Corporate Accessibility and Stock Price Crash Risk*

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Keywords: Corporate accessibility, Private information acquisition, Stock price crash risk, China

JEL Classification: G19, D89

*This manuscript is dedicated to Michael Firth, who passed away in August 2016. While working on revisions to this manuscript, he enlightened us with his wisdom about life and his brilliant understanding of financial and accounting economics, which was important for the eventual completion of this work. Wong is from Lingnan University, 8 Castle Peak Road, Tuen Mun, N.T., Hong Kong. Email: soniawong@ln.edu.hk, Phone: (852) 2616-8159. Zhao is from Lingnan University, 8 Castle Peak Road, Tuen Mun, N.T., Hong Kong. Email: x4zhao@ln.edu.hk, Phone: (852) 2616-8156. We are grateful to Ferdinand Gul, K. Philip Wang, Baohui Zhang, Chen Lin, Dan Li, Guanming He, Li Guo, and seminar participants at FMA (European), FMA (Annual), CICF, Shanghai JiaoTong University, and Chinese University of Hong Kong, for their comments. Wong thanks the Government of the Hong Kong Special Administrative Region of PRC for funding support (GRF LU391113).

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1. Introduction

A grave risk faced by stock market investors is the sudden crash in stock prices. Jin and Myers (2006) articulate that stock price crashes are caused by the hoarding and accumulation of bad news by managers due to a lack of corporate transparency. Consistent with this prediction, research shows that stock price crash risks (hereafter also known as crash risks) are lower in firms that have high-quality accounting and financial reporting information (Hutton *et al.*, 2009; Kim *et al.*, 2011; DeFond *et al.*, 2014; Kim *et al.*, 2014; Kim and Zhang, 2016). In many emerging markets, accounting and financial information is limited and of poor quality. The weak public information environment in these emerging markets provides corporate management with greater latitude to withhold bad news from investors, leading to more pronounced stock price crash risks in these markets than in mature markets. Obtaining more firm-specific information and consequently attenuating stock price crash risks in a weak public information environment is crucial for both investors and regulators. In this study, we examine whether corporate accessibility, which enables outsiders to privately contact and communicate with corporate insiders via different types of public communication channels (e.g., telephones, e-mail, and online discussion forums), can facilitate investors' acquisition of firm-specific information and consequently mitigate stock price crash risks. We choose China, the largest emerging market, as the venue to test our hypotheses as the country's poor public information environment has been well documented (Piotroski and Wong, 2012).

Publicly listed firms usually provide market participants with public contact information via annual reports, company websites, stock exchanges, and other public sources. Such public communication channels allow market participants, especially those without personal contact with firms, to gain access to a firm's management to seek firm-specific information and/or

initiate/confirm their paying corporate in-house visits or attending private meetings on investor days. Therefore, accessibility is likely to facilitate private communications between corporate insiders and various market participants (see, Brown *et al.*, 2019; Firth *et al.*, 2019).

Market participants view private communications as vital to obtaining firm-specific information (Soltes, 2014; Brown *et al.*, 2015).[1] Globally, investors spend US$2 billion annually on private meetings with managers (see Levine 2017). During these meetings, market participants can ask corporate management to explain and clarify the publicly available corporate information, which is particularly relevant to emerging markets wherein investors are less educated and experienced and often do not have the necessary skills and sophistication to understand the publicly available financial information (Titman *et al.*, 2017). More importantly, private communications allow outside market participants to actively elicit "mosaic" information that can be combined with their own private information to understand management quality and firm operations (Cheng *et al.*, 2016; Bushee *et al.*, 2017; Bushee *et al.*, 2018). In addition, market participants use private communications to obtain verbal cues from management, which allows them to detect unfavorable firm performance and corporate misconduct (Hobson *et al.*, 2011; Mayew and Venkatachalam, 2012). We hypothesize that accessibility allows outside investors to get more informed about a firm's bad news, thereby mitigating stock price crash risks.

We test our hypothesis using public firms listed on China's two stock exchanges. China serves as an ideal setting for our study for the following three reasons. First, the stock price crash risk is pronounced in China and varies greatly across firms (Piotroski and Wong, 2012).[2] The

[1]U.S. public companies held, on average, 99 one-on-one meetings with investors in 2015 (see, NG and Troianovski, 2015). A 2010 survey revealed that CEOs and CFOs spent 17 and 26 days per annum, respectively, interacting with various market participants (see, Solomon and Soltes, 2015). Chinese listed firms receive an average of around four site visits per year (Cheng *et al*., 2015, 2016).

[2]For example, Piotroski and Wong (2012) show that the negative skewness in daily excess returns in China is

country's weak enforcement of accounting rules and disclosure standards give corporate insiders enough leeway to suppress bad news, causing the stock prices of publicly listed firms to crash (Aharony *et al.*, 2000; Chen and Yuan, 2004; Liu and Lu, 2007; Kao *et al.*, 2009). Second, most investors in China are small retail investors who do not have the necessary education and financial knowledge to understand firms' public disclosures (Titman *et al.*, 2017). Accessibility gives these retail investors an alternative and easy way to seek information from management to address their informational deficiencies.

Third, the China Securities Regulatory Commission (CSRC) issued a regulation in 2004 that requires listed firms to offer a range of public communication channels to outside market participants. As compliance with this regulation is voluntary, substantial variations across firms are expected. Moreover, the Shenzhen Stock Exchange (SZSE) enacted a regulation in 2009 that requires firms to disclose the number of private in-house meetings held with outside market participants, in their annual reports. These data allow us to verify whether accessibility can indeed facilitate private communications. More importantly, this regulation was further amended in July 2012, requiring that listed firms publicly disclose the detailed contents of their private meetings with immediate effect. If the mitigation effect of accessibility on crash risk is attributable to the information that market participants obtain from private communications, the effect of accessibility on stock price crash risk is greater when the acquired information is disseminated to a broader audience. Hence, the regulatory change provides us with a valuable identification to verify our hypothesized information acquisition function of accessibility.

We survey all of the Chinese listed firms in 2010 to evaluate their accessibility by focusing on three communication channels that are publicly available to outside market participants,

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significantly greater than the global average documented by Jin and Myers (2006).

namely, telephones, e-mail, and online discussion forums. A firm is considered accessible if we can successfully communicate with it using at least one of the three channels of communication. The measure is also used in Firth *et al*. (2019). They argue that accessibility facilitates outsiders' acquisition of information via private communications and increases firms' difficulties in hiding any self-dealing activities. Consistent with their conjecture, they find that inaccessible firms are associated with more serious agency problems. Jin and Myers (2006) suggest that agency problems are insufficient to predict the advent of stock price crash risks because they have to be accompanied by informational opacity that allows a stockpile of bad news. Thus, although accessibility has been shown to be associated with agency problems, the question of whether accessibility can serve as a conduit of information transfer that helps to reduce the accumulation of bad news and consequently stock price crash risks remains unanswered. This study addresses this question.

We relate accessibility to two measures of firm-specific crash risk: (a) the negative skewness of future firm-specific weekly returns and (b) the likelihood of future extreme negative firm-specific returns. These two measures have been widely used in prior studies (Chen *et al.*, 2001; Hutton *et al.*, 2009; Kim *et al.*, 2011; Kim and Zhang, 2016). We use accessibility measured in 2010 to explain the stock price crash risk for the 2011–2013 period. By doing so, we can explore whether accessibility can predict future stock price crash risks.

Our final sample contains 1,576 unique listed firms, of which 27% are publicly accessible. After controlling for firms' public transparency, agency conflicts, and other factors that can explain stock price crash risks, we find that accessible firms face lower stock price crash risks. In particular, relative to firms that have no accessible channels, the subsequent negative skewness of accessible firms decreased by around 28% and the likelihood of extreme negative

firm-specific returns by 32% during the 2011–2013 period.

Studies suggest that the lack of financial reporting transparency is associated with greater stock price crash risks (Hutton *et al.*, 2009; Kim *et al.*, 2019). Next, we examine whether accessibility can substitute the informational role of public financial information. We find that the effect of accessibility on stock price crash risk is stronger in firms with poor financial reporting environments (manifested as high earnings management and low financial statement readability). This finding suggests that accessibility is a good substitute for public financial information in disclosing bad news to the market. In fact, we find that poor public financial information is no longer associated with greater stock price crash risks in accessible firms, suggesting that these stock price crash risks induced by public disclosure opacity can be redressed by accessibility. Moreover, the crash risk mitigation effect of accessibility remains economically significant in firms wherein the financial reporting quality is high, suggesting that accessibility retains a prominent informational role even when the quality of firms' public financial information is high. Our results are robust upon matching accessible firms with inaccessible firms with similar characteristics via the propensity score matching (PSM) approach.

To determine our proposed mechanism for the link between accessibility and stock price crash risks, we first examine whether accessibility can facilitate private communications. We use the data from private in-house meetings and find that accessible firms indeed conduct more frequent private meetings between firms and outside market participants than inaccessible firms.

We then examine whether accessibility mitigates crash risk by facilitating market participants' information acquisition via private communications. In particular, we use the SZSE's 2012 policy of disclosing the contents of private communications and examine its impact

on the mitigation effect of accessibility on crash risk. We find that the crash risk mitigation effect of accessibility for firms listed on the SZSE increases significantly when the contents of private meetings are publicly disclosed. The result confirms our premise that the link between accessibility and crash risk is created by the information derived from private communications.

We also explore the difference between effective and nominal accessibility (public communication channels are present but not accessible). As only effective accessibility allows information exchange between firms and outsiders, we believe that effective rather than nominal accessibility can reduce crash risks. Our findings are consistent with this expectation. Furthermore, we construct variables to measure accessible firms' quality of responses upon surveying them and examine whether the mitigation effect of accessibility is affected by communication quality. We believe that a higher quality of communication will promote more effective information exchange, thereby increasing the effect of accessibility. As expected, we find that firms with high-quality communication experience larger declines in stock price crash risks.

Finally, we examine whether accessibility is indeed associated with accumulating less bad news. We focus on two types of corporate bad news, namely, the announcement of negative unexpected earnings and the issuance of negative earnings guidance (Chang *et al.*, 2017). We find that the stock prices of inaccessible firms are more likely to crash in the weeks following these bad news announcements, whereas the stock prices of accessible firms do not show a similar tendency to crash. These findings suggest that the bad news announcements are unexpected for inaccessible firms but not for accessible firms, consistent with the belief that accessibility facilitates the disclosure of bad news and lowers the likelihood of a crash in stock prices.

We further test this argument using the relaxation of short-sale constraints. Short-sale constraints hinder the incorporation of negative information into stock prices and lead to stock price crashes (Chang *et al.*, 2007). We find that the effect of relaxing short-selling constraints on stock price crash risk is weaker in accessible firms than in inaccessible firms, which is consistent with the accumulation of less negative news in accessible firms.

Our study extends the literature on the determinants of stock price crash risk. Unlike studies that primarily examine the availability of public accounting information and practices in developed markets (Hutton *et al.*, 2009; Kim *et al.*, 2011; DeFond *et al.*, 2014; Kim and Zhang, 2016), our study focuses on accessibility, which allows outside investors to actively contact firms to acquire information via private communications on a continuous basis. We find that that accessibility can mitigate stock price crash risk induced by the opacity of public disclosures. We document that the stockpile of bad news can be attenuated by providing accessibility to market participants, adding to our understanding of information transmission and communications amongst agents in financial markets.

We also contribute to the literature on private communications by documenting a new mechanism that can facilitate market participants' private information acquisitions. Extant studies generally focus on communication events that are often scheduled in advance and attended by institutional investors and financial intermediaries (investor conferences, analyst/investors day, and corporate site visits) (Soltes 2014, Green *et al.*, 2014a; 2014b; Kirk and Markov, 2016; Cheng *et al*., 2016). We show that accessibility can enhance market participants' information acquisition. Our study also extends the literature that examines the effect of publicly listed firms' investor relations (IR) programs on investor base, liquidity, and valuations (Bushee and Miller, 2012; Kirk and Vincent, 2014; Brown *et al.*, 2019; Chapman *et*

al., 2019). This study links accessibility, constructed on the basis of firms' IR programs, to stock price crash risks, which is an important economic outcome of corporate transparency that has been neglected by prior studies.

Our study has implications for regulators and investors with respect to stock price crash risk management. Our results suggest that regulators in financial markets with weak public information environments can mitigate stock price crash risk by incentivizing/requiring publicly listed firms to establish effective accessibility for various market participants. Moreover, our accessibility measure provides investors with an easy-to-use, low-cost screening technology to identify firms that face high stock price crash risks. This measure is particularly valuable because studies such as those of Yan (2011) and Sunder (2010) suggest that the risks associated with extreme losses can be curtailed via screening and not via diversification.

2. Research background and hypothesis

2.1. Institutions of China's information environment

It is evident that the information environment of China's stock markets is weaker than that of mature markets (e.g. Morck *et al.*, 2000; Gul *et al.*, 2010; Piotroski and Wong, 2012). Because of insufficient firm-specific information, China's stock prices exhibit high levels of co-movement and stock price crashes. For example, Morck *et al.* (2000) find that nearly 80% of Chinese stocks move together in an average week, with market returns explaining about 45.3% of the variation in weekly firm-level returns. Piotroski and Wong (2012) show that the negative skewness of Chinese listed firms is significantly higher than that of listed firms in other countries.

