

Under watchful eyes: Analyst site visits and firm earnings management

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ABSTRACT

This paper investigates whether analyst site visits, where sell-side analysts visit corporate sites and interact with management, reduce earnings management by host firms. Taking advantage of the disclosure of analyst site visits by Chinese listed firms, we find that the intensity of analyst site visits is negatively associated with discretionary accruals, and this relation is robust to controlling for endogeneity. Furthermore, we find that site visits attended by star analysts and including factory tours are associated with lower levels of discretionary accruals than those without these features. We also report that the number and coverage of questions posed during site visits are negatively associated with discretionary accruals. Our results demonstrate that site visits by sell-side analysts perform a vital monitoring role and exert significant constraints on firms' opportunistic financial reporting.

Keywords: sell-side analysts, site visits, earnings management, external monitoring

JEL Classification: G24, G34, M41

1. INTRODUCTION

One of the key professional activities of sell-side analysts is to visit firms that they cover and to attend on-site activities; these are referred to as “analyst site visits”.¹ These visits, along with earnings calls, brokerage conferences, and analyst/investor days, constitute direct interactions between analysts and firms, and are essential to sell-side analysts’ functioning as information intermediaries. Understanding analyst site visits and the contexts in which they occur is instrumental in unpacking the “black box” of sell-side analysts, which commentators have been seeking to do for some time (e.g., Ramnath et al., 2008; Bradshaw, 2011).

Analyst site visits are distinct from other well-researched analyst-firm interactions such as earnings calls. First, while the sole objective of earnings calls is to announce financial results, site visits may serve a wide variety of objectives, and rarely substitute for earnings calls. Second, the frequency and timing of analyst site visits vary significantly between firms and over time, whereas earnings calls are normally pre-set to coincide with financial reporting cycles. Third, whereas earnings calls are always attended by top executives, analysts visiting corporate sites often do not meet top executives. Analyst site visits are also markedly different from analyst/investor days (Kirk and Markov, 2016): the latter are much less frequent and are usually attended by top executives.

Anecdotally, site visits are viewed as a valuable endeavor by sell-side analysts themselves and users of sell-side research.² Meanwhile, the semi-public nature of site visits has placed them on the radar of securities regulators, who are concerned about the possibility of non-public information being passed between analysts and firms. In turn, users of analyst research

¹ Prior research has used a variety of terms to refer to these events, e.g., “corporate site visits” (Cheng et al. 2016; Cheng et al. 2019), “private in-house meetings” (Bowen et al. 2018), and “company visits” (Han et al. 2018). We opt to use “analyst site visits”, instead of “corporate site/company visits”, to highlight our focus on analysts, rather than other visitors such as institutional investors. We opt not to use “private in-house meetings” because these events are best described as “semi-public”: while attendance is by invitation, analysts from reputable brokerage firms are almost always invited.

² Source: <https://www.irmagazine.com/buy-side/research-site-visits-most-valuable-says-investment-community> (accessed on 15 May, 2020).

are paying close attention to compliance issues related to analyst site visits. In the U.S., the enforcement actions of the Securities and Exchange Commission (SEC) have prompted an increasing number of asset managers to adopt formal due diligence processes, which, among other things, examine how the analysts that work for sell-side research providers interact with management.³

Site visits by analysts and other interest groups such as institutional investors have been examined in prior literature as a channel for visitors to acquire value-relevant information from management (e.g., Cheng et al., 2016; Bowen et al., 2018; Han et al., 2018; Cheng et al., 2019; Chen et al., 2021). The evidence suggests that analysts benefit from site visits in terms of improved forecast accuracy (Cheng et al., 2016; Han et al., 2018). Site visits by analysts and investors alike are found to be informative and to cause market reactions (Bowen et al., 2018; Cheng et al., 2019; Chen et al., 2021).

