Web Appendix to Authority, Incentives and Performance: Evidence from a Chinese Newspaper

Yanhui Wu
Marshall School of Business, University of Southern California

August 2015

This web-based appendix includes details about data collection, a more detailed description of the institutional setting, and additional empirical results that are either mentioned but not published in the published version of the paper or discussed in this appendix.

1 Data Collection

I undertook the main field work in the summer of 2007. The external data were coded mainly in the summer of 2009. From 2007 to 2010, I conducted numerous formal and informal interviews with reporters, division editors, chief editors, and CEO of the Newspaper, a number of journalists from other Chinese newspapers, and several industrial regulators.

The Newspaper provided the internal performance measures and personnel information of all its employed reporters from 2003 to 2010. I directly obtained from the IT department of the Newspaper the following information: the number of articles, the number of words, the quantity score, and the quality score. Then, I confirmed the data with the reporters' wage bills, which contained information about the quantity and quality scores. Personnel information on reporters and editors was provided by the Human Resource department of the Newspaper. Missing and inconsistent information was completed or corrected through other sources.

The news content was downloaded from two sources: 1) the publicly accessible website of the Newspaper; 2) its internal digital archives. Directed by an experienced journalist, a team of three research assistants (RAs hereafter), who were college students in China, coded every article by reading its title, authorship, byline, lead paragraph, and other information such as formats (column, labeling) and pictures according to a set of specified rules (described in **Table A1**). To set the coding rules, I constructed preliminary instructions based on the assignment rules of quality scores at the Newspaper, with reference to the evaluation criteria of the Association of Chinese Journalists. The RAs then tried these instructions in various random samples. The coding processes were adjusted until the RAs could achieve more than 80% agreements in their independent coding, which is a standard practice in the

Table A1: External Measures and Coding Rules

variable	description and coding rules
investigative report	A long report (more than 700 Chinese words) on crimes, scandals, corruption, corporate wrongdoing, investigation into social phenomena, and detailed analysis of a specific industry; often labeled as "investigative report" on the Newspaper.
feature story	A long report (more than 700 Chinese words) on in-depth coverage of a selected issue with no immediate topical subject, and often with an opinionated view; examples include interviews with celebrities on a special topic, life of a particular group of people; usually published with well-designed pictures.
special report	A long article (more than 700 Chinese words) that is not identified as either an investigative report or a feature story; containing "special/unique/first report" in the lead paragraph.
advertising article	A short article about promotion of products and/or image of a particular company; excluding reports on multinational firms, and lengthy interviews with CEOs on management.
propaganda	Coverage of propaganda campaigns originated by the government; usually labeled as "propaganda" on the Newspaper.
assigned with editor	An article authored by a reporter but with an statement that the report is originated and organized by a division editor.
column by content	An article labeled as a column by content, such as "Reading New Policies" and "Weekly Special".
article with external authors	An article coauthored with external authors, who are named as "correspondent" on the Newspaper.
coauthored article (article with internal coauthors)	An article authored jointly with other employed reporters in the Newspaper, from the same division or from different divisions.

study of journalism involving content analysis. After the rules were clearly specified and the research assistants were well trained, I provided them with the archives, the number of articles, and personnel information except for the quantity and quality scores. To reduce systematic measure errors due to subjective judgement, each RA was assigned articles of reporters in the same division. In case that a reporter switched between divisions, his or her articles were still coded by the same RA. The experienced journalist verified the consistency of coding from time to time, and randomly checked the coding results.

To verify the RAs' work, I coded a random sample that mixed articles from reporters in different divisions. My coding results of those articles classified as investigative reports, feature stories, advertising articles, reports on government officials, and on-the-scene reports were essentially the same as the ones coded by the RAs. As detailed personnel information of reporters, division editors, and external authors was available, the articles "assigned by editor" and those with coauthorship were the same in the RAs' coding and in my coding. There were minor differences in the coding results of special reports, propaganda, and "column by content" articles. But the differences were systematic and would be cancelled out in the regressions.

2 Institutional Background

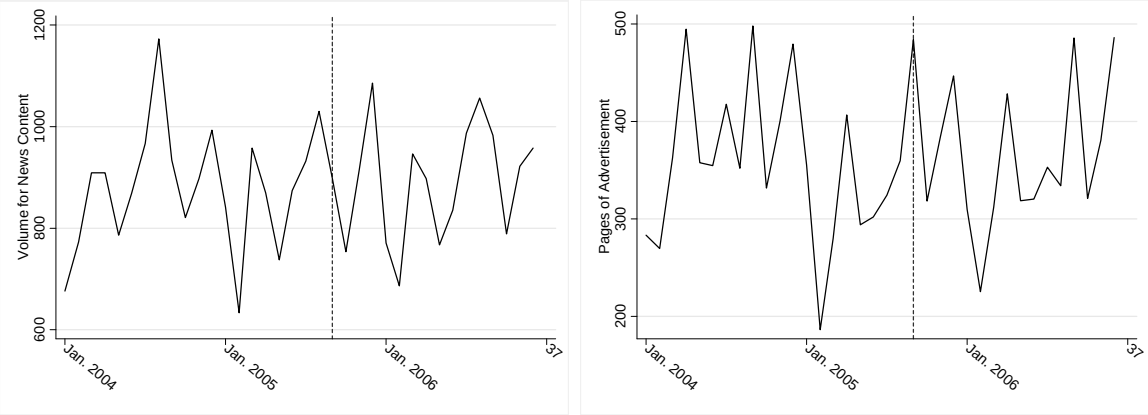
Drawing from numerous interviews and the Newspaper's internal documents, this section describes the institutional framework. The Newspaper is an industry leader in a competitive regional market in China. It employs more than 300 journalists and has a daily circulation of about one million. Although owned by the state, the Newspaper is fully funded by advertising and sales revenues. After paying an annual fixed fee to the state, the board of the Newspaper has the freedom to distribute its residual profits. The board also enjoys high autonomy in managerial practices and editorial decisions, except for in reporting on major political issues. In practice, many commercial newspapers in China strategically use a fixed section, typically the front section, for propaganda and articles injected by the official news agency, while managing the "real" business in the remaining sections.

The content of the Newspaper includes a front section covering important news, headlines, and editorial articles, followed by sections on Economy and Business, Politics and Law, Education and Health, and General Reports, and then by sections on Local News, Entertainment, Consumption Guides, and Sports. Approximately 80% of the news content is provided by employed journalists, while the remainder is provided by news agencies, freelance writers, and other media. In this paper, I focus on the sample period of 2004-2006, during which the operating environment, the internal structure of the Newspaper were stationary. **Figure A4** shows that the volume of news content and the quantity of advertising were stable during this sample period.[1]

[1] The advertising data are provided by an independent agent that collects monthly data on the volume of

Figure A4: Time Series of Volume and Advertisement of the Newspaper

Panel A: Net Volume of News Content **Panel B: Amount of Advertisement**



Notes: All the observations are at the monthly level from January 2004 to December 2006. Panel A plots the net volume of the Newspaper in terms of pages obtained by subtracting the number of pages occupied by advertisement from the total number of pages published by the Newspaper. Panel B plots the amount of advertisement normalized in terms of the number of pages.

