The Determinants of Media Bias in China

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Abstract

We measure and investigate the determinants of political control of newspapers in China. To this end, we collect information, including the name and ownership, of all newspapers in China that existed between 1981 and 2011. We also analyze the content of 110 general interest newspapers between 1998 and 2011. We find that more strictly politically controlled newspapers cover disasters and corruption more than their commercial competitors, most likely in order to monitor lower level officials. We also find that they cover leaders and the official news agency Xinhua to a larger extent. Moreover, we construct an index of political control of each of the 110 newspapers. We find that in the cross section, this correlates negatively with GDP per capita and population size. We find no time trend in the political control of Chinese newspapers in the 2000s. Finally, we analyze the effect of a reform to close down all county papers in 2003. The reduced competition significantly affected the degree of political control of the remaining papers.

1 Introduction

Political thinkers have long recognized that free media play an essential role for accountability in democracies. The role of unfree media in autocracies, in particular for accountability, is less studied, as is the degree of political control of unfree media. In this paper, we aim at filling this gap by addressing two questions.

The first question is: what do autocratic leaders use the media for? They may suppress bad news that is relevant for accountability (Besley and Prat, 2006). More actively, they may maneuver propaganda to promote policy implementation and sustain regime stability. They may also use media to monitor lower-level government officials (Egorov et al., 2009), or in general as an intelligence device to mitigate the problem of inadequate and unreliable communication within the state bureaucracy and among self-interested government officials. These uses have opposing implications for accountability.

The second question is: what accounts for variation in political control of media in autocracies? This question has been posed in a number of studies at the country level (e.g.

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Djankov et al., 2003; Egorov et al., 2009). We address it using variation within China and across time.

We investigate the above two questions for the particular example of newspapers in China. In China, no newspaper is free from political control. However, the political leaders allow newspapers different degrees of freedom to serve the market or to further political goals. We call the newspapers that are more inclined to further political goals "politically controlled." Based on a unique large-scale data set that we construct, we document the evolution of Chinese newspapers and the variations in their news content to answer to the question of how leaders use newspapers. Then, we analyze the determinants of political control. We construct an index of political control, analyze political control in a simple model, and use a reform in 2003 to close down all county-level newspapers to identify the effects of competition on political control.

China is an interesting object of study because of its economic and political importance, because of the increasing tension between economic and political goals in China, and because of data availability. Traditionally, Chinese newspapers, regarded as the mouthpiece of the Communist Party of China (CPC hereafter), strictly followed the Party line in their editorial decisions. The main newspaper organs were the tightly controlled *Party Dailies*. However, economic growth in China has spurred consumers' demand for media service and producers' demand for advertising channels. A number of more commercial newspaper products (evening papers and subsidiaries) were introduced. The Chinese newspaper sector now features an unusual combination of political control and commercial motive. On the one hand, China is regarded as one of the countries with the lowest degree of press freedom. On the other hand, the Chinese newspaper market is today the world's largest, with a daily circulation of around 100 million;[1] the Chinese advertising market is the third largest in the world after the US and Japan and is expected to surpass Japan in 2013. In contrast to countries in the West, the circulation of newspapers in China is growing fast, with a 13% increase in 2009-2010. In 2009, the audience contact rate of newspapers in China is 64%, only below that of TV (91%) and far above that of the Internet (38%) (Cui, 2011).

Data on Chinese newspapers are scatteringTo the best of our knowledge, we construct the most comprehensive directory of Chinese newspapers. We gather information on the location, starting and termination dates, owner, government affiliation, and content type of all Chinese newspapers that existed between 1981 and 2011. Then, we merge this directory with data on newspaper content from a digital archive of 110 general-interest Chinese newspapers from 1998 to 2011. Our study of news content is based on around 48 million articles published by these general-interest newspapers during this sample period.

We first investigate how Chinese newspapers produce propaganda for policy implementation and regime stability. In Chinese politics, this role of the media is called the "Party Line." In accordance with the Party line, newspapers routinely cover policy directives from national and regional leaders, visits of Party and government leaders to subordinate government divisions, mass organizations, and workplaces, the study of government policies and

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[1]Source: World Association of Newspapers.

the works of the paramount leader, and the achievements of individual factories, counties or persons. The Xinhua News Agency is a key tool to produce news stories that enforce propaganda objectives. We define three content categories to reflect this media use. The first is the count of articles mentioning each of 1,978 political leaders at the central, provincial and prefectural levels (3 million such articles in the data set). The second is the count of articles citing the Xinhua News Agency (4.8 million articles). The third is the coverage of the most important annual news stories listed by the regime critical newspaper *Epoch Times*, relative to the coverage of the counterpart stories from the Xinhua News Agency.

We find striking differences between the newspapers that we, on a priori grounds, suspect to be more or less tightly controlled. In the *Party Dailies*, the dominant newspaper format until the economic reform, 21 percent of their published articles mention the top political leaders. In contrast, the more recently launched and commercially oriented newspapers, classified as *Evening* and *Subsidiary* papers to be distinguished from *Party Dailies*, only mention political leaders in 8 and 4 percent of their news coverage, respectively. Similar differences are found for stories listed by Xinhua and *Epoch Times*. It seems that the introduction of more commercially oriented newspapers has dramatically reduced the amount of propaganda exposure. However, a caveat appears that the introduction of new newspaper formats may lead to such a pattern of product differentiation that the *Dailies* are now more controlled than they would have been absent the new formats, as suggested by our model.

The second role of the media that we investigate is in the monitoring of bureaucrats and providing information to political leaders – called the "Mass Line" in Chinese media policy. Once more, we define three categories to capture this media use. The first is the number of newspaper stories covering corruption subjects (50,000 stories of this type in the data set). The second is the coverage of disasters and the third is the coverage of accidents (such as train de-railings or coal-mine accidents) that often involve a mismanagement by local officials. We find 140,783 stories about disasters and 32,193 about accidents. These three categories of news reports may conflict with the Party Line, because they may reflect a defective political leadership.

Somehow surprisingly, we find that the more tightly-controlled *Party Dailies* cover corruption and disasters to a significantly larger extent than their more commercial competitors. The corruption stories are typically about the misbehavior of lower-ranked bureaucrats, such as taking bribes. This constitutes evidence that political leaders use newspapers to monitor and discipline lower-ranked bureaucrats, as well as an intelligence device. We only find 13 cases of corruption that involve any of the 1,978 top Chinese political leaders in newspaper coverage. This suggests that the accountability effects of the media are different for lower-level bureaucrats and for top political leaders. More politically controlled papers carry more corruption stories; the monitoring motive dominates for lower-level officials, whereas the regime stability motive dominates for higher-level officials.

We also measure the commercial use of media, the Bottom Line. This is captured by coverage of sports, entertainment, and crime. Not surprisingly, the more commercial newspapers cover these topics more extensively.

The second goal of this paper is to understand the determinants of political media control. To this end, we first construct an index of political control. We first note that the content characteristic of more politically-controlled newspapers predicts less advertising revenue, indicating a trade-off between political and economic goals. Then, we perform a principal component analysis of our nine content categories. The first principal component, explaining 40 percent of the variation, puts a large weight on exactly the type of content that characterizes less advertising revenue (and high political control). This suggests that the most important dimension of product differentiation in the Chinese newspaper market is the degree of political control. We use this first component as our primary measure of political control.[2] The correlation of this index with the predicted advertising revenue ranking of a newspaper is -0.7, its correlation with an indicator for a tightly-controlled newspaper is 0.9, and its correlation with the share of censored microblog posts at the provincial level is 0.8.

Then, we develop a simple model of political media control to analyze the effects of competition between media owners with multiple goals (political and economic). In the typical model of government influence on media (e.g., Besley and Prat, 2006), the competition is between profit-maximizing firms, whereas the politician is an outside agent trying to influence the media. In the Chinese context, politicians own the media. Only CPC Committees (the highest decision-making body at each level of party/government) can obtain a license to run a general interest newspaper. Consequently, different politicians compete for profit while caring about political goals. In this setting, it is not obvious whether more competition will promote the economic goal or the political goal. The theory illustrates that the effect of competition will depend on the degree of initial control of the newspaper and what type of newspaper (party versus commercial newspapers) that enters the market.

Empirically, we find that the political control is significantly lower in newspapers run by lower-levels of government (and for *Evenings* and *Subsidiaries*). We find weak evidence that regions with a higher GDP have less-politically-controlled newspapers. This result is present in the cross section, but not across prefectures within provinces or over time. Furthermore, we find that the effect of GDP on political control is largest for newspapers run by lower-level governments, which care less about political control. Consequently, an increase in GDP is related to an increased gap in political control between the newspapers run by central and lower-level governments.

Finally, we investigate the effect of competition on political control, exploiting a policy reform that forced the closing-down of most county-level *Party Dailies* (one third of all general-interest newspapers) in 2003. Of 330 general-interest county papers existing in 2002, fewer than 90 existed in 2004 with the others' licenses being withdrawn by the central government, which implemented this reform to reduce the public expenditure for subscribing Party newspapers borne by county and village level government agencies. We find that the average effect of the resulting increased concentration on newspapers was less political control. The effect is driven by the more commercial *Evening* and *Subsidiary* papers, while the

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[2]Using the predicted advertising revenue or the probability of being a *Party Daily* would yield very similar results.

Dailies became more politically controlled.

2   Background

In what follows, we present a short description of the institutional background of Chinese newspapers, partly as an aid to understanding the data section. Further details will be discussed later.

Political control of the media in China is exercised through ownership and supervision, propaganda campaigns and news emission through the Xinhua News Agency, and through pre- and post-publication monitoring. To date, all Chinese newspapers are required to have a total or dominant state ownership. They must also be affiliated with a party/government supervisor that is responsible for licensing, the appointment of top personnel, and the monitoring of important editorial matter. Eligible supervisors include the Party Committees at different administrative levels, CPC divisions, government departments, and government-sponsored mass organizations. The nature of the supervisor regulates the content of a newspaper. Most notably, only a Party Committee can obtain licenses to publish general-interest newspapers. Party Committees are the highest and most powerful political decision-making bodies in China, at each level of government (central, provincial, prefecture, county). The newspaper licenses are issued by SAPP – the State Administration for Press and Publication.

The newspapers come in variants indicated by their names. The *Dailies* are "official" papers, where subscriptions are taken out with public money and circulated among offices, classrooms, factory workshops, and government officers. The *Evenings,* reaching readers in the evenings (non-working hours), are allowed to carry softer news, be more entertainment oriented, and less strictly controlled than the *Dailies*. *Evenings* have mainly been introduced after the economic reforms in the 1980s. They rely on private subscriptions and street vendors for most of their circulation. The *Metro* papers, thriving after the 1990s, essentially compete with *Evenings* but reach readers in the mornings. An innovation in the newspaper sector during the 1990s was the creation of *Subsidiaries*, or newspapers owned by parent newspapers which, in turn, were owned by Party Committees.

3   Data

This section explains the data collection and describes the main variables we will use. A more detailed description can be found in the on-line appendix.

3.1   Newspaper Directory

We construct a detailed directory of all Chinese newspapers from 1981 to 2011. The directory is mainly based on four data sources: (i) the *Comprehensive Chinese Newspaper Directory* (2003, 2006, 2010), published by SAPP – the authority that issues licenses for publishing newspapers; (ii) *the Annual China Journalism Yearbooks* (1982-2010), published by the Chinese

Academy of Social Science; (iii) *the China Newspaper Industry Yearbooks* (2004-2010), published by a Beijing-based research institute; and (iv) an eight-volume collection of the front pages of major newspapers on the date of first publication.

From these data sources, we obtain information on each newspaper's location, address, starting date, termination date, direct owner (head unit), supervisor (Party/government affiliation), ranking in the administrative hierarchy of the Chinese government, type of readership (general or specialized), and other information such as the names of chief-editors and business scopes. For major newspapers in certain years, we also collect information on the annual circulation number, the revenue composition, annual advertising revenues, and the ranking of advertising revenues in the provincial market from publicly available reports submitted to SAPP, central and local governments, and the Association of Chinese Journalists.

Three variables are particularly important for our analysis: the newspaper's owner, supervisor, and content scope. Starting with content, we will focus on the general-interest newspapers that provide comprehensive news regarding all fields of journalism and target a general readership. These newspapers account for the major share of newspaper circulation and readership. Within the general newspapers, we distinguish among "Daily", "Evening", and "Metro" papers according to a newspaper's name.[3] These three types of general newspapers reflect different degrees of Party/government control in terms of ownership, financial structure, and editorial autonomy.

