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Abstract

We examine how government ownership in brokerage firms influences analyst research quality in the Chinese context. When the government has strong incentives to prop up market prices, analysts from brokerages with significant government shareholdings ("government-brokerage analysts") issued relatively less pessimistic (or more optimistic) earnings forecasts and revisions and more favorable stock recommendations; they were also slower to revise. Although less accurate than those issued by other brokerages, these forecasts significantly influenced investors' beliefs. During regular times, government-brokerage analysts issued relatively less optimistic (more pessimistic) earnings forecasts and revisions and less favorable stock recommendations; they were also quicker to revise and no less accurate than those by other brokerages. Government-brokerage analysts thus balance market credibility against government incentives. In doing so, they serve both market advisory and stabilization functions. We show that their market stabilization function also operates during times of high investor sentiment.

Keywords: Sell-side analysts; Forecast optimism; Forecast accuracy; Government ownership; Shareholders; Emerging markets; Coordinated economies

JEL: G14, G24, G28, O16

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1 Introduction

Government ownership in financial institutions is prevalent outside the U.S. around the world (e.g., La Porta et al., 2002; Barth et al., 2013). Such ownership may be necessary and beneficial for some countries' economic development (Gerschenkron, 1962) or may facilitate government officials' political objectives that may deviate from social objectives (Shleifer and Vishny, 1994). Prior empirical research has devoted significant attention to examine the effect of government shareholdings in banks: for example, on banks' lending decisions (Sapienza, 2004), on borrowing firms' employment decisions (Carvalho, 2014) or accounting choices (Chen et al., 2010), and on economies' financial development (Barth et al., 2001) or productivity and growth (La Porta et al., 2002).

This paper studies the effects of government ownership in brokerage firms on the quality of analysts' research and the consequences of such government influence on financial markets. As "the preeminent market information intermediaries" (Bradshaw, 2011) between firms and their investors, brokerage firm ("sell-side") analysts provide a crucial role in the functioning of capital markets: they extract information from managers; process and distill complex economic, financial, and strategic information; and produce analyses, forecasts, and recommendations about firms; moreover, their information output can critically influence market participants' beliefs (e.g., So, 2013). While state-controlled capital investments in brokerage firms occur in various parts of the world, the impact of state ownership on the quality of analysts' research has received scant attention.[1] We fill this gap in the literature.

To answer these questions, we examine how Chinese sell-side analysts at state-owned brokerage firms respond to the central government's time-varying policy or political incentives. China is a natural setting to study these questions not only because it is home to one of the world's most important emerging economies and financial markets, but also because the country's policymakers

[1]For example, we checked the major shareholders of brokerage firms for a non-exhaustive list of Asian countries outside of China, including Japan, South Korea, Singapore, Malaysia, Vietnam, Thailand and Indonesia. In each case, we found brokerage firms in which state or local governments hold significant stakes, either directly or indirectly (e.g., through ownership of the brokerage firm's holding company).

view the development of strong capital markets and market institutions as a crucial component of the nation's competitiveness (Qi, 2008). Indeed, the Chinese central government fostered and monitored the growth of the brokerage industry in the early 2000s, and, by the end of 2017, the number of sell-side analysts had increased threefold over the preceding 15 years.[2] Sell-side analysts' research and recommendations are relied on by a significant proportion of retail investors (Gu et al., 2013; Shenzhen Stock Exchange (SSE), 2017), and they directly influence nearly 1,000 institutions with assets under management exceeding 70 trillion RMB.

Yet, in achieving its policy or political objectives, the Chinese central government may exert influence on market institutions, such as brokerage firms and the analysts they employ, that serves to undermine the credibility that is vital for their market functions.[3] For example, the government at times has strong incentives to stabilize the market. In China, whereby 2018 retail investors numbered 135 million and accounted for 85 percent of trades, a stable stock market is likely to contribute significantly to maintaining social stability and the government's power (e.g., Tullock, 1987; Piotroski et al., 2015). Critically, anectodal evidence suggests that the government perceives analysts' research to be influential and wishes to utilize their information production as a means to achieve policy goals. For example, Bloomberg reported in late 2018 that the Chinese Securities Regulatory Commission (CSRC), in an attempt to address the slowing economic growth weakening stock market, had warned representatives of more than 30 brokerage firms that their analysts should "strive for higher-level thinking and take into account the interests of the Party and the country when publishing research." Thus, the government's influence on or ownership in brokerage firms can create a complicated set of incentives and outcomes.

Ex ante, it is unclear how analysts would respond to external pressures on the information

[2]This estimate appeared in the 2017 annual report on sell-side analysts in China issued by *New Fortune*, which selects "star" analysts annually by surveying institutional investors, as *Institutional Investor* does in the United States. (See http://www.xcf.cn/article/4cf22130b18211e8a3350242ac110003.html.)

[3]For example, Bloomberg reported in 2017, shortly before the 19th National Congress of the Communist Party of China (CPC), that "As China's most important political event in years draws nearer, regulations have made it clear to the nation's top financiers that they don't want to see any major turbulence." Similarly, the *Wall Street Journal* reported in mid-2018 that "traders and brokers say regulators are increasingly stepping in to influence trades and make China's market appear less volatile, especially when Beijing wants to project stability."

and analyses they produce. On the one hand, analysts' reputational concerns may counterbalance the government's incentives and pressures (Fang and Yasuda, 2009). On the other hand, concern for their career trajectories at the brokerage firm, which may (implicitly) depend on the central government's influence, could magnify analysts' responsiveness to the government's incentives. The degree of analysts' responsiveness is thus likely to depend on how analysts trade off these two conflicting forces (Jackson, 2005; Cowen et al., 2006).

We hypothesize that analysts who work at brokerage firms with significant government ownership will be more likely to respond to government incentives than analysts employed at brokerage firms without government-brokerage ownership. State-owned brokerages are likely to be more sensitive to political influence because the government is the controlling shareholder and likely has a strong voice at the brokerage firm. Thus, their employees' appointments and promotions could be subject to government guidance. However, the desire to achieve policy or political objectives through financial intermediaries must balance against the intermediaries' efforts to maintain their market credibility. Thus, we also hypothesize that during "normal" times, the quality of research by analysts at government-owned brokerage firms is at least as good as those produced by non-government-owned brokerage firms.

To empirically test these hypotheses, we examine how analysts' information production changes during periods when the central government has strong incentives to influence the stock market. For our primary analyses, we identify six events between 2005 and 2015: the four market-rescue attempts between 2005 and 2015 and the 17^{th} and 18^{th} National Congress Meetings of the Communist Party of China in 2007 and 2012 (see Table A1 for details). In each of these events, the central government wished to prop up stock market prices either to limit the extent of market panic (in the case of the four financial-market rescue events), consistent with the "development" theory of state ownership (Gerschenkron, 1962), or to manage external perceptions of China (in the case of the National Congress Meetings), consistent with the "political" theory of state ownership (Shleifer and Vishny, 1994). To support these objectives, the government may seek to influence the research

of brokerage firm analysts.

Using a difference-in-differences (DID) design, we study how the differences in the quality of research between government-brokerage (*GovBro*) analysts (treatment) and non-*GovBro* analysts (control) changed during these economic shocks (or intervention periods). We document the following main findings. First, during government intervention periods, *GovBro* analysts' earnings forecasts are relatively more optimistic than non-*GovBro* analysts'. For example, during market-rescue periods, non-*GovBro* analysts' earnings forecasts decline, consistent with the deteriorating fundamentals; *GovBro* analysts' forecasts during market-rescue periods undo about 23% of this baseline decline. Our main findings are robust: they do not appear to be driven by unobserved omitted variables (following, e.g., Oster, 2019), and they are robust to a variety of empirical specifications, such as stringent fixed effects structures or propensity-score matched samples, as well as alternative measures of earnings-forecast optimism.

To provide supporting evidence that our main results are due to *GovBro* analysts' compliance with government incentives, we show that the relative optimism effect is more pronounced in brokerage firms with: i) a higher degree of state ownership and thus greater degree of government influence; ii) a higher level of analyst turnover and thus less analyst job security or more significant internal job market concerns; or iii) senior managers who have close ties with the CSRC, who are likely to serve as communication channels for the central government's policies. Our results are also more pronounced in the forecasts of firms that the government has the strongest incentives to prop up, in particular firms with larger market capitalization (which have an out-sized influence on the market) and state-owned enterprises (SOEs). We find some suggestive evidence that analysts with more significant reputational concerns, such as "star" analysts or analysts with senior titles, are less likely to comply with government incentives; however, these findings are not statistically significant. Overall, our findings are consistent with *GovBro* analysts complying with government incentives during intervention periods by producing relatively more optimistic (or less pessimistic) research. They are also consistent with internal labor market incentives playing a more significant

role for *GovBro* analysts than reputational effects in explaining their degrees of compliance.

We next document how *GovBro* analysts' compliance to government incentives during intervention periods manifest in other aspects of their information production. During government intervention periods, *GovBro* analysts also issue relatively more favorable stock recommendations, and they comply in part by delaying the issuance of new forecasts (or revisions) during economic downturns. Moreover, when *GovBro* analysts revise downward during economic downturns, they do so less severely than non-government-brokerage analysts. During market-rescue periods, for example, the (downward) revisions of *GovBro* analysts are 28% less severe than those of non-government brokerage analysts. Furthermore, we show that the relatively optimistic earnings forecasts of *GovBro* analysts during government intervention periods are relatively less accurate. This finding rules out the possibility that *GovBro* analysts' relative optimism is due to access to better information; instead, it is consistent with our compliance hypothesis.

Interestingly, we also find that, during regular (non-event) periods, *GovBro* analysts produce on average less optimistic earnings forecasts, less favorable stock recommendations, more frequent forecast revisions, and similarly accurate earnings forecasts compared to non-*GovBro* analysts. These findings illustrate that *GovBro* analysts produce relatively good research during regular times, allowing state-owned brokerages to maintain their market credibility, but their information production is co-opted by government incentives during intervention periods.

Finally, we show that the relative optimism of *GovBro* analysts likely influenced market participants' beliefs about firms' future prospects. We examine the drift in stock prices after earnings announcements and find that market prices are slower to adjust to bad news when government-brokerage analysts play a more important role in firms' information environment (i.e., when they constitute a larger percentage of firms' analyst coverage).

Although our main analyses focus on six events during the 2005-2015 period in which the Chinese central government had strong incentives to prop up the stock market, we conclude the paper by analyzing *GovBro* analysts' forecasts during periods when the central government could have had

incentives to stabilize a buoyant stock market. Interestingly, we find that in "hot" markets—when there is an elevated level of share turnover, which is a common indicator of investor sentiment (e.g., Lee and Swaminathan, 2000; Baker and Wurgler, 2006)—*GovBro* analysts' earnings forecasts are relatively less optimistic and more accurate compared to non-*GovBro* analysts'. These findings point to analysts serving a broader economic role in facilitating the stabilization of stock markets.

Our evidence contributes novel evidence on the effects of government ownership in financial institutions, particularly in emerging market settings (Chen et al., 2010; Carvalho, 2014). Whereas prior literature has focused mainly on the effects of ownership on banks (Barth et al., 2001; La Porta et al., 2002; Sapienza, 2004), we analyze the effects of government ownership in brokerage firms. Relatedly, we contribute to the research on how political incentives impact analysts' information production. The prior literature analyzed how *covered firms'* political connections influence analysts (Chen et al., 2010; Huang and Wright, 2015; Chen et al., 2016). In contrast, we examine how the government's direct shareholdings in brokerage firms influence the quality of analysts' research, which has received scant attention despite state-controlled capital investments in brokerage firms in many countries. Our findings draw attention to a novel channel—information production by state-owned brokerage analysts—through which governmental policies, such as stabilizing capital markets, can be carried out. They also highlight the dual roles of state-owned capital-market institutions in China: serving as information intermediaries that advise investors and (implicitly) as policy implements that help to stabilize the stock markets in extreme times (Hope et al., 2019; Wong, 2014). Financial market stabilization is an important policy objective for East Asian economies in the aftermath of the 1997 Asian financial crisis and, more generally, emerging markets, which can often be plagued by market instability.