2.1 The Organization of Production and Information Problems

News production involves collecting, selecting, and processing information, and the process involves three major players: chief editors, division editors, and reporters. The roles of these players are depicted in the organizational chart of the Newspaper (see Figure 1 of the published paper). Chief editors, who constitute the majority of the editorial board, lie at the top of the organization.[2] Chief editors set the long-run editorial policies for the Newspaper, make major financial and personnel decisions, and supervise the news production. Below chief editors are division editors, who are responsible for the editorial activities of a particular news section. At the bottom of the organization are reporters, whose main job is to collect information, initiate news reports, cover news events, and write articles. Reporters are organized into divisions corresponding to the news sections. A reporter usually specializes in one or two long-term subject areas, such as banking or higher education.

The major cost of news production is the cost of collecting and processing information on specific events, fields, and industries. It is more costly to acquire information that is original, unique, and accurate. For this reason, editors, who lack close relationships with news sources

advertising from newspapers. I do not have access to reliable circulation data, as circulation data are among the top business secrets in the Chinese newspaper industry. Published circulation data are available only at the yearly level and are suspected of being inflated.

[2]The editorial board includes the Chair, the CEO, two general chief editors, and several vice chief editors. Among them, the Chair is responsible for the overall editorial policy and general management. The CEO is in charge of major financial decisions. The two general chief editors assist the Chair in general editorial management. The vice chief editors supervise editorial activities in specific news divisions.

and whose main activities are confined to the office, only engage in collecting information with a low access cost, such as information on anticipated events and news columns designed in advance. Reporters with direct contact to news sources are generally relied on to collect high-quality and original information, such as information for investigative reports and feature stories.

Information asymmetries occur between editors and reporters because of the division of labor between them in news production. For instance, if a reporter reports on an event without collecting details, an editor will not be able to verify the quality of the reporter's coverage without gathering information from other sources. Moreover, given the cost of monitoring reporters' activities and verifying the quality of submitted information, serious agency problems may occur when reporters and editors have goals that differ from those of the Newspaper. For example, an editor wants a reporter to write an in-depth report on recent development in an industry, but the reporter may simply visit several favored companies and write a report with positive impressions of these companies.

2.2 The Provision of Incentives and Agency Problems

The Newspaper uses a high-powered payment scheme to motivate reporters whose output is measurable and separable from others. A reporter's wage income consists of two parts: 1) a fixed base-salary, which accounts for approximately one-third of his wage and 2) a piece-rate payment that is directly tied to his monthly performance, as measured by a score with a quantity component and a quality component. The quantity score is determined by the number of published articles and words. The quality score is determined by the quality of published articles, which is evaluated by an internal evaluation committee on a daily basis and aggregated on a monthly basis. The scoring system is sophisticatedly designed to ensure "an accurate and fair measure of a reporter's individual contribution."

Despite the performance pay, reporters may divert their effort from journalistic activities to other activities that bring them private benefits. Chinese reporters have substantial private networking and rent-seeking opportunities (see Zhao, 1998, 2008 for numerous examples). "Hongbao" (grey income) – the Chinese word for money or gifts in exchange for favors – is pervasive in the Chinese media industry.[3] Moreover, reporters may spend time and effort establishing "guanxi" (social connections) to expand their career and business opportunities. A common example is for a reporter to submit information that is favorable to an interviewee. Some of this information, such as an advertising-type report, is particularly detrimental to the Newspaper, as it not only diminishes the quality of the news content but may also crowd out advertising revenues. Other less obvious examples include journalists taking advantage of a newspaper's reputation to enhance their personal career, conducting consulting work for

[3]Under Chinese media regulation, a journalist receiving "hongbao" from interviewees is viewed as corruption. However, unless the amount of money is large and verified, such behaviors are seldom punished. Anecdotal evidence suggests that "hongbao" can account for a significant portion of some reporters' incomes.

interviewees, and colluding with public relations firms. Given these private benefits and the performance pay, a reporter chooses between actions that are aligned with the organizational goal and actions that are divergent from it.

In contrast with the high-powered pay scheme for reporters, the payment scheme for division editors is a low-powered flat wage because their jobs largely involve multi-tasking and cooperative teamwork. A division editor's job spans from supervising and coordinating subordinate reporters to monitoring the implementation of news coverage and ratifying reporters' proposals.[4] On occasions of anticipated events or government intervention (e.g., propaganda), division editors may engage in collecting information and implementing news coverage. Because the Newspaper receives and processes information 24 hours a day, division editors work an eight-hour shift. Thus, teamwork is essential in their performance. Given their flat-wage pay structure, division editors are primarily motivated by career concerns and on-the-job benefits, such as their intrinsic valuation of the job and its perks. Unlike reporters, who have direct contacts with interviewees and substantial discretion in their action choices, division editors have far fewer opportunities to seek rents because their activities are restricted to the office and are easier to monitor.[5] An agency problem is more likely to occur when division editors have different preferences for news reports from chief editors, for instance, when they care more about perks or favoritism in the workplace.

Chief editors of the Newspaper are paid salaries according to their positions in the government hierarchy and bonuses depending on the yearly profits of the Newspaper. Similar to managers in many state-owned enterprises in China, chief editors aim to maximize the profits of the Newspaper after satisfying certain political constraints. Their preferences are largely captured by the performance measures for reporters, especially the quality scores. Using monthly data from 2003 to 2010, I find that the reporters' quality scores are highly correlated with the Newspaper's advertising revenues three months later.[6]

To summarize all the players' objectives, chief editors are regarded as profit-maximizer with certain political constraints because they have the freedom to distribute residuals and because their pay is correlated with the Newspaper's profits; division editors are motivated by a flat wage and on-the-job private benefits, such as job satisfaction and workplace favoritism; and reporters are motivated by 1) salary and performance pay, 2) the benefits of private networking and rent seeking, and 3) job satisfaction. Here, I omit the agents' career concerns, as I will control for individual fixed effects and time-variant factors that capture workers' career concerns in the regression analysis.

[4] Division editors also supervise copy editors, who provide support for editorial activities but are not involved in decision making. The organizational change does not affect the job assignments of copy editors.

[5] Another reason that division editors are less involved in rent-seeking is that division editors have a higher hierarchical position and their rent-seeking behavior will incur more severe punishment from the government.

[6] The three-month lag is based on the insider insight that companies often set their advertising plans on a quarterly basis.

2.3 Authority and Control before the Reform

The distribution of editorial authority determines the hierarchical structure of the Newspaper: chief editors at the top, division editors in the middle, and reporters at the bottom. Without formal delegation of decision rights, chief editors have the right to modify and overrule the decisions made by both division editors and reporters. Division editors can overrule reporters' submitted decisions, while reporters have no formal decision rights and cannot approve their own decisions.