In this paper, we depart from the information-acquisition angle in the literature and investigate whether analyst site visits serve as an effective mechanism for monitoring firms' behaviors, and in particular their earnings management. The monitoring role of sell-side analysts has been broadly recognized since Jensen and Meckling (1976). Empirically, Yu (2008) reports that firms followed by more analysts engage in less earnings management. Taking advantage of exogenous shocks to analyst coverage, Chen et al. (2015) demonstrates the casual relation whereby analyst following constrains firms' earnings management (and other corporate decisions), while Bradley et al. (2017) shows that analysts with industry knowledge are more effective in monitoring firms. These studies, however, treat analysts' activities as a

³ For example, the Office of Compliance Inspections and Examinations of the SEC states that its 2020 examination priorities include “to assess, among other things, the extent of these RIAs’ [*registered investment advisors; added by the authors*] due diligence practices, policies, and procedures” (page 15; <https://www.sec.gov/about/offices/ocie/national-examination-program-priorities-2020.pdf>; accessed on 5 September, 2020).

“black box” and do not reveal the particular activities through which analysts exert their influence.

We hypothesize that the effectiveness of analyst site visits in constraining host firms’ earnings management results from both facilitating and inhibiting forces. On the one hand, site visits give analysts direct, on-the-ground knowledge of a host firm’s activities, a useful supplement to more distant sources of information such as financial reports. At the same time, regular visits by analysts equipped with rich industry expertise and professional experience can be a powerful deterrent against blatant earnings management. On the other hand, concerns exist that visiting analysts primarily appease management, rather than monitoring them: for example, analysts have many conflicts of interest, site visits are stage-managed, and top executives are rarely the hosts. There is, therefore, some uncertainty around the relationship between analyst site visits and firms’ earnings management, and this serves as an additional motivation for the current study.

We empirically investigate whether analyst site visits reduce host firms’ earnings management by exploiting a unique disclosure regulation of the Shenzhen Stock Exchange (SZSE) in China, which makes mandatory SZSE-listed firms’ disclosure of site visits by analysts (and other stakeholders).⁴ Based on a sample of SZSE-listed firms between 2013 and 2017, we hand-collect data on analyst site visits, including the frequency of visits, identities of attending analysts, visit itineraries, and the number and content of questions posed. We follow the literature to measure accrual earnings management by discretionary accruals.

In the main empirical analysis, we regress discretionary accruals on measures of the intensity of analyst site visits, including an indicator for hosting analyst site visits, the annual

⁴ In mid-2020, the SZSE was ranked as the eighth largest stock exchange globally, and the second largest in China, in terms of market capitalization (<https://finance.yahoo.com/news/20-largest-stock-exchanges-world-175549152.html>; accessed on 8 September, 2020). At the end of June 2020, 10,636 securities, issued by 2,249 firms, were listed on the SZSE, with a total market capitalization of 27.7 trillion RMB (<http://docs.static.szse.cn/www/market/periodical/month/W020200706567747546499.html>; accessed on 8 September, 2020).

number of site visits, and the annual number of visiting analysts, while controlling for common firm characteristics, in particular the number of analysts following. The results show that firms subject to more intense analyst site visits have lower levels of discretionary accruals, suggesting that these firms are engaged in less accrual earnings management.

To address the endogeneity concern that firms managing their earnings less are more likely to host analyst site visits, we conduct an instrumental variable regression in order to account for exogenous variations in the intensity of analyst site visits. Specifically, following prior research (Han et al., 2018; Chen et al., 2021), we use as the instrumental variables factors that hinder or facilitate analysts' visits but are unlikely to concern firms when they are making earnings management decisions: extreme weather in the area of the headquarters and the accessibility of the headquarters by fast transportation. The results from the instrumental variable regressions reinforce the earlier findings that firms which host more visits or are frequented by more analysts are engaged in less accrual earnings management.

