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Stockholm School of Economics Asia Working Paper
No. 52

November 2019

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Abstract

We examine the role top executives' social media activity plays for the stock market. When analyzing a unique data set of board chairs' posts on Chinese social media platform Sina Weibo, we find that they are positively associated with stock returns. When we take a closer look at content, we show it is work-related content that drives stock returns. Non-work-related content has an immediate but transitory effect, suggesting that such posts grab the attention of investors but only contain noise. We also find that information asymmetry plays a significant role in the relationship between board chairs' Weibo posts and stock returns. Also, the more followers that board chairs have on their Weibo account, the larger the effect Weibo posts have on stock returns. Furthermore, relative to state-controlled firms, Weibo posts by board chairs in private firms exhibit a significantly larger effect on stock returns. Finally, we find that a laxer regulatory environment translates into board chairs' work-related Weibo posts having a larger effect on stock returns. Top executive social media activity thus acts as a complementary channel for firm-specific information being disseminated to the stock market.

JEL Classification: G12; G14; N20
Keywords: Social Media; Microblogging; Information dissemination; Stock market; Investors; China

1 Introduction

In this paper, we examine the role of social media activity by top executives in listed Chinese firms in the dissemination of firm-relevant news as shown in the capital market. Over the last decade, social media platforms have become increasingly important channels for the distribution of news and information from all walks of life. For example, consumer behavior has changed significantly, with consumers preferring information from fellow customers rather than traditional experts (Chen et al., 2014). In terms of information relevant for market participants, firms typically utilize their websites and social media accounts as complementary, and sometimes even substitute, channels to disseminate firm-specific information. The internet in general, and perhaps social media platforms in particular, effectively function as channels for the dissemination of corporate information. This information in turn often has a nontrivial effect on capital markets (Hu et al., 2013; Blankespoor et al., 2014).

The goal of this paper is thus to analyze how social media activity by board chairs in Chinese listed firms relates to and influences the capital market. More specifically, we examine whether board chairs' activity on the Chinese microblog platform Sina Weibo actually contains information (move stock prices) or merely adds noise (do not fundamentally move prices). Sina Weibo is a natural starting place since it constitutes a popular channel through which users quickly spread news and opinions in a fashion similar to Twitter users in other countries. That top executives' social media posts affect stock returns is not a farfetched assumption. Social media platforms constitute a channel for quick dissemination of news and personal views. It also allows for two-way communication, that is, followers can engage with corporate leaders directly over the platform. A board chair's Weibo account thus represents an additional

channel for information that can be used by investors in their decision-making process. However, a board chair can post all types of information on social media. For example, he/she can show his/her family life, post jokes, or communicate with followers, talk about his/her day, wish people a great day, give an opinion on a political event, and so on. While that type of content constitutes an important part of his/her life, it does not convey any material information about the firm under his/her control. That is, that type of content is not relevant to the stock market. Whether social media posts, in this case on Sina Weibo, by board chairs is *informative*, or *noise*, is hitherto an untested issue.

To test this, we identify board chairs' Weibo accounts for all listed firms and analyze how their activity on the platform affects stock returns during the period 2009-2016. We find that Weibo posts by board chairs are positively associated with stock returns for firms in which the board chairs function. We then show that it is work-related Weibo posts that drive stock returns. In addition, we also find that the stock market response to work-related Weibo posts is not subsequently reverted and that Weibo posts are associated with an increase in trading volume. These results indicate that work-related Weibo posts disseminate incremental information to the market. While non-work-related content has an immediate effect, it is transitory with a fast reversion to the mean during the days after the information is posted. That is, non-work-related Weibo posts are associated with an increase in trading volume with no change in returns. We attribute this transitory market effect to the investor attention theory developed by Barber and Odean (2008). Non-work-related Weibo posts are thus purely noise with no lasting effect on stock returns.

A closely related issue is whether firm heterogeneity has a significant effect on the relationship between board chairs' Weibo posts and stock returns. A deeper analysis of

firm heterogeneity can improve our understanding of the nature of information dissemination. It has been argued that information asymmetry introduces adverse selection between sellers and buyers, thereby creating more costs in transactions (Milgrom and Stokey, 1982; Copeland and Galai, 1983). In light of this, board chairs being active on social media can help potential investors overcome the reluctance to purchase firm shares (Feng and Johansson, 2019). We argue that Weibo posts may have a significant effect on firms that face greater information asymmetry as it may act as a complementary channel for information dissemination. Interestingly, we find that stock returns for firms characterized by smaller size, less analyst coverage, and fewer institutional holdings are more affected when their board chairs post on their social media accounts. These findings thus provide evidence that Weibo posts convey information to the market, in particular for more opaque firms

If investors pay attention to information that is posted on Weibo, then it is likely that the market response to Weibo posts should be different depending on how many people actually see the posts. Presumably, the greater the number of followers, the greater the number of investors who are able to act on the information, and consequently the greater the market response. In addition, the relationship between board chairs' Weibo activity and stock returns is influenced by firm ownership. Relative to state-controlled firms, private firms exhibit a significantly larger effect on stock returns after the board chair posts work-related content on his Weibo account. Finally, we find that a laxer regulatory environment translates into board chairs' work-related Weibo posts having a larger effect on stock returns. To sum up, our empirical analysis supports the hypothesis that board chairs disseminate important information over their Weibo accounts and that this information influences the capital market.

This paper connects and contributes to different strands of literature. First, we contribute to a burgeoning literature on how information relevant to investors' decision-making process is disseminated over social media. For example, Blankespoor et al. (2014) have shown that firms use social media as a way to increase stock liquidity by reducing information asymmetry. Bollen et al. (2011) link mood on Twitter to stock market movements, and Chen et al. (2014) and Jame et al. (2016) examine the link between online investor opinions to market movements. In a study that is closely related to ours, Feng and Johansson (2019) examine how top executive social media activity in China helps improve their firms' information environment. We extend this literature by providing strong empirical evidence linking board chairs' social media activity to stock returns.

Second, we build on previous research on information dissemination and the capital market (e.g. Kothari et al., 2009; Bushee et al., 2010; Dai et al., 2015; Drake et al., 2017). This strand of literature has linked capital market movements to press coverage, analyst reports, and internet intermediaries. We contribute to it by linking social media activity by top executives to stock returns. We also show how information disseminated through social media is particularly influential for firms characterized by a higher level of information asymmetry.

Third, we add to a line of research that explores the behavior of individual investors. It is commonly argued that attention is a scarce cognitive resource (e.g. Peng and Xiong, 2006), something that affects stock returns. Barber and Odean (2008) provide evidence supporting the hypothesis that individual investors are net buyers of stocks that grab attention. Examples of attention-grabbing include stocks that appear in the news, stocks with extreme short-term returns, and stocks characterized by abnormal trading volume.

In a related study, Barber et al. (2005) find evidence supporting the argument that individual investors make decisions on mutual fund purchases based on how the funds are able to grab their attention and miss relevant information for making a sound investment decision. In a study on earnings announcements, Dellavigna and Pollet (2009) show that investors' limited attention has an effect on stock returns. Peng and Xiong (2008) find that investors tend to take in more market and sector-wide information compared to firm-specific information and that this explains features in return co-movements that traditional rational expectations models fail to address. Hirshleifer et al. (2009) examine and provide empirical evidence supporting the so-called investor distraction hypothesis, i.e. that superfluous news constrains investors' ability to react to relevant news. We extend the literature on investors and attention by exploring the content of Chinese board chairs' Weibo posts. We show that information that is not relevant for investment decisions, in this case non-work-related posts on social media, has an immediate but transitory effect on stock returns.

The remainder of this paper is organized as follows. Section 2 presents the related literature and then provides a detailed discussion of the working hypotheses. Section 3 introduces the data, the main variables, and the empirical research methodology. Section 4 presents the baseline analysis and the extended empirical analysis that focuses on post content, trading volume, information asymmetry, followers on social media, state and private firm ownership, and the regulatory environment. Finally, Section 5 concludes the paper.

2 Related Literature and Hypotheses Development

We begin this study with the basic question of whether or not social media posts by top executives affect the stock market. Research has shown that public information influences stock market prices and activity. Mitchell and Mulherin (1994) show that news announcements are positively related to market activity. Antweiler and Frank (2004) show that stock message boards can help predict market volatility. Closer to our study, Tetlock (2007) finds that media pessimism is associated with downward pressure on market prices, followed by a reversal to fundamentals, and high market trading volume. Publicly shared sentiment about a company may thus have an impact on its stock price. Previous studies have also examined the relationship between social media and capital markets more closely. Bollen et al. (2011) analyze how sentiment on Twitter can help predict future movements in the stock market. Park et al. (2013) use data from stock message boards to examine investor confirmation bias. Blankespoor et al. (2014) find that firm news that is disseminated on Twitter is associated with higher market liquidity and smaller bid-ask spreads. Both Chen et al. (2014) and Jame et al. (2016) look at crowdsourced investor opinion and how it relates to movements in the stock market. This strand of literature has provided ample empirical evidence supporting the argument that social media activity is associated with movements in the stock market.