In the late 1990s, some Chinese newspapers experimented with a decentralized organizational arrangement under which editorial authority was delegated to division editors. The rationale behind such a managerial change was the discrepancy between nominal decision rights (formal authority) and effective control over decisions (real authority). Although having formal decision rights, chief editors may not effectively control actual editorial decisions, because they are unlikely to have sufficient time and the information to originate and monitor news coverage. By contrast, division editors closer to information sources and more informed of reporters' activities and thus are in a better position to originate news coverage and monitor reporters' behavior. Therefore, delegating editorial authority to division editors would promote their initiative and facilitate the use of their local knowledge. Such a rationale was recognized during the commercialization of the Chinese media, when rapid delivery of diverse information to readers became crucial for circulation.

In the early 2000s, the Newspaper formally delegated editorial authority to division editors in all divisions. Division editors possessed the rights to ratify news reports that were submitted from their subordinate reporters and to approve the publication of the reports. Chief editors were committed not to intervening in editorial decisions except in unusual situations. Under this arrangement, the effective control of editorial decisions depends on the degree of information asymmetry between division editors and reports and also on the division editors' incentive to monitoring reporters. For instance, an editor sitting in an office would not have the information to intervene in an investigative report that a reporter initiates and implements. A division editor may not have sufficient incentive to clean up low-quality reports that cater to interviewees, because she may not care about the Newspaper's profitability or may show favoritism toward their subordinates. In these two situations, editorial decisions are effectively controlled by reporters.

2.4 Authority and Control after the Reform

In September 2005, the Newspaper decided to reallocate editorial authority from division editors to chief editors in four divisions, namely, Economy and Business, Politics and Law, Education and Health, and General Reports, but to maintain the previous authority arrangement in the other divisions, namely, Local News, Entertainment, Consumption Guides, and

Photography.[7] To implement this new managerial practice, the Newspaper created an editing center headed by two vice chief editors (Vice Chief Editors 1 and 2 in Figure 1). Three senior editors from the front section were assigned an additional task to assist these vice chief editors in managing the editing center. Under the new arrangement, division editors were required to submit their editorial decisions to the editing center for approval, although they still had the right to ratify proposals from their subordinate reporters. As a result of this authority change, the two vice chief editors reallocated their efforts from other tasks to directing the editing center and to monitoring editorial decisions. Because it lacks information sources to fulfill the need for rapid news delivery, the editing center played a limited role in initiating news coverage. Its function focused on monitoring and ratifying submitted news articles. For instance, one specified function of the editing center was to clean up low-quality or even harmful news content (e.g., advertising-type information).

This organizational reform had potential impacts on the effective control of editorial decisions. Division editors might reduce their incentive to collect information and to modify reporters' proposals because their decisions could be overruled by chief editors. On the other hand, due to the lack of information, chief editors could not effectively intervene in reporters' proposals, which might in turn allow reporters to gain greater control over editorial decisions.

2.5 What Caused the Reform?

Internal documents of the Newspaper show that the organizational reform was triggered by the replacement of a chief editor. In June 2005, the local government appointed a new chief editor (Chief Editor A in Figure 1) when a previous chief editor reached the mandatory retirement age. As a regular appointment, the new chief editor was selected from among several candidates who were "hierarchically appropriate" to fill the vacancy.[8] The new chief editor proposed a change that shifted editorial authority from division to chief editors, from among several possible changes in managerial practices considered by the board of the Newspaper. Some board members supported the proposal because they had been concerned about the loss of control when authority was delegated to division editors. Several members objected to this proposal, arguing that such an authority change was not particularly sensible because the chief editors were overloaded with many tasks and rarely informed of reporters' activities. Despite this dispute, the majority of the board believed that such an authority change was more acceptable than other proposed changes, because the practice of keeping authority to chief editors was widely adopted in other newspapers. Ultimately, the board decided to implement the authority change within the four divisions that the new chief editor took

[7] During the reform, the Sports division was treated differently: sports reporters were allowed to become involved in editorial decision making. Therefore, in the baseline sample, I exclude observations of sports reporters. The inclusion of these reporters barely affects the baseline results.

[8] The regulation of the media in China requires that top managers of every general-interest newspaper be appointed by a responsible government department and be assigned with hierarchical positions according to the administrative ranks of the newspaper. Unless being promoted from within the newspaper, a new top manager should be selected from candidates at the same hierarchical level as the replaced manager.

Table A2: Summary Statistics of Personnel Data

Panel A: Reporters

variables	gender (male)	education (college)	Party member	age	tenure	position (1-2-3)	qualification (1-2-3)
mean	0.60	0.83	0.47	32.80	8.20	1.50	1.47
min	0.00	0.00	0.00	22.00	1.00	1.00	1.00
max	1.00	1.00	1.00	57.00	27.00	3.00	3.00

Panel B: Division and Copy Editors

variables	gender (male)	education (college)	Party member	age	tenure	position (1-2-3)	qualification (1-2-3)
mean	0.57	0.73	0.49	38.30	13.30	2.20	2.20
min	0.00	0.00	0.00	25.00	2.00	1.00	1.00
max	1.00	1.00	1.00	54.00	27.00	3.00	3.00

Notes: These tables summarize personnel information of 183 reporters and 56 division editors and copy editors in the sample from January 2004 to December 2006. The means of the reporters' personal characteristics are weighted by monthly observations; the means of the division editors' personal characteristics are weighted by yearly observations. "Party_member" is a dummy indicating the membership of the Chinese Communist Party. "Tenure" is the number of years of working experience in the Newspaper. "Position" is an indicator ranking from 1 to 3, representing reporter, chief reporter and senior reporter respectively in the hierarchy of the Newspaper. "Qualification" is a certificate authorized by the Association of Chinese Journalists to indicate the expertise and experience in journalism, with 1 referring to assistant journalist, 2 to journalist, and 3 to senior journalist.

Table A3: Summary Statistics of Stayers, Exits, and Entries

variables	gender (male)	education (college)	Party member	age	tenure	position (1-2-3)	qualification (1-2-3)	Quantity Score	Quality score
Stayers	0.63	0.86	0.43	32.7	7.98	1.56	1.51	2104	1574
	(0.48)	(0.34)	(0.50)	(8.84)	(6.02)	(0.71)	(0.68)	(1236)	(1136)
Exits	0.61	0.81	0.43	34.32	9.07	1.7	1.57	1845	1071
	(0.50)	(0.39)	(0.50)	(8.08)	(7.68)	(0.82)	(0.57)	(1151)	(953)
Entries	0.52	0.94	0.24	29.68	5.13	1.36	1.33	2218	1174
	(0.51)	(0.24)	(0.44)	(7.37)	(5.52)	(0.65)	(0.65)	(1628)	(878)

Notes: In the statistics of all the variables, the first line reports the mean values, and the second line reports the standard errors (in parentheses). Stayers are reporters who are observed before and after the organizational reform; entries are reporters whose performance is only observed afte the reform; and exits are the reporters who leave their jobs within three months of the reform. The numbers of stayers, exits, and entries are respectively 113, 28, and 33. The numbers of observations for the quantity and quality scores of the stayers, exits, and entries are respectively 3457, 357, and 409.

over from the retired one, while leaving the other divisions unaffected. The wage structure, evaluation system, and job assignments were deliberately kept unchanged to avoid too much disruption within the Newspaper.