Our evidence also contributes to the nascent literature on the role and importance of sell-side research at times of elevated economic uncertainty. Prior research on U.S. analysts (Loh and Stulz, 2018) suggests that, during bad times, market participants place greater weight on sell-side analysts' information, which is particularly useful when firms' economic prospects are less certain.

Our research suggests that the implications of economic uncertainty for analyst forecasts could differ significantly outside the U.S. In particular, in state coordinated economy contexts, the information produced by sell-side analysts may be less reliable precisely during uncertain (or bad) times.

Finally, our evidence contributes to the growing literature on the role of the central government in shaping China's information environment. Prior literature has investigated how China's institutional environment shapes listed firms' reporting incentives, both via formal rules set by regulators, which can affect firms' earnings-management behavior (e.g., Chen and Yuan, 2004; Haw et al., 2005), and via the government's political influence on affiliated firms, which can affect the timing of negative news releases (e.g., Piotroski et al., 2015). Most closely related to our work is the burgeoning stream of literature that examines how the government intervenes in financial intermediaries' information production. Several papers have examined how the government's influence affects the timing and quality of information produced by various news media (e.g., Piotroski et al., 2017; Hope et al., 2019). Although other scholars (Piotroski et al., 2012) have examined the government's role in the structure and competitive landscape of the brokerage industry, we are the first to document the impact of government incentives on the forecasts and recommendations of certain sell-side analysts.

2 Background and Hypothesis Development

This section describes the strands of literature to which our study contributes. We then trace the development of the Chinese brokerage industry and detail how the industry is regulated and the channels through which the central government can exert influence. Finally, we lay out our main hypotheses on how the government's incentives are likely to affect the research quality of sell-side analysts.

2.1 Literature Review

Analysts play a critical role as an information intermediary between firms and investors. A deep and rich literature has examined the economic forces that affect the quality of the information produced by analysts, such as their earnings forecasts or stock recommendations, in the U.S. context. For example, analysts' earnings forecasts can be biased due to their incentives to obtain preferential management access (Francis and Philbrick, 1993; Chen and Matsumoto, 2006; Bradshaw et al., 2016), generate investment banking business for their brokerage firms (Dugar and Nathan, 1995; Michaely and Womack, 1999), maintain client relationships, or generate trading commissions (Cowen et al., 2006; Jacob et al., 2008; Gu et al., 2013).

Extending beyond the U.S. setting and motivated by the law and finance (La Porta, 1996) literature, researchers also examined how and why analysts' information production varies around the world. A central finding in this literature is that analysts tend to issue less accurate or more optimistically biased forecasts in countries with weaker regulatory or governance institutions (Hope, 2003; Tan et al., 2011; Bilinski et al., 2013; Arand et al., 2015). A plausible explanation is that weaker institutions provide incentives and opportunities for insiders to obscure the information environment, for example, to facilitate the extraction of private control benefits (Bushman and Smith, 2001; Leuz et al., 2003; Fan and Wong, 2005), creating more significant challenges for information intermediaries in these markets (Bae et al., 2008). Another explanation is that these institutional differences create different information production incentives for analysts (Barniv et al., 2005; Bradshaw et al., 2019).

In the international context, a special incentive force on analysts' information production has received particular attention: the role of political incentives. Prior work has examined how analysts' incentives vary based on covered firms' political connections: for example, using firm-level data from 17 countries around the world, Chen et al. (2010) documents that analysts' forecasts of politically connected firms tend to be less accurate; similarly, using data from China, Huang and Wright (2015) documents that state shareholding of covered firms is negatively related to the quality of

analysts' earnings forecasts. Chen et al. (2016) show that the monitoring role of financial analysts, for example, in deterring fraud or improving financial reporting quality, are weakened by covered firms' political connections.

Our study also examines how political incentives impact analysts' information production. We focus on a single country (i.e., China), in which the government plays a particularly important role in regulating and coordinating the markets. One advantage of focusing on China is that we can clearly identify and exploit the central government's time-varying incentives to empirically examine how analysts' information outputs change within a common institutional context. Moreover, our study focuses on financial market stabilization, an important policy objective for East Asian economies in the aftermath of the 1997 Asian financial crisis and, more generally, emerging markets, which can often be plagued by market instability.

Our research differs from and adds to the existing literature in several significant ways. First, whereas the prior literature has emphasized how *covered firms'* political connections influence analysts (Chen et al., 2010; Huang and Wright, 2015; Chen et al., 2016), we examine on how government's ownership in brokerage firms influence the quality of analysts' research, which has received scant attention despite the prevalence of state-controlled capital investments in brokerage firms in many countries outside the U.S. (see, e.g., footnote 1). Second, whereas the prior literature examined the differences in analysts' research across different covered-firm types, we examine how the research quality of analysts in state-owned brokerage firms varies in response to the central government's time-varying policy objectives. Finally, to the extent we find that Chinese brokerage firm analysts respond to the government's time-varying incentives, our analysis points to sell-side analysts' dual roles in government coordinated economies, both as market advisers and market stabilizers.

Below we provide relevant institutional details about brokerage firms and market regulation in China. We explain how the Chinese regulators can exert pressure on brokerage firms and why certain sell-side analysts may effectively fulfill the dual roles.

2.2 The Brokerage Industry in China

In response to the 1991 formal opening of China's two stock exchanges, the Shanghai Stock Exchange and the Shenzhen Stock Exchange, financial institutions obtained licenses to engage in securities trading and underwriting; thus, a brokerage industry emerged in China. These brokerage firms were all controlled either by large state-owned banks or by state-owned enterprises. For instance, Huaxia Securities, one of the largest securities brokerages in the 1990s, was owned by the Industrial and Commercial Bank of China.

Over the ensuing decade, the Chinese stock market grew rapidly, and in 2001 the China Securities Regulatory Commission (CSRC) issued a notice permitting non-state-owned enterprises to invest in or control brokerage firms.[4] Minsheng Securities was the first non-state-owned enterprise to obtain a brokerage license, in 2002; the company's larger shareholders included such well-established non-state-owned enterprises as China Oceanwide, New Hope Group, and Fosun International. By the end of 2002, brokerage firms with no government shareholdings numbered about 20.

The prosperity of non-state-owned brokerage firms during the 2002–2003 market decline attracted the attention of regulatory agencies. In 2003, the CSRC re-emphasized that brokerage firms were strictly prohibited from using trading-settlement funds, entrusted assets, and customers' entrusted bonds for other purposes. Over the next five years, the CSRC imposed severe sanctions, including revocation of business licenses, on non-compliant brokerage firms: most of the approximately 30 firms sanctioned during this period were non-state-owned (Piotroski et al., 2012). Since then, the Chinese brokerage industry has grown steadily. By the end of 2015, approximately 15% of all brokerage firms were non-state-owned.

[4]The CSRC, established in 1992, is the primary regulator of China's securities markets, comparable to the U.S. Securities and Exchange Commission. The CSRC's responsibilities include enacting and enforcing policies, laws, and regulations concerning securities markets; supervising securities issuers and financial institutions; and imposing penalties for misconduct or violations of rules or laws related to securities and futures.

2.3 Government Influence on China's Brokerage Industry

In many respects, the operations and performance of Chinese brokerage firms depend on the CSRC. First, they must be licensed by the CSRC to engage in securities trading or underwriting. Further, every prospective IPO firm traditionally required the approval of the CSRC before it can be listed on an exchange.[5] Thus, the underwriting fees earned by brokerage firms, which account for a significant portion of their total revenues, depend to some extent on the CSRC. Permission is also necessary when brokerage firms wish to pursue new businesses, such as margin trading and issuance of asset-backed securities. Furthermore, the CSRC oversees the activities of brokerage firms by investigating misconduct and enforcing sanctions. Jointly, its formal powers constitute a formidable mechanism through which the central government exerts influence on brokerage firms' behavior.

Alongside formal regulatory channels, the CSRC can also influence brokerage firms via an informal and frequently employed mechanism known as *window guidance*. A phenomenon that originated in Japan in the 1950s, window guidance is a method by which regulatory agencies communicate their agendas to the directors of financial institutions privately, via phone calls or private meetings. By contrast to formal mechanisms, window guidance is non-mandatory and less rigid but can entail an implicit threat: potential retribution for non-compliance via the formal powers of the regulator. To the extent that such an implicit threat could incentivize top managers of brokerage firms, window guidance could serve as an effective instrument for enforcing compliance with government incentives.

For example, in an effort to stabilize the stock market, the CSRC met with 21 brokerage firms on July 4, 2015. Immediately after the meeting, the participating firms jointly announced that they would invest no less than 120 billion RMB in blue-chip ETFs and would not sell stock holdings as long as the Shanghai Composite index remained below 4,500 points. In the ensuing months, however, CITIC Securities, China's largest investment bank and a state-owned enterprise, was

[5] In July 2019, China launched a pilot registration system on the start-up board, STAR Market, that does not require CSRC approval. However, prospective IPO firms on the main board still require CSRC's approval.

suspected of short-selling while the "national team" of state financial institutions injected cash into the market. That September, the company's president, Boming Cheng, was arrested for bribery and eventually sentenced to more than three years in prison.

2.4 Hypothesis Development

Though the entire Chinese brokerage industry, and its analysts, could have been subject to CSRC influence to some degree, state-owned brokerage firms are likely to have been especially sensitive to government incentives. First, state-owned brokerage firms were ultimately controlled by the central government or by local government, whose incentives could have directly shaped these firms' behavior. Second, the senior managers of state-owned brokerage firms were appointed (and could be dismissed) by the government. Therefore, the motivations of these firms' management teams were more likely to be aligned with the government. The career or promotion prospects of analysts they oversee were also likely subject to the government's incentives, either explicitly or implicitly. For these reasons, we hypothesize that *GovBro* analysts are more likely to respond to the government's policy incentives.

However, the impact of government ownership in brokerage firms on analysts' research quality is likely to be nuanced. To the extent that the government leverages state-owned brokerage firms to fulfill its policy objectives, their analysts' research ought to be credible to market participants. Yet, by responding to the government's policy incentives, these analysts and brokerage firms risk compromising the credibility of their research and thus their effectiveness as a *de facto* policy implementation tool. Thus, the desire to achieve policy or political objectives through *GovBro* analysts' information production must balance against efforts to maintain their market credibility. Thus, we also hypothesize that, during "normal" times, government brokerage firms' research quality is at least as good as those produced by non-government-owned brokerage firms.

3 Main Empirical Results

This section presents the results of empirical analyses of differences in the earnings forecasts of *GovBro* analysts and non-*GovBro* analysts during periods when the Chinese government could plausibly have had stronger incentives to prop up the stock market. Following a description of our sample construction and research design, we report our analyses and interpretation of the results.

3.1 Sample Selection and Research Design

Our sample consists of annual earnings forecasts from 2005 through 2015. Because no single database in China provides complete coverage of analysts' forecast data, we construct a comprehensive dataset by combining five vendors' data. We begin with earnings-forecast data from the China Stock Market & Accounting Research (CSMAR) database, to which we add any new forecasts found in the following data sources: CBAS, the Wind Financial database, the RESSET financial research database, and HIBOR.[6] We assign a unique code to each analyst, whom we identify by name across the various datasets. For a new forecast to be included in our sample, it must (i) be issued by a different analyst, (ii) be issued on a different date, or (iii) pertain to a different firm. Following prior literature (e.g., Clement and Tse, 2005), we include only one-year-ahead earnings forecasts issued between the prior and current fiscal-year earnings announcements.[7] We merge in information about the brokerage, the analyst, and the covered firm and eliminate observations for which we lack the necessary information on brokerage ownership (i.e., state-owned or private) or analyst characteristics.

Our overall sample consists of 232,991 earnings forecasts for 2,107 unique listed firms between 2005 and 2015. These forecasts were issued by 5,053 analysts at 94 distinct brokerage firms;

[6] Over 80% of the forecasts included in our final sample are from CSMAR. Our results are robust to using only data from CSMAR.

[7] We focus on annual earnings forecasts, instead of quarterly earnings forecasts or target price forecasts, since Chinese analysts usually do no provide quarterly earnings forecasts, and there are only over 30,000 target price forecast observations covered by the CSMAR database in our sample period (about 14% of our annual earnings forecast sample).

around 80% were state-owned and 20% non-state-owned.[8] In state-owned brokerage firms, about 30 analysts issue earnings forecasts each year; in non-state-owned brokerage firms, the number is about 20 analysts each year. Overall, about 14% of the annual earnings forecasts in our sample were issued by analysts at non-state-owned brokerages.