We go on to examine whether the format and the substance of analyst site visits are associated with firms' earnings management. On the format of visits, we examine whether a site visit is attended by star analysts and whether its itinerary includes a factory tour. We find that site visits by star analysts and with factory tours are associated with less accrual earnings management than visits without these features. On the substance of visits, we examine the intensity and coverage of the questions posed by analysts during site visits. The results suggest that scrutiny from visiting analysts, indicated by the number and coverage of analysts' questions, is negatively associated with less accrual earnings management by host firms.

Among the supplementary analyses, we first examine alternative measures of the quality of financial reporting, including an exchange-assessed disclosure score and the propensity of restatements. We find that firms receiving more analyst site visits have higher disclosure scores and are less likely to restate annual financial statements, consistent with the main results based

on discretionary accruals. Next, we examine whether real earnings management, measured according to Roychowdhury (2006), may be impacted by analyst site visits. Unlike accrual earnings management, the effect of analyst site visits on real earnings management is found to be less clear-cut, indicating that the two means of earnings management are monitored differently by sell-side analysts. Lastly, to address the potential substitution between sell-side analysts and the media in their informational roles, we control for media coverage and find that the monitoring effect of analyst site visits is robust to this control.

This study makes several significant contributions. First, we contribute to the expanding literature on unpacking sell-side analysts' "black box" by examining analyst site visits. Importantly, whereas prior studies on site visits (e.g., Cheng et al., 2016, 2019; Bowen et al., 2018; Han et al., 2018; Chen et al., 2021) focus on such visits being venues for management to influence the decision making of analysts (and other attendees), our study takes the novel view that the influence may operate in the opposite direction: visiting analysts could affect firms' behaviors—in particular, their financial reporting choices. This inquiry enriches the multi-faceted nature of analyst-management interactions and deepens our understanding of analysts' professional activities.

Second, this study adds evidence on how firms' earnings management is constrained by a key professional activity of sell-side analysts—site visits. Although analysts have long been regarded as external monitors (Jensen and Meckling, 1976), it remains unclear how they monitor managers, because the literature has not focused attention on analysts' specific professional activities, only considering their professional engagements in the entirety (e.g., Yu, 2008; Chen et al., 2015), or their personal attributes such as talent (e.g., Dang et al., 2021). Our findings fill this gap and provide the nuanced insight that site visits are a key professional activity through which analysts monitor managers and mitigate their earnings management, an action detrimental to shareholders and other stakeholders.

Third, the findings of this study are relevant to the regulation and enforcement of firm-analyst interactions not only in China but also in developed markets. As China is the second-largest economy in the world, with the fourth- and eighth-largest stock exchanges, the healthy functioning of its capital markets is of critical importance, and this depends on the properly executed roles of sell-side analysts. Moreover, while securities regulators worldwide are rightly keen to ensure that analyst site visits (and other firm-analyst interactions) are free from material non-public information, excessive regulation of these events could deter firms from hosting them, or prevent analysts from interacting inquisitively with their hosts, which may deprive the investor community of the benefits of site visits, including their monitoring effect.⁵

The rest of the paper is organized as follows. Section 2 reviews prior literature and develops the hypotheses. Section 3 explains the sample, the data, and other research design matters. Section 4 presents and discusses the empirical results of the main analyses and those of the supplementary and robustness tests. Section 5 concludes.

2. PRIOR LITERATURE AND HYPOTHESIS DEVELOPMENT

2.1 Relevant literature

Our study is related to two streams of literature: on sell-side analysts' activities and the monitoring role of sell-side analysts. The first stream of literature aims to unpack the "black box" of analysts' decision making, which several authors have argued is imperative (Ramnath et al., 2008; Bradshaw, 2011). A large number of studies examine analysts' participation in public events such as earnings calls (e.g., Mayew, 2008; Mayew et al., 2013; Huang et al., 2018). Studies have also probed private or semi-public interactions between analysts and management: private meetings (Soltes, 2014), analyst/investor days (Kirk and Markov, 2016), and similar activities surveyed by Brown et al. (2015).