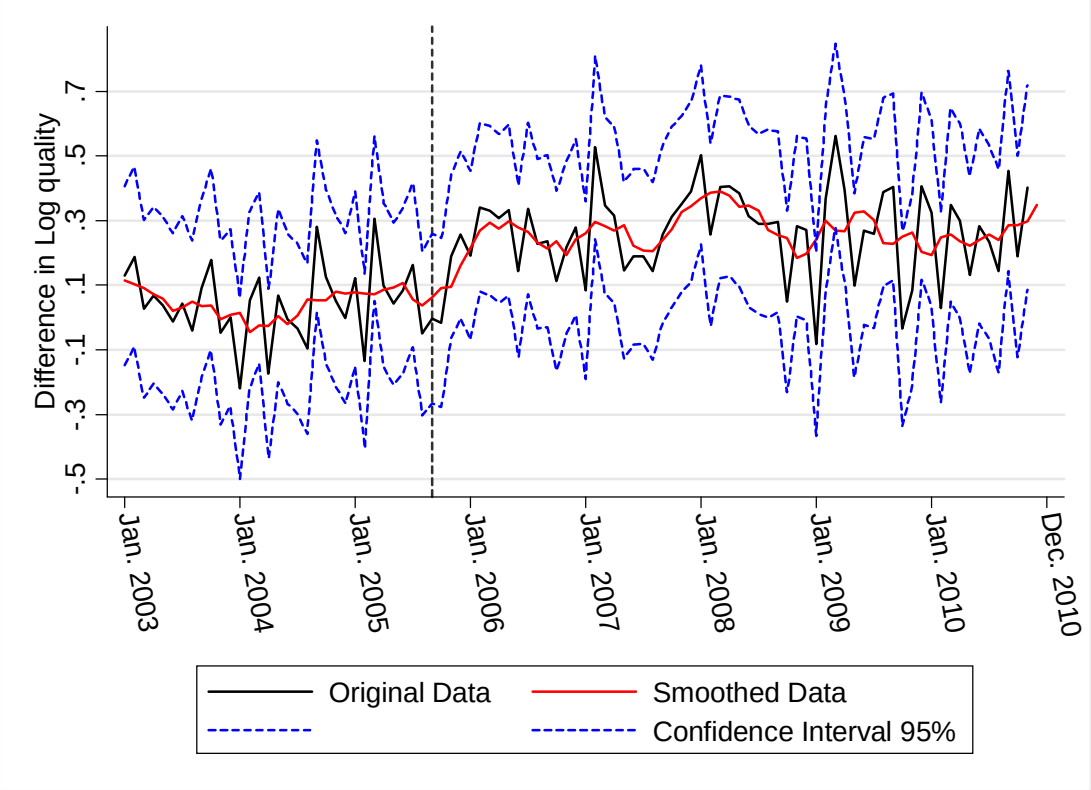
In interviews, journalists of the Newspaper described both the appointment of the new chief editor and the organizational change as "big surprises," because the new chief editor had "zero journalism experience" and because "nobody was talking about organizational change at that time." Several senior journalists indicated that the replacement and the authority change were unlikely to be driven by political influence. If the replacement had been intended as a means of strengthening political control, the government would have replaced the top personnel with propaganda officials or senior managers from a Party newspaper. However, the chair of the board and the other chief editor were not replaced during the sample period, and the new chief editor was not from the propaganda department and had no previous experience in the media industry. Furthermore, the government rarely intervened in specific managerial practices of commercial newspapers. One editor said, "The government is probably not even aware of our organizational change. They do not care about matters of this kind."

3 Additional Empirical Results

3.1 Main Results (Sections 3-5)

This subsection presents the figures and tables that are mentioned but not published in Sections 3, 4, and 5 of the published version of the paper.

Figure A1: Longer Time Series of Reporters Performance



Notes: This figure plots the monthly difference in (log) quality scores between the treatment and the control groups against the time series from January 2003 to December 2010. The smoother curve is obtained by using a moving averaging process with quarterly lags and leds. The two dashed curves depict the confidence interval at the 95% level. The dotted vertical line indicates the timing of the reform: September 2015.

Table A4: Comparison between Treatment and Control before the Reform

	treatment		control		Local News Division	
variables	mean	dev.	mean	dev.	mean	std. dev.
internal performance measures						
quantity score	2004	1335	2022	1217	1300	989
quality score	1526	1197	1364	976	1152	883
# articles	28.9	18.4	34.01	25.43	21.44	13.88
# words	20220	13086	14317	12393	10626	9646
external performance measures						
# investigative reports	1.25	1.54			1.21	1.27
# feature stories	0.90	1.26			1.09	1.00
# special reports	4.86	9.18			2.90	1.80
# propaganda articles	0.32	0.90			0.26	0.69
# advertising articles	0.66	1.37			0.53	0.76
# coauthored articles	4.37	12.45			0.97	1.81
# articles with external authors	9.23	9.40			5.24	2.67
measures of editors' activities						
# articles assigned by editor	1.15	2.30			0.49	0.79
# articles column by content	1.30	2.78			1.32	0.64

Notes: Observations are at the individual-month level. "Treatment" indicates the treatment group, including reporters in the four reformed divisions, namely, Economy and Business, Politics and Law, Education and Health, and General Reports. "Control" indicates the control group, including reporters in all the four unreformed divisions, namely, Local News, Entertainment, Consumption Guides, and Photography. "Local News Division" includes only reporters in the Local News division.

Table A5: Correlation between Quality Score and External Measures

independent variables	coefficient
#investigative reports	166.18***
	(15.340)
#feature stories	169.26***
	(20.640)
#special reports	74.15***
	(7.440)
#propaganda articles	131.67***
	(24.980)
#advertising articles	-33.26***
	(11.320)
#all articles	4.41
	(2.830)
#overall words	0.042***
	(0.006)
#assigned by editor	-44.37***
	(12.950)
#column by content	-29.28*
	(16.530)
#articles with external coauthors	-11.41***
	(3.410)
#articles with internal coauthors	-23.95***
	(4.410)
#observations	3,265
Adjusted R-squared	0.785

Notes: This table presents the result of the regression of the quality score on the external measures, without controlling individual fixed effects. The effect of the articles other than the above types is absorbed in the intercept. The observations include the reporters in the treatment group, namely, Economy and Business, Education and Health, Politics and Law, and General Reports, and the reporters in the Local News division within the control group. Standard errors (in parentheses) are clustered by individual. *** denotes significance at 1%, ** at 5%, and * at 10%.