Our main outcome of interest is the observed optimism of an analyst's forecast of a firm's annual earnings. To measure this outcome, we follow prior literature (i.e., Clement and Tse, 2005; Clement and Law, 2014) and normalize an analyst's *Raw Optimism*—the one-year-ahead earnings-per-share (EPS) forecast for a given firm minus the firm's actual EPS—to range from 0 to 1. That is, the main dependent variable in our study is

$$Optimism_{ij\tau T} = \frac{Raw\ Optimism_{ij\tau T} - \min_{jT}\left(Raw\ Optimism_{ij\tau T}\right)}{\max_{jT}\left(Raw\ Optimism_{ij\tau T}\right) - \min_{jT}\left(Raw\ Optimism_{ij\tau T}\right)}, \tag{1}$$

where $Optimism_{ij\tau T}$ is the normalized optimism of analyst i's forecast of firm j's annual earnings issued at date τ in year T; $\min_{jT}\left(Raw\ Optimism_{ij\tau T}\right)$ and $\max_{jT}\left(Raw\ Optimism_{ij\tau T}\right)$ are the sample minimum and maximum of $Raw\ Optimism_{ij\tau T}$ for all the forecasts issued for firm j in year T (i.e., varying at the firm-year level). To limit the influence of outliers on the scaling, prior to the normalization we first winsorize the variable at the top and bottom 1% of the cross sectional distribution.

As explained in Clement and Tse (2005) and Clement and Law (2014), this normalization facilitates the interpretation and comparison of regression coefficients while conserving the relative distance between forecasts issued for the same firm and the same year. Since variation in this optimism measure, by construction, captures the relative optimism of forecasts issued for the same firm, this normalization also has the advantage of neutralizing the effect of firm-level factors at a particular time. In other words, our effects are mainly identified by within-firm and across-analyst

[8] In computing these percentages, we treat brokerage firms changing their ownership structure from state-owned to non-state-owned (or vice versa) as a new brokerage firm observation. Moreover, in untabulated results, we find that government-brokerage analysts and non-government-brokerage analysts cover similar firms. We do not find that the firms covered by these analysts exhibit significantly different firm characteristics, including firm size, book-to-market ratio, leverage, ROA, market beta, and sales growth.

variation in $Optimism_{ij\tau T}$.[9] Thus, our empirical tests neutralize the effects on forecast optimism arising from differences in analyst characteristics.

To examine how government ownership in brokerage firms affected the quality of research by analysts, we examine how *GovBro* analysts' forecasts differ from non-*GovBro* analysts during periods when the central government had strong incentives to stabilize the stock market. In particular, we identify six event (or intervention) periods between 2005 and 2015 during which the Chinese government had incentives to prop up the market and influence brokerage analysts' research to sustain higher stock prices: the four market-rescue attempts between 2005 and 2015 and the six-month periods surrounding the 17^{th} and 18^{th} National Congress Meetings of the CPC in 2007 and 2012.[10]

During market rescue events, the central government took deliberate actions (see Table A1 for details) to prop up stock market prices in order to limit the extent of panic and stabilize the market. These actions are consistent with the market development objectives of the government. On the other hand, National Congress Meetings occur every five years and attract worldwide attention to the country. The central government has strong incentives to manage external perceptions of China during these times, consistent with its political objectives. A thriving and robust stock market helps to demonstrate the country's economic power and the market's approval of the central government's policies or actions, such as the reshuffling of members in the Politburo Standing Committee (CPC's highest body) or other political appointments announced during these meetings. To this end, the central government could be incentivized to bolster the stock market, for example, by suppressing negative market information (Piotroski et al., 2015).

To account for the possibility of baseline differences between the forecasts of *GovBro* and non-

[9] Clement and Law (2014) explain that "this [scaled optimism] metric is conditional on the same firm-year ... [and thus] this adjustment is identical to controlling for firm-year fixed effects." Though this normalization is a standard in the literature on analysts' forecast properties, we verified in untabulated results that our main findings are robust to alternative normalizations such as price per share. In our robustness tests (Table 8), we also find consistent results by estimating specifications using *Raw Optimism* with various fixed effects structures.

[10] Our results are robust to changing the definition of the intervention periods for the National Congress meetings to the interval beginning three months before the meetings began and ending one month after their conclusion.

GovBro analysts, we benchmark and compare their intervention-period differences in *Optimism* against non-intervention-period differences. Thus, our main tests estimate variations of the following DID specification:

$$\begin{aligned} Optimism_{ij\tau T} &= \beta_0 + \beta_1 Govbro_{i\tau T} \times Event_{\tau T} + \beta_2 Event_{\tau T} \\ &+ \beta_3 GovBro_{i\tau T} + \gamma' X_{i\tau T} + f_T + \xi_{ij\tau T}, \end{aligned} \tag{2}$$

where $Event_{\tau T}$ is an indicator variable that takes a value of 1 if the earnings forecast is issued on a date that falls within a government intervention period and 0 otherwise; $GovBro_{i\tau T}$ is an indicator variable that takes a value of 1 if the earnings forecast is issued by an analyst employed (at the time of the forecast) by a state-owned brokerage firm and 0 otherwise; and $X_{i\tau T}$ is a set of analyst characteristics observed as of the date of the earnings forecast.

A brokerage firm is classified as state-owned ($GovBro_{i\tau T} = 1$) when we determine its ultimate controller to be a government entity. Following prior literature (La Porta et al., 1999; Fan and Wong, 2002; Claessens et al., 2002), we define the ultimate controller as the shareholder that possesses determining controlling rights in the company and is not controlled by another entity. To identify the ultimate controller, we track each firm's ownership pyramid and find the ultimate owners of all shareholders whose ownership stake in a brokerage firm is greater than 10%. Whether the brokerage firm is state-owned is then determined by the identity of its largest ultimate owner.[11] In our sample, all of the largest ultimate owners possessed more than 20% of a given brokerage firm's shares.

To account for analyst characteristics ($X_{i\tau T}$) that could explain variation in *Optimism*, we control for the effect of the analyst's firm-specific experience (*Firmexp*), defined as the number of days that an analyst has issued forecasts at the firm; the analyst's general experience (*Genexp*), defined as the number of days that the analyst has issued forecasts included in the database; the

[11] Many state-owned brokerage firms are ultimately owned by local State-owned Assets Supervision and Administration Commission of the State Council.

analyst's forecasting frequency at the firm in the current year (*Frequency*); the number of companies the analyst follows (*Companies*); the number of industries the analyst follows (*Industries*); elapsed time from the date of the forecast to the end of the fiscal year (*Horizon*); and the number of unique analysts employed by the brokerage firm (*Brokersize*). Following Clement and Tse (2005), all analyst-level controls are normalized to range from 0 to 1, like the normalization of *Raw Optimism* to create the Optimism variable. Definitions of these regression controls appear in Table A2; their distributional summary statistics are reported in Table 1, Panel A.

The main coefficient of interest in Eq., (2) is β_1 (i.e., the "DID coefficient"), which compares the average differences in earnings-forecast optimism between state-owned and non-state-owned brokerage analysts during intervention-event periods to the average differences in earnings-forecast optimism between the two types of analysts during non-event periods. In keeping with our hypothesis that *GovBro* analysts are more likely to respond to the government's incentives to prop up the stock market during government intervention periods, we expect a positive and significant β_1. Moreover, if *GovBro* analysts' quality during regular times is at least as good as non-*GovBro* analysts', we expect a β_3 that is zero or negative.

3.2 Earnings-Forecast Optimism during Government Intervention Periods

Table 1, Panel A, provides descriptive statistics on the variables in our primary sample. We report both the normalized (in Panel A) and the raw (in Panel B) versions of all the main dependent and explanatory variables we use. The mean of *GovBro* is 0.86, indicating that 86% of the forecasts included in our sample were issued by *GovBro* analysts; about 25% of forecasts were issued during government intervention periods. On average, analysts in our sample have about 1.5 years (551 days) firm-specific forecasting experience and 3.8 years (1,398 days) of general forecasting experience; they issue about four forecasts for each firm-year, cover 24 firms and six industries, and provide forecasts 230 days before the fiscal period end. Finally, on average, a brokerage firm in our sample has about 46 analysts.

Table 1, Panel B, provides a univariate summary of *Optimism* for *GovBro* and non-*GovBro* analysts. It shows that, during intervention periods, *Optimism* declines overall by about 10% (from 0.4646 to 0.4175). This pattern reflects the fact that the majority of the intervention periods we consider—the four market-rescue periods—were characterized by significant market declines, during which the fundamentals of China's economy were anticipated to decline. Moreover, the table also shows that *GovBro* analysts were relatively more optimistic in that the decline in their *Optimism* was smaller in magnitude. For example, about a third of the *Optimism* decline of non-*GovBro* analysts during intervention periods is "un-done" by *GovBro* analysts' relative optimism.

In Table 2 we examine whether these univariate results are robust to controlling for analyst and brokerage characteristics. This table reports DID regression estimates, following Eq., (2), of how government incentives during intervention periods affect government-brokerage analysts' *Optimism*. Columns 1-2 examine the two types of event respectively, the four market-rescue events (*Rescue*) and the two National Congress meetings (*Meeting*); column 3 pools all the events (*Event*).

The multivariate tests of Table 2 are consistent with the univariate analyses. In each specification, we find a DID coefficient that is positive and statistically significant (at the 5% level), consistent with *GovBro* analysts exhibiting relative optimism in their earnings forecasts during government intervention periods.

These findings are also consistent with the *GovBro* analysts attempting to strike a balance between two conflicting considerations: their market reputations and their internal promotional prospects (Jackson, 2005; Cowen et al., 2006). During market-rescue periods, in particular, government-brokerage analysts on average revised downward (e.g., the sum of the coefficients on *GovBro* × *Rescue* and *Rescue* is negative and significant at the 5% level), in keeping with the declining fundamentals, a pattern that suggests that they cared about preserving credibility in the marketplace. But our DID estimates also show that these analysts' forecasts were relatively more optimistic—they revised less severely than did non-government-brokerage analysts during economic downturns—which suggests a degree of compliance with the government's incentives.

One way to interpret the magnitude of the effect is to assess how much of the decline in *Optimism* during intervention periods is "un-done" by government-brokerage analysts. Interpreting the coefficients in column 1, we find that *Optimism* on the part of non-government-brokerage analysts declines on average by 0.045 during the market rescue periods (the coefficient on *Rescue*), consistent with analysts' expectations of deteriorating fundamentals during these times; relative to this baseline, government-brokerage analysts' forecasts undo about 23% of this decline in *Optimism*. Moreover, the negative and significant coefficient on *Govbro* suggests that government-brokerage analysts are less optimistic in the non-event period compared with their non-government-brokerage counterparts, consistent with analysts managing their reputation during regular times.

3.3 Heterogeneity in *GovBro* Analysts' Relative Optimism

Next, we provide evidence that our main results are driven by *GovBro* analysts' responsiveness to government incentives. If so, we should expect to see *GovBro* analysts' relative optimism during intervention periods to be more pronounced in contexts where analysts have stronger compliance incentives.

3.3.1 Heterogeneity By Brokerage Firm Type

We begin by examining differences in *GovBro* analysts' compliance incentives that may arise from the heterogeneity in brokerage firm characteristics. In particular, we expect *GovBro* analysts to have more substantial compliance incentives in brokerage firms with a higher degree of state ownership, in which the government likely has a greater degree of explicit control over the firm's decisions (e.g., promotions or demotions). We also expect *GovBro* analysts' compliance incentives to be stronger in those brokerage firms with less job security, in which analysts are likely to have more significant internal career concerns. Finally, we expect *GovBro* analysts' compliance incentives to be stronger in brokerage firms with senior managers who have close ties with the CSRC. These CSRC-connected managers are likely to serve as communication channels for the central government's

policies and exert pressure on their subordinates to fulfill policy objectives.

