Firm news and market views:
the informational role of official newspapers in China

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December 2020

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1 Introduction

In countries where the state has significant influence on the economy, it is unclear how the degree of state control over the media impacts the media's role in providing corporate news to the market. On the one hand, tightening state control will increase the media's political incentives to serve as the government's mouthpiece, while loosening state control will increase the media's economic incentives to meet the market's informational demand. On the other hand, state-controlled media can serve as credible news outlets for conveying information about economic and industrial policies to market participants. Although distancing themselves from the state will free the media to meet market demands by providing more firm-specific information, a reduction in political dependence could also weaken these outlets' connection to the government and jeopardize their ability to obtain information about the government's economic agendas and policies. Thus, it is possible that heavy state control may not necessarily lead to no information but rather, to a different type of information being supplied to the market by media outlets.

In this paper, we examine whether differences in the degree of state control over the media affect the type of information it supplies to the market. Specifically, we consider whether media outlets that are under heavy state control provide news with stronger industry and macroeconomic components relative to firm-specific components, and whether media outlets that are subject to less state control provide more firm-specific news and less industry and macroeconomic news. Our paper addresses this issue by investigating corporate news articles published in China. China is a natural setting to examine articles published by state-owned media. Similar to most other developing economies, Chinese newspapers are directly or indirectly controlled by the government or party-affiliated organizations, with editorial boards and journalists subject to political oversight and incentivized to cater to politicians. Due to these

political pressures, newspapers in China publish articles that frequently contain political slogans or support current political orthodoxy.[1] That said, China's newspapers must also serve the market economy. In response to demand for business news and entertainment, China sanctioned the creation of "non-official" newspapers.[2] These newspapers are still state-controlled, but have stronger commercial incentives and a clear mandate to attract and serve a broader readership. This is in stark contrast to official newspapers, which are closely aligned with their sponsoring organization and are required to serve as the government's mouthpiece.

Prior research establishes that increased state control over media leads to stronger incentives for the media to pursue political objectives. More specifically, recent research has shown that due to stronger state control, official newspapers publish articles that contain more political rhetoric and positively biased content than non-official newspapers (Stockmann 2013; Piotroski et al. 2017; You et al. 2018; Qin et al. 2018). In addition, You et al. (2018) document that even among non-official newspapers, those under stronger state control provide significantly less timely coverage of corporate fraud. This is consistent with the conjecture that state control reduces newspapers' incentives to supply firm-specific information to the market for firm monitoring.

However, although state control induces official newspapers' political bias and reduces their incentives to provide firm-specific information, it does not necessarily mean that they do not have any informational role. The official newspapers' stronger connection to the government could enable them to access more information about industrial and macro policies. That is, despite official newspapers' weaker economic incentives to meet the market demand for information, they can still play an important informational role because the government may

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[1] See Stockmann (2013) for a comprehensive review.
[2] See Hu (2010) for a summary and discussion of the rise of the business news media in China.

value these media outlets as key channels to inform both its officials and the market of its industrial and macro policies.

We posit that official newspapers, because of their closer proximity to the government and the Party, are in a position to gather and credibly convey information about government objectives, plans, and policies that would have broad implications for specific industries or the economy at large. Therefore, we expect official newspaper articles to be tilted more toward covering these industry and market-wide topics when reporting on individual firms. In contrast, given their market orientation and commercial incentives, non-official business newspapers, we expect them to focus on conveying information about firm-specific activities of the covered firm and its executives' decisions. The composition of their news is primarily firm-specific rather than industry- or market-specific.

To investigate this prediction, we gathered a comprehensive sample of domestic corporate news articles written about Chinese listed firms over the period of 2000–2017. Our main sample consists of 2.78 million articles drawn from 52 official and 48 non-official business newspapers across China. For each news article, we estimate the market reaction on its publication date and the fraction of the market reaction related to the incorporation of firm-specific versus industry and market-wide news.

First, we find that both official and non-official newspaper articles have information content, as measured by the absolute stock market reaction to their publication. More importantly, our results provide confirmation that official newspapers, although being more politicized and generating a smaller market reaction than non-official newspapers, continue to convey useful information to China's capital markets.

Given that both sets of articles have information content, we next focus on identifying the relative *type* of information conveyed by these corporate news articles. Following the methodology in Liu (2011), we decompose daily returns into three components—a market component, an industry component, and a firm-specific component—and use this decomposition to measure the relative amount of industry, market, and firm-level news influencing the stock price of a given firm on a given day. We find that, relative to the average trading day without news coverage, the portion of industry and market news versus firm-specific news influencing stock prices shifts around the publication of a corporate news article about the covered firm. Specifically, a smaller fraction of the firm's daily stock return is related to industry or market news on the date these articles are published (i.e., a greater fraction of the firm's daily stock return relates to the firm-specific information component), which is consistent with corporate news articles' conveying, on average, incremental, value-relevant firm-specific information to the financial markets. This firm-specific information effect is actually larger than the shift observed on earnings announcement dates, suggesting that our business news articles (and other underlying information events) are preempting the release of firm-specific earnings news in China. Interestingly, the shift from industry and market news to firm-specific news is more (less) pronounced when non-official (official) newspapers publish the articles. This observed difference in the *relative* components of the market reaction to these news articles suggests that official and non-official newspapers are potentially conveying different types of information to the market.[3] This conclusion is then confirmed by examining the relation between stock return synchronicity and annual newspaper activity in China, where greater official (non-official)

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[3] Our estimations suggest that the average official newspaper article conveys a 2.4 percent more (less) industry and market-level (firm-specific) information component in the news of the covered firm than comparable non-official business newspaper articles.

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newspaper activity of the covered firm over the calendar year is found to be associated with an increase (decrease) in the stock return synchronicity over the same period, similar to the relative informational effects observed for financial analyst coverage (executives' insider trades) in prior research (Piotroski and Roulstone 2004). Together, these findings are consistent with our conjecture that the official newspapers are not necessarily failing to play any informational role, but rather serving as a different kind of news outlet through providing more industry or market-specific information than non-official newspapers.

Next, we examine whether and how political forces interact with this unique informational role of official party newspapers by varying the degree of political influence on the newspapers. First, we find that official newspapers controlled by the central government convey relatively more industry and market-level information than official newspapers controlled by local governments, consistent with central government newspapers' having greater access to policy-relevant information, wider circulation, and greater perceived credibility. Second, *all* newspapers in China convey relatively more industry and market information during National Congress periods, which is consistent with the newspapers' in-depth (and perhaps disproportionate) coverage of those major political events. Also, our evidence suggests that the effect of this political event is incrementally stronger for official than non-official newspapers. Third, we find that observed differences in the type of information conveyed by non-official and official newspapers widened following President Xi's visit to leading state media outlets on February 19th, 2016, with official (non-official) newspapers conveying relatively more industry and market-wide (firm-specific) information after this high profile "loyalty" event. Finally, we show that industry information in official newspapers' articles is incrementally stronger on days when the central government introduced new industrial policies.

Finally, we examine whether a textual analysis of the content of the two types of news articles corroborates our main findings. Using the latent Dirichlet allocation (LDA) approach to classify the topics in the corporate news articles into firm-specific, industry-specific, and market-specific, we find that official newspapers report significantly more industry and market topics relative to firm-specific topics than non-official newspapers. We find similar results using a word count of the articles mentioning a related-industry name. We also repeat our main tests using a restricted sample of data with: (1) firm-days with at least one official newspaper article and one non-official newspaper article, (2) articles published on the day or within two days around the earnings announcement, (3) articles published in newspapers that appear throughout our entire sample period, (4) articles published only in newspapers domiciled in China's three tier-one cities (Beijing, Guangzhou, and Shanghai), and (5) articles with non-stale news. Our test results remain robust to these sample restrictions.

Our paper contributes to the literature in several unique ways. First, we show that official and non-official newspapers serve different informational roles in China's capital markets. Non-official newspapers create and disseminate firm-specific information about the covered firm, thus fulfilling an important information intermediary role in China's capital markets. Official newspapers, despite their role as the Party's mouthpiece, also play an important role by delivering industry-level and market-wide information to the capital markets. Given that economic growth and government policy is central to emerging market firms' investment opportunities and performance, official newspapers appear to be serving a critical and complimentary informational role in China's capital markets at this stage of the country's development. Our findings suggest that their difference is not necessarily in whether the media

outlet plays an informational role in the market, but rather in the type of information the outlet provides to the market.

Second, we show that greater intensity of coverage by official newspapers is associated with an incremental increase in stock return synchronicity, even after controlling for firm fixed effects. This evidence suggests that the current structure of the Chinese media, where a significant proportion of corporate news articles are produced by official newspapers, may be a source of the unusually high level of price synchronization observed in China's economy (e.g., Morck et al. 2000).

Third, we show that even state-owned corporate news media can provide information to the markets. This is consistent with the evidence in the United States that the business press serves as an information intermediary to the market (Bushee et al. 2010). Also, similar to prior research that shows perverse incentives can weaken media outlets' information quality (Gurun and Butler 2012; Jung et al. 2018), we document that official newspapers, due to greater government influence on them, provide less information to the market than non-official newspapers. However, despite the stronger state influence, we find that official newspapers continue to play an informational role by supplying a different type of information to the market. This has implications to the informational role of corporate news in many developing countries which have a high percentage of state-owned news media.[4]

Fourth, and more generally, we contribute to an understanding of the information environment of China's capital markets that are characterized by weak institutions (Piotroski and Wong 2012; Ke et al. 2015). And, because China is the largest economy practicing state

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[4] Djankov et al. (2003) find that the state ownership of print media is high in many developing regions: 57% in Africa, 28% in Asia-Pacific, 44% in the Middle East and North Africa, and 28% in Central and Eastern Europe of the top five daily newspapers are state-owned.

capitalization, our paper serves as an important first step toward understanding whether, and under what contextual conditions, China's state-controlled information institutions will be able to fulfill their market development roles within the country's broader institutional, political, and economic framework.

2 Background on Chinese newspapers and hypothesis development

2.1 Information content of Chinese corporate news articles

There are two types of newspapers in China—official and non-official. The official newspapers (called "party papers") are directly affiliated with organs of the Chinese government, which have a well-defined and installed readership base, and serve the primary goal of conveying the government's political narrative to its constituents. The non-official newspapers are also state-owned but are operated by a quasi-governmental agency. Following the introduction of economic reforms in 1979, the government commercialized the non-official newspapers and stopped providing ongoing financial support for their day-to-day operations (Stockmann 2013).

A number of high-profile, non-official business newspapers emerged in the late 1990s and early 2000s.[5] These non-official business publications are characterized by their focus on corporate and financial news and almost propaganda-free reporting. And, consistent with earlier evidence on the general media in China, corporate news articles published in non-official business newspapers contain less political rhetoric and less positive content than those published by official newspapers (Piotroski et al. 2017; You et al. 2018; Qin et al. 2018), suggesting that these newspapers are likely filling an important information role for capital market participants.

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[5] Examples include *Caijing, 21st Century Business Herald*, *Economic Observer*, *New Fortune Magazine*, and *Business Watch*.

In contrast, official party newspapers are expected to publish articles that cater to politicians, the Party, and/or the newspaper's sponsoring governmental or party unit. This political influence means that political incentives could adversely affect the credibility and information content of news articles published by official newspapers. This negative effect on official newspapers is expected to be significant because You et al. (2018) find that even among the eight *non-official* newspapers in their sample, the positive association between the tone of the article and stock returns is lower (higher) for newspapers with stronger state control (market orientation).

2.2 Relative information content of China's business news articles

Prior research establishes that individual market participants have different relative informational advantages with respect to firm, industry, or market-level information, and their resultant information-based activities have a differential impact on the price formation process. For example, insiders have an advantage with respect to acquiring and disseminating firm-specific information, as evidenced by their trading behavior in advance of firm-specific announcements (Seyhun 1992, 1998; Meulbroek 1992; Damodaran and Liu 1993) and the net-negative impact of their private trading activity on stock price synchronicity (Piotroski and Roulstone 2004). Conversely, financial analysts have an advantage with respect to the production, interpretation, and dissemination of industry and market-level information and trends, as evidenced by the net-positive impact of their reporting activity on stock return synchronicity (Piotroski and Roulstone 2004; Crawford et al. 2012), and in response to the earnings announcements of other firms in the same industry (Ramnath 2002) and changes in macroeconomic factors (Hutton et al. 2012).