⁵ The China Securities Regulatory Commission (CSRC), the Chinese equivalent of the U.S. SEC, issued a Regulation Fair Disclosure-style regulation that aimed to stamp out selective disclosure of material non-public information in January 2007.

Site visits are semi-public interactions between sell-side analysts and management and have received attention in recent literature (e.g., Cheng et al., 2016; Bowen et al., 2018; Han et al., 2018; Chen et al., 2020). While these studies differ in terms of research questions and focus, they share the common theme that site visits are treated as venues for sell-side analysts and other visitors to acquire information and then act on it. Our study is distinct from those studies in that we postulate that firms' behaviors—earnings management in particular—may be affected by visiting analysts' interaction with management during site visits.

This perspective naturally links to a second stream of literature on the multi-faceted influences of sell-side analysts on firms' earnings management in particular, and their opportunistic behaviors in general. On the one hand, analysts have been shown to act as external monitors who deter earnings management. Yu (2008) reports a negative relationship between analyst coverage and measures of earnings management. In an international setting, Degeorge et al. (2013) find that analyst coverage is negatively associated with earnings management in countries with well-developed financial systems. Irani and Oesch (2013) show that accrual earnings management increases following exogenous reductions in analyst coverage, caused by brokerage firm closures. On the other hand, the performance pressure from analysts could also serve as an incentive for firms to manage earnings. For example, Han et al. (2021) show that analyst coverage is negatively associated with goodwill impairment. This literature has so far looked at analysts' professional activities as a whole, with no attempt to discern which particular activity of analysts deters firms from earnings management, or how. Our study advances this stream of literature by arguing and providing evidence that analysts exert their monitoring influence on firms via site visits.

Beyond earnings management, prior research also examines the effect of analysts on firms' other opportunistic behaviors. For example, Dang et al. (2021) show that firms are less involved in insider trading when covered by high-ability analysts, suggesting a positive impact of

analysts' innate quality. Our study complements this research by showing that, besides their personal attributes, analysts' efforts, for example in making site visits, can also mitigate firms' opportunistic behaviors.

More closely related to ours, Qi et al. (2021) find a negative association between firms' accrual earnings management and *institutional investors'* site visits. Our paper differs from theirs in several key aspects. First, our focus is on the monitoring role of sell-side analysts via site visits, as opposed to that of institutional investors examined in Qi et al. (2021). The former are information intermediaries, and play distinctive roles from institutional investors. Second, we conduct in-depth analyses on the format and substance of analyst site visits, such as the attendance of star analysts and the inclusion of factory tours, and on analysts' questions, which provide a rich and nuanced picture of this key professional activity of sell-side analysts. Lastly, our study is based on a more comprehensive and recent sample, implications from which are likely to have better external validity and to be more relevant to contemporary practice.

2.2 Hypothesis development

Analyst site visits and firm earnings management

We hypothesize that site visits are an important and distinctive channel through which sell-side analysts play their monitoring role. As mentioned in the introduction, frequent visits by a large number of analysts to a firm's headquarters or production facilities can serve as a powerful monitoring mechanism. Close proximity to the center of corporate decision making and business operations allows analysts to access better information, both hard and soft. Specifically, hard information is objective, structured, and quantified, whereas soft information is subjective, unstructured, and often in textual form (Liberti and Petersen, 2019). The former is typified by accounting information in financial reports, and the latter includes insights about the host firm's general state of affairs, employee morale, and other subtle matters that are

difficult to glean from financial reports or other second-hand materials (Cheng et al., 2019).⁶ Not only do site visits help analysts to contextualize hard information (Roberts et al., 2006), but they also enable analysts to gather valuable soft information, which often arises from face-to-face interaction, or is costly to collect from a distance (e.g., Petersen and Rajan, 2002; Liberti and Petersen, 2019). This “ground intelligence operation” remains valuable even in today’s world with its advanced communication technology (Chen et al., 2021). Via their interpretative role as information intermediaries (Huang et al., 2018), analysts then distil these first-hand experiences and disseminate them among their clients, which effectively leads to close scrutiny of managers by the wider investment community.