The poor information environment of China's stock market has been attributed to the government's extensive controls and its influence over the markets (Piotroski and Wong, 2012). China established the Shanghai Stock Exchange and the SZSE in the early 1990s to partially

privatize its state-owned enterprises (SOEs). However, the government often retains a controlling stake in partially privatized listed SOEs. As research indicates, SOEs are associated with the lower demand and supply of corporate information in financial markets (Ball *et al.*, 2000a; Bushman *et al.*, 2004). On the demand side, controlling shareholders of SOEs often assess managerial performance by relying on information obtained from private channels and political networks rather than on accounting and financial information (Ball *et al.*, 2000a). Furthermore, SOEs are usually favored by governments in terms of funding and are often bailed out by governments when they face the risk of bankruptcy (Sapienza, 2004). Therefore, there is less demand for credible accounting and other corporate information from controlling shareholders and creditors. On the supply side, controlling shareholders and managers of SOEs often prioritize social and political objectives over maximizing shareholder values, and they are therefore not incentivized to supply firm-specific information to financial markets to lower capital costs and correct asset misvaluation.

In addition to the pervasive effects of state-owned listed firms, the Chinese weak information environment is also related to the country's weak enforcement and legal institutions. China's accounting and auditing standards are not substantially different from those adopted by mature markets. Specifically, China adopted international auditing standards in 1994 and more stringent standards in 2007. Since 2007, Chinese listed firms have been required to comply with International Financial Reporting Standards (IFRS). However, the adoption of these international standards has not been accompanied by a commensurate increase in enforcement capacity and legal protection for investors (Allen *et al.*, 2005; Piotroski and Wong, 2012). Due to the lower likelihood of detection and penalties for fraudulent accounting, earnings misreporting and other types of malpractice are prevalent in Chinese listed firms (Aharony *et al.*, 2000; Chen and Yuan,

2004; Firth *et al.*, 2011).

Particularly relevant to our study is that Chinese listed firms have a strong tendency to inflate earnings and suppress the release of bad news. Aharony *et al.* (2000) and Chen and Yuan (2004) find that some firms prop up their performance by booking excessive non-operating income and engaging in accruals-based earnings management to meet the profitability requirements for a rights offering and an initial public offering, respectively. Some studies also find that Chinese firms meet earnings targets by recognizing losses in a less timely manner (Ball *et al.*, 2000b; Bushman and Piotroski, 2006). Jian and Wong (2010) document the use of related party sales to their unlisted parents to boost earnings and avoid delisting. Jiang *et al.* (2010) document that some firms use inter-company loans to facilitate the tunneling of resources in state-owned firms while simultaneously propping up their firms' balance sheets. Piotroski *et al.* (2015) suggest that listed firms in China have political incentives to suppress the release of bad news to the market around major political events. As it is not possible for firms to permanently prop up performance and suppress bad news, it is not surprising that the stock price crash risk of Chinese listed firms is significantly higher than that of firms in other countries (Morck *et al.*, 2000).

Following the high-profile corporate scandals and the weakening of investor confidence in the stock markets in the mid 2000s, the CSRC introduced a series of reforms to strengthen investor protection and enhance the corporate transparency of listed firms. For example, listed firms were required to have a minimum of one third of the total number of directors as independent directors on their boards by June 30, 2003, at least one of whom had to be an accounting professional. In addition to adopting internationally accepted auditing and accounting standards, the CSRC has imposed numerous specific disclosure requirements to increase the

supply of corporate information to help investors protect their interests. For example, listed firms have been required to disclose information about detailed ownership, including pyramidal ownership structure and related party transactions, in their annual reports since 2001 and 2006, respectively.

Recognizing the limited supply of good-quality public information, the CSRC has taken steps to enable investors and other market participants to more easily obtain information directly from corporate insiders by providing communications channels for Chinese listed firms. Specifically, it issued a regulation in 2004 requiring listed firms in China to offer outside investors a range of communication channels.[3] The provision requires listed firms to add an IR section to their webpages, establish dedicated investor telephone consultation, and respond promptly to concerns raised by public investors.

To promote interactive communication between firms and outside investors while maintaining fairness,[4] the SZSE introduced a regulation in 2006 requiring SZSE-listed firms to report all private in-house meetings between outsiders and firms to the CSRC and SZSE. Firms have been required to disclose information on the number of private meetings to the public via their annual reports since 2009. In July 2012, the SZSE further amended this regulation and launched an innovative platform on the stock exchange's website known as "EasyIR." The listed firms were required to disclose detailed information on private meetings, including the number of participants, date, time, venue, and most importantly, the detailed contents of the

[3]"The Provisions on Strengthening the Protection of the Rights and Interests of the General Public Shareholders" (No. 118 [2004] of the CSRC) was released on December 7, 2004. This is in the spirit of Provision No. 3 [2004] of the State Council, which calls for the protection of the rights and interests of investors, especially general public investors.

[4]China issued the fair disclosure regulation to prohibit insiders from disclosing material nonpublic information to selected market participants on January 30, 2007.

communications within two days of the event. This disclosure requirement effectively results in the greater diffusion of information to a broader audience on a timelier basis.

2.2. Hypothesis development

Based on the model of Jin and Myers (2006), firms have the incentive to suppress bad news, resulting in a stockpile of negative information. If the accumulation of negative information reaches a tipping point, it will be forced out, leading to the bursting of the bubble and a stock price crash. The model suggests that firms' stock price crash risk depends on the opacity of a firm's information environment, with more opaque firms exhibiting a greater crash risk. Consistent with this prediction, studies document that stock price crash risk is associated with corporate transparency and accounting practices (Hutton *et al.*, 2009; DeFond *et al.*, 2014; Kim *et al.*, 2014). For example, DeFond *et al.* (2014) show that increased corporate transparency due to the adoption of IFRS can reduce the stock price crash risk. Hutton *et al.* (2009) find that firms with higher corporate transparency proxied by lower levels of earnings management also exhibit a lower stock price crash risk.

Studies on the effects of corporate transparency on stock price crash risk focus on the quality of accounting information and practices. Corporate transparency, however, depends not only on the availability and quality of public corporate information but also on the information obtained by market participants via private communications with corporate insiders. During private communications, outsiders may ask questions to clarify ambiguities in a firm's public disclosures or obtain a deeper understanding of the firm's operations. A salient characteristic of private communications is that they allow outsiders to actively ask questions and make inferences based on what they have witnessed and sensed, which helps them obtain soft information that is rarely available in public sources (Soltes, 2014).

Although fair disclosure regulations prohibit the disclosure of material non-public information to select market participants, the literature demonstrates that private communications are important in allowing market participants to obtain valuable firm-specific information (Green *et al.*, 2014; Cheng *et al.*, 2016; Bushee *et al.*, 2017). Based on the number of corporate site visits in China, Cheng *et al.* (2016) suggest that corporate visits allow financial analysts to directly observe the operations of firms, which help them improve the accuracy of their earnings forecasts. Solomon and Soltes (2015) suggest that private meetings with management allow investors to obtain information that is non-material in itself but that can become "material" in combination with investors' other sources of information. Soltes (2014) further suggests that the information value of private interactions between managers and financial analysts is unlike that of public interactions because the conversation parties in private communications tend to be less concerned about public perceptions of their comments and can therefore engage in more open discussion.

Particularly relevant to our study is research that suggests that direct communications with corporate management allow participants to obtain informational cues that help them to make inferences about possible negative corporate events. For example, Mayew and Venkatachalam (2012) show that the negative effects of managers' voice conference calls can be used to predict poor future performance, while Hobson *et al.* (2011) demonstrate that the vocal cues in CEOs' speeches at earnings conferences can effectively be used to predict future financial misreporting. A more recent study shows that manager sentiment based on textual tone in firm financial reports and conference calls can predict the aggregated market returns (Jiang *et al.*, 2019). Overall, these studies suggest that market participants can make inferences about bad news based on their private communications with management and incorporate the information into the stock price in

a timelier manner.

Based on our discussion above, market participants are likely to obtain valuable information while communicating with firm insiders via public communication channels. They can also use these public communication channels to confirm and arrange other forms of private communications (e.g., corporate in-house meetings) with corporate insiders (Brown *et al.*, 2019). Therefore, we expect that accessibility can facilitate private communications between firms and outside market participants and consequently their acquisition of corporate information. Accordingly, negative corporate news is less likely to be stockpiled in accessible firms than in inaccessible firms, leading to a negative relationship between accessibility and stock price crash risk. We propose the following hypothesis:

H0: Accessible firms face lesser stock price crash risks than inaccessible firms.

3. Data and variables

We obtain our data on accessibility from a June 2010 survey based on all public firms listed on China's two stock exchanges. These data have also been used by Firth *et al.* (2019). Information on firm stock prices and firm characteristics has been collected from the China Stock Market and Accounting Research (CSMAR) database. After merging our datasets and excluding financial firms and those with missing financial information, we have 4,418 firm-year observations for 1,576 firms. The filtering process is presented in Table I.

[Table I about here]

3.1. Measures of accessibility

We manually surveyed the accessibility of all Chinese listed firms to outside investors. The detailed survey design and data collection process can be found in Firth *et al.* (2019). We briefly present our key procedures here.

First, we searched the websites of each listed firm to identify whether there was an IR sub-page/section within the firm's website. For those with an IR section, we further checked whether there was an online discussion forum embedded in the IR section and, if so, counted the number of postings by investors and the number of firm replies to the postings. Moreover, we collected telephone and e-mail contact information disclosed in the IR section.

Second, we made phone calls and sent e-mails to each firm to check whether effective communication with the firm could be established. Using the telephone communication channel, we made phone calls to each firm requesting them to arrange corporate site visits. We chose to do so because the CSRC requires all listed firms to arrange corporate site visits for outsiders upon request. Using the e-mail communication channel, we sent e-mails to each firm to seek information on the major locations of their business operations. We chose to do so because this information is relevant to investors and is not considered sensitive.

Based on the survey information, a firm was considered to be accessible if (1) we could effectively talk with the firm on the telephone (*TEL* = 1 if yes and 0 if no) (a talk was considered effective if the firm either accepted or rejected the corporate visit request for some acceptable reason); (2) we received an e-mail reply from the firm (*EMAIL* = 1 if yes, and 0 if no); or (3) records of the communications between investors and the firm were present on the online discussion forum (*Forum* = 1 if yes, and 0 if no). Thus, our classification of accessibility depends on whether effective communication can be established with a firm and not on the firm's specific responses to our questions.

In addition to the above measures of accessibility for the three public communication channels, we also created an overall accessibility measure. A firm was considered to be accessible as a whole if at least one of the three communication channels was accessible (*IRACS*

= 1 if yes, and 0 if no). Furthermore, *IRSCORE* was created to measure the strength of accessibility by summing the number of accessible communication channels (the maximum score is 3). Detailed definitions of these accessibility measures can be found in Appendix I.

As shown in Table I, we find that among the 1,576 firms investigated, about 78% had IR subpages and 56% (42%, 19%) provided telephone (e-mail, forum) communication channels on their pages. About 20% (15%, 85%) of the telephone (e-mail, forum) channels were actually accessible. Taken as a whole (see the last column), about 73% of firms provided at least one communication channel and 27% were accessible either via online discussion forums, e-mail, or telephone.[5]

3.2. Measures of the stock price crash risk

We calculate the measures of the stock price crash risk and the likelihood of large negative returns based on firms' weekly stock returns from 2011 to 2013. We first compute the firm-specific abnormal weekly return by running a market model. This model is specified as follows:

$$R_{i,w} = \alpha_i + \beta_{1,i}R_{m,w-2} + \beta_{2,i}R_{m,w-1} + \beta_{3,i}R_{m,w} + \beta_{4,i}R_{m,w+1} + \beta_{5,i}R_{m,w+2} + \varepsilon_{i,w} \quad (1)$$

where $R_{i,w}$ is the stock return of firm *i* in week *w* and $R_{m,w}$ is the value-weighted return on the Chinese stock market in week *w*. The residuals $\varepsilon_{i,w}$ from model (1) are highly skewed. We transform them to a roughly symmetric distribution by defining the firm-specific abnormal weekly return $AR_{i,w}$ as the log of one plus the residual, that is, $AR_{i,w} = Log(1 + \varepsilon_w)$.

Our first measure of the stock price crash risk is the negative skewness of the firm-specific

[5]The relatively low accessibility rate in China is consistent with the ineffective enforcement of relevant regulations to provide communication channels for outsiders and the well-documented low incentives of corporate insiders to enhance corporate transparency in China (Morck *et al*. 2000; Piotroski & Wong 2012).

abnormal weekly returns (a higher value indicates a higher stock price crash risk). In particular, for firm *i* in year *t*, the negative skewness ($NCSKEW_{i,t}$) is computed as

$$NCSKEW_{i,t} = -\left[n(n-1)^{3/2}\sum AR_{i,w}^{3}\right]/\left[(n-1)(n-2)(\sum AR_{i,w}^{2})^{3/2}\right] \quad (2)$$

Our second measure of the stock price crash risk is the likelihood of a large negative firm-specific return. Following Kim *et al.* (2011) and Hutton *et al.* (2009), a firm is defined to have experienced a stock price crash in a year if it has a firm-specific abnormal weekly return 3.09 standard deviations below the annual average firm-specific abnormal weekly returns in a year ($CRASH_{i,t}$ = 1). This deviation is chosen to generate a frequency of 0.1% in the normal distribution.