In the context of China's newspapers, it is possible that official and non-official newspapers convey different information to the financial markets due to their relative advantages with respect to acquiring, interpreting, and disseminating firm-level versus industry and market-wide information. Due to their commercial incentives, non-official newspapers may be more likely to engage in firm-specific reporting than official newspapers, either to increase readership through investigative reports or to cater to the covered firms (through the publication of favorable news stories) in exchange for advertising revenue (or in the extreme, journalist compensation). In both cases, these reporting activities can lead to an increase in the supply of firm-specific information about the covered firm. Similarly, non-official newspapers may be more inclined to report on factors behind the recent stock price or earnings performance of individual firms; this focus on idiosyncratic performance drivers consequently increases the supply of firm-specific information about the covered firm.

In contrast, official newspapers enjoy a close relationship with their sponsoring governmental agencies and party units. Due to these relationships, official newspapers may become conduits for conveying political opinions and policy-related information to the market. And, even in the absence of any specific communication directives from their sponsoring entities, official newspapers are also likely to have greater access to economic data, are more likely to cover political events, and are more likely to frame corporate news in the broader political/economic policy context than non-official newspapers.

However, it is also possible that the official newspapers' well-known, pro-government biases, could dominate and significantly weaken their informational role to the markets. Thus, it remains an empirical question whether official newspapers could serve as a channel for valuable information by conveying timely information about current and future government policy,

industry-level trends and regulation, and/or macroeconomic data when reporting on individual companies.

These arguments lead to our two alternative hypotheses. First, focusing on differences in the relative type of information contained in the business news articles of official and non-official newspapers, we predict:

H1: The relative amount of industry and market-wide information contained in official newspaper articles is significantly more than the relative amount of industry and market-level information contained in non-official newspapers' articles.

Second, focusing on the association between newspapers' activity and listed firms' stock return synchronicity, we predict

H2: Official newspaper's coverage of the listed firm is more positively associated with stock return synchronicity over the year than that of non-official newspapers.

3 Research design, sample construction, and descriptive statistics

3.1 Newspaper data source

To perform our analyses, we use data from Wisenews, a commercial database of domestic Chinese language newspaper and magazine articles. Due to database limitations before 2000, we focus on domestic newspaper articles published about China's listed firms over the period 2000–2017.

To construct our sample of country-specific newspaper articles, we use a refinement of the methodology employed in Piotroski et al. (2017). First, using the trading name of each listed company, we develop an automated article-crawling robot to search the archives of the database to identify all Chinese language articles featuring the listed company listed either on the Shanghai or Shenzhen Stock Exchanges during our sample period. Second, we attribute

individual articles to a specific listed firm based on the corporate name that appears most frequently in the specific article. To ensure that our sample consists of press-generated news articles, we specifically exclude articles identified as summary lists (for example, firms with the largest price change or trading activity) and articles that relate to regulation-mandated announcements or press releases made by the company (for example, quarterly earnings reports, annual reports, and ad hoc filings). We also rely on machine learning processes to clean the crawled news articles that are not related to the company but appear due to ambiguity in the firm's name. When a news article mentions more than one firm, we assign the article to the firm whose name appears most often in the article or to the firm whose name appears first in the article if all the firm names appear with the same frequency in the article.[6] Finally, we keep only articles published in official newspapers and non-official business newspapers (i.e., non-official newspapers focusing on financial and economic news reporting). These procedures yield a final sample of 2,777,103 unique corporate news articles about 3,103 unique domestic listed companies, drawn from 100 unique newspapers.

3.2 Classification of newspapers

Because our research focuses on corporate news, our sample includes only articles published in official newspapers and non-official business newspapers.[7] Newspapers are classified as *official newspapers* if they are under the direct control of the central and local Communist Party Committees (party newspapers) or government institutions (political organ papers) and serve as their mouthpiece. Business newspapers are classified as *non-official* if they

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[6] As a robustness check, we have also tried keeping only articles with the name of one firm. Our main results remain to be the same using this restricted sample.

[7] We exclude all commercialized metro and evening newspapers given their orientation toward non-business news. There could be potential under-identification of official papers as some of the evening papers claim to be official newspapers (e.g., *Hefei Evening Newspaper*). However, this exclusion should not bias our results.

have an orientation toward reporting business, economic, and financial news and are not controlled by any of the preceding organizations. Most non-official papers are controlled by news groups (e.g. *21st Century Business Herald* by the Nan Fang News Group in Guangzhou), commerce-related ministries (e.g. *Financial News* by the People's Bank of China), or have private individuals or companies as minority shareholders (e.g. *Economics Observer* by the Shandong Sanlian Group Ltd, which is a state-owned company). Based on these definitions, our sample of 100 newspapers consists of 52 official and 48 non-official newspapers.

3.3 Measurement of the information content (i.e., market reaction) of the news article

3.3.1 Absolute market reaction

Following prior research on the information content of firm-specific information releases, we measure the incremental information content of a news article based on the stock market's reaction to its publication (Fama et al. 1969). Specifically, we estimate two variants of the stock price reaction to the publication of a news article. The first variable, *Return$_{it}$*, is measured as the one-day raw stock return for firm i on the date of the newspaper article's publication (i.e, day t). The second variable, *Mkt-Adj Return$_{it}$*, is measured as *Return$_{it}$* minus the value-weighted market return for all stocks in China on day t. Because we are interested in the magnitude of the unsigned impact of newspaper coverage on the firm's stock price, we follow prior research (Bailey et al. 2006; Griffin et al. 2011; Peress 2014) and measure the information content as the absolute value of the stock price reaction on the publication date (|*Return$_{it}$*| and |*Mkt-Adj Return$_{it}$*|, respectively), benchmarked against the firm's average, long-run daily volatility. All price and return data are gathered through CSMAR.

3.3.2 Market, industry, and firm-specific component of information

Prior research documents that firm-specific stock returns and earnings news can be decomposed into three components: a market component, an industry component, and a firm-specific component (King 1966; Brown and Ball 1967; Roll 1988). Following the methodology in Liu (2011), we disaggregate the daily stock return of a given firm into these three components, and estimate two variables, *Industry Information$_{it}$* and *Industry & Market Information$_{it}$*, which are designed to measure the proportion of daily returns related to industry-level information and industry and market-level information, respectively, on day t.

The variable *Industry Information$_{it}$* captures the relative amount of industry-wide news contained in firm i's stock return on day t, following the decomposition in Liu (2011). *Industry Information$_{it}$* is defined as $\frac{|CR_{it}^I|}{|CR_{it}^F|+|CR_{it}^I|+|CR_{it}^M|}$, where CR_{it}^M is the component of market-wide information embedded in firm i's return on day t; CR_{it}^I is the component of industry-wide information embedded in firm i's return on day t; and CR_{it}^F is the component of firm-specific information embedded in firm i's return on day t. To estimate these components, we annually estimate the following model for each firm in each calendar year to extract the market and industry beta of firm i, denoted β_i^M and β_i^I:

$$R_{it} = \alpha_i + \beta_i^M \times R_t^M + \beta_i^I \times (R_t^I - \beta_i^{IM} \times R_t^M) + \varepsilon_{it}. \tag{1}$$

In these models, R_{it} is the return of firm i on day t; R_t^I is the value-weighted return on the industry (we follow prior literature (Gul et al. 2013; Bradshaw et al. 2019) using China Securities Regulatory Commission (CSRC) industry classification with two-digit code for manufacturing industries and one-digit code for all other industries) portfolio (to which firm i is affiliated) on day t; R_t^M is the value-weighted market return on day t; β_i^{IM} is the market beta of the industry to which firm i is affiliated, estimated from the following market model regression in each calendar year:

$$R_t^I = \alpha_i + \beta_i^{IM} \times R_t^M + \varepsilon_{It}, \qquad (2)$$

where CR_{it}^M, the component of market-wide information among firm i's return on day t, is

defined as $\hat{\beta}_i^M \times R_t^M$, where $\hat{\beta}_i^M$ is estimated from Model (1); CR_{it}^I, the component of industry-

wide information embedded in firm i's return on day t, is defined as $\hat{\beta}_i^I \times \left(R_t^I - \hat{\beta}_i^{IM} \times R_t^M\right)$,

where $\hat{\beta}_i^{IM}$ is estimated from Model (2); and CR_{it}^F, the component of firm-specific information

embedded in firm i's return on day t, is defined as $R_{it} - CR_{it}^M - CR_{it}^I$.[8]

Analogously, the variable *Industry & Market Information_{it}* captures the relative amount

of industry and market-wide information news contained in firm i's stock return on day t.

Industry & Market Information_{it} is measured as $\frac{|CR_{it}^I| + |CR_{it}^M|}{|CR_{it}^F| + |CR_{it}^I| + |CR_{it}^M|}$, where CR_{it}^M is the component

of market-wide information embedded in firm i's return on day t; CR_{it}^I is the component of

industry-wide information embedded in firm i's return on day t, and CR_{it}^F is the component of

firm-specific information embedded in firm i's return on day t.

3.4 Descriptive statistics

Table 1 presents descriptive statistics on our sample of 100 newspapers and 2,777,103

unique corporate news articles. Panel A shows that 32 are national newspapers controlled by the

central government (consisting of five official and 27 non-official newspapers), while the

remaining 68 newspapers are local newspapers controlled by local government entities or local

party organizations (consisting of 47 official and 21 non-official newspapers). In terms of

newspaper articles, we see that 50.2 percent of the news articles in our sample are published by

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[8] To estimate these individual stock return components, we exclude firms that have fewer than 30 observations in a given year, and the daily return observations for those firm-years are not included in our main empirical tests.

national newspapers. These articles account for 12.9 percent and 67.1 percent of the total number

of articles published by official and non-official newspapers, respectively.[9]

Insert Table 1 about here

Panel B shows that the number of newspaper outlets included in the sample ranges from

37 to 87 newspapers per year. For the first half of our sample, the number of newspapers and

newspaper articles generally increased year over year, consistent with the underlying growth in

China's capital markets and liberalization of the news media. Interestingly, the number of

newspapers and news articles plateaued in 2008 and experienced a notable decline in the final

years of the sample. This is due to both the closure of underperforming newspapers and the

suspension of coverage of select newspapers by Wisenews. Finally, consistent with the important

roles that the manufacturing and financial sector plays in China's economy, Panel C shows that

these two industries account for 38.1 percent and 22.0 percent, respectively, of all corporate

news articles written during our sample period.

Table 2 presents descriptive statistics on the variables used in our main empirical

analyses. First, the average daily raw and market-adjusted return for our full sample of daily

return observations is approximately zero, consistent with daily stock returns in China behaving

like a random walk. Second, consistent with the high level of stock return synchronization

documented in China by (Morck et al. 2000), we observe that, on average, the industry

information component (industry and market information component) explains 25 percent (52

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[9] Panel A also highlights the existence of a potential selection bias in the Wisenews database, as only 26 provinces are shown as having at least one official business newspaper included in the database over our sample period (out of a total of 32 provincial-level administration units, excluding the Special Administrative Regions of Hong Kong and Macau, in China), while four provincial-level administrative units have no newspaper coverage in our database.

percent) of daily stock returns in China. We also observe that firm-level daily raw returns move in the same direction as the firm's industry index return 69 percent of the time.