Moreover, frequent visits by sell-side analysts to a firm’s sites can increase the visibility of the host firm in the investment community, in turn enhancing its transparency. Greater visibility attracts a wider group of market players and encourages information production by other analysts and institutional investors, a key characteristic of a transparent information environment (Lang et al., 2003; Bushee and Miller, 2012). Better visibility and transparency discourage managers from distorting financial reports because their users are less likely to be deceived (e.g., Dyck et al., 2010).

There are opposing forces in play which may weaken the monitoring effect of sell-side analysts via site visits. First, analysts are faced with conflicts of interests, and may not intentionally seek to monitor host firms. Analysts are incentivized to attract investment banking or trading business to their brokerage firms from the firms that they cover, which creates a powerful conflict of interests (Groysberg et al., 2011; Irvine, 2014). This leads to analysts being unwilling to criticize or confront firms and renders their monitoring ineffective (e.g., Bradshaw, 2011). Second, analysts are inclined to maintain cordial relationships, or even curry favor, with

⁶ While it is difficult to quantify, the benefit of first-hand, soft information is generally acknowledged and there exists supporting evidence: for example, Malloy (2005) shows that local analysts make more accurate forecasts than non-local analysts.

management. Analysts who are on good terms with management enjoy many “privileges”: for example, open access to top executives, invitations to corporate events (site visits included), or favorable queuing at earnings calls, while “hostile” analysts risk losing them (Mayew, 2008). Analysts may even go so far as to self-censor their unfavorable opinions (e.g., withholding low-profit forecasts), especially in emerging markets (Hwang and Li, 2018). Third, site visits might be choreographed so that analysts only receive what their hosts want to share. As a result, analysts may not obtain material information, hard or soft, from site visits (Soltes, 2014), which will impair their ability to monitor firms. Last, Bowen et al. (2018) show that more than half of insiders’ stock sales take place around the times of site visits. To the extent that the management of some firms have a greater need to sell stocks, it is plausible that they will also have a stronger incentive to manage earnings, which will in turn counter the monitoring role of analyst site visits.

Taken together, it is an empirical question whether site visits serve as effective means for sell-side analysts to monitor firms’ earnings management. Our first hypothesis, stated in the alternative form, is as follows:

Hypothesis 1: *Ceteris paribus*, the intensity of site visits by sell-side analysts is negatively associated with host firms’ earnings management.

Format of analyst site visits

Building on the constraining effect of analyst site visits on firms’ earnings management discussed earlier, we next examine whether salient features of analyst site visits may be indicative of enhanced (or impeded) monitoring by analysts. One feature is the attendance of star analysts. Star status is commonly viewed as an indicator of the reputation and (perceived) competence of analysts, by both practitioners and researchers (e.g., Clarke et al., 2007; Groysberg et al., 2011). In the current setting, the attendance of star analysts is more likely to deter host firms from earnings management for two reasons. Firstly, their extensive industry

expertise and experience enable them to more skillfully discover potential discrepancies between reported and actual financial performance, and secondly, they bring greater visibility to host firms (Bradley et al., 2017).

Another notable feature is that some site visits, in particular those hosted by manufacturing firms, include tours of production facilities, research laboratories, etc. These additional activities may allow analysts to gain a first-hand insight into key (or new) manufacturing activities, and help them to spot discrepancies between firms' claims and factory floor realities. Thus, analyst site visits that include factory tours are expected to be more effective in deterring firms' earnings management.

Collectively, we state the hypotheses mentioned above, in the alternative form, as:

Hypothesis 2: Analyst site visits with the following features are more effective in reducing earnings management:

- a) the attendance of star analysts;
- b) the inclusion of factory tours.

3. RESEARCH DESIGN

3.1 Analyst site visits, data, and sample

Since 2013, the SZSE has made it mandatory for all firms listed there to disclose site visits by interested parties.⁷ The disclosure must cover important details, such as dates and locations, attendees (e.g., analysts, institutional investors, and staff of the host firm), activities (presentations, Q&A sessions, factory tours, etc.), and transcripts of questions and answers.