The ownership determines who the residual claimant is and how to distribute the profits. Based on the nature of the direct owner, a newspaper can be classified into one of four ownership categories: *Party-state capital*, if a newspaper is owned by a Party Committee or a Party/government division; *Media capital*, if a newspaper is a subsidiary of another newspaper or other mass media[4]; and *Societal capital*, and *SOE*.[5] The first two categories are most relevant for our analysis of the general-interest newspapers. Regarding the type of supervisor, which determines who appoints the top personnel of newspapers and who is responsible for editorial policies, we distinguish among five mutually exclusive categories: First, *Party Committee,* if a newspaper is directly supervised by the propaganda department of a CPC Committee; Second, *Parent Newspaper*, if a newspaper is a subsidiary of other newspapers and supervised by its parent newspaper; and *Party/government Bureau*, *Other media* and *Inter-*

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[3]A newspaper is coded as "Daily" when its name contains the word "Daily (Ri Bao in Chinese)" or "News (Bao)" followed by the name of a province, prefecture, or country. A small number of newspapers whose names do not contain the names of the region where the newspaper is based are still coded as "Daily" if the newspaper in question is explicitly stated as the Party organ of a CPC committee and is published on a daily basis. A newspaper is coded as "Evening" if its name contains the word "Evening News (Wan Bao in Chinese)". A newspaper is coded as "Metro" if its name contains the word "Metro News (Dushi Bao)", "City News (Cheng Bao)", "Express (Kuai Bao)", "Times (Shi Bao)", or "Morning Post (Chen Bao)." Some newspapers whose names contain "Business News (Shang Bao)", "Youth News (Qingnian Bao)," are also coded as "Metro" if their content scope is reported as a "general-interest" paper. These are the newspapers that are converted from special-interest newspapers but still carry their previous names.

[4]Within the "media capital" category, we create a subgroup: "media capital with private share", if a newspaper is partially financed by capital from the private sector, including private companies, state-owned enterprises, and listed companies.

[5]A newspaper is coded as *Societal capital*, if it is financed by a government-sponsored mass organization. A newspaper is coded as *SOE* if it is owned by a state-owned-enterprise and circulated within that enterprise.

nal supervisor as the remaining categories.[6] Once more, the first two categories are most relevant for our analysis. It should be noted that , in most cases, the owner is also the supervisor. We distinguish between these two classifications to more accurately capture the political and economic control of Chinese media, as will become clear in the analysis.

To simplify the matter, we will analyze three newspaper categories defined by both supervisor and content type: *Party Dailies, Party Evenings*, and *Subsidiaries*. *Party Dailies* and *Evenings* have a Party Committee as the supervisor and the content categories "Daily", and "Evening or Metro", respectively. *Subsidiaries* are supervised by a parent newspaper. This distinction is in accordance with some studies of Chinese journalism (e.g., Zhao 1998, 2008; Fang 2000, 2009).

Table 1 shows an example of our coding: Fuzhou prefecture, Fujian province, in 1998. The provincial Party Committee supervised two newspapers: one *Party Daily* and one *Subsidiary*. Note that the subsidiary has the Fujian Newspaper office as its supervisor, rather than a Party Committee. The prefecture Party Committee also has two newspapers, a *Daily* and an *Evening*. Finally, the county-level Fuqing Party Committee has a *Party Daily*.

Table 1: Newspaper Types in Fujian-Fuzhou 1998

Type	Level	Category	Newspaper	Supervisor
Party Daily	Province	Daily	Fujian Daily	CPC Fujian Provincial party committee
Subsidiary	Province	Metro	Channel metropolis newspaper	Fujian Newspaper office
Party Daily	Capital city	Daily	Fuzhou Daily	CPC Fuzhou Municipal party committee
Party Evening	Capital city	Evening	Fuzhou Evening News	CPC Fuzhou Municipal party committee
Party Daily	County	Daily	Fuqing Times	CPC Fuqing Municipal party committee

Data source: Chinese newspaper directory data constructed by the authors.

Historical development   Based on the directory, we illustrate the evolution of the newspaper industry in China. After the foundation of PRC, "Party journalism" was strictly applied to all mass media.[7] Newspapers were official products, subscribed to with public money and consumed in offices, classrooms, and factory workshops. The *Party Dailies* published by the Party Committees at different administrative levels dominated people's consumption of news.[8]

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[6]*A newspaper is coded as Party/governmentbureau, if it is supervised by a specific Party/government divisions; as Other media, if it is a subsidiary of other media such as news agency, broadcaster, and press; as Internal supervisor, if a newspaper is only internally distributed within a mass organization or state-owned enterprises.*

[7]A small number of commercial newspapers were allowed to continue into the early 1950s. There numbers dropped from 58 in March 1950 to 25 in August 1951 to zero in 1952 (Fang 2000).

[8]In the late 1950s and the early 1960s, recognizing the need for newspapers as a form of popular culture and entertainment for the urban population, the CCP permitted some regional committees in central cities to launch 13 evening dailies. Also responsible for propagating Party policies and directives, these "Party Evening Papers" were more readership-oriented, with the contents being more diversified and closer to everyday urban life. During the Cultural Revolution, all 13 evening papers were forced to close down because their orientation was viewed as incompatible with the ideology of the time. In the early 1980s, these 13 Evening papers all resumed publication (Fang 2000).

The upper panel of Figure 1 shows the number of general-interest newspapers in China from 1981 to 2011 in the directory. The lower panel of Figure 1 shows the breakdown by the administrative rank of the Party Committee that owns the newspaper. In 1981, there were 246 general-interest newspapers, the vast majority (229) of which was *Party Dailies*. At that time, the central and all provincial Party Committees had *Party Dailies*, while many prefecture and county level governments did not. The subsequent rapid growth of *Party Dailies* was mainly driven by the prefecture and county *Dailies*. It is extremely uncommon that a Party Committee has more than one *Daily*.

Figure1: Number of General Interest Newspapers by Level and Type
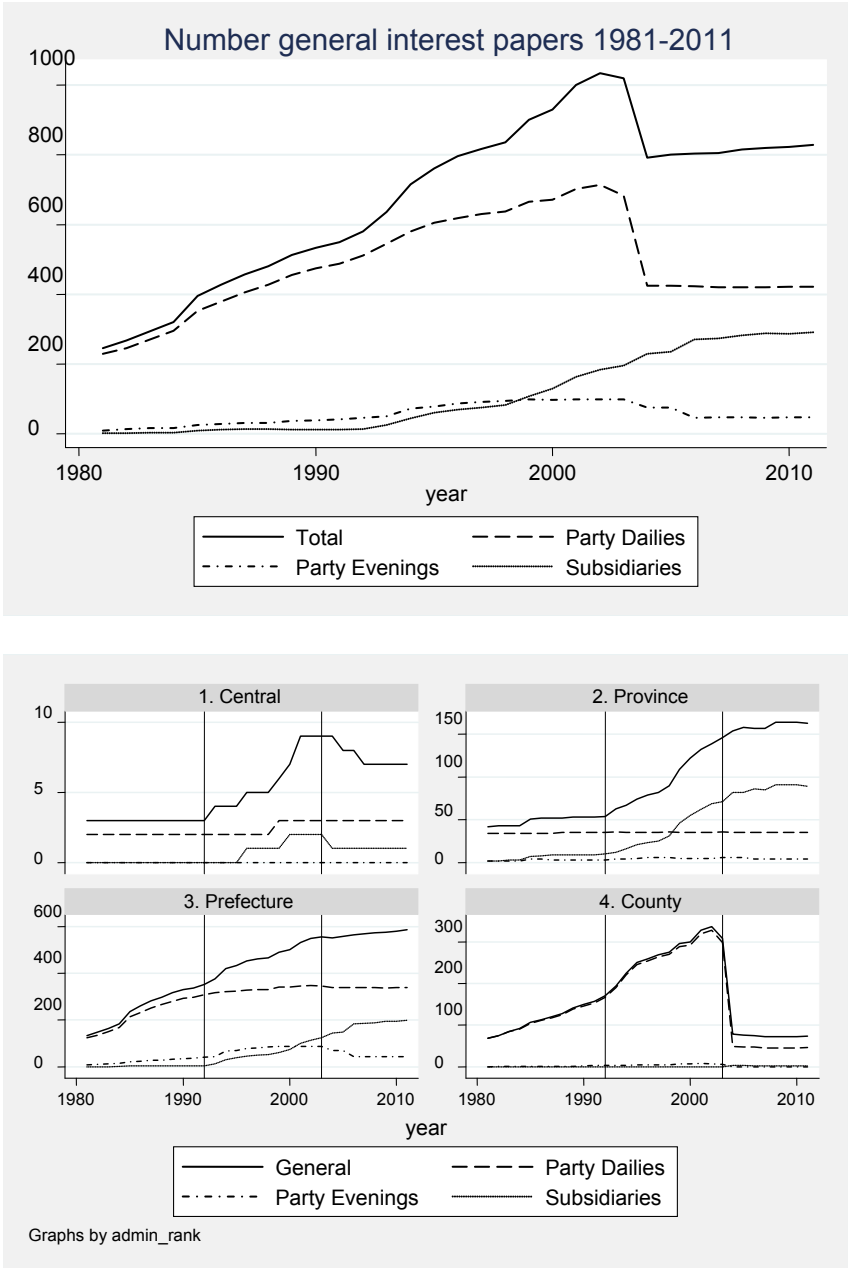
With the economic and social reforms in 1978, the demand for non-Party journalism – informative news coverage, diversified reports, and entertainment – started to grow. Firms

increasingly wanted to advertise their products through media that could reach a wide readership. Advertising became one of China's fastest-growing industries. At the same time, the government gradually cut subsidies and encouraged commercial financing. This shift in funding sources required market-oriented journalism.

The newspapers that took the first step towards market-oriented journalism were the *Party Evening* papers. While maintaining some features of Party journalism, these evening papers published "soft" news about personal life and entertainment and provided more informative reports on economic and social activities. Although small in numbers, they soon attracted a large readership and became the top earners of advertising revenues. As indicated in the lower panel of Figure 1, the *Party Evenings* were mainly introduced by prefecture-level Party Committees in provincial capital cities, the most urbanized areas and the most lucrative regional markets. These *Evenings* became a serious threat to the advertising profits of the provincial-level newspapers.

In 1992, after Deng Xiaoping's Southern Tour, the open endorsement of the market economy by political leadership stimulated the boom of advertising and media industries.[9] During the 1990s, the most fundamental reform concerning media commercialization is the permission to establish *Subsidiary* newspapers by existing Party newspapers. Although indirectly owned by the Party-state and still subject to party journalism, a *Subsidiary* newspaper did not receive any government funding. Many of them absorbed non-state capital – typically funding from mass organizations and state-owned-enterprises – and enjoyed a high degree of financial and managerial autonomy. In Figure 1 with the first vertical line marking the year 1992 of Deng's tour, the increased trend in the number of *Subsidiaries* after this year is clearly visible. The pattern is particularly pronounced for the provincial Party Committees, which actively launched commercial *Subsidiaries* to compete the Prefectural Evenings.

In the 2000s, the market trend has been towards consolidation. In 2003, the SAPP withdrew the licenses of most county-level newspapers, with the stated purpose of reducing the financial burden borne by bottom-level government agencies that were required to subscribe to Party *Dailies*.[10] A few exemptions were made based on historical, cultural, and economic factors. In Figure 1, with the second vertical line marking the year 2003, the number of county-level newspapers dropped from 337 in 2002 to 78 in 2004. Another trend starting from the late 1990s has been towards building newspaper conglomerates, which organize a large number of newspapers under major newspaper groups.

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[9]In 1993, the advertising revenues in the whole country reached 13.4 billion Yuan, a 98% percent increase over 1992. Newspaper advertising revenues doubled from 1992 to 1993.

[10]Before the policy reform in 2003, it was compulsory for every government agency to subscribe to all *Party Dailies* above their administrative rank. For example, a village-level government agency was required to subscribe to the county *Daily*, the prefectural *Daily*, and the provincial *Daily* in the province to which the village belonged and the *People's Daily* (the central Party organ). The subscription fees (summed across all government agencies) amounted to a significant burden for the public expenditure in less developed counties. Some government agencies even shifted this financial burden by collecting additional fees from local residents to pay the subscription. The resistance from local residents, particularly in the rural areas, directly triggered the closing-down policy (SAPP Internal Documentation, *China Journalism Yearbook*, 2004).

3.2 News Content

We conduct a content analysis of the digital texts of the Chinese newspapers that are available in WiseNews, a Hong Kong-based newspaper data provider. WiseNews provides digital archives of 259 newspapers based in Mainland China from 2000 to date. Among them, 125 are general-interest newspapers, from which we are able to identify 110 as Party *Dailies*, *Party Evenings*, and *Subsidiaries* (see Table 2). Geographically, these newspapers cover 29 out of 31 provinces. In terms of government affiliation, ownership, and type of readership, the WiseNews sample, to a large extent, represents the whole newspaper industry in Mainland China. However, WiseNews only contains newspapers located in provincial capital cities and some major prefectural areas. The newspapers in rural areas and less-developed prefectures will not be represented in this sample.

Table 2: General Interest Newspapers in WiseNews

	daily	evening	metro	Total
parent newspaper	2	16	40	58
party	37	12	3	52
Total	39	28	43	110

Based on key-word searches and article counts, we construct a series of content measures that reflect different types of journalism and bias towards the Party/government. The central ideology underpinning the CPC's domination over the media in China is the so-called "Party principle," under which newspapers play a dual role in the Chinese political system: the "Party line" that defines newspapers as the Party's mouthpiece and the "Mass line" that assigns an intelligence mission to mass media for political leaders' decision making. Moreover, to understand the effect of commercialization on political accountability, it is important to investigate whether commercialization in China has led to more investigative stories of corruption, to more sensationalism, or both. Therefore, we differentiate three types of journalism according to the stated goals and tools of political control: 1) the Party-line journalism enforced by the CPC propaganda departments and the Xinhua News Agency; 2) the Mass-line journalism that gives the media the intelligence mission to assist political leadership and monitor government bureaucrats; 3) the bottom-line journalism that is oriented towards readership and advertising. All the measures are for each newspaper on a yearly basis.