Insert Table 2 about here
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4 Empirical analyses: information content of Chinese business newspaper articles

4.1 Absolute market reaction to news article publication

Our first set of empirical analyses examines the incremental information content of business news articles published by domestic Chinese newspapers before testing our main hypothesis. Following prior research on the media (Antweiler and Frank 2004; Tetlock 2007, 2011), we measure the incremental information content of a news article based on the stock market's reaction to its publication. To perform our analysis, we estimate the following cross-sectional model using firm-level data:

$$
\begin{aligned}
|Return_{it}| \text{ or } |Mkt\text{-}Adj\ Return_{it}| = {} & \alpha + Year\text{-}Month\ FE + Firm\ FE + \\
& \beta_1 News\ Coverage_{it} + \beta_2 News\ Coverage_{it} \times Official_{it} + \\
& \beta_3 |Market\ Return_{it}| + \beta_4 Firm\ Size_{it} + \beta_5 Market\text{-}to\text{-}book_{it} + \beta_6 ROA_{it} + \\
& \beta_7 Leverage_{it} + \beta_8 SOE_{it} + \beta_9 Earnings\ Announcement_{it} + \varepsilon_{it} \qquad (3)
\end{aligned}
$$

Table 3 presents selected coefficients (and *t*-statistics) from estimations of these models. Consistent with newspapers serving an information role for China's capital market participants, we observe that although the magnitude of the market reaction is significantly smaller for official newspapers than for non-official newspapers as captured by the significant negative coefficient on *News Coverage$_{it}$×Official$_{it}$* (β_2<0), articles published in official newspapers continue to have significant information content, with the sum of the coefficients on *News Coverage$_{it}$* and on *News Coverage×Official$_{it}$* being significantly positive (β_1+β_2>0). These results confirm that even with our expanded sample of official newspapers covering most provinces in China, we continue to find that official newspapers play an informational role in the market.

4.2 Disaggregation of market reaction into market, industry, and firm-specific components

In this section, we use Liu's (2011) method to decompose stock returns into firm-specific, industry and market components and then examine whether official and non-official newspapers convey different amounts of industry and market-wide versus firm-specific information to the markets. Prior research shows that financial intermediaries and select market participants contribute different information to stock prices, and that the type of information they contribute is related to their relative informational advantage. Piotroski and Roulstone (2004) show insider and institutional investors primarily reveal firm-specific information through their trades and changes in holdings, consistent with their private access to firm-specific information sources. In contrast, Piotroski and Roulstone (2004) show that the reporting activities of financial analysts contribute relatively more industry and market-level information than firm-specific information to market prices, with the effect especially pronounced following the initiation of analyst coverage (Crawford et al. 2012). Finally, focusing on the news media, Dang et al. (2015) show that newspapers operating in stronger institutional environments write idiosyncratic articles, contribute more firm-specific information than news outlets operating in weak institutional settings.

In the China context, our preceding evidence shows that domestic business news articles about China's listed firms convey information. However, the type of information domestic newspapers contributes to the market and whether official and non-official newspapers create and disseminate the same type of information are open empirical questions. Table 4 explores

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these issues. Specifically, we estimate the following cross-sectional models using firm-level

data:

$$\begin{aligned}
Industry\ Information_{it}\ or\ Industry\ \&\ Market\ Information_{it}\ &=\ \alpha\ + \\
&Year\text{-}Month\ FE\ +\ Firm\ FE\ +\ \beta_1 News\ Coverage_{it}\ +\ \beta_2 News\ Coverage_{it}\ \times \\
&Official_{it}\ +\ \beta_3 Firm\ Size_{it}\ +\ \beta_4 Market\text{-}to\text{-}book_{it}\ +\ \beta_5 ROA_{it}\ + \\
&\beta_6 Leverage_{it}\ +\ \beta_7 SOE_{it}\ +\ \beta_8 Earnings\ Announcement_{it}\ +\ \varepsilon_{it}
\end{aligned} \qquad (4a)$$

$$\begin{aligned}
Comovement_{it}\ &=\ \alpha\ +\ Year\text{-}Month\ FE\ +\ Firm\ FE\ +\ \beta_1 News\ Coverage_{it}\ + \\
&\beta_2 News\ Coverage_{it}\ \times\ Official_{it}\ +\ \beta_3 Firm\ Size_{it}\ +\ \beta_4 Market\text{-}to\text{-}book_{it}\ + \\
&\beta_5 ROA_{it}\ +\ \beta_6 Leverage_{it}\ +\ \beta_7 SOE_{it}\ +\ \beta_8 Earnings\ Announcement_{it}\ +\ \varepsilon_{it}\ (4b)
\end{aligned}$$

In these models, the dependent variable *Industry Information$_{it}$* (*Industry & Market

Information$_{it}$*) equals the fraction of firm *i*'s raw stock return that reflects industry information

(industry and market information) on day *t*. The disaggregation of daily returns into firm-

specific, industry-level, and market-level information components follows the methodology of

Liu (2011). As a relative measure, higher *Industry Information$_{it}$* (*Industry & Market

Information$_{it}$*) may not necessarily imply that the article contains more industry or market-wide

information or just less firm-specific information. However, we do not have intra-day return

data to estimate the industry (β_{it}^I) and market betas (β_{it}^M) and calculate the component of market-

wide information (CR_{it}^M) and industry-wide information (CR_{it}^I) directly (Patton and Verado,

2012).[10] To alleviate this concern, we use a non-parametric variable, *Comovement$_{it}$*, which is an

indicator variable equal to one if firm *i*'s raw stock return moved in the same direction as the

firm's relevant industry index on day *t*, and zero otherwise. We expect that if the news article has

more industry-wide information, *Comovement$_{it}$* is more likely to be equal to one. This version of

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[10] Following the decomposition model in (Liu, 2011), our dependent variables (*Industry Information$_{it}$* and *Industry & Market Information$_{it}$*) are calculated using the market and industry betas estimated at the year level. Direct measure of the daily covariation of stock returns with industry returns would require intra-day return data ((Patton and Verado, 2012). Instead, we construct a non-parametric variable, *Comovement*, which essentially captures on a daily basis whether the stock return covaries positively with the industry returns (industry beta > 1).

the model (Model (4b)) is estimated using a OLS regression instead of a logit model, allowing us to include firm fixed effect[11].

Our main variable of interest, *News Coverage$_{it}$*, is an indicator variable equal to one if there was a business news article about firm *i* published in any domestic Chinese newspaper on day *t*, and zero otherwise. Similarly, the indicator variable *Official$_{it}$* equals one if a business news article about firm *i* was published in an official newspaper on day *t*, and zero otherwise. To the extent that Chinese business news articles about Chinese listed firms primarily convey meaningful firm-specific information, we expect a negative coefficient on *News Coverage$_{it}$* (β_1<0). However, as discussed earlier, we expect news articles published by official newspapers to convey *relatively more* industry and market-level information than articles published by non-official newspapers. If this conjecture is correct, we expect a positive coefficient on the interaction term *News Coverage$_{it}$×Official$_{it}$* (β_2>0). Finally, to control for omitted determinants of the information content of these newspaper articles, we include firm-level control variables (*Firm Size$_{it}$, Market-to-book$_{it}$, ROA$_{it}$, Leverage$_{it}$, and SOE$_{it}$*). Because dates associated with corporate earnings announcements induce stock price volatility, we include an indicator variable (*Earnings Announcement$_{it}$*) that equals one if the firm announced quarterly, semi-annual, or annual earnings earning on day *t*, and zero otherwise. We also include year-month indicator variables, and firm fixed effects in all OLS estimations, and all standard errors are clustered by firm. All variables are as defined in the Appendix.

Table 4 presents selected coefficients (and *t*-statistics) from estimations of these models. First, the results in columns (1) and (3) show that the average proportion of daily returns explained by industry and market factors is significantly lower on days associated with the

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[11] As robustness checks, we also estimate Model (4b) using a Logit model without firm fixed effects in all our regressions in the paper, and the key results remain same.

publication of a corporate news article about a specific firm than the proportion observed on days without such articles, as reflected by the negative coefficient on *News Coverage$_{it}$*. This negative relation is consistent with these newspaper articles' generally conveying firm-specific information about the firms being covered. This represents an approximate 10 percent reduction in the relative amount of industry and market-level information (versus firm-specific information) contained in daily returns on these publication dates. This main result is confirmed by the results in column (5), where we see that the likelihood of an individual firm's stock price moving in the same direction as its industry index is lower on dates associated with a published news article.

Insert Table 4 about here

Focusing on differences between official and non-official newspapers, the results in columns (2) and (4) reveal that the relative amount of firm-specific versus industry and market-wide information conveyed by official newspaper articles is significantly larger than the proportion conveyed by non-official newspapers, as reflected by the positive coefficient on the term *News Coverage$_{it}$×Official$_{it}$*. In other words, official newspapers convey relatively more (less) industry and market-level (firm-specific) information than non-official newspapers, all thing being equal. The results in column (6) confirm these differences, where the observed reduction in the likelihood of comovement with industry returns around newspaper article publication dates is significantly smaller when the business news article is published by an official newspaper. This result provides support that the relatively higher industry and market-wide information documented using Liu's (2011) measures is likely to be associated with a greater absolute level of market-wide information conveyed by official newspaper articles.

Thus, although the articles of both types of newspapers primarily convey firm-specific information about the covered firm, the degree to which the article conveys other macro-level information seems to be correlated with the specific newspaper's political role, with official newspapers seemingly able to credibly convey information about government policies toward and/or overall economic performance of specific industries or the broader economy. These results support our first hypothesis that compared to non-official newspapers, official newspapers provide a relatively larger proportion of industry and market-specific information than firm-specific information.

4.3 Link between official and non-official newspaper activity and stock return synchronicity

Prior research shows that the level of stock price synchronization observed in an economy reflects the amount of firm-specific information being incorporated in prices, with the degree of synchronization affected by both the strength of country-level institutions and firm-level mechanisms and incentives to promote transparency (Morck et al. 2000; Durnev et al. 2003; Jin and Myers 2006; Chen et al. 2007; Fernandes and Ferreira 2008; Haggard et al. 2008).

Due to China's historically weak institutional arrangements and incentives for opacity, China's stock prices exhibit an unusually high level of stock return synchronization, with the effect more pronounced for state-controlled firms, firms with low-quality auditors, and firms with minimal foreign shareholders (Gul et al. 2010). Given the important role that the state media plays in shaping the flow of information in this economy, we expect that the different information roles played by official and non-official newspapers will differentially affect the degree of stock price synchronization we observe for China's listed firms, with more articles

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published by official (non-official) newspapers leading to more (less) stock price

synchronization, all things being equal.

To examine this issue, we estimate the following empirical model using our full sample

of listed firm-year observations:

$$Synchronicity_{it} = \alpha + Year\ FE + Firm\ FE + \beta_1 Newspaper\ activity_{it} + \\ \beta_2 Fundamental\ Correlation_{it} + \beta_3 Herfindahl\ Index_{it} + \\ \beta_4 Std\ Dev(ROA_{it}) + \beta_5 Log\ (\#\ of\ Industry\ Firms_{it}) + \beta_6 Firm\ Size_{it} + \\ \beta_7 Market\text{-}to\text{-}book_{it} + \beta_8 ROA_{it} + \beta_9 Leverage_{it} + \beta_{10} SOE_{it} + \varepsilon_{it} \qquad (5)$$

In this model, the dependent variable, *Synchronicity*$_{it}$, captures the annual comovement of

a firm's stock return with the overall market return. *Synchronicity*$_{it}$ is measured as log $(\frac{R^2}{1-R^2})$,

where R^2 is estimated from the market model for firm *i* in year *t* using daily return data. We

measure newspaper activity in the regression in three different ways. First, we use the overall

newspaper coverage intensity, *Number of Articles*$_{it,}$ measured as the natural logarithm of one plus

the number of news articles covering firm *i* in year *t*, to capture newspaper activity. Second, as

proxies for newspaper activity, we use the official newspaper coverage intensity, *Number of*

Official Articles$_{it,}$ measured as the natural logarithm of one plus the total number of news articles

about firm *i* published in official newspapers in year *t*, and the non-official newspaper coverage

intensity, *Number of Non-Official Articles*$_{it,}$ measured as the natural logarithm of one plus the

total number of news articles about firm *i* published in non-official newspapers in year *t*. Finally,

to capture newspaper activity, we use the relative intensity of media coverage by official

newspapers, *Relative Official Coverage*$_{it}$, measured as the ratio of one plus *Number of Official*

Articles$_{it}$ to one plus *Number of Non-Official Articles*$_{it,}$.