What about public information in the form of content posted on board chairs' Weibo social media accounts? Do we expect information distributed this way to have an effect on stock returns? Previous studies have shown that social media plays important roles for corporations. For example, Blankespoor et al. (2014) find that firms are able to reduce information asymmetry and increase the liquidity of their stocks through social media activity. Lee et al. (2018) find that firms are able to engage more

effectively with their customers if they utilize social media platforms as a channel to connect. Lee et al. (2015) provide evidence that firms can use social media in their pursuit to control the negative effects of product recalls. In terms of information, Jung et al. (2018) find that firms can use social media for strategic dissemination of news. Similarly, Feng and Johansson (2019) note that social media platforms are becoming important channels for information dissemination. They show that firms with board chairs who are active on social media in China are characterized by more firm-specific information being disseminated to the capital market.

If we believe that board chairs choose to post information regardless of sentiment, we would expect the average effect on stock returns to be relatively neutral. However, research has shown that companies are prone to publish information with a positive sentiment and avoid making information that can be seen as negative sentiment public. We ran a sentiment analysis on the Weibo posts by board chairs in this study and found that as little as 4% of all posts could be characterized as having a negative tone in them. This suggests the argument that top executives prefer to post positive content on social media. Since almost all Weibo posts by board chairs in our data set contain positive content, we hypothesize that board chairs' Weibo posts have a positive relationship to stock returns.

> **Hypothesis 1:** Board chairs' Weibo posts are positively associated with stock returns

To better understand what type of information that is disseminated and whether different types of information affect the market differently, we need to examine post content. The type of content that is of primary interest is that which is work-related, i.e.

has anything to do with the company where the person in question acts as board chair. Building on the argument that high-level executives are prone to publish positive content about their firms on social media and avoid negative news, we expect that most work-related posts are positive in nature. We thus hypothesize that work-related Weibo posts by board chairs have a positive effect on stock returns.

> **Hypothesis 2:** Board chairs' Weibo posts with work-related content are positively associated with aggregated stock returns

How about non-work-related posts? For example, would a board chair posting about his or her family affect the stock market? As such posts generally would not convey any incremental information that is relevant to the firm and its value, we hypothesize that non-work-related posts do not affect firms' stock returns aggregated over a period of time.

> **Hypothesis 3:** There is no significant relationship between board chairs' non-work-related Weibo posts and aggregated multi-day stock returns

While the hypothesis above is reasonable, prior research suggests that there may be an immediate effect on stock returns when influential individuals such as board chairs in China post on social media. In an influential study, Barber and Odean (2008) provide evidence for the hypothesis that individual investors are net buyers of stocks that grab attention. They argue that many individual investors lean towards purchasing stocks that have caught their attention in some way. It is not farfetched to assume that posts by top executives on social media may grab the attention of individual investors

looking for signals before deciding on how to trade. We argue that this holds especially true in the case of China. The Chinese stock market is characterized by a large number of retail investors (Feng and Johansson, 2017), and they tend to be responsible for a large share of the turnover in the market (Johansson and Ljungwall, 2009). In a study on investor attention in the Chinese market, Seasholes and Wu (2007) find individual investors, especially first-time buyers, are attracted to stocks that hit an upper price limit and become net buyers of those stocks. They also show that this immediate effect is followed by a reversion to the initial level within a short period of time after the event. Based on the investor attention story put forward by Barber and Odean (2008) and the characteristics of the Chinese stock market, we expect there to a transitory effect on stock prices as non-work-related Weibo posts grab the attention of individual investors. That is, we hypothesize that there is an immediate effect on the first trading day followed by a quick reversal afterward.

> **Hypothesis 4:** Board chairs' non-work-related Weibo posts are positively associated with first-day stock returns, a relationship that is offset by a negative relationship during subsequent trading days

As Weibo posts grab the attention of investors, stock returns are affected. Similarly, we can expect trading volume to be affected by board chairs' social media activity. As noted above, we hypothesize that both work- and non-work-related Weibo posts have an immediate effect on stock returns, while their longer-term effects differ. For trading volume, we expect a different outcome. If the hypothesis that non-work-related Weibo posts drive immediate stock returns which are then followed by a reversal, this means that non-work-related posts are likely to give rise to similar increases in

trading volume as work-related posts. We thus hypothesize that the effect of board chairs' Weibo posts on stock returns is positive, regardless of the content in those posts.

> **Hypothesis 5:** Board chairs' Weibo posts are positively associated with trading volume regardless of post content

We also want to examine the potential effects of selected firm characteristics. More specifically, we are interested in firm characteristics that are associated with the level of information dissemination. Information asymmetries are related to costs emanating from adverse selection (e.g., Milgrom and Stokey, 1982; Copeland and Galai, 1983). Previous studies have shown that firm characteristics that are associated with information asymmetry or trading costs include firm size, trading volume, and analyst following (e.g. Easley et al., 1994; Eleswarapu et al., 2004; Karpoff et al., 2013). Feng and Johansson (2019) examine social media usage by Chinese top executives as a way to decrease the reluctance of investors to trade in their firms' shares. They find that the impact of social media activity is amplified for smaller firms, younger firms, and firms with fewer analysts following them. Thus, based on previous research on information asymmetry and the impact improved information dissemination can have on capital markets, we hypothesize that the relationship between board chairs' Weibo posts and stock returns is amplified for firms characterized by a higher level of information asymmetry.

> **Hypothesis 6:** The effect of board chairs' Weibo posts on stock returns is greater when the firm is characterized by a lower level of information dissemination to investors

In terms of board chairs' social media presence, it is plausible to assume that their overall influence is dependent on how well they engage with their followers. For example, Paniagua and Sapena (2014) show that followers and likes on social media are positively related to a firm's share value. However, they also find that the relationship is dependent on whether or not a firm has attained critical mass in its following. If investors do pay attention to information being posted on Sina Weibo, then it is likely that the market response to posts differs depending on how many people actually read the posts. Based on this, one measure of investor attention could thus be the number of followers of the Weibo account in question. Even though the number of followers is far from a complete measure, it can serve as an overall proxy for social media influence. Based on previous research and the reasoning here, we hypothesize that the relationship between board chairs' posts on Weibo and stock returns is influenced by the number of users following the board chair in question on Weibo.

Hypothesis 7: The effect of board chairs' Weibo posts on stock returns is greater when the board chair has more followers

Firm ownership can have a significant impact on the behavior of top executives. In China, board chairs in state-controlled companies are typically individuals with government backgrounds. Board chairs in privately controlled firms, on the other hand, are often founders or belong to the founder's family. As a result, board chairs' incentive structures and also the ability to make decisions on their own differ significantly between the two types of firms. Being appointed by the government apparatus, board chairs in state-controlled firms can be expected to take a more careful approach to what they post on publicly on social media platforms. Board chairs in privately controlled

firms, on the other hand, are likely facing a higher degree of freedom in what and how they communicate to the public. Based on this, we hypothesize that the information content in Weibo posts by board chairs in privately controlled firms on average is richer and therefore influence stock returns more.

Hypothesis 8: The effect of board chairs' Weibo posts on stock returns is greater for private firms than for SOEs

Finally, we are interested in what impact the regulatory environment may have on the relationship between top executives' social media posts and stock returns. More specifically, we want to know if the relationship between the two differs in strict and lax regulatory environments, respectively. Our reasoning here is straightforward: if existing regulations can be characterized as lax, this gives board chairs more room to publish information related to their firms, thus providing more information to the market. This, in turn, means that the information being published by board chairs on social media has more potential to affect the stock market. In a stricter regulatory environment, it is more likely that the board chair is more constrained by what he or she is allowed and not allowed to post. This suggests that the content provided in posts is likely to transfer less useful information and thus have a smaller impact on the stock market. We thus hypothesize that a laxer regulatory environment is associated with board chairs' Weibo posts having a greater effect on stock returns.

Hypothesis 9: The effect of board chairs' Weibo posts on stock returns is greater in a laxer regulatory environment

3 Data, Variables, and Methodology

3.1 Data Sample

To analyze the relationship between top executives' social media activity and the capital market, we first identify board chairs in all listed firms during the time period 2009-2016. The board chair is often the one that has the most authority when it comes to making operational decisions in Chinese companies (Kato and Long, 2006; Feng and Johansson, 2017, 2019). Similar to Feng and Johansson (2019), we choose to examine the Weibo accounts of board chairs rather than the firms' official accounts because of the way that particular social media platform functions and the fact that board chairs can post a large variety of different content, including posts related to work and private life.[2] After we have identified all board chairs, we manually search Weibo and collect the account and download the posts for those board chairs who have opened a public account.

Panel A in Table 1 presents the year distribution of firms with board chairs who opened a Sina Weibo account during 2009-2016. We identify a total of 88 firms with board chairs who had a Weibo account during the sample period. Most of the board chairs opened their accounts in 2010 or 2011. Panel B in Table 1 presents the industry distribution of the firms with board chairs who opened a Sina Weibo account during 2009-2016. Out of the 88 firms characterized by board chairs with a Weibo account, 52

[2] We only download the Weibo posts by Board Chairs who use their actual names. If a board chair uses a screen name on Sina Weibo, we are unable to identify and analyse his or her content. Although this may reduce our sample, such a reduction would actually bias against our findings.

were active in manufacturing and 11 were active in the IT sector. The remaining firms were spread across other industries.