3.3. Control variables

We control for various firm characteristics that may affect firms' stock price crash risk. First, we include all of the controls used in Kim *et al.* (2011), which are the stock trading turnover (*DTURN*), lagged negative skewness (*LNCSKEW*), firm-specific weekly returns volatility (*SIGMA*), average firm-specific weekly returns (*RET*), firm size (*SIZE*), market-to-book ratio (*MB*), financial leverage (*LEV*), and profitability (*ROA*).

Studies suggest that financial reporting transparency is an important determinant of stock price crash risk. We also control for the quality of corporate public reporting. We adopt two measures. One is earnings management (*ACCM*), defined as the absolute value of discretionary accruals as in Kothari *et al.* (2005). The other measure is a financial report's readability (*READ*), defined as the log of the file size in megabytes of a firm's annual report file (a large document size indicates lower readability) (Loughran and McDonald, 2014). Loughran and McDonald (2014) suggest that file size is a better measure of the effective communication of valuation-relevant information, which does not require document parsing as other measures such

as the Fog Index do.

Studies such as Hutton *et al.* (2009) suggest that managers have the incentive to accumulate bad news when they engage in expropriation activities that destroy shareholder value. Firth *et al.* (2019) suggest that the lack of accessibility is a symptom of self-dealing activities by firm insiders. To remove the possible confounding effects of stock price crash risk, we include a host of control variables to capture the major types of self-dealing activities that are documented in prior studies. They include fund tunneling (*ORECA*), abnormal related party transactions (*ARPT*), and managerial slack consumption (*EXPR*) (Jian and Wong, 2010; Jiang *et al.*, 2010;). Moreover, we control for key governance characteristics that apparently have significant implications for the quality of corporate governance of Chinese listed firms, namely, state ownership (*STATE*), the dispersion of control and cash-flow rights by controlling shareholders (*CO*), and the independence of directors (*INDP*) (Jiang *et al.*, 2010; Conyon and He, 2011). The detailed definition and data source of these variables are provided in Appendix I.

3.4. Descriptive statistics

The summary statistics of the main variables used in our study are presented in Table II. The statistics show that the average negative skewness is -0.23 and the standard deviation is 0.64. On average, 13% of the firms in our sample have experienced a stock price crash. We present the correlations between the variables in Table III. We find that our five accessibility measures are highly correlated with each other. Thus, to avoid multicollinearity, we include them in the regression models separately. We find that *IRACS* is negatively related to both *CRASH* and *NCSKEW*, which is consistent with our hypothesis. We also find that accessible firms tend to be small, are less leveraged, and perform better.

[Tables II and III about here]

4. Empirical model and main results

4.1. Accessibility and stock price crash risk

To test the relationship between accessibility and stock price crash risk, we regress the negative skewness on accessibility using an ordinary least square model and regress the crash indicator on accessibility using a probit model. The two models are specified as follows:

$$NCSKEW_{i,t} = \alpha_0 + \alpha_1 ACS_i + \alpha_2 X_{i,t-1} + \boldsymbol{I} + \boldsymbol{P} + \boldsymbol{Y} + \varepsilon_{i,t} \quad (3)$$

$$CRASH_{i,t} = \alpha_0 + \alpha_1 ACS_i + \alpha_2 X_{i,t-1} + \boldsymbol{I} + \boldsymbol{P} + \boldsymbol{Y} + \varepsilon_{i,t} \quad (4)$$

The dependent variables in models (3) and (4) are $NCSKEW_{i,t}$ and $CRASH_{i,t}$, respectively. Our key explanatory variable is ACS_i, which is one of our accessibility measures. *IRACS*, *IRSCORE*, *TEL*, *EMAIL*, and *FORUM*. $X_{i,t-1}$ are the control variables discussed in section 3.3, all of which are lagged by one year. We also include industry (***I***), province (***P***), and year (***Y***) fixed effects to control for unobservable factors that may affect stock price crash risk. We estimate the models with robust standard error clustering at the firm level.

Panel A of Table IV reports the estimates of model (3). We find that accessibility is negatively and significantly related to stock return negative skewness. In column (1), the coefficient on *IRACS* is -0.065, suggesting that the skewness in accessible firms is 0.065, or 28% (i.e., 0.065/0.23, the mean of *NCSKEW* is -0.23) lower than that of inaccessible firms that have an average level of negative skewness. In column (2), the coefficient on *IRSCORE* is -0.054, indicating that, on average, for each unit increase in accessibility scores, the negative skewness decreases by 0.054. This is economically meaningful as it implies that the negative skewness for an average firm decreases by about 23% (0.054/0.23). We also find that the coefficients on *TEL*, *EMAIL*, and *FORUM* are negative and significant.

[Table IV about here]

Panel B reports the estimates of model (4). The results show that accessible firms are less likely to experience a stock price crash (extreme negative returns) than inaccessible firms. For example, in column (1), the coefficient on *IRACS* is -0.212, which is significant at the 1% level. The marginal effect reported at the bottom of the column is -0.042, suggesting that on average, the likelihood of a stock price crash for accessible firms is 4.2% lower than that for inaccessible firms. This is economically significant, as it suggests a probability reduction of 32% (0.042/0.13) relative to the average crash rate (the mean of *CRASH* is 0.13). The coefficients on other accessibility measures are also negative and significant. Thus, our results suggest that accessible firms are less likely to experience a stock price crash.

Considering control variables, we find that firms with greater trading turnover, higher stock returns and market-to-book ratio, and lower profitability tend to experience a higher price crash risk, consistent with the findings documented in prior studies (e.g. Hutton *et al.*, 2009; Kim *et al.*, 2011). Firms that maintain greater earnings management and lower financial readability also experience a higher crash risk, which is consistent with the opacity argument of stock price crash risk (Jin and Myers, 2006). Moreover, stocks of firms that engage in greater tunneling of corporate resources and display managerial slack are more likely to crash, consistent with the agency perspective of stock price crash risk (Kim *et al.*, 2011; Xu *et al.*, 2014).

4.2. The substitution effect of accessibility for public disclosures

The lack of public disclosure transparency has been recognized as the main reason for high stock price crash risks in emerging markets such as China (Piotroski and Wong, 2012). In this section, we examine whether accessibility can substitute the information role of corporate public disclosures in attenuating the impact of poor corporate transparency on stock price crash risk. Heflin *et al.* (2003) show that firms are less forthcoming in public disclosures than in private

communications. Outside market participants that have access to firms' management can obtain detailed information and qualitative insights into these firms and their industries, independent of public disclosures. Such soft information is particularly important for market participants in their decision making (Brown *et al.*, 2015; Kirk and Markov, 2016). If accessibility allows outsiders to obtain valuable information that is not conveyed in firms' public disclosures and substitutes the information role of the public disclosures in disclosing bad news, the attenuating effects of accessibility on stock price crash risk is stronger even in firms with poor public disclosures.

We adopt two measures to gauge the quality of firms' public disclosures: earnings management (*ACCM*) as in Kothari *et al.* (2005), and financial statement readability (*READ*) as in Loughran and McDonald (2014), which has been discussed in section 3.3. To test our conjecture, we augment our baseline models, i.e., equations (3) and (4), with the interaction terms between our accessibility measures and *ACCM* and *READ*, respectively. The estimated results are presented in Table V.

[Table V about here]

Panel A presents the results when the quality of public disclosures is measured by earnings management (*ACCM*). The coefficients on the interaction terms are significantly negative, indicating that the negative effect of accessibility is more pronounced when firms have higher accruals or lower earnings quality. The coefficients on the standalone *ACCM* are significantly positive, confirming the findings of Hutton *et al.* (2009) that opaque financial reports are associated with higher stock price crash risks. Importantly, we find that the coefficients on the interaction terms have a larger magnitude than those on the standalone *ACCM*. A joint significance test of these two coefficients ($ACCM+ACS*ACCM = 0$), as reported at the bottom of the columns, shows that they are jointly significant. The results collectively indicate that the high

crash risk due to poor earnings quality is fully redressed by accessibility.

The sum of the coefficients on accessibility and the interaction with *ACCM*, namely, *ACS*+*ACS***ACCM* = 0, is highly significant. When *ACCM* is at the 25% percentile (i.e., *ACCM* = 0.03), the difference in *NCSKEW* between accessible and inaccessible firms is -0.023 (-0.008+(-0.496*0.03)). This is economically significant, as it suggests a 10% (0.023/0.23) reduction in *NCSKEW* relative to the mean level. The results suggest that accessibility can reduce stock price crash risks even when firms' earnings quality is high, implying that accessibility may allow investors to acquire soft information that is not conveyed in firms' reported earnings.

Panel B reports the estimates for the public disclosure measure, *READ*. The pattern is similar. The coefficients on the interaction term are negative and statistically significant. In the model of *NCSKEW*, the magnitude of the coefficient on the standalone *READ*, as shown in columns (1) and (2), is slightly larger than that of the interaction term. The joint significance test (*READ*+*ACS***READ* = 0) shows that their sum is indistinctively different from 0, suggesting that the effect of poor readability on stock price crash risk is no longer significant in the presence of accessibility. Overall, the results in this section suggest that accessibility can reduce the risk of stocks of firms with poor-quality public disclosures from crashing. The mitigating effect of accessibility remains economically significant even when firms' public discourse quality is reasonably high. The results confirm our argument that accessibility allows outside investors to obtain valuable soft information that may be absent in firms' public disclosures, which, in turn, helps to mitigate stock price risks.

4.3. Matching accessible firms with inaccessible firms

As shown in Table I, accessible firms account for a relatively low proportion of our full sample. To obtain a more balanced sample and to better control for firm characteristics, we match

accessible firms with inaccessible firms that have similar characteristics using PSM and subsequently examine the difference in stock price crash risks between them.

Specifically, we first run a probit model wherein the dependent variable is *IRACS* and the explanatory variables are the control variables in models (3) and (4).[6] Using the propensity score that is estimated from the probit model, we find the best-matched control firm (*IRACS* = 0) for each treated firm (*IRACS* = 1). To ensure that accessible firms are well matched with inaccessible firms, we test the differences in the characteristics of these two groups of firms. The results are reported in Panel A of Table VI. We find that none of the characteristics are significantly different in these two types of firms, suggesting the successful pairing of accessible firms with inaccessible firms.

[Table VI about here]

In Panel B, we present the average negative skewness in accessible and inaccessible firms and the difference between them. We find that the average *NCSKEW* of inaccessible and accessible paired firms is -0.198 and -0.249, respectively. The difference is -0.050, which is significant at the 5% level and consistent with the coefficient on *IRACS* as reported in Table IV. We also divide the full sample into two subsamples based on the two measures of public disclosure quality. Within each subsample, we similarly match accessible firms with inaccessible firms. The table indicates that accessible firms have a lower *NCSKEW* than inaccessible firms, but the results are significant only for the groups with high earnings management and low financial statement readability. These results are consistent with our findings in Table V.

We report the estimates in Panel C when the outcome variable is *CRASH*. We find that 13.8% of the firms in the inaccessible group and 9.9% in the accessible group experience a stock price

[6]Using *TEL*, *EMAIL*, and *FORUM* as the dependent variables and repeating the matching analysis, we find similar results.

crash. The difference is 3.9%, which is significant at the 1% level. We find similar results in the analysis of the subsamples. One exception is that the difference in *CRASH* is statistically significant in the low earnings management subsample, suggesting that the mitigation effect of accessibility on stock price crash risk still works even when the quality of reported earnings is high. Overall, the results of PSM are highly consistent with our previous results.

5. Evidence on the role of accessibility in facilitating private communications and information acquisition

Thus far, we find evidence that accessibility is associated with low stock price crash risks. Our findings are built on the premise that accessibility can facilitate market participants to privately communicate and obtain information. In this section, we offer evidence to support this premise.

5.1. Accessibility and frequency of private in-house meetings

A prominent form of private communications is private in-house meetings, which are communication events held at corporate headquarters with various outside market participants. They have to be pre-arranged and thus are likely to take place when accessibility is present. Firms listed on the SZSE have been required to disclose summary information about private in-house meetings in their annual reports since 2009 (firms listed the SHSE are voluntary to disclose the information).[7] We collect valuable data on private meetings held during the 2011–2013 period from the WIND database to examine whether accessibility is associated with the frequency of in-house meetings. We measure the frequency of private meetings using the number of private in-house meetings between corporate insiders and various outside market participants annually. Specifically, we create four variables: *Total private meetings* (log(1+total number of

[7]The participants of the meetings include various market participants such as financial analysts, the media, mutual funds managers, individual investors, banks and insurance companies, foreign institutions, assets management, and consultant companies, among others.

private meetings between insiders and outsiders)), *Meetings with analysts* (log(1+the number of private meetings between insiders and financial analysts)), *Meetings with individuals* (log(1+the number of private meetings between insiders and individual investors)), and *Meetings with the media* (log(1+the number of private meetings between insiders and the media)).