These estimations in Table 5 confirm and reinforce the interpretation of our earlier

findings and support our second hypothesis. Results in column (2) show that the number of

articles published by official (non-official) newspaper are positively (negatively) associated with

stock return synchronicity, suggesting that these newspapers are primarily contributing industry-level (firm-specific) information to the price formation process. Similarly, we find in column (3) that the relative intensity of media coverage by official newspapers is positively associated with stock return synchronicity. The results for official newspapers are strikingly similar to research showing the effects for financial analysts, who also have a competitive advantage with respect to gathering, analyzing, and disseminating information about industry and market-wide trends (Piotroski and Roulstone 2004; Crawford et al. 2012).

Insert Table 5 about here
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5 Political variation in the information content of China's state-controlled newspapers

Our remaining tests search for political variation in the information content of China's state-controlled newspapers.

5.1 Relative influence of central government versus local government official newspapers

To the extent that proximity to policy-relevant information is behind the relative strength of the informativeness of official newspapers with respect to industry and market-level topics, we would expect newspapers affiliated with central government agencies (i.e., national newspapers) to produce stronger information effects than official newspapers affiliated with local governments and agencies. Similarly, if national newspapers are perceived to possess greater credibility, we would document similar differences in the information content of the articles. To test these arguments, we first categorize our official newspapers based on the locality of their sponsoring organization. This process identifies five official newspapers as being controlled by units of the central government, and 47 official newspapers being controlled by local governmental units, with these newspapers having published 111,010 and 752,095 business

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news articles about individual listed firms, respectively. Next, we re-estimate variants of Models (4a) and (4b), with the indicator variable $Official_{it}$ being replaced by two separate indicator variables— $Central\ Official_{it}$ and $Local\ Official_{it}$—reflecting the locality of the official newspaper. Specifically, $Central\ Official_{it}$ is an indicator variable equal to one if an official newspaper controlled by the central government published a corporate news article about firm i on day t, and zero otherwise, and $Local\ Official_{it}$ is an indicator variable equal to one if an official newspaper controlled by a local government agency or party unit published a corporate news article about firm i on day t, and zero otherwise.

Consistent with our earlier arguments, results in Table 6, Panel A shows that the positive incremental impact of official newspaper article publication on our two stock return–based measures of industry and market information is larger for national newspapers than local official newspapers, with the difference in coefficients significantly different from each other at the one percent significance level.[12]

Insert Table 6 about here

5.2 Impact of CPC National Congress on the informativeness of official versus non-official newspapers

Meetings of the CPC National Congress correspond to highly politicized periods in China. During the National Congress meetings, the CPC publicly unveils its leadership team for the next five years and begins the process of outlining the Party's goals and objectives (i.e., the Five-Year Plan). Therefore, during National Congress years (defined as the half year before and

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[12] Untabulated analyses reveal a minimal, incremental effect among non-official newspapers with national versus regional circulation (and only in certain empirical specifications), suggesting that differences in circulation are likely not behind the observed differences in information effects of articles published by local government versus central government official newspapers.

after the exact Congress week), it is natural to expect that newspapers in China will convey a disproportionate amount of industry and macroeconomic information. And, to the extent that official newspapers are the primary channel by which this information is credibly disseminated to the market, we would expect the industry and market role of official newspapers to be incrementally stronger during these periods.[13]

Table 6, Panel B, which presents select coefficients and *t*-statistics from these estimations, reveals two key findings. First, we find that all corporate news articles in China convey relatively more industry and market-wide information during National Congress periods, consistent with these newspapers' in-depth (and perhaps disproportionate) coverage of those major political events. Second, and quite surprisingly, we find little evidence to suggest that this temporal shift is larger for official newspapers than non-official newspapers. If anything, select specifications suggest that the effect may actually be more pronounced for non-official newspapers which, during non-Congress periods, are less likely to have conveyed material amounts of industry or market-level information, whereas official newspapers are already fulfilling that role.

5.3 Impact of Xi Jinping media visit on the informativeness of official versus non-official newspapers

On February 19, 2016, President and Chairman Xi Jinping made an extraordinary, high profile visit to the country's three most important state-run media outlets, the official newspaper *People's Daily*, the state-run news agency Xinhua, and state broadcaster China Central Television (CCTV). During these visits, President Xi told editors and reporters they must pledge "absolute loyalty" to the government and ensure that the media serves as the government's

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[13] Prior research already documents that Chinese newspapers tilt their coverage and reporting decisions around these political events to facilitate the suppression of negative corporate news (Piotrosk et al. 2015).

mouthpiece. Anecdotal evidence suggests that the reporting incentives and activities of Chinese newspapers shifted in response to this powerful signal from the Party.[14] We exploit this event to identify whether the tightening of this relationship between the Party and official newspapers affected the relative information content of their reports.

The results in Table 6, Panel C reveal two pronounced effects. First, we document a dramatic reduction in the amount of industry and market-level information being conveyed by non-official newspapers following Xi's policy statement, as reflected by a shift in the main *News Coverage* effect in these estimations. Second, we document a significant increase in the incremental amount of industry and market information conveyed by official newspapers following President Xi's media visits. These divergent effects parallel changes that occurred among official and non-official newspapers during the conglomeration reform of the 2000s, under which the two types of newspapers were permitted to focus on their respective market and political roles (Piotroski et al. 2017). More importantly, these current results reinforce our interpretation that official and non-official newspapers also serve different informational roles for China's capital markets.[15]

5.4 Examination around industrial policy shocks

Next, we examine the relative informational properties of newspaper articles published around the introduction of new industry-level economic policies by the Chinese government. To the extent our results reflect differences in official newspapers' access to policy-level data and

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[14] Untabulated analyses documented a small, but statistically significant, reduction in the overall information content of news articles published by both official and non-official newspapers following Xi's media visits. This overall reduction in the informational role of the business news media is consistent with anecdotal evidence suggesting that the loyalty event has had a negative effect on China's information environment.

[15] The results in this section are robust to restricting the sample to only articles written during the Xi Jinping era (2012–2017) and during the one-year period before and after his visit to China's media outlets.

incentives to report on such issues, we would expect our results for official newspapers to be stronger during these policy-sensitive periods, all things being equal.

To test this argument, we collect information on all economic policies issued by Chinese governmental units from the China Industrial Policy website (http://zc.wefore.com) over our sample period.[16] Given the objective of our tests, we retained the subsample of polices that were introduced by central government agencies, including all State Council and ministry-level organizations,[17] as these policy changes would have national implications and warrant coverage by all business media outlets. The policies involve several areas, including regulations, taxes, and industry standards. For each policy introduction, we identify the calendar date of the formal announcement of the policy and determine whether the policy applies to a specific set of CSRC industries.

Table 6, Panel D presents these estimations. These results reinforce our interpretation that official and non-official newspapers also serve different informational roles for China's capital markets; that is, the perceived value of an official newspaper article is increasing in expected market and industry policy relevance of the article.

6 Additional analyses

6.1 Selection issues

The preceding analyses find that official and non-official newspapers convey news to the market with different composition of firm-specific versus industry and market-wide information. However, this effect could be the result of the two types of newspapers choosing to report fundamentally different economic events. As such, the observed information composition is

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[16] This search yields approximately 52,000 new policies that were introduced by various municipal, provincial, and central government–level organizations from 2000—2017.

[17] These include the Ministry of Industry and Information Technology, the Ministry of Agriculture and Rural Affairs, and the Ministry of Commerce.

endogenous to the newspapers' coverage decision. To address this concern, we control for the underlying events on which the media is reporting in the following tests.

6.1.1 Restricted news articles to the same underlying corporate event

We narrow our comparison of the articles from the two types of newspapers for the same firm on the same day. The objective of the procedure is to ensure that the official and non-official newspapers are covering the same set of underlying events. As discussed earlier, we expect the official (non-official) newspapers will convey more industry and market-level (firm-level) information in such a restricted sample, which confines the media coverage to firm-day observations with at least one news article from official newspapers and one from non-official newspapers. This selection procedure results in a sample of 11,299,928 observations, with 1,295,550 corporate news articles published by our sample of 100 newspapers, over our sample period. Table 7, Panel A presents selected coefficients and t-statistics (in parentheses) from our regression analysis. These estimations of Models (4a) and (4b) using this subsample of daily return observations confirm our main findings in Table 4.

Insert Table 7 about here

6.1.2 Articles published around corporate earnings announcements

We employ a research design that examines the attributes of corporate news articles written around the same specific corporate event—earnings announcements. To perform this analysis, we first identify quarterly, semi-annual, and annual earnings announcement dates for all Chinese listed firms over our sample period through CSMAR. We then match our full sample of newspaper articles against these earnings announcement dates and retain all news articles published on or within two days of the listed firm's respective earnings announcement date (days −2 to +2). This selection procedure results in a sample of 229,872 corporate news articles published by our

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sample of 100 newspapers, and covering approximately 93,230 unique earnings announcement events over our sample period. Table 7, Panel B presents selected coefficients and *t*-statistics (in parentheses) from our regression analysis. These estimations of Models (4a) and (4b) using this subsample of daily return observations confirm our main findings in Table 4.

6.2 Restricted sample of newspapers

Our descriptive evidence suggests that our newspaper database has selection biases, both across time and across provinces. The systematic absence of local official and/or non-official business newspapers in these databases has the potential to induce a selection bias into our analysis if these database coverage decisions are non-random. To validate that our results are not driven by such coverage biases, we re-estimate our main analysis using two restricted samples: (1) articles published in newspapers that appear throughout our entire sample period, and (2) articles published only in newspapers domiciled in China's three tier-one cities (Beijing, Guangzhou, and Shanghai). Untabulated estimations of Models (4a) and (4b) using these restricted samples confirm our main results.

6.3 Measurement of news articles' topical content and industry content

To better understand the topical content of corporate news articles published in China, we use textual analysis techniques to identify and categorize the individual topics contained in each news article. Specifically, we create the variable *Industry & Market Content$_{it}$*, which is the relative weight of industry and market-level topics covered in a specific news article about firm *i* on day *t*. To determine which topics are industry or market-specific, we first use the latent Dirichlet allocation (LDA) to identify and define 400 unique topics embedded in our sample of

news articles.[18],[19] Once these 400 topics have been identified and defined, we use the following method to categorize each of these topics as firm, industry, or market-specific in nature. First, an article is characterized as covering a specific topic when the weight of the article on the topic is more than one percent of the article's total content. Second, we classify the topic as an industry topic if more than 20 percent of all articles covering firms within an industry (over the full sample) are identified as containing this topic. This procedure identifies 64 industry-specific topics in our sample, or, in other words, 16 percent of all topics discussed in these news articles are classified as industry-level topics. Second, we sort the remaining 336 topics according to the number of articles covering each specific topic. Those topics contained in the top quintile of this distribution (68 topics) are classified as market-wide topics. These market-wide topics account for 17 percent of the total topics identified in our sample. The remaining 268 topics are assumed to be primarily firm-specific in nature. The variable *Industry & Market Content*$_{it}$ reflects the proportion of topics covered in a specific news article that is classified as an industry or market article using this methodology.