[TABLE 1 HERE]

3.2 Variables

As discussed in Section 2, we want to analyze the effect board chairs' Weibo posts have on stock returns. Throughout most of the analysis, the main dependent variable is buy-and-hold abnormal returns (BHARs). We calculate BHARs for a [0,3] window, where 0 is the day the board chairs publish a post on his or her Sina Weibo account. The key explanatory variable is *Weibo*, a dummy variable that is equal to 1 if the board chair posts on a certain day and 0 otherwise. In some of the sections, this key explanatory variable will be divided into work-related and non-work-related. The focus of these variables is thus on the content in the Weibo posts. In one part of the empirical analysis, we use a vector autoregressions analysis (VAR) instead of the baseline multivariate regression analysis. For that analysis, we use daily abnormal returns ($ABReturn_t$) and daily abnormal trading volume ($ABVolume_t$) as dependent variables.

In addition to the key variables above, we use a set of control variables at firm level: *firm size*, the natural logarithm of total assets; *analyst*, the natural logarithm of 1 plus the number of analysts covering the firm in question; *leverage*, the book value of all liabilities scaled by the total assets; *ROE*, the ratio of net profits to total equity. We also need to control for confounding firm events that may bias the results. We do this by creating *event day*, a dummy variable that is equal to 1 if a firm's board chair posts on Weibo during the five trading days ([-2,2]) around the day the firm issues a public

announcement (on issues such as M&A, dividend, stock repurchase, equity, bank and bond financing, etc.) and 0 otherwise. We also need to take the potential effect of news reports into account. To do this, we create *news day*, a dummy variable that is equal to 1 if the board chair posts on Weibo five trading days ([-2 2]) around the day that a newspaper reports firm news and 0 otherwise.

3.3 Empirical Methodology

Our primary interest is in the information content of board chairs' Weibo posts and how that information influences the stock market. To examine this, we use the following multivariate regression model:

$$BHARs[0,3]_{i,t} = \alpha + \beta Weibo_{i,t} + \beta_2 X_{i,t} + A_t + B_i + \varepsilon_{i,t} \quad (1)$$

Here, the dependent variable is thus the three-day buy-and-hold abnormal returns and the key explanatory variable is board chairs' Weibo posts. $X_{i,t}$ is a set of time-varying firm-level control variables (see Section 3.2 for definitions and details): firm size, analyst, institutions, market-to-book, leverage, and ROE. A_t and B_i are vectors of dummy variables that account for year and firm fixed effects, respectively, and $\varepsilon_{i,t}$ is the error term for firm i at time t. That is, year dummies are included to reduce concern that board chairs' social media activity may cluster through time or that the impact of macroeconomic conditions may vary across time. In addition, firm fixed effects are used to control for unobservable firm-related factors that may influence stock return patterns. The multivariate regression model in Equation (1) is estimated using

pooled ordinary least squares (OLS) and we use cluster standard errors by firm and year to make them robust to potential heteroskedasticity (Petersen, 2009; Thompson, 2011).

4 Empirical Analysis

4.1 Weibo Posts and Stock Returns

We begin the empirical analysis by examining the information content of chairmen's posts on Sina Weibo. More specifically, we analyze the relationship between such posts and stock returns. As noted in Section 2, our working hypothesis is that chairmen's activity on social media is positively associated with market returns of their firms. To analyze this empirically, we conduct an event study in which the main event is a Weibo post by a firm's chairman. We first identify the event days for each firm and Weibo post and then construct buy-and-hold abnormal returns (BHARs) using benchmark portfolios that are constructed based on size, book-to-market ratio, and momentum.[3] Panel A in Table 3 presents the univariate statistics of two samples of firm observations. The Weibo sample is composed of firm observations characterized by the chair of the firm posting on Weibo, and the No Weibo sample is comprised of the remaining firm observations. For these two firm samples, we then calculate BHARs[0,3], i.e. the BHARs from day 0 to day 3. The total number of firm observations with Weibo posts is 17,241 and the number of firm observations without Weibo posts

[3] For robustness, we also run the same analysis using alternative benchmarks to construct the BHARs, including an equally-weighted A-stock share index, a tradable value-weighted A-stock share index, and a size and book-to-market matched portfolio. Using these alternative benchmarks do not qualitatively change the results and we therefore leave these additional regression results out for the sake of brevity.

is 88,805. The sample characterized by Weibo posts has a mean BHAR of 0.098%, while the sample without Weibo posts has a mean BHAR of 0.036%. The third column presents simple tests for differences in the mean and median of BHARs in the two samples. The difference in the mean and median is significant at the 1% level. These initial findings suggest that Weibo posts do carry valuable information content.

Panel B in Table 3 presents multivariate regressions with BHARs as the dependent variable and the various firm-level control variables defined in Section 3.2. In the first column, we only include standard firm-level control variables and year and firm fixed effects. The coefficient for Weibo posts is positively significant at the 1% level, supporting our initial findings of a strong relationship between chair's Weibo posts and stock returns. To control for potential confounding firm-specific events, we include the dummy variable Event day in Column 2. The multivariate regression results suggest that Event day does have a significant effect on stock return. In addition, adding Event day reduces the impact of Weibo on stock returns. However, this reduction does not cause the effect of Weibo posts by board chairs to go away. Similarly, to control for traditional media effects, we include the variable News day in Column 3. The results show that News day is important for predicting stock returns. However, Weibo once again remains significant. This suggests that Weibo posts by board chairs disseminate information in the stock market, even after we control for a news channel in the form of traditional media. Finally, we include both Event day and News day in Column 4. As can be seen in Table 3, although the size of the coefficient for Weibo posts decreases when we add these two control variables, it remains positively significant at the 1% level. This result lends further support to the hypothesis that Weibo posts by firm chairs contain firm-relevant information.

[TABLE 3 HERE]

4.2 Weibo Post Content and Stock Returns

Next, we take a closer look at the content of chairmen's Weibo posts and stock price returns. Our working hypothesis is that the relationship between activity on social media and stock price movements is significantly influenced by actual content. We, therefore, divide the sample of Weibo posts into different content categories. First, we compare work- and non-work-related posts. Section 1 of Panel A in Table 4 presents descriptive statistics for BHARs tied to each of the two content categories. The mean of the BHAR associated with work-related posts is 0.138%, while that of posts not related to work is 0.079%. The difference in the mean of the BHARs is significant at the 1% level, as is the difference in the median of the BHARs. Figure 1 shows the BHARs surrounding chairs' Weibo posts divided into the two types of content. The figure shows that work-related Weibo posts provide important information to the market, while non-work-related Weibo posts mainly attract the attention of investors over a short period of time.

[FIGURE 1 HERE]

In Section 2 of Panel A in Table 4, we instead compare BHARs for work-related posts with BHARs for no posts. Again, the mean and median for BHARs associated with work-related posts are significantly larger than for BHARs for no Weibo posts.

Finally, we compare BHARs for Weibo posts that are not work-related to BHARs for no Weibo posts. Here, there is no significant difference in the mean and median of the BHARs for the two sample groups. These initial findings suggest that posts characterized by work-related content are associated with significantly larger BHARs, while other Weibo posts are not associated with a significant difference in terms of stock returns.

We once again control for other potential factors that may drive these tentative findings by running multivariate regressions with the BHARs[0,3] as the dependent variable and work-related Weibo posts and non-work-related Weibo posts as the key explanatory variables. The result for four model specifications are presented in Panel B in Table 4, where we include the same control variables as in our previous regressions, but leave them out of the table for the sake of brevity. Column 1 presents the results of the baseline regression. The coefficient for work-related Weibo posts is positively significant at the 1% level while the coefficient for non-work-related Weibo posts is insignificant. When we add the control for event day, the initial results for work- and non-work-related Weibo posts hold up even though the coefficient for event day is highly significant as well. In Column 3, we control for news day. The coefficient for news day is highly significant, but the initial results for the two Weibo post variables remain qualitatively the same. Finally, Column 4 presents the full model in which we control for both event and news day. While the coefficient for work-related Weibo posts has decreased in size, it is still positively significant at the 1% level. We can thus conclude that work-related Weibo posts by the chair are associated with significant positive effects on firms' stock returns, while Weibo posts that are not related to work do not have a significant impact.