To test these predictions, we estimate a variant of Eq., (2) in which we decompose the *GovBro* indicator into *GovBro*&*Type* and *GovBro*&*Non-Type*, where *Type* (*Non-Type*) is an indicator that takes a value of 1 (0) if the analyst's brokerage firm satisfies (does not satisfy) a particular attribute type. That is, $Type + Non\text{-}Type = 1$ and $GovBro\&Type + GovBro\&Non\text{-}Type = GovBro$.

Table 3, Panel A, reports the results from decomposing *GovBro* analysts' relative optimism by brokerage firm types. In column 1, *Type* (*Non-Type*) is an indicator for analysts working in brokerage firms in which the central or local government owns more than (less than) 50% of the shares. To the extent that *GovBro* analysts' relative optimism is more pronounced in brokerage firms with a high degree of government control, we expect the coefficient on *GovBro*&*Type* to be more positive than *GovBro*&*Non-Type*. We find that both coefficients are positive and significant at the 1% level, and the coefficient on *GovBro*&*Type* is larger in magnitude and statistically significantly (at the 5% level) so. (The last row of the panel reports the p-value of the test of equality between the two coefficients.) Consistent with our predictions, *GovBro* analysts' relative optimism is more pronounced in brokerage firms with a higher degree of government ownership.

In column 2, *Type* (*Non-Type*) is an indicator for analysts working in brokerage firms with a relatively high (low) degree of analyst turnover, defined as having an average annual turnover in analysts greater than (less than) 20%. Both the coefficients on *GovBro*&*Type* and *GovBro*&*Non-Type* are positive and statistically significant at the 1% level, with the coefficient on the former being larger in magnitude and statistically significantly (at the 1% level) so. Consistent with our predictions, *GovBro* analysts' relative optimism is more pronounced in brokerage firms with less job security. These first two tests are consistent with the idea that internal career concerns could be an important lever through which government shareholdings could influence analysts' behavior (Li and Zhou, 2005; Bradshaw et al., 2019).

In column 3, *Type* (*Non-Type*) is an indicator for analysts working in brokerage firms with CSRC-connected senior managers. We manually collected data on the senior managers of all the

brokerage firms in our sample using information disclosed in brokerage firms' annual reports. We identify a brokerage firm as having a CSRC-connected senior manager (*CSRC Manager*) if one of its senior managers had prior work experience in the headquarter or local office of CSRC. Both the coefficients on *GovBro&Type* and *GovBro&Non-Type* are again positive and statistically significant at the 5% level, with the coefficient on the former being larger in magnitude and statistically significantly (at the 10% level) so.

Overall, these findings are consistent with the hypothesis that *GovBro* analysts' relative optimism during government intervention periods is due to their compliance with government incentives. In addition, these results also highlight the importance of internal career concerns and politically connected senior managers as potential mechanisms through which the government's policy goals influence *GovBro* analysts' research.

3.3.2 Heterogeneity By Target Firm Type

To provide additional support for the compliance hypothesis, in Panel B, Table 3, we further examine variations in *GovBro* analysts' relative optimism by exploiting heterogeneity by covered-firm characteristics. We expect the effect to be more pronounced for *GovBro* analysts' forecasts in those target firms whose stock prices the government has particularly strong incentives to prop up. For example, to minimize market panic (in the case of the four financial-market rescue events), or to create an impression of robust financial markets (in the cases of the National Congress meetings), the government may want to prop up the prices of larger firms (which have outsized impact on the market), firms in supported industries explicitly identified by the prevailing Five-Year plan, or SOEs.

In column 1, *Type* (*Non-Type*) is an indicator for earnings forecasts for large (small) covered firms, defined as having market capitalization in (outside) the top 500 of all listed firms. The coefficient on *GovBro&Type* is positive and significant (at the 1% level) while the coefficient on *GovBro&Non-Type* is small, negative, and statistically insignificant (at the 10% level). Consistent

with our expectations, the former is more positive and statistically significantly so (at the 1% level), suggesting that *GovBro* analysts' relative optimism is concentrated in forecasts for the largest firms in the market.

In column 2, *Type* (*Non-Type*) is an indicator for earnings forecasts for firms in (not in) industries supported by the CCP's five-year plan. The coefficients on *GovBro&Type* and *GovBro&Non-Type* are both positive, although only the latter is statistically significant. Moreover, although the former is larger in magnitude, consistent with our predictions, we do not find that the two coefficients are statistically different at the 10% level.

In column 3, *Type* (*Non-Type*) is an indicator for earnings forecasts for SOEs (non-SOEs). The coefficients on *GovBro&Type* and *GovBro&Non-Type* are both positive and statistically significant at the 5% level, with the coefficient on the former being larger in magnitude and statistically significantly (at the 5% level) so. Together, these results support the compliance hypothesis by showing that the relative optimism of *GovBro* analysts are more pronounced in their earnings forecasts in firms whose stock prices the government has the greatest incentives to prop up during intervention periods.

3.3.3 Heterogeneity By Analyst Type

Finally, in Panel C, Table 3, we examine variations in *GovBro* analysts' relative optimism by exploiting heterogeneity by analyst status. Prior literature suggests that reputational concerns could provide an effective disciplinary mechanism against analysts' conflicts of interest in the U.S. (Fang and Yasuda, 2009). Thus, we could expect the relative optimism effect that we document in the Chinese setting to be weaker for analysts with greater market reputational concerns. To examine such possibilities, we exploit differences across analysts' "star" status and their titles.

In column 1, *Type* (*Non-Type*) is an indicator for earnings forecasts by analysts who were, at the time of the forecast, designated (not designated) as a "star" by the *New Fortune*, the most authoritative financial magazine in China, as of the earnings-forecast date. The coefficients on

GovBro&Type and *GovBro&Non-Type* are both positive and statistically significant (at the 10% level), and, consistent with our predictions, the latter coefficient is larger in magnitude. However, we do not find that the two coefficients are statistically significantly (at the 10% level) different from each other.

To be sure, in column 2, we consider an alternative definition in which *Type* (*Non-Type*) is an indicator for earnings forecasts by analysts who were designated as a "star" by *New Fortune* at any time within the three years before the earnings-forecast date. The results in column 2 are very similar to those in column 1: the coefficients on *GovBro&Type* and *GovBro&Non-Type* are both positive and statistically significant, with the latter being larger in magnitude; however, they are not statistically significantly different from each other.

In column 3, *Type* (*Non-Type*) is an indicator for an analyst with a high-level senior title, such as "chief analyst," "senior analyst," "vice president," or "managing director." The results are again quite similar to the prior two columns: the coefficients on *GovBro&Type* and *GovBro&Non-Type* are both positive and statistically significant, with the latter being larger in magnitude; however, they are not statistically significantly different from each other.

Thus, although the relative magnitudes of our tests in Panel C are suggestive of the possibility that external reputation concerns may limit analysts' incentives, we do not find strong statistical evidence in support of such a hypothesis. Instead, our findings in Table 3 are consistent with internal labor market incentives play a more significant role for *GovBro* analysts than reputational effects in explaining their degrees of compliance.

4 Other Research Output Attributes and Robustness Tests

This section examines other attributes of analysts' research output to provide further evidence of *GovBro* analysts' compliance to government incentives during intervention event periods. We also provide several tests to address the robustness of our main findings to unobserved omitted variables, alternative fixed effects structures, alternative definitions of earnings-forecast optimism,

and alternative samples.

4.1 Other Research Output Attributes

To the extent that the government's incentives influence some sell-side analysts' information production, we may also expect to find relative optimism in the other information they produce. To provide additional support for our main results, we examine how *GovBro* analysts' stock recommendations, earnings-forecast revisions, lag, and accuracy change due to the government's time-varying market-stabilization incentives.

Stock recommendations are important, and frequently studied, summary statistics produced by analysts (Jegadeesh et al., 2004; Barber et al., 2005). And *GovBro* analysts' compliance with government incentives may also manifest in their stock recommendations. To test this hypothesis, we estimate the DID specifications presented in Table 2 using an alternative dependent variable, *REC*, which assigns the recommendations "strong buy," "buy," "hold," "sell," and "strong sell" the respective numerical values 1, 0.75, 0.5, 0.25, and 0. The results, reported in Table 4, show that *GovBro* analysts on average made relatively more favorable stock recommendations during each of the intervention periods, but during normal times they made relatively less favorable stock recommendations, corroborating our main results on earnings-forecast optimism.

We may also expect to find relative optimism in *GovBro* analysts' forecast revisions (*Revision*). To examine whether the magnitude of revisions varied during intervention periods, we extract a subset from our sample consisting of earnings forecasts issued by the same analyst that differed from her prior forecast for the same period's earning and the same firm. This specification produces a sample of 57,994 one-year-ahead forecasts between 2005 and 2015.

Table 5 estimates the DID specifications of Table 2, but uses *Revision* as the dependent variable of interest. The results suggest that during market-rescue periods (column 1), non-*GovBro* analysts who revised tended to revise downward, consistent with deteriorating economic fundamentals. By contrast, the revisions of *GovBro* analysts tended to be on average less severe: we obtain a positive

and statistically significant DID coefficient (at the 5% level). Moreover, the economic magnitudes are significant: government-brokerage analysts' downward revisions at these times are less severe, on average, by about 28%. We do not find any differential patterns in forecast revisions during National Congress Meetings (column 2), but in the specification (column 3) that pools all events, we obtain a positive DID coefficient that is both economically and statistically (at the 5% level) significant. We do not find significant differences between the revisions of *GovBro* and non-*GovBro* analysts during normal times.

We further explore whether government incentives influence the time lag between the latest forecast and its most recent predecessor (*Forecast Gap*). Table 6 estimates the three specifications of Table 2 but uses *Forecast Gap* as the dependent variable of interest. Column 1 shows that when *GovBro* analysts issue forecasts during intervention periods, they tend to do so more slowly (e.g., their revisions are less timely during these times). Interestingly, our results suggest that during non-event periods *GovBro* analysts tend to update more frequently—that is, the interval between forecasts tends to be shorter than non-*GovBro* analysts. This comparative promptness diminishes significantly, however, during government intervention periods. Across all events (i.e., column 3), the sum of the coefficients on *GovBro* × *Event* and *GovBro* is statistically not different from 0 (at the 10% level).

Finally, we examine how *GovBro* analysts' earnings-forecast accuracy is affected by government incentives during intervention periods. Table 7 reports the results from estimating the three DID specifications of Table 2 but uses *Accuracy* as the dependent variable of interest. The results in Table 7 suggest that the forecasts issued by government-brokerage analysts during intervention periods are on average relatively *less* accurate: the coefficients on each of the three DID coefficients are negative and statistically significant at the 5% level. We also find, in all three columns, a positive coefficient on *GovBro*, suggestive of *GovBro* analysts' forecasts being more accurate during normal times; however, none of these coefficients are statistically significant at the 10% level.

The findings in Tables 5 and 6 suggest that government-brokerage analysts comply with the

government's incentives at least in part by delaying forecasts (and revisions) during economic downturns. Moreover, when they revise downward during economic downturns, they do so less severely than non-government-brokerage analysts. Jointly, these findings are consistent with a pattern of balancing career incentives inside the brokerage firm against external reputational concerns. These findings also exclude the alternative hypothesis that our documented relative optimism effect is driven by *GovBro* analysts being generally less efficient or responsive to changes in economic conditions. (For example, if *GovBro* analysts' forecasts can be less optimistic during market downturns simply due to their being generally more sluggish in issuing forecasts.) However, our results show that they are more responsive (and relatively less optimistic) during regular times.

Moreover, the findings of Table 7 help to rule out the possibility that our main findings could be due to *GovBro* analysts possessing superior information about firms during government intervention periods ("the information hypothesis"). State-owned brokerage firms may be more capable of acquiring information about firms' future prospects during uncertain or bad times; in particular, they may be able to predict which firms will receive preferential treatment (e.g., a bailout) from the Chinese government. If so, our main results would reflect a differential information-quality effect rather than a differential optimism effect due to compliance with government incentives. Under the information hypothesis, we expect forecasts issued by *GovBro* analysts during the intervention periods to be relatively more accurate. The results of Table 7 are inconsistent with these predictions; instead, they are consistent with the compliance hypothesis, under which *GovBro* analysts' forecasts would be expected to be relatively less accurate during intervention periods.

4.2 Robustness Tests

In Table 8, we provide several additional tests to examine the robustness of our main findings in Table 2. We begin by assessing the extent to which the main results of Table 2 could be due to a bias driven by correlated omitted unobservable variables. We implement the δ statistic proposed by Oster (2019), which facilitates an assessment of the extent to which omitted variables could

influence our estimates and have only been recently adopted by accounting researchers (Ma et al., 2021; Scherf, 2021). This methodology is based on the insight (Altonji et al., 2005) that the amount of selection between the treatment and the observed set of controls can be informative of the degree of selection on unobservables and therefore useful for bounding the magnitudes of potential omitted variable bias in OLS estimates.

In Panel A, we report the δ, the parameter that determines the proportionality of selection between observables and unobservables, that would make the main coefficients in Table 2—*GovBro* × *Rescue*, *GovBro* × *Meeting*, or *GovBro* × *Event*—zero. In computing this statistic, we assume that the inclusion of observed and unobserved variables in the regression achieves a maximum R^2 of 1. As we show in Panel A, Table 8, we consistently obtain a *negative* δ. While obtaining negative δs cannot be used to bound the magnitude of the omitted variables bias, a common interpretation in the applied economics work is that the results are unlikely to be driven by omitted variables bias. This is because negative δs indicate that the main coefficient of interest *increase* in magnitude when more controls are included in the regressions (e.g., Graham et al., 2017; Glewwe et al., 2018; Scherf, 2021).

To be sure, in Panels B and C, we test how the main results are sensitive to explicit changes in the regression specification, the measurement of the dependent variable, or the sample. For parsimony, we focus on the robustness of the specification in column 3, Table 2, in which the main coefficient of interest is *GovBro* × *Event*.

In Panel B, we assess whether our findings are robust to a DID framework using *Raw Optimism* (i.e., without the normalization described in Section 3 above) and under various generalized fixed effects structures. In estimating these specifications, we include the "raw" (un-normalized) variants of the control variables in Table 2, which are summarized in Table 1. All of the specifications in Panel B include target-firm-year fixed effects. Additionally, the specification of column 1 includes brokerage fixed effects; column 2 includes analyst fixed effects; column 3 includes firm-broker fixed effects; and column 4 includes firm-analyst fixed effects. In all four cases, we continue to find

a positive and statistically significant (at the 5% level) main coefficient, consistent with *GovBro* analysts exhibiting relative optimism during government intervention periods. Thus, our main results are robust to various alternative fixed effects structures.[12]

In Panel C, columns 1 and 2, report the DID results using measures of *Optimism* and *Accuracy*, respectively, defined using two-year ahead earnings forecasts. We find very similar results: analysts' longer horizon forecasts are relatively more optimistic and less accurate during government intervention periods. We verify that the results are also similar if we use three-year ahead forecasts.

Column 3, Panel C, re-examines our main results but using a sample that keeps each analyst's last forecast for each firm in each quarter. The DID coefficient is positive and significant at 5% level.[13] Furthermore, column 4 re-examines our main results but excludes the 2nd market rescue event from the sample since it overlaps with the financial crisis. We continue to find a positive and significant (at the 5% level) DID coefficient, suggesting that our main findings are not driven by the financial crisis per se.

Finally, to avoid concern that our documented relative optimism effect is induced by observable differences between government-brokerage and non-government-brokerage firms, we conduct propensity score matching and match each treated brokerage firm with a control brokerage firm. We first regress *Govbro* on the following brokerage firm characteristics: the logarithm of total assets, the logarithm of brokerage firm age, brokerage firm gross return on assets, an indicator for being publicly listed, and an indicator for being incorporated in one of the top ten provinces ranked by GDP. We match each government-owned brokerage firm with the non-government-owned brokerage firm from the same year with the closest propensity score. The matching is undertaken without replacement and requires a caliber width of 5%.[14] Column 5 reports the regression results using

[12] We also implemented these generalized DID specifications to test the robustness of our heterogeneity tests reported in Table 3. We obtain qualitatively very similar results.

[13] We do not keep the last forecast for each firm in each year since our analysis requires an analyst's forecasts for a given firm within and outside of the intervention periods. Keeping one analyst-firm forecast each year removes significant variation from the data.

[14] Untabulated results indicate that government-owned brokerage firms are larger in market capitalization, older, more likely to be listed and incorporated in economically stronger provinces. After matching, none of the brokerage firm characteristics exhibit statistically significant differences between the government-brokerage firms and their

PSM matched sample, which shows that the DiD coefficient continues to be positive and statistically significant (at the 10% level), with larger coefficient magnitudes compared to column 3 of Table 2. The inference from the propensity-score matched sample is consistent with our findings in Panel A, Table 8 using the methodology of Oster (2019): our findings are unlikely driven by correlated omitted variables.

5 Exploring Additional Implications

In this section, we provide additional tests to analyze the implications of *GovBro* analysts' compliance to the government's time-varying market-stabilization incentives.

5.1 Assessing Market Impact

We assess whether *GovBro* analysts' relative optimism during intervention periods had an impact on market participants' beliefs. It is challenging to directly test how analysts' forecasts, recommendations, and general information production influence investors' beliefs. However, we can make inferences based on the evolution of market prices after earnings announcements. In particular, to the extent that markets overweight the *general* relative optimism of *GovBro* analysts' information during times of economic downturn, we should expect to see investors under-react to (negative) earnings surprises. This is because the market remains relatively optimistic about the company's future earnings (e.g., due to in *GovBro* analysts' relatively optimistic long horizon earnings forecasts and or their relatively favorable stock recommendations), resulting in a slow adjustment to bad news and a more negative PEAD (Cao and Narayanamoorthy, 2012).

We design a test to measure how PEAD varies depending on the composition of prior consensus earnings forecasts. To the extent that a firm is covered by more *GovBro* analysts, the consensus forecasts for the firm are more likely to be influenced by *GovBro* analysts' relative optimism during intervention periods. We construct a variable *GovBro*% that measures the percentage of analysts

matched control samples.

covering the firm employed at state-owned brokerage firms. Then, we examine whether the market's reaction to earnings surprises during event periods differs when the consensus is subject to greater *GovBro* analysts' influence. We do so by estimating the following specification:

$$\begin{aligned} CAR(3,\tau)_{jtT} &= \beta_0 + \beta_1 GovBro\%_{jtT} \times Surp_{jtT} \times Eventy_T + \beta_2 GovBro\%_{jtT} \times Surp_{jtT} \\ &+ \beta_3 Surp_{jtT} \times Eventy_T + \beta_4 GovBro\%_{jtT} \times Eventy_T \times + \beta_5 GovBro_{jtT} \\ &+ \beta_6 Surp_{itT} + \gamma X_{jtT} + f_T + \epsilon_{ij\tau T}, \end{aligned} \tag{3}$$

where $CAR(3,\tau)_{jtT}$ is the cumulative abnormal returns of firm j measured from three days to τ days after the earnings announcement made on date t in year T; $Surp_{jtT}$ is the difference between firm j's actual fiscal-year earnings announced on date t in year T and the prior consensus earnings forecast for firm i, deflated by beginning-year stock price; and $Eventy$ is an event-year indicator variable. The main effect for $Eventy$ does not belong to the specification because it is absorbed by year-fixed effects (f_T). All other regressors are as defined in Eq., (2) and detailed in Table A2.

The central coefficient of interest in Eq., (3) is β_1, which captures how the incremental response to earnings surprises during event periods (β_3) differs when the consensus is more subject to *GovBro* analysts' relative optimism. To the extent that the relative optimism of *GovBro* analysts influences market participants, we would expect a positive and significant β_1 for longer-window CARs. These patterns should hold particularly in bad times since the market's overreliance on government-brokerage analysts' optimism would imply a slow adjustment to bad news.

In Table 9, column 1, we begin by examining short-window returns [CAR(-2,2)]. We find that the coefficient on β_1 is statistically no different from zero at the 10% level, suggesting that the incremental short-term market response to event-period earnings surprise does not differ for higher *GovBro%* firms. In column 4, we find similar results when we subset on to be concentrated in the sample of bad news observations (with negative earnings surprise). These results suggest that, in a short window around the earnings announcement, market participants do not seem to treat

GovBro analysts' earnings forecasts differently during intervention periods.

Over the longer windows, we find very different patterns. In columns 2 and 3, Table 9, we report the results from estimating Eq., (3) using longer-window returns [CAR(3,60) and CAR(3,90)]. We find a positive and statistically significant (at the 1% level) β_1, suggesting that the incremental PEAD during event periods is significantly more positive for higher *GovBro%* firms. In columns 5 and 6, we find that these results are concentrated in the sample of bad news observations. The analogous regressions estimated using the subsample of observations with positive earnings surprise produces β_1 coefficients that are statistically insignificant at the 10% level.

These results suggest that, when the consensus consists of a greater percentage of *GovBro* analysts, the market's reaction to a unit of negative surprise during event periods corresponds to a relative downward drift in the stock price over time. Thus, the empirical evidence is consistent with market participants overweighting the relatively optimistic information produced by *GovBro* analysts during event periods.

5.2 GovBro Analysts' Market Stabilization Role in High Sentiment Periods

Although the primary analyses of the paper focus on market event periods during which the central government likely had strong incentives to prop up the market, it is possible that analysts can play a market stabilization role during periods of excessive investor sentiment, which can lead to destabilizing market bubbles (Brown and Cliff, 2005; Baker and Wurgler, 2006).

To test this conjecture, we identify "hot" markets or high-sentiment periods based on aggregate share turnover (following, e.g., Lee and Swaminathan, 2000; Baker and Wurgler, 2006). In Table 10, we consider three definitions of "hot" markets based monthly turnover being in the the top 30% (columns 1 and 2), 20% (columns 3 and 4), or 10% (columns 5 and 6) of the sample period. We then estimate the primary regression specifications of Eq., (1) using "hot" markets as the event period of interest, and examine both *Optimism* (in odd columns) and *Accuracy* (in even columns) as the dependent variables of interest.

Generally, we find that *GovBro* analysts issue relatively less optimistic and more accurate forecasts during these high-sentiment periods. These findings are consistent with our hypothesis that during periods when the central government does not have incentives to prop up the stock market, government brokerage firms maintain their reputation in the marketplace by producing relatively good research. In the context of buoyant markets, *GovBro* analysts' more accurate but less optimistic forecasts can help to cool down market prices. Thus, *GovBro* analysts' market stabilization function could operate in both the bad times as well as the good.

6 Concluding Remarks

This paper examines the implications of government shareholdings in brokerage firms on analysts' research quality. Our findings show that government-brokerage analysts' information production is influenced by the government's time-varying market stabilization incentives. Thus, our work suggests the dual roles of state-owned brokerage firm analysts in coordinated economy contexts: serving as information intermediaries that advise investors and as mechanisms for stabilizing the stock market.

Of course, our inferences are based on an analysis of the Chinese context. And while China is home to perhaps the world's most significant emerging economy and financial market, making our findings intrinsically important in our view, the extent to which the effects of government ownership in brokerage firms on analysts' information production that we document applies in other emerging market contexts remains an open question. We believe these are fruitful areas for future research, as government ownership in brokerage firms appears to be prevalent. For example, we investigated a non-exhaustive list of Asian countries outside of China, including Japan, South Korea, Singapore, Malaysia, Vietnam, Thailand, and Indonesia. In each case, we identified brokerage firms in which state or local governments hold significant stakes, either directly or indirectly (e.g., through ownership of the brokerage firm's holding company). Moreover, each of these countries' economies relies on some level of state coordination. It appears plausible, therefore, that the phenomenon we

document could variously apply to these countries.

Thus, similar to some prior work that investigates the effects of government ownership in banks (Sapienza, 2004; Chen et al., 2010) by focusing on the context of a specific country, our work aims to pave the way for future researchers to deepen the understanding of the influence of government shareholdings in financial intermediaries on their information production and on markets' information processing. We hypothesize that the influence depends on the extent of the government's coordination role in the economy, the labor market for analysts, and the severity of the intervention events. We look forward to future work in this area.