The Party Line – Leaders, Xinhua and Epoch The Party Line is one basic principle of the classic Maoism, "The role and power of newspapers consists in their ability to bring the Party program, the Party line, the Party's general and specific policies, its tasks and methods of work to the people in the quickest and most extensive way" (Zhao, 1998, p25). News content along this line is highly positive, didactic, and openly value-oriented. We construct three measures – leader mention, Xinhua citation, and negative coverage (*Epoch*) over positive coverage (Xinhua) – to approximate the Party-line journalism.

Central in the Party-line journalism is the coverage of the Party and government leaders whose activities are not only related to policy making and important social events, but also

represent the image of the Party and indicate regime stability. Thus, we calculate the number of articles that mention the names of 1,978 top political leaders at the central, provincial and prefectural level in China.[11] About 3 million out of the total 48 million articles mention these leaders: 1.3 million for central leaders, 1 million for provincial leaders, and 700,000 for prefectural leaders. We define a variable *LeaderMentions:* the share of articles mentioning all political leaders among all articles published by a newspaper normalized by multiplying 100. The mean of "LeaderMentions" is 5 with a standard deviation of 11. Most of these articles routinely cover policy directives endorsed by central and provincial leaders, the leaders' visits to subordinate government divisions, mass organizations, and workplaces, the study of government policies and the works of the paramount leader, and the achievements of individual factories, counties or Party members positively appraised by the leaders.

As mentioned, the Xinhua News Agency (Xinhua for short), under the direct control of the CPC Central Propaganda Department, is a key tool to produce news stories and enforce the Party-line journalism. For many important propaganda campaigns, national political events, and the activities of central leaders, newspapers are required to carry Xinhua copies to avoid "political incorrectness" and ideological inconsistency. Based on the search for articles containing the words "Xinhua News Agency" (新华社 in Chinese, 4.8 million of this type of articles found), we define a variable Xinhua Cites to be the percentage of articles that mention "Xinhua News Agency" among all published articles. By newspaper and year, the mean of "Xinhua Cites" is 6% with a standard deviation of 12%.

Complementary to the practices of promoting propaganda through Xinhua, one important tool to enforce the Party-line is through depressing and censoring negative reports on the Party. Thus, we construct a third measure of the Party-line journalism based on the relative coverage of the top events listed by *Epoch Times* – an overseas-based anti-CPC Chinese newspaper – and those listed by Xinhua. *Epoch Times* publishes a significant number of negative reports on the CPC government, most of which are suppressed or censored in the media outlets in mainland China.[12] Using 46 top events listed by *Epoch Times* and 108 top events listed by Xinhua from 2001 to 2010, we search relevant articles in a window around the events.[13] In total, we find around 600,000 articles covering the *Epoch Times* top stories and 1.6 million articles covering the Xinhua top stories. We define a variable "Epoch Stories"

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[11]At the central level, the name list includes all members in the Political Bureau of the CPC Central Committee and the affiliated Commissions, heads of all ministries on the Chinese Central State Council. In total, we search for 108 central level politicians. The search is set from the beginning of the year when they are promoted to this level of office to the end of the year when they leave office. We search for the names of CPC secretaries and governors/mayors at the provincial (785 names) and prefectural (1085 names) Party Commission and Administration.

[12]Examples of the top events listed by *Epoch Times* are "China's largest residential fire happened in Shanghai", "Google announced its withdrawal from the Chinese market", "The truth of HIV in China revealed by Professor Gao Yaojie in a speech in Washington on Dec. 1", "The scandal of defense attorney Li Zhuang during local CCP boss Bo Xilai's campaign against organized crime in Chongqing City".

[13]Xinhua News Agency started to publish its annual list of top 10 events from 2001 and *Epoch Times* made its counterpart lists from 2002. We search all these listed events. A significant number of events listed by *Epoch Times* were censored and no coverage of them was found in any newspaper in mainland China. This is why the searched events in *Epoch Times* constitute a considerably smaller amount than the Xinhua events. A full list of the events, the key words and time periods that we use to identify the newspaper articles are available in the online appendix.

to be the ratio of the number of articles covering the top events listed by *Epoch Times* over the number of articles covering the top events listed by Xinhua. At the newspaper and year level, the mean of "Epoch Stories" is 23% with a standard deviation of 15%.

The Mass Line – Corruption, disasters and accidents   The mass line is a political and organizational method developed by the CPC during the Chinese revolution.[14] The mass line view recognizes the role of the media as an intelligence mission to assist political leaders in their decision making. The media carry out the tasks of reporting people's opinions and concerns and informing leaders of the performance of the cadres who are working directly with the people (Zhao 1998). In more recent years, one important practice of the mass line is the so-called "supervision by public opinion (Yulun Jiandu)," which permits the media to report on corruption and wrongdoings of Party officials and government agencies.[15]

Whether the Chinese press can act as an effective watch dog is disputed. Some argue that as an institution that is relatively autonomous from other parts of the state bureaucracy and now with a commercial logic rooted outside the government bureaucracy itself, the reformed and commercialized news media are playing an increasingly important surveillance role. By bringing certain issues to the public arena, media-originated exposures sometimes help shape the terms of public discourse and lead to the formation of specific reform policies (Gordon, 1999). On the other hand, criticisms tend to solely be aimed at low-ranked officials and bureaucracies that fail to adequately carry out the Party directive, for poor working style, and for failing to live up to the Party standards (Nathan, 1986; Zhao 1998). Furthermore, information that may trigger collective social actions, create political division, or threaten the leadership of CPC is strictly censored (Zhao 1998, 2008).

To measure the Mass-line journalism, we search for articles about corruption cases (excluding those on how governments advocate, initiate, and implement anti-corruption activities), disasters, and serious accidents.[16] We find around 50,000 articles covering corruption cases. These articles mostly involve corruption of government officials below the prefectural level, typically for taking bribes.[17] We define a variable *corruption* to be the share of articles covering corruption cases among all articles published by a newspaper at the yearly level.

For the CPC and Chinese government, disasters and serious accidents, particularly those that are not caused by natural reasons, are negative news because the appearance of these is an indication of the poor performance of government agencies and the detachment from the people.[18] Based on the EM-DAT database constructed by the Brussels-based Center for

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[14]In the words of Liu Shaoqi, the chief theoretician of the CPC mass line, "You [the Party media workers] travel to all locations. The people depend on you to voice their demands, difficulties, experiences and even to describe mistakes in our work. You turn them into news, features and reports to Party Committees at various levels, and to the Central Committee. In this way, you make a connection between the Party and the masses." (Liu, 1968)

[15]During a long period after the foundation of the People's Republic of China, the criticism of Party officials and government agencies was collected into a special bulletin called "Internal References," which was only distributed among Party cadres whose position was above a certain level.

[16]We use the following string of Chinese characters to search for the coverage of corruption cases:
(腐败 or 贪污 or 受贿 or 金钱) and (双规 or 调查 or 审查 or 检察机关) and (免去 or 罢免 or 查处 or 惩处 or 撤消 or 撤除)

[17]We only find 13 corruption cases involving any of the 1,978 political leaders at the central, provincial, and prefectural levels.

[18]For example, in July 2011, two high-speed trains collided in Wenzhou, Zhejiang province, killing 40 people.

Research on the Epidemiology of Disasters, we search for 224 disasters from 1998 to 2010, in which more than 30 people were killed. In total, 140,783 stories cover these disasters. Among these disasters, we isolate 129 non-natural disasters - called "accidents" in this paper - to capture the type of events that are more relevant from a government-monitoring perspective.[19] 32,193 articles are found to cover these accidents. We define a variable "Disasters" to be the share of the articles covering the above disasters among the total number of published articles by a newspaper during a year. The variable "Accidents" is similarly defined.

The Bottom Line – Crime, entertainment, sports We finally construct a category to capture the bottom-line journalism: the type of journalism that attracts readership and advertisement. This type of material is another perceived dividing line between the more and less strictly-controlled papers. The more commercialized newspapers tend to carry more entertaining and sensational news articles. This tabloid-journalism, which is popular in many Western countries, has been attacked by CPC Party officials in campaigns against "Spiritual Pollution".[20]

We define three variables "Sports," "Entertainment," and "Crime" to be the shares of articles covering these three subject matters. In particular, we search for sport stories with a string consisting of the most popular sports.[21] This yields around 2.4 million articles, or an average share of 4.6 percent by newspaper and year. To identify entertainment material, we use a string including key words such as movie, television, musical, concert, record, etc.[22] We find 5.7 million stories covering entertainment, or an average share of 11 percent. Finally, we search for crime stories covering serious violent crimes (murder, rape, robbery) or organized crime.[23] We identify 175,963 such stories. The average share of articles covering crime is less than 0.3 percent by newspaper and year.

The Ministry of Railways announced that three high ranking railway officials were fired immediately after the crash under charges of corruption. (http://www.guardian.co.uk/world/2011/jul/25/chinese-rail-crash-cover-up-claims)

[19]The accidents include 81 industrial accidents (of which 55 are coal mine accidents), 29 transport accidents and 19 are miscellaneous accidents. Responsibility of government officials is claimed in most of these accidents.

[20]See e.g. Zhao (1998), p. 131.

[21]We use the string:

"体育比赛 or 运动会 or 足球 or 篮球 or 乒乓球 or 羽毛球 or ((游泳 or 蛙泳 or 蝶泳 or 仰泳 or 自由泳) and 比

赛) or 排球 or (田径 and 比赛) or 长跑 or 短跑 or 冬泳 or 保龄球 or 网球 or 台球 or 桌球"

which translates into "Artic contest or games or soccer or basketball or Ping-Pong or badminton or (swimming or breaststroke or butterfly stroke or backstroke or crawl and competition) or volleyball or (track and field and competition) or long-distance race or dash or wintertime swimming or bowling or tennis or Ping-Pong or pool".

[22]The string is

"电影 or 电视 or 话剧 or 戏剧 or 戏曲 or 主演 or 演员 or 歌手 or 歌星 or 影星 or 音乐剧 or 演唱会 or 演奏会

or ((流行 or 主流 or 摇滚 or 民俗 or 民族) and 音乐) or 唱片 or 演唱会 or 歌迷会 or 影迷会"

which translates into "Movie or television or modern drama or play or drama or acts the leading role in or actor or singer or singer or movie star or musical or concert or concert or (the popular or mainstream or rock and roll or folk customs or nationality and music) or phonograph record or concert or fan club or movie fan meeting".

[23]We use the search string: 歹徒 or 行凶 or 凶犯 or 罪犯 or 杀人 or 强奸 or 抢劫 or 黑社会 which translates into "Scoundrel or commits murder or murderer or criminal or murder or to rape or to rob or organized crime". The search is limited to a search among article titles, because we need to differentiate the crime stories from the officer's talk on anti-crime campaigns. Articles telling such stories tend to use such salient words in the title, while articles for the officer's talk can contain such words in content but are very less likely to use them in the title.

4 Measurement of political control

What content characterizes politically controlled papers? Our first goal is to find what type of news content is characteristic of more tightly controlled newspapers. Our strong prior is that the *Party Dailies* are more tightly controlled. We first describe what type of news content is characteristic of *Party Dailies* compared to *Party Evenings* and *Subsidiaries* in the same market (prefecture) and year. Our second strategy is to regress content on advertising ranking. The idea is that there is a conflict between profit maximization and political control, so that tighter political control has a price in terms of less advertising revenue. Thus, we analyze what type of news content predicts high advertising revenues.

To compare *Party Dailies* with *Party Evenings* and *Subsidiaries*, we first look at the raw data. Table 3 shows content by newspaper type. The last column contains the average number of articles that we found in each newspaper and year. *Party Evenings* and *Subsidiaries* have around 30 percent more articles than *Party Dailies*. We next look at the content characterizing the "Party Line" function of the newspapers. *Party Dailies* mention top political leaders in 22 percent of their articles. This is vastly more than *Party Evenings* (8 percent) or *Subsidiaries* (5 percent). *Party Dailies* also cite Xinhua News in 34 percent of their articles, again substantially more than *Party Evenings* (25 percent) or *Subsidiaries* (18 percent). This means that a shift in demand from *Party Dailies* to *Evenings* and *Subsidiaries* will have a massive impact on people's exposure to political leaders and Xinhua News stories. The third column shows that also the selection of news stories is systematically different between the two categories. *Party Dailies* tend to cover less of the top stories listed by the regime critical *Epoch Times*, as a share of all top stories covered.

Table 3: Content Categories by Newspaper Type

	I	II	III	IV
	Party Line			
	Leader Mentions	Xinhua Cites	Epoch Stories	Number Articles
Party Daily	21.83	34.32	20.31	16,695
Party Evening	8.4	25.08	23.33	21,655
Subsidiary	4.8	17.99	26.63	23,936
	Mass Line			
	Corruption	Disasters	Accidents	
Party Daily	0.20	0.62	0.15	
Party Evening	0.15	0.44	0.15	
Subsidiary	0.14	0.42	0.11	
	Bottom Line			
	Sports	Entertainment	Crime	
Party Daily	5.74	10.70	0.31	
Party Evening	7.12	13.08	0.70	
Subsidiary	6.96	13.80	0.65	

Data source: Chinese newspaper directory data constructed by the authors.