We replace the dependent variables of our baseline models with the private meeting variables. We also control for *SZSE*, which is an indicator of firms listed on the SZSE, in the model. The estimated results are reported in Table VII. We find that accessibility is positively and significantly related to the intensity of the private meetings, suggesting that accessibility facilitates private communications between firm insiders and outsiders.

[Table VII about here]

5.2. The effect of accessibility and the disclosure of the contents of private in-house meetings

Next, we use the 2012 policy change regarding the disclosure of the contents of private in-house meetings to examine whether the mitigation effect of accessibility is attributable to the information obtained from private communications. The SZSE adopted a policy on July 9, 2012 requiring firms to disclose the details of their private meetings on its EasyIR website within two days of the event. This has effectively led to an exogenous increase in the diffusion of the information obtained from the private meetings to a larger number of outside market participants. Assuming that the effect of accessibility on stock price crash risk is caused by market participants' information acquisition from private communication, the effect of accessibility on crash risk will be stronger when the acquired information is publicly disclosed.

To test this conjecture, we conduct a difference-in-difference (DID) analysis by measuring weekly crash events. Specifically, a firm experiences a weekly crash if the firm-specific abnormal weekly returns given by equation (1) is below the annual average of the firm-specific

abnormal weekly returns, denoted by *WCRASH*. The treatment variable is defined by *EasyIR*, which equals 1 if a firm was traded on the SZSE on or after July 9, 2012, and 0 otherwise. We add *EasyIR* and its interaction with our accessibility measure, *IRACS* to our baseline model (Equation 4). We also include the exchange indicator *SZSE* and the week fixed effects in the model so that the coefficient on the interaction term is the DID estimate. The results of the firm-week panel regressions are reported in Table VIII.

[Table VIII about here]

We find that the coefficients on *ACS* are significantly negative, which is consistent with our baseline results on the mitigating effects of accessibility on stock price crash risks. Our key finding is that the effect of accessibility on stock price crash risk is more pronounced in the post-event period, as shown by the coefficients on the interaction terms and the p-value of the coefficient joint significance test (*ACS+ACS*EasyIR = 0*). The results suggest that the effect of accessibility on stock price risks is greater when the communication contents of private meetings are publicly disclosed, which supports our premise that accessibility mitigates stock price crash risk by facilitating investors' information acquisition via private communications.

5.3. The effects of real vs. nominal accessibility

We consider a firm to have real accessibility when outsiders can effectively communicate with the firm's insiders via telephone, e-mail, or its online discussion forum (*IRACS* = 1). Firms that are inaccessible (*IRACS* = 0) include (1) those that provide communication channels on their website's IR subpage but are virtually inaccessible, which we refer to as fake accessible firms, denoted by *FAKEACS*, and (2) firms that do not provide any communication channels at all, which we refer to as dark firms. We expect that only real accessibility can facilitate information acquisition by outsiders and thus have a mitigation effect on stock price crash risks. Similar to

dark firms, fake accessible firms have nominal accessibility, which *a priori* have no impact on stock price crash risk. To further support our information-based explanation, we examine whether real and nominal accessibility have distinctive effects on stock price crash risk.

To conduct the test, we simultaneously include *IRACS* and *FAKEACS* in the baseline models. The estimated results are reported in Table IX. From columns (1) and (2), we find that only the coefficients on *IRACS* are statistically significant and that the coefficients on *FAKEACS* are insignificant. We further conduct a joint test of *IRACS* – *FAKEACS* = 0 (that is, there is no difference between real accessibility firms and fake accessible firms). From the p-values shown at the bottom of the columns, we reject the null hypothesis. The results suggest that real accessible firms have significantly lower levels of stock price crash risk than dark firms, but that there is no significant difference between fake accessible firms and dark firms. To complete our analysis, we simultaneously include *IRACS* and *WIR*, which are dummy variables indicating the provision of an IR subpage on a firm's website. The results are presented in columns (3) and (4). The results are similar and suggest that the mere provision of IR has no significant explanatory power on stock price crash risk. The results consistently suggest that only real accessibility, which allows information exchanges between outsiders and firms, can reduce stock price crash risk.

[Table IX about here]

5.4. The effects of accessibility with various quality

Our information-based explanation for accessibility also suggests that the effect of accessibility on stock price crash risk is stronger if the quality of communications made through public communication channels is higher. To test this implication, we adopt four continuous variables from Firth *et al.* (2019) to measure the quality of communications made through public

communication channels: (1) *Telephone interviewee attitude*, our telephone interviewer's rating (0, 1, 2, 3, 4, or 5) of the attitude and sincerity of the person who answered the phone call, with 0 being the worst and 5 being the best; (2) *Length of the response e-mail*, the logarithm of the number of characters in the e-mail text. This variable measures the effort made by a firm in response to investors, with a high value indicating a better quality of accessibility; (3) *No. of days to receive an e-mail reply*, the logarithm of the number of days it took to receive the firm's response to e-mails. This variable measures the timeliness of firms in responding to investors; and (4) *No. of postings on the online forum*, the logarithm of the number of postings on the online discussion forum. This variable measures the frequency of interactions between firms and investors. We repeat our baseline model analysis using the four measures, and the estimated results are reported in Table X. We find that firms answering the telephone with a better attitude, replying to e-mails in greater detail and in a timelier manner, and having more frequent online interactions with investors are likely to face lower stock price crash risks, which suggests that the mitigation effect of accessibility on stock price crash risks is more pronounced when the quality of communication between insiders and investors is high.

[Table X about here]

6. Evidence of negative information accumulation

The above analysis suggests that accessibility allows market participants to engage in private communications to acquire information. To support the negative information hoarding view proposed by Jin and Myers (2006), we further examine whether accessibility is associated with less negative information accumulation.

6.1. Negative corporate news

We focus on two types of negative corporate news that are used in the studies of stock price crash

risk (Andreou *et al.*, 2017; Chang *et al.*, 2017). The first is the announcement of negative unexpected earnings news. Specifically, a firm experiences negative unexpected earnings news (*UESURP*) if the unexpected earnings are at the bottom tercile of all firms in the current quarter and are non-negative in the previous quarter wherein unexpected earnings are defined as the net income in the current quarter minus the net income in the same quarter of the previous year, scaled by lagged market value equity. The logic behind this measure is that the release of very bad news is not expected based on firms' previous announcements and therefore comes as a surprise to the market (Chang *et al.*, 2017). The second type of negative news is the issuance of managerial earnings guidance indicating that firms' earnings in the current quarter is expected to fall (*GuideFall*). If accessibility allows investors to evaluate a firm's operations and earnings on a continuous basis, negative earnings news is likely to be reflected in the stock price, and its announcement is less likely to trigger a stock price crash. Therefore, we expect that accessible firms are less likely to experience a stock price crash than inaccessible firms as a result of bad earnings announcements. To conduct the test, we merge the negative earnings events with our week-level stock price crash events and run the firm-week panel regression as in the last section. The estimated results are presented in Table XI.

[Table XI about here]

Panel A reports the results when the negative earnings news is measured by *UESURP*. We find that the coefficients on *UESURP* are significantly positive, which suggests that the announcement of negative earnings news is associated with a high probability of stock price crash risk in inaccessible firms. The coefficients on the interaction terms between the accessibility measure and the negative news indicators are significantly negative, suggesting that the engendering effect of negative news on a stock price crash is mitigated in accessible firms.

The coefficients on the standalone accessibility measures remain significantly negative. In column (1), we find that the sum of the coefficients (*ACS+ACS*UESURP+UESURP*) is close to zero. This finding is confirmed by the joint significance test as shown at the bottom of the column. The results suggest that the announcement of negative unexpected earnings does not trigger a stock price crash in accessible firms. Panel B reports the results when the negative earnings news is measured by *GuideFall,* wherein we find a similar pattern. The results show that the announcement of negative earning guidance in accessible firms is less likely to cause a stock price crash compared with inaccessible firms. Overall, the results confirm that accessibility facilitates the disclosure of corporate bad news to the market.

6.2. Removal of short-sale constraints

We further examine whether accessibility facilitates the disclosure of corporate bad news by removing the short-sale constraints on firm stocks. Studies suggest that short-sale constraints can inhibit the impounding of negative information into stock prices and is associated with a higher stock price crash risk (Miller, 1977; Diamond and Verrecchia, 1987; Chang *et al.*, 2007). If accessibility is likely to increase the likelihood of disclosures of negative news to the market, we expect that the effect of accessibility on stock price crash risk will be to be more (less) pronounced in the presence (absence) of short-sale constraints. We test this conjecture via the short selling pilot program in China.

China has allowed margin trading and short selling since March 2010. It has a pilot program that allows short selling of a designated list of stocks. As a result, the short-sale constraints for stocks to be placed on the list have been lifted. During our 2011–2013 sample period, 631 firms were newly added to the pilot program list, including 153 firms added on December 5, 2011; 273 firms added on January 31, 2013; and 205 firms added on September 16, 2013. The staggered

regulations allow us to examine the effect of accessibility on stock price crash risk in the presence (absence) of short-sale constraints using a DID approach. To conduct the test, we define the treatment variable *ShortSales*, which equals 1 if a stock is included in the designated list of stocks that are eligible for short selling, and 0 otherwise. We add *ShortSales* and its interaction with our accessibility measures to the firm-week panel regression. The estimated results are reported in Table XII. As expected, we find the coefficients on the interaction terms to be significantly positive. The results suggest that the crash risk mitigation effect of accessibility is stronger in the presence of short-sale constraints and weaker in the absence of short-sale constraints, which is consistent with the belief that accessibility facilitates the disclosure of bad news.

[Table XII about here]

7. Additional tests and robustness

7.1. Heterogeneity in investor opinions and stock price overvaluation

In addition to the information accumulation model used in Jin and Myers (2006), an investor opinion heterogeneity model explains stock price crash risk. Developed by Hong and Stein (2003), the model reveals that trading among investors who have different opinions could expose the private signals of others and cause large price changes. In line with this theory, Chen *et al.* (2001) find that the negative skewness in stock returns is most pronounced during periods of large disagreement as proxied by detrending trading volumes. Another explanation for the stock price crash is the stochastic bubble model, which states that large negative returns are caused by the bursting of the bubble. Consistent with this argument, Harvey and Siddique (2000) find that a higher M/B is associated with more consequent negative stock return skewness.

The lack of accessibility may be associated with large opinion heterogeneity because it is

difficult to converge divergent opinions in the absence of effective communication. Moreover, inaccessible firms may be more likely to experience the bursting of bubble if they are more attentive to speculative investors. Although we provide evidence to support the information role of accessibility, we conduct tests to ascertain whether our findings are consistent with these two alternative explanations. Specifically, we examine whether our findings are more pronounced in firms with higher detrending trading volumes (*DTURN*) and stock price overvaluation (*MB*). The results are reported in Appendix II. The coefficients on the standalone accessibility measure remain significantly negative but the coefficients on its interaction with *DTURN* and *MB* are insignificant, suggesting that investor opinion heterogeneity and stochastic bubble models are unlikely to be the reasons underlying our findings.

7.2. Accounting conservatism and corporate resources

Another drawback of our finding is that our accessibility measures may relate to accounting conservatism that is associated with stock price crash risk (Kim and Zhang, 2016). For example, accessible firms may be subject to more monitoring from outsiders and thus less likely to resort to aggressive reporting. Moreover, firms with more slack resources have a greater capacity to hire employees to answer random e-mails, telephones, and online inquiries. Slack resources can also serve as a cushion to shield firms from unexpected shocks, thereby reducing crash risk. To address these concerns, we re-estimate our models by controlling for accounting conservatism and corporate slack resources as in extant studies (Chen and Miller, 2007; Khan and Watts, 2009; Levitas and McFadyen, 2009). The estimated results are reported in Appendix III. We find that the coefficients on our various accessibility measures remain highly significant and are not sensitive to the inclusion of accounting conservatism and slack resources variables.

8. Conclusion

This study examines whether accessibility enables market participants to obtain more firm-specific information and consequently mitigate stock price crash risk in emerging markets. To do so, we adopt measures of accessibility based on an assessment of outside investors' ease of communication with firm insiders via telephone, e-mail, and online discussion forums in China. We find that accessible firms are associated with a lower stock price crash risk than inaccessible firms. The results are more pronounced in firms with high earnings management and low financial statement readability, suggesting that accessibility can substitute the information role of corporate public disclosures and help to reduce crash risk in a weak public information environment.

We demonstrate that accessibility reduces stock price crash risk by facilitating private communications between firms and outside market participants and consequently disclosing corporate information to the markets. Specifically, we find that accessibility is associated with more private in-house meetings between firms and outside investors. We also find that the effect of accessibility is enhanced when the contents of private meetings are disclosed to the public on a mandatory basis. Moreover, we find that the stock price attenuation effect is apparent in firms with real rather than nominal accessibility and that these firms experience a higher quality of communication via public communication channels.