Second, we adopt an alternative approach whereby we search for the presence of unambiguous, industry-specific words or phrase in each article. Specifically, we count the number of times an article mentions industry names. Our dictionary of industry names is based

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[18] We use Blei et al. (2003) latent Dirichlet allocation (LDA), one of the most popular topical modeling techniques in textual analysis, to identify topics and their corresponding distributions within each news article. Past research has shown that LDA can meaningfully capture the topics of the textual content of analyst reports and 10-Ks (Bao and Datta 2014; Dyer et al. 2017; Hoberg and Lewis 2017; Huang et al. 2017). The advantage of LDA topic modeling is that it is an unsupervised learning algorithm and hence does not require any labeled data to generate topics. The LDA algorithm assumes that each document can be represented by a mixture of topics, and each topic also can be characterized by a probability distribution over the words. After specifying the number of topics, the algorithm will learn the probability distribution over all words for each topic. More importantly, for each document, the algorithm will also identify the distribution of topics within it. We rely on the document-topic distribution discovered by LDA to identify the content of each news article by instructing the LDA algorithm to generate 400 topics.
[19] See Lin and Hovy (1997), Beineke et al. (2004), Zhang et al. (2009), and Njølstad et al. (2014) for specific details on the use of LDA.

on the Guidelines for Industry Classification of Listed Companies (2012 revision), published by

the CSRC. We assume that if a newspaper mentions the related industry name when covering

certain firms, the article is likely to contain industry-wide content. The resultant variable,

Industry Count$_{it}$, is the number of times an article mentions an industry name, deflated by the

number of sentences in an article.

Table 8, Panel A shows that the mean news article published in an official newspaper

mentions more industry names (9.8 percent versus 9.1 percent, respectively) and contains a

greater relative amount of industry and market topics (34.8 percent versus 31.4 percent,

respectively) than an article published in a non-official newspaper. Table 8, Panel B presents

selected coefficients and *t*-statistics (in parentheses) from our regression analysis. These

estimations confirm our main results, namely, that official newspapers more frequently reference

the covered firm's CSRC industry in their articles than non-official newspapers, and the average

article published by official newspapers contains a greater portion of industry and market-level

topics than articles published by non-official newspaper about the same firm.[20]

<div align="center">

Insert Table 8 about here

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[20] We have also confirmed that official articles with high *Industry Count* (*Industry & Market Content*) are associated with a relatively higher level of industry-wide (industry and market-wide) information component. We repeat the regression in column (2) of Table 4 and replace *News Coverage×Official* with *News Coverage×Official with high industry count* and *News Coverage×Official with low industry count*, where *Official with high (low) industry count* equals one when the official newspaper article is (not) ranked in the top quintile based on industry count. The untabulated results show that the coefficient on *News Coverage×Official with high industry count* is significantly larger than that of *News Coverage×Official with low industry count*. We repeat the regression in column (4) of Table 4 using *Industry & Market Content* and define *Official with high (low) industry and market content* as an official article that is (not) ranked in the top quintile based on industry and market content. We find similar results using this measure of industry and market content in the articles.

6.4 Robustness tests: focus on non-stale articles

An additional concern with our media analysis is that by examining all corporate news articles in the Wisenews database we are capturing many articles that are disseminating stale news. To the extent that articles in official or non-official newspapers are systematically published sooner or later, or that the publication of a news article by one newspaper has the potential to shape the reporting behavior of later articles by other newspapers, our market-based results may reflect those timing differences. We re-estimate our main analysis, Models (4a) and (4b), after retaining only those corporate news articles that we classify as "non-stale," based on the textual content of the article. We define an article as being "stale" if the cosine similarity score with another article published within fourteen-day period before it is greater than 0.4. Estimations using these non-stale articles yield similar inferences, and marginally stronger results, than those reported in Table 4.

7 Conclusion

State-controlled media in developing economies typically performs both market and political functions. Through the creation of new information and the broad dissemination of public information, the media can serve important information and governance roles.[21] However, the reporting objectives of state-controlled media are frequently not aligned with transparency and resultant market-oriented benefits.

Prior research argues and finds that corporate news articles published by official newspapers in China contain political rhetoric and content, and provide less information to the capital markets. Although these conclusions are valid, they also overlook that official

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[21] Prior research shows that media outlets create and disseminate financial information (Zingales 2000; Bushman et al. 2004; Bushee et al. 2010; Soltes 2010) and serve as a watchdog in the market (Dyck and Zingales 2002; Miller 2006; Dyck et al. 2008; Liu and McConnell 2013), even helping autocrats to monitor their bureaucrats (Egorov et al. 2009; Lorentzen 2014).

newspapers, because of their close proximity to the government, can still play an important role in communicating industry and market-wide news and information to the capital markets. Our paper provides the first evidence to suggest that China's official newspapers may serve a different and complimentary informational role than that played by non-official newspapers in China's market economy.

Finally, our main assumption throughout the paper is the stock price reaction to the publication of a news article represents the incremental, value-relevant information being conveyed by the article. To the extent that the markets in China are informationally inefficient, our stock return–based measures would instead be capturing the *perceived* information content of the news article. Regardless, our evidence remains relevant, as ours is the first comprehensive study to document the different types of business topics covered in Chinese business news media and how the market reacts to this information. Future research can investigate whether the market corrects for known biases embedded in the content of these newspapers' articles, especially as it relates to the industry and market-wide information conveyed by China's politicized official newspapers.

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Appendix 1
Variable definitions

Variable	Definition
$Return_{it}$	Daily raw stock return for firm i on day t.
$|Return_{it}|$	The absolute value of $Return_{it}$
$Mkt\text{-}Adj\ Return_{it}$	The value weighted market-adjusted return for firm i, measured as $Return_{it}$ minus the value-weighted market return for all stocks in China on day t.
$|Mkt\text{-}Adj\ Return_{it}|$	The absolute value of $Mkt\text{-}Adj\ Return_{it}$
$Market\ Return_t$	The value-weighted market return for all stocks in China on day t.
$|Market\ Return_{it}|$	The absolute value of $Market\ Return_t$
$Industry\ Information_{it}$	This is a measure of the relative amount of industry-wide information news contained in firm i's stock return on day t. It is defined as $\frac{|CR_{it}^I|}{|CR_{it}^F|+|CR_{it}^I|+|CR_{it}^M|}$, where CR_{it}^M is the component of market-wide information embedded in firm i's return on day t; CR_{it}^I is the component of industry-wide information embedded in firm i's return on day t; CR_{it}^F is the component of firm-specific information embedded in firm i's return on day t, following the decomposition by Liu (2011). To estimate these components, we annually estimate the following model for each firm in each calendar year to extract the market and industry beta of firm i, denoted β_i^M and β_i^I: $$R_{it} = \alpha_i + \beta_i^M \times R_t^M + \beta_i^I \times (R_t^I - \beta_i^{IM} \times R_t^M) + \varepsilon_{it}. \qquad (1)$$ In these models, R_{it} is return of firm i on day t; R_t^I is the value-weighted return on the industry (we follow prior literature (Gul et al. 2013; Bradshaw et al. 2019) using China Securities Regulatory Commission (CSRC) industry classification with two-digit code for manufacturing industries and one-digit code for all other industries) portfolio(to which firm i is affiliated) on day t; R_t^M is the value-weighted market return on day t; β_n^{IM} is the market beta of the industry to which the firm i is affiliated, estimated from the following market model regression in each calendar year: $$R_t^I = \alpha_i + \beta_i^{IM} \times R_t^M + \varepsilon_{It}, \qquad (2)$$ where CR_{it}^M, the component of market-wide information within the firm i's return on day t, is defined as $\hat{\beta}_i^M \times R_t^M$, while $\hat{\beta}_i^M$ is estimated from Model (1); CR_{it}^I, the component of industry-wide information embedded in the firm i's return on day t, is defined as $\hat{\beta}_i^I \times (R_t^I - \hat{\beta}_i^{IM} \times R_t^M)$, while $\hat{\beta}_i^{IM}$ is estimated from Model (2); CR_{it}^F, the component of firm-specific information embedded in firm i's return on day t, is defined as $R_{it} - CR_{it}^M - CR_{it}^I$.
$Industry\ \&\ Market\ Information_{it}$	This is a measure of the relative amount of industry and market-wide information news contained in firm i's stock return on day t. It is defined as $\frac{|CR_{it}^I|+|CR_{it}^M|}{|CR_{it}^F|+|CR_{it}^I|+|CR_{it}^M|}$, where CR_{it}^M is the component of market-wide information embedded in firm i's return on day t; CR_{it}^I is the component of industry-wide information embedded in firm i's return on day t; CR_{it}^F is the component of firm-specific information embedded in firm i's return on day **t**, following the decomposition by Liu (2011).
$Comovement_{it}$	An indicator variable equal to one if firm i's raw stock return moved in the same direction as the firm's relevant industry index on day t, and zero otherwise.
$Synchronicity_{it}$	The annual comovement of the firm's stock return with the overall market return. It is measured as $\log(\frac{R^2}{1-R^2})$, where R^2 is estimated from the market model following Morck et al. (2000) for firm i in calendar year t using daily return data. $$RET_{i,t} = \alpha + \beta_1 \times MARET_t + \beta_2 \times INDRET_{i,t} + \varepsilon_{i,t}$$ where $RET_{i,t}$ is raw stock return for firm i on day t, $MARET_t$ is the value-weighted market return on day t, and $INDRET_{i,t}$ is the value-weighted industry index on day t.
$Industry\ \&\ Market\ Content_{it}$	This is the relative weight of industry and market-level topics covered in a specific news article about firm i on day t. To determine which topics are industry- or market-specific, we use first latent Dirichlet allocation (LDA) to identify and define 400 unique topics embedded in our sample of news articles. Once these 400 topics have been identified and defined, we use the following methodology to categorize each of these topics as firm, industry, or market-specific in nature. First, an article is characterized as covering a specific topic when the weight of the article on the topic is more than one percent of the article's total content. Second, we classify the topic as an industry topic if more than 20 percent of all articles covering firms within an industry (over the full sample) are identified as containing this topic. This procedure identifies 64 industry-specific topics in our sample, or, in other words, 16 percent of all topics discussed in these news articles are classified industry-level topics. Second, we sort the remaining 336 topics according to the number of articles covering each specific topic. Those topics contained in the top quintile of this distribution (68 topics) are classified as market-wide topics. These market-wide topics account for 17 percent of the total topics identified in our sample. The remaining 268 topics are assumed to be primarily firm-specific in nature. The variable *Industry & Market Content$_{it}$* reflects the proportion of topics covered in a specific news article that are classified as industry or market topics using this methodology.
$Industry\ Count_{it}$	The number of times an industry name is mentioned in an article, deflated by the number of sentences in an article. Our dictionary of industry names is defined based on the Guidelines for Industry Classification of Listed Companies (2012 revision), published by the CSRC.
$News\ Coverage_{it}$	An indicator variable equal to one if there was a business news article about firm i published in any domestic Chinese newspaper on day t, and zero otherwise.

Official$_{it}$	An indicator variable equal to one if a business news article about firm *i* was published in an official newspaper on day *t*, and zero otherwise.
Number of Articles$_{it}$	The natural logarithm of one plus the number of news articles covering firm *i* in year *t*.
Number of Official Articles$_{it}$	The natural logarithm of one plus the total number of news articles about firm *i* published in official newspapers in year *t*.
Number of Non-Official Articles$_{it}$	The natural logarithm of one plus the total number of news articles about firm *i* published in non-official newspapers in year *t*.
Relative Official Coverage$_{it}$	The ratio of one plus *Number of Official Articles$_{it}$* to one plus *Number of Non-Official Articles$_{it}$*
Firm Size$_{it}$	Firm size, measured as the natural logarithmic of total assets of firm *i* at the end of year *t*.
Market-to-book$_{it}$	Ratio of the firm's market value of equity to book value of equity of firm *i* at the end of year *t*.
ROA$_{it}$	Firm's return on assets, measured as net income in year *t* scaled by total assets of firm *i* at the end of year *t*.
Leverage$_{it}$	Ratio of the firm's long-term debt to shareholders' equity of firm *i* at the end of year *t*.
SOE$_{it}$	Indicator variable equal to one if the firm *i* is ultimately controlled by either the central or local government; a firm is considered state controlled if the state owns more than 20 percent of its equity in year *t*.
Earnings Announcement$_{it}$	An indicator variable equal to one if firm *i* makes the announcement for quarterly, semi-annual and annual earnings on day *t*, and zero otherwise.
Fundamental Correlation$_{it}$	The logarithmic transformation of the R^2 from a regression of the firm *i*'s quarterly return on assets on a value-weighted industry index of ROA in year *t*. The variable is estimated using three years of historical data (i.e.,12 quarterly observations in each firm-specific regression).
Herfindahl Index$_{it}$	A revenue-based Herfindahl index of firm *i*'s industry-level concentration in year *t*.
Std Dev (ROA$_{it}$)	Standard deviation of firm *i*'s quarterly return on assets realizations, measured over three years including and preceding year *t*.
Log (# of Industry Firms$_{it}$)	Log of the number of firms in firm *i*'s industry in year *t*.