The next three categories relate to the "Mass Line" role of newspapers. Here, our priors are less strong. On the one hand, these stories might be suppressed because they reflect poor

performance of government agencies and a negative image of the CPC. On the other hand, they might be encouraged because of the intelligence mission of the newspapers to report the misconduct at lower level party cadres and by government bureaucrats. We find that *Party Dailies* report more on corruption and disasters than the less tightly politically controlled *Party Evenings* and *Subsidiaries*.

The final three categories capture the bottom-line journalism. *Evenings* and *Subsidiaries* cover more sports and entertainment than *Party Dailies*. In particular, they cover crime more than twice as frequently as *Party Dailies*.

These differences could partly reflect the fact that our sample of *Dailies, Evenings* and *Subsidiaries* is drawn from different places. It could, for example, be that *Dailies* in our sample are predominantly from places with more corruption and this is why we find more corruption coverage in these newspapers. To address this concern, Table 4 regresses the content categories on the type of newspaper, including prefecture-by-year fixed effects. Essentially, we compare the content of *Party Dailies*, *Evenings* and *Subsidiaries* within the same prefecture and year, and consequently with the same available news material. The differences in content are similar to those in raw means reported in Table 3. Notably, corruption and disaster coverage are lower in the less politically controlled *Evenings* and *Subsidiaries*.

Table 4: Content by Newspaper Type, Prefecture by Year Fixed Effects

VARIABLES	Leader mentions	Xinhua cites	Epoch Stories	Corruption	Disasters	Accidents
Party Evening	-13.593***	-12.786***	4.462***	-0.076***	-0.154***	-0.010
	(2.269)	(3.167)	(0.676)	(0.014)	(0.051)	(0.014)
Subsidiary	-18.591***	-15.000***	5.949***	-0.067***	-0.236***	-0.015
	(1.593)	(1.762)	(0.527)	(0.011)	(0.044)	(0.014)
Observations	718	718	718	718	718	718
R-squared	0.724	0.798	0.915	0.627	0.743	0.592

Standard errors clustered by newspaper: *** p<0.01, ** p<0.05, * p<0.1.

Table 4, cont. Content by Newspaper Type, Prefecture by Year Fixed Effects

VARIABLES	Sports	Entertainment	Crime
Party Evening	1.652***	3.199***	0.274***
	(0.527)	(0.559)	(0.096)
Subsidiary	1.203***	2.857***	0.358***
	(0.335)	(0.453)	(0.053)
Observations	718	718	718
R-squared	0.715	0.826	0.685

Since this was somewhat surprising, we further investigated the result that the *Party Dailies* covered more disasters and corruption. It might be that the type of coverage in the *Party Evenings* and *Subsidiaries* is more aggressive. One way of exploreing this is to look at the speed of coverage. When a sensitive event takes place, Xinhua typically gives a recommendation on whether and how it should be covered. An aggressive newspaper should hurry up to cover it before the Xinhua makes its recommendation. To investigate this, we

added coverage of all disasters killing more than 30 people in Asia, but outside of China. Consistent with newspapers waiting for Xinhua, disasters happening in China are, on average, covered almost one day later than similar disasters outside of China. The average first day of coverage of a disaster in Asia outside of China is 2.5 days compared to 3.4 days for disasters in China.

Then, we compared the speed of coverage by type of newspaper. Compared to *Party Dailies* in the same prefecture, *Party Evenings* are faster in covering disasters (around eight hours on average). However, this is true for disasters both in China and outside. There is no significant difference in the relative speed of coverage inside and outside China. *Subsidiaries* are not significantly different from *Dailies* in their coverage. We also explored a dummy variable for being the first newspaper covering a disaster. Once more, there were no significant differences.

What content characterizes newspapers with high advertising revenues? We will now investigate what type of content characterizes newspapers with high advertising revenues. For around half of the newspaper-year observations, we have data on the advertising ranking of the newspapers. We use this to analyze what type of content characterizes newspapers with high advertising ranking. Using an ordered probit, we regress the advertising ranking on our content categories and prefecture-by-year fixed effects.

The result is shown in Table 5. The first column shows the results of nine regressions with only one content category included, and prefecture-by-year fixed effects. The general picture is that the content categories that we found to be characteristic of strictly controlled newspapers are also characteristic of newspapers with low advertising revenues. This also holds when we control for the type of newspaper. Leader Mentions , Xinhua cites, corruption, disaster and accident coverage are negatively correlated with advertising revenues. *Epoch Times* stories, sports, crime and entertainment coverage are positively correlated with a good advertising ranking. Column 2[sth is missing here] shows the result from one regression including all content categories. Because of multicollinearity and few observations, these relationships are rarely statistically significant.

Table 5: Advertising Ranking and Party Daily

	Advertising Ranking				Party Daily	
PCA 1st dim			7.242***	5.712***		3.327***
			(0.618)	(0.975)		(0.187)
Leader mentions	0.067***	0.026*			0.019***	
	(0.006)	(0.014)			(0.004)	
Xinhua cites	0.054***	0.008			0.011***	
	(0.007)	(0.018)			(0.003)	
Epoch Stories	-0.058***	0.016			-0.011***	
	(0.010)	(0.013)			(0.003)	
Corruption	7.734***	3.156*			0.584	
	(1.005)	(1.786)			(0.374)	
Disasters	2.713***	0.770*			-0.170***	
	(0.366)	(0.448)			(0.058)	
Accidents	3.726***	2.394*			0.335***	
	(1.089)	(1.222)			(0.105)	
Sports	-0.193***	-0.055			-0.024*	
	(0.032)	(0.064)			(0.013)	
Entertainment	-0.197***	-0.079			-0.014	
	(0.024)	(0.052)			(0.009)	
Crime	-1.917***	-0.970*			-0.247**	
	(0.218)	(0.505)			(0.120)	
Party Daily				0.381*		
				(0.218)		
Party Evening				-0.425**		
				(0.211)		
Observations		521	521	521	718	718
R-squared					0.774	0.727

The dependent variable in the first four columns is minus the advertising ranking of each newspaper. The dependent variable in the last two columns is an indicator for the newspaper being a Party Daily. All specifications include prefecture by year fixed effects. Standard errors clustered by newspaper in parenthesis. *** p<0.01, ** p<0.05, * p<0.1

Index of political control   In order to simplify our analysis, we are interested in constructing an index of political control. To this end, we now perform a principal component analysis of our content categories. To remove news availability that may vary by prefecture and year, we analyze the residuals from a regression of content categories on prefecture by year fixed effects. The result is shown in Table 6. The first component explains 40 percent of the variation in news coverage. The factor loadings look very similar to what we earlier found to be positively (negatively) correlated with political control (good advertising ranking). Leader Mentions [see question above] have the strongest positive factor loading, followed by Xinhua News citations and corruption stories. Entertainment, crime and coverage of *Epoch Times* top stories have the strongest negative factor loadings. Figure 2 plots the factor loadings of the PCA first component against t-statistics from regressions of advertising ranking on each of the content categories individually and prefecture-by-year fixed effects (Table 5, column 1) and the equivalent t-statistics using the Party Daily dummy as the dependent variable.

Table 6: Principal Components Analysis

Component	Eigenvalue	Proportion	Variable	Comp1
Comp1	3.60	0.40	Leader Mentions	0.46
Comp2	1.33	0.15	Xinhua cites	0.39
Comp3	1.07	0.12	Epoch Stories	-0.31
Comp4	0.93	0.10	Corruption	0.33
Comp5	0.62	0.07	Disasters	0.29
Comp6	0.51	0.06	Accident	0.06
Comp7	0.43	0.05	Sports	-0.27
Comp8	0.30	0.03	Entertainment	-0.37
Comp9	0.20	0.02	Crime	-0.37

Figure 2: PCA $1st$ **Component and t-stats**
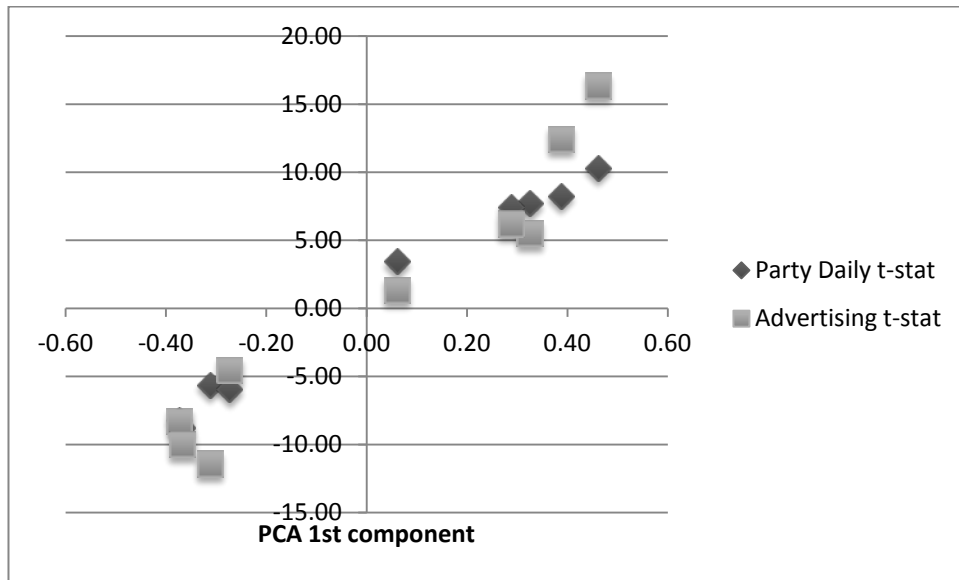
It seems that the first dimension of differentiation in the Chinese newspaper market (captured by the first principal component) measures the trade-off between political control and advertising revenue. To further make this case, from columns 2 and 5 of Table 5, we compute the expected advertising ranking and probability that a newspaper is a *Party Daily*. Figure 3 plots these against the first dimension from the principal component analysis. The first principal component is clearly negatively related to good advertising ranking (raw correlation -0.73) and positively correlated with the probability of being a *Party Daily* (correlation 0.92). The correlation between the expected advertising ranking and the probability of being a *Party Daily* is -0.64. In a regression including prefecture by year fixed effects, the first principal component is negatively correlated with advertising ranking (t-stat well above ten, Table 5 column 3) and positively correlated with the probability that a newspaper is a *Party Daily* (again very high t-stat, Table 5 column 6). It is not the case that the advertising ranking is correlated with the principal component only through type of newspaper. Column 4 controls for the type of newspaper, and the principal component is still significant and the size of the coefficient is not affected to any considerable extent.

Figure 3: PCA 1st Component and Advertising Ranking – Political Control
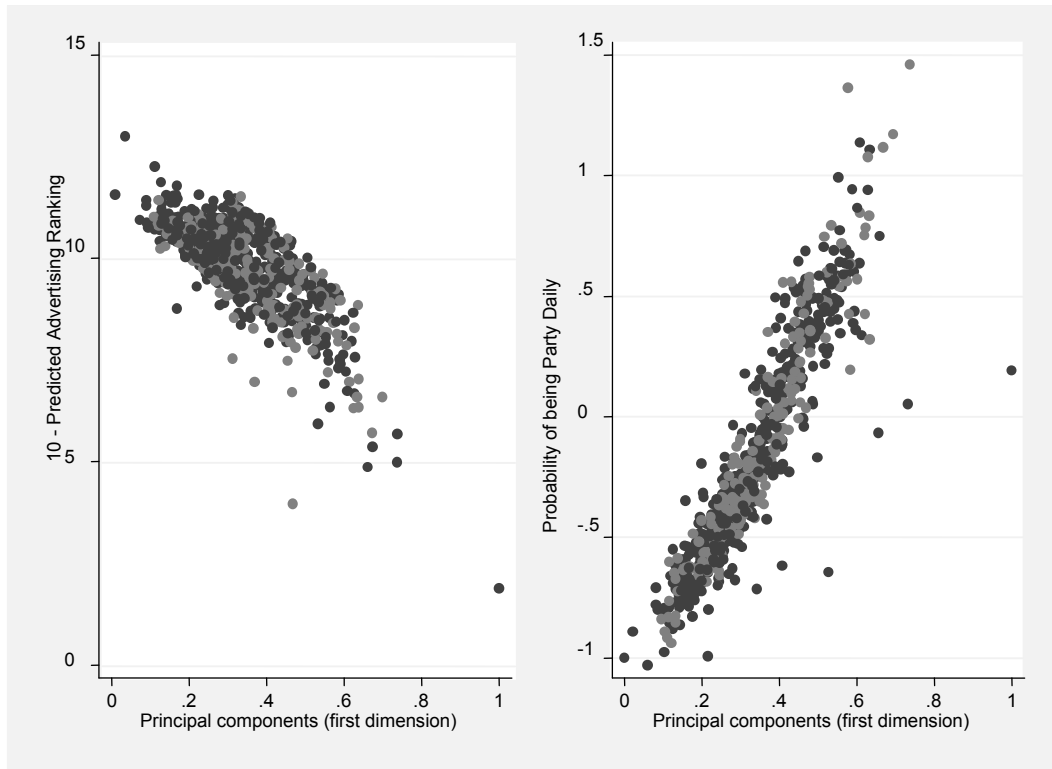
We will use the first principal component as our index of political control. The picture is very similar if one instead uses the predicted probability that a newspaper is a *Party Daily*, or the newspaper's predicted advertising ranking, based on the coefficients estimated in Table 5. The first principal component is a mix of these that is more strongly correlated with both than either with the other.