Table A6: Stability of Correlations between Quality Score and External Measures

Sample	Treatment Group		Local News Division		Entire Sample
	(1)	(2)	(3)	(4)	(5)
Variable	before the reform	interactions with	before the	interactions with	interactions with reform×treatment
#investigative	164.01***	-35.54	208.76***	-43.65	-18.07
	(26.10)	(30.83)	(19.97)	(39.44)	(47.99)
#feature	144.54***	-17.05	185.91***	-30.08	-6.30
	(33.28)	(35.87)	(14.14)	(52.42)	(56.46)
#special	59.57***	17.56	82.10***	13.47	27.18
	(11.94)	(14.02)	(19.02)	(43.30)	(35.87)
#propaganda	151.57***	-96.77**	74.59*	-27.61	22.03
	(32.14)	(42.37)	(39.30)	(48.19)	(52.48)
#advertising articles	5.24	-12.81	-23.02	-29.25	87.58
	(15.50)	(30.21)	(23.25)	(40.88)	(58.79)
#all articles	7.75*	5.25	10.88***	-5.50	10.24
	(4.49)	(6.56)	(2.87)	(5.28)	(7.45)
#words	0.044***	-0.002	0.037***	0.047***	-0.046***
	(0.011)	(0.014)	(0.008)	(0.011)	(0.014)
#with external coauthor	-7.81	-13.66	-20.55	-22.38*	28.30**
	(7.75)	(8.97)	(11.37)	(11.72)	(11.99)
#with internal coauthor	-19.76***	-7.20	-7.88	0.84	-21.71
	(4.99)	(9.44)	(19.73)	(38.29)	(31.33)
#assigned by editors	-46.04***	-18.28	-32.44	12.79	-28.66
	(12.77)	(20.96)	(21.58)	(55.44)	(59.40)
#columns by content	-30.38**	-15.63	12.49	-46.25	59.90
	(13.37)	(25.33)	(54.83)	(64.90)	(50.59)
#observations	2446		819		3265
Adjusted-R Squared	0.815		0.879		0.829

Notes: Columns (1) and (2) present the coefficients of the regression of the quality score on the external measures and their interactions with the reform dummy in the treatment group (Economy and Business, Politics and Law, Education and Health, and General Reports). Columns (3) and (4) present the coefficient of the same kind of regression in the Local News division. The last column presents the coefficients of the interaction between one type of news content and the interacting terms (reform×treatment) in a regression that pools the observations in the previous columns together. All the regressions control for both division and individual fixed effects. The standard errors (in parentheses) are clustered at the individual level. ***denotes the significance level at 1%, **at 5%, and * at 10%.

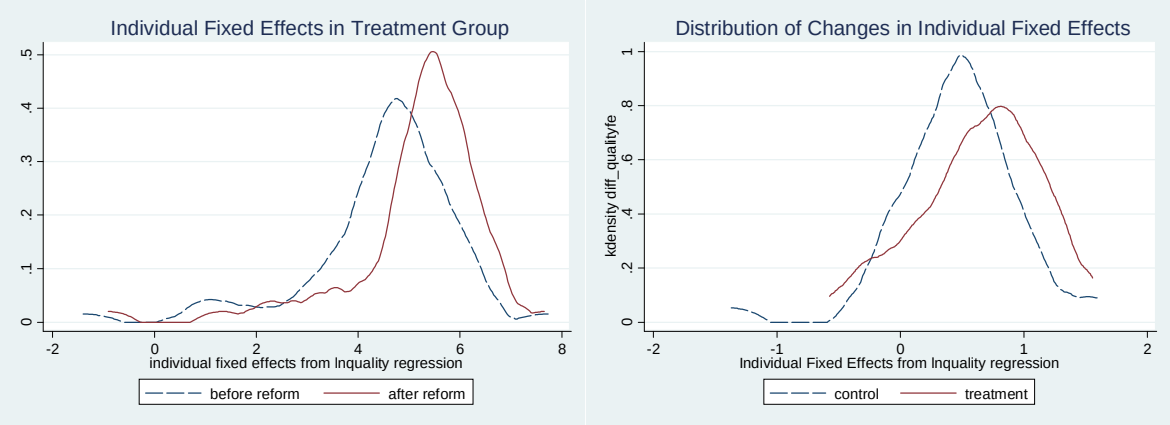
Table A7: Robustness Check of Average Treatment Effects: Clustering

	log quantity score				log quality score			
	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]
reform×	0.054	0.052	0.053	-0.066	0.207*	0.205*	0.194	0.062
treatment	(0.133)	(0.135)	(0.127)	(0.128)	(0.110)	(0.110)	(0.116)	(0.110)
bootstrapped-p	[0.681]	[0.667]	[0.671]	[0.623]	[0.063]	[0.061]	[0.089]	[0.595]
reform	-0.040				-0.152**			
	(0.096)				(0.054)			
individual fixed effects	yes	yes	yes		yes	yes	yes	
time fixed effects		yes	yes	yes		yes	yes	yes
time-variant covariates			yes	yes			yes	yes
#observations	4,459	4,459	4,459	4,459	4,440	4,440	4,440	4,440
adj-R^2	0.488	0.518	0.542	0.279	0.372	0.402	0.404	0.206

Notes: This table replicates Panel A of Table 3 in the paper except that now standard errors (in parentheses) are clustered by divisions (#clusters= 9). Reform is a timing dummy that equals one if an observation is in and after the month of the organizational change that transferred editoral decision rights from division editors to chief editors. Treatment is a dummy for the reporters from the reformed divisions: Economy and Business, Education and Health, Politics and Law, and General Reports. Time fixed effects are 36 year_month dummies. The time-variant covariates include age-squared, tenure-squared, position, qualification, and division fixed effects. When a regression excludes individual fixed effects (Column [4] and [8]), time-invariant personal characteristics (gender, education and Party membership) and the factors that are collinear with individual and time fixed effects (age and tenure), are now included. ***denotes significance at 1%, **at 5%, and * at 10%. The bootstrapped-p is the p-value calculated by a method of percentile-t Wald bootstrapping.