Table 1
Distribution of sample newspapers and sample news articles

This table presents the distribution of newspapers, newspaper articles, and firm trading days by region (Panel A), by year (Panel B), and by industry (Panel C). Official refers to newspapers that are directly affiliated with organs of the Chinese government, which have a well-defined and installed readership base, and serve the primary goal of conveying the government's political narrative to its constituents. Non-official refers to newspapers other than Official newspapers. Non-official newspapers activities are confined to newspapers with a focus on financial and economic news.

Panel A: Distribution by region

	Newspapers			Newspaper Articles		
Province	All	Official	Non-official	All	Official	Non-official
National	32	5	27	1,395,326	111,010	1,284,316
Shanghai	7	3	4	268,266	99,335	168,931
Yunnan	2	2	NA	6,207	6,207	NA
Beijing	5	2	3	158,383	68,458	89,925
Sichuan	6	4	2	100,549	28,223	72,326
Tianjin	2	1	1	14,392	11,734	2,658
Ningxia	2	2	NA	389	389	NA
Anhui	3	2	1	11,155	7,061	4,094
Shandong	3	3	NA	26,871	26,871	NA
Shanxi	1	1	NA	2,093	2,093	NA
Guangdong	10	6	4	520,013	281,889	238,124
Guangxi	1	1	NA	14,598	14,598	NA
Jiangsu	2	2	NA	14,135	14,135	NA
Jiangxi	1	1	NA	15,460	15,460	NA
Hebei	1	1	NA	431	431	NA
Henan	3	2	1	8,729	5,671	3,058
Zhejiang	1	1	NA	20,836	20,836	NA
Hainan	1	1	NA	5,512	5,512	NA
Hubei	4	2	2	76,347	56,510	19,837
Hunan	1	1	NA	39,403	39,403	NA
Gansu	3	2	1	45,664	19,721	25,943
Fujian	1	1	NA	18,008	18,008	NA
Liaoning	4	3	1	6,919	6,264	655
Chongqing	1	NA	1	4,131	NA	4,131
Shaanxi	1	1	NA	1,370	1,370	NA
Qinghai	1	1	NA	611	611	NA
Heilongjiang	1	1	NA	1,305	1,305	NA
Total	100	52	48	2,777,103	863,105	1,913,998

Panel B: Distribution by year

	Newspapers			Newspaper Articles			Firm-Day Observations		
Year	All	Official	Non-official	All	Official	Non-official	All	With Media Coverage	No Media Coverage
2000	60	39	21	35,404	18,171	17,233	342,345	28,514	306,914
2001	65	40	25	55,900	27,209	28,781	392,216	41,205	336,226
2002	58	36	22	66,633	36,365	30,268	425,955	46,919	359,322
2003	83	45	38	95,428	40,602	54,826	466,264	57,294	370,836
2004	87	47	40	103,384	40,183	63,201	490,379	59,169	386,995
2005	86	46	40	168,633	40,909	127,724	563,755	79,730	395,122
2006	68	34	34	151,815	35,212	116,603	542,734	83,218	390,919
2007	68	35	33	197,699	49,803	147,896	598,320	93,655	400,621
2008	83	48	35	267,506	71,179	196,327	695,545	114,984	428,039
2009	60	37	23	208,410	63,100	145,310	669,694	94,245	461,284
2010	40	23	17	184,776	62,873	121,903	678,907	89,720	494,131
2011	47	26	21	199,052	68,746	130,306	772,253	98,705	573,201
2012	47	25	22	233,405	70,154	163,251	961,099	113,747	727,694
2013	50	26	24	236,039	63,493	172,546	1,023,431	113,959	787,392
2014	49	25	24	184,336	55,656	128,080	993,367	93,157	809,031
2015	43	20	23	149,211	42,523	106,688	1,009,052	82,639	859,841
2016	39	18	21	133,699	41,915	91,784	1,079573	78,436	945,874
2017	37	17	20	105,683	35,012	70,671	1,080,153	28,514	974,470
Total	100	52	48	2,777,103	863,105	1,913,998	12,785,042	1,369,296	10,007,939

Table 1 (continued)

Panel C: Distribution by industry

Industry	Newspapers			Newspaper Articles			Firm-Day Observations		
	All	Official	Non-official	All	Official	Non-official	All	With Media Coverage	No Media Coverage
Agriculture	94	49	45	22,495	5,214	17,281	182,388	16,952	159,893
Mining	100	52	48	131,410	35,207	96,203	413,529	50,089	282,119
Manufacturing	100	52	48	1,058,766	300,806	757,960	6,947,044	684,063	5,888,278
Energy & Utilities	100	52	48	73,728	16,946	56,782	547,237	53,212	473,509
Construction	96	50	46	60,267	21,964	38,303	324,200	35,804	263,933
Retail & Wholesale	100	52	48	147,043	54,198	92,845	846,047	89,735	699,004
Transportation	100	52	48	166,697	76,050	90,647	506,822	77,307	340,125
Travel & Tourism	92	49	43	12,588	4,560	8,028	61,289	8,466	48,701
Info Svc & Software	100	52	48	115,108	33,265	81,843	581,200	59,472	466,092
Financial	100	52	48	610,551	183,027	427,524	743,778	106,499	133,227
Real Estate	100	52	48	198,905	60,460	138,445	856,898	93,042	657,993
Leasing & Commerce.	100	52	48	59,235	24,157	35,078	185,603	27,172	126,368
Scientific Research	81	42	39	4,460	1,692	2,768	51,792	3,075	47,332
Environmental	96	51	45	47,970	21,911	26,059	150,691	22,041	102,721
Education	60	30	30	935	155	780	15,656	751	12,721
Health; Social work	78	38	40	3,824	908	2,916	30,653	3,246	26,829
Sport; Entertainment	94	50	44	39,692	16,216	23,476	179,203	22,655	139,511
Diversified	99	51	48	23,429	6,369	17,060	163,012	15,715	139,583
Total	100	52	48	2,777,103	863,105	1,913,998	12,785,042	1,369,296	10,007,939

Table 2
Descriptive statistics

This table presents descriptive statistics on the variables used in our main empirical analyses. All variables are defined in the Appendix. All continuous variables are winsorized at the 1 percent level on both tails.

Variables	Number of Observations	Mean	25th Percentile	Median	75th Percentile	Standard Deviation
$Return_{it}$	12,785,042	0.003	-0.015	0.002	0.018	0.036
$|Return_{it}|$	12,785,042	0.025	0.007	0.016	0.033	0.026
$Mkt\text{-}Adj\ Return_{it}$	12,785,042	0.002	-0.012	-0.001	0.012	0.029
$|Mkt\text{-}Adj\ Return_{it}|$	12,785,042	0.020	0.005	0.012	0.024	0.023
$Market\ Return_{it}$	12,785,042	0.001	-0.007	0.002	0.011	0.019
$|Market\ Return_{it}|$	12,785,042	0.014	0.004	0.009	0.018	0.014
$Industry\ Information_{it}$	12,780,776	0.254	0.047	0.173	0.412	0.245
$Industry\ \&\ Market\ Information_{it}$	12,780,776	0.523	0.330	0.526	0.719	0.251
$Comovement_{it}$	12,785,042	0.685	0.000	1.000	1.000	0.465
$News\ Coverage_{it}$	12,785,042	0.217	0.000	0.000	0.000	0.412
$Official_{it}$	12,785,042	0.068	0.000	0.000	0.000	0.251
$Firm\ Size_{it}$	12,785,042	15.580	14.620	15.360	16.220	1.415
$Market\text{-}to\text{-}book_{it}$	12,785,042	3.896	1.725	2.747	4.570	3.918
ROA_{it}	12,785,042	0.033	0.011	0.031	0.059	0.060
$Leverage_{it}$	12,785,042	0.488	0.321	0.487	0.644	0.220
SOE_{it}	12,785,042	0.533	0.000	1.000	1.000	0.499
$Earnings\ Announcement_{it}$	12,785,042	0.013	0.000	0.000	0.000	0.112

Table 3
Absolute market reaction to news article publication

This table presents evidence on the information content of Chinese newspaper business articles, specifically, select coefficients from an estimation of the following model:

$$|Return_{it}| \text{ or } |Mkt\text{-}Adj\ Return_{it}| = \alpha + \text{Year-Month FE} + \text{Firm FE} + \beta_1 News\ Coverage_{it} + \beta_2 News\ Coverage_{it} \times Official_{it}$$
$$+ \beta_3 |Market\ Return_{it}| + \beta_4 Firm\ Size_{it} + \beta_5 Market\text{-}to\text{-}book_{it} + \beta_6 ROA_{it} + \beta_7 Leverage_{it} + \beta_8 SOE_{it} + \beta_9 Earnings\ Announcement_{it} + \varepsilon_{it.}$$

In these estimations, the dependent variable *|Return$_{it}$|* (*|Mkt-adj Return$_{it}$|*) is the absolute value of firm *i*'s raw stock return (market adjusted stock return) on day *t*. The indicator variable *News Coverage$_{it}$* equals one if there was a business news article about firm *i* published in any domestic Chinese newspaper on day *t*, and zero otherwise. The indicator variable *Official$_{it}$* equals one if a business news article about firm *i* was published in an official newspaper on day *t*, and zero otherwise. All other variables are defined in the Appendix. All reported *t*-statistics (in parentheses) are adjusted for the clustering of standard errors by firm. All models include an array of year-month and firm fixed effects. ***, **, * denote significance at the 1 percent, 5 percent, and 10 percent levels, respectively.

Dependent Variable:	*|Return$_{it}$|*	*|Mkt-Adj Return$_{it}$|*
Estimation:	**(1)**	**(2)**
News Coverage$_{it}$	0.006***	0.007***
	(47.23)	(48.28)
News Coverage$_{it}$ × Official$_{it}$	-0.002***	-0.002***
	(-13.97)	(-13.92)
|Market Return$_{it}$|	0.666***	
	(152.73)	
Firm Size$_{it}$	0.001***	0.001***
	(5.03)	(5.89)
Market-to-book$_{it}$	0.000***	0.001***
	(14.50)	(17.72)
ROA$_{it}$	-0.005***	-0.001
	(-3.60)	(-0.83)
Leverage$_{it}$	-0.002**	-0.001
	(-2.38)	(-1.52)
SOE$_{it}$	-0.001**	-0.001**
	(-2.20)	(-2.43)
Earnings Announcement$_{it}$	0.003***	0.004***
	(26.07)	(30.43)
Intercept	0.001	0.000
	(0.50)	(0.07)
Sum of $\beta_1 + \beta_2$	0.004***	0.005***
	(775.13)	(791.00)
Year-Month Fixed Effects	Yes	Yes
Firm Fixed Effects	Yes	Yes
Adjusted R^2	0.250	0.096
N	12,785,042	12,785,042

Table 4

Information content of Chinese corporate news articles: firm-specific, industry, or market news?