To further validate the fact that our index captures political control, we compare it with the share of censored posts on Sina Weibo. Sina Weibo is the largest micro blog in China by far, with over 300 million registered users. Bamman et al. (2012) estimate the share of censored posts by Chinese province. The upper left graph in Figure 4 plots the average political control index against the share of deleted posts. Average political control is affected by sampling of newspapers in different provinces, e.g. by type and administrative level. The upper right graph shows average political control for *Party Dailies* only. The lower graph shows average political control, where newspaper type and level of government have been partialled out.

Figure 4. PCA First Component and Censoring of Weibo Microblogs
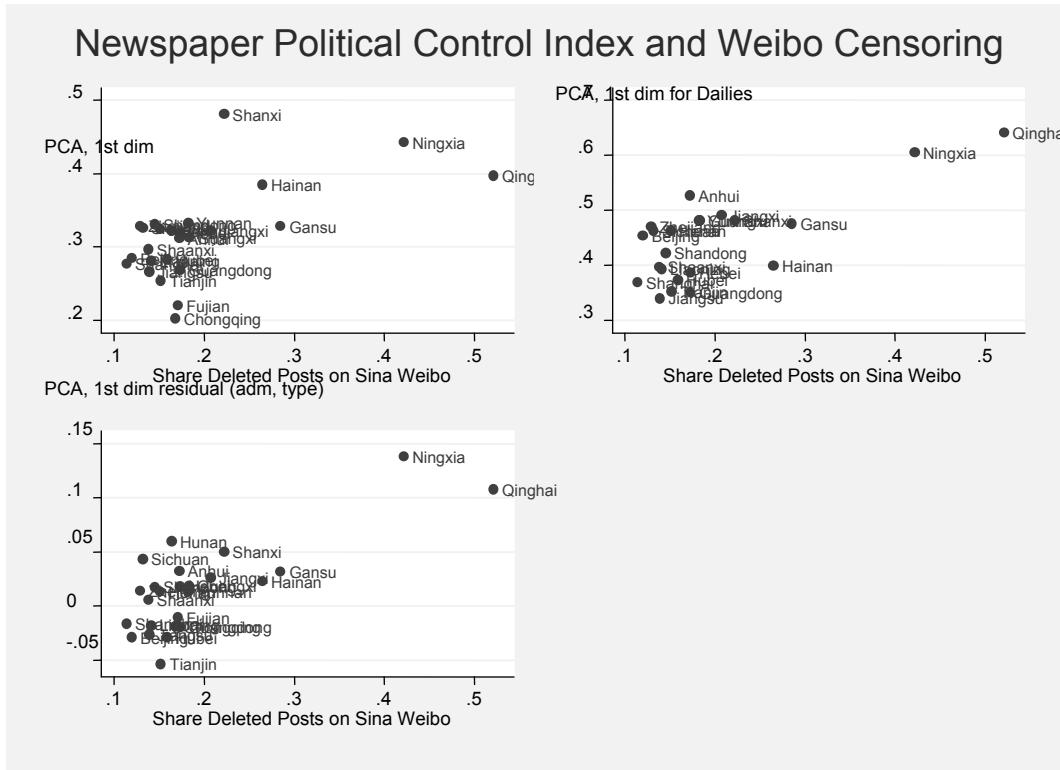
The average political control index of newspapers in a province has a raw correlation of 0.64 with the of share censored posts. Comparing only the political control of *Party Dailies*, the correlation with the share of censored posts increases to 0.72. Removing the residual from newspaper type and level of government, the correlation rises to 0.81. The two outliers (in both dimensions) are Ningxia and Qinghai. In these provinces, the share of deleted posts is around 50 percent, and the average index of political control for *Party Dailies* is around 0.6. If these two provinces are removed, the raw correlation is still 0.55.

Table 7 contains a table of the newspapers that have the highest and lowest average political control in our sample. The most controlled papers are *Party Dailies* at the central and provincial level. The least controlled are *Subsidiaries* and one *Party Evening* at the provincial and prefecture level.

Table 7: Most and Least Controlled Newspapers

Political control	Newspaper name	Newspaper type	Level	Province	Prefecture
0.68	QINGHAIDAILY	Party Daily	province	Qinghai	Xining
0.64	NINGXIADAILY	Party Daily	province	Ningxia	Yinchuan
0.59	GANSUDAILY	Party Daily	province	Gansu	Lanzhou
0.59	ANHUIDAILY	Party Daily	province	Anhui	Hefei
0.56	PEOPLE'SDAILY	Party Daily	central	Beijing	Beijing
0.54	YUNNANDAILY	Party Daily	province	Yunnan	Kunming
0.54	SICHUANDAILY	Party Daily	province	Sichuan	Chengdu
0.54	SHANXIDAILY	Party Daily	province	Shanxi	Taiyuan
0.54	JIANGXIDAILY	Party Daily	province	Jiangxi	Nanchang
0.53	GUANGXIDAILY	Party Daily	province	Guangxi	Nanning
0.21	CHUTIANMETROPOLISDAILY	Subsidiary	province	Hubei	Wuhan
0.21	DUSHISHIBAO	Party Evening	prefecture	Yunnan	Kunming
0.21	SHENZHENEVENINGNEWS	Subsidiary	prefecture	Guangdong	Shenzhen
0.19	WUHANEVENINGNEWS	Subsidiary	prefecture	Hubei	Wuhan
0.17	WUHANMORNINGPOST	Subsidiary	prefecture	Hubei	Wuhan
0.16	LIAOSHENEVENINGNEWS	Subsidiary	province	Liaoning	Shenyang
0.16	INFORMATIONTIMES	Subsidiary	prefecture	Guangdong	Guangzhou
0.15	BEIJINGEVENINGNEWS	Subsidiary	province	Beijing	Beijing
0.13	THEFIRST	Subsidiary	province	Beijing	Beijing
0.03	BEIJINGDAILYMESSENGER	Subsidiary	province	Beijing	Beijing

Finally, Figure 5 plots the distribution of the political control index, by newspaper type. *Party Dailies* are most controlled, followed by *Party Evenings* and *Subsidiaries*.

Figure 5. PCA First Component and Newspaper Type
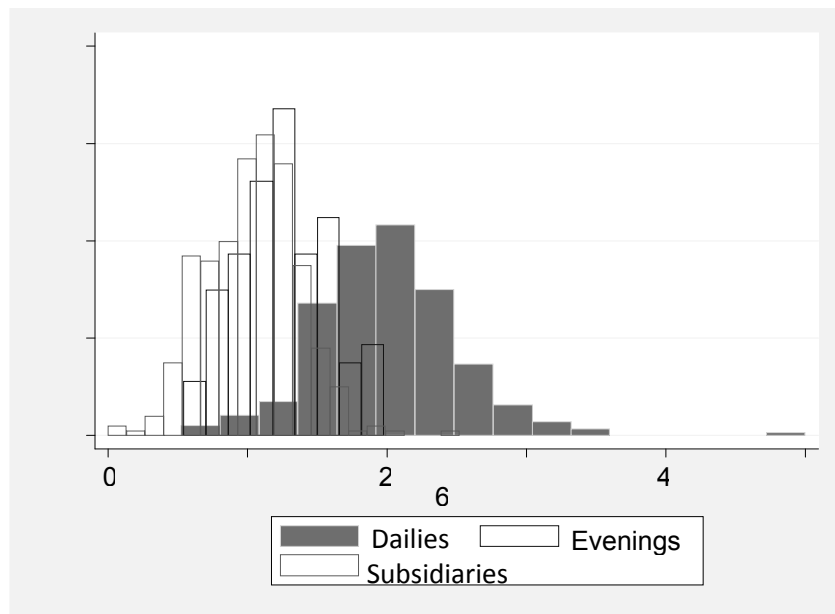
Why do Ningxia and Qinghai control their newspapers more than other provinces? They are inland provinces far from the main engines of growth. Still, they are not particularly

poor, although they are below the mean in terms of per capita GDP. These provinces are small and media competition might be weaker for this reason. To discuss what factors might matter and how, we now set up a simple model of political media control.

5   Determinants of political control: Model

5.1   Motivating example

As an example of the type of competition we are trying to capture, consider the Chengdu prefecture. It is a pretty representative example of the evolution of the newspaper market in urban areas. Chengdu, the capital city of the Sichuan province, is a central city in Southwest China. With a population of 14 million and a GDP of RMB 390 billion (about 62 billion in US dollars) in 2008, the Chengdu district is constantly ranked as No. 13 among all Chinese cities during the 2000s.

In the early 1980s, the dominating newspaper in Chengdu was the *Sichuan Daily*, run by the provincial level Party Committee. Its only competition was a county level *Party Daily*. In 1983, the prefecture-level Party Committee started the *Chengdu Evening News*, which quickly became the leader of the local press market. In 1995, the *Sichuan Daily* launched a commercial subsidiary, the *West China City News*. Before the start of this subsidiary, the *Chengdu Evening News* had advertising revenues 3.4 times as large as those of the *Sichuan Daily*.[24] Within four years, the *West China City News* earned advertising revenues of RMB130 million, while the advertising revenue of its parent paper, the *Sichuan Daily*, fell from RMB40 million to 20 million. However, the *Chengdu Evening News* experienced an even greater fall as its advertising revenue plunged from a peak of RMB 160 million to RMB80-90 million. In response, the Chengdu Party Committee — the owner of *Chengdu Evening News*, launched a new Daily newspaper in 2001, *Chengdu Daily*, to replace the *Evening* as the Party newspaper. The "liberalized" *Chengdu Evening News* became a subsidiary of *Chengdu Daily* and enjoyed the same autonomy as the *West China City News*. The *Chengdu Evening News* revived. In 2003, competition was reduced as the county-level *Party Daily Dujiang Yang Newspaper* was closed down.

5.2   Model

We now develop a simple model to discuss how Party Committees adjust the level of political control of their newspapers to trade off economic and political goals. A newspaper n can locate on the line at $x_n \in [0, 1]$, where a higher x_n means less political control. There is a continuum of consumers with ideological blisspoints, x_i, uniformly distributed on $x_i \in [0, 1]$. The consumer's utility from newspaper n with ideological profile n is

$$u\left(x_i, x_n\right) = \frac{1}{2} - \left|x_i - x_n\right|.$$

_____

[24]The numbers in this example are from Huang (2001).

We abstract from price competition and set the price of the newspaper to zero. In practice, the subscription prices were set by national regulation for each category (*Daily, Evening, Subsidiary*) until 2005. Even after this, the price dispersion is small and the subscription fees are a small share of total revenue, which mainly comes from advertising. Consumers only buy one newspaper. They buy the newspaper that gives them the highest utility and they do not buy newspapers that give a negative utility.

The newspapers earn a profit that is $\overline{R}$ times their demand in the market. The Party Committee which owns the paper cares about this profit and about consumer exposure to political information in the paper. The Party Committee's ideological blisspoint is $x = 0$. Its utility from ideology is $-\alpha$ times the average consumed ideology. A newspaper at $x_n = 0$ is thus most preferred from a political influence perspective while a newspaper at $x_n = \frac{1}{2}$ maximizes consumer demand.

Party Committee Monopoly   The most common market structure in China is that one Party Committee owns all newspapers in a prefecture. We start by analyzing this case. Suppose that the Party Committee chooses to have only one *Party Daily*, located at $x_n = d$. Demand is then

$$X(d) = \frac{1}{2} + d,$$

and the utility of the Party Committee is,

$$U(d) = \underbrace{X(d)\,\overline{R}}_{\text{revenue}} - \alpha \underbrace{X(d)\,d}_{\text{political exposure}}.$$

The provincial Party Committee will select d to maximize utility. This is a simple quadratic problem with the solution

$$d^* = \begin{cases} 0 & \text{if } \frac{\overline{R}}{\alpha} \leq \frac{1}{2} \\ \frac{\overline{R}}{2\alpha} - \frac{1}{4} & \text{if } \frac{1}{2} < \frac{\overline{R}}{\alpha} < \frac{3}{4} \\ \frac{1}{2} & \text{if } \frac{\overline{R}}{\alpha} \geq \frac{3}{4} \end{cases} \quad (1)$$

The *Daily* will be less ideological the larger is the market $\overline{R}$ and the less the Party Committee cares about political control, α.

Now consider the case where the Party Committee owns both a *Party Daily* and an *Evening* with positions d and e. In this case, the demand for the *Daily* will be

$$X_d = \frac{d + e}{2},$$

and those reading it will be exposed to ideological content d. The demand for the *Evening* is

$$X_e = e + \frac{1}{2} - \frac{d + e}{2},$$

and those reading it will be exposed to ideological content e. The Party Committee's utility

from the newspaper profiles (d, e) is

$$U(d, e) = \overline{R}\left(e + \frac{1}{2}\right) - \alpha\left(X_d d + X_e e\right).$$

In this case, it will set $d = 0$, since $\frac{\partial U}{\partial d} = -\alpha_p d < 0$. The existence of an *Evening* will increase the political control of the *Daily*. The reason is that a more commercialized *Daily* will only steal readers from the *Evening* and hence not generate more profits.