[TABLE 4 HERE]

4.3 Weibo Posts and Stock Price and Volume Patterns

Expanding on the findings in the previous section, we now examine the abnormal returns and the abnormal volume associated with Weibo posts with different types of content. We have previously hypothesized that the main part of the abnormal returns identified in Section 4.2 can be found during the first couple of days when a chair posts work-related content on Weibo. To analyze this, we calculate the daily abnormal stock returns for a window of [0,3], i.e. the day of the event and the three following days. We then run multivariate regressions similar to the ones in the previous sections, but now with each of the abnormal returns as the dependent variable. Panel A in Table 5 presents the results for each of the four trading days. The coefficient for work-related Weibo posts is positively significant at the 1% level for the day of the post and the following day, and weakly significant at the 10% level on the second day after the post. This suggests that the impact of work-related Weibo posts is fast and that the effect disappears after the first two or three trading days. The coefficient for non-work-related Weibo posts is positively significant at the 5% level on the day of the post, and then negatively significant at the 5% and 10% level on the first and second day after the post is made, respectively. There is thus a positive effect of non-work-related Weibo posts on the day of the post, but that effect is later offset by an abnormal negative stock return, suggesting that the market corrects the initial effect due to the lack of firm-relevant content in the Weibo post. These results suggest that the information in non-work-

related Weibo posts are merely noise, a finding that supports the investor attention story found in Barber and Odean (2008).

In order to better understand if investor attention actually increases after chairs post on Weibo, we analyze trading volume patterns. We again look at a [0,3] window and analyze abnormal trading volume during each day to see if there is a significant pattern. After calculating the abnormal trading volume for each of the four days in the window, we estimate multivariate regression models similar to the ones in Panel A, but now with daily abnormal trading volume as the dependent variable. The results are shown in Panel B in Table 5. The coefficient for work-related Weibo posts is positively significant for abnormal trading volume in day 0 and day 1. Similarly, the coefficient for non-work-related Weibo posts is positively significant at the 1% and 5% level for abnormal trading volume in day 0 and day 1, respectively. This shows that investor attention in terms of trading does not depend on the content provided in the Weibo posts, but instead solely on board chairs' activity on social media in general. We argue that this lends further support to the investor attention hypothesis in that social media activity by top business leaders in China draw the attention of investors regardless of the type of information they provide to the public and that it is only business-relevant content that actually has a significant impact on stock returns.

[TABLE 5 HERE]

4.4 A Vector Autoregression Analysis of Weibo Posts and Stock Returns

To further analyze the relationship between Weibo posts and stock returns, we conduct a vector autoregressive (VAR) analysis similar to that of Tetlock (2007). The

VAR model accounts for contemporaneous and lagged relations between Weibo posts and returns. Unlike a regular OLS analysis, a VAR analysis accounts for the complex dynamic relationships between the variables by directly accounting for the lags of the variables. In the panel VAR analysis, we define the endogenous variables to be days characterized by Weibo posts and stock returns. We then include the following exogenous variables: market return, lagged market return, event day, news day, firm size, analyst, institutions, market-to-book ratio, leverage, and ROE. The panel VAR equation is defined as follows:

$$Return_{i,t} = \alpha + \beta_1 L5_0(Weibo)_{i,t} + \beta_2 L5_0(return)_{i,t} + \beta_3 exogenous_{i,t} + \varepsilon_{i,t} \qquad (2)$$

We estimate the panel VAR using system generalized methods of moments (GMM) estimations and five lags of the explanatory variables. The focus of the VAR analysis is the coefficients of the vector β_1. The vector describes the dependence of returns on contemporaneous and previous days with Weibo posts.

A summary of the results of the VAR analysis is presented in Panel A in Table 10. For the sake of brevity, we only include the coefficients for days with Weibo posts which are lagged from 0 to 5 days. The results support our earlier findings of a significant and positive relationship between Weibo posts by firm chairs and stock returns. Here, stock returns are statistically and economically associated with Weibo posts on the same day as well as the previous day. Economically speaking, a Weibo post by the chair is associated with a 28 basis points increase in abnormal returns. These findings indicate that when the system is subjected to a Weibo post "shock", a reaction in the stock market is manifested on the day and the following day of the post. Moreover,

the results show that there are no significant reversals in stock returns taking place within the trading week following a Weibo post.

Panel B presents the VAR results for the equation in which days with Weibo posts are the dependent variable and stock returns with different lags are the explanatory variables (we again leave out coefficients for control variables for the sake of brevity). The results show that shocks in stock returns are not associated with an increase in Weibo posts by firm chairs. We can conclude that the results of the VAR analysis are consistent with the regression analysis in Table 4 and with the event study in Figure 1. In particular, the result that Weibo posts days matter for stock returns on the same and following day but not on subsequent days is found in Figure 1. In the figure, we see that the cumulative return achieves its highest gain on the day after a board chair posts on Weibo, with only minor changes occurring on the subsequent days.

[TABLE 6 HERE]

4.5 The Information Environment

In Section 2, we hypothesized that the information environment in which firms operate influences the relationship between chairs' Weibo posts and stock returns. More specifically, we believe that for firms characterized by poor transparency, Weibo posts have a more significant impact on stock returns as the information they convey is of more significance. To test this empirically, we use three alternative proxies for information environment presented and defined in Section 3.2: *smaller firm*, *fewer analysts*, and *fewer institutions*. We run multivariate regressions similar to our baseline regression with the addition of the interaction variable for each of the proxies for the

information environment variable and Weibo post. We again include the set of control variables as found in the complete regression model used in the last column of Panel B in Table 4.

The results for the multivariate regressions with BHARs[0,3] as the dependent variable and each of the proxies for the information environment are presented in Table 7. In Column 1, smaller firm is used as a proxy for the information environment. Weibo post is still positively significant at the 1% level. More importantly, for this part of the analysis, the interaction variable for information environment and Weibo posts is positively significant at the 1% level as well. When we use the alternative two proxies for the information environment in Columns 2 and 3, the interaction variable remains positively significant at the 1% level. We can thus conclude that for firms operating in a more limited information environment, the information provided through board chairs' Weibo posts has a larger impact on the stock price.

For completeness, we also run the same estimations for work-related Weibo posts and non-work-related Weibo posts. While we leave these results out for the sake of brevity, they lend further support to our earlier findings. Variations in the information environment only influence the relationship between Weibo posts and stock returns when the posts are work-related. For non-work-related posts, there is no significant effect on that relationship.

[TABLE 7 HERE]

4.6 Followers and the Effect of Weibo Posts

Next, we examine how followers affect the relationship between Weibo posts and stock returns. Our working hypothesis is that more followers translate into board chairs posting on Weibo having a larger effect on stock returns. To test this, we collect the number of followers for all Weibo accounts in our data sample and construct the dummy variable more followers, which equals 1 if the number of followers of the Weibo account in question is more than the median value of the sample and 0 zero otherwise.[4] We then estimate the baseline multivariate regression model with BHARs[0,3] as the dependent variable again, this time with the interaction variable *Weibo*more followers* as the explanatory variable of interest.

The regression results are presented in Table 8. The coefficient for Weibo posts is once again positively significant at the 1% level. More importantly, the interaction variable for Weibo posts and followers is positively significant at the 1% level. This result indicates that the number of followers has a direct impact on the influence information dissemination through Weibo posts by firm chairs has on stock returns. For completeness, we also run tests for the subsamples of work-related and non-work-related Weibo posts. The number of followers only has a significant effect on the relationship between Weibo posts and stock returns when the posts are work-related (we leave these results out to conserve space).

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[4] Unfortunately, historical follower data on Weibo are not readily available. We collected follower data on February 1, 2017, for all the accounts in the sample and used this information for the sample. We thus implicitly assume that the number of followers remain the same across the sample. While this assumption does not fully hold up in reality, drastic changes to the number of followers for firm chairs is uncommon. Based on this, we argue that the data we use serve as an acceptable proxy for followers in our data sample.

[TABLE 8 HERE]

4.7 State vs. Private Ownership

In Section 2, we hypothesized that firm ownership influences the relationship between Weibo posts by firm chairs and stock returns. More specifically, we believe that the effect Weibo posts has on stock returns is larger for privately controlled firms than for SOEs. To test this hypothesis, we divide the sample into two groups: private firms and SOEs. We then estimate new regressions for each of the two subsamples. The results of these regressions are presented in Table 9. Column 1 shows the results for the subsample of private firms, while Column 2 presents the results for SOEs. The coefficient for Weibo posts is positively significant at the 1% level in both cases. However, it is much larger for the subsample with private firms.

To test if the effect of Weibo posts on stock return is significantly different between the two samples, we run a new regression for the whole sample in which we include the interaction variable *Weibo*SOE*. Here, *SOE* is a dummy variable that is equal to 1 if the firm is controlled by the national or local governments and 0 otherwise. The results of this regression are presented in Column 3. The coefficient for the key explanatory variable, Weibo*SOE, is negatively significant at the 1% level. This suggests that the effect information dissemination via Weibo posts has on stock return is significantly more pronounced for privately controlled firms.