⁷ The relevant regulation was originally issued as the Information Disclosure Memorandum 41: Management of Investor Relations and Related Disclosure Requirements (2012), and has since been superseded by the Membership Management Rules of the Shenzhen Stock Exchange (2020 edition). Specifically, within two trading days of an investor-relations event (including, but not limited to, site visits), all SZSE-listed firms are required to publish an event record, using a standardized form, at a web portal designated by the SZSE (<http://www.cninfo.com.cn/>).

We hand-collect data on analyst site visits from the SZSE-sanctioned web portal, where firms publish the required disclosures. Based on the detailed information on these visits, we identify site visits that are attended by sell-side analysts, consistent with our focus on site visits as a means for analysts to monitor host firms.

To construct the sample, we start with all firms listed on the SZSE between 2013 and 2017, over which period the exchange-mandated disclosure was strictly enforced. As is standard in the literature, we exclude financial institutions, firm-year observations under non-standard listing conditions (i.e., with ST, *ST or PT status), observations with missing required data, and industry groups with fewer than five peer firms. Stock returns, financial data, and other analyst-related data are obtained from the China Stock Market & Accounting Research (CSMAR) database.

The final sample comprises 7,081 firm-year observations (1,764 unique firms) during the 2013-2017 period, of which 5,206 observations feature the hosting of at least one analyst site visit in a fiscal year (corresponding to a total of 29,844 visits). Table 1 details the construction of the sample.

Panel A of Table 2 describes the prevalence and frequency of the analyst site visits. 73.5% of the sample host at least one analyst site visit in a year. The mean firm in our sample hosts 4.215 (median 2) visits over a year, and receives a total of 27.81 visiting analysts (median 9); this translates to 5.429 (median 2) analysts per visit. These statistics confirm that site visits are a widely adopted form of analyst-firm engagement, but they are modest in size, and thus distinctive from larger gatherings such as earnings calls or analyst/investor days.

3.2 Research design and variable measurement

To test Hypothesis 1, we use the following regression model:

$$Discretionary\ accruals = a_0 + a_1 Analyst\ site\ visit + Control\ variables. \quad [1]$$

The dependent variable *Discretionary accruals (DA)* measures accrual earnings management (in a supplementary analysis, we examine real earnings management). We use the performance-matched modified Jones model (Kothari et al., 2005) to estimate discretionary accruals (*DA*). The main analyses use absolute *DA*, which captures the magnitude of accrual earnings management, regardless of direction. Additional analyses use signed discretionary accruals to examine upward and downward accrual earnings management separately.

Our independent variable of interest relates to the intensity of analyst site visits. Specifically, three measures are used: (i) whether a firm hosts any analyst site visits in a year (*ASV_DUMMY*; binary); (ii) the number of analyst site visits per year (*ASV*); and (iii) the number of visiting analysts per year (*ANLST*). According to Hypothesis 1, frequent visits by analysts and/or well-attended visits would be indicative of strong analyst monitoring and lead to less earnings management by the hosts. Therefore, the coefficient for *Analyst site visit* (i.e., a_1) is expected to be negative (when the dependent variable is absolute *DA*). Furthermore, when upward and downward earnings management are examined separately, according to Hypothesis 1, the coefficient a_1 is expected to be negative for the former, and positive for the latter.

We control for an array of firm characteristics that are shown to affect earnings managements in prior literature (e.g., Yu, 2008; Dechow et al., 2010; Bradley et al., 2017). In particular, the number of sell-side analysts following (*COVERAGE*) is intended to account for the general effect on earnings management of analyst following, as we seek to highlight the monitoring effect of site visits in particular. Other firm characteristics include firm size (*SIZE*), book-to-market ratio (*BM*), leverage (*LEV*), return on assets (*ROA*), stock return volatility (*RETSTD*), whether the auditor is one of the big four auditing firms (*BIG4*; binary), losses incurred (*LOSS*; binary), the holdings of the largest shareholder (*LGST_SHR*), the holdings of institutional investors (*IH*), board size (*BOARD*), and board independence (*INDEP*).