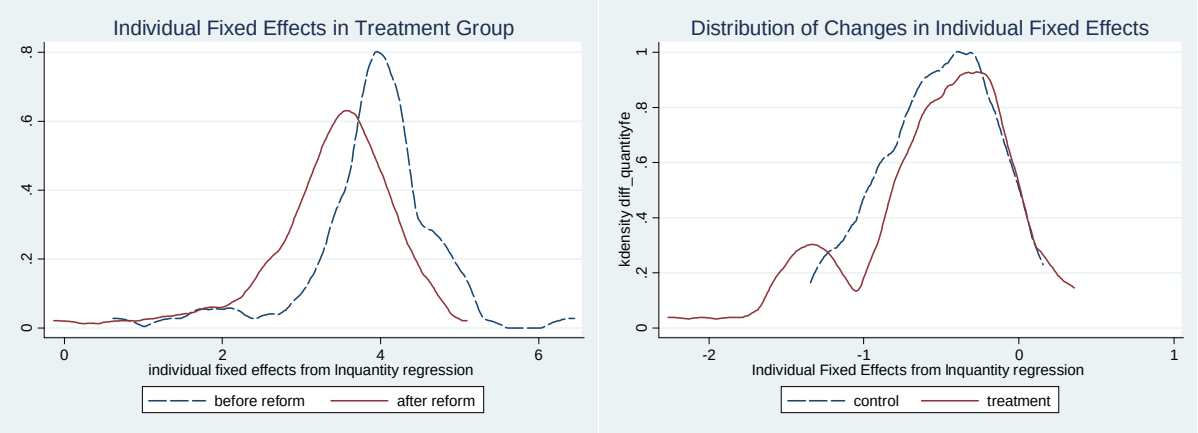
Figure A2: Kernel Density of Estimated Individual Fixed Effects

Panel A: Quality Performance



P-value of K-S Test: 0.000 *P-value of K-S Test: 0.000*

Panel B. Quantity Performance



P-value of K-S Test: 0.000 *P-value of K-S Test: 0.294*

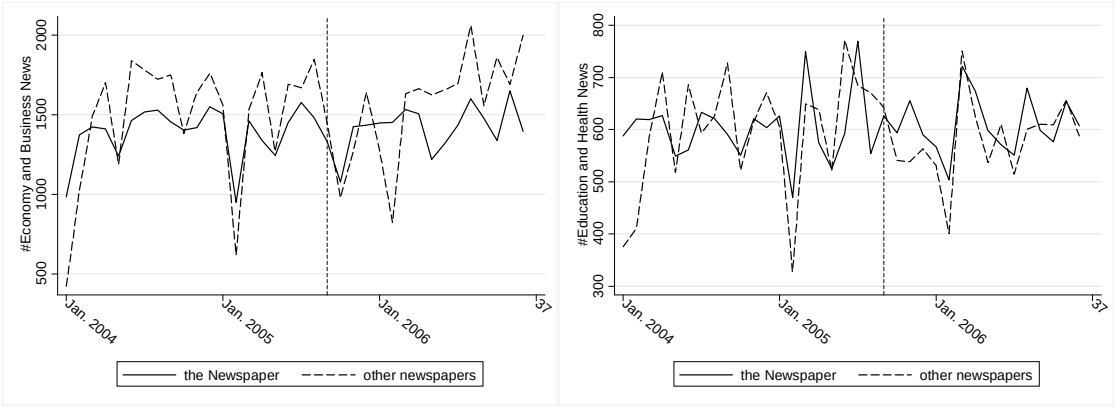
Notes: The individual fixed effects of quality performance (Panel A) or those of quantity performance (Panel B) are individual treatment effects for each reporter retrieved from a regression of the log quality score or quantity score on individual dummies and their interactions with the reform dummy, with controls as in the baseline D-I-D regression. The sample includes only reporters remaining after the reform. The kernel density uses the Epanechnikov kernel. The P-values of K-S test are the corrected P-values of the combined Kolmogorov–Smirnov tests of equality of distributions. In each of the above two panels, the left figure depicts the distribution of the individual fixed effects before and after the reform in the treatment group; the right figure depicts the distributions of the after-before differences in the individual fixed effects in the treatment and control groups.

Table A8: Comparison of Quantity Residuals: Exits, Stayers and Entries

	treatment group			control group		
	exits	stayers	entries	exits	stayers	entries
before reform	3.449	3.882		3.076	2.760	
	(1.105)	(0.873)		(1.120)	(1.523)	
after reform		3.362	3.155		2.239	3.425
		(0.874)	(0.741)		(1.511)	(1.530)
Difference		-0.520***			-0.521*	
		(0.156)			(0.316)	

Notes: In the statistics of all the variables, the first line reports the mean values, and the second line reports the standard errors (in parentheses). Reform is the timing dummy equal to one after (including) September 2005. Treatment group is the reporters from the divisions in which editorial authority was reallocated from the middle to the top: Economy and Business, Politics and Law, Education and Health and General Reports. Control group is the reporters from the four unreformed divisions: Local News, Entertainment, Consumption Guides, and Photography. The "quantity residuals" are individual fixed effects retrieved by running a regression of the log quantity score on the individual dummies and their interactions with the reform dummy, with controls as in the baseline DID estimation. The stayers exclude 6 reporters who switched between the treatment and the control. The results are qualitatively similar when these observations are included.

Figure A3: Comparison of the Coverage of Economy and Business News and Education and Health News between the Newspaper and its Competitors



Notes: All the observations are at the monthly level from January 2004 to December 2006. The left figure plots the number of articles with subject matters related to economy, finance, business, and firms in the Newspaper under study (the solid line) and the average number of the same types of articles in the Newspaper's three major competitors. The right figure is similarly plotted except that the subject matters are now education and health.

Table A9: Average Treatment Effects on External Performance Measures

	#special reports	#propaganda articles	#coauthored with other reporters	# external correspondents
reform×	0.161	-0.0002	0.151	2.177*
treatment	(0.578)	(0.047)	(0.715)	(1.031)
#obs	3,265	3,265	3,265	3,265
adj-R^2	0.268	0.168	0.234	0.651

Notes: These regressions use the reporters in the Local News division as the control group. Treatment is a dummy for the reporters from the reformed divisions: Economy and Business, Education and Health, Politics and Law, and General Reports. "Reform" is the timing dummy for the observations in and after the month of the organizational reform that reallocated editorial decision rights from division editors to chief editors. All the regressions control for individual fixed effects, time (year_month) fixed effects, time-variant individual characteristics defined as in the baseline estimation. Standard errors (in parentheses) are clustered by subdivisions (#clusters=16). ***denotes significance at 1%, **at 5%, and * at 10%.

Table A10: Heterogeneous Treatment Effects by Seniority

	log quantity score	log quality score	#reporters' initiative	#advertising articles	#editors' initiative
reform ×	-.247*	-0.246*	-1.707	0.222	-0.768
junior	(0.075)	(0.122)	(1.030)	(0.134)	(0.482)
control for time fixed effects, division fixed effects, and personnel characterisitics including gender, education, Party membership, age and age-squared, tenure and tenure-squared,					
#observations	2,481	2,478	2,454	2,454	2,454
adjusted R2	0.269	0.115	0.101	0.282	0.140

Notes: The observations are monthly performance measures of the reporters in the treatment group. The dependent variable "#reporters' initiative" is the sum of the numbers of investigative reports and feature stories; "#advertising articles" is the number of articles with an advertising element; "#editors' initiative" is the sum of the numbers of articles assigned by and columns designed by division editors. The regressions are D-I-D estimation to identify the interactions between the reform dummy and the junior dummy, which is an indicator that equals one if a reporter has a tenure of no greater than 3 years. Standard errors (in parentheses) are clustered by subdivisions. ***denotes significance at 1%, **at 5% and * at 10%.