Given $d = 0$, the Party Committee will set e to maximize

$$U(d, e) = \overline{R}\left(\frac{1}{2} + e\right) - \frac{\alpha}{2}\left(1 + e\right)e.$$

This has the solution

$$e^* = \begin{array}{ll} 0 & \text{if } \frac{\overline{R}}{\alpha} \leq \frac{1}{2} \\ \frac{\overline{R}}{\alpha} - \frac{1}{2} & \text{if } \frac{1}{2} < \frac{\overline{R}}{\alpha} < 1 \\ \frac{1}{2} & \text{if } \frac{\overline{R}}{\alpha} \geq 1. \end{array} \quad (2)$$

If $\frac{\overline{R}}{\alpha_p} < \frac{1}{2}$, there will only be a *Daily* paper, since there is no point in having two perfect substitutes.

Comparing d and e from equations (1) and (2), it is clear that an *Evening* paper in the two-paper case will be more commercialized than a *Daily* in the one-paper case, given the same $\frac{\overline{R}}{\alpha}$. To see why, consider a decrease in commercialization under both cases; see Figure 6. The effect on total Party Committee profits is the same in both cases, but the effect on ideological exposure is different. As the monopoly *Party Daily* becomes less commercialized, this influences all readers. However, as the *Party Evening* becomes less commercialized, this only influences the readers of the *Evening*, and some readers are even stolen from the *Party Daily* causing these to be exposed to a more commercial content. As the ideological benefits from making the *Evening* more politically controlled are lower, it will be less controlled.

Figure 6. Monopoly Party Committee
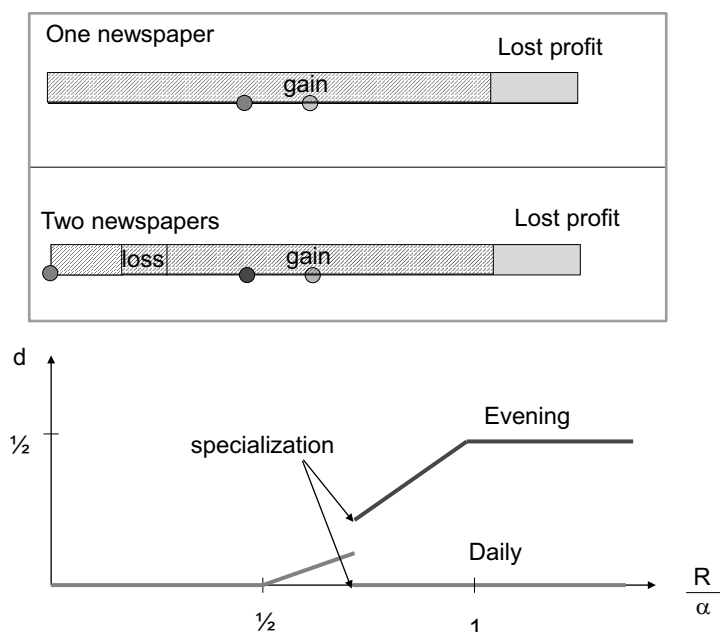
Consequently, a *Daily* and an *Evening* will be specialized, or differentiated, around the position a single *Daily* would occupy at the market conditions. As an *Evening* paper enters, it will become more commercialized than the *Daily* was just before entry and the *Daily* will become more controlled.

When will the Party Committee choose to start an *Evening* paper? If it were costless, the monopoly Party Committee would like to start an *Evening* if $\frac{\overline{R}}{\alpha} > \frac{1}{2}$. In this range, the *Daily* in the one-paper case would be located at $d > 0$. If the Party Committee started an *Evening* located at this position and moved the *Daily* to $d = 0$, it would gain the same profits and get better political exposure as some readers would remain with the *Daily*. If $\frac{\overline{R}}{\alpha} < \frac{1}{2}$, then the Party Committee would not like to start an *Evening* paper, since $e^* = 0$ in this case and there is no point in having two papers located at the same position.

Party Committee Duopoly   We now consider the case with two competing Party Committees. This is the second most common market situation overall and the most common market structure in the sample of prefectures for which we have content data for at least some newspapers. We call one the Province Party Committee and the other the county Party Committee. One committee may care more about political control than the other. We label their preferences for political control α^p and α^c. We will use this model to discuss the exit of the county papers, which overwhelmingly were Party *Dailies*. Hence, we will analyze the case where a county *Daily* competes against a provincial *Daily* or a provincial *Daily* and an *Evening*. To make this problem tractable, we will reduce the strategy space and only allow the *Dailies* to be located at two positions $d = \{0, d_H\}$.

Consider a market where $\frac{\overline{R}}{\alpha_p} < \frac{1}{2}$. Under monopoly, the provincial Party Committee runs a *Daily* located at $d = 0$. We now consider the game where a provincial *Daily* and a county

Daily simultaneously decide whether to locate at 0 or d_H. In this case, there exists a unique Nash Equilibrium where both dailies locate at 0 if $\frac{\overline{\overline{R}}}{\alpha_p} < 2d_H^2$. In this region, locating at 0 is a dominant strategy. In the region $2d_H^2 < \frac{\overline{\overline{R}}}{\alpha_p} < d_H$, there exist two Nash equilibria: (0,0) and (d_H, d_H). In the region $d_H < \frac{\overline{\overline{R}}}{\alpha_p} < \frac{1}{2}$, playing d_H is a dominant strategy and the only equilibrium is (d_H, d_H).

In comparison, under monopoly the only equilibrium is $d = 0$. Consequently, the existence of a competing *Daily* makes other *Dailies* less politically controlled. The reason is that competition amplifies the effects on profits and diminishes the effects on political exposure. This is shown in Figure 7. The upper panel shows the effect of moving from $d = 0$ to $d = d_H$ in the monopoly case. The monopoly *Daily* trades off the increased profits against the worse political exposure. The lower panel shows the trade-off in the duopoly case. Moving to $d = d_H$ increases the profits more because of market stealing from the competing *Daily*. On the other hand, the cost in terms of worse political exposure is lower as some of the readers remain with the competing *Daily*.

Figure 7. Market Structure and Incentives to Commercialize Daily
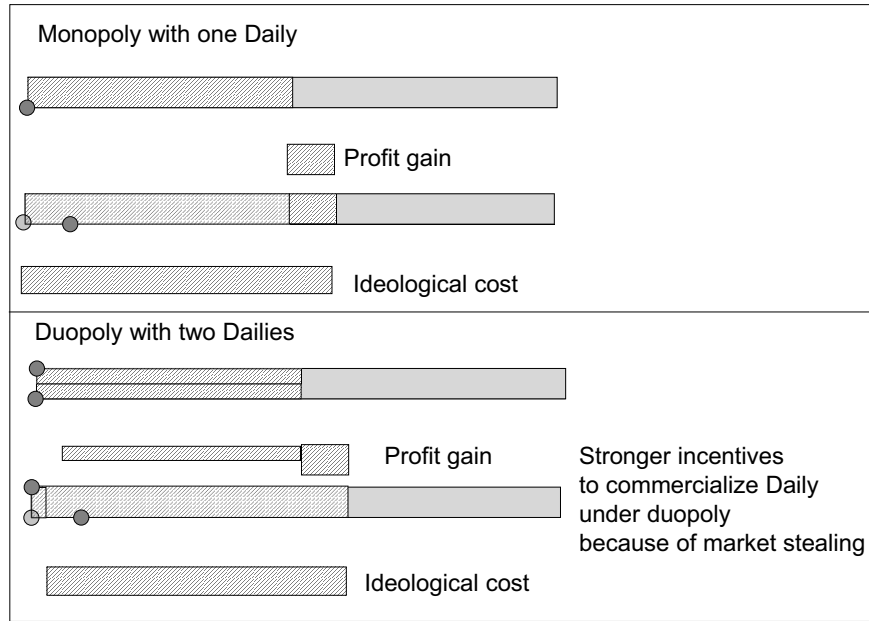
Consider now the case where a provincial and a county *Daily* are both located at some point d, and the Provincial Party Committee considers where to position a *Party Evening*, e. The *Party Evening* is positioned to maximize

$$X_e R + \frac{1}{2} X_d R - \alpha_P \left(X_e e + X_d d \right),$$

where

$$
\begin{aligned}
X_e &= \frac{1}{2} + \frac{e - d}{2}, \\
X_d &= \frac{d + e}{2}.
\end{aligned}
$$

This has the solution

$$e^* = \begin{cases} 0 & \text{if } \frac{\overline{R}}{\alpha} \leq \frac{2}{3} \\ \frac{3}{4}\frac{\overline{R}}{\alpha} - \frac{1}{2} & \text{if } \frac{2}{3} < \frac{\overline{R}}{\alpha} < \frac{4}{3} \\ \frac{1}{2} & \text{if } \frac{\overline{R}}{\alpha} \geq \frac{4}{3}. \end{cases} \quad (3)$$

Comparing this to the positioning of the *Evening* in the monopoly case, equation (3), we see that the *Evening* paper is more politically controlled when there is a competing county *Daily* than when there is not. Figure 8 shows how the trade-off changes. The upper panel shows the effect of an *Evening* becoming more politically controlled in the monopoly case and the lower panel shows the same situation in the duopoly case. The effect on political content exposure is the same in both cases. However, in terms of profits, the existence of a competing *Daily* reduces the *Evening*'s incentives to differentiate from the position of the *Party Dailies*. Because of market stealing from the county *Daily*, it is less important for the *Evening* paper to differentiate. For this to be an equilibrium, the *Dailies* would also like to remain in their positions. This implies that

$$U^J(d_H, d_H, e^*) \geq U^J(0, d_H, e^*), \qquad j = P, C,$$

which holds if $\overline{R}$ is large enough.

Figure 8. Market Structure and Incentives to Commercialize Evening
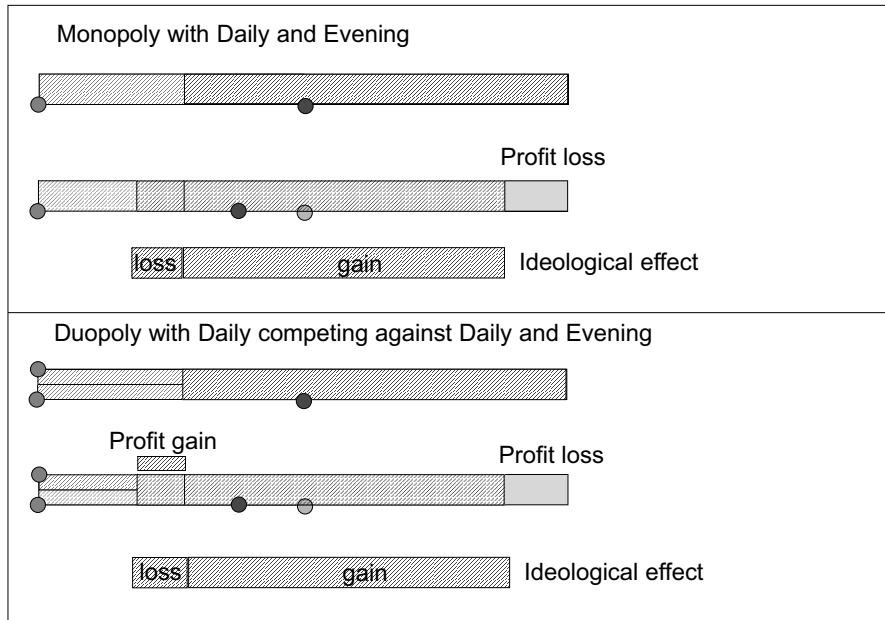
We have the following predictions. The level of ideological control is falling in the size of the advertising market, and more so for levels of government that care less about political control, and rising in the preference for political control. The probability of entry of an *Evening* is increasing in the size of the advertising market. At entry, the *Daily* and the *Evening* will differentiate around the position of the pre-existing *Daily*, with the *Daily* becoming strongly politically controlled and the *Evening* being commercialized. Finally, a com-

peting *Daily* will make other *Dailies* more commercialized, and *Evenings* less commercialized. We will now investigate a subset of these.

6 Determinants of political control: empirics

We now investigate the determinants of political control. We first look at how our political control index correlates with a number of factors such as GDP, population size and internet penetration. Then, we study the effect of competition using the reform in 2003 to close down all county-level newspapers as exogenous variation.

The model focuses on advertising market size and competition. We will also investigate other variables, such as the degree of internet penetration, the distance to Beijing and the level of government. The size of the advertising market is probably increasing economic development, which is positively related to income, wages, education levels, internet penetration and FDI. Internet penetration may also affect the political control of media by providing an alternative information channel.

We first look at provincial cross-sectional relationships between these variables. Figure 9 plots the average political control index for each province against population, GDP per capita, real foreign direct investment and internet users per capita. From the graph, it is clear that there is a negative relationship between newspaper control and all these variables. Ningxia and Qinghai are two of the very smallest provinces. Qinghai is also poor, attracts little FDI and has few internet user. There is no time trend, political control of newspapers seems to have remained roughly constant over our sample period.

