political Science from Duke University. He will be a Postdoctoral Research Associate in Formal Theory and Quantitative Analysis at Princeton University's Politics Department in the 2009-2010 academic year.