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Table A1. Government Intervention Events and Periods

This table reports the details of the two types of market intervention events used in the paper. We define market-rescue intervention periods as the time interval between the first and the last publicly identifiable dates in which notable market-rescue steps were taken by the Chinese government for each given episode. We define the intervention period for each National Congress of the Communist Party of China to be the time interval starting three months prior to the beginning of and ending three months after the conclusion the meeting.

Event	Intervention Period	Notes
Market Rescue		
1st	1/23/2005–6/5/2005	Notable market-rescue steps: • On January 23, 2005, the Ministry of Finance announced that the security-transaction tax rate would be lowered (from 0.2% to 0.1%). • On May 25, 2005, the CSRC froze IPOs. • On June 5, 2005, the CSRC called for a meeting with executives of fund companies, securities firms, and stock exchanges to discuss share-split structure reform. The CSRC asked fund companies to sell less to maintain the stability of the stock market. Meanwhile the CSRC would take steps to rescue the market, such as permitting new equity funds to invest in stock markets and decreasing the tax rate on dividends.
2nd	4/24/2008–10/30/2008	Notable market-rescue steps: • On April 24, 2008, the Ministry of Finance announced that the security-transaction tax rate would be lowered (from 0.3% to 0.1%). • After August 19, 2008, transaction taxes were levied only on stock sellers. Central Huijin Investment bought shares in three large state-owned banks. State-owned Assets Supervision and Administration Commission (SASAC) encouraged large shareholders of SOEs to buy stocks. • On September 16, 2008, the CSRC froze IPOs. • On October 9, 2008, the Central Bank lowered interest rates and reserve requirements and waived interest taxes. On October 30, 2008, the Central Bank lowered interest rates again.
3rd	4/1/2012–12/4/2012	Notable market-rescue steps: • On April 30, 2012, the Shanghai Stock Exchange and the Shenzhen Stock Exchange announced that transaction fees would be lowered (by around 25%). • On October 10, 2012, Central Huijin Investment announced its intention to purchase shares in four state-owned banks. • On November 2, 2012, the CSRC announced that IPOs would be frozen.
4th	7/1/2015–12/31/2015	Notable market-rescue steps: • On July 1, 2015, the Shanghai Stock Exchange and the Shenzhen Stock Exchange announced that they would lower transaction fees (by around 30%). • Between July 2 and July 4, 2015, the CSRC announced investigations into market-manipulation activities; Central Huijin Investment Ltd. announced its intention to buy market ETFs; the CSRC announced that it would slow down IPOs; the CSRC called a meeting with 21 brokerage firms, after which the firms jointly announced that they would invest no less than 120 billion RMB in blue-chip ETFs and would not sell off these holdings as long as the Shanghai Composite index was below 4,500 points. • On July 8, 2015, the Central Bank announced its intention to provide unlimited liquidity to the China Securities Finance Corporation and to invest social-insurance funds in the market. More than 100 SOEs were prohibited from selling stocks and IPOs were frozen. • Until the end of 2015, China Securities Finance Corporation held shares in more than 1,000 listed firms.
National Congress of CPC		
17th	8/1/2007–1/31/2008	The meeting was held 10/15/2007–10/21/2007
18th	9/1/2012–2/28/2013	The meeting was held 11/8/2012–11/14/2012

Table A2. Definitions of Variables

This table details the definitions of variables used in this paper's empirical analyses.

Variable	Definition
Optimism	Forecast optimism (analyst EPS forecast minus actual EPS) for analyst i following firm j in year t minus the minimum forecast optimism for analysts who follow firm j in year t. This difference is scaled by the range of forecast optimism of analysts following firm j in year t.
Rescue	Equals 1 if forecasts are issued during a market-rescue period and 0 otherwise.
Meeting	Equals 1 if forecasts are issued within the six-month period surrounding a meeting of the National Congress of the Chinese Communist Party, and 0 otherwise.
Event	Equals 1 if *Rescue* equals 1 or *Meeting* equals 1, and 0 otherwise.
GovBro	Equals 1 if a brokerage is ultimately controlled by a state-owned enterprise or by the state-owned Assets Supervision and Administration Commission of the State Council, and 0 otherwise.
Firmexp	The number of days of firm-specific experience for analyst i, who follows firm j in year t, minus the minimum number of days of firm-specific experience for analysts who follow firm j in year t. This difference is scaled by the range (in number of days) of firm-specific experience of analysts who follow firm j in year t.
Genexp	The number of days of general experience for analyst i, who follows firm j in year t, minus the minimum number of days of general experience for analysts who follow firm j in year t. This difference is scaled by the range (in number of days) of general experience of analysts who follow firm j in year t.
Industries	The difference between the number of industries (with the same two-digit CSRC industry code) followed by analyst i, who follows firm j in year t, and the minimum number of industries followed by analysts who follow firm j in year t. This difference is scaled by the range in the number of industries followed by analysts who follow firm j in year t.
Frequency	The number of firm-j forecasts made by analyst i, who follows firm j in year t, minus the minimum number of firm-j forecasts for analysts who follow firm j in year t. This difference is scaled by the range in the number of firm-j forecasts issued by analysts who follow firm j in year t.
Horizon	The difference between the number of days from the forecast date to fiscal year-end for analyst i, who follows firm j in year t, and the minimum number of days from the forecast date to fiscal year-end for analysts who follow firm j in year t. This difference is scaled by the range in the number of days from the forecast date to fiscal year-end for analysts who follow firm j in year t.
Brokersize	The difference between the number of analysts employed by the brokerage employing analyst i, who follows firm j in year t, and the minimal number of analysts employed by brokerages whose analysts follow firm j in year t, deflated by the range in the number of analysts employed by the brokerage whose analysts follow firm j in year t.
REC	Equals 1 for strong buy, 0.75 for buy, 0.5 for neutral, 0.25 for sell, and 0 for strong sell.
Revision	The difference between the current EPS forecast (current forecast) and the most recent EPS forecast issued by the same analyst about the same firm for the same year (prior forecast), deflated by the prior forecast.
FGAP	The difference between the number of days elapsed since the last forecast about the same firm by analyst i, who follows firm j in year t, and the minimum number of days elapsed since the last forecast about the same firm by analysts who follow firm j in year t. This difference is scaled by the range in the number of days elapsed since the last forecast about the same firm by analysts who follow firm j in year t.
Accuracy	The difference between maximum forecast error (the absolute value of the difference between EPS forecast and actual EPS) for analysts who follow firm j in year t and the forecast error for analyst i. This difference is scaled by the range in forecast error for analysts who follow firm j in year t.
Optimism (raw)	Forecast optimism (analyst EPS forecast minus actual EPS) for analyst i following firm j in year t divided by stock price of firm j at the beginning of year t.

Table A2. Continued

Optimism2	*Optimism* based on two-year ahead earnings forecasts.
Accuracy2	*Accuracy* based on two-year ahead earnings forecasts.
BHAR	Buy-and-hold market adjusted return.
Govbro%	The proportion of government-brokerage analysts in the total cohort of analysts who follow a given firm.
Eventy	Equals 1 for a year when at least four of the six months before an earnings-announcement date fall into an event period, and 0 otherwise. In our sample period, it equals 1 for 2007 and 2012, and 0 for other years.
Surp	Earnings surprise (actual EPS minus analyst consensus forecast) deflated by stock price at the beginning of the year. Consensus forecast is calculated as the mean of the last forecast that each analyst issues within 180 days prior to the actual earnings announcement.
Size	Logarithm of market value of equity measured at the beginning of the earnings-announcement year.
MB	Market-to-book ratio measured at the beginning of the earnings-announcement year.
Turnover	Average daily turnover rate during the six months prior to the earnings-announcement date.
Institutional Ownership	Percentage of total shares owned by institutional investors at the beginning of the earnings-announcement year.
Momentum	Buy-and-hold return for the 180-day period before the earnings-announcement date.
Hot	Equals 1 if monthly share turnover rate is in the top 30%, 20% or 10% of our sample period, and 0 otherwise.

Table 1.
Descriptive Statistics

Panel A provides descriptive statistics on the variables in our main sample, which consists of 232,992 one-year-ahead analysts' forecasts issued from 2005 to 2015. For each variable, the following pooled distributional summary statistics are reported: sample minimum (Min), 25^{th} percentile (P25), average (Mean), 50^{th} percentile (Median), 75^{th} percentile (P75), maximum (Max), and standard deviation (SD). Panel B reports the means of our main dependent variable of interest, *Optimism*, between the earnings forecasts issued by state-owned (*GovBro*=1) and non-state-owned (*GovBro*=0) brokerage firms, as well as their mean differences, and between the event (*Event*=1) and non-event (*Event*=0) periods, as well as their mean differences. The bottom row of the rightmost column reports the pooled difference-in-difference estimate. *T*-statistics based on robust standard errors are reported in parentheses, and significance levels are indicated by *, **, *** for 10%, 5%, and 1% respectively. Variables definitions are reported in Table A2; variables denoted *(Raw)* are the un-scaled versions of their counterparts.

Panel A: Distributional Summary Statistics

	Min	P25	Mean	Median	P75	Max	SD
GovBro	0.00	1.00	0.86	1.00	1.00	1.00	0.34
Rescue	0.00	0.00	0.21	0.00	0.00	1.00	0.41
Meeting	0.00	0.00	0.08	0.00	0.00	1.00	0.28
Event	0.00	0.00	0.25	0.00	1.00	1.00	0.43
Optimism	0.00	0.16	0.45	0.43	0.72	1.00	0.32
Accuracy	0.00	0.37	0.63	0.73	0.92	1.00	0.33
Firmexp	0.00	0.04	0.38	0.29	0.68	1.00	0.34
Genexp	0.00	0.25	0.52	0.52	0.80	1.00	0.31
Frequency	0.00	0.17	0.50	0.50	1.00	1.00	0.38
Companies	0.00	0.11	0.36	0.27	0.53	1.00	0.30
Industries	0.00	0.09	0.33	0.24	0.50	1.00	0.31
Horizon	0.00	0.33	0.57	0.57	0.89	1.00	0.32
Brokersize	0.00	0.25	0.50	0.47	0.76	1.00	0.31
FGap	0.00	0.00	0.45	0.30	1.00	1.00	0.43
Raw Optimism	-0.51	-0.01	0.12	0.05	0.18	1.47	0.28
Raw Accuracy	0.00	0.03	0.18	0.09	0.22	1.47	0.25
Raw Firmexp	0.00	43.00	550.96	323.00	842.00	2,725.00	635.22
Raw Genexp	4.00	694.00	1,398.21	1,292.00	2,011.00	3,565.00	883.50
Raw Frequency	1.00	2.00	3.78	3.00	5.00	14.00	2.70
Raw Companies	2.00	12.00	24.13	19.00	31.00	125.00	19.16
Raw Industries	1.00	3.00	6.12	5.00	8.00	26.00	4.46
Raw Horizon	10.00	154.00	230.21	230.00	330.00	403.00	103.64
Raw Brokersize	7.00	30.00	45.59	43.00	59.00	100.00	22.30
Raw FGap	0.00	30.00	111.41	65.00	127.00	3,266.00	165.24

Panel B: Earnings-Forecast Optimism

		Optimism			
	N	Total Sample	*GovBro*=0	*GovBro*=1	*Diff(1-0)*
Event=0	174,044	0.4646***	0.4684***	0.4640***	-0.0044*
					(-1.937)
Event=1	58,947	0.4175***	0.4031***	0.4200***	0.0170***
					(4.768)
Diff(1-0)	232,991	0.0471***	0.0653***	0.0439***	0.0214***
		(31.426)	(16.723)	(27.063)	(5.059)

Table 2.
Government Intervention Periods and Earnings-Forecast Optimism

This table reports the results of OLS regressions of *Optimism* on an event indicator (*Rescue*, *Meeting*, or *Event*), an indicator for a state-owned brokerage firm (*GovBro*), an interaction of the two indicators, and analyst-level control variables. Column 1 examines differential forecast optimism during the market-rescue events (*Rescue*); column 2 examines differential forecast optimism during the National Congress meetings (*Meeting*); and column 3 examines differential forecast optimism during both types of events (*Event*). All specifications include year- and industry-fixed effects. T-statistics, reported in parentheses, are based on two-way-cluster robust standard errors, clustering at the analyst and year levels. Significance levels are indicated by *, **, *** for 10%, 5%, and 1% respectively. Variables are defined in Table A2.