Figure 9. Political Control Index and Covariates
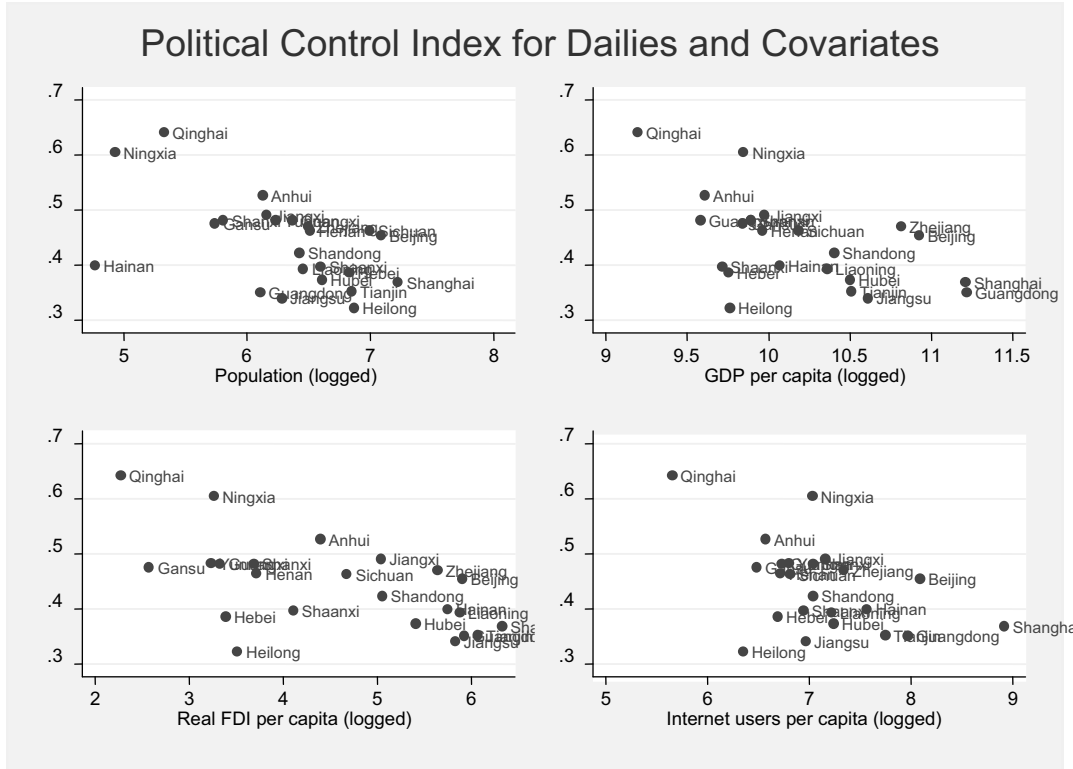
The first column of Table 8 shows how our measure of political control of newspapers correlates with a number of variables at the provincial level. The strongest negative correlation is with sheer province size, measured by population. Political control is also significantly negatively correlated with proxies for economic development, such as FDI per capita, GDP per capita and average wages. Our two measures of competition in the newspaper market, the number of newspapers and the number of Party Committees running newspapers are both negatively correlated with the political control of newspapers. For comparison, Column 2 shows the same correlations for the share of censored posts by province, as measured by Bamman et al. (2012). The share censored on the micro blog Sina Weibo correlates very much in the same way as our political control index, a further indication that they essentially measure the same thing. None of these correlations should be interpreted as measuring causal relationships.

Table 8: Provincial Cross-sectional Correlations

	Political control index	Share censored Weibo posts
Population (log)	-0.7031	-0.7078
Real FDI (log)	-0.5287	-0.6154
Longitude	-0.4661	-0.5833
GDP per capita (log)	-0.4654	-0.4426
Average wage (log)	-0.4072	-0.2382
Number of newspapers	-0.4072	-0.2382
Government exp. per capita (log)	-0.3983	-0.2688
Internet users per capita (log)	-0.3696	-0.4926
Number of Party Committees running newspapers	-0.3696	-0.4926
Number employed per capita (log)	-0.1022	-0.129
Latitude	0.0163	0.1267
University students per capita (log)	0.0335	-0.2632
Distance to Beijing	0.053	0.0242
Industrial share	0.0661	0.0323

We investigate these relationships in a regression framework. Table 9 shows results from regressing the political control index of each newspaper on newspaper and prefecture characteristics. The first column includes year fixed effects. There is a clear cross-sectional relationship between political control and population size and GDP per capita. The cross sectional relationships are stronger than those found by Djankov et al. (2003) across countries. They find weak correlations between GDP per capita and concrete measures of media freedom such as the number of journalists jailed, controlling for state ownership. When we control for prefecture or newspaper fixed effects, the standard errors increase by a factor of five, and these relationships lose statistical significance. The same is true for the other variables, such as internet penetration, that were correlated with political control at the provincial level. The robust findings are with respect to variables that vary by newspaper: the level of government and type of newspaper. Newspapers by lower levels of governments are less strictly controlled: central level papers are most controlled, followed by province papers and finally prefecture papers. The second to last row shows a test of the province and prefecture fixed effects being equal. *Party Dailies* are most controlled, followed by *Evenings* and *Subsidiaries*.

Table 9: Dependent Variable: Political Control Index

GDP per capita (log)	-0.026***	-0.023	-0.016
	(0.008)	(0.049)	(0.051)
Population (log)	-0.031**	0.008	-0.014
	(0.013)	(0.051)	(0.049)
# general interest papers	-0.003*	0.001	0.002
	(0.002)	(0.002)	(0.002)
Province	-0.111***	-0.101***	
	(0.016)	(0.010)	
Prefecture	-0.148***	-0.158***	-0.067***
	(0.023)	(0.019)	(0.011)
Party Evening	-0.152***	-0.157***	0.037
	(0.016)	(0.017)	(0.033)
Subsidiary	-0.195***	-0.201***	
	(0.013)	(0.014)	
Observations	714	714	714
R-squared	0.699	0.744	0.849
		Prefecture	Newspaper
Fixed Effects	Year	and Year	and Year
Province=Prefecture	0.01	0.00	
Evening=Subsidiary	0.01	0.01	

Standard errors clustered by prefecture in parenthesis: *** p<0.01, ** p<0.05, * p<0.1.

We know from Table 9 that lower-level governments impose less strict political control. The model suggests that these governments would react more to changes in GDP than the more controlled central level newspapers. Table 10 investigates whether the response to GDP differs by different types of government. The first specification controls for year effects only. In the second column, prefecture fixed effects are added. The third column instead adds newspaper fixed effects. The results show that lower level governments react more than the center. A higher GDP thus seems to increase the difference in political control between different levels of government.

	I	II	III	IV	V	VI
GDP (log)	0.061***	0.043	0.060	-0.026**	-0.024	0.069
	(0.013)	(0.050)	(0.050)	(0.012)	(0.044)	(0.053)
Prefecture * GDP	-0.095***	-0.099***	-0.111***			
	(0.015)	(0.014)	(0.018)			
Province * GDP	-0.080***	-0.075***	-0.088***			
	(0.008)	(0.016)	(0.020)			
Party Evening * GDP				-0.020	-0.014	-0.097***
				(0.013)	(0.013)	(0.021)
Subsidiary * GDP				0.009	0.010	-0.093***
				(0.014)	(0.014)	(0.018)
Population (log)	-0.009	0.030	0.007	-0.004	0.021	-0.014
	(0.015)	(0.040)	(0.028)	(0.014)	(0.043)	(0.027)
# general interest papers year	-0.004*	-0.001	0.000	-0.004**	0.001	-0.001
	(0.002)	(0.003)	(0.003)	(0.002)	(0.002)	(0.003)
Province	1.329***	1.249***		-0.115***	-0.109***	
	(0.148)	(0.282)		(0.023)	(0.017)	
Prefecture	1.542***	1.579***	0.335	-0.159***	-0.171***	-0.098***
	(0.244)	(0.256)	(0.341)	(0.029)	(0.025)	(0.011)
Party Evening	-0.161***	-0.167***	0.027	0.173	0.073	0.084
	(0.017)	(0.014)	(0.036)	(0.223)	(0.212)	(0.353)
Subsidiary	-0.195***	-0.201***		-0.353	-0.374	
	(0.013)	(0.013)		(0.234)	(0.227)	
Observations	714	714	714	714	714	714
R-squared	0.703	0.750	0.853	0.704	0.747	0.870
Fixed Effects	Year	Prefecture and Year	Newspaper and Year	Year	Prefecture and Year	Newspaper and Year

Standard errors clustered by prefecture in parenthesis: *** p<0.01, ** p<0.05, * p<0.1.

The last three columns of Table 10 investigate whether *Party Evenings* and *Subsidiaries* also react more to an increase in GDP than the *Party Dailies*. Our model suggests that this would be the case as the *Evenings* would react to larger advertising profits while the *Dailies* would remain at the maximum political control point (for Party Committees that own both a *Daily* and an *Evening*). Here, the evidence is more mixed. In the strongest specification with newspaper fixed effects, the *Party Evenings* and *Subsidiaries* react more to increasing GDP than the *Party Dailies*.

The positive correlation between increases in GDP and political control for the central level newspapers and the *Party Dailies* suggests that our model may be missing something. Some people argue that there is cross-subsidization between *Party Dailies* and the more commercially oriented papers under the same Party Committee. This could explain why the political control of *Party Dailies* seems to increase (if anything) when GDP increases. Another possibility is that the value of political control, α in the model, also increases with GDP. The value of holding power may be increasing in GDP and political control may partly be used to ensure regime stability.

Competition and political control We now investigate the effect of competition on bias using a reform aimed at closing down county-level newspapers. With the stated purpose of reducing the fragmentation in the media market, most county-level newspapers lost their newspaper license in 2003, thus forcing them to close. A few exemptions were made: county-level newspapers started by the Party before 1949; papers published by county-level, autonomous, ethnic minority administrations or in ethnic minority languages; papers in counties with a population of at least half a million, a GDP of 10 billion Yuan, a volume of consumer goods sales of 3 billion Yuan and above, and where the advertising revenue of the party organ exceeded 4 million Yuan.[25]

The dramatic effect of this reform on the total number of general interest newspapers can be seen in Figure 1. The effect was as large in the WiseNews prefectures for which we have newspaper content data. There were close to 60 county *Dailies* in WiseNews prefectures in 2002, by 2004 this figure had dropped to less than 10. This had strong effects on the market structure. Figure 10 shows the number of Party Committees involved in running newspapers in the prefectures covered in the WiseNews sample. The reform caused a large increase in the number of monopoly and duopoly markets. Thus, the reform caused a significant fall in competition for the newspapers in our sample. We do not have any content data for any county newspapers. Consequently, what we can measure is the effect of county *Dailies* closing down on newspapers that remain in the market.

We first estimate the effects of this fall in competition on the political control of the newspapers by regressing the political control index on the number of competing *Party Dailies* and *Party Evenings*. The number of competing Party Dailies is computed as the number of *Party Dailies* in the prefecture that are run by a Party Committee other than the one that runs the paper whose content data we analyze in this observation. The result is shown in Table 11. The first column includes newspaper and year fixed effects. The second column adds controls for GDP, population, wage, industrial share of GDP, real FDI, the number of university students, the number of employees, total government expenditures, and the number of internet users.

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[25]For a description, see Zhao (2008).

Table 11: Dependent Variable: Newspaper Political Control

	I	II	III	IV
# Competing Party Dailies	0.007***	0.006**	-0.008*	-0.009*
	(0.002)	(0.002)	(0.004)	(0.005)
Party Evening * # Competing Party Dailies			0.018**	0.018**
			(0.007)	(0.007)
Subsidiary * # Competing Party Dailies			0.017***	0.017***
			(0.004)	(0.004)
# Competing Evenings and Subsidiaries	0.007	0.007	0.009	0.010
	(0.010)	(0.011)	(0.007)	(0.008)
Party Evening * # Competing Evenings and Subsidiaries			-0.019	-0.020
			(0.027)	(0.029)
Subsidiary * # Competing Evenings and Subsidiaries			-0.009	-0.013
			(0.019)	(0.018)
Observations	652	652	652	652
R-squared	0.870	0.873	0.875	0.878
Controls	No	Yes	No	Yes
Fixed Effects	Newspaper and Year	Newspaper and Year	Newspaper and Year	Newspaper and Year
Party Evening			0.06	0.10
Subsidiary			0.01	0.01

Standard errors clustered by prefecture in parenthesis: *** p<0.01, ** p<0.05, * p<0.1
All specifications control for newspaper type and administrative level. Controls include GDP, population, wage, industrial share of GDP, real FDI, number of university students, number of employees, total government expenditures, number of internet users.

More competing *Party Dailies* are correlated with more political control across all specifications. The coefficient on the number of competing *Evenings* and *Subsidiaries* is completely insignificant. There is little variation in the data and the standard errors are 4-6 times as large as those on competing *Party Dailies*.

Our model suggests that the effect of more competing *Party Dailies* would differ by newspaper type. Other *Dailies* would become less politically controlled, because the demand elasticity increases while the political exposure effects become smaller. On the other hand, *Evening* papers become more politically controlled, as they would have less of an incentive to differ from the position of the *Party Dailies*.