This table presents evidence on whether the information content of Chinese business articles reflects firm specific, industry, and/or market news, and presents select coefficients from an estimation of the following empirical models:

$$\text{Industry Information}_{it} \text{ or Industry \& Market Information}_{it} \text{ or Comovement}_{it} = \alpha + \text{Year-Month FE} + \text{Firm FE} + \beta_1 \text{News Coverage}_{it} + \beta_2 \text{News Coverage}_{it} \times \text{Official}_{it} + \beta_3 \text{Firm Size}_{it} + \beta_4 \text{Market-to-book}_{it} + \beta_5 \text{ROA}_{it} + \beta_6 \text{Leverage}_{it} + \beta_7 \text{SOE}_{it} + \beta_8 \text{Earnings Announcement}_{it} + \varepsilon_{it}$$

In the first set of estimations, the dependent variable *Industry Information$_{it}$* is the relative weight of industry-level topics covered in a specific news article about firm i on day t. In the second set of estimations, the dependent variable *Industry and Market Information$_{it}$* the relative weight of industry and market-level topics covered in a specific news article about firm i on day t. The disaggregation of daily returns into firm specific, industry-level, and market-level information components follows the methodology of Liu (2011) and is defined in the Appendix. In the third set of estimations, the dependent variable *Comovement$_{it}$* equal to one if firm i's raw stock return moved in the same direction as the firm's relevant industry index on day t, and zero otherwise. The indicator variable *News Coverage$_{it}$* equals one if there was a business news article about firm i published in any domestic Chinese newspaper on day t, and zero otherwise. The indicator variable *Official$_{it}$* equals one if a business news article about firm i was published in an official newspaper on day t, and zero otherwise. All other variables are defined in the Appendix. An OLS model is applied to the regression in columns (1)–(6). All reported t-statistics (in parentheses) are adjusted for the clustering of standard errors by firm. OLS models include an array of year-month and firm fixed effects. ***, **, * denote significance at the 1 percent, 5 percent, and 10 percent levels, respectively.

Dependent Variable:	*Industry Information$_{it}$*		*Industry & Market Information$_{it}$*		*Comovement$_{it}$*	
Estimation:	(1)	(2)	(3)	(4)	(5)	(6)
News Coverage$_{it}$	-0.023***	-0.025***	-0.049***	-0.053***	-0.030***	-0.031***
	(-24.89)	(-26.08)	(-52.56)	(-54.34)	(-30.61)	(-30.13)
News Coverage$_{it}$×Official$_{it}$		0.006***		0.013***		0.004***
		(5.59)		(12.89)		(3.76)
Firm Size$_{it}$	0.000	0.000	-0.010***	-0.009***	-0.013***	-0.013***
	(0.16)	(0.17)	(-5.20)	(-5.16)	(-7.03)	(-7.01)
Market-to-book$_{it}$	-0.001***	-0.001***	-0.005***	-0.005***	-0.002***	-0.002***
	(-4.25)	(-4.24)	(-17.99)	(-17.96)	(-10.85)	(-10.84)
ROA$_{it}$	0.022	0.022	-0.011	-0.011	0.053***	0.052***
	(1.15)	(1.15)	(-0.79)	(-0.80)	(4.33)	(4.33)
Leverage$_{it}$	0.005	0.005	0.005	0.005	0.013**	0.013**
	(0.57)	(0.57)	(0.85)	(0.83)	(2.21)	(2.21)
SOE$_{it}$	-0.000	-0.000	0.003	0.003	-0.010**	-0.010**
	(-0.03)	(-0.03)	(0.80)	(0.80)	(-2.01)	(-2.01)
Earnings Announcement$_{it}$	-0.024***	-0.024***	-0.049***	-0.048***	-0.040***	-0.040***
	(-20.71)	(-20.51)	(-38.36)	(-38.04)	(-14.69)	(-14.63)
Intercept	0.161***	0.160***	0.755***	0.753***	1.008***	1.008***
	(4.24)	(4.22)	(26.70)	(26.65)	(32.92)	(32.89)
Sum of $\beta_1 + \beta_2$		-0.019***		-0.040***		-0.027***
		(219.33)		(1203.23)		(538.28)
Year-Month Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Firm Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Adj. R^2	0.055	0.055	0.040	0.040	0.017	0.017
N	12,780,776	12,780,776	12,780,776	12,780,776	12,785,042	12,785,042

Table 5

Official and non-official newspaper activity and stock return synchronicity

This table presents select coefficients from various estimations of the following empirical model:

$$\text{Synchronicity}_{it} = \alpha + \text{Year FE} + \text{Firm FE} + \beta_1\text{Newspaper Activity} + \beta_2\text{Relative Official}_{it} + \beta_3\text{Fundamental Correlation}_{it}$$
$$+ \beta_4\text{Herfindahl Index}_{it} + \beta_5\text{Std Dev (ROA}_{it}) + \beta_6\text{Log (\# of Industry Firms}_{it}) + \beta_7\text{Firm Size}_{it}$$
$$+ \beta_8\text{Market-to-book}_{it} + \beta_9\text{ROA}_{it} + \beta_{10}\text{Leverage}_{it} + \beta_{11}\text{SOE}_{it} + \varepsilon_{it.}$$

The dependent variable, *Synchronicity*$_{it}$ captures the comovement of the firm's stock return with the overall market return. Following Morck et al. (2000), *Synchronicity*$_{it}$ is measured as log $(\frac{R^2}{1-R^2})$, where R^2 is estimated from the market model for firm i in year t using daily return data. For *Newspaper Activity*$_{it}$, we use the overall newspaper coverage intensity, *Number of Articles*$_{it,}$ measured as the natural logarithm of one plus the number of news articles covering firm i in year t, in column (1); we use the official newspaper coverage intensity, *Number of Official Articles*$_{it,}$ measured as the natural logarithm of one plus the number of news articles about firm i published in official newspapers in year t, and the non-official newspaper coverage intensity, *Number of Non-Official Articles*$_{it,}$ measured as the natural logarithm of one plus the number of news articles about firm i published in non-official newspapers in year t, in column (2); and the relative intensity of media coverage by official newspapers, *Relative Official Coverage*$_{it}$, measured as the ratio of one plus *Number of Official Articles*$_{it}$ to one plus *Number of Non-Official Articles*$_{it}$, in column (3). All other variables are defined in the Appendix. All reported *t*-statistics (in parentheses) are adjusted for the clustering of standard errors by listed firm. All models include an array of year and firm fixed effects. ***, **, * denote significance at the 1 percent, 5 percent, and 10 percent levels, respectively.

Dependent Variable:	Synchronicity$_{it}$		
Estimation:	(1)	(2)	(3)
Number of Articles$_{it}$	-0.193***		
	(-20.62)		
Number of Official Articles$_{it}$		0.035***	
		(4.51)	
Number of Non-Official Articles$_{it}$		-0.232***	
		(-24.47)	
Relative Official Coverage$_{it}$			0.200***
			(7.72)
Fundamental Correlation$_{it}$	0.009***	0.009***	0.009***
	(3.43)	(3.22)	(3.13)
Herfindhal Index$_{it}$	-0.856***	-0.872***	-0.828***
	(-5.71)	(-5.86)	(-5.46)
Std Dev (ROA$_{it}$)	-1.162***	-1.128***	-1.353***
	(-6.57)	(-6.39)	(-7.63)
Log (# of Industry Firms$_{it}$)	0.003	-0.000	0.018
	(0.09)	(-0.01)	(0.46)
Firm Size$_{it}$	-0.073***	-0.069***	-0.185***
	(-4.80)	(-4.52)	(-13.22)
Market-to-book$_{it}$	-0.040***	-0.039***	-0.041***
	(-18.48)	(-18.17)	(-18.93)
ROA$_{it}$	-0.286**	-0.286***	-0.230**
	(-2.57)	(-2.582)	(-2.06)
Leverage$_{it}$	-0.028	-0.023	-0.099*
	(-0.53)	(-0.44)	(-1.90)
SOE$_{it}$	0.046*	0.041	0.069***
	(1.82)	(1.62)	(2.82)
Intercept	1.998***	1.836***	2.813***
	(7.08)	(6.54)	(10.32)
Year Fixed Effects	Yes	Yes	Yes
Firm Fixed Effects	Yes	Yes	Yes
Adjusted R^2	0.332	0.336	0.316
N	32,815	32,815	32,815

Table 6 Political variation in the information content of china's state-controlled newspapers

Panel A: Conditional upon central government versus local government official newspapers

This panel presents evidence on whether the information content of Chinese business articles reflects firm-specific, industry, and/or market news, and presents select coefficients from an estimation of the following empirical models:

$$\text{Industry Information}_{it} \text{ or Industry \& Market Information}_{it} \text{ or Comovement}_{it} = \alpha + \text{Year-Month FE} + \text{Firm FE} + \beta_1\text{News Coverage}_{it} + \beta_2\text{News Coverage}_{it}\times\text{Central Official}_{it} + \beta_3\text{News Coverage}_{it}\times\text{Local Official}_{it} + \beta_4\text{Firm Size}_{it} + \beta_5\text{Market-to-book}_{it} + \beta_6\text{ROA}_{it} + \beta_7\text{Leverage}_{it} + \beta_8\text{SOE}_{it} + \beta_9\text{Earnings Announcement}_{it} + \varepsilon_{it}$$

In the first set of estimations, the dependent variable *Industry Information*$_{it}$ is the relative weight of industry-level topics covered in a specific news article about firm i on day t. In the second set of estimations, the dependent variable *Industry and Market Information*$_{it}$ is the relative weight of industry and market-level topics covered in a specific news article about firm i on day t. The disaggregation of daily returns into firm specific, industry-level, and market-level information components follows the methodology of Liu (2011) and is defined in the Appendix. In the third set of estimations, the dependent variable *Comovement*$_{it}$ equal one if firm i's raw stock return moved in the same direction as firm's relevant industry index on day t, and zero otherwise. The indicator variable *News Coverage*$_{it}$ equals one if there was a business news article about firm i published in any domestic Chinese newspaper on day t, and zero otherwise. The indicator variable *Official*$_{it}$ equals one if a business news article about firm i was published in an official newspaper on day t, and zero otherwise. All other variables are defined in the Appendix. An OLS model is applied to all estimations. All reported *t*-statistics (in parentheses) are adjusted for the clustering of standard errors by firm. OLS models include an array of year-month and firm fixed effects. ***, **, * denote significance at the 1 percent, 5 percent, and 10 percent levels, respectively.

Dependent Variable:	Industry Information$_{it}$	Industry & Market Information$_{it}$	Comovement$_{it}$
News Coverage$_{it}$	-0.025***	-0.053***	-0.031***
	(-26.13)	(-54.44)	(-30.14)
News Coverage$_{it}\times$ *Central Official*$_{it}$	0.012***	0.020***	0.007***
	(7.15)	(15.53)	(3.50)
News Coverage $\times$ *Local Official*$_{it}$	0.005***	0.012***	0.003***
	(4.39)	(11.62)	(3.03)
Test of Difference ($\beta_2 - \beta_3$)	0.007***	0.008***	0.004
(Chi-squared statistic)	(10.90)	(54.93)	(2.66)
Control Variables	Yes	Yes	Yes
Year-Month Fixed Effects	Yes	Yes	Yes
Firm-Fixed Effects	Yes	Yes	Yes
Adj. R^2	0.056	0.040	0.017
N	12,780,776	12,780,776	12,785,042

Panel B: Conditional upon CPC national congress

This panel presents evidence on whether the information content of Chinese business articles reflects firm-specific, industry, and/or market news, conditioned upon the presence of a National Congress Meeting of the CPC during the year. Our eighteen-year sample period spans four National Congress periods (2002, 2007, 2012, 2017).