We also reveal that accessibility is associated with less accumulation of negative corporate news. Specifically, we find announcements of negative unexpected earnings and the issuance of bad earnings guidance are less likely to trigger a stock price crash in accessible firms than in inaccessible firms. Moreover, the relaxation of short-sale constraints has less of an impact on stock price stock risk in accessible firms than in inaccessible firms.

Overall, our results suggest that accessibility is an important mechanism for reducing the

stock price crash risk in China. Our study has important implications for other emerging markets that are plagued by a weak information environment. However, the lack of accessibility is not unique to emerging markets. For example, ICR, a leading strategic communications firm, conducted a survey on firms included in the Russell 3000 index in 2013 and found that over one third of these firms were not accessible by e-mail.[8] Therefore, the implications of our findings can be applied to more mature markets.

[8] http://www.icrinc.com/wp-content/uploads/2015/06/IR-Website-Survey-Release-FINAL.pdf.

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Table I
Sample and Accessibility Measures

i. All non-financial firms listed on the two Chinese stock exchanges as of the end of June 2010.			1798	
ii. The number of firms after excluding firms with (a) invalid websites or (b) missing financial data.			1576	
iii. The number of firms with investor relations subpages (IR section)			1222	
%, (**iii**/**ii**)			78%	
Communication channels	Tel-phone (*TEL*)	E-mail (*EMAIL*)	Forum (*FORUM*)	Overall (*IRACS*)
iv. The number of firms offering channels	882	666	294	1154
%, (**iv**/**ii**)	56.0%	42.3%	18.7%	73.2%
%, (**iv**/**iii**)	72.2%	54.5%	24.1%	94.4%
v. The number of firms offering channels that are accessible	173	97	250	430
%, (**v**/**ii**)	11.0%	6.2%	15.9%	27.3%
%, (**v**/**iii**)	14.2%	7.9%	20.5%	35.2%
%, (**v**/**iv**)	19.6%	14.6%	85.0%	37.3%

Table II
Variable Summary Statistics

This table provides the summary statistics of the main variables used in this study. All of the variables are defined in Appendix I.

Variables	N	Mean	Std.	P25	Median	P75
IRACS	4,418	0.28	0.45	0.00	0.00	1.00
IRSCORE	4,418	0.34	0.60	0.00	0.00	1.00
TEL	4,418	0.11	0.32	0.00	0.00	0.00
EMAIL	4,418	0.06	0.24	0.00	0.00	0.00
FORUM	4,418	0.17	0.37	0.00	0.00	0.00
NCSKEW	4,418	-0.23	0.64	-0.64	-0.25	0.15
CRASH	4,418	0.13	0.33	0.00	0.00	0.00
DTURN	4,418	-0.09	0.16	-0.18	-0.08	-0.01
LNCSKEW	4,418	-0.16	0.65	-0.56	-0.15	0.22
SIGMA	4,418	0.06	0.01	0.05	0.06	0.07
RET	4,418	-0.00	0.01	-0.01	-0.00	0.00
SIZE	4,418	22.16	0.92	21.50	21.99	22.66
MB	4,418	1.87	1.77	0.75	1.35	2.31
LEV	4,418	0.08	0.11	0.00	0.03	0.13
ROA	4,418	0.11	0.12	0.06	0.11	0.16
ACCM	4,418	0.12	0.20	0.03	0.08	0.15
READ	4,418	0.42	0.70	-0.23	0.51	0.92
ORECA	4,418	1.65	2.26	0.37	0.84	1.89
EXPR	4,418	0.09	0.09	0.04	0.07	0.11
ARPT	4,418	-0.08	0.75	-0.46	-0.09	0.02
CO	4,418	1.32	0.66	1.00	1.00	1.34
STATE	4,418	0.43	0.50	0.00	0.00	1.00
INDP	4,418	0.37	0.05	0.33	0.33	0.40

Table III
Correlation Matrix

This table provides the correlations between the main variables used in this study. All of the variables are defined in Appendix I.

Variables	(1) *IRACS*	(2) *IRSCORE*	(3) *TEL*	(4) *EMAIL*	(5) *FORUM*	(6) *CRASH*	(7) *NCSKEW*
IRSCORE	0.90	1					
TEL	0.57	0.63	1				
EMAIL	0.41	0.57	0.16	1			
FORUM	0.71	0.71	0.07	0.14	1		
CRASH	-0.05	-0.05	-0.03	-0.03	-0.03	1	
NCSKEW	-0.02	-0.02	-0.01	-0.02	-0.01	0.39	1
DTURN	0.03	0.03	0.02	0.02	0.01	-0.01	-0.01
LNCSKEW	0.01	0.00	0.00	0.00	0.00	0.03	0.13
SIGMA	0.07	0.06	0.04	-0.01	0.07	-0.03	0.09
RET	0.03	0.03	0.03	0.01	0.02	-0.01	0.09
SIZE	-0.04	-0.03	-0.03	0.03	-0.04	-0.04	0.00
MB	0.12	0.11	0.06	0.06	0.09	0.06	0.21
LEV	-0.12	-0.12	-0.05	-0.07	-0.10	-0.02	-0.07
ROA	0.02	0.02	0.00	0.02	0.02	-0.08	0.03
ACCM	-0.03	-0.04	-0.02	-0.02	-0.03	0.06	0.07
READ	0.11	0.12	0.04	0.07	0.11	0.01	0.00
ORECA	-0.08	-0.07	-0.04	-0.04	-0.05	0.05	0.02
EXPR	-0.01	-0.01	0.02	-0.03	-0.01	0.07	0.09
ARPT	-0.07	-0.06	-0.03	-0.03	-0.06	-0.01	-0.01
CO	0.03	0.03	0.04	0.03	0.01	-0.02	0.02
STATE	-0.12	-0.12	-0.06	-0.06	-0.10	-0.02	-0.05
INDP	0.00	0.00	0.00	0.02	-0.01	0.00	0.02

Variables	(8) *DTURN*	(9) *LNCSKEW*	(10) *SIGMA*	(11) *RET*	(12) *SIZE*	(13) *MB*	(14) *LEV*
LNCSKEW	-0.11	1					
SIGMA	0.18	-0.06	1				
RET	0.23	-0.12	0.34	1			
SIZE	0.14	0.01	-0.24	0.11	1		
MB	-0.03	0.12	0.28	0.35	-0.05	1	
LEV	0.03	-0.08	-0.13	-0.02	0.21	-0.32	1
ROA	0.04	0.00	-0.08	0.15	0.39	0.00	0.07
ACCM	-0.06	0.01	0.10	0.08	-0.06	0.16	0.01
READ	0.09	-0.02	-0.12	0.04	0.13	-0.09	0.02
ORECA	-0.04	0.01	0.03	0.01	-0.06	0.01	-0.02
EXPR	-0.02	0.09	0.12	-0.04	-0.22	0.32	-0.14
ARPT	-0.02	0.00	-0.04	-0.10	0.08	-0.04	0.10
CO	-0.05	0.04	0.04	0.00	-0.04	0.01	-0.01
STATE	-0.04	-0.03	-0.07	-0.07	0.16	-0.15	0.19
INDP	0.00	0.00	-0.05	0.00	0.09	0.03	0.01

Variables	(15) *ROA*	(16) *ACCM*	(17) *ORECA*	(18) *EXPR*	(19) *ARPT*	(20) *CO*	(21) *STATE*
ACCM	-0.06	1					
READ	-0.01	-0.06	1				
ORECA	-0.14	0.07	-0.02	1			
EXPR	-0.22	0.04	-0.02	0.10	1		
ARPT	-0.02	-0.01	-0.04	-0.01	0.15	1	
CO	0.04	0.01	-0.06	0.02	0.01	0.09	1
STATE	0.07	-0.04	-0.15	-0.04	-0.14	0.00	-0.11
INDP	-0.01	0.02	0.04	0.04	0.01	0.00	-0.06

Table IV
Accessibility and Stock Price Crash Risk

This table reports the estimates of regressions relating stock price crash risk to accessibility. Firm stock price crash risk is measured by *NCSKEW* (Panel A) and *CRASH* (Panel B). Accessibility measures (*ACS*) include *IRACS*, *IRSCORE*, *TEL*, *EMAIL*, and *FORUM*. We control for variables as in Kim *et al.* (2011), which include *DTURN*, *LNCSKEW*, *SIGMA*, *RET*, *SIZE*, *MB*, *LEV*, and *ROA*. Firms' financial reporting quality measures, *ACCM* and *READ,* are also controlled for. We also control for agency problem measures, which include *ORECA*, *ARPT*, *EXPR*, *CO*, *STATE*, and *INDP*. All of the variables are defined in Appendix I. Industry, province, and year fixed effects are included. A probit model is used when the dependent variable is *CRASH*. At the bottom of Panel B, the marginal effect of the respective accessibility measures is reported, assuming other variables valued at the mean. The t-statistics based on a robust standard error estimate clustering at the firm level are reported in parentheses. Significance at the 10%, 5%, and 1% levels is indicated by *, **, and ***, respectively.

Panel A: The dependent variable is *NCSKEW*

	(1)	(2)	(3)	(4)	(5)
IRACS	-0.065***				
	(-3.24)				
IRSCORE		-0.054***			
		(-3.64)			
TEL			-0.058**		
			(-2.13)		
EMAIL				-0.077**	
				(-2.44)	
FORUM					-0.060**
					(-2.56)
DTURN	0.119*	0.119*	0.118*	0.119*	0.117*
	(1.78)	(1.79)	(1.76)	(1.77)	(1.75)
LNCSKEW	0.096***	0.096***	0.096***	0.096***	0.096***
	(6.43)	(6.40)	(6.41)	(6.39)	(6.40)
SIGMA	-0.883	-0.897	-0.985	-1.058	-0.898
	(-0.88)	(-0.89)	(-0.98)	(-1.05)	(-0.89)
RET	9.908***	9.881***	10.041***	9.955***	9.918***
	(5.39)	(5.38)	(5.47)	(5.42)	(5.39)
SIZE	0.015	0.015	0.016	0.016	0.015
	(1.16)	(1.16)	(1.21)	(1.25)	(1.19)
MB	0.043***	0.043***	0.042***	0.042***	0.042***
	(5.80)	(5.83)	(5.58)	(5.64)	(5.71)
LEV	-0.024	-0.027	-0.013	-0.020	-0.024
	(-0.22)	(-0.25)	(-0.13)	(-0.19)	(-0.23)
ROA	0.127	0.128	0.121	0.121	0.127
	(1.34)	(1.34)	(1.27)	(1.26)	(1.33)
ACCM	0.117*	0.116*	0.120*	0.119*	0.118*
	(1.75)	(1.72)	(1.79)	(1.77)	(1.75)
READ	0.060***	0.060***	0.056***	0.057***	0.059***
	(4.08)	(4.13)	(3.86)	(3.90)	(4.01)
ORECA	0.005	0.005	0.006	0.006	0.005
	(1.24)	(1.23)	(1.36)	(1.36)	(1.34)
EXPR	0.383***	0.383***	0.400***	0.392***	0.390***
	(3.10)	(3.11)	(3.25)	(3.18)	(3.17)
ARPT	-0.013	-0.013	-0.012	-0.012	-0.012
	(-1.00)	(-1.01)	(-0.91)	(-0.90)	(-0.95)
CO	-0.001	-0.000	-0.001	-0.002	-0.002
	(-0.08)	(-0.03)	(-0.10)	(-0.12)	(-0.17)
STATE	-0.039*	-0.039*	-0.036*	-0.036*	-0.038*
	(-1.82)	(-1.83)	(-1.69)	(-1.71)	(-1.80)
INDP	0.180	0.182	0.175	0.184	0.174
	(1.07)	(1.08)	(1.03)	(1.09)	(1.03)
Industry, province, and year fixed effects	Yes	Yes	Yes	Yes	Yes
Cluster	Firm	Firm	Firm	Firm	Firm
N	4,418	4,418	4,418	4,418	4,418
Adj. R-squared	0.101	0.102	0.100	0.100	0.101