In the regressions, all count variables are (after adding one) converted into natural logarithms. All regression variables (except the binary ones) are winsorized by 1% at both tails. All regressions include industry and year fixed effects, and *t*-statistics are based on standard errors that are heteroskedasticity consistent and clustered by firm. In an untabulated robustness analysis, we also control for regional variations by including regional (provincial) fixed effects; the results are robust to this change.

Panel B of Table 2 shows descriptive statistics of the variables used for the regression (the analyst-site-visit variables have already been discussed in Panel A). For the average firm, the magnitude of discretionary accruals (*DA*) amounts to 5.7% of total assets. Firms with positive and negative *DA*, on average (based on the mean), manage earnings upward by 6.1% and downward by 5.2%, respectively. The average firm has a market capitalization of RMB 9.407 billion, a *BM* of 0.654, and an *ROA* of 0.046. A firm is followed by 7.450 analysts, and 32.8% of its shares are held by the largest shareholder, on average. All these statistics are reasonably representative of the firms listed on the SZSE, and are broadly in line with those reported in prior literature (e.g., Han et al., 2018; Cheng et al., 2019). Lastly, the correlations among the regression variables (Panel C) are generally consistent with expectations.

4. EMPIRICAL RESULTS

4.1 Analyst site visits and earnings management

Table 3 reports the results from estimating regression [1]. Panel A concerns the effect of analyst site visits on accrual earnings management, measured by absolute discretionary accruals. The coefficients for the three measures of analyst site visits—the indicator of having visits or not (*ASV_DUMMY*), the annual number of visits (*ASV*), and the annual number of visiting analysts (*ANLST*)—all have the expected negative sign and are statistically significant (all $p\text{-values} < 0.01$). In terms of the economic effect, compared to firms hosting no visits, firms hosting analyst site visits report 17.9% lower discretionary accruals, relative to the sample

median (column 1).⁸ Regarding the number of site visits (attending analysts), a 1% increase in visit numbers (analyst numbers) is associated with a reduction in discretionary accruals of 7.7% (5.1%) (columns 2 and 3). These statistics demonstrate that analyst site visits mitigate host firms' accrual earnings management in an economically meaningful manner.

Interestingly, analyst coverage (*COVERAGE*) is shown to be insignificant in Panel A. By contrast, in an untabulated analysis where regression [1] is estimated *without* the variables for analyst site visits, analyst coverage is statistically significant, as documented by prior studies (e.g., Yu, 2008). This implies that, among analysts' professional activities, site visits are indispensable for monitoring managers and curtailing earnings management.

In Panel B, we examine the effect of analyst site visits on directional accrual earnings management, by estimating regression [1] separately in the subsamples with positive and negative discretionary accruals. The results are consistent with those using the absolute discretionary accruals: more frequent and/or better-attended site visits by analysts attenuate accrual earnings management, regardless of its direction.

Casual relation between analyst site visits and earnings management

A major challenge in documenting evidence of the monitoring role of analyst site visits is to address the endogeneity concern on the relation between analyst site visits and firms' earnings management. It is possible that firms managing earnings less (more broadly, providing higher-quality financial disclosure) would attract more visits. Consistent with this scenario, Cheng et al. (2019) report that mutual fund managers are more likely to visit larger and more profitable firms, and firms with better disclosure ratings. To the extent that sell-side analysts and mutual fund managers share similar decision-making processes for site visits, this reverse-causality could complicate the inferencing. To address the endogeneity concern, we use

⁸ The economic effect (as a percentage) is measured relative to the sample median of the dependent variable. Using the dependent variable's mean or standard deviation does not affect the inferences.

instrumental variable regression with instrