

Article Title: I Know What You Mean: Information Compensation in an Authoritarian Country

Abstract: How do people address information deficiency caused by rigid control of information in authoritarian regimes? We argue that there exists an internally-oriented information compensation approach through which people can glean extra information from official messages domestically. This approach does not violate state regulations directly and allows people to retrieve information not explicitly publicized by the government. We delineate the circumstances of internally-oriented information compensation using the case of China. We conduct trend and text analysis on the data of millions of individual-level actions of Chinese Internet search engines and social media users during a large anticorruption campaign that conspicuously claimed to crack down on influential corrupt leaders without naming who exactly. We show that some Chinese netizens were able to identify the unnamed high-ranking officials targeted by the campaign based on negative official reports about their family members. Some of the netizens even correctly predicted the downfall of the officials months before the government's announcements. As the existing literature is increasingly concerned about the threat of digital authoritarianism on throttling the free flow of information, our findings indicate that some authoritarian citizens, instead of passively accepting the government's information control, acquired their own arts of information self-salvation. This, though not directly challenging the government, constitutes an everyday politics under digital authoritarianism.

Key Words Information Control, Information Compensation, China, Everyday Resistance, Digital Authoritarianism

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Author Bio:

Jiangnan Zhu is an Associate Professor of the Department of Politics and Public Administration at the University of Hong Kong. She is interested in comparative politics, especially corruption, information politics, and political trust in China. She has published in *Comparative Political Studies*, *Public Administrative Review*, *Governance*, *Political Research Quarterly*, *Journal of Contemporary China*, etc.

Chengli Wang (corresponding author) is an Assistant Professor of the School of Public Economic and Administration, Shanghai University of Finance and Economics. He does research in political communication, information technology and politics, and international relations. His most recent publication appears in *International Affairs*, *Comparative Political Studies*, etc.

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Introduction

Authoritarian governments not only closely monitor the traditional press but also conduct censorship of cyberspace by blocking websites they deem illegal, filtering news with off-limits content, and monitoring users' online behaviors (Hachigian 2002; Kalathil and Boas 2003; King et al. 2013). Such controls hinder citizens from freely accessing information, intensifying the existing information deficiency caused by opaque authoritarian politics (Wallace 2016). Yet, not all authoritarian citizens are politically ignorant or passively waiting for what the government feeds them. Many citizens are thirsty for a wider array of information, multiple perspectives, and in-depth reports of the events they are interested in (MacKinnon 2008; Yang 2009; Reuter and Szakonyi 2015). In certain circumstances, some of them even spontaneously seek countermeasures to partially make up for the political information that is missing in domestic official reports (Zhu et al. 2012). We define people's self-motivated behavior to address the undesirable information deficiencies as "information compensation."

One type of information compensation is *externally* oriented, that is turning to sources restricted by the government for more information. For example, in the past, Soviets hoarded shortwave radios to bypass government jamming and receive Western broadcasts (Mikkonen 2010). Nowadays, state online information control can stimulate people to circumvent censorship and access information considered off-limits by the government (Hobbs and Roberts 2018). Nevertheless, using hacking methods and other tools to evade government blockades comes with an entry bar of at least money, technological knowledge, and foreign language skills (MacKinnon 2012), which can be a major deterrent for some. This circumstance brings us to the core question of this research: are there other means to offset information deficits when people cannot afford the cost or risk of entry or simply do not want to cross the line of legality?

We argue that another long-existing approach to compensate for lack of information in authoritarian countries is *internally* oriented. With this strategy, citizens mainly seek clues from the government-controlled domestic information environment. Although the clues in the official discourse are usually subtle, they stimulate people with political instinct to glean extra meaning between lines of official news for what the government is unwilling to disclose directly. The information gleaned from deductive reasoning is often mixed with unverified stories that can be eventually proven true *or* false, yet it may shed some light on the dynamics of opaque authoritarian politics for ordinary people.

We illustrate the process of internally-oriented information compensation by analyzing large and individual-level datasets of real-time search behavior of Chinese Internet users during the recent anticorruption campaign in China. This campaign claimed to crack down on high-ranking corrupt officials as one of its major strategies, which greatly stimulated public curiosity to speculate on who the targeted officials were. We collected data from China's most popular Internet search engine (Baidu) and social media platform (Weibo). By conducting trend analysis and text analysis upon our data, we show how Chinese netizens inferred the identity of the targeted corrupt leaders largely through reasoning of the government's negative reports about family members of the suspected officials. In doing so, some people were able to surmise the government's hidden intention and even the next move. We present evidence that about six months before the government announced the arrests of the suspected politicians, many Chinese netizens, through the internal compensation, had already known who the undisclosed targets of the anticorruption campaign were.

Our findings contribute to the understanding of the "art of being governed" (Szonyi 2017) in authoritarian states. By exploring how ordinary Chinese netizens access

blocked information through mundane quotidian interaction with the government, we demonstrate people's everyday strategies of living with digital authoritarianism, which sometimes constitute "hidden resistance" against information oppression (Scott 1990). While previous literature indicates that most people either remain politically passive, ignorant, and "tamed" by the information-repressive regime (Zuckerman 2015), or fire back against the censorship by aggressively seeking information externally (Antoon de Baets 2002), we show that some people in China also take the middle ground by using internally-oriented approaches to proactively make up for the information shortage without blatantly disregarding government rules. As Scott (2010) argues, grassroots political behavior much of the time lies somewhere between strict compliance and active resistance. In this "everyday politics" under the government's information manipulation, people embrace, comply with, adjust, and contest "norms and rules regarding authority over production of, or allocation of resources" and do so in "quiet, mundane, and subtle expressions and acts" (Kerkvliet 2009: 232). New media, though empowering the autocracies, has also reinforced average people's capacity and ingenuity to work the system. More importantly, although the art of information self-salvation by ordinary people may not challenge authoritarian regimes strongly, directly, and successfully, it can unwittingly affect governing strategies and divert the original policy goals of the government. In the long term, information compensation could result in backlash, as it involves transmission of unverified information among the public, which may inadvertently motivate people to produce and take political rumors as an alternative but credible source of information, resulting in a rather chaotic information environment not necessarily favoring authoritarian regimes.

There are three caveats. First, while emphasizing authoritarian citizens' information compensation behaviors, we do not deny the fact that large numbers of

people are actually politically passive (Chen and Yang 2019). However, as we will discuss in the following section, multiple impulses can stimulate people to compensate for missing political information. We take these incentives as premises in this article and study *how* people compensate for a lack of information, instead of aiming to elucidate “*why* people seek information compensation.” Second, by differentiating the two kinds of information compensation approaches, we do not mean the two approaches are mutually exclusive or that people are divided by the two types of strategies. People in practice may utilize either, both, or neither of the two approaches to extract more information. We here focus on illustrating the circumstance when people do not have or do not want to use the “tech ladders” to climb over the Great Firewall; we discuss how they adapt to the information deficit in their daily lives. Therefore, embracing political communication theories such as the gateway effect (Hobbs and Roberts 2018) and the Streisand effect, we propose in favor of adding a new analytical mechanism to our toolbox to understand the dynamics of information flow in authoritarian countries. Finally, we do not suggest that internally-oriented information compensation can replace freedom of the press. Information compensation has its limitations and may only expand access to information when identifiable clues in a specified context are available.

Information Control and Information Compensation

The fundamental goal of mass media in authoritarian regimes is to support and advance the agenda of the government in power. The mass media are sometimes directly owned and controlled by the government as one instrument together with others to control society (Siebert et al. 1956). Therefore, information is tightly controlled, especially regarding topics that are deemed sensitive by the government, such as political scandals,

elite politics, or large-scale collective actions (King et al. 2013). Governments can distort public perceptions, sometimes actively by spinning or lying about a given topic, while at other times passively by non-discussion or censorship, leaving individuals to fill in the blanks themselves or not realize that something is missing in their knowledge spectrum. For example, during the 2003 SARS epidemic and even the COVID-19 crisis in China, being afraid of social panic and economic disaster, government initially censored information about the diseases, creating serious information deficiencies for the public (Kraus 2004). Meanwhile, recent technological development has given birth to digital authoritarianism, which attempts to keep the public from falling under the influence of online ideological “contamination” (Bamman et al. 2012; Chen and Xu 2017; Han 2018; King et al. 2017).

However, rather than being completely passive or politically ignorant, a portion of authoritarian citizenry are aware of the information deficiency caused by the tight control and are motivated by various impetuses to seek out additional information. Some people believe having more social-political information than a government provides on issues such as politics and economic policies is an advantage that can bring them benefits or help them avoid potential damages. For example, those who received information about the Chernobyl nuclear leakage or aforementioned epidemics ahead of the official announcements had the first-mover advantages of having more opportunities to escape or protect themselves than latecomers during such crises (Plokhy 2018). Investors everywhere, including in democracies, favored by the information disparity tend to earn more profits from the market than those who are not “in the know” (Seale et al. 2001). That is why the Federal Reserve Chairman’s speeches are often considered as a barometer of the macro-economy, and many commercial forecasters are skilled in inferring policy moves based on the wording and frequency of

certain terms appearing in the Chairman's talks (Romer and Romer 2000). In addition to these rational calibrations, the impulse to break through the information blockade can also be a form of "counter-conduct" driven by one's response to repressions (Foucault 2007). Under the Streisand effect, government efforts to suppress a sensational piece of online information can backfire and end up making more trouble for the would-be censor (Nabi 2014) because once people know that information is being blocked from them, they may have a stronger desire to know and spread it (Jansen and Martin 2015). Habit is another impulse pushing people to overcome sudden censorship imposed on their constantly accessed websites (Hobbs and Roberts 2018). Also, some people, even in authoritarian states, might just hold strong political interests and opinions on a variety of sociopolitical issues as found in existing research (McFarland et al. 1996; Lippa and Arad 1999). They are keen to learn a wider array of information and from multiple perspectives.

Therefore, some authoritarian citizens are not satisfied with one-sided messages from the government (Yang 2009; Reuter and Szakonyi 2015). Being conscious about the information deficits and distortions, they are self-motivated to seek countermeasures to offset them in the restricted media environment. We define this phenomenon as "information compensation." Based on where and how they supplement their information, we suggest that information compensation can be further classified as *externally oriented* and *internally oriented*.

Internally and Externally Oriented Information Compensation

Externally oriented compensation consists of technical means to bypass the government's restriction and gain access to otherwise censored materials. For instance, in the Cold War era, the Soviet bloc was one of world's largest consumers of shortwave

radio receivers, which could bypass jamming of Western radio stations.¹ In the Internet age, some Chinese netizens use virtual private networks (VPN) to climb over the imprisonment of the Great Firewall to embrace information from the outside world. However, using these tools has a rather demanding entry bar. Several studies have demonstrated that most of the VPN users in China are relatively well educated, with technological savvy and foreign language skills (MacKinnon 2008). On the other hand, to limit the potential threats caused by information flowing from outside, authoritarian governments could change jamming patterns or tighten management of VPNs, making people's external connections unstable. Some countries, such as Turkmenistan, Iran, and China, even penalize VPN usage. The monetary cost, knowledge required, and political repercussions impede the externally-oriented approach from being used more widely among the populace, particularly for those who have no IT or foreign language skills and for those who do not want to bother crossing the "red line" to read news from foreign sources.

We argue that another, probably long-existing, way to make up for information deficits is internally-oriented. When adopting this approach, the public scrutinizes official messages, and through heuristic learning, reasoning, and peer discussion of clues caught in the context, gleans extra meaning between or behind the lines of official discourse for what the government is unwilling to disclose directly. Unlike the externally-oriented approach, the internally-oriented information compensation strategy does not require the acquisition of any tools, which lowers the monetary and technological barriers for most people. Also, because this approach relies on hidden messages within the internal information environment, it reduces the political risk of

¹ We thank our anonymous reviewer for the information.

getting punished for circumventing the government information blockade. However, this approach does require people to be familiar with the general practices of authoritarian information control and have some political knowledge to some extent, at least in the past without much of the help of the new media.

Living in an information-repressed society, many authoritarian citizens have acquired the art of making educated and often accurate guesses concerning the government's hidden messages from official reports of the state media. For example, people usually interpret articles on the front page of the newspaper by party mouthpieces as important political messages signaling leaders' power. A sudden tightening or loosening of control of certain information, or inconsistency in early and later reports in the official media, may also be taken by people with political instincts as forecasts of potential changes in policies (Huang 2015). For instance, under Stalin, some Soviet people could infer which leaders were losing favor with Stalin after seeing them disappear from his side in previously published group photos.² Those people could also surmise who was outcast by their colleagues by leaders' absence in Politburo meetings reported in the official news, since experience has shown that a disgraced person is generally not allowed to be acknowledged or greeted in public (Fitzpatrick 2000). Similarly, during the Cultural Revolution, savvy readers in China could infer by reading between the lines of *People's Daily* editorials that Mao Zedong was implicitly identifying his political enemies who would likely fall from power soon (Li 2011). Even in China today, some people with political awareness can identify precisely which government unit's view a *People's Daily* article reflects through the pseudonym used by the writing team of the article (Tsai and Kao 2013). Although some of the clues

² "Dr. Kuang talks about how to use historical materials,"

<https://www.youtube.com/watch?v=p8fwKRFZWH4>

might be deliberately left out by the state media for certain intentions (more on this in the section of ancillary discussion), many people learned to appropriate them for their own purposes, such as to have a better knowledge of the regime dynamic or even to push for government accountability, for those politically more active groups (e.g., O'Brien and Li 2006; Stern and O'Brien 2012).

The evolution of information technology has reinforced the power of internally-oriented information compensation in several ways (Joseph 2011). First, technology such as search engines provides people convenience to search for additional information once they catch clues from official reports. Even with information controls like censorship, the possibility of finding more information is greater when searching online than searching through printed documents in a library. Second, new media has allowed people to interact with a wider virtual community than in the old days to have peer discussions and collaboratively infer the hidden messages in official reports. If an issue keeps simmering online, the public's understanding of it will grow as more netizens contribute new evidence and analysis in a discussion board. Finally, new media, such as social media, can lower the knowledge bar and make internal information compensation available to a wider populace. The availability of "push" technology, such as pop-ups, barrage, and forwarding/share functions of new media, helps social concerns reach a larger audience. People may be exposed to others' social-political chats anywhere and at any time, regardless of whether they were originally interested in them. Once an issue calls out the media hounds, even those without strong political instincts might learn and begin to engage with the discussion. Compared with individual or small-group guessing of the hidden messages in official reports in the age of printed media, new media and the Internet have upgraded internally-oriented information compensation to a teamwork of riddle guessing.

The case of China provides a good opportunity to study the process of internally-oriented information compensation in an authoritarian regime with the popularization of social media. In the following, we show how internally-oriented information compensation works in practice in the context of the recent crackdown on some corrupt high-ranking officials in China.

The Mega Tigers Hunted in China's Corruption Crackdown

Xi Jinping started to fight corruption intensively after assuming the role of General Secretary of the Chinese Communist Party (CCP) in late 2012. Over a million officials were punished within a few years. Moreover, from the beginning, the party center made it clear that it would strike both *tigers*—powerful leaders—and *flies*—ordinary officials. Although previous anticorruption campaigns also arrested officials at/above vice-provincial or ministerial levels, former administrations had rarely explicitly emphasized high-level leaders as targets. Therefore, Xi's lofty announcement of a tiger hunt drummed up public speculation that the party center intended to crack down on some "mega tigers," that is, former leaders at top levels, unprecedentedly breaking the traditional mode of elite protection (Manion 2016; Wedeman 2017).

We show public usage of internally-oriented information compensation to predict the targeted officials by focusing on three national-level officials: Zhou Yongkang, Ling Jihua, and Guo Boxiong. Zhou, to date the highest-ranking official prosecuted for corruption in the People's Republic of China (PRC), was a powerful member of the Politburo Standing Committee—the CCP's highest decision-making body—mainly overseeing the security and law enforcement apparatus. Ling, previously the close aide of former President Hu Jintao, was the Vice Chairperson of the Chinese People's Political Consultative Conference, one of China's legislative organs. Finally, Guo

Boxiong was the Vice Chairman of the Central Military Commission, also the highest-ranking military officer jailed for corruption in the PRC.

All of them ran large corruption networks involving their subordinates and family members. Their prominent positions and influence in the party had given them a presumed immunity to corruption investigation. Nevertheless, people started to notice intensive news coverage in official media of the arrest of lower-ranked officials and especially close family members of the mega tigers along with a wealth of negative reports on their family members. In a tightly controlled information environment, Chinese media are usually restrained from reporting outright about family members of high-level officials, not to mention airing negative stories about them. Hence, the now unmasked information was immediately taken by some readers as hints of a big government move. They were motivated to identify the tigers behind the reported subjects and disseminate their interpretations online.

Empirical Strategies and Findings

We empirically substantiate our argument that people can distinguish a government's hidden intentions in our case by going through three sequential explorations. First, we demonstrate that people gave attention to pertinent official reports and further probed backstage stories. Second, we show how people inferred who the targeted officials were by following their observed clues. Third, we further illustrate what Chinese netizens knew about the government's real targets by analyzing netizens' comments following the original official messages. We collected data from two sources: Baidu Index (zhishu.baidu.com) and Weibo (www.weibo.com). Baidu Index is a big data platform based on Baidu, the most widely used Internet search engine within mainland China for websites, keywords, audio files, and images. It has recorded data regarding Chinese

Internet users' daily search behaviors since 2011, including detailed information about popular search terms and the course and critical timing of their transmission. From this platform, we collected media index, search index, and related search profiles. We also analyzed the massive digitalized records on Weibo, the most popular social media in China, to detect citizen-government and citizen-citizen interaction on accessing and spreading information not directly provided by the government. Both Baidu and Weibo strictly follow Chinese government regulations on information control. Therefore, people who use these two platforms can be considered as adopting the approach of the internally-oriented information compensation. This is especially the case for those using Baidu to *search* for information because very likely those people had no better options, such as Google that can only be accessed via VPN in China. Thus, data collected from these platforms lends confidence to the idea of Chinese society's internally-oriented information compensation behaviors. In the following, we provide detailed explanations of the empirical strategies and findings.

1. People gave attention to pertinent official reports and further probed backstage stories.

We first show that people were able to catch clues from official reports. We collected data for the media index and search index of the family members of the three officials from Baidu index. The "media index" is the daily volume of mass media news reports whose titles contain the targeted search terms (e.g., names of the family members of the officials). The "search index" is calculated using a weighted sum of the search volumes of Chinese netizens. The search index and media index feature different data sources and computing methods. Spikes in the two indices reflect a sudden rise of attention given to the targeted search terms by the mass media and the general public, respectively.

In the cases of the three mega tigers, intensive negative coverage of their close family members appeared in official Chinese discourse months before the formal announcement of the downfall of the mega tigers. This can be observed in the media index in Figure 1. For each of the three family members, spike A appears in the same time period of intensive negative reports of each of them, indicating sudden media attention on each individual. All of the reports had strong signs pointing to the mega tigers without directly identifying who they were. For example, in the case of Zhou's son, Zhou Bin (ZB), following a couple of earlier news reports on his connections with gangsters in February, intense media reports arose in late February and March 2014, reflected as spike A, consisting of several adjacent peaks during that period of time in his media index in Figure 1(a). One of the peaks corresponded to a news report by an influential official newspaper, describing that the corrupt rich businessman ZB had extensive connections with government officials and a strong family background. Another report about ZB's family directly mentioned Zhou Yongkang's former name, Zhou Yuangen, along with other details, such as the Chinese Petroleum University, which is well known as Zhou's alma mater, and the oil industry and Sichuan province, which are widely known to have been governed by Zhou.

In the case of Ling, approximately six months before the formal announcement of his investigation, the media released a series of details about the removal of his brother, Ling Zhengce (LZC), from a political position (see spike A in the media index of Ling's brother in Figure 1(b)). The government news agency Xinhua published a fairly suggestive comment, emphasizing that corrupt officials were often bonded by kinship and marriage and raising the question of whether LZC had been protected by his connection in the central government. In the case of Guo, his son Guo Zhenggang (GZG) was detained for investigation by military authorities. Intense coverage by

government's official media report about GZG appeared in March 2015 (see his media index in Figure 1(c)),³ and were also highly suggestive. For example, one article commented by quoting a former PLA general, "*parents* must educate their kids well; they cannot escape with impunity if their children are not behaving themselves." Soon after, another article wrote, "Although GZG is only a 'small tiger,' could there be a 'mega tiger' behind him? As said by the government spokesman: the larger tiger will surely be dug out if one exists." Online appendix A provides examples of major reports at the dates of spike A in the media index of the three cases.

The suggestive wording in the official news was in salient contrast to the usual practice of Chinese media, which unlike their counterparts in democracies, do not have the autonomy to report sensitive issues such as the suspected corruption of high-level officials and their close family members due to the rigid government control of the mass media. But now, in the three cases, several hundred news articles were published directly by well-recognized party mouthpieces, such as the *People's Daily* and Xinhua News Agency, which hints at something unusual. What matters especially in demonstrating the mechanism of internal information compensation is whether the public caught the unusualness and paid attention to these official reports. Figure 1 indicates that the answer is very likely yes.

Figure 1 illustrates that corresponding to the news report waves, especially spike A in the media index, there were search volume increases and spikes in the search index regarding them in the same period of time. This pattern indicates wide public attention on the family members and that the attention was very likely caused by the negative

³ The small bump of GZG's media index preceding Spike A was caused by news of his promotion in January.

official reports about the individuals and probably also the general information atmosphere at that time. During the highest peak time, daily searches of the names of the sons and brothers of the mega tigers reached to over 680,000, 300,000, and 510,000 times, respectively. In contrast, the search frequencies of other common political keywords are usually much lower.⁴ This suggests that a lot of Chinese netizens had sensed the unusualness in the official reports and took it as a clue to search for the reported figures for more information concerning them. For a robustness check of the correlation between the spikes in the media and search indices, we use vector autoregression (VAR) between the two indices. The Granger causality test shows significant causal effects of media indices on the search indices. Impulse response, variance decomposition, and cumulative impulse function also show similar strong patterns. More detailed explanations of various VAR results are provided in online Appendix B.

Figure 1 inserted here

2. People connected family members reported in official media to the mega tigers

Next, we show how people inferred who the targeted officials were behind those reported members using the “related search profile” generated by the Baidu Index. It provides keywords that are often searched together with the original search terms during defined periods of time. The mapping helps to identify Chinese Internet users’ search directions from one term to another, which partially reflects people’s reasoning process. In Figure 2, the large blue dot in the center of each chart is the respective

⁴ For example, the average daily search time for “Belt Road Initiatives” is only 11,074 in usual time. Another example is Ying Yong, an official who suddenly became famous during the COVID-19 crisis because the Chinese central government promoted him from Shanghai to be Party Secretary of Hubei province to fight the emergency. The search time of his name during peak time was 6,550.

reported family member's name—the core term to start a search—and the surrounding dots represent related search terms whose linear distances to the center map out levels of correlation with the core term. Terms having shorter radiuses to the center are more strongly related to the core term based on Baidu's calculation of users' search patterns. Dots' size reflects the search volumes of related terms, with larger sizes indicating higher search volumes. Dots' colors tell the changing trend of search volumes of terms in the defined periods of time. Orange dots are terms whose search index is increasing, whereas green dots are terms whose search index is declining.

We find first that family members' names were surrounded by several related search terms in all three cases, showing that netizens picked up the “hint” very likely in official media and conducted more searches from there. Second, the names of the mega tigers and their pseudonyms were the queries most commonly related to their family members in all three cases. For instance, in the case of ZB, three of the four most popular related search queries referred to his father (orange dots 1, 2, and 4 in chart (a) of Figure 2), and the most-searched terms with the highest user interests related to LZC and GZG were Ling and Guo (orange dot 1 in chart (b) and (c) of Figure 2), respectively. The orange color of these search queries also indicates increasing search volumes for them. Altogether this shows that many people were able to grasp the “keywords” in the widely circulated official reports, such as family names (i.e. Zhou, Ling, and Guo) and former and current positions, as clues to guess and search for the untold mega tigers. However, people's reasoning processes are not always smooth and linear. There were various guesses and sometimes misinformation about who the mega tigers were. For example, when searching ZB, some people also searched Zhou Jiping (green dots 3 and 4 in chart (a)), probably because the latter has the same last name and is also a leader

of the oil industry. Similar misconceptions occurred with searches of LZC and GZG.⁵ Despite all the detour, most people's perceptions of the mega tigers behind the reported figures centered on the correct names.