Panel B: The dependent variable is *CRASH*

	(1)	(2)	(3)	(4)	(5)
IRACS	-0.212***				
	(-3.52)				
IRSCORE		-0.146***			
		(-3.14)			
TEL			-0.161*		
			(-1.88)		
EMAIL				-0.240**	
				(-2.07)	
FORUM					-0.153**
					(-2.20)
DTURN	0.348**	0.346**	0.339**	0.342**	0.341**
	(2.08)	(2.07)	(2.04)	(2.06)	(2.04)
LNCSKEW	0.033	0.032	0.033	0.032	0.033
	(0.86)	(0.83)	(0.83)	(0.81)	(0.84)
SIGMA	-10.421***	-10.495***	-10.808***	-11.042***	-10.704***
	(-3.89)	(-3.91)	(-4.03)	(-4.10)	(-3.98)
RET	-0.469	-0.469	0.007	-0.303	-0.242
	(-0.09)	(-0.09)	(0.00)	(-0.06)	(-0.05)
SIZE	-0.029	-0.028	-0.027	-0.026	-0.028
	(-0.87)	(-0.86)	(-0.81)	(-0.77)	(-0.85)
MB	0.038**	0.038**	0.035*	0.036**	0.036**
	(2.17)	(2.13)	(1.93)	(1.98)	(1.99)
LEV	-0.046	-0.055	-0.020	-0.039	-0.045
	(-0.18)	(-0.21)	(-0.08)	(-0.15)	(-0.17)
ROA	-0.777***	-0.780***	-0.797***	-0.803***	-0.783***
	(-3.40)	(-3.42)	(-3.49)	(-3.51)	(-3.45)
ACCM	0.222**	0.221**	0.234**	0.230**	0.226**
	(2.12)	(2.10)	(2.22)	(2.19)	(2.14)
READ	0.075*	0.075*	0.066*	0.068*	0.071*
	(1.92)	(1.91)	(1.70)	(1.75)	(1.82)
ORECA	0.021**	0.021**	0.022**	0.022**	0.022**
	(2.03)	(2.05)	(2.17)	(2.15)	(2.15)
EXPR	0.618**	0.627**	0.672**	0.651**	0.647**
	(2.20)	(2.23)	(2.39)	(2.30)	(2.29)
ARPT	-0.037	-0.037	-0.034	-0.034	-0.035
	(-1.09)	(-1.07)	(-1.00)	(-0.99)	(-1.01)
CO	-0.045	-0.044	-0.047	-0.047	-0.050
	(-1.10)	(-1.08)	(-1.16)	(-1.15)	(-1.21)
STATE	-0.031	-0.029	-0.022	-0.024	-0.029
	(-0.55)	(-0.52)	(-0.40)	(-0.43)	(-0.52)
INDP	-0.132	-0.131	-0.144	-0.138	-0.150
	(-0.28)	(-0.28)	(-0.31)	(-0.30)	(-0.33)
Industry, province, and year fixed effects	Yes	Yes	Yes	Yes	Yes
Cluster	Firm	Firm	Firm	Firm	Firm
N	4,418	4,418	4,418	4,418	4,418
Pseudo R-squared	0.043	0.042	0.040	0.040	0.041
Marginal effect of accessibility	-0.042	-0.029	-0.032	-0.048	-0.031

Table V
Accessibility and Financial Reporting Transparency

This table reports the estimates of regressions examining how the relationship between accessibility and stock price crash risk varies with corporate financial reporting transparency. Firm stock price crash risk is measured by *NCSKEW* and *CRASH*. Financial reporting transparency is measured by earnings management (*ACCM*) (a higher value indicates less transparency) and financial report readability (*READ*) (a higher value indicates less transparency). Accessibility measures (*ACS*) include *IRACS*, *IRSCORE*, *TEL*, *EMAIL*, and *FORUM*. We control for variables as in Kim *et al*. (2011), which include *DTURN*, *LNCSKEW*, *SIGMA*, *RET*, *SIZE*, *MB*, *LEV*, and *ROA*. We also control for agency problem measures, which include *ORECA*, *ARPT*, *EXPR*, *CO*, *STATE*, and *INDP*. All of the variables are defined in Appendix I. Industry, province, and year fixed effects are included. A probit model is used when the dependent variable is *CRASH*. The t-statistics based on a robust standard error estimate clustering at the firm level are reported in parentheses. The estimates for the financial reporting transparency measures, *ACCM* and *READ,* are reported in Panels A and B, respectively. At the bottom of the columns, the p-values of tests examining the joint significance of key coefficients are reported. Significance at the 10%, 5%, and 1% levels is indicated by *, **, and ***, respectively.

Panel A: Accessibility and earnings management

Dependent variable	*NCSKEW*					*CRASH*				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Accessibility measures (*TRANS*)	*IRACS*	*IRSCORE*	*TEL*	*EMAIL*	*FORUM*	*IRACS*	*IRSCORE*	*TEL*	*EMAIL*	*FORUM*
ACS	-0.008	-0.010	-0.003	-0.053	0.014	-0.056	-0.017	-0.036	0.105	-0.010
	(-0.32)	(-0.54)	(-0.10)	(-1.48)	(0.41)	(-0.73)	(-0.32)	(-0.34)	(0.63)	(-0.11)
*ACS * ACCM*	-0.496***	-0.401***	-0.472***	-0.226*	-0.666***	-1.422***	-1.289***	-1.103*	-4.380**	-1.348**
	(-4.22)	(-4.19)	(-2.92)	(-1.73)	(-3.25)	(-3.17)	(-3.62)	(-1.95)	(-2.02)	(-2.40)
ACCM	0.184***	0.176***	0.147**	0.129*	0.149**	0.356***	0.360***	0.277**	0.279***	0.271**
	(3.11)	(2.94)	(2.31)	(1.92)	(2.37)	(2.92)	(2.94)	(2.54)	(2.59)	(2.50)
Control	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry, province, and year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cluster	Firm	Firm	Firm	Firm	Firm	Firm	Firm	Firm	Firm	Firm
Observations	4,418	4,418	4,418	4,418	4,418	4,418	4,418	4,418	4,418	4,418
R-squared	0.104	0.104	0.101	0.100	0.103	0.046	0.046	0.041	0.043	0.042
P-value of test: *ACS+ACS*ACCM = 0*	0.00	0.00	0.00	0.02	0.00	0.00	0.00	0.03	0.04	0.01
P-value of test: *ACCM+ACS*ACCM = 0*	0.00	0.01	0.03	0.40	0.01	0.02	0.01	0.14	0.06	0.05
P-value of test: *ACS+ACS*ACCM+ACCM = 0*	0.00	0.00	0.01	0.15	0.01	0.01	0.00	0.09	0.05	0.03

Panel B: Accessibility and financial report readability

Dependent variable	*NCSKEW*					*CRASH*				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Accessibility measures (*TRANS*)	*IRACS*	*IRSCORE*	*TEL*	*EMAIL*	*FORUM*	*IRACS*	*IRSCORE*	*TEL*	*EMAIL*	*FORUM*
ACS	-0.033	-0.023	-0.026	-0.040	-0.019	-0.115	-0.064	-0.101	-0.189	-0.008
	(-1.34)	(-1.22)	(-0.83)	(-1.02)	(-0.59)	(-1.49)	(-1.01)	(-0.92)	(-1.10)	(-0.09)
*ACS * READ*	-0.064**	-0.053**	-0.065*	-0.061	-0.074**	-0.198**	-0.148**	-0.122	-0.086	-0.274**
	(-2.24)	(-2.54)	(-1.73)	(-1.30)	(-2.00)	(-2.30)	(-1.97)	(-1.00)	(-0.46)	(-2.51)
READ	0.077***	0.077***	0.063***	0.060***	0.070***	0.122***	0.116***	0.077*	0.071*	0.110***
	(4.52)	(4.66)	(4.10)	(3.99)	(4.45)	(2.83)	(2.70)	(1.92)	(1.81)	(2.68)
Control	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry, province, and year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cluster	Firm	Firm	Firm	Firm	Firm	Firm	Firm	Firm	Firm	Firm
Observations	4,418	4,418	4,418	4,418	4,418	4,418	4,418	4,418	4,418	4,418
R-squared	0.102	0.103	0.101	0.100	0.101	0.045	0.044	0.041	0.041	0.043
P-value of test: *ACS+ACS*READ = 0*	0.00	0.00	0.01	0.01	0.00	0.00	0.00	0.02	0.03	0.00
P-value of test: *READ+ACS*READ = 0*	0.62	0.22	0.95	0.98	0.92	0.33	0.64	0.70	0.94	0.11
P-value of test: *ACS+ACS*READ+READ = 0*	0.40	0.95	0.41	0.29	0.44	0.01	0.11	0.14	0.12	0.04

Table VI
Matching Accessible Firms with Inaccessible Firms

This table reports the differences in stock price crash risk between accessible firms and inaccessible firms using the propensity score matching (PSM) approach. We first run a probit model wherein the dependent variable is the accessibility dummy variable, *IRACS*. We control for variables as in Kim *et al.* (2011), which include *DTURN*, *LNCSKEW*, *SIGMA*, *RET*, *SIZE*, *MB*, *LEV*, and *ROA*. Firms' financial reporting quality measures, *ACCM* and *READ,* are also controlled for. We further control for agency problem measures, which include *ORECA*, *ARPT*, *EXPR*, *CO*, *STATE*, and *INDP*. Industry, province, and year fixed effects are also included. Using the propensity score from the probit model, we find the best-matched control firm (*IRACS* = 0) for each treated firm (*IRACS* = 1). In Panel A, we report the mean of the control variables in the two groups of firms. We also test the differences in the variables, with the difference in the estimates and test p-values reported in the last two columns. In Panels B and C, we present the differences in *NCSKEW* and *CRASH* between the control and treated firms. We repeat the PSM process by dividing the full sample into subsamples based on financial reporting transparency, that is, firms with low earnings management (ACCM < median) and high earnings management (*ACCM* > median), and firms with low financial report readability (*READ* > e median) and high financial report readability (*READ* < median). All of the variables are defined in Appendix I. Significance at the 10%, 5%, and 1% levels is indicated by *, **, and ***, respectively.

Panel A: Firm characteristics between accessible firms and matched control inaccessible firms

	Control firms (*IRACS* = 0)	Treated firms (*IRACS* = 1)	Difference (1-0)	
			Estimate	P-value
DTURN	-0.087	-0.088	-0.001	0.893
LNCSKEW	-0.140	-0.151	-0.011	0.667
SIGMA	0.057	0.058	0.000	0.716
RET	-0.001	-0.001	0.000	0.946
SIZE	22.087	22.099	0.012	0.739
MB	2.137	2.179	0.043	0.576
LEV	0.060	0.058	-0.002	0.665
ROA	0.109	0.110	0.002	0.731
ACCM	0.106	0.113	0.008	0.137
READ	0.534	0.540	0.006	0.829
ORECA	1.346	1.369	0.023	0.739
ARPT	-0.152	-0.158	-0.005	0.832
EXPR	0.091	0.092	0.001	0.637
CO	1.332	1.346	0.014	0.604
STATE	0.350	0.335	-0.015	0.445
INDP	0.370	0.368	-0.001	0.577

Panel B: The difference in *NCSKEW* between treated and control firms

Samples	Control firms (*IRACS* = 0)	Treated firms (*IRACS* = 1)	Difference (1-0)	
			Estimate	P-value
All firms	-0.198	-0.249	-0.050**	0.044
Earnings management				
Low	-0.221	-0.249	-0.029	0.331
High	-0.118	-0.245	-0.128***	0.004
Financial report readability				
Low	-0.127	-0.269	-0.143***	
High	-0.233	-0.220	0.013	0.739

Panel C: The difference in *CRASH* between treated and control firms

Samples	Control firms (*IRACS* = 0)	Treated firms (*IRACS* = 1)	Difference (1-0)	
			Estimate	P-value
All firms	0.138	0.099	-0.039***	0.003
Earnings management				
Low	0.133	0.104	-0.029*	0.068
High	0.150	0.090	-0.060***	0.009
Financial report readability				
Low	0.169	0.092	-0.077***	
High	0.134	0.110	-0.024	0.243

Table VII
Accessibility and Private Meetings

This table reports the estimates of regressions examining the relationship between accessibility and private meeting intensity. Private meeting intensity is measured by the log of the number of private in-house meetings between corporate insiders and outside market participants in a year, which includes log(1+total number of private meetings between insiders and outsiders) (*Total private meetings*), log(1+the number of private meetings between insiders and financial analysts) (*Meetings with analysts*), log(1+the number of private meetings between insiders and individual investors) (*Meetings with individuals*), log(1+the number of private meetings between insiders and the media) (*Meetings with the media*). The accessibility measure is *IRACS*. We control for variables as in Kim *et al.* (2011), which include *DTURN*, *LNCSKEW*, *SIGMA*, *RET*, *SIZE*, *MB*, *LEV*, and *ROA*. Firms' financial reporting quality measures, *ACCM* and *READ,* are also controlled for. We further control for agency problem measures, which include *ORECA*, *ARPT*, *EXPR*, *CO*, *STATE*, and *INDP*. *SZSE*, which equals 1 if a stock is traded on the SZSE, is also included as a control. Variables are defined in Appendix I. We estimate the regressions with firm-year observations over the 2011–2013 sample period. Industry, province, and year fixed effects are included. The t-statistics based on a robust standard error estimate clustering at the firm level are reported in parentheses. Significance at the 10%, 5%, and 1% levels is indicated by *, **, and ***, respectively.