3.2 Further Evidence (Section 6)

This subsection expands Section 6 (Further Evidence) of the published paper, including additional figures and tables that are related but not published in the paper.

3.2.1 Robustness across Samples

In the paper, I show that within the baseline sample, the authority change at the Newspaper has profound effects on reporters' efforts and action choices as well as on division editors' behavior. As shown in **Table A11**, the effects are remarkably stable in a long period and in various samples.

3.2.2 Political Influence

As a common view, the freedom of press is severely suppressed in China. Political control affects the editorial policy of every major Chinese newspaper to some degree. In the current empirical setting, the treated reporters may be more sensitive to political influence, because they cover news that is more related to politics and government activities. If the Newspaper experienced changes in political influence at the time of the authority change, the effects of the authority change may be spurious.

Studies in Chinese journalism (e.g., Zhao 1998, 2008) show that since the late 1990s commercial newspapers in China, though subject to certain political constraints, have gradually become profit-maximizing state-owned enterprises. Based on the content of 110 major newspapers in China during the 2000-2010 period, Qin, Stromberg, and Wu (2015) find that commercial newspapers are substantially less controlled than non-commercial newspapers in terms of news content, and that the differences between the two types of newspapers are strikingly stable despite substantial economic growth and changes in the political leadership in China. The Newspaper that I study is one of the most commercial newspapers in China, and no obvious evidence suggests that the political control over in the area in which the Newspaper operates significantly changed during the sample period.

Various evidence in the current study excludes the concern regarding political influence. First, propaganda articles are the most important measure of political influence. The number of propaganda articles remains barely changed after the authority change within the treatment group. When reporters in the Local News division, who also write propaganda articles, are used as a control group, the effect of the authority change on propaganda is negligible. Second, Communist party members are more subject to political influence. I do not find any systematic differences in the effects of the authority change between reporters who are party members and those who are not. Third, the authority change has little effect on the performance of the Politics and Law reporters, whose reporting is most sensitive to political influence (see **Table 7** of the published paper). Finally, when the Annual National People's Congress is held, the political control of media is stricter than usual. For the sample that

Table A11: Estimates of Average Treatment Effects Using Other Samples

	(1)		(2)		(3)		(4)	
	include Sports		exclude special events		Jan-Aug, 2005-2006		Sept 2003 - Aug 2007	
	quantity	quality	quantity	quality	quantity	quality	quantity	quality
reform	0.056	0.194*	0.054	0.188*	0.045	0.209*	0.083	0.205*
× treatment	(0.102)	(0.103)	(0.105)	(0.101)	(0.077)	(0.111)	(0.098)	(0.112)
reform	0.208**	0.816***						
× sports	(0.077)	(0.058)						
control for individual fixed effects, time fixed effects, division fixed effects, and time-variant personal characteristics such as age-squared, tenure-squared, position and qualification								
#obs	4,838	4,807	3,829	3,811	2,025	2,013	5,912	5,889
R-squared	0.55	0.397	0.551	0.406	0.564	0.434	0.528	0.392

Notes: The dependent variables "quantity" and "quality" are shorthand for "log quantity score" and "log quality score" respectively. Reform is a dummy for an observation in and after the month (September 2005) of the organizational reform. Treatment is a dummy equal one for observations in the reformed group (Economy and Business, Education and Health, Politics and Law, and General Reports). In specification 1 (the first two columns), I include an interaction term between the organizational reform and a dummy for the sports division. In specification 2 (the third and fourth columns), I exclude observations in the months of March (annual National People's Congress), August 2004 (Olympic Games), and July 2006 (World Cup) from the baseline sample. In specification 3 (the fifth and sixth columns), I use a balanced window sample only including observations from January to August in 2005 and the same months for 2006. In specification 4 (the last two columns), I use a longer balanced windown sample including observations from September 2003 to August 2007. Standard errors (in parentheses) are clustered at the level of 21 subdivisions. ***denotes significance at 1%, **at 5%, and * at 10%.

excludes these yearly events (in March), the estimated effects of the authority change remain virtually the same as those in the baseline sample (see Column 2 in **Table A11**).

3.2.3 Leadership and Management Style

Numerous business cases and several recent studies (e.g., Bertrand and Schoar 2003) have shown that senior managers, most notably CEOs, have a significant impact on firms' management style. The authority change was triggered by the replacement of one chief editor, who I refer to as CEA (Chief Editor A in **Figure 1**) for expositional simplicity. To what extent did the new chief editor affect the Newspaper's style? How would his influence differ systematically between the treatment and control groups? Arguably, the appointment process of CEA and his job assignment on the board limited his personal impact on news content and reporters' behavior (recall **Section 2.4** of the published paper). To further assess the potential impact of the top managers, I explore several major replacements on the board of the Newspaper from 2003 to 2010. In particular, I augment the baseline D-I-D estimation with additional interaction terms that equal one if an observation 1) occurs after each specific replacement and 2) is in the treatment group. **Table A12** presents the results

The first test exploits a drastic change in the board before the sample period. In January 2003, a new Chair was assigned by the government to replace the retired one; in April, this new Chair replaced two vice chief editors who were responsible for the treated divisions. However, such a radical change of top managers did not have any significantly differentiated impact on the performance of reporters in the treatment and control groups (see Columns (1) and (2)). The second test combines two episodes that occurred after the baseline sample period. In October 2008, **CEA** stepped down and the composition of the board reverted to the situation before his appointment. One year later, a new chief editor was appointed, and he became the new board Chair in February 2010. Columns (3) and (4) show that neither replacement has differentiated effects on the performance of reporters in the treatment and control groups. In other words, the reporters' performance is not reversed upon the resignation of **CEA**. Columns (5) and (6) pool together, in the same regression, all the above noted changes of top managers as well as the authority change and the appointment of **CEA** which took place a few months earlier. The result verifies the findings presented in Columns (1) through (4): replacing top managers per se does not affect reporters' performance in systematically different ways across divisions.

3.2.4 Editorial Policies and Evaluation System

The Newspaper operates in a highly competitive local market. Although the market structure was stable during the sample period, some unobservable changes in the demand for different types of journalism that coincided with the authority change might affect the Newspaper's editorial policies and the reporters' news coverage. From the supply side, a change in the evaluation methods or the composition of the evaluation committee may also affect the measure

Table A12: Tests of the Effects of Replacements of Top Managers

	(1) quantity	(2) quality	(3) quantity	(4) quality	(5) quantity	(6) quality
sample period	2003		2007-2010		2003-2010	
replacement-1	-0.043	-0.045			0.016	-0.033
× treatment	(0.078)	(0.085)			(0.063)	(0.070)
replacement0					0.080	0.010
× treatment					(0.065)	(0.069)
reform× treatment					**0.026**	**0.230****
					(0.095)	**(0.086)**
replacement1			-0.026	-0.010	-.007	0.006
× treatment			(0.062)	(0.039)	(0.075)	(0.057)
replacement2			0.068	0.034	0.058	0.031
× treatment			(0.058)	(0.033)	(0.052)	(0.026)
#observations	1,331	1,329	5,782	5,749	11,572	11,518
adjusted R-squared	0.536	0.386	0.405	0.506	0.541	0.411

Notes: "Treatment" is a dummy for the observations in the four divisions that experienced the authority change in September 2005. "Reform" is a dummy for the observations in and after the month of the authority change in September 2005. "Replacement-1" is a dummy for the observations in and after the replacements of the Chair and two vice chief editors in April 2003. "Replacement1" is a dummy for the observations in and after October 2008, when the chief editor who triggered the organizational reform resigned. "Replacement2" is a dummy for the observations in and after Febuary 2010 when a new Chair was appointed. "Replacement0" is a dummy for the observation in and after the appointment of the chief editor who triggered the authority change in June 2005. The independent variables are the interactions between the treatment and each replacement. The regressions control for individual and time fixed effects and time-variant factors as in the baseline estimation. Standard errors (in parentheses) are clustered by subdivisions (#clusters=21). ***denotes significance at 1%, **at 5%, and * at 10%.

Table A13: Robustness Check of Average Treatment Effects: Division Trends

	log quantity score				log quality score			
sample	Entire Control		Local News		Entire Control		Local News	
	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]
reform×	0.053	-0.066	0.018	-0.100	0.194*	0.061	0.204*	0.037
treatment	(0.104)	(0.104)	(0.078)	(0.126)	(0.103)	(0.087)	(0.103)	(0.118)
individual fixed effects	yes		yes		yes		yes	
division_specific linear trend	yes	yes	yes	yes	yes	yes	yes	yes
time-variant covariates	yes	yes	yes	yes	yes	yes	yes	yes
time-invariant covariates		yes		yes		yes		yes
#observations	4,459	4,459	3,300	3,300	4,440	4,440	3,259	3,259
adj-R^2	0.542	0.279	0.549	0.302	0.404	0.206	0.347	0.144

Notes: This table reports the aerage treatment effects of the baseline DID estimation as those reported in Table 3 in the paper except that now the regressions control for division_specific linear trends. Reform is a timing dummy that equals one if an observation is in and after the month of the organizational change that transfered editoral decision rights from division editors to chief editors. Treatment is a dummy for the reporters from the reformed divisions: Economy and Business, Education and Health, Politics and Law, and General Reports. The "Entire Control" sample uses reporters in all the four unreformed divisions as the control group; the "Local News" sample uses only reporters in the Local News division as the control group. Time fixed effects are 36 year_month dummies. The time-variant covariates include age-squared, tenure-squared, position, qualification, and division fixed effects. When a regression excludes individual fixed effects (Column [2], [4], [6], and [8]), time-invariant personal characteristics (gender, education and Party membership) and the factors that are collinear with individual and time fixed effects (age and tenure), are now included. Standard errors (in parentheses) are clustered by subdivisions. ***denotes significance at 1%, **at 5%, and * at 10%.

of reporters' quality scores.

Evaluation Methods and Committee. According to the Newspaper's documentation, the evaluation methods in terms of the evaluation procedure and the classification of good articles remained the same after the authority change. Moreover, all the nine committee members were the same individuals, and the division of labor among them and the flat-wage pay scheme applied to them did not change. Furthermore, they were unlikely to have any career concerns, as they had reached retirement age.

Evaluation Policies. A change in editorial policies would largely be reflected in the evaluation system for reporters' performance. Therefore, I test the stability of the evaluation system by examining the correlation between the quality score and the external measures of news content before and after the reform. As shown in **Table A6**, within the treatment group, none of the external measures that make a notable contribution to the quality score change significantly after the reform. Similar results appear in the control group. The triple interaction terms (each external measure interacted with both reform and treatment) reported in the last column are mostly statistically insignificant, verifying the consistency of a non-discriminating evaluation policy over time. These results rule out the coincidence of the authority change and a drastic change in the evaluation policy. They also exclude the possibility that the Newspaper changed its evaluations to favor certain types of journalism.

Resource Reallocation across Divisions. The heterogeneous treatment effects across divisions within the treatment group provide strong support to the real impact of the authority change on reporters' behavior. However, these effects raise a concern that the Newspaper, in response to changes in market demand, might grow the Economy and Business division and the Education and Health division, for which the effects of the authority change were most pronounced. A piece of indirect evidence mitigates this concern: the results in the baseline estimations are barely affected even when the regression includes separate time trends for each division (**Table A13**).

To offer direct evidence, I gather monthly data on the number of articles containing keywords related to "economy," "finance," and "firms" and keywords related to "education" and "health," published in the Newspaper and its three major competitors. As the time series in **Figure A4** shows, the number of articles in these two subject matters is stable in both the Newspaper and the three competitor newspapers during the sample period. Moreover, a change in editorial policies targeted at certain divisions is usually implemented by reallocating resources, especially human resources, across divisions. However, the number of copy editors and proof-readers assigned to each news section hardly changed at all in the sample years.

3.2.5 Production Technology and Work Environments

I have shown that the authority change is not associated with injection of more production factors, such as human resources at all levels of the Newspaper. Is it possible that the effects of the authority change are contaminated by potential changes in the Newspaper's

production function, such as advances in information technology, or improvements in work environments? First, the Newspaper is well established, and the production process is almost routines. All the journalists across divisions were equipped with the same information and computer technology. Second, the Internet, which may enable editors to originate more news reports, was popular long before the start of the sample period. Only after 2007 did social media become popular and affect the traditional media in China. Third, the vice chief editors and division editors, who held these positions for lengthy tenure, were the key determiners of division-specific work environments. Given that these individuals remained in the same positions over the sample period, it is unlikely that the work environments of different divisions changed precisely at the time of the organizational reform and in ways that systematically differ from one another.

References

[1] Bertrand, Marianne, and Antoinette Schoar. (2003). "Managing with Style: The Effect of Managers on Firm Policies." Quarterly Journal of Economics, 118(4), pp. 1169-208.

[2] Qin, Bei, David Stromberg, and Yanhui Wu (2015). "Media Bias in Autocracies: Evidence from Chinese Newspapers," University of Southern California and University of Stockholm, working papers.

[3] Zhao, Yuezhi. (1998). Media, Market, and Democracy in China: Between the Party Line and the Bottom Line. University of Illinois Press.

[4] Zhao, Yuezhi. (2008). Communication in China: Political Economy, Power, and Conflict. Rowman & Littlefield Publishers.