[TABLE 9 HERE]

4.8 The 2013 Government Regulation against Using Social Media to Manipulate Market Prices

In the final part of the empirical analysis, we take a closer look at the regulatory environment and the relationship between Weibo posts and stock returns. Our working hypothesis is that a laxer regulatory environment is associated with a larger impact of information disseminated through Weibo posts on stock returns. To test this empirically, we exploit a public announcement by the China Securities Regulatory Commission (CSRC) on June 23, 2013. As social media has become an increasingly important channel for disseminating information, the CSRC has tried to find ways to regulate and guide how information is spread over social media platforms. On June 23, 2013, the CSRC announced that for "any institution or individual using social media to implement insider trading, market manipulation, securities fraud or other violations of laws and regulations, the China Securities Regulatory Commission will investigate and deal with according to the law" (CSRC, 2013).

To test whether this announcement had a significant effect on the relationship between chairs' Weibo posts and stock returns, we create the dummy variable post-regulation which equals 1 if a Weibo post is published after the new regulation came into effect and 0 otherwise. We then extend our baseline regression model with the interaction between Weibo posts and the regulatory variable. The regression results are presented in Panel A of Table 10. As can be seen in the table, we once more present the results for various specifications of the equation, with the full model specification shown in Column 4. In all four estimations, the coefficient for Weibo posts is still positively significant at the 1% level. More importantly, the interaction variable

*Weibo*Post-regulation* is negatively significant at the 1% level in all four estimations. This result suggests that the effect of Weibo posts is significantly smaller after the CSRC tightened up regulations on using social media to manipulate the stock market.

Panel B in Table 10 presents the results for the two subsamples with work- and non-work-related Weibo posts. We once more create interaction variables with the dummy variable *Post-regulation* and each of the two content-based dummy variables. As can be seen in the Table, the interaction variable for work-related Weibo posts and the regulatory change is negatively significant at the 1% level, while the coefficient for non-work-related Weibo posts and the regulatory change is statistically insignificant. These results indicate that only the impact of work-related Weibo posts on stock returns is affected by changes in the regulatory environment. This is an expected result as we previously found that non-work-related Weibo posts do not have a significant effect on subsequent stock returns.

We can thus conclude that an improvement in the regulatory environment is associated with a significant decline in the effect chair's Weibo posts have on stock returns. There are at least two potential explanations for this. First, it is possible that social media platforms such as Weibo were used to drive stock prices before the introduction of more stringent regulations against such practice. Second, the introduction of such a regulation may have resulted in an increase in self-censorship, with chairs being deterred to convey as much information to the public via their Weibo posts as they had done prior to the regulation.

[TABLE 10 HERE]

5 Concluding Remarks

This paper analyzes how board chairs' social media activity is associated with share prices for Chinese listed firms. Building on recent research that examines how firms use social media to inform and engage with their stakeholders, we focus on how top executives in large firms disseminate information via their personal social media accounts and the impact this has on firms' market value. Our empirical analysis shows that board chairs' Weibo posts are positively associated with stock returns and trading volume. This finding holds true for an aggregate sample of all Weibo posts and for a subsample with work-related Weibo posts. When we examine non-work-related posts, we find an immediate but transitory effect on stock returns, suggesting that such posts grab the attention of investors but do not convey information that is relevant for firm value. We also find that the relationship between board chairs' Weibo posts and stock returns is amplified for firms characterized by information asymmetry as measured by firm size, analyst following, and institutional ownership. The relationship is also amplified if the board chair in question has more followers, if the firm is privately controlled, and if the regulatory environment is laxer.

We believe that these results suggest that social media platforms can function as complementary channels for the dissemination of firm-specific information and that the information being posted affects firms' market value. This highlights the importance for investors and analysts to not only follow traditional channels through which firms have published information but also take information disseminated over so-called new media into consideration. It also showcases the importance of understanding and being able to use social media in an effective way, not only for firms as organizations but for key personnel such as top executives in those firms. As noted by Feng and Johansson

(2019), there are advantages of being able to disseminate information over social media as it influences how the market perceives not only the top executive but also the company at large. As such it should play a significant role in how firms communicate with their stakeholders.

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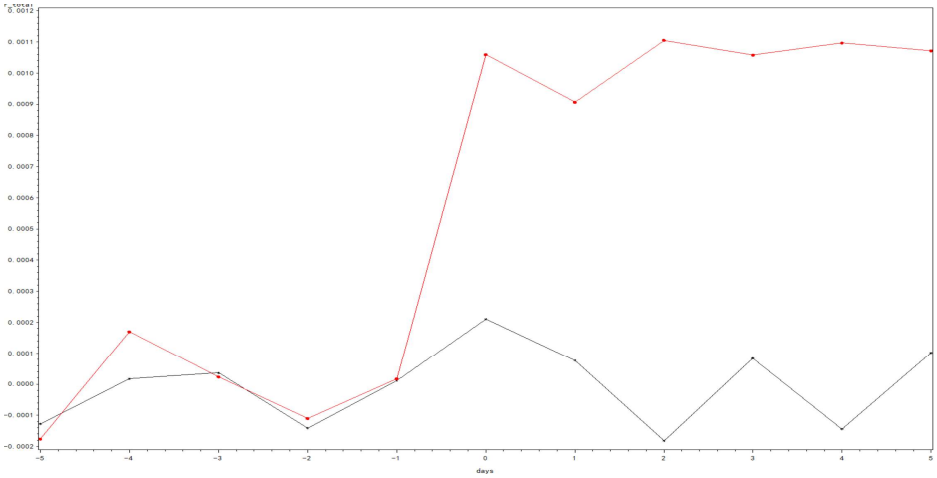
Figure 1. Buy-and-hold Abnormal Returns around Weibo Posts



This figure depicts the ten-day buy-and-hold abnormal return around Weibo posts where 0 indicates the day that the board chair posts on Weibo. The benchmark portfolios are constructed based on size, B/M and momentum. The red line indicates work-related Weibo posts and the blue line indicates non-work-related Weibo posts.

Table 1. The Sample

Panel A. Year Distribution

This panel presents the year distribution of A-share listed firms with a board chair who opened a Sina Weibo account during 2009-2016.

Year	Board Chair Opening a Weibo Account	
	Number	Percentage of Total Firm Sample
2009	3	3.409%
2010	23	26.136%
2011	41	46.591%
2012	9	10.227%
2013	5	5.682%
2014	4	4.545%
2015	3	3.409%
2016	0	0.000%
Total	88	100%

Table 1. The Sample

Panel B. Industry Distribution
This panel presents the industry distribution of A-share listed firms with a board chair who opened a Sina Weibo account during 2009-2016.

CSRC Industry	Board Chair Opening a Weibo Account	
	Number	Percentage of Total Firm Sample
Agriculture, Forestry, farming & fishery	0	0.000%
Mining	1	1.136%
Manufacturing	52	59.091%
Utilities	2	2.273%
Construction	2	2.273%
Wholesale and retail	4	4.545%
Transportation	2	2.273%
Hotel & catering industry	1	1.136%
Information transmission、software & information technology service	11	12.500%
Finance	0	0.000%
Real estate	6	6.818%
Leasing & commerce service	3	3.409%
Scientific research & technology service	0	0.000%
Water conservancy, environment & public facilities management	1	1.136%
Education	0	0.000%
Hygienism & social work	0	0.000%
Culture, sports & entertainment	3	3.409%
Comprehensive	0	0.000%
Total	88	100.000%

Table. Summary Statistics of Variables

This table presents the summary statistics of the main variables in this study. The definitions of variables are given in Appendix 2. All variables are winsorized at the top and bottom 1%. The total number of observations is 106,046.

Variables	Mean	Median	STD	Q1	Q3
BHARs[0, 3]	0.046%	0.035%	2.341%	0. 028%	1.067%
ABVolume[0, 3]	0.086	1.972	-0.181	-0.481	0.319
Weibo	0.163	0	0.369	0	0
Work-related weibo	0.096	0	0.294	0	0
Non-work-related weibo	0.067	0	0.250	0	0
Event day	0.024	0	0.153	0	0
News day	0.031	0	0.173	0	0
Firm size	22.847	0.961	22.704	22.173	23.331
Analyst	25.798	32.651	14.000	2.000	40.000
Institutions	0.176	0.270	0.049	0.008	0.224
Market-to-book	3.777	2.708	2.933	1.996	4.789
Leverage	0.484	0.210	0.486	0.315	0.654
ROE	0.082	0.116	0.082	0.036	0.133

Table 3. Information Content of Weibo Posts

Panel A: Univariate Tests

This table presents the descriptive statistics for the Weibo sample and the No Weibo sample as well as univariate tests for differences in means and medians between the samples. The Weibo sample is composed of observations characterized by a Weibo post by the board chair. The No Weibo sample is composed of observations when the board does not post on Weibo. *BHARs[0, 3]* is the absolute value of buy-and-hold abnormal returns from the day of the Weibo post until three days after the post. The benchmark is constructed based on Size, B/M and Momentum. The last column presents the *t*-Test and Mann-Whitney-Wilcoxon Test for the difference between (1) and (2). ***, ** and * denote significance for the difference between the two sample groups at 1%, 5%, and 10% respectively.