The last two columns of Table 11 test for these heterogeneous effects. The main effect in the first row measures the effect for *Party Dailies* (the omitted category). The number of competing *Party Dailies* is negatively correlated with the political control of *Party Dailies*, although this is insignificant. For *Party Evenings* and *Subsidiaries*, more competing *Dailies* are associated with more political control. The last two rows show F-tests for the coefficient being different than zero for *Party Evenings* and *Subsidiaries* (the main effect plus interactions).

Certainly, the number of competing *Party Dailies* could be endogenous to many factors that also influence the degree of political control of newspapers. For this reason, we only want to use only the variation generated by the 2003 reform to identify the causal effect of competition on political control. For this reason, we create a variable, which we call "# Competing *Party Dailies* by Reform", which is minus the number of county-level newspapers in this prefecture in 2002, multiplied by an indicator variable for the year 2003 or later. De-

fined this way, the variable becomes comparable to the OLS estimates above. This variable measures the fall in the number of newspapers a prefecture would have due to the reform if all county papers that existed in 2002 were closed down. For a prefecture with one county paper in 2002, this variable would be zero before 2003 and then minus one after 2003.

Table 12 shows the results. The first two columns show the average effect across all newspapers. This is positive and significant. The last two columns show the differential effect across newspaper types. The coefficient on *Party Dailies* is negative and marginally significant whereas the coefficient on *Evenings* and *Subsidiaries* is positive and significant. Once more, the last two columns show an F-test for effects for *Evenings* and *Subsidiaries*.

Table 12: Dependent Variable: Newspaper Political Control

	I	II	III	IV
# Competing Party Dailies by Reform	0.006***	0.005**	-0.008*	-0.010*
	(0.002)	(0.003)	(0.004)	(0.005)
Party Evening * (# Competing Party Dailies by Reform)			0.020***	0.020***
			(0.005)	(0.005)
Subsidiary * (# Competing Party Dailies by Reform)			0.021***	0.021***
			(0.005)	(0.005)
Observations	652	652	652	652
R-squared	0.869	0.871	0.874	0.877
Controls	No	Yes	No	Yes
Fixed Effects	Newspaper and Year	Newspaper and Year	Newspaper and Year	Newspaper and Year
Party Evening			0.00	0.01
Subsidiary			0.00	0.00

Standard errors clustered by prefecture in parenthesis: *** $p<0.01$, ** $p<0.05$, * $p<0.1$
All specifications control for newspaper type and administrative level. Controls include GDP, population, wage, industrial share of GDP, real FDI, number of university students, number of employees, total government expenditures, number of internet users.

Table 13 adds a placebo reform in 2002. The variable Placebo Reform 2002 is constructed by leading the "# Competing Party Dailies by Reform" variable one year. The Reform 2002 variable is insignificant, as are the interactions in columns three and four.

Table 13: Dependent Variable: Newspaper Political Control

	I	II	III	IV
# Competing Party Dailies by Reform	0.005***	0.005**	-0.008	-0.009
	(0.002)	(0.002)	(0.006)	(0.006)
Party Evening * (#Competing Party Dailies by Reform)			0.018**	0.018**
			(0.008)	(0.008)
Subsidiary * (# Competing Party Dailies by Reform)			0.018**	0.019**
			(0.007)	(0.007)
Placebo Reform 2002	0.002	0.000	-0.000	-0.001
	(0.004)	(0.004)	(0.006)	(0.006)
Party Evening * placebo reform			0.003	0.003
			(0.007)	(0.007)
Subsidiary * placebo reform			0.004	0.003
			(0.007)	(0.007)
Observations	652	652	652	652
R-squared	0.869	0.871	0.874	0.877
Controls	No	Yes	No	Yes
Fixed Effects	Newspaper and Year	Newspaper and Year	Newspaper and Year	Newspaper and Year
Party Evening 2002			0.59	0.66
Subsidiary 2002			0.32	0.57
Party Evening			0.02	0.02
Subsidiary			0.00	0.00

Standard errors clustered by prefecture in parenthesis: *** p<0.01, ** p<0.05, * p<0.1
All specifications control for newspaper type and administrative level. Controls include GDP, population, wage, industrial share of GDP, real FDI, number of university students, number of employees, total government expenditures, number of internet users.

Table 14 analyzes the dynamic effects of the reform. It seems that around half of the changes in political control were implemented already in 2003 and the remaining in 2004, although many of these coefficients are insignificant due to multicollinearity.

Table 14: Dependent variable: Newspaper Political Control

Reform 2002	0.002	0.000	-0.000	-0.001
	(0.003)	(0.004)	(0.006)	(0.006)
Party Evening * reform 2002			0.002	0.003
			(0.008)	(0.007)
Subsidiary * reform 2002			0.003	0.003
			(0.007)	(0.007)
Reform	0.006**	0.003*	-0.003	-0.006
	(0.003)	(0.002)	(0.004)	(0.004)
Party Evening * reform			0.010**	0.010**
			(0.004)	(0.004)
Subsidiary * reform			0.013**	0.013**
			(0.005)	(0.006)
Reform 2004	0.001	0.003	-0.004	-0.003
	(0.004)	(0.002)	(0.007)	(0.005)
Party Evening * reform 2004			0.009	0.009
			(0.008)	(0.008)
Other * reform 2004			0.007	0.007
			(0.006)	(0.006)
Observations	718	652	718	652
R-squared	0.852	0.872	0.857	0.878
Controls	No	Yes	No	Yes
Fixed Effects	Newspaper and Year	Newspaper and Year	Newspaper and Year	Newspaper and Year
Party Evening			0.05	0.18
Subsidiary			0.01	0.01
Party Evening 2002			0.77	0.66
Subsidiary 2002			0.40	0.62
Party Evening 2004			0.05	0.18
Subsidiary 2004			0.43	0.07

Standard errors clustered by prefecture in parenthesis: *** p<0.01, ** p<0.05, * p<0.1
All specifications control for newspaper type and administrative level. Controls include GDP, population, wage, industrial share of GDP, real FDI, number of university students, number of employees, total government expenditures, number of internet users.

Table 15 shows the effect of the reform by specific content category. For most categories, the signs are the expected, but the effects on individual categories are seldom significant. For the categories in Table 15a (other than *Epoch* stories), we expect the sign of the main effect to be negative and the interaction terms to be positive. This is true for all but three of 18 coefficients. It is not true for the content category corruption, which was weakly correlated with political control. In Table 15b, we expect the main effect to be positive and the interaction effects to be negative. This is true for all coefficients. Once more, none are significant.

Table 15a: Reform and Type of Content

VARIABLES	Leader Mentions	Xinhua Cites	Epoch Stories	Corruption	Disasters	Accidents
Reform	-1.180***	-0.509	0.490	0.013	-0.043**	-0.009
	(0.380)	(0.796)	(0.642)	(0.009)	(0.018)	(0.020)
Party Evening * reform	1.378***	1.864	-0.808	-0.008	0.068***	0.021
	(0.414)	(1.132)	(0.535)	(0.009)	(0.020)	(0.018)
Subsidiary * reform	1.676***	1.166*	-1.325**	-0.008	0.080**	0.022
	(0.438)	(0.631)	(0.521)	(0.008)	(0.031)	(0.016)
Observations	652	652	652	652	652	652
R-squared	0.846	0.844	0.883	0.617	0.602	0.396
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Fixed Effects	Newspaper and Year	Newspaper and Year	Newspaper and Year	Newspaper and Year	Newspaper and Year	Newspaper and Year
Party Evening	0.45	0.05	0.49	0.37	0.16	0.41
Subsidiary	0.06	0.12	0.02	0.21	0.10	0.20

Standard errors clustered by prefecture in parenthesis: *** p<0.01, ** p<0.05, * p<0.1
Controls include GDP, population, wage, industrial share of GDP, real FDI, number of university students, number of employees, total government expenditures, number of internet users.

Table 15b: Reform and Type of Content

VARIABLES	Sports	Entertainment	Crime
Reform	0.077	0.243	0.025
	(0.109)	(0.153)	(0.023)
Party Evening * reform	-0.007	-0.454**	-0.034
	(0.198)	(0.183)	(0.025)
Subsidiary * reform	-0.037	-0.403**	-0.029
	(0.131)	(0.186)	(0.021)
Observations	652	652	652
R-squared	0.756	0.880	0.770
Controls	Yes	Yes	Yes
Fixed Effects	Newspaper and Year	Newspaper and Year	Newspaper and Year
Party Evening	0.64	0.27	0.64
Subsidiary	0.66	0.08	0.71

Standard errors clustered by prefecture in parenthesis: *** p<0.01, ** p<0.05, * p<0.1
Controls include GDP, population, wage, industrial share of GDP, real FDI, number of university students, number of employees, total government expenditures, number of internet users.

To sum up, we find that the average effect of the reform to close down county papers was to lower the political control among the remaining papers, or equivalently, to increase commercialization. This is driven by the *Evenings* and *Subsidiaries*. The remaining *Dailies* move in the opposite direction and become more politically controlled.

7 Conclusion

In this paper, we investigate what the recent economic growth and subsequent changes in the Chinese media market have meant for media freedom, and what implications this may have for political accountability. To this end, we first investigate the uses of political control. We find that more tightly controlled newspapers cover more political leaders and news from the Xinhua News Agency, presumably for propaganda and policy implementation reasons. We also find that these newspapers cover corruption of lower level officials and disasters more than their commercial competitors. We interpret this as the political leaders using newspapers to monitor and discipline lower level bureaucrats. We find little evidence that newspapers of any sort cover corruption of higher level politicians, unless these are already under attack from within the CPC. However, we do find that the commercial papers cover the top stories by the regime critical *Epoch Times* to a relatively larger extent.

Consequently, the trend towards commercialization is likely to decrease the newspaper monitoring of lower level bureaucrats. Political accountability at higher levels may increase, as indicated by the stronger coverage of *Epoch Times* stories, but without much direct individual monitoring of top leaders. The trend towards commercialization is likely to reduce the propaganda exposure of newspaper readers. The effects that we find are dramatic. The commercialized papers only have 4-8 percent newspaper stories mentioning leaders' names, compared to 22 percent for tightly controlled papers, and around ten percent less of their articles mention Xinhua News Agency.

We construct an index of political control. This is essentially based on content which characterizes newspapers that we, on apriori grounds, strongly suspect to be more politically controlled and to have lower advertising revenues. We investigate the covariates and determinants of this index. We find no trend in political control over the last ten years. In the cross section, the index correlates negatively with GDP per capita, population size, FDI per capita and competition (the number of newspapers in the prefecture). This is similar to the correlations found by studies using country-level data on press freedom, e.g. Egorov et al. (2009) or Djankov et al. (2003). We find that newspapers controlled by lower levels of government react more to increases in GDP. Consequently, increases in GDP magnify the gap in political control between newspapers controlled by higher and lower levels of government.

We finally investigate the effect of competition on political control using a reform in 2003 to close down all county-level newspapers. We find that this reform, on average, reduced political control. This is driven by the commercial papers which become significantly less controlled after the exit of the county-level papers. This makes sense as the exiting papers were *Party Dailies* which are typically more controlled.

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8 Appendix

8.1 Equilibrium with duopoly Dailies

Suppose that the provincial *Daily* paper is located at d=0. If the county Party Committee also locates at $d = 0$, it gets half the market and utility

$$U^c (0,0) = \frac{1}{4}\overline{R}$$

.If it enters at $d = d_H$, it gets demand

$$X = (d_H + \frac{1}{2} - \frac{1}{2}d_H) = \frac{1}{2}(1 + d_H)$$

and utility

$$U^c (d_H,0) = \frac{1}{2}(1 + d_H)\overline{R} - \alpha^c \frac{1}{2}(1 + d_H) d_{H.}$$

It prefers to locate at d_H if

$$U^c (d_H,0) > U^c (0,0),$$

which is true if and only if $d_H < \frac{\overline{R}}{\alpha_p}$.

Suppose instead that the provincial *Daily* is located at d_H. The county *Daily* can locate at d_H and get utility

$$U^c(d_H, d_H) = \frac{d_H + \frac{1}{2}}{2}\overline{R} - \alpha_c\left(d_H + \frac{1}{2}\right)d_H.$$

If it instead locates at $d_L = 0$, it gets utility

$$U^c(0, d_H) = \frac{d_H}{2}\overline{R} - \alpha_c\left(d_H + \frac{1}{2} - \frac{d_H}{2}\right)d_H.$$

It will choose d_H if

$$U^c(d_H, d_H) > U^c(0, d_H)$$

which holds if

$$2d_H^2 < \frac{\overline{R}}{\alpha_p}.$$

This condition is automatically fulfilled if $d_H < \frac{\overline{R}}{\alpha_p}$ and $\frac{\overline{R}}{\alpha_p} < \frac{1}{2}$. The analysis is analogous for the provincial Party Committee choice. Consequently, there exists a unique Nash Equilibrium where both *Dailies* locate at 0 if $\frac{\overline{R}}{\alpha_p} < 2d_H^2$. In this region, locating at 0 is a dominant strategy. In the region $2d_H^2 < \frac{\overline{R}}{\alpha_p} < d_H$, there exist two Nash equilibria: (0,0) and (d_H, d_H). In the region $d_H < \frac{\overline{R}}{\alpha_p} < \frac{1}{2}$, the only equilibrium is (d_H, d_H).