Figure 2 inserted here

Corresponding to this inference process, Figure 3 shows that spikes in searches of the three mega tigers overlapped with spikes in searches of their immediate family members in terms of timing and volume (see spike A in Figure 3), respectively, months before the formal announcement of the downfall of the corrupt officials (spike B in Figure 3). The overlapped spikes and their consistent slope highly suggest that the heated online search about the three corrupt leaders originated from concerns over their family members. In other words, users in our sample acquired extra information by precisely linking the reported family members with the mega tigers not directly revealed in the official reports.

For a robustness check of this correlation, VAR is also conducted. The results indicate that the amount of media reporting on the mega tigers' family members "Granger-causes" the increase of online search volume of mega tigers. In other words, the sharing of state media stories greatly predicts netizens' online search behavior. Online Appendix B explains in more detail the VAR results. In addition, we tracked the search index and the media index of the corrupt leaders in the 10-month period before the mega tigers were arrested (online Appendix C). No corresponding spikes in the

⁵ For LZC, for example, some people misconnected him to another former Chinese official Linghu An (orange dot 6 in chart (b)). For GZG, some people misconnected him to Guo Meimei (orange dot 8 in chart (c)), the woman involved in the "Red Cross corruption scandal" years ago.

media index of the mega tigers were found during the time period of spike A of the search index. This suggests that the public attention on the mega tigers was not caused by any formal media reports of them, lending additional support that the data pertinence of the search indices between the mega tigers and their respective family members is not coincidental, but guided by public suspicions aroused mainly by the official media reports about these tigers' family members.

Figure 3 inserted here

3. People anticipated mega tigers as the final anticorruption targets before the official announcement.

We further illustrate people's reasoning results using text analysis of posts on Weibo, the popular social media in China. We first traced the most-cited posts on Weibo regarding each of the three reported family members of the mega tigers within 24 hours of the period of spike A in Figure 1. For all three cases, we found that all the most-circulated posts were from Weibo public accounts owned by official media or commercial news sources controlled by the government. These public accounts are used by state media to disseminate their reports and are accessible to all Weibo users.

For example, for Zhou's son, the most-cited post was from *Sina Finance*, entitled "Who is ZB" and published on February 26, 2014, which aroused hundreds of thousands of searches about the link between ZB and Zhou on Baidu. Figure 4 shows that after this article was posted by Sina, not only did netizens' comments follow the story (red dots surrounding the large dot A of *Sina Finance*), it was also reposted by public accounts of other official media, such as *New Weekly* and *Beijing Times* (the large orange dots B and C) and followed by herds of comments, leading to a three-tier attention distribution. For Ling's brother, the most-cited post was from *the People's Daily*, entitled "Shanxi Provincial Political Consultative Conference Chairman LZC

has been expelled from public positions.” For Guo’s son, the most-cited post was also from *the People’s Daily*, entitled “Interpreting the downfall of post-70s general GZG: What signal does the government want to send? You understand.”

Figure 4 inserted here

We collected all the comments and forwards of these most-cited Weibo posts within three days following the first appearance of the original post, to analyze the results of people’s reasoning after reading the official reports.⁶ Because most of these forwards and comments are short messages, their content is difficult to understand unless it is normalized. We process all forwards and comments through two cleanup stages. Online Appendix D explains the processing details.

To analyze the content of the short texts, we establish three categories of themes using a self-compiled slang dictionary to assess the mundane realism of the results. Because of the harsh censorship in China, Chinese Internet users often use linguistic tricks such as homonyms, synonyms, satire, and metaphors when discussing issues that they deem sensitive to ensure that their posts circumvent the censorship. The three categories were “Mega Tigers,” “Downfall,” and “Criticism”. “Mega tigers” referred to netizens’ direct or indirect mentioning of Zhou, Ling, and Guo in their comments, indicating their ability to identify the mega tigers behind the family members that were reported in the mass media.⁷ “Downfall” refers to comments that speculated about the

⁶ We only take into account first-layer reposts, comments, and likes by those who had directly read and transmitted the original posts. Due to technical limitations, we do not count the sublayers of transmission that occurred after the first-layer posts were read.

⁷ “Indirect mentioning” refers to online vocabularies regarding the mega tigers; for instance, people refer to Zhou Yongkang as “instant noodle” because his name “Kang” overlaps with a famous brand of instant noodle “Kang Shifu” in China.

eventual removal of the mega tigers, demonstrating those netizens' anticipation of the downfall of the mega tigers before the official announcement. "Criticism" involved the vocabulary used by netizens to criticize and delegitimize the three corrupt leaders morally or legally. Online Appendix E1 lists the five most commonly used words, which are synonyms of the major categories, and their frequency of appearance for each of the three cases. Online Appendix E2 provides sample comments including the words listed in online Appendix E1 to exemplify messages transmitted among netizens.

Figure 5 presents the percentages of the three categories of comments based on the frequency of keyword appearance. For identification of the mega tigers behind the individuals, the percentages were 62.9%, 48.6%, and 39% for Zhou Yongkang (Zhou Bin), Ling Jihua (Ling Zhengce), and Guo Boxiong (Guo Zhenggang), respectively. In terms of the speculation on the downfall of the mega tigers, the percentages were 27%, 8%, and 23%, respectively. Finally, 1% to 8% of the comments expressed repugnance toward the corruption of the three officials.⁸ When we aggregate these three sets of data, we find that at least five months before the formal announcement, between 62% and 84% of users in the sample had already surmised that these senior leaders were being targeted by the Chinese government.

Figure 5 inserted here

Ancillary Discussions

Both our theoretical and empirical sections have shown that people catching the "clues" in the official media is the linchpin of the internally-oriented information compensation. Thus, the origin of the clues is worthy of additional discussion here. First, some may wonder whether the clues are deliberately left by the government to cue the

⁸ The low percentage of this category is very likely related to netizens' self-censorship.

public. We do not exclude this possibility; sometimes governments and politicians do intentionally leak information under consideration to the public. For instance, in democracies there exists “dog whistle politics,” in which politicians routinely use subtle signals seeking to “surreptitiously communicate support to small groups of impassioned voters whose commitments are not broadly embraced by the body politic” (Lopez 2015: 4; Poynting et al. 2001). Authoritarian governments may also use similar strategy to serve their interests, such as avoiding sudden shocks that may impair socio-economic stability. However, the Chinese state is fragmented, and it is oftentimes difficult to pin down the signal senders and their exact purposes (Stern and O’Brien 2012). We present more discussion about government signaling in online Appendix F.

What matters more in this research is that we found some netizens firmly perceived those official media reports of mega tigers’ family members as the government’s intentional dissemination of information. These people not only identified the mega tigers, but also believed that the government wanted people to know. For them, the game has changed from “I know what you mean” to “I know you know I know.” Such category of netizens in our Weibo dataset account for at least 5%, 4%, and 3%, for the case of Guo, Zhou, and Ling, respectively. This bears important socio-political consequences. Their suspicions over intentional information dissemination by the government means no matter whether or not official reports are government cues, a group of the population will always suspect dishonesty on behalf of the government. They can influence others through online comments and lead more people to be skeptical, constantly guessing whether official messages signal any government intention or future policy changes and even circulating rumors. In addition, we found in our dataset that these more sophisticated netizens tend to be more critical. Considering themselves as having recognized the government’s “tricks,” these bloggers

often write satirical comments showing a sense of contempt for the government, officials in general, or state media and discontent with information control. Online Appendix G shows an iceberg of hundreds of similar types of comments. Their critiques of the government can spread to a wider populace together with their suspicions of government intentions. Hence, even if the clues are deliberate cues, state information manipulation here does not result in the neat agenda setting attempted by the government. It can inadvertently generate information and even behavioral chaos, stimulating social anxiety and distrust of government (DiFonzo and Bordia 2007).

This is also linked to the second concern, whether reports that are not suggestive also stimulate people to conduct information compensation. By our observations, this kind of situation is not rare in China, though more systematic research is needed. Web users sometimes express interpretations and perspectives different from or opposite to what is propagandized by the government (Tang and Huhe 2013). The most recent case is COVID-19. From the end of 2019 to early January 2020, Chinese official media had tried to calm people by denying the resurgence of SARS and emphasizing public health experts' opinions of no human contagion of the virus. Although the official media did not suggest anything serious or the need for protection, such as wearing masks, some netizens questioned the official news and suspected the real situation in their online discussions. Meanwhile, searches for the term "N95 mask" rose high on Baidu ahead of intensive news coverage of wearing masks. Thus, even without suggestive news reports, some people may still conduct information compensation if they sense something unusual from the broad information environment. Online Appendix H provides more details of the case with empirical data. This example bolsters our argument that internally-oriented information compensation for many people is a spontaneous self-salvation of information deficiency under digital authoritarianism.

Conclusion

While previous literature has richly studied the tactics of how governments manipulate information flow, this article credits ordinary people with their capacity to counter the manipulation. We find that in some circumstances, people are self-motivated to seek countermeasures to compensate for information deficiencies caused by censorship. We define this pattern of behavior as information compensation and provide the first empirical evidence of how Chinese netizens carried out internally-oriented information compensation by studying online information about the downfall of three national-level officials during an anticorruption campaign.

Our article has three important implications. First, by connecting big data harvested from real life with theorizing the relationships between people and autocratic regimes, our research is able to reflect more diversified citizen tendencies under digital authoritarianism. We show that not all citizenry in a repressed information environment are passively receiving official messages. Although many citizens are not as politicized as regime “boundary-pushers” who actively interpret government messages to push for changes (O’Brien and Li 2006; Stern and O’Brien 2012), they spontaneously acquired the art of information self-salvation by ascertaining the truth from less than truthful domestic sources to compensate for information unshared by the government. This internally-oriented information compensation strategy, being neither a direct challenge to nor passive compliance of the authoritarian information control, enlarged authoritarian citizens’ knowledge space. In fact, much political behavior by citizens is probably like this, lying somewhere between compliance and active resistance. In this middle ground, the preference of the apolitical majority is not between being governed/repressed and not being governed/repressed, but to interact with regulatory regimes by complying with, adjusting to, and contesting the norms and rules in order

to minimize the costs/risk of being governed.

Second, while information compensation in authoritarian regimes has existed historically, the development of social media and other Web 2.0 techniques has facilitated the effectiveness of the reasoning and spreading among vast audiences. We illustrate this approach rigorously using authoritarian citizens' daily consumption of the Internet, which is also emphasized by recent literature on the Internet's democratization effects (Shirky 2011). The human facet recorded by us helps reveal the existence of people's deep-down dissatisfaction underneath a seemingly peaceful society. This can potentially contribute to understanding why manifest outcomes, such as popular demonstrations and regime breakdown, sometimes occur very suddenly (Huhe et al. 2018).

Third, as a big-data-based study, we focus on conceptualizing and distinguishing the difference among the internal and external approaches to information accessing. Our research opens the door for several avenues of future research to extract more information about political processes and stimulate new theory generation. For instance, how are the two means of information compensation complementarily used by some people? How do people with different compensation approaches, including overseas Chinese with access to free press, interact and perceive others' information? How does information retrieved from the two means affect receivers' political opinions? Answers to these questions can help understand how political power is acquired, exercised, and challenged in everyday politics. Also, how much internally-oriented information compensation is applied differently, if it is used in democracies without information censorship? For example, if some people believe that media is biased, do they utilize this presumption to correct the information received from the source? Does it make

them less or more informed? Future research may study more about the differences and similarities of internally-oriented information compensation in different regimes.

Finally, it should be emphasized that information compensation cannot replace freedom of speech. It is more of a “poor man’s alternative” way to adapt to the non-ideal situation. It relies on information gleaned from official contexts; thus usually those with political knowledge and instinct may be better equipped and be the early cohort of people to use this approach. Actually, many Weibo users in our sample might represent this type of people because Weibo users are more urban, better educated, and richer than the general Chinese Internet population (CNNIC 2018). Future research may try to empirically illustrate the information dissemination waves of inferred knowledge from the earlier cohort to the wider populace and the overall portion of the netizens who can conduct information compensation. In addition, the information extracted cannot always be correct and may sway the general public to believe in messages destructive to the regime. This uncertainty means that information control ultimately is a double-edged sword for authoritarian regimes.

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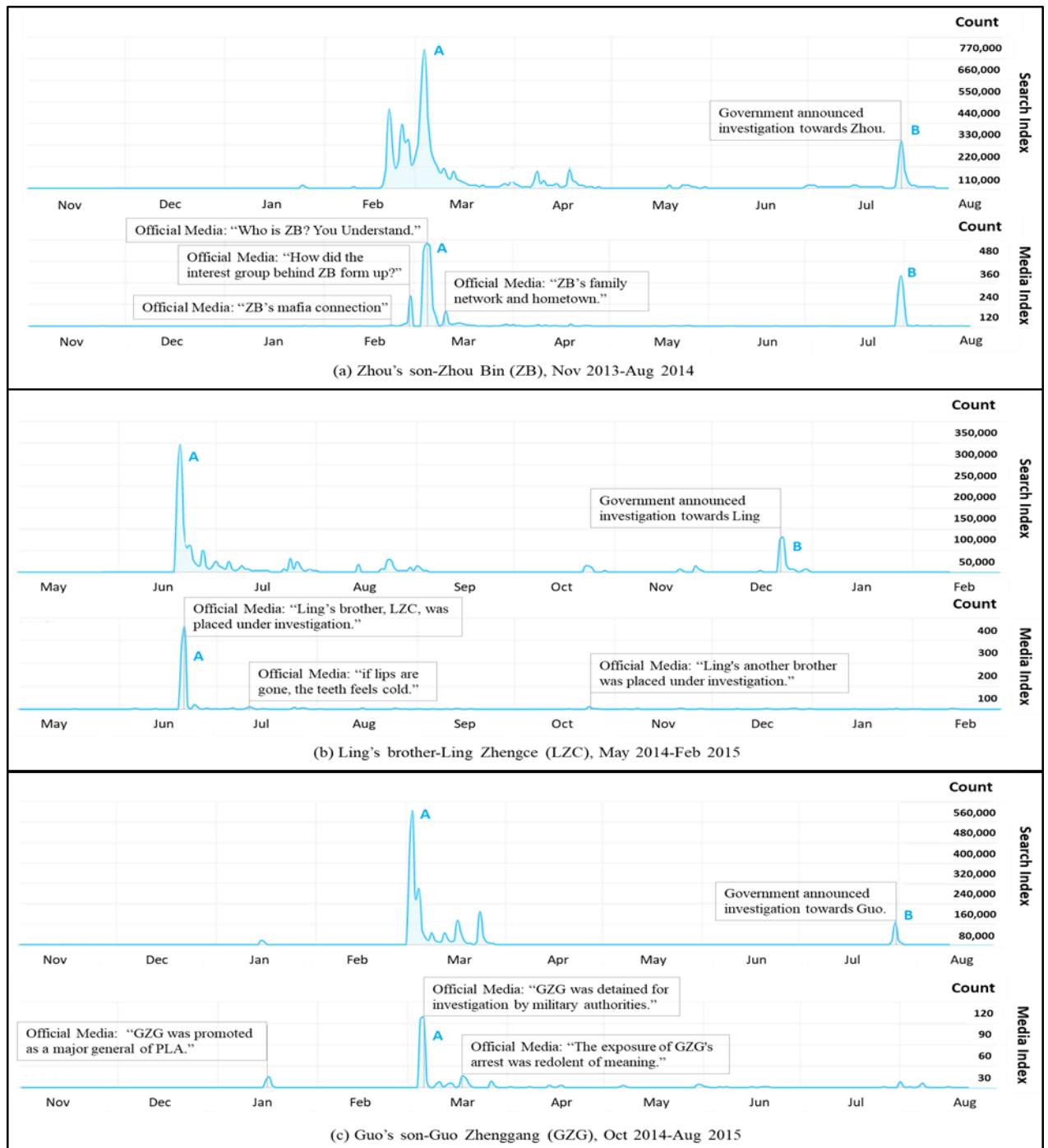
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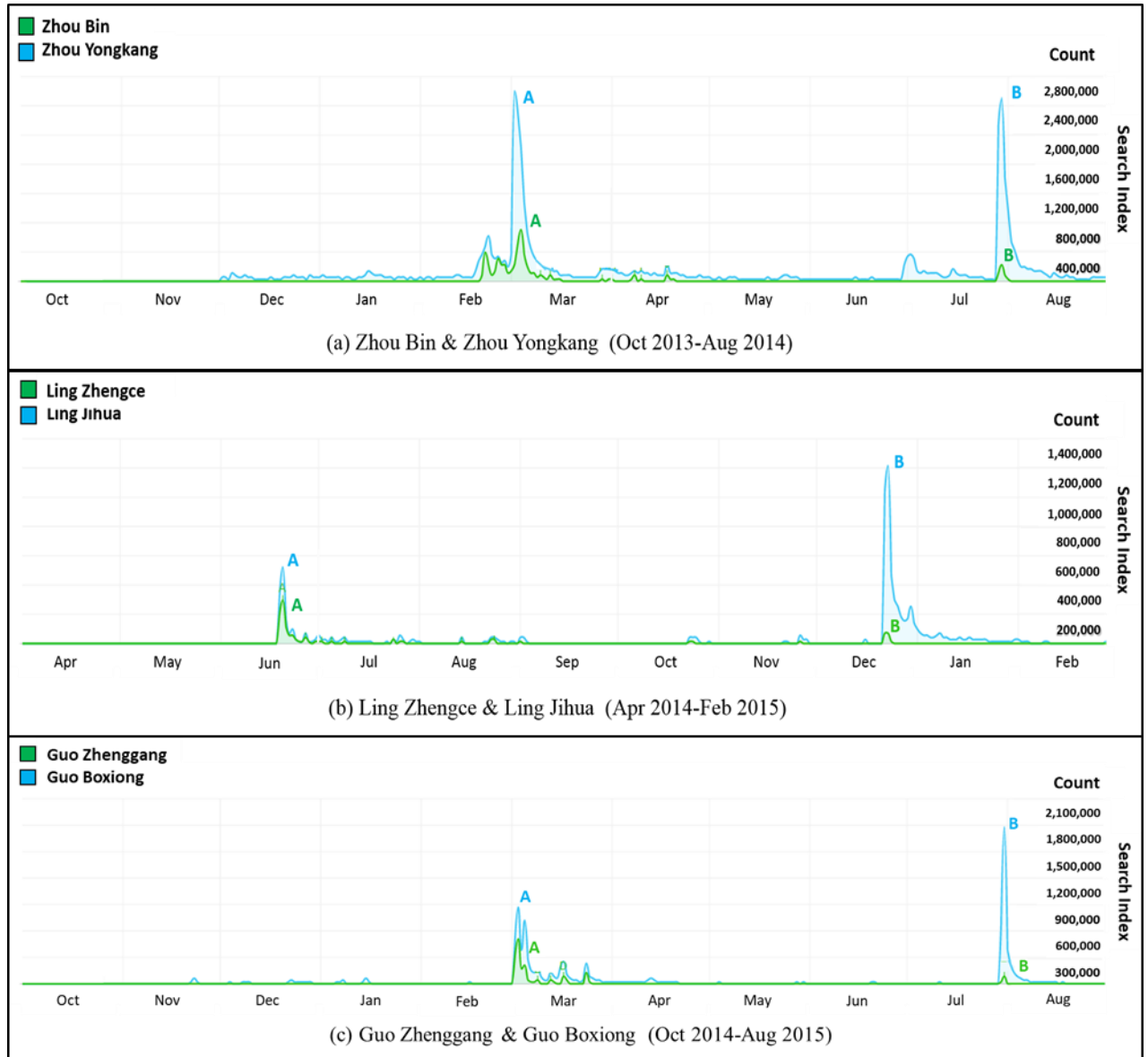
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Figure 1. Search index and media index of mega tigers' family members on the Baidu Index



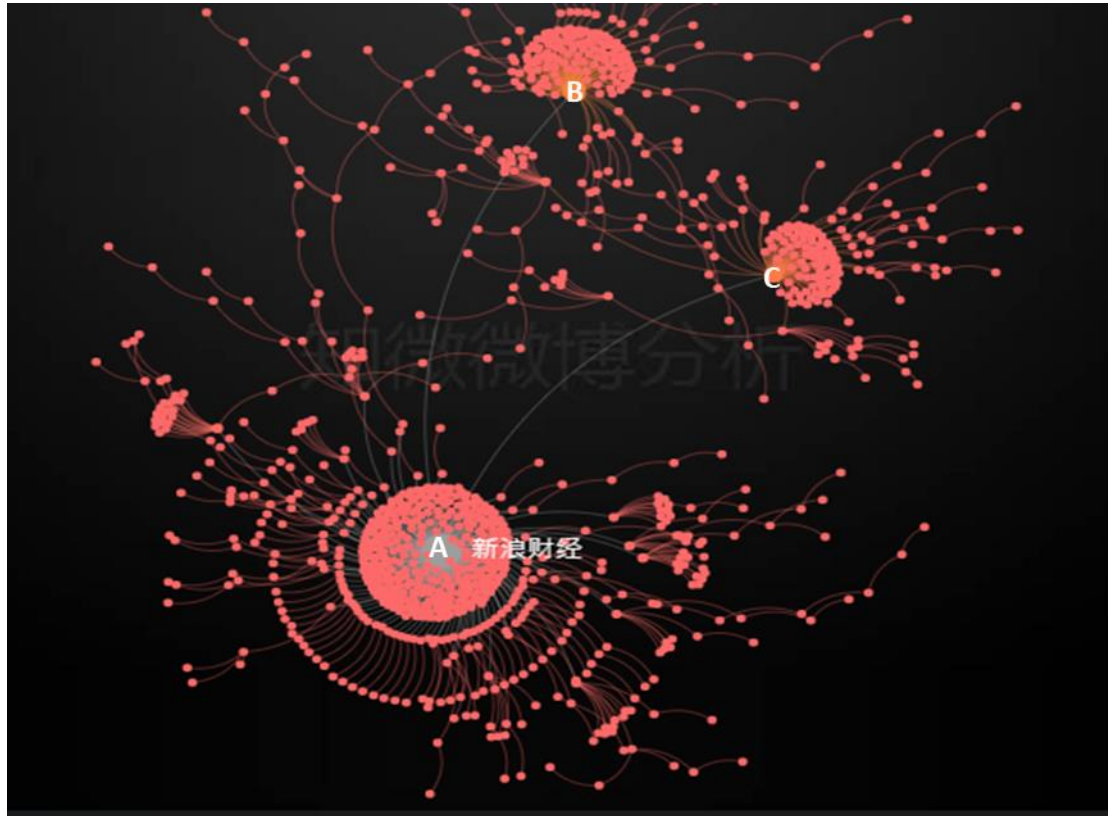
Note: Spike A in each chart occurred during the time period of the intensive negative reports about each family member of the mega tigers. Spike B in each chart occurred during the time period of the downfall of each mega tiger.

Figure 3. Overlapped search index of mega tigers and their family members on the Baidu Index



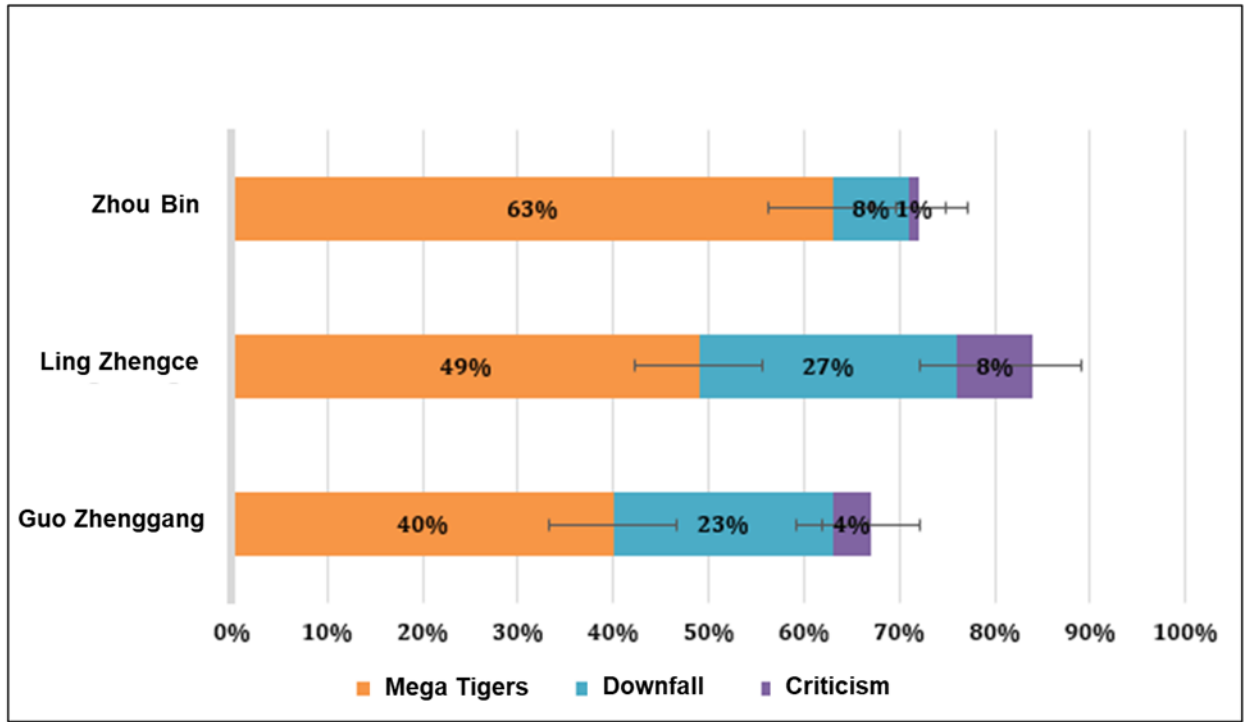
Note: Spike A in each chart occurred during the time period of the intensive negative reports about each family member of the mega tigers. Spike B in each chart occurred during the time period of the downfall of each mega tiger.