	(1)	(2)	(3)	(4)
Dependent variables	*Total private meetings*	*Meetings with analysts*	*Meetings with individuals*	*Meetings with the media*
IRACS	0.158***	0.085**	0.056**	0.017**
	(3.73)	(2.26)	(2.21)	(2.29)
Control	Yes	Yes	Yes	Yes
Industry, province, and year fixed effects	Yes	Yes	Yes	Yes
Cluster	Firm	Firm	Firm	Firm
Observations	4,418	4,418	4,418	4,418
Adj. R-squared	0.577	0.507	0.146	0.064

Table VIII

Accessibility and the Changes in the Disclosure Policy of Private Meetings

This table reports the estimates of probit regressions examining the impact of the changes in the disclosure policy of private meetings on the relationship between accessibility and stock price crash risk. Stock price crash risk is measured by *WCRASH*, which equals 1 if the firm-specific weekly returns fall 3.09 standard deviations below the annual average of firm-specific weekly returns in a week, and 0 otherwise. Treated firms are defined by *EasyIR*, which equals 1 if a stock is traded on the SZSE on and after July 9, 2012 (the date on which IR activities between firms and investors are required to be disclosed on SZSE's EasyIR), and 0 otherwise. *SZSE*, which equals 1 if a stock is traded on the SZSE, is also included. Accessibility measures (*ACS*) include *IRACS*, *IRSCORE*, *TEL*, *EMAIL*, and *FORUM*. We control for variables as in Kim *et al.* (2011), which include *DTURN*, *LNCSKEW*, *SIGMA*, *RET*, *SIZE*, *MB*, *LEV*, and *ROA*. Firms' financial reporting quality measures, *ACCM* and *READ,* are also controlled for. We further control for agency problem measures, which include *ORECA*, *ARPT*, *EXPR*, *CO*, *STATE*, and *INDP*. All of the variables are defined in Appendix I. We estimate the regressions with firm-week observations over the 2011–2013 sample period. Industry, province, and time (weekly) fixed effects are included. At the bottom of the column, the p-value of tests examining the joint significance of key coefficients are reported. The t-statistics based on a robust standard error estimate clustering at the firm level are reported in parentheses. Significance at the 10%, 5%, and 1% levels is indicated by *, **, and ***, respectively.

Dependent variable	*WCRASH*				
	(1)	(2)	(3)	(4)	(5)
Accessibility measures (*ACS*)	*IRACS*	*IRSCORE*	*TEL*	*EMAIL*	*FORUM*
ACS	-0.137***	-0.108***	-0.139**	-0.177**	-0.094**
	(-3.87)	(-3.75)	(-2.54)	(-2.35)	(-2.26)
*ACS * EasyIR*	-0.287***	-0.185**	-0.286**	-0.337*	-0.181**
	(-3.50)	(-2.55)	(-2.19)	(-1.76)	(-2.00)
EasyIR	-0.113**	-0.125**	-0.157***	-0.163***	-0.149***
	(-2.07)	(-2.26)	(-2.95)	(-3.09)	(-2.74)
Control	Yes	Yes	Yes	Yes	Yes
Industry, province, and time (weekly) fixed effects	Yes	Yes	Yes	Yes	Yes
Cluster	Firm	Firm	Firm	Firm	Firm
Observations	171,977	171,977	171,977	171,977	171,977
Pseudo R-squared	0.108	0.107	0.105	0.105	0.105
P-value of test: *ACS+ACS*EasyIR = 0*	0.00	0.00	0.00	0.00	0.00
P-value of test: *EasyIR+ACS*EasyIR = 0*	0.00	0.00	0.00	0.01	0.00
P-value of test: *ACS+ACS*EasyIR+EasyIR = 0*	0.00	0.00	0.00	0.00	0.00

Table IX
The Effects of Real vs. Nominal Accessibility

This table reports the estimates of regressions examining the effects of real and nominal accessibility on stock price crash risk. Firm stock price crash risk is measured by *NCSKEW* and *CRASH*. Firms with real accessibility are defined by *IRACS*, which equals 1 if at least one of the three communication channels (phone, e-mail, and online discussion forum) is accessible, and 0 otherwise. Firms with fake accessibility are defined by *FAKEACS*, which equals 1 if at least one of the three communication channels (phone, e-mail, and online discussion forum) is provided on the firm's IR subpage but is not accessible, and 0 otherwise. Firms with the IR subpage provision on their website are defined by *WIR*, which equals 1 if there is an IR program subpage on the firm's website, and 0 otherwise. We control for variables as in Kim *et al.* (2011), which include *DTURN*, *LNCSKEW*, *SIGMA*, *RET*, *SIZE*, *MB*, *LEV*, and *ROA*. Firms' financial reporting quality measures, *ACCM* and *READ,* are also controlled for. We further control for agency problem measures, which include *ORECA*, *ARPT*, *EXPR*, *CO*, *STATE*, and *INDP*. All of the variables are defined the Appendix I. Industry, province, and year fixed effects are included. A probit model is used when the dependent variable is *CRASH*. The t-statistics based on a robust standard error estimate clustering at the firm levels is reported in parentheses. At the bottom of the column, the p-value of the joint test of *IRACS* = *FAKEACS* or *IRACS* = *WIR* is reported. Significance at the 10%, 5%, and 1% levels is indicated by *, **, and ***, respectively.

	(1)	(2)	(3)	(4)
Dependent variable	*NCSKEW*	*CRASH*	*NCSKEW*	*CRASH*
IRACS	-0.080***	-0.227***		
	(-3.04)	(-3.12)		
FAKEACS	-0.021	-0.021		
	(-0.86)	(-0.35)		
IRACS			-0.059***	-0.206***
			(-2.72)	(-3.26)
WIR			-0.021	-0.021
			(-0.86)	(-0.35)
Control	Yes	Yes	Yes	Yes
Industry, province, and year fixed effects	Yes	Yes	Yes	Yes
Cluster	Firm	Firm	Firm	Firm
Observations	4,418	4,418	4,418	4,418
R-squared	0.101	0.043	0.101	0.043
P-value of test: *IRACS* = *FAKEACS* or *IRACS* = *WIR*	0.006	0.001	0.324	0.059

Table X
The Effects of Accessibility with Various Quality

This table reports the estimates of regressions relating stock price crash risk to accessibility with various quality. Firm stock price crash risk is measured by *NCSKEW* (Panel A) and *CRASH* (Panel B). We use four continuous variables to measure the quality of accessibility, including *Telephone interviewee attitude* (high is better), *Length of the response e-mail*, *No. of days to receive an e-mail reply*, and *No. of postings on the online forum*. We control for variables as used in Kim *et al.* (2011), which include *DTURN*, *LNCSKEW*, *SIGMA*, *RET*, *SIZE*, *MB*, *LEV*, and *ROA*. Firms' financial reporting quality measures, *ACCM* and *READ,* are also controlled for. We further control for agency problem measures, which include *ORECA*, *ARPT*, *EXPR*, *CO*, *STATE*, and *INDP*. All of the variables are defined in Appendix I. Industry, province, and year fixed effects are included. A probit model is used when the dependent variable is *CRASH*. The t-statistics based on a robust standard error estimate clustering at the firm level are reported in parentheses. Significance at the 10%, 5%, and 1% levels is indicated by *, **, and ***, respectively.

Panel A: The dependent variable is *NCSKEW*

	(1)	(2)	(3)	(4)
Telephone interviewee attitude (high is better)	-0.013**			
	(-2.55)			
Length of the response e-mail		-0.019**		
		(-2.37)		
No. of days to receive an e-mail reply			0.034*	
			(1.84)	
No. of postings on the online forum				-0.011**
				(-2.17)
Controls	Yes	Yes	Yes	Yes
Industry, province, and year fixed effects	Yes	Yes	Yes	Yes
Cluster	Firm	Firm	Firm	Firm
Observations	4,418	4,418	4,418	4,418
Adj. R-squared	0.101	0.100	0.100	0.100

Panel B: The dependent variable is *CRASH*

	(1)	(2)	(3)	(4)
Telephone interviewee attitude (high is better)	-0.037***			
	(-2.59)			
Length of the response e-mail		-0.058**		
		(-1.98)		
No. of days to receive an e-mail reply			0.134**	
			(2.05)	
No. of postings on the online forum				-0.037**
				(-2.57)
Controls	Yes	Yes	Yes	Yes
Industry, province, and year fixed effects	Yes	Yes	Yes	Yes
Cluster	Firm	Firm	Firm	Firm
Observations	4,418	4,418	4,418	4,418
Pseudo R-squared	0.041	0.040	0.040	0.041

Table XI
The Effects of Accessibility on Bad Earnings Announcements

This table reports the estimates of the analyses examining the effects of accessibility on bad earnings announcements. Stock price crash risk is measured by *WCRASH*, which equals 1 if a firm's firm-specific weekly returns fall 3.09 standard deviations below the annual average of firm-specific weekly returns in a week, and 0 otherwise. Accessibility measures include *IRACS*, *IRSCORE*, *TEL*, *EMAIL*, and *FORUM*. A firm is identified as experiencing bad news in a week if it releases a quarterly earnings report that shows its unexpected earnings (net income in the current quarter minus the net income in the same quarter of the previous year, scaled by lagged market value equity) is at the bottom tercile and is non-negative in the previous quarter (*UESURP*). A firm is also identified as experiencing bad news in a week if it issues a (quarterly) managerial earnings guidance that indicates that the its net income is expected to fall (*GuideFall*). Panels A and B report the estimates of the probit regression examining the effects of accessibility around firm bad news as measured by *UESURP* and *GuideFall*, respectively. We control for variables as in Kim *et al.* (2011), which include *DTURN*, *LNCSKEW*, *SIGMA*, *RET*, *SIZE*, *MB*, *LEV*, and *ROA*. Firms' financial reporting quality measures, *ACCM* and *READ,* are also controlled for. We further control for agency problem measures, which include *ORECA*, *ARPT*, *EXPR*, *CO*, *STATE*, and *INDP*. All of the variables are defined in Appendix I. We estimate the regressions with firm-week observations over the 2011–2013 sample period. Industry, province, and time (weekly) fixed effects are included. At the bottom of the column, the p-value of tests examining the joint significance of key coefficients are reported. The t-statistics based on a robust standard error estimate clustering at the firm level are reported in parentheses. Significance at the 10%, 5%, and 1% levels is indicated by *, **, and ***, respectively.

Panel A: An unexpected decline in earnings

Dependent variable	*WCRASH*				
	(1)	(2)	(3)	(4)	(5)
Accessibility measures (*ACS*)	*IRACS*	*IRSCORE*	*TEL*	*EMAIL*	*FORUM*
ACS	-0.187***	-0.139***	-0.186***	-0.223***	-0.126***
	(-5.72)	(-5.34)	(-3.71)	(-3.32)	(-3.34)
*ACS * UESURP*	-0.726***	-0.605***	-0.483***	-0.570**	-0.527***
	(-5.56)	(-4.63)	(-2.75)	(-2.14)	(-3.32)
UESURP	1.067***	1.049***	0.825***	0.777***	0.852***
	(13.77)	(13.34)	(12.17)	(11.85)	(12.34)
Control	Yes	Yes	Yes	Yes	Yes
Industry, province, and time (weekly) fixed effects	Yes	Yes	Yes	Yes	Yes
Cluster	Firm	Firm	Firm	Firm	Firm
Observations	171,977	171,977	171,977	171,977	171,977
Pseudo R-squared	0.122	0.121	0.116	0.115	0.116
P-value of test: *ACS+ACS*UESURP = 0*	0.00	0.00	0.00	0.00	0.00
P-value of test: *UESURP+ACS*UESURP = 0*	0.00	0.00	0.04	0.43	0.03
P-value of test: *ACS+ACS*UESURP+UESURP = 0*	0.16	0.01	0.34	0.95	0.16

Panel B: Managerial earnings forecasts of a fall

Dependent variable	*WCRASH*				
	(1)	(2)	(3)	(4)	(5)
Accessibility measures (*ACS*)	*IRACS*	*IRSCORE*	*TEL*	*EMAIL*	*FORUM*
ACS	-0.189***	-0.139***	-0.183***	-0.212***	-0.133***
	(-6.00)	(-5.43)	(-3.82)	(-3.13)	(-3.72)
*ACS * GuideFall*	-0.438***	-0.383***	-0.331	-0.799**	-0.360**
	(-3.26)	(-3.29)	(-1.55)	(-2.20)	(-2.32)
GuideFall	0.919***	0.923***	0.792***	0.815***	0.840***
	(12.50)	(12.72)	(12.16)	(12.73)	(12.26)
Control	Yes	Yes	Yes	Yes	Yes
Industry, province, and time (weekly) fixed effects	Yes	Yes	Yes	Yes	Yes
Cluster	Firm	Firm	Firm	Firm	Firm
Observations	171,977	171,977	171,977	171,977	171,977
Pseudo R-squared	0.118	0.119	0.115	0.116	0.115
P-value of test: *ACS+ACS*GuideFall=0*	0.00	0.00	0.02	0.00	0.00
P-value of test: *GuideFall+ACS*GuideFall=0*	0.00	0.00	0.03	0.96	0.00
P-value of test: *GuideFall+ACS*GuideFall+GuideFall=0*	0.01	0.00	0.18	0.58	0.01

Table XII
The Effects of Accessibility and the Removal of Short-sale Constraints

This table reports the estimates of probit regressions examining the impact of the removal of short-sale constraints on the relationship between accessibility and stock price crash risk. Stock price crash risk is measured by *WCRASH*, which equals 1 if its firm-specific weekly returns fall 3.09 standard deviations below the annual average of firm-specific weekly returns in a week, and 0 otherwise. Treated firms are defined by *ShortSales*, which equals 1 if a stock is included in the designated list of stocks that are eligible for short selling, and 0 otherwise. Accessibility measures include *IRACS*, *IRSCORE*, *TEL*, *EMAIL*, and *FORUM*. We control for variables as in Kim *et al.* (2011), which include *DTURN*, *LNCSKEW*, *SIGMA*, *RET*, *SIZE*, *MB*, *LEV*, and *ROA*. Firms' financial reporting quality measures, *ACCM* and *READ,* are also controlled for. We further control for agency problem measures, which include *ORECA*, *ARPT*, *EXPR*, *CO*, *STATE*, and *INDP*. All of the variables are defined in Appendix I. We estimate the regressions with firm-week observations over the 2011–2013 sample period. Industry, province, and time (weekly) fixed effects are included. At the bottom of the column, the p-value of tests examining the joint significance of key coefficients are reported. The t-statistics based on a robust standard error estimate clustering at the firm level are reported in parentheses. Significance at the 10%, 5%, and 1% levels is indicated by *, **, and ***, respectively.