	Weibo (1)		**No Weibo (2)**		**Test for Difference between (1) and (2)**
	N	***BHARs[0, 3]***	**N**	***BHARs[0, 3]***	
Mean	17241	0.098%	88805	0.036%	8.79***
Median	17241	0.061%	88805	0.013%	6.94***

Table 3. Information Content of Weibo Posts

Panel B: Multivariate Tests

This table presents the OLS regression results of board chair Weibo posts and stock performance. The dependent variables are measured as the absolute value of buy-and-hold abnormal returns (BHARs) in a window of [0, 3] where the benchmark is constructed based on size, B/M and momentum. *BHARs[0, 3]* (basis points) is constructed as *BHARs[0, 3]* multiplied by 10,000 to make the coefficient relevant. The key explanatory variable is Weibo, which equals one if the firm's board chair post on Weibo at date *t*, and zero otherwise. The remaining explanatory variables are defined in Appendix 2. Year and firm dummies are included but not reported. All continuous variables are winsorized at the top and bottom 1%. *T*-statistics are given in parentheses and computed using heteroskedasticity-robust standard errors clustered by firm and year (Petersen, 2009; Thompson, 2011). ***, **, and * denote significance at the 1%, 5%, and 10% level, respectively.

	BHARs[0, 3] (basis points)			
	(1)	(2)	(3)	(4)
Weibo	41.246***	11.159***	12.075***	8.108***
	(5.62)	(4.80)	(5.62)	(3.54)
Event day		26.187***		17.209***
		(19.13)		(12.08)
News day			18.207***	10.495***
			(7.89)	(6.92)
Firm Size	0.458	0.439	0.518	0.320
	(0.42)	(0.61)	(0.90)	(1.27)
Analyst	-0.083***	-0.076**	-0.091**	-0.068**
	(-2.65)	(-2.28)	(-2.04)	(-1.92)
Institutions	-12.157***	-10.087***	-9.504***	-7.195***
	(-6.55)	(-3.29)	(-4.90)	(-5.07)
Market-to-Book	1.406***	1.597***	1.081***	1.207***
	(4.75)	(4.98)	(3.63)	(3.08)
Leverage	2.509	2.385	2.091	1.765
	(0.71)	(1.26)	(0.86)	(0.48)
ROE	12.833*	8.098*	9.187**	10.807**
	(1.88)	(1.91)	(1.99)	(2.34)
Year fixed effect	Yes	Yes	Yes	Yes
Firm fixed effect	Yes	Yes	Yes	Yes
Intercept	-8.070	-8.796	-6.230	-11.012
	(-0.34)	(-1.28)	(-0.98)	(-0.73)
Number	106046	106046	106046	106046
Adjusted R^2	0.072	0.078	0.076	0.082

Table 4. Information Content of Work-related Weibo and Non-work-related Weibo Posts

Panel A: Univariate Test

This table presents the descriptive statistics for the Work-related Weibo sample, the Non-work-related Weibo sample, and the No Weibo sample as well as univariate tests for differences in means and medians. The Work-related Weibo sample is composed of observations with work-related Weibo posts. The Non-work-related Weibo sample is composed of observations with non-work-related Weibo posts. The No Weibo sample is composed of observations with no Weibo posts. *BHARs[0, 3]* is the absolute value of buy-and-hold abnormal returns from date 0 to date 3 and the benchmark is constructed based on Size, B/M and Momentum. The last column presents the *t*-Test and Mann-Whitney-Wilcoxon Test for the difference between (1) and (2). ***, ** and * denote significance for the difference between the two sample groups at 1%, 5%, and 10% respectively.

1. Work-related Weibo Post vs Non-work-related Weibo Post

	Work-related Weibo (1)		Non-work-related Weibo (2)		Test for Difference between (1) and (2)
	N	BHARs[0, 3]	N	BHARs[0, 3]	
Mean	10131	0.138%	7110	0.041%	5.63***
Median	10131	0.079%	7110	0.025%	5.17***

2. Work-related Weibo Post vs No Weibo Post

	Work-related Weibo (1)		No Weibo (2)		Test for Difference between (1) and (2)
	N	BHARs[0, 3]	N	BHARs[0, 3]	
Mean	10131	0.138%	88805	0.036%	10.04***
Median	10131	0.089%	88805	0.013%	7.85***

3. Non-work-related Weibo Post vs No Weibo Post

	Non-work-related Weibo (1)		No Weibo (2)		Test for Difference between (1) and (2)
	N	BHARs[0, 3]	N	BHARs[0, 3]	
Mean	7110	0.041%	88805	0.035%	0.51
Median	7110	0.025%	88805	0.013%	1.06

Table 4. Information Content of Work-related Weibo and Non-work-related Weibo Posts

Panel B: Multivariate Tests

This table presents the OLS regression results for Work-related Weibo posts, Non-work-related Weibo posts, and stock performance. The dependent variables are measured as the absolute value of buy-and-hold abnormal returns (BHARs) using a window of [0, 3] where the benchmark is constructed based on size, B/M and momentum. *BHARs[0, 3]* (basis points) is constructed as *BHARs[0, 3]* multiplied by 10000 to make the coefficient relevant. The two key explanatory variables are: *Work-related Weibo*, which equals one if the firm's board chair made at least one work-related Weibo post at date *t* and zero otherwise, and *Non-work-related Weibo*, which equals one if the firm's board chair made at least one Weibo post with no relation to work at date *t* and zero otherwise. The remaining explanatory variables are defined in Appendix 2. Year and firm dummies are included but not reported. All continuous variables are winsorized at the top and bottom 1%. *T*-statistics are given in parentheses and computed using heteroskedasticity-robust standard errors clustered by firm and year (Petersen, 2009; Thompson, 2011). ***, **, and * denote significance at the 1%, 5%, and 10% level, respectively.

	***BHARs[0, 3]* (basis points)**			
	(1)	**(2)**	**(3)**	**(4)**
Work-related	40.109***	10.209***	13.398***	8.794***
Weibo	(5.59)	(9.13)	(5.07)	(3.38)
Non-work-related	1.096	-1.148	2.107	1.096
Weibo	(0.37)	(-0.26)	(0.91)	(0.47)
Event day		23.259***		16.127***
		(15.42)		(10.40)
News day			15.265***	9.159***
			(6.21)	(7.85)
Controls	Yes	Yes	Yes	Yes
Year fixed effect	Yes	Yes	Yes	Yes
Firm fixed effect	Yes	Yes	Yes	Yes
Intercept	-8.002	-8.725	-6.175	-10.125
	(-0.31)	(-1.04)	(-0.72)	(-1.12)
Number	106046	106046	106046	106046
Adjusted R^2	0.072	0.078	0.079	0.084

Table 5. Stock Return and Volume Patterns of Work-related and Non-work-related Weibo Posts

Panel A: Return Pattern

This panel presents the OLS regression results for Work-related Weibo posts, Non-work-related Weibo posts, and the stock return pattern using a [0, 3] event window. The dependent variables are measured as the size, B/M and momentum adjusted abnormal returns at date 0 to 3, respectively. ABReturns (basis points) is constructed as *ABReturns* multiplied by 10000 to make the coefficient relevant. The key explanatory variables are: *Work-related Weibo*, which equals one if the firm's board chair made at least one work-related Weibo post at date *t* and zero otherwise, and *Non-work-related Weibo*, which equals one if the firm's board chair made at least one Weibo post with no relation to work at date *t* and zero otherwise. The remaining explanatory variables are defined in Appendix 2. Year and firm dummies are included but not reported. All continuous variables are winsorized at the top and bottom 1%. *T*-statistics are given in parentheses and computed using heteroskedasticity-robust standard errors clustered by firm and year (Petersen, 2009; Thompson, 2011). ***, **, and * denote significance at the 1%, 5%, and 10% level, respectively.

	Abnormal Returns (basis points)			
	ABReturn$_t$	**ABReturn$_{t+1}$**	**ABReturn$_{t+2}$**	**ABReturn$_{t+3}$**
	(1)	**(2)**	**(3)**	**(4)**
Work-related weibo	5.794***	1.209***	0.309*	-0.176
	(4.38)	(2.67)	(1.86)	(0.97)
Non-work-related weibo	1.172**	-0.822**	-0.115*	0.106
	(2.80)	(-1.96)	(-1.79)	(0.80)
Event day	11.208***	6.891***	2.149*	1.041
	(7.47)	(3.20)	(1.91)	(1.28)
News day	6.409***	3.138***	1.062**	0.271
	(5.14)	(2.67)	(2.10)	(1.04)
Controls	Yes	Yes	Yes	Yes
Year fixed effect	Yes	Yes	Yes	Yes
Firm fixed effect	Yes	Yes	Yes	Yes
Intercept	-7.396	-9.108*	-5.487	-6.906
	(-1.27)	(-1.79)	(-1.42)	(-1.13)
Number	106046	106046	106046	106046
Adjusted R^2	0.074	0.071	0.054	0.039

Table 5. Stock Return and Volume Patterns of Work-related and Non-work-related Weibo Posts

Panel B: Volume Pattern

This panel presents the OLS regression results for Work-related Weibo posts, Non-work-related Weibo posts, and the trading volume pattern using a [0, 3] event window. The dependent variables are abnormal trading volume(%), measured as the ratio of trading volume at date *t* to the average daily trading volume of firm *i* during the past 180 days minus one, thus capturing the trading volume change in date *t*. *ABVolume (%)* is constructed as *ABVolume* multiplied by 100 to make the coefficient relevant. The key explanatory variables are: *Work-related Weibo*, which equals one if the firm's board chair made at least one work-related Weibo post at date *t* and zero otherwise, and *Non-work-related Weibo*, which equals one if the firm's board chair made at least one Weibo post with no relation to work at date *t* and zero otherwise. The remaining explanatory variables are defined in Appendix 2. Year and firm dummies are included but not reported. All continuous variables are winsorized at the top and bottom 1%. *T*-statistics are given in parentheses and computed using heteroskedasticity-robust standard errors clustered by firm and year (Petersen, 2009; Thompson, 2011). ***, **, and * denote significance at the 1%, 5%, and 10% level, respectively.