Figure 4 Information dissemination of reports of Zhou Yongkang's Son, ZB, on Weibo



Note: A is *Sina finance*, which is under Sina and Sina works with Chinese government closely. B is *New Weekly* and C is *Beijing Times*. Both of them are official media.

Figure 5. Percentages of the three types of comments on Weibo



Notes: Total number of comments collected is 2,1321.

Supplementary Information for Article:

Appendix A. Timeline of official media news reports of the mega tigers' family members

Table A1. Timeline of Reports on Zhou Bin (ZB) and Zhou Yongkang

Report Date	Events Reported	Major Media/ Report Title/ Source
21 February 2014	Liu Han got rich because he built connections with many officials. One of the persons in his network was Zhou Bin, who was a businessman with special background.	<i>The Beijing News (Xinjing Bao)</i> /Sichuan Liu Han Brothers' Wealth Collecting Track Is Suspected Involving Mafia (四川刘汉兄弟涉黑敛财轨迹) http://www.bjnews.com.cn/news/2014/02/21/305838.html accessed on 14 June 2020
27 February 2014	The story of a rich businessman Zhou Bin is very popular these days. Behind his story is of course serious corruption uncovered under the large backdrop of anticorruption in today's China. ...Zhou Bin was able to succeed in corruption because he had very powerful political capital... which protected him.	<i>China Youth Daily</i> */How did the interest group behind Zhou Bin form up? (周滨背后的利益集团是如何形成的) http://www.chinanews.com/gn/2014/02-27/5887834.shtml accessed on 21 May 2017 * published by the Chinese Communist Youth League Central Committee, the official youth organization of the CCP.
1 March 2014	Zhou Bin was taken away by the police for investigation. Mentioned his father's name, fast development of the hometown.	Caixin/Hometown of Zhou Bin became a model (周滨家乡成“康居乡村”先进典型) / http://china.caixin.com/2014-03-01/100645322.html accessed on 30 April 2017.
2 March 2014	A detailed report on Zhou Bin	Sina Finance/Who is Zhou Bin? You Understand (谁是周滨?你懂的) https://freeweibo.com/weibo/3682222030338878 accessed on 30 April 2017
10 March 2014	This article directly mentioned the name of Zhou Bin's father, though obscurely referring to Zhou Yongkang in his former name: Zhou Yuangen. Moreover, it also mentioned the name of Zhou Yongkang's wife; Beijing Petroleum	<i>Elder Newspaper (老年报)</i> /Neighbors Recall Uncles of the Mysterious Businessmen: Helped with law suits and bailouts (乡邻忆神秘富商的叔叔们: 包揽打官司和捞人) / http://news.ifeng.com/history/zhongguoxiandaishi/detail_2014_03/10/34600429_0.shtml accessed on 21 May 2017

	University, which is widely known to be the college that Zhou Yongkang graduated from; and also several officials and businessmen who were already arrested and affiliated with Zhou Yongkang in the oil system and Sichuan province.	
29 July 2014	Zhou Yongkang's case was submitted to investigation.	Xinhua/ "Party Center decided to investigate Zhou Yongkang's disciplinary problems" (中共中央决定对周永康严重违纪问题立案侦查) / http://news.qq.com/a/20140729/086114.htm accessed 30 April 2017.

Table A2. Timeline of Reports on Ling Zhengce (LZC)

Date	Events Reported	Major Media/ Report Title/Source
19 June 2014	Ling Zhengce and Du Shanxue, two Shanxi Province senior officials, were investigated	Caixin/ "Ling Zhengce was suddenly investigated" (令政策突然被查)/
20 June 2014		Xinhua/ "Xinhua News Agency Comments on Ling Zhengce's arrest: It won't help even with connections in the central government" (新华社评令政策被查: 朝里有人也不灵) / http://www.thepaper.cn/newsDetail_forward_1251803 accessed on 30 April 2017
20 June 2014		Xiakedao (Affiliated with <i>People's Daily</i>) / "Ling Zhengce was cracked down: A dream in the capital is suddenly over" (令政策落马: 一朝忽觉京梦醒) / http://opinion.haiwainet.cn/n/2014/0620/c456317-20763924.html accessed on 30 April 2017

Table A3. Timeline of Reports on Gou Zhenggang (GZG)

Report Date	Events Reported	Major Media/ Report Title/ Source
5 March 2015	Liu Yuan was asked to comment about Guo Zhenggang's hold up for	Tencent/"Liu Yuan discussed the military mega tiger: you understand" (刘源谈军队更大“老虎”: 你懂的 /

	corruption investigation; he replied, “You know it that an even larger tiger is to come.”	http://xw.qq.com/cul/20150305040650/NEW2015030504065004 accessed on 30 April 2017
9 March 2015	Liu Jian said that “parents must educate their kids well, they cannot escape with impunity if their children are not behaving themselves.”	<i>China Youth Daily</i> /A military member discussed the investigation of Guo Zhenggang: Parents cannot escape responsibility for their kids’ problems.” (军方委员谈郭正钢被查：孩子不好父母难脱责任)/ http://www.chinanews.com/fz/2015/03-09/7112811.shtml accessed on 30 April 2017
12 March 2015	Although Guo Zhenggang is only a “small tiger,” could there be a “mega tiger” behind him? Using the words of the spokesman of CPPCC, speculation has no value, the larger tiger will surely be dug out, if there exists one...	<i>China Youth Daily</i> / Post-70s Guo Zhenggang became the youngest military tiger; timing of his downfall is very meaningful (70 后郭正钢成最年轻军老虎 落马时间别有深意)/ http://mil.sohu.com/20150312/n409691741.shtml accessed 21 May 2017

Appendix B: Vector Autoregression (VAR) between media indices and search indices

Figures 1 and 3 in the main text show both mega tigers' and their family members' search volume (search index) are highly co-integrated with the sharing of state media (media index) of their family members. There is some concern the spurious correlation between adverse official media reports and Web users' rising search volume at the same period may lead to the two series happen to vary with the same trend. Therefore, a VAR analysis is an appropriate method for the robustness check of our findings. In the following, we show the results of VAR analysis based on the data of the spike A period (within a time range of 30 days ranging from no media reports to the end of the spike of each case). We do this to explore to what extent Web users' online search behavior adapts to the sharing of state media, especially to what extent the online search volume of mega tigers was stimulated by media coverage of mega tiger's family members.

The analytical results of VAR are reported in Table B1. In Models 1 to 3, we display the results of the three cases. Under each model, the first column (Search index 1) reports the estimates for the equation concerning the online search volume of mega tigers' family members, showing the correlation between each family member's media index and search index. The second column under Models 2 and 3 (Search index 2) reports the estimates for the equation of online search volume of the mega tigers, showing the correlation between the family member's media index and mega tiger's search index. Model 1 only displays the search index of ZB because the name "Zhou Yongkang" has become a sensitive word on the Chinese Internet since 2017, and its search index is not publicly available anymore. Fortunately, we can still use the data of two other mega tigers in Models 2 and 3 to test our argument of this article. The length of the lag is selected based on the smallest SBIC values. We display the results of lag 1 or/and lag 3 so that we can observe the immediate response of netizens' online search behavior to the sharing of state media. Moreover, selecting a short lag can somewhat limit the potential influence of rumors on the netizens' search behavior.

While the coefficients estimated for VAR Models 1 to 3 cannot be used directly for causal inference as in an ordinary regression model because of the multivariate nature of the VAR model and multicollinearity among the variables, they are still able to show the magnitude of the historical dynamics of the relationship between search behavior and the sharing of state media. In a less statistically strict sense, the coefficients show a causal relationship to some extent. Even after the attenuation caused by multicollinearity, the first lagged effects of the media index in Models 1 to 3 are significantly associated with the search index for the mega tigers.

The Granger causality test is especially useful in terms of explaining causal inference. It tests the null hypothesis that the past values of media reports/index do not contribute to explaining the current search volume/index. The results of both Model 2 and Model 3 show that the amount of media reports on mega tigers' family members "Granger-causes" the rise of online search volume of mega tigers. This reflects a causal direction running from the government's media reports to Chinese netizens' attention and online search behavior.

Table B1. VAR Results of Media Indices and Search Indices

	Model 1	Model 2		Model 3	
	Search index 1 ZB	Search index 2 LZC	Search index 2 Ling	Search index 1 GZG	Search index 2 Guo
Lag 1	623.24*** (179.34)	2.79* (1.220)	1457.34*** (562.18)	8852.59*** (2142.04)	16785.13*** (3664.46)
Lag 2	-1006.2*** (185.12)			776.31 (2461)	2385.63 (4211.81)
Lag 3	77.99 (172.60)			3477.58 (1828.26)	6245.81* (3127.66)
R ²	0.99	0.51	0.49	0.69	0.74
N=Days	29	28	28	29	29
Granger Test (Prob>chi2)	859.97***	5..39*	6.82**	23.23***	27.44***

Note: ZB=Zhou Bin, LZC=Ling Zhengce, GZG=Guo Zhenggang

Impulse-response confirms the causal relationship (see Figure B1.A, Figure B2.A, and Figure B3.A) indicated in Table B1. Particularly, we can see in Figure B2.A, over one day, the increase of one unit of LZC's media index causes about a 10,000+ unit increase in the search index of Ling Jihua, the real anticorruption target behind LZC. The 95% confidence intervals are above the line of zero (at lag 1), meaning that we can reject the null hypothesis that LZC's media index causes no change in Ling's search index. In Figure B3.A, the increase of one unit of GZG's media index causes about a 40,000+ unit increase in the search index of Guo Boxiong, the mega tiger behind GZG. The 95% confidence intervals are also above the line of zero (at lag 1), meaning that we can reject the null hypothesis. In contrast, the 95% confidence intervals of the response of Guo's search index to GZG's media index always covers the horizontal line of zero at lag 2 and lag 3. This could suggest that the media reports' impact on Web users' search behavior did not last very long. In other words, even if the information was deliberately released by the government to guide public opinion, its effect was short-lived—only about one day. This result might somewhat ease the concern about government opinion-guiding from another angle.

The results of variance decomposition (see Figure B1.B, Figure B2.B, Figure B3.B) and cumulative impulse function (see Figure B1.C, Figure B2.C, Figure B3.C) are generally consistent with the Granger causality test and impulse-response function. In each case, compared to the search index of the family member, the mega tiger's search index is shown to have a more prompt and intensive response to change in the family member's media index. This result partially explains why the mega tiger's searching peaks in Figures 1 and 3 in the main text are higher than those of their family members in the corresponding period. Taking together the information yielded by all the VAR results, we can infer that media reports of mega tigers' family members to a large extent motivated netizen to actively search for relevant information about the mega tigers long before their final downfall.