Dependent variable	*WCRASH*				
	(1)	(2)	(3)	(4)	(5)
Accessibility measures (*ACS*)	*IRACS*	*IRSCORE*	*TEL*	*EMAIL*	*FORUM*
ACS	-0.232***	-0.170***	-0.238***	-0.284***	-0.149***
	(-6.98)	(-6.14)	(-4.79)	(-3.79)	(-3.91)
*ACS * ShortSales*	0.279***	0.173**	0.314**	0.330*	0.069
	(2.67)	(2.27)	(2.27)	(1.66)	(0.47)
ShortSales	-0.109**	-0.093*	-0.073	-0.062	-0.058
	(-2.14)	(-1.88)	(-1.50)	(-1.31)	(-1.18)
Control	Yes	Yes	Yes	Yes	Yes
Industry, province, and time (weekly) fixed effects	Yes	Yes	Yes	Yes	Yes
Cluster	Firm	Firm	Firm	Firm	Firm
Observations	171,977	171,977	171,977	171,977	171,977
Pseudo R-squared	0.106	0.106	0.104	0.104	0.103
P-value of test: *ACS+ACS*ShortSales = 0*	0.63	0.97	0.56	0.80	0.56
P-value of test: *ShortSale+ACS*ShortSales = 0*	0.07	0.29	0.07	0.18	0.93
P-value of test: *ACS+ACS*ShortSale+ShortSale = 0*	0.49	0.21	0.98	0.93	0.30

Appendix I
Variable Definitions

Variables	Definitions/Descriptions	Sources
Accessibility variables:		
TEL	A dummy variable indicating firms that are accessible by telephone. It equals 1 if effective phone contact could be made with the firm, and 0 otherwise.	Manually collected
EMAIL	A dummy variable indicating firms that are accessible by e-mail. It equals 1 if an e-mail reply was received from the firm, and 0 otherwise.	Manually collected
FORUM	A dummy variable indicating firms that are accessible via the online discussion forum. It equals 1 if there was an online discussion forum with a record of communications between investors and the firm, and 0 otherwise.	Manually collected
IRACS	A dummy variable indicating firms that are accessible. It equals 1 if at least one of the three communication channels (phone, e-mail, and online discussion forum) is accessible, and 0 otherwise.	Manually collected
IRSCORE	An accessibility index indicating the number of communication channels (phone, e-mail, and online discussion forum) that are accessible (maximum score = 3 and the minimum score = 0).	Manually collected
FAKEACS	A dummy variable indicating firms that provide fake accessibility. It equals 1 if at least one of the three communication channels (phone, e-mail, and online discussion forum) is provided but is not accessible, and 0 otherwise.	Manually collected
IR	1 if there is an IR subpage on a firm's website, and 0 otherwise.	Manually collected
Telephone interviewee attitude (high is better)	A rating (0, 1, 2, 3, 4, and 5) given by our telephone interviewers to the firms that answer the telephone to evaluate their attitude and service quality (0 to be the worse and 5 is the best).	Manually collected
Length of the response e-mail	The logarithm of the number of characters in the text of e-mails that were replied to.	Manually collected
No. of days to receive an e-mail reply	The logarithm of the number of days it takes from sending the e-mail to receiving the firm's reply. We received the last e-mail reply after 26 days.	Manually collected
No. of postings on the online forum	The logarithm of the number of postings on the online discussion forum.	Manually collected
Stock price crash risk variables:		
NCSKEW	The negative skewness of firm-specific weekly returns in a year.	GTA_TRD/CSMAR
CRASH	1 if a firm experiences firm-specific weekly returns falls 3.09 standard deviations below the annual average of firm-specific weekly returns in a year, and 0 otherwise.	GTA_TRD/CSMAR
WCRASH	1 if a firm experiences firm-specific weekly returns falls 3.09 standard deviations below the annual average of firm-specific weekly returns in a week, and 0 otherwise.	GTA_TRD/CSMAR
Explanatory variables:		
DTURN	The average monthly share turnover over the current fiscal year period minus the average monthly share turnover over the previous fiscal year period, wherein monthly share turnover is calculated as the monthly trading volume divided by the total number of shares outstanding during the month.	GTA_TRD/CSMAR
LNCSKEW	The negative skewness of firm-specific weekly returns in year t-1.	GTA_TRD/CSMAR
SIGMA	The standard deviation of firm-specific weekly returns over the fiscal year period.	GTA_TRD/CSMAR
RET	The mean of firm-specific weekly returns over the fiscal year period.	GTA_TRD/CSMAR
SIZE	The log of the market value of equity.	GTA_TRD/CSMAR
MB	The market value of equity divided by the book value of equity.	GTA_FS/CSMAR, GTA_TRD/CSMAR
LEV	Total long-term debts divided by the total assets.	GTA_FS/CSMAR
ROA	Income before extraordinary items divided by the lagged total assets.	GTA_FS/CSMAR
ACCM	The absolute value of discretionary accruals based on Kothari *et al.* (2005). Specifically, we run a regression for each industry-year wherein the dependent	GTA_FS/CSMAR

	variables are total accruals (measured as (Δcurrent assets − Δcurrent liabilities − Δcash + Δdebt in current liabilities − depreciation)/lagged total assets), and the independent variables are 1/lagged total assets, Δrevenues/lagged total assets, PPE/lagged total assets, and ROA (net income/total assets). Total discretionary accruals are the absolute values of the residual from the model.	
READ	The natural logarithm of the file size in megabytes of firms' annual report files that are published by the SHSE and SZSE.	Manually collected
ORECA	Other accounts receivables scaled by total assets (see Jiang *et al*. 2010).	GTA_FS/CSMAR
ARPT	Abnormal related-party transactions as in Jian and Wong (2010).	GTA_FS/CSMAR
EXPR	The expense ratio, which is the operating expense (total expenses less cost of goods sold, interest expense, and managerial compensation) scaled by annual sales.	GTA_FS/CSMAR
CO	The ratio of an ultimate controlling shareholder's voting rights over his/her cash-flow rights. The information on control and cash-flow rights is collected from the annual report. If the information is not disclosed, the control-ownership dispersion is calculated based on the equity chain. That is, cash-flow right is measured by the products of the cash-flow rights along the ownership chain till it reaches the ultimate owner of the firms. Control rights are measured by the weakest link along the ownership chain.	GTA_HLD/CSMAR
STATE	Indicator variable set to 1 if the firm is ultimately controlled by the state, and to 0 otherwise, using a 30% "weakest link in the control chain" threshold as per CSMAR and CSRC guidelines.	GTA_HLD/CSMAR
INDP	The number of independent directors over the total number of directors on the board.	GTA_CG/CSMAR
EasyIR	1 if a stock is traded on the SZSE on and after July 9, 2012 (the date on which IR activities between firms and investors are required to be disclosed on SZSE's EasyIR), and 0 otherwise.	GTA_TRD/CSMAR
SZSE	1 if a stock is traded on the SZSE, and 0 otherwise.	GTA_TRD/CSMAR
ShortSales	1 if a stock is included in the designated list of stocks that are eligible for short selling, and 0 otherwise.	GTA_TRD/CSMAR
UESURP	1 if a firm's unexpected earnings in the current quarter period are in the bottom tercile and its unexpected earnings in the previous quarter period are non-negative, and 0 otherwise, where unexpected earnings are defined as net income released in the current quarter period minus net income in the same quarter in the previous year, scaled by the total equity market value in the previous year.	GTA_IAR/CSMAR, GTA_TRD/CSMAR
GuideFall	1 if a firm issues an earnings guidance indicating that its earnings in the current quarter period will decline, and 0 otherwise.	GTA_FIN_F/CSMAR

Appendix II

Heterogeneity in Investor Opinions and Stock Price Overvaluation

This table reports the estimates of probit regressions examining the impact of investor opinion disagreement and stock price overvaluation on the relationship between accessibility and stock price crash risk. The dependent variable is firm stock price crash risk, measured by *NCSKEW* and *CRASH*. Accessibility measure is *IRACS*. Investor opinion disagreement is measured by the detrending trading volumes (*DTURN*). Stock price overvaluation is measured by the market-to-book ratio (*MB*). We control for variables as in Kim *et al.* (2011), which include *DTURN*, *LNCSKEW*, *SIGMA*, *RET*, *SIZE*, *MB*, *LEV*, and *ROA*. Firms' financial reporting quality measures, *ACCM* and *READ,* are also controlled for. We further control for agency problem measures, which include *ORECA*, *ARPT*, *EXPR*, *CO*, *STATE*, and *INDP*. All of the variables are defined in Appendix I. Industry, province, and year fixed effects are included. A probit model is used when the dependent variable is *CRASH*. The t-statistics based on a robust standard error estimate clustering at the firm level are reported in parentheses. Significance at the 10%, 5%, and 1% levels is indicated by *, **, and ***, respectively.

	(1)	(2)	(3)	(4)
Dependent variable	*NCSKEW*	*CRASH*	*NCSKEW*	*CRASH*
IRACS	-0.068***	-0.181***	-0.069**	-0.160**
	(-3.02)	(-2.69)	(-2.50)	(-2.07)
*ACS * DTURN*	-0.028	0.366		
	(-0.22)	(1.01)		
DTURN	0.128	0.249		
	(1.59)	(1.35)		
*IRACS * MB*			0.009	-0.022
			(0.82)	(-0.88)
MB			0.003***	0.024**
			(3.06)	(2.15)
Control	Yes	Yes	Yes	Yes
Industry, province, and year fixed effects	Yes	Yes	Yes	Yes
Cluster	Firm	Firm	Firm	Firm
Observations	4,418	4,418	4,418	4,418
R-squared	0.101	0.0432	0.095	0.0458

Appendix III

Controlling for Accounting Conservatism and Corporate Slack Resources

This table reports the estimates of regressions relating stock price crash risk on accessibility controlling for additional factors. Stock price crash risk is measured by *NCSKEW* and *CRASH.* Accessibility is measured by *IRACS*. We control for variables used in Kim *et al.* (2011), which include *DTURN*, *LNCSKEW*, *SIGMA*, *RET*, *SIZE*, *MB*, *LEV*, and *ROA*. Firms' financial reporting quality measures, *ACCM* and *READ,* are also controlled for. We further control for agency problem measures, which include *ORECA*, *ARPT*, *EXPR*, *CO*, *STATE*, and *INDP*. All of the variables are defined in Appendix I. In columns (1) and (4), we examine the effect of accessibility by additionally controlling for accounting conservatism (*CSCORE*) as in Khan and Watts (2009). In columns (2) and (5), we examine the effect of accessibility by controlling corporate slack resources, which are measured by cash holding/net assets, current assets/current liability, working capital/net assets, and the number of employees/total assets. In columns (3) and (6), we include all the control variables. Industry, province, and year fixed effects are included. A probit model is used when the dependent variable is *CRASH*. The t-statistics based on a robust standard error estimate clustering at the firm level are reported in parentheses. Significance at the 10%, 5%, and 1% levels is indicated by *, **, and ***, respectively.

	(1)	(2)	(3)	(4)	(5)	(6)
Dependent variable		*NCSKEW*			*CRASH*	
IRACS	-0.065***	-0.062***	-0.062***	-0.214***	-0.207***	-0.209***
	(-3.25)	(-3.09)	(-3.09)	(-3.54)	(-3.42)	(-3.44)
Accounting conservatism (*CSCORE*)	-0.164		-0.165	-1.019**		-1.077**
	(-1.04)		(-1.04)	(-2.31)		(-2.44)
Cash holding/net assets		0.020	0.022		0.158*	0.174**
		(0.48)	(0.54)		(1.86)	(2.05)
Current assets/current liability		0.213***	0.211***		0.362*	0.353*
		(2.64)	(2.61)		(1.79)	(1.75)
Working capital/net assets		-0.038	-0.038		-0.073	-0.071
		(-1.52)	(-1.51)		(-1.30)	(-1.28)
Employees/total assets		-0.025*	-0.025*		-0.005	-0.004
		(-1.87)	(-1.86)		(-0.14)	(-0.12)
Control	Yes	Yes	Yes	Yes	Yes	Yes
Industry, province, and year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Cluster	Firm	Firm	Firm	Firm	Firm	Firm
Observations	4,418	4,418	4,418	4,418	4,418	4,418
R-squared	0.102	0.104	0.104	0.045	0.046	0.048