Dependent Variable:	Industry Information$_{it}$		Industry & Market Information$_{it}$		Comovement$_{it}$	
Estimation:	(1) No Congress	(2) Congress Period	(3) No Congress	(4) Congress Period	(5) No Congress	(6) Congress Period
News Coverage$_{it}$	-0.025***	-0.023***	-0.054***	-0.047***	-0.032***	-0.026***
	(-25.79)	(-16.95)	(-53.47)	(-36.52)	(-29.69)	(-14.91)
Test of Difference (C-NC)	0.002***		0.007***		0.006***	
(Chi-Squared Statistic)	(14.88)		(213.09)		(35.46)	
News Coverage$_{it}$ × Official$_{it}$	0.005***	0.009***	0.013***	0.014***		
					0.003***	0.004**
	(4.79)	(5.28)	(12.49)	(8.91)	(3.03)	(2.48)
Test of Difference (C-NC)	0.004***		0.001		0.001	
(Chi-Squared Statistic)	(22.25)		(2.39)		(1.87)	
Control Variables	Yes	Yes	Yes	Yes	Yes	Yes
Year-Month Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Firm Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Adj. R^2	0.060	0.042	0.041	0.040	0.018	0.016
N	9,886,967	2,893,809	9,886,967	2,893,809	9,889,388	2,895,654

Panel C: Conditional upon Xi Jinping media visits

This panel presents evidence on whether the information content of Chinese business articles reflects firm-specific, industry, and/or market news, conditioned upon whether the article was written before or after Xi Jinping's visit to state media outlets on February 19, 2016.

Dependent Variable:	Industry Information$_{it}$		Industry & Market Information$_{it}$		Comovement$_{it}$	
Estimation:	(1) Before Visit	(2) After Visit	(3) Before Visit	(4) After Visit	(5) Before Visit	(6) After Visit
News Coverage$_{it}$	-0.025***	-0.026***	-0.052***	-0.063***	-0.030***	-0.040***
	(-26.53)	(-21.56)	(-54.30)	(-41.46)	(-29.25)	(-19.19)
Test of Difference (A-B)	-0.001***		-0.011***		-0.010***	
(Chi-Squared Statistic)	(8.66)		(134.02)		(60.8)	
News Coverage$_{it}$ × Official$_{it}$	0.006***	0.012***	0.012***	0.022***		
					0.003***	0.011***
	(4.90)	(8.53)	(11.77)	(12.96)	(2.85)	(4.29)
Test of Difference (A-B)	0.006***		0.010***		0.008***	
(Chi-Squared Statistic)	(45.62)		(201.66)		(20.49)	
Control Variables	Yes	Yes	Yes	Yes	Yes	Yes
Year-Month Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Firm Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Adj. R^2	0.059	0.008	0.038	0.024	0.018	0.012
N	10,765,844	2,014,932	10,765,844	2,014,932	10,769,023	2,016,019

Panel D: Conditional upon industrial policy shocks

D.1: Distribution by year
This panel presents the distribution of policies and firm trading days by year.

| Year | Full Sample | Firm-Days with Policy Introduction | | Firm-Days without Policy Introduction | |
		N	% with Media Coverage	N	% with Media Coverage
2000	342,345	58,420	11.46	283,925	10.11
2001	392,216	83,819	15.14	308,397	14.04
2002	425,955	97,659	17.25	328,296	15.17
2003	466,264	119,335	21.52	346,929	20.10
2004	490,379	133,423	22.45	356,956	20.57
2005	563,755	178,497	31.96	385,258	28.96
2006	542,734	181,674	29.66	361,060	27.12
2007	598,320	202,464	31.15	395,856	34.01
2008	695,545	224,711	32.66	470,834	41.23
2009	669,694	202,387	26.77	467,307	33.00
2010	678,907	174,707	22.55	504,200	28.83
2011	772,253	172,336	21.75	599,917	26.93
2012	961,099	156,115	19.50	804,984	25.21
2013	1,023,431	147,283	18.80	876,148	23.78
2014	993,367	84,977	14.33	908,390	18.95
2015	1,009,052	190,580	11.32	818,472	15.59
2016	1,079,573	231,533	10.07	848,040	13.02
2017	1,080,153	127,104	8.19	953,049	10.00
Total	12,785,042	2,767,024	21.54	10,018,018	21.77

D.2: Regression

This panel presents evidence on whether the information content of Chinese business articles reflects firm specific, industry, and/or market news, conditioned upon whether there is a new country-level policy for a certain industry introduced on that day.

| Dependent Variable: | Industry Information$_{it}$ | | Industry & Market Information$_{it}$ | | Comovement$_{it}$ | |
Estimation:	(1) Policy Introduction	(2) No Policy Introduction	(3) Policy Introduction	(4) No Policy Introduction	(5) Policy Introduction	(6) No Policy Introduction
News Coverage$_{it}$	-0.027***	-0.024***	-0.052***	-0.052***	-0.027***	-0.031***
	(-26.42)	(-23.35)	(-51.61)	(-46.98)	(-20.08)	(-26.11)
Test of Difference (P-NP)	-0.003**		-0.000		0.004***	
(Chi-Squared Statistic)	(5.93)		(0.00)		(27.58)	
News Coverage$_{it}$ × Official$_{it}$	0.008***	0.006***	0.015***	0.013***	0.004**	0.003***
	(4.98)	(5.18)	(10.07)	(11.60)	(2.39)	(3.07)
Test of Difference (P-NP)	0.002*		0.002***		0.001	
(Chi-Squared Statistic)	(3.62)		(6.99)		(0.35)	
Control Variables	Yes	Yes	Yes	Yes	Yes	Yes
Year-Month Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Firm Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Adj. R^2	0.101	0.049	0.049	0.040	0.027	0.017
N	2,766,308	10,014,468	2,766,308	10,014,468	2,767,024	10,018,018

Table 7 Political variation in the information content of china's state-controlled newspapers

This table presents evidence on whether the information content of Chinese business articles reflects firm specific, industry, and/or market news, and presents select coefficients from an estimation of the following empirical models:

$$\text{Industry Information}_{it} \text{ or Industry \& Market Information}_{it} \text{ or Comovement}_{it} = \alpha + \text{Year-Month FE} + \text{Firm FE} + \beta_1\text{News Coverage}_{it}$$
$$+ \beta_2\text{News Coverage}_{it}\times\text{Official}_{it} + \beta_3\text{Firm Size}_{it} + \beta_4\text{Market-to-book}_{it} + \beta_5\text{ROA}_{it} + \beta_6\text{Leverage}_{it}$$
$$+ \beta_7\text{SOE}_{it} + \beta_8\text{Earnings Announcement}_{it} + \varepsilon_{it}$$

In the first set of estimations, the dependent variable *Industry Information*$_{it}$ is the relative weight of industry-level topics covered in a specific news article about firm *i* on day *t*. In the second set of estimations, the dependent variable *Industry and Market Information*$_{it}$ the relative weight of industry and market-level topics covered in a specific news article about firm *i* on day *t*. The disaggregation of daily returns into firm specific, industry-level, and market-level information components follows the methodology of Liu (2011) and is defined in the Appendix. In the third set of estimations, the dependent variable *Comovement*$_{it}$ equal to one if firm *i*'s raw stock return moved in the same direction as the firm's relevant industry index on day *t*, and zero otherwise. The indicator variable *News Coverage*$_{it}$ equals one if there was a business news article about firm *i* published in any domestic Chinese newspaper on day *t*, and zero otherwise. The indicator variable *Official*$_{it}$ equals one if a business news article about firm *i* was published in an official newspaper on day *t*, and zero otherwise. All other variables are defined in the Appendix. An OLS model is applied to the regression in columns (1)–(6). All reported *t*-statistics (in parentheses) are adjusted for the clustering of standard errors by firm. OLS models include an array of year-month and firm fixed effects. ***, **, * denote significance at the 1 percent, 5 percent, and 10 percent levels, respectively.

Panel A: Restricted News Articles to the Same Underlying Corporate Event
This panel presents the comparison of the articles from the two types of newspapers for the same firm on the same day.

Dependent Variable:	*Industry Information*$_{it}$		*Industry & Market Information*$_{it}$		*Comovement*$_{it}$	
Estimation:	(1)	(2)	(3)	(4)	(5)	(6)
News Coverage$_{it}$	-0.029***	-0.031***	-0.063***	-0.066***	-0.039***	-0.040***
	(-13.00)	(-13.11)	(-26.57)	(-27.27)	(-16.12)	(-16.15)
News Coverage$_{it}\times$*Official*$_{it}$		0.004**		0.008***		0.003***
		(2.54)		(8.75)		(2.85)
Control Variables	Yes	Yes	Yes	Yes	Yes	Yes
Year-Month Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Firm Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Adj. R^2	0.056	0.056	0.040	0.040	0.017	0.017
N	11,299,928	11,299,928	11,299,928	11,299,928	11,303,489	11,303,489

Panel B: Articles published around corporate earnings announcements
This panel presents the attributes of corporate news articles written around the same specific corporate event—earnings announcements.

Dependent Variable:	*Industry Information*$_{it}$		*Industry & Market Information*$_{it}$		*Comovement*$_{it}$	
Estimation:	(1)	(2)	(3)	(4)	(5)	(6)
News Coverage$_{it}$	-0.023***	-0.024***	-0.044***	-0.046***	-0.026***	-0.035***
	(-17.676)	(-17.735)	(-33.320)	(-33.815)	(-11.058)	(-14.972)
News Coverage$_{it}\times$*Official*$_{it}$		0.005***		0.010***		0.005*
		(3.050)		(6.173)		(1.682)
Control Variables	Yes	Yes	Yes	Yes	Yes	Yes
Year-Month Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Firm Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Adj. R^2	0.054	0.054	0.044	0.044	0.015	0.019
N	876,050	876,050	876,050	876,050	876,316	876,316

Table 8
Measure of news articles' topical content and industry content

This table documents the relative amount of industry and market topics versus firm-specific content contained in business news articles published by Chinese newspapers over 2000–2017. Specifically, the table presents select coefficients from an estimation of the following empirical models:

$$\text{Industry Count}_{it} (\text{Industry \& Market Content}_{it}) = \alpha + \text{Year-Month FE} + \text{Firm FE} + \beta_1\text{Official}_{it} + \beta_2\text{Firm Size}_{it} + \beta_3\text{Market-to-book}_{it} + \beta_4\text{ROA}_{it} + \beta_5\text{Leverage}_{it} + \beta_6\text{SOE}_{it} + \beta_7\text{Earnings Announcement}_{it} + \varepsilon_{it.}$$

In the first model, the dependent variable *Industry & Market Content$_{it}$* is the relative weight of industry and market-level topics covered in a news article about firm i on day t, as defined in the Appendix, and the dependent variable *Industry Count$_{it}$* is the frequency of firm i's industry name being mentioned in a news article on day t, deflated by the total number of sentences in an article. The indicator variable *Official$_{it}$* equals one if an official newspaper published a business news article about firm i on day t, and zero otherwise. All other variables are defined in the Appendix. All reported t-statistics (in parentheses) are adjusted for the clustering of standard errors by firm. All estimations of the first model include an array of year-month and firm fixed effects. ***, **, * denote significance at the 1 percent, 5 percent, and 10 percent levels, respectively.

Panel A: Descriptive evidence

Variables	Mean All Articles ($N = 2,777,103$)	Official Newspaper ($n = 863,105$)	Non-official Newspaper ($n = 1,913,998$)	Difference Official – Non-official (t-statistic)
Industry Count$_{it}$	0.093	0.098	0.091	0.007*** (13.70)
Industry & Market Content$_{it}$	0.324	0.348	0.314	0.034*** (144.32)

Panel B: Multivariate estimation of news article's content

Dependent variable:	Industry Count$_{it}$	Industry & Market Content$_{it}$
Official$_{it}$	0.006***	0.016***
	(2.73)	(7.85)
Firm Size$_{it}$	0.000	0.010***
	(0.23)	(5.27)
Market-to-book$_{it}$	-0.001***	-0.000
	(-5.09)	(-0.48)
ROA$_{it}$	0.010	0.001
	(0.64)	(0.08)
Leverage$_{it}$	-0.010	0.002
	(-1.31)	(0.23)
SOE$_{it}$	0.001	0.009***
	(0.37)	(2.84)
Earnings Announcement$_{it}$	-0.024***	-0.068***
	(-16.01)	(-28.80)
Intercept	0.075**	0.201***
	(2.29)	(6.24)
Year-Month Fixed Effect	Yes	Yes
Firm Fixed Effect	Yes	Yes
Adjusted R^2	0.007	0.015
N	2,777,103	2,777,103