Figure B1. The Case of Zhou Bin (ZB)

Figure B1A. Impulse Response

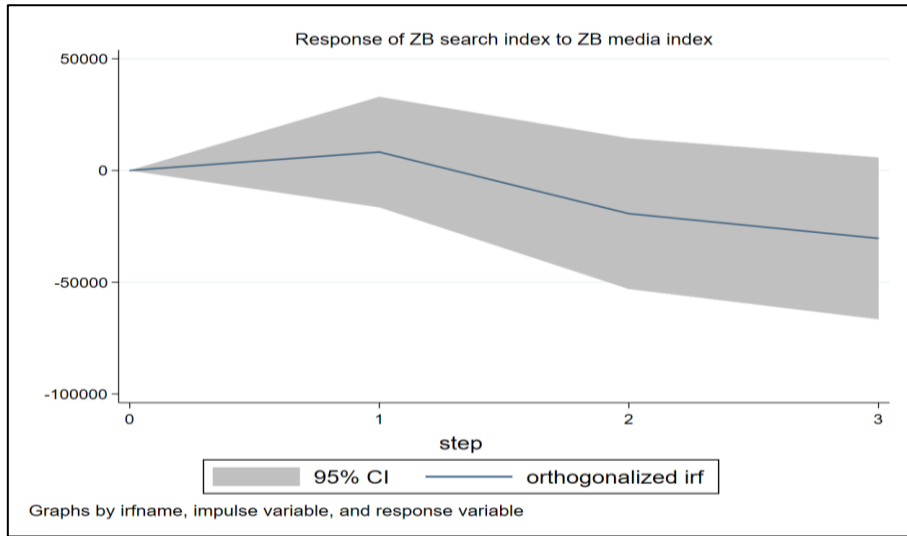


Figure B1B. Variance Decomposition

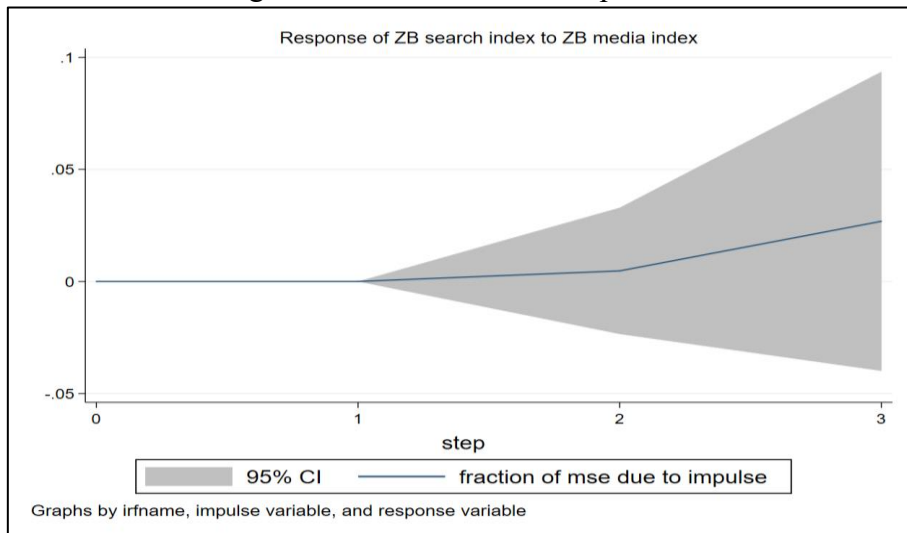


Figure B1C. Cumulative Impulse Function

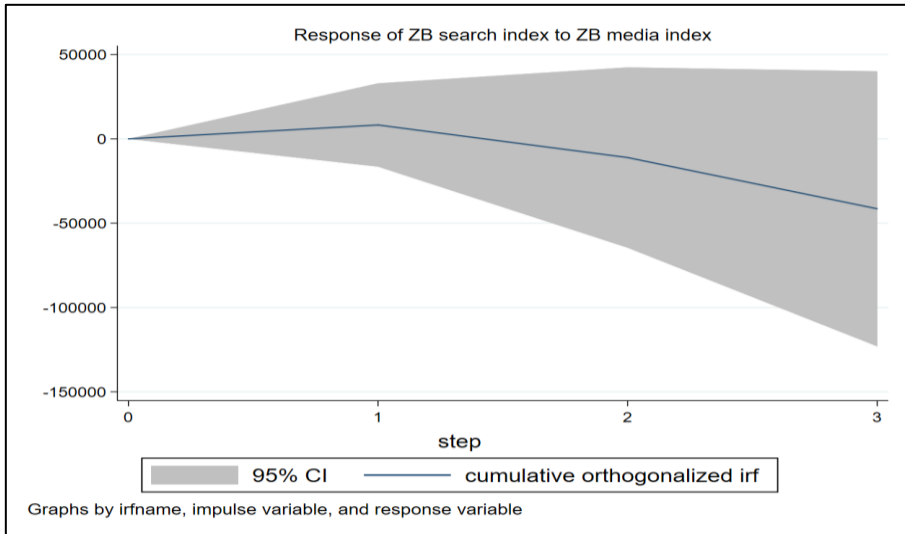


Figure B2. The Case of Ling Zhengce (LZC) and Ling Jihua (LJH)

Figure B2A. Impulse Response

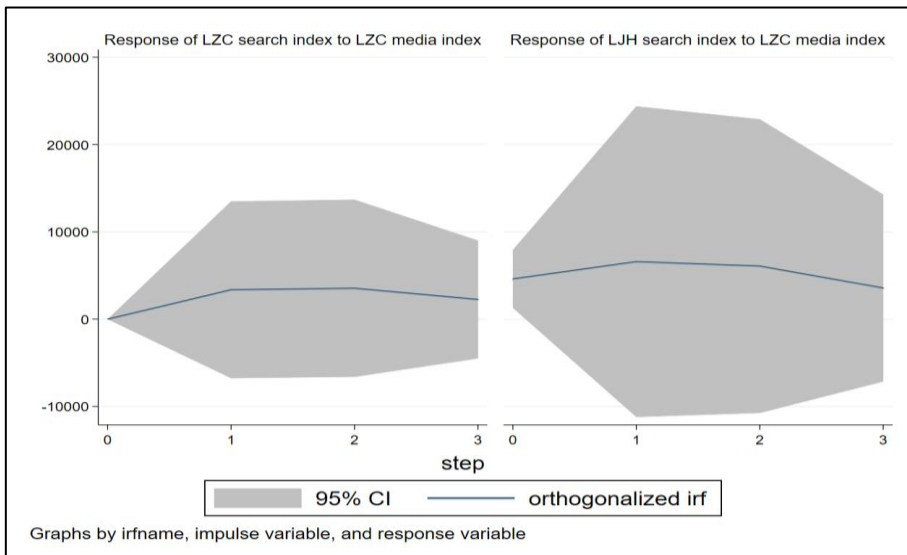


Figure B2B. Variance Decomposition

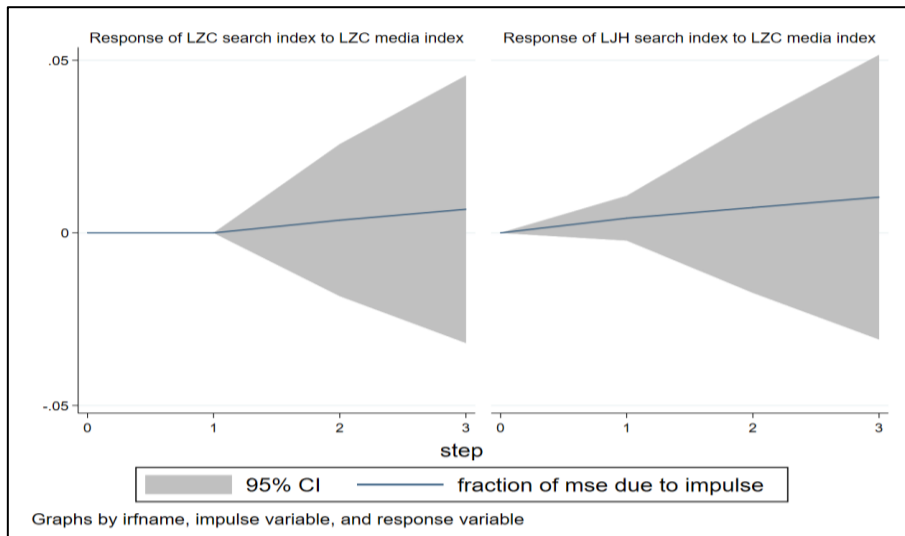


Figure B2C. Cumulative Impulse Function

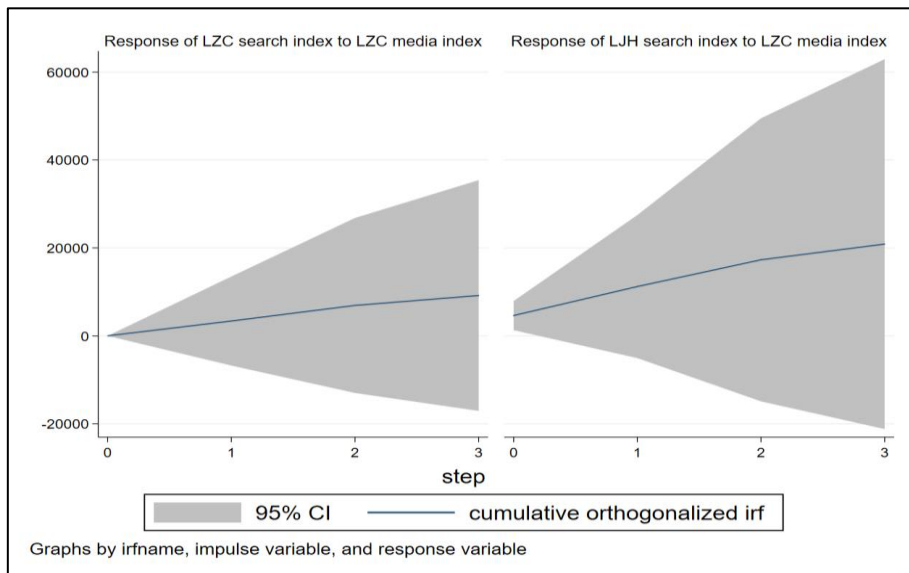


Figure B3. The Case of Guo Zhenggang (GZG) and Guo Boxiong (GBX)

Figure B3A. Impulse Response

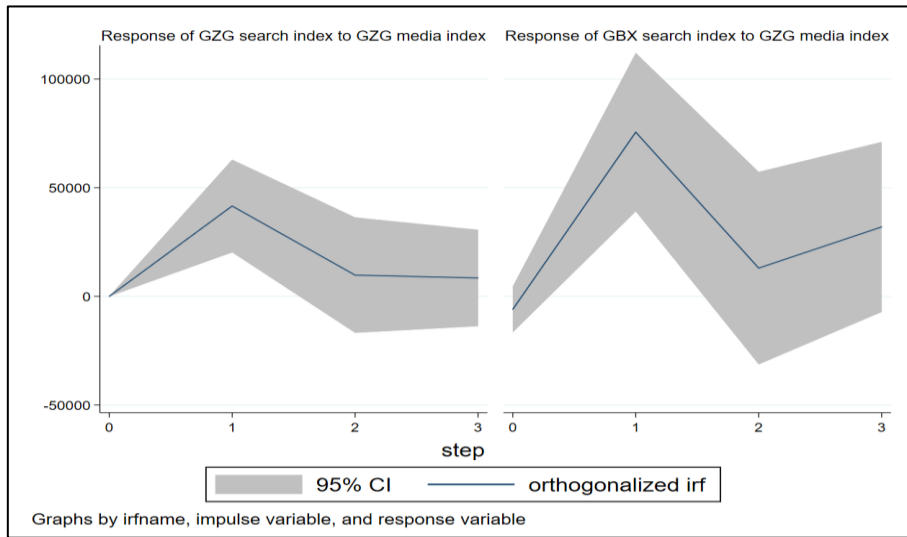


Figure B3B. Variance Decomposition

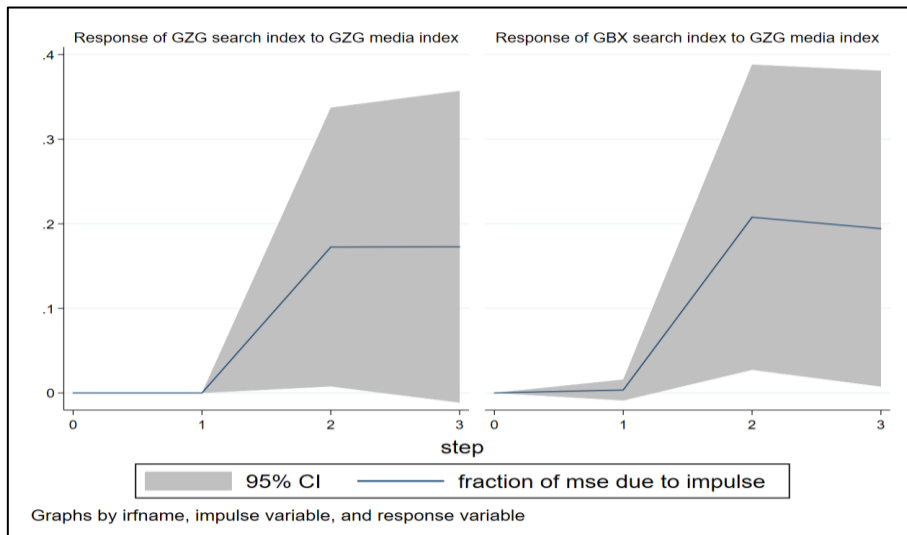
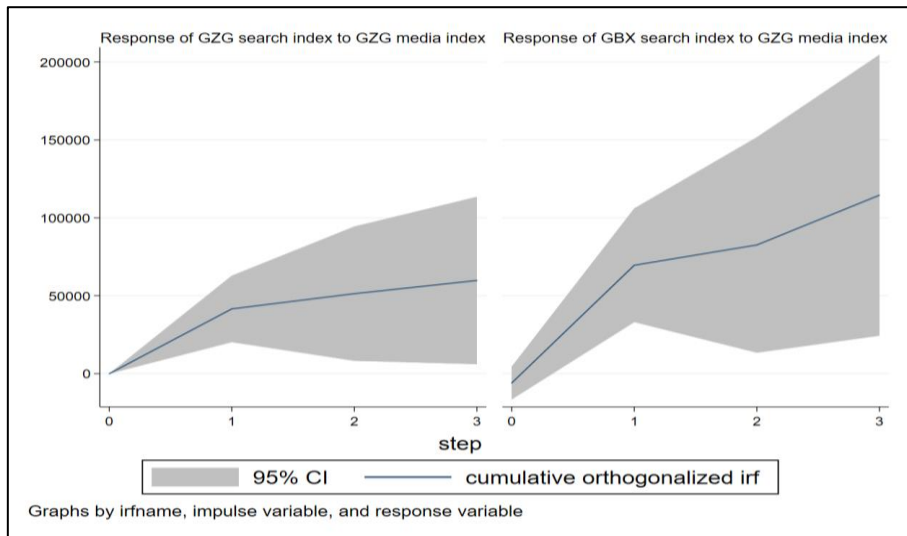
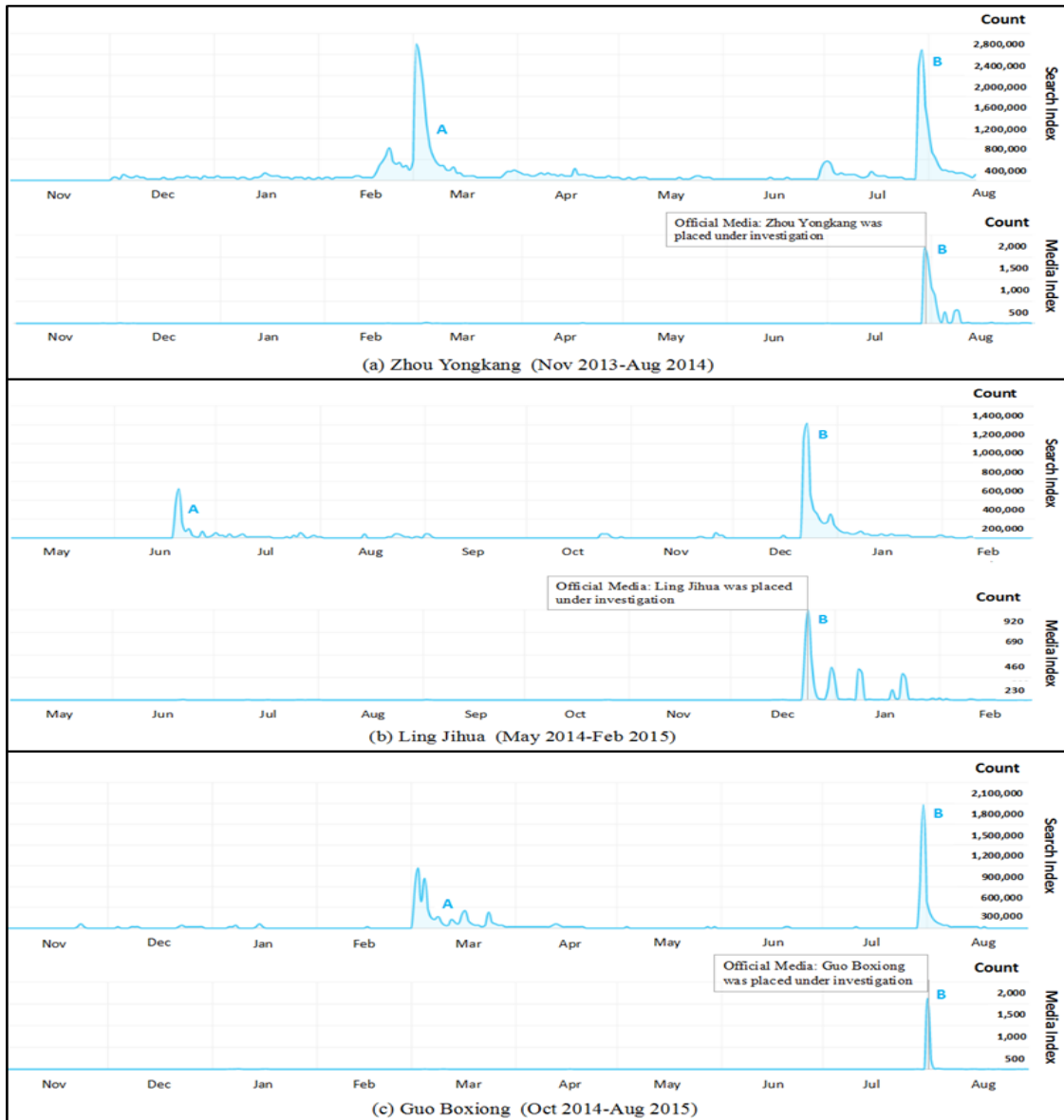


Figure B3C. Cumulative Response Function



Appendix C: Baidu search index and media index of mega tigers



Appendix D: Processing details of Weibo posts, forwards

First, we cleaned up the text as follows:

(1) Removed punctuation, spacing, emoticons, and dates of comments and forwards.

(2) Removed patterns like “转发微博” (*zhuanfa weibo*), which means a forward with no comment. We ignored the automatic forwards because they do not help us to understand the reason of why people spread them.

(3) Removed user’s name and mention like “@ user_name” because they intervene in the frequency counting.

(4) Removed URLs, such as #网页连接# (*wang ye lian jie*), which people used as an external link to provide additional information to support their comments.

Second, we set four rules to normalize the meaning of the forwards that have been re-forwarded across different users:

(1) Pattern one: user_one://@user_two://@user_three: Mega tiger.

(2) Pattern two: user_one: →_→, or “→”, or “最右” (these emojis means “look right”)//@user_two: mega tiger.

(3) Pattern three: user_one: 好像是 or 赞一个 (It looks like that)//@user_two: mega tiger.

(4) Pattern four: user_one: 打虎 (hunting tiger)//@user_two: 周老虎 (tiger Zhou)//@user_three: mega tiger.

We took patterns (1), (2), and (3) as the first user agrees with the last user’s opinion, and we recorded the first user’s comment as “mega tiger.” For pattern four, if one forward contains more than one synonym of a keyword, we only counted it once.

Appendix E1: Text classifier of Weibo comments: Top 5 most-used words in each category

Categories	Zhou Bin (ZB)		Ling Zhengce (LZC)		Guo Zhenggang (GZG)	
	Words	count	Words	count	Words	count
Identify mega tigers	爸爸 Father	2641	计划 Jihua	21	大老虎 Mega Tiger	76
	爹 Daddy	447	哥俩 Brothers	18	伯雄 Boxiong	12
	面 Noodle ^a	225	完成 Wancheng	13	郭主席 Chairman Guo	8
	大老虎 Mega Tiger	162	令家 Ling Family	7	熊 Xiong	8
	康师傅/父 Master Kang ^a	100	令狐 Linghu	5	爹 Daddy	7
Anticipate downfall of mega tigers	快了 Upcoming	124	秦城 Prison jailing high level officials	18	大戏 Big event	30
	前戏 Foreplay	88	倒下 Downfall	10	你懂得 You understand	17
	前奏 Prelude	82	开除 Expel	5	落马 Downfall	6
	铺垫 Foreshadowing	33	审查 Investigation	4	快了 Upcoming	6
	大动作 Major moves	24	坠 Be caught	2	大动作 Major moves	3
Delegitimize mega tigers	坏 Bad	15	叛国 Treason	2	支持 Punishment	3
	罪 Crime	10	罪 Crime	2	坏 Badness	3
	杀 Execute	9	毙 Shoot to death	2	杀 Execute	2
	恶 Badness	5	恶 Badness	2	叛 Treason	1
	支持 Punishment	2	支持 Punishment	2	毙 Shoot to death	1

Note: Because Zhou Yongkang's name has the character "Kang," the same as the popular instant noodle brand, Master Kang (*Kang Shifu*) in China, people often refer to Zhou as the noodle brand, or just "noodle."

Appendix E2: Sample of Weibo comments

	Zhou Bin		Ling Zhengce		Guo Zhenggang	
Categories	Posts	Translation	Posts	Translation	Posts	Translation
Identify mega tigers	长得有点像康师傅	He looks like Master Kang.	令计划的哥哥？	Ling Jihua's elder brother?	我只知道之前有个之前有个军委副主席叫郭伯雄，他儿子也叫郭正钢	I only know a former Vice Chairman of the CMC called Guo Boxiong, whose son is also called Guo Zhenggang
	说那么多永康哥的大儿子	Waste of so many words. Son of Brother Yongkang.	计划政策双落空	Plan (Jihua) and Policy(Zhengce) both go in vain	郭正钢，郭伯雄之子	Guo Zhenggang, son of Guo Boxiong.
Anticipate mega tigers' downfall	看样子老子也快出来与大家见面了再等等。	It seems that the father will meet us soon. Let's wait for a while.	哥俩儿会师秦城！	Brothers reunite in Qincheng Prison!	伯雄要完啊！！！！	Bo Xiong is in danger!!
	快要打到周大老虎了要通关的前奏吗	Mega tiger Zhou is ready to be attacked. Is this a prelude to passing through the game?	令氏家族，树倒猢猻散	The Ling family, when an important person falls from power, his followers disperse all at once.	儿子进去了，老子也快了	If the son is in prison, his father will be there soon.
Delegitimize mega tigers	他们全家就罪该万死全部枪毙最好	Even death cannot atone for the family's crimes. They should all be shot.	令家叛国	The Ling family betrays the country.	都死在升官发财的路上，这帮坏人暴露了真实的价值观，可恶严惩！	These officials all fell down on the road of seeking promotion and making profits for themselves. These bad guys were exposed of their true selves. Detestable! Must punish them severely!

	周家一群恶虎，糟蹋了地学界的门望.	The Zhou family is filled with evil tigers. They bring disgrace to the field of geology.	山西的败类	Scum of Shanxi	格杀勿论	Kill with lawful authority
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Appendix F: Dog whistle politics with Chinese characteristics?

The question whether official reports are indeed sent by the government intentionally for some purpose and constitute some kind of “dog whistle politics with Chinese characteristics” is beyond the scope of our research. However, we do not exclude this possibility and would like to provide some additional discussion here. We suspect that authoritarian governments may also use the “dog whistle” strategy to serve their interests. Authoritarian governments can be especially sensitive to breaking news about high-level elite politics, which is closely related to regime survival (e.g. Svobik 2012), and therefore release explosive news tactically by deliberately leaking bits of information first to avoid sudden shocks that may impair socio-economic stability. In the current cases, one possible concern of the government, among others, is that the three officials were at national-level administrative ranks, making the purge unprecedented in the post-Mao era. Social reactions to the rush announcements of their downfalls would have been difficult to predict; thus, the government may have chosen to leak some information, thereby allowing time for people to form anticipation and construct social consent for the mega tigers’ downfall.