	Optimism		
	(1)	(2)	(3)
GovBro × *Rescue*	0.0105***		
	(3.757)		
Rescue	-0.0452***		
	(-4.596)		
GovBro × *Meeting*		0.0283**	
		(2.615)	
Meeting		-0.0384	
		(-1.314)	
GovBro × *Event*			0.0159***
			(4.200)
Event			-0.0334
			(-1.320)
GovBro	-0.0061**	-0.0067*	-0.0081*
	(-2.610)	(-2.215)	(-2.226)
Firmexp	-0.0082*	-0.0077*	-0.0079*
	(-2.061)	(-2.049)	(-2.018)
Genexp	-0.0017	-0.0013	-0.0014
	(-0.391)	(-0.277)	(-0.314)
Frequency	0.0338***	0.0333***	0.0336***
	(13.393)	(12.765)	(12.212)
Companies	-0.0187**	-0.0198**	-0.0194**
	(-2.469)	(-2.722)	(-2.658)
Industries	0.0243***	0.0245***	0.0244***
	(3.946)	(3.978)	(3.997)
Horizon	0.3183***	0.3187***	0.3175***
	(8.177)	(8.854)	(8.610)
Brokersize	0.0094**	0.0093**	0.0093**
	(2.377)	(2.315)	(2.344)
Year FE	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes
Observations	232,991	232,991	232,991
Adj R^2	0.1158	0.1150	0.1151

Table 3.

Heterogeneous Effects on Earnings-Forecast Optimism by Brokerage, Covered-Firm, and Analyst Type

This table reports the results of estimating a variant of Eq., (2) in which we decompose the *GovBro* indicator into *GovBro&Type* and *GovBro&Non-Type*, where *Type* (*Non-Type*) is an indicator that takes a value of 1 (0) if the analyst's brokerage firm satisfies (does not satisfy) a particular attribute. For brevity, only the coefficients on the interaction terms are reported. In Panel A, "Type" denotes forecasts by analysts employed in brokerage firms in which the central or local government owns more than 50% of the shares in column 1; brokerage firms with more than 20% of annual analyst turnover in column 2; and brokerage firms with CSRC-connected senior managers in column 3. In Panel B, "Type" denotes forecasts issued for firms with large capitalization (i.e. the top 500 firms based on market capitalization) in column 1; firms in industries supported by the Five-Year plan in column 2; and SOEs in column 3. In Panel C "Type" denotes forecasts issued by analysts who are designated as "star" analysts by the *New Fortune* magazine as of the forecast date in column 1; analysts designated "stars" within three years prior to the forecast date in column 2; and analysts with senior titles, such as "chief analyst," "senior analyst," "vice president," or "managing director" in column 3. All specifications include *Type* and *Non-Type* indicators as controls as well as analyst controls and industry- and year-fixed effects as in Table 2. T-statistics, reported in parentheses, are based on two-way-cluster robust standard errors, clustering at the analyst and year levels. Significance levels are indicated by *, **, *** for 10%, 5%, and 1% respectively. All variables are defined in Table A2.

	Panel A: By Brokerage Firm Type		
	(1)	(2)	(3)
Type =	High State Ownership	High Analyst Turnover	CSRC Manager
GovBro&Type×Event	0.0253***	0.0506***	0.0204***
	(3.877)	(6.963)	(5.419)
GovBro&Non-Type×Event	0.0146***	0.0154***	0.0135**
	(4.109)	(4.096)	(3.162)
Controls	Yes	Yes	Yes
Observations	232,991	232,991	232,991
Adj R^2	0.1152	0.1153	0.1152
p-Value of F-Test	0.0313	0.0016	0.0830
	Panel B: By Covered Firm Type		
	(1)	(2)	(3)
Type =	Large Mcap	Supported Industries	SOE Firms
GovBro&Type×Event	0.0330***	0.0204	0.0384**
	(4.892)	(1.135)	(2.425)
GovBro&Non-Type×Event	-0.0053	0.0146*	0.0105***
	(-1.004)	(2.190)	(4.820)
Controls	Yes	Yes	Yes
Observations	232,991	232,991	232,991
Adj R^2	0.1158	0.1153	0.1153
p-Value of F-Test	0.0031	0.8041	0.0758
	Panel C: By Analyst Type		
	(1)	(2)	(3)
Type =	Star (Now)	Star (3-Years)	High-Title
GovBro&Type×Event	0.0137*	0.0132*	0.0083*
	(2.047)	(2.070)	(2.033)
GovBro&Non-Type×Event	0.0164***	0.0176**	0.0170***
	(3.504)	(2.752)	(3.811)
Controls	Yes	Yes	Yes
Observations	232,991	232,991	232,991
Adj R^2	0.1151	0.1151	0.1152
p-Value of F-Test	0.7624	0.6805	0.2026

Table 4.
Stock-Recommendation Optimism

This table reports the results of OLS regressions of analysts' recommendations (*REC*) on an event indicator (*Rescue*, *Meeting*, or *Event*), an indicator for a state-owned brokerage firm (*GovBro*), an interaction of the two indicators, and analyst-level control variables. The dependent variable *REC* assigns the recommendations "strong buy," "buy," "hold," "sell," and "strong sell" the numerical values of 1, 0.75, 0.5, 0.25, and 0 respectively. Column 1 examines differential recommendations during market-rescue events (*Rescue*); column 2 examines differential recommendations during the National Congress meetings (*Meeting*); and column 3 examines differential recommendations during both types of events (*Event*). All specifications include industry- and year-fixed effects. T-statistics, reported in parentheses, are two-way-cluster robust standard errors, clustering at the analyst and year levels. Significance levels are indicated by *, **, *** for 10%, 5%, and 1% respectively. Variables are defined in Table A2.

	Recommendation Optimism		
	(1)	(2)	(3)
GovBro × *Rescue*	0.0307*		
	(2.081)		
Rescue	-0.0348		
	(-0.745)		
GovBro × *Meeting*		0.0403*	
		(2.062)	
Meeting		-0.0386	
		(-1.366)	
GovBro × *Event*			0.0316**
			(2.238)
Event			-0.0190
			(-0.571)
GovBro	-0.1016***	-0.0990***	-0.1031***
	(-6.186)	(-5.651)	(-6.138)
Firmexp	-0.0322**	-0.0322**	-0.0326**
	(-2.961)	(-3.025)	(-3.031)
Genexp	0.0376*	0.0375*	0.0377*
	(1.839)	(1.850)	(1.854)
Frequency	0.2630***	0.2630***	0.2631***
	(14.572)	(14.566)	(14.593)
Companies	-0.2265***	-0.2266***	-0.2267***
	(-11.019)	(-11.054)	(-11.024)
Industries	0.0563**	0.0563**	0.0563**
	(3.162)	(3.162)	(3.165)
Horizon	-0.0062	-0.0081	-0.0082
	(-0.659)	(-0.638)	(-0.762)
Brokersize	0.0365	0.0364	0.0366
	(1.037)	(1.030)	(1.042)
Year FE	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes
Observations	284,891	284,891	284,891
Adj R^2	0.0831	0.0831	0.0831

Table 5.
Earnings-Forecast Revision

This table reports the results of OLS regressions of earnings-forecast revisions (*Revision*) on an event indicator (*Rescue*, *Meeting*, or *Event*), an indicator for a state-owned brokerage firm (*GovBro*), an interaction of the two indicators, and analyst-level control variables. Column 1 examines differential revision magnitudes during the market-rescue events (*Rescue*); column 2 examines differential accuracy during the National Congress meetings (*Meeting*); and column 3 examines differential accuracy during all intervention event periods (*Event*). All specifications include industry- and year-fixed effects. T-statistics, reported in parentheses, are based on two-way-cluster robust standard errors, clustering at the analyst and year levels. Significance levels are indicated by *, **, *** for 10%, 5%, and 1% respectively. Variables are defined in Table A2.

	Revision		
	(1)	(2)	(3)
GovBro × *Rescue*	0.0190**		
	(2.536)		
Rescue	-0.0676***		
	(-4.183)		
GovBro × *Meeting*		-0.0083	
		(-1.345)	
Meeting		0.0619***	
		(4.482)	
GovBro × *Event*			0.0163**
			(2.304)
Event			-0.0386**
			(-2.926)
GovBro	-0.0053	0.0013	-0.0054
	(-0.865)	(0.207)	(-0.819)
Firmexp	-0.0441***	-0.0437***	-0.0439***
	(-9.942)	(-9.291)	(-9.628)
Genexp	0.0157**	0.0163**	0.0157**
	(2.557)	(2.590)	(2.513)
Frequency	-0.0005	0.0007	-0.0003
	(-0.145)	(0.224)	(-0.082)
Companies	0.0087	0.0084	0.0076
	(1.287)	(1.350)	(1.202)
Industries	-0.0062	-0.0063	-0.0062
	(-0.724)	(-0.757)	(-0.742)
Horizon	0.0052	0.0106	-0.0029
	(0.543)	(0.840)	(-0.197)
Brokersize	-0.0017	-0.0021	-0.0015
	(-0.449)	(-0.556)	(-0.406)
Year FE	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes
Observations	57,994	57,994	57,994
Adj R^2	0.0533	0.0528	0.0510

Table 6.
Days Elapsed since Last Forecast

This table reports the results from OLS regressions of the number of days elapsed since the prior forecast (*FGAP*) on an event indicator (*Rescue*, *Meeting*, or *Event*), an indicator for a state-owned brokerage firm (*GovBro*), an interaction of the two indicators, and analyst-level control variables. Column 1 examines differential days elapsed during the market-rescue events (*Rescue*); column 2 examines differential days elapsed during the National Congress meetings (*Meeting*); and column 3 examines differential days elapsed during all intervention events (*Event*). All specifications include industry- and year-fixed effects. T-statistics, reported in parentheses, are based on two-way-cluster robust standard errors, clustering at the analyst and year levels. Significance levels are indicated by *, **, *** for 10%, 5%, and 1% respectively. Variables are defined in Table A2.

	FGAP		
	(1)	(2)	(3)
GovBro × *Rescue*	0.0118**		
	(2.585)		
Rescue	-0.0528		
	(-1.305)		
GovBro × *Meeting*		0.0124*	
		(2.054)	
Meeting		-0.0812***	
		(-4.806)	
GovBro × *Event*			0.0128***
			(3.278)
Event			-0.0448
			(-0.993)
GovBro	-0.0094***	-0.0085***	-0.0104***
	(-3.917)	(-5.089)	(-3.561)
Firmexp	-0.0121**	-0.0112**	-0.0119**
	(-2.955)	(-2.682)	(-2.915)
Genexp	-0.0159***	-0.0162***	-0.0160***
	(-3.471)	(-3.186)	(-3.330)
Frequency	-0.0822***	-0.0828***	-0.0823***
	(-19.441)	(-19.069)	(-19.207)
Companies	0.0141***	0.0120***	0.0134***
	(4.775)	(4.665)	(5.207)
Industries	0.0048	0.0050*	0.0049*
	(1.727)	(2.001)	(1.819)
Horizon	-0.0399***	-0.0507**	-0.0434***
	(-4.411)	(-2.873)	(-3.910)
Brokersize	0.0141***	0.0143***	0.0142***
	(5.186)	(4.489)	(4.899)
Year FE	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes
Observations	135,161	135,161	135,161
Adj R^2	0.0064	0.0069	0.0061

Table 7.
Earnings-Forecast Accuracy

This table reports the results of OLS regressions of forecast accuracy (*Accuracy*) on an event indicator (*Rescue*, *Meeting*, or *Event*), an indicator for a state-owned brokerage firm (*GovBro*), an interaction of the two indicators, and analyst-level control variables. Column 1 examines differential accuracy during the market-rescue events (*Rescue*); column 2 examines differential accuracy during the National Congress meetings (*Meeting*); and column 3 examines differential accuracy of forecasts issued during all intervention event periods (*Event*). All specifications include industry- and year-fixed effects. T-statistics, reported in parentheses, are based on two-way-cluster robust standard errors, clustering at the analyst and year levels. Significance levels are indicated by *, **, *** for 10%, 5%, and 1% respectively. Variables are defined in Table A2.

	Accuracy		
	(1)	(2)	(3)
GovBro × *Rescue*	-0.0103***		
	(-4.513)		
Rescue	0.0170		
	(1.082)		
GovBro × *Meeting*		-0.0106**	
		(-2.376)	
Meeting		0.0306	
		(1.686)	
GovBro × *Event*			-0.0103**
			(-3.168)
Event			0.0129
			(0.547)
GovBro	0.0035	0.0022	0.0039
	(1.340)	(0.935)	(1.325)
Firmexp	0.0115***	0.0107***	0.0114***
	(3.366)	(3.265)	(3.402)
Genexp	0.0083*	0.0083*	0.0083*
	(1.888)	(1.934)	(1.868)
Frequency	-0.0250***	-0.0248***	-0.0249***
	(-5.882)	(-5.680)	(-5.797)
Companies	0.0007	-0.0006	0.0008
	(0.088)	(-0.081)	(0.110)
Industries	-0.0309***	-0.0303***	-0.0309***
	(-3.601)	(-3.516)	(-3.604)
Horizon	-0.4658***	-0.4669***	-0.4657***
	(-20.640)	(-24.123)	(-22.684)
Brokersize	0.0018	0.0020	0.0018
	(0.365)	(0.391)	(0.364)
Year FE	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes
Observations	232,991	232,991	232,991
Adj R^2	0.2188	0.2184	0.2188

Table 8.
Robustness

This table reports robustness tests of our main results. Columns 1-3, Panel A, provide estimates of the relative degree of selection in unobservables that would make the coefficients on *GovBro* × *Rescue*, *GovBro* × *Meeting*, or *GovBro* × *Event* in Table 2 zero, respectively. We report the δ statistic, following Oster (2019), assuming that the inclusion of unobserved variables would produce a maximum R^2 of 1. Panel B considers alternative fixed effects structures and uses unscaled variables: it reports the results of OLS regressions of unscaled forecast optimism [*Optimism (Raw)* is the difference between analyst EPS forecast and actual EPS, deflated by price at the beginning of the year] on an event indicator (*Event*), an indicator for a state-owned brokerage firm (*GovBro*), an interaction of the two indicators, and unscaled counterparts of analyst-level control variables (as in Table 2). Panel C considers alternative dependent variables or samples. Columns 1-3, Panel C, report regression estimates based on the same explanatory variables as in column 3, Table 2, but consider the following dependent variables: an alternative measure of forecast optimism *(Optimism2)* and accuracy *(Accuracy2)* defined using two-year-ahead earnings forecasts in columns 1 and 2. Columns 3-5, Panel C, report regression estimates based on the same specification as in column 3, Table 2, but using a different sample: column 3 uses only the sample of each analyst's last forecast in a quarter, column 4 excludes the second market rescue period from the sample, and column 5 uses a propensity-score-matched sample. All specifications include year- and industry-fixed effects. T-statistics, reported in parentheses, are based on two-way-cluster robust standard errors, clustering at the levels of the fixed effects in Panel B and at the analyst and year levels in Panel C. Significance levels are indicated by *, **, *** for 10%, 5%, and 1% respectively. Variables are defined in Table A2.

Panel A: Bounding the Effect of Omitted Variables using Oster (2019)

DV=	*Optimism*		
Primary Var=	*GovBro* × *Rescue*	*GovBro* × *Meeting*	*GovBro* × *Event*
	(1)	(2)	(3)
δ	-.005071	-.006393	-.00654

Panel B: Using Alternative Fixed Effects Structures and Raw (Unscaled) Variables

	Optimism (Raw)			
	(1)	(2)	(3)	(4)
GovBro × *Event*	0.0007***	0.0006**	0.0006**	0.0007**
	(3.249)	(2.312)	(2.391)	(2.242)
Controls	Yes	Yes	Yes	Yes
Firm-Year FE	Yes	Yes	Yes	Yes
Brokerage FE	Yes	No	No	No
Analyst FE	No	Yes	No	No
Firm-Broker FE	No	No	Yes	No
Firm-Analyst FE	No	No	No	Yes
Observations	228,934	226,283	216,610	188,165
Adj R^2	0.6316	0.6570	0.6957	0.7491

Panel C: Using Alternative Dependent Variables or Samples

DV =	*Optimism2*	*Accuracy2*	*Optimism*		
Sample =	Using Two-Year Ahead Forecast	Using Two-Year Ahead Forecast	Last Forecast Only	Exclude $2^n d$ Market Rescue	Propensity Score Matched Sample
	(1)	(2)	(3)	(4)	(5)
GovBro × *Event*	0.0180**	-0.0128**	0.0144**	0.0163***	0.0202*
	(2.518)	(-2.664)	(2.671)	(3.749)	(1.868)
Year FE	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes
Observations	184,578	184,578	176,641	224,504	110,907
Adj R^2	0.0663	0.0920	0.1179	0.1157	0.1326

Table 9.
Post Earnings Announcement Drift

This table reports OLS results of regressing cumulative abnormal returns around or following the announcements of fiscal-year earnings on the following explanatory variables: earnings surprise (*Surp*), proportion of analysts covering the firm employed by government brokerage firms (*GovBro%*), the indicator of event year (*Eventy*), and all interactions of these three variables. Main effects for *Eventy* are not reported because they are absorbed by year-month fixed effects. We also include in each specification the following controls: firm size (*Size*), market-to-book multiple (*MB*), share turnover (*Turnover*), institutional ownership (*Institution Ownership*), and stock return momentum (*Momentum*). Columns 1 examines cumulative abnormal returns from -2 days before to 2 days after the earnings announcement (*BHAR (-2,2)*, and columns 2 and 3 examine 3 days to 60 days (*BHAR (3,60)* and 3 days to 90 days (*BHAR (3,90)* after the earnings announcement. Columns 4-6 are estimated on the subsample of "bad news" earnings announcements (negative earning surprises), using *BHAR (-2,2)*,*BHAR (3,60)* and *BHAR (3,90)* respectively. All specifications include industry- and year-month fixed effects. T-statistics, reported in parentheses, are based on two-way-cluster robust standard errors, clustering at the analyst and year levels. Significance levels are indicated by *, **, *** for 10%, 5%, and 1% respectively. All variables are defined in Table A2.

Sample =	(1)	(2)	(3)	(4)	(5)	(6)
	Full Sample			*Bad News Sample*		
Return =	$BHAR$ $(-2,2)$	$BHAR$ $(3,60)$	$BHAR$ $(3,90)$	$BHAR$ $(-2,2)$	$BHAR$ $(3,60)$	$BHAR$ $(3,90)$
GovBro% × *Surp* × *Eventy*	-0.0868	0.7443***	0.7890***	-0.0471	0.5612***	0.8023***
	(-1.360)	(3.563)	(3.728)	(-0.999)	(3.101)	(3.747)
GovBro% × *Surp*	-0.0017	-0.3315**	-0.2403	-0.0160	-0.2009**	-0.2856
	(-0.040)	(-2.606)	(-1.469)	(-0.460)	(-2.106)	(-1.633)
Surp × *Eventy*	-0.0128	-0.4317***	-0.4749***	-0.0260	-0.2505**	-0.3282**
	(-0.267)	(-3.279)	(-3.324)	(-0.696)	(-2.025)	(-2.235)
GovBro% × *Eventy*	-0.0011	0.0026	-0.0106	0.0040*	-0.0040	-0.0157
	(-0.171)	(0.215)	(-0.427)	(1.979)	(-0.300)	(-0.506)
GovBro%	0.0015	-0.0021	0.0050	0.0015	0.0052	0.0141
	(0.620)	(-0.234)	(0.351)	(0.867)	(0.531)	(0.887)
Surp	0.1444***	0.6934***	0.6049***	0.0816	0.4893***	0.4444*
	(2.935)	(3.722)	(2.862)	(1.451)	(3.375)	(1.848)
Size	0.0012	-0.0151***	-0.0149*	0.0008	-0.0160***	-0.0156
	(1.538)	(-3.007)	(-1.859)	(0.790)	(-2.870)	(-1.665)
MB	0.0005	0.0001	0.0004	0.0006	0.0004	0.0000
	(1.611)	(0.096)	(0.329)	(1.512)	(0.320)	(0.005)
Turnover	-0.3595***	-0.3081	-0.6291**	-0.3560***	-0.1986	-0.4712
	(-3.904)	(-1.521)	(-2.058)	(-4.217)	(-0.928)	(-1.402)
Institution Ownership	-0.0001	-0.0004**	-0.0005**	-0.0001	-0.0004***	-0.0005***
	(-1.249)	(-2.494)	(-2.599)	(-0.885)	(-2.981)	(-2.789)
Momentum	0.0255***	0.0040	0.0149	0.0241***	0.0049	0.0114
	(4.961)	(0.259)	(0.819)	(5.518)	(0.324)	(0.542)
Year-Month FE	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes
Observations	9,497	9,517	9,517	6,643	6,653	6,653
Adj R^2	0.0549	0.1527	0.1589	0.0487	0.1713	0.1660

Table 10.
Government Invention Periods and Analysts' Earnings Forecasts:
Hot Markets

This table reports the results of OLS regressions of forecast optimism (*Optimism*), reported in odd columns, or forecast accuracy (*Accuracy*), reported in even columns, on an indicator for hot stock market (*Hot*), an indicator for a state-owned brokerage firm (*GovBro*), an interaction of the two indicators, and analyst-level control variables. In column (1)-(2), (3)-(4), and (5)-(6), *Hot* is a dummy variable which evaluates to one if monthly share turnover rate is in the top 30%, 20% and 10% of our sample period, respectively, and equals zero otherwise. All specifications include industry- and year-fixed effects. T-statistics, reported in parentheses, are based on two-way-cluster robust standard errors, clustering at the analyst and year levels. Significance levels are indicated by *, **, *** for 10%, 5%, and 1% respectively. Variables are defined in Table A2.

	(1)	(2)	(3)	(4)	(5)	(6)
CV =	*Optimism*	*Accuracy*	*Optimism*	*Accuracy*	*Optimism*	*Accuracy*
Hot =	*Top* 30%		*Top* 20%		*Top* 10%	
GovBro × *Hot*	-0.0142***	0.0135**	-0.0184***	0.0143**	-0.0002	0.0152**
	(-5.041)	(2.401)	(-6.245)	(2.578)	(-0.024)	(2.433)
Hot	-0.0322	0.0051	-0.0190	0.0079	-0.0542*	0.0149
	(-1.214)	(0.567)	(-0.686)	(0.966)	(-1.922)	(1.089)
GovBro	-0.0013	-0.0010	-0.0016	-0.0005	-0.0037	0.0008
	(-0.484)	(-0.332)	(-0.615)	(-0.175)	(-1.596)	(0.291)
Firmexp	-0.0079*	0.0114***	-0.0080*	0.0115***	-0.0082*	0.0116***
	(-1.975)	(3.536)	(-1.984)	(3.580)	(-2.031)	(3.634)
Genexp	-0.0010	0.0083*	-0.0009	0.0081*	-0.0012	0.0083*
	(-0.229)	(2.076)	(-0.215)	(2.020)	(-0.279)	(2.080)
Frequency	0.0333***	-0.0249***	0.0335***	-0.0250***	0.0336***	-0.0250***
	(13.172)	(-6.764)	(13.147)	(-6.799)	(13.279)	(-6.844)
Companies	-0.0192**	0.0007	-0.0197**	0.0009	-0.0199**	0.0010
	(-2.359)	(0.082)	(-2.381)	(0.111)	(-2.495)	(0.125)
Industries	0.0246***	-0.0310***	0.0248***	-0.0311***	0.0249***	-0.0311***
	(3.552)	(-3.762)	(3.585)	(-3.773)	(3.700)	(-3.801)
Horizon	0.3273***	-0.4687***	0.3290***	-0.4708***	0.3242***	-0.4679***
	(11.097)	(-23.828)	(10.911)	(-23.633)	(10.319)	(-23.348)
Brokersize	0.0096**	0.0017	0.0095**	0.0017	0.0096**	0.0017
	(2.302)	(0.360)	(2.249)	(0.354)	(2.333)	(0.358)
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes
Observations	232,991	232,991	232,991	232,991	232,991	232,991
Adj R^2	0.1164	0.2190	0.1158	0.2191	0.1155	0.2189