	Abnormal Trading Volume (%)			
	ABVolume$_t$	**ABVolume$_{t+1}$**	**ABVolume$_{t+2}$**	**ABVolume$_{t+3}$**
	(1)	**(2)**	**(3)**	**(4)**
Work-related Weibo	5.383***	3.123***	0.876	0.608
	(5.25)	(2.94)	(1.44)	(0.69)
Non-work-related	2.097***	1.253**	0.387	0.064
Weibo	(2.81)	(2.39)	(0.51)	(0.37)
Event day	11.286***	7.018***	5.473***	1.139*
	(4.71)	(3.29)	(2.85)	(1.82)
News day	6.145***	4.271***	2.085***	0.918*
	(3.54)	(2.81)	(1.93)	(1.74)
Controls	Yes	Yes	Yes	Yes
Year fixed effect	Yes	Yes	Yes	Yes
Firm fixed effect	Yes	Yes	Yes	Yes
Intercept	-24.805***	-18.156***	-12.087***	-8.297***
	(-5.12)	(-6.53)	(-4.59)	(-2.74)
Number	106046	106046	106046	106046
Adjusted R^2	0.010	0.007	0.005	0.006

Table 6. Vector Autoregressions for Returns and Weibo Posts

This table reports panel vector autoregression results using the following model specification:

$$Return_{i,t} = \alpha + \beta_1 L5_0(Weibo\ Day)_{i,t} + \beta_2 L5_0(Return)_{i,t} + \beta_3 Exogenous_{i,t} + \varepsilon_{i,t}$$

The coefficients are obtained using system GMM estimations and five lags the explanatory variables. The dependent variables are Returns (basis points) and Weibo days for Panels A and B respectively.

Panel A: Return as a Function of Weibo Shocks

	Returns (basis points)
Weibo Day$_t$	28.456***
	(11.79)
Weibo Day$_{t-1}$	8.142*
	(2.12)
Weibo Day$_{t-2}$	-2.264
	(-0.59)
Weibo Day$_{t-3}$	3.541
	(0.46)
Weibo Day$_{t-4}$	-1.231
	(0.91)
Weibo Day$_{t-5}$	0.712
	(1.21)
AICC	8.507
Number	106046

Table 6. Vector Autoregressions for Returns and Weibo Posts

Panel B: Weibo as a Function of Return Shocks

	Weibo
$Return_{t-1}$	0.012
	(0.51)
$Return_{t-2}$	-0.004
	(0.18)
$Return_{t-3}$	0.007
	(0.31)
$Return_{t-4}$	0.010
	(0.08)
$Return_{t-5}$	0.006
	(0.27)
AICC	-10.926
Number	106046

Table 7. Information Content of Weibo Posts and Information Asymmetry

This table presents OLS regression results for Weibo posts, stock performance, and information asymmetry. The dependent variables are measured as the absolute value of buy-and-hold abnormal returns (BHARs) in a window of [0, 3] where the benchmark is constructed based on size, B/M and momentum. *BHARs[0, 3]* (basis points) is constructed as *BHARs[0, 3]* multiplied by 10000 to make the coefficient relevant. The key explanatory variables are *Weibo*, which equals one if the firm's board chair post at least once on Weibo at date *t* and zero otherwise, and the interaction term of Weibo and a proxy for information asymmetry. In column (1), *Smaller firm* is a dummy variable which equals one if the firm's market capitalization is less than the corresponding median value of the sample at the end of the nearest quarter and zero otherwise. In column (2), *Fewer analysts* is a dummy variable which equals one if the number of analysts covering the firm is less than the corresponding median value of the sample and zero otherwise. In column (3), *Fewer Institutions* is a dummy variable which equals one if the ratio of mutual fund holdings for a firm at the end of the nearest quarter is less than the corresponding median value of the sample, and zero otherwise. Other variables are defined in Appendix 2. Year and firm dummies are included but not reported. All continuous variables are winsorized at the top and bottom 1%. *T*-statistics are given in parentheses and computed using heteroskedasticity-robust standard errors clustered by firm and year (Petersen, 2009; Thompson, 2011). ***, **, and * denote significance at the 1%, 5%, and 10% level, respectively.

	***BHARs[0, 3]* (basis points)**		
	(1)	**(2)**	**(3)**
Weibo	6.609***	5.186***	7. 745***
	(7.85)	(5.91)	(6.87)
Weibo*	4.154***		
Smaller firm	(3.72)		
Weibo*		3.127***	
Fewer Analysts		(8. 09)	
Weibo*			3.863***
Fewer Institutions			(8.95)
Event day	17.209***	15.487***	14.365***
	(12.08)	(10. 84)	(8.97)
News day	10.495***	11.308***	9.426***
	(6.92)	(7.19)	(5.65)
Controls	Yes	Yes	Yes
Year fixed effect	Yes	Yes	Yes
Firm fixed effect	Yes	Yes	Yes
Intercept	-11.012	-12.796	-14.297
	(-0.73)	(-1.36)	(-1.08)
Number	106046	106046	106046
Adjusted R^2	0.082	0.085	0.084

Table 8. Weibo Posts, Followers and Stock Performance

This table presents the OLS regression results for Weibo posts, Weibo followers and stock performance. The dependent variable is measured as the absolute value of buy-and-hold abnormal returns (BHARs) in a window of [0, 3] where the benchmark is constructed based on size, B/M and momentum. *BHARs[0, 3]* (basis points) is constructed as *BHARs[0, 3]* multiplied by 10000 to make the coefficient relevant. The key explanatory variables are *Weibo*, which equals one if the firm's board chair makes at least on Weibo post at date *t* and zero otherwise, and the interaction term of *Weibo* and *More followers. More followers* is a dummy variable which equals one if the number of followers of the official Weibo account is less than the corresponding median value of the sample and zero otherwise. The remaining explanatory variables are defined in Appendix 2. Year and firm dummies are included but not reported. All continuous variables are winsorized at the top and bottom 1%. *T*-statistics are given in parentheses and computed using heteroskedasticity-robust standard errors clustered by firm and year (Petersen, 2009; Thompson, 2011). ***, **, and * denote significance at the 1%, 5%, and 10% level, respectively.

	BHARs[0, 3] **(basis points)**
Weibo	5.978***
	(10.63)
Weibo*	4.280***
More followers	(5.97)
Event day	15.915***
	(14.28)
News day	11.264***
	(4.97)
Controls	Yes
Year fixed effect	Yes
Firm fixed effect	Yes
Intercept	-8.706
	(-0.94)
Number	106046
Adjusted R^2	0.091

Table 9. State-Owned and Private Firms

This table presents OLS regression results for Weibo, ownership type, and stock performance. The dependent variable is measured as the absolute value of buy-and-hold abnormal returns (BHARs) in a window of [0, 3] where the benchmark is constructed based on size, B/M and momentum. *BHARs[0, 3]* (basis points) is constructed as *BHARs[0, 3]* multiplied by 10000 to make the coefficient relevant. The regression results for private firms and SOEs are presented in columns (1) and (2), respectively. The difference between SOEs and private firms is presented in column (3). The key explanatory variables are *Weibo*, which equals one if the firm's board chair posts at least one weibo at date *t* and zero otherwise. In column (3), *SOE* is a dummy variable which equals one if the firm is ultimately controlled by the government or government-related entities and zero otherwise. The remaining explanatory variables are defined in Appendix 2. Year and firm dummies are included but not reported. All continuous variables are winsorized at the top and bottom 1%. *T*-statistics are given in parentheses and computed using heteroskedasticity-robust standard errors clustered by firm and year (Petersen, 2009; Thompson, 2011). ***, **, and * denote significance at the 1%, 5%, and 10% level, respectively.

	***BHARs[0, 3]* (basis points)**		
	Private Firms	**SOE**	**Effect of SOE**
	(1)	**(2)**	**(3)**
Weibo	10.270***	6.356***	n.a.
	(7.48)	(4.95)	
Weibo*SOE			-3.172***
			(-7.39)
Event day	18.431***	14.175***	16.807***
	(10.65)	(4.39)	(11.95)
News day	11.197***	7.297***	9.348***
	(6.92)	(5.70)	(5.84)
Controls	Yes	Yes	Yes
Year fixed effect	Yes	Yes	Yes
Firm fixed effect	Yes	Yes	Yes
Intercept	-7.106	-12.483	-15.195
	(-0.85)	(-0.46)	(-1.28)
Number	68055	37991	106046
Adjusted R^2	0.093	0.081	0.087

Table 10. Effects of the 2013 Government Regulation

This table presents the OLS regression results on the 2013 government regulation effect. The dependent variables are measured as the absolute value of buy-and-hold abnormal returns (BHARs) in a window of [0, 3] where the benchmark is constructed based on size, B/M and momentum. *BHARs[0, 3]* (basis points) is constructed as *BHARs[0, 3]* multiplied by 10000 to make the coefficient relevant.

Panel A. Weibo

This panel presents the OLS regression results for the 2013 government, Weibo, and stock performance. The key explanatory variables are *Weibo* which equals one if the firm's board chair posts at least a weibo at date *t* and zero otherwise, and the interaction term of *Weibo* and *Post-regulation*. *Post-regulation* is a dummy variable which equals one if the observation is after the government regulation on June 23, 2016, and zero otherwise. The remaining explanatory variables are defined in Appendix 2. Year and firm dummies are included but not reported. All continuous variables are winsorized at the top and bottom 1%. *T*-statistics are given in parentheses and computed using heteroskedasticity-robust standard errors clustered by firm and year (Petersen, 2009; Thompson, 2011). ***, **, and * denote significance at the 1%, 5%, and 10% level, respectively.

	***BHARs[0, 3]* (basis points)**			
	(1)	**(2)**	**(3)**	**(4)**
Weibo	51.297***	17.708***	19.139***	15.309***
	(4.80)	(6.93)	(6.81)	(3.64)
Weibo*Post-regulation	-10.246***	-8.405***	-9.492***	-6.286***
	(7.34)	(-6.55)	(-7.90)	(-5.71)
Post-regulation	-2.142	4.308	-2.108	5.496
	(-0.71)	(1.17)	(-1.23)	(0.94)
Event day		28.306***		16.485***
		(14.52)		(13.68)
News day			19.794***	11.527***
			(9.75)	(6.30)
Controls	Yes	Yes	Yes	Yes
Year fixed effect	Yes	Yes	Yes	Yes
Firm fixed effect	Yes	Yes	Yes	Yes
Intercept	-11.196	-10.095	-8.091	-13.308
	(-0.85)	(-1.31)	(-0.50)	(-0.85)
Number	106046	106046	106046	106046
Adjusted R^2	0.075	0.077	0.079	0.084

Table 10. Effects of the 2013 Government Regulation

Panel B. Work-related Weibo vs Non-work-related Weibo

This panel presents OLS regression results of the 2013 government regulation, different types of Weibo, and stock performance. The key explanatory variables are: *Work-related Weibo*, which equals one if the firm's board chair made at least one work-related Weibo post at date *t* and zero otherwise, *Non-work-related Weibo*, which equals one if the firm's board chair made at least one Weibo post with no relation to work at date *t* and zero otherwise, and their interaction term with *Post-regulation*. *Post-regulation* is a dummy variable which equals one if the sample observation is after the 2013 government regulation and zero otherwise. The remaining explanatory variables are defined in Appendix 2. Year and firm dummies are included but not reported. All continuous variables are winsorized at the top and bottom 1%. *T*-statistics are given in parentheses and computed using heteroskedasticity-robust standard errors clustered by firm and year (Petersen, 2009; Thompson, 2011). ***, **, and * denote significance at the 1%, 5%, and 10% level, respectively.

	BHARs[0, 3] (basis points)			
	(1)	(2)	(3)	(4)
Work-related Weibo	49.574***	15.769***	18. 850***	8.794***
	(6.80)	(7.58)	(9.92)	(3.38)
Work-related Weibo*	-13.386***	-4.524***	-10.987***	-5.085***
Post-regulation	(-8.73)	(-6.49)	(-7.35)	(-6.47)
Non-work-related Weibo	0.876	-0.975	1.135	1.408
	(0.86)	(-0.58)	(1.29)	(0.89)
Non-work-related Weibo*	0.108	1.208	-2.305	-0.341
Post-regulation	(0.52)	(0.45)	(-0.74)	(-1.30)
Post-regulation	-2.098	3.693	-2.149	5.296
	(-1.24)	(1.29)	(-1.38)	(0.87)
Event day		29.108***		14.705***
		(17.17)		(12.03)
News day			18.394***	10.482***
			(12.41)	(8.49)
Controls	Yes	Yes	Yes	Yes
Year fixed effect	Yes	Yes	Yes	Yes
Firm fixed effect	Yes	Yes	Yes	Yes
Intercept	-13.074	-12.704	-8.973	-14.592
	(-0.92)	(-1.42)	(-0.69)	(-1.28)
Number	106046	106046	106046	106046
Adjusted R^2	0.074	0.079	0.081	0.086

Appendix 1. List of Chinese Keywords

股权	股份变动；股权变更；所有者权益；股东权益；资本公积；股本；股权；股份
盈余公告	年报；季报；半年报；业绩预报；业绩快报
收入	销售收入；收入；销售额；销量；主营；现金流；现金
利润	损益；盈利；费用；支出；投入；利润；亏损；业绩；效益；收益；每股收益；EPS；
资产、负债	资产；负债；贷款；债务
融资	配股；增发；融资；投行；投资银行；银行；借款；债券；债权
股利	股利；分红；红利；10 转；10 送
税收	纳税；税收；利税；所得税；税务；退税
并购	参股；入股；收购；并购；兼并；控制权；控股；投资；购买；重组；转让
荣誉	行业领先；被认定为；关键技术；核心技术；荣膺；入选；领先； 荣获；创造；高度认同；喜获；斩获；突破；奖励；声誉；佳绩
研发	研制；专利；研发；开发；创新；R&D
单位	万元；万户；万台；万部；千万；亿元；亿；十亿；百亿；千亿； 万亿
市场	市场份额；市场占有率；行业排名；
经营活动	动工；开张；开工；揭牌；　揭幕；奠基；承接；承建；建成；完工；完成；落成；庆典；竣工；投入使用；重大进展；签约；签订； 签署；合同；中标；进军；洽谈；合作；赢得；入围；列入；推出；宣布；宣告；发布；新产品；新品；上市；获批；新品；采购； 购买；销售；出货量；展览；博览会；营销；质量；控制；政府；领导；首长；考察；莅临；视察；调研；补贴；诉讼
人物活动	参观；访问；考察；洽谈；会见；听取；参加；受邀；签约；采访；拜访；

Appendix 2. Definitions of Variables

Variable	Definition
BHARs[0, 3]	Three-day buy-and-hold abnormal return. 0 is the trading date at which the firm's board chair posts a Weibo and the benchmarks are size, B/M and momentum matching portfolios.
$ABReturn_t$	Abnormal return at date *t*, measured as the difference between the stock return of firm *i* at date *t* and the benchmark portfolio return created based on size, B/M and momentum.
$ABVolume_t$	Abnormal trading volume at date *t*, measured as the difference between the trading volume at date *t* and the average trading volume of the past 170 trading days (i.e. the past 6 months).
Effective bid-ask spread	Two times the absolute value of the difference between the transaction price and the mid-quote scaled by the mid-quote.
Price impact	The coefficient obtained when regressing the stock return measured in basis points over a 5-minute interval onto the signed square-root of trading volume in millions of RMB over the same interval with intercept omitted.
Weibo	A dummy variable which equals one if the firm's board chair makes at least one Weibo post at date *t* and zero otherwise.
Work-related Weibo	A dummy variable which equals one if the firm's board chair makes at least one work-related Weibo post at date *t* and zero otherwise.
Non-work-related Weibo	A dummy variable which equals one if the firm's board chair only make non-work-related Weibo posts at date *t* and zero otherwise.
Event day	A dummy variable which equals one if the firm's board chair makes a Weibo post in any of the five trading days ([-2 2]) around the day that the firm issued a public announcement (e.g., M&A, dividend, stock repurchase, equity, bank and bond financing) and zero otherwise.
News day	A dummy variable which equals one if the firm's board chair makes a Weibo post in any of the five trading days ([-2 2]) around the day that a newspaper reports firm news at date *t* and zero otherwise.
Weibo followers	The number of Weibo users who are following the board chair's official Weibo account.
Firm size	The natural logarithm of the market capitalization of the firm at the beginning of year-quarter *t.*
Analyst	The natural logarithm of one plus the number of analysts that cover firm *i* at year-quarter *t.*
HHI	Abbreviation for Herfindahl-Hirschman Index, an indicator of competition, estimated by using all listed firms' sales from the same industry at the beginning of year-quarter *t*.
Leverage	The book value of all liabilities scaled by total assets at the beginning of the year-quarter *t*.
ROE	Net profits divided by total equity at the beginning of the year-quarter *t*.
Family Firm	A dummy variable which equals one if the firm is ultimately controlled by individuals or members of a family and zero otherwise.