We have some indirect evidence supporting government acquiescence to the reverse-accessing of the off-limits information. We notice that online comments about the mega tigers were not censored. With intense online censorship, the Chinese government can easily filter or block any information. When the government deems certain issues or people highly sensitive, it can simply shut down searches of all the words relevant to them, including their real names and commonly used synonyms (Bamman, O’Conner, & Smith 2012; Ng 2013). For example, keywords that relate to the Tiananmen Square protests of 1989 remain blocked on Weibo. Should one try to search for “June 4th Riot/Revolution” or “May 35th,” euphemisms created by Chinese netizens to refer to the incident, a government warning about non-display will appear. Keywords regarding sensitive international events, such as “Egypt” and “Jasmine,” which could be related to the Arab Spring and which the government worried could cause social turmoil, were temporarily blocked (Bamman, O’Conner, & Smith 2012). During the incident of Wang Lijun’s defection to the United States Consulate, even words and pictures related to tomatoes became sensitive and blocked by the government because netizens used them to refer to Bo Xilai. These examples demonstrate the Chinese government’s ability to filter and censor. Therefore, if the government wanted to block searches and rumor propagation about the mega tigers, they could have simply blocked their names and all the synonyms commonly used by netizens.

However, there are still many possibilities and aspects not clear enough to be able to build a strong argument for the government’s deliberate signaling. As O’Brien and Li (2006) and Stern and O’Brien (2012) show, government signals are often mixed and ambiguous due to fragmentation of Chinese politics, such as the division between

central and local governments, multiple bureaucracies, and different factions. Signals that the society receives are often difficult to pin down concerning their source and exact purposes. As one of our reviewers conjectured, “given the CCP is faction-ridden and beset with vicious factional and policy infighting, what looks like a deliberate decision to telegraph corruption fights in advances” is also “likely to be the result of one faction using the media under its sway to attach other factions inside the sprawling CCP bureaucracy.”

Therefore, although we do not exclude the possibility of the potentially understudied subtle opinion-guiding skill of authoritarian regimes, we have to leave this for future research that can gather more data and direct evidence to examine if the practice is indeed an intentional tactics along with others, such as repackaging dogmatic propaganda into soft propaganda, delivering government messages through credible commercial media (Stockmann 2013), demonstrating responsiveness through e-governance (Chen, Pan, & Xu 2016; Distelhort & Hou 2017; Meng, Pan, & Yang 2017), and hiring online commentators to fabricate social media posts (Han 2015; King, Pan, & Roberts 2017). Still, as discussed in the main text, this possibility does not contradict our proposed theoretical framework. Even if the clues are deliberate cues by the government, many people learn to appropriate the clues for their own purposes, and state information manipulation is not guaranteed to result in the neat agenda setting attempted by the government. It can inadvertently generate information and even behavioral chaos, stimulating social anxiety and distrust of government.

Future research can look for direct evidence of such “dog whistle politics with Chinese characteristics” and study different possible concerns motivating an authoritarian government to disseminate information in this way and how much this approach fulfills the government’s goals.

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Ng, J. (2013). *Blocked on Weibo: What Gets Suppressed on China's Version of Twitter (And Why)*. New York, NY: The New Press.

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Appendix G: Examples of comments

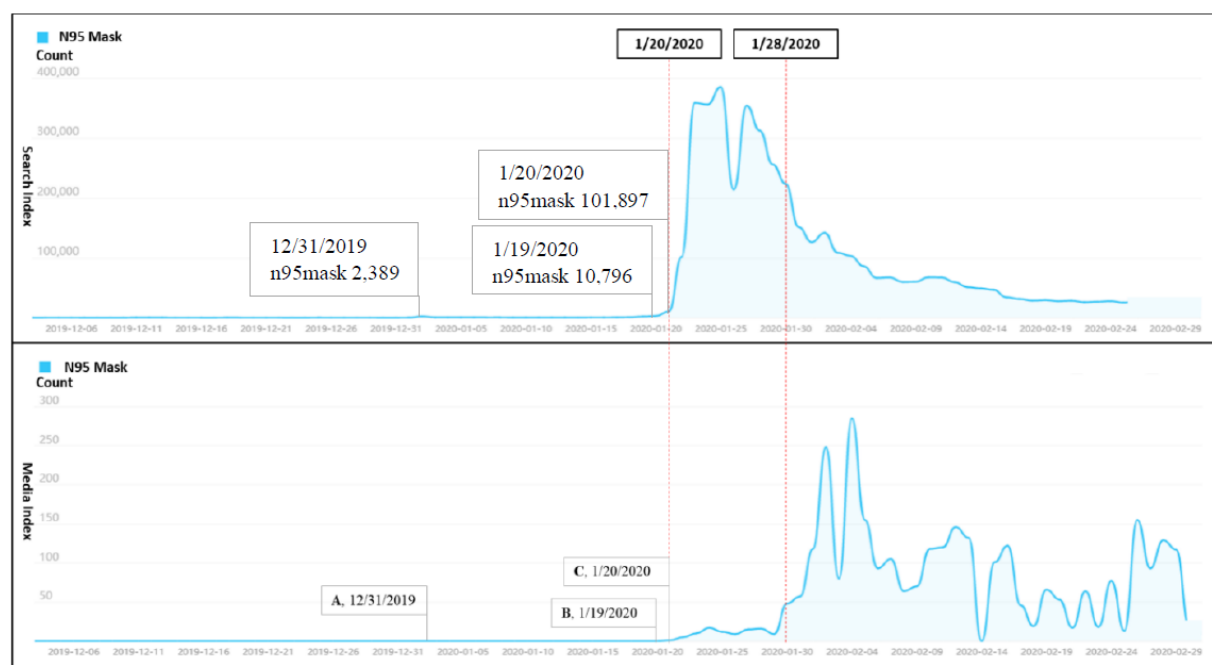
Original Comment	Translation
“前戏太冗长了！党中央还怕我们一下子接受不了，所以要循序渐进，做很多铺垫！”	“What a long and tedious foreplay. The Party Center is afraid that we (the public, note by author) cannot bear the sudden shock [of the downfall of the mega tigers], so only foreshadows the upcoming [crackdown] step by step.”
“就一个武松打虎的传统剧目，还要整得像韩剧一样，分成几个月，过几天撒点料！没有长腿偶吧，谁要看啊！” 🙄	It is just a “Wusong beating a tiger” kind of traditional show, but pretends to be a Korean drama, lasting for several months, only revealing some gossip every few days! Who wants to see the show, without handsome main actors!” (The emoji is a typical way to show contempt in people’s online chatting).
“全国人民都快能齐声朗读出他爹的名字了，媒体这儿还这故弄玄虚。”	“Media were deliberately mystifying, while almost the whole nation can read out his father’s name.”
中央主要领导的子女哪个不腐？怎么不查？我们就看习大大敢不敢动他们！	“Is any son or daughter of major leaders of the central government not corrupt? Why not investigate them? Let’s see if Uncle Xi dare to investigate them or not!

Appendix H: The case of COVID-19

The examples of people conducting information compensation when state media news was not suggestive were not rare in China, though more systematic research is needed in the future. The most recent case consists of the circumstances of the COVID-19 outbreak. The virus first broke out in Hubei, Wuhan province, at the end of 2019. From December 31, 2019, to around January 20, 2020, the Chinese official media had mainly tried to calm people down by denying the resurgence of SARS and emphasizing public health experts' opinions of no human contagion or limited human contagion from the virus. In this early stage, although the official media did not suggest anything serious about the virus or the need for protection, such as wearing masks, some netizens questioned the official news and suspected the real situation in their online discussions. Some people also started to consider purchasing and wearing masks to protect themselves. We examined searches of the term "N95 mask," a particulate-filtering facepiece respirator meeting higher standards than regular masks, on the Baidu search index. It would be reasonable to assume that sudden surges in searches for "N95 mask" very likely indicated Web users' anxiety about the virus and consideration of wearing protection.

We presented the comparison of the media index and search index of "N95 mask" between December 2019 and February 2020 and detailed analysis in the following.

Figure H1. Search index and media index of N95 mask, December 2019-February 2020



We can divide the whole time period in the above figure into three stages.

The first stage ended on January 20, 2020, which was the very early stage of the

outbreak of the virus. In this stage, state media never mentioned N95 masks in official reports; the media index of the term is “0.” Instead, on December 31, 2019 (point A in media index), official news like *People’s Daily* reported that the pneumonia in Wuhan was not SARS, no clear evidence of human contagion was found, experts from the National Health Commission (NHC) arrived in Wuhan, and so forth.⁹ This news apparently did not intend to suggest anything serious to the public because a social-economic panic was the last thing that the Chinese government wanted to see. However, we noticed a small bump in search index on December 31, 2019, when there were 2,389 searches for “N95 mask,” approximately ten times higher than the usual daily number of searches). This bump likely indicated that a very small group of vigilant people already sensed some irregularity from the news reports, although the news itself was not intending to scare people. We also searched on Weibo and found some Weibo bloggers had discussed the topic on the same day looking for more information about the real situation in Wuhan. Some bloggers expressed anxiety and questioned, “if nothing serious had happened, why were NHC experts sent to Wuhan?” Other bloggers inferred that the situation could be quite serious given the involvement of NHC experts and reminded others to be careful.

On January 19, 2020 (point B in media index), state media news about the virus included the message that “the situation of human-to-human contagion cannot be excluded, but the epidemic is preventable and controllable.”¹⁰ Again, the news was trying to calm people instead of revealing the severity of the virus. However, searches of “N95 mask” further rose to 10,796, while the media index of the term was still zero. This means a few more netizens started to conduct more information compensation.

On January 20, 2020 (point C in media index), state media reported the conclusion of a very authoritative Chinese public health expert (Professor Zhong Nanshan) that the virus was definitely contagious among humans, and people should wear masks when going out but that there was no need to wear N95 masks.¹¹ This news, though it confirmed the contagion of the virus, clearly suggested people not overreact by wearing N95 masks. However, searches for the term quickly rose to 101,897 on that day. Netizens searched for the price of N95 masks, how to wear them, where to buy them, whether they can be used repeatedly, and so forth. This phenomenon seems to especially echo a finding observed by other China scholars that Web users sometimes interpret the opposite of what is propagandized by the Chinese government (Tang and Huhe 2013).

The week of January 20-28, 2020, can be considered as the second stage (the short

⁹ For instance, see news reports here:

<https://m.weibo.cn/status/4455530086650043?>

<https://m.weibo.cn/status/4455557715329831?>

<http://tv.cctv.com/2019/12/31/VIDEj8dWSxKsoNFkBqw2aiOD191231.shtml>, all accessed on July 8, 2020.

¹⁰ For example, see news report here: <https://m.weibo.cn/status/4462394879443958>, accessed on July 8, 2020.

¹¹ For example, see news report here: <https://www.caixin.com/2020-01-20/101506465.html>, accessed on July 8, 2020.

period between the two red lines in Figure H1). During this time period, the Baidu search index of “N95 mask” showed spikes reaching nearly 400,000 searches. The changing trend reflected the social reality that in a few days, more and more people became very anxious about the virus and felt the need to know more about how to protect themselves after the state media confirmed the contagion of the virus. At the same time, media reports of the details of the epidemic were still limited. In contrast to the search index, the media index of “N95 mask” was very low, meaning there were only a few news reports directly mentioning the term. Most of those reports were telling people not to or not necessarily to wear N95 masks.¹² The contrast between the media index and search index very likely indicates Web users’ self-motivated information compensation, as many people began to suspect official news and did their own “research” about what was going on and necessary protections.

In the third stage, which was the time after January 28, 2020, state media began to mention N95 masks more often because of their limited stock along with other medical resources at that time. In contrast, searches of the term began to decline. This is very likely because media reports about the epidemic had become much more intensive than in the previous two stages, and the information deficiency about the virus had become largely relieved.

Thus, this case shows that even when official news did not intend to be suggestive, some people may still conduct information compensation if they sense something unusual from the broad information environment. This motivation might be especially strong when the issue is related to people’s well-being. More systematic research is needed to gather more cases and further study this conjecture. However, this example generally supports our argument that internally-oriented information compensation for many people is a spontaneous self-salvation of information deficiency under digital authoritarianism.

¹² For example, see news report here: <http://www.subaonet.com/2020/0122/2629708.shtml>, accessed on July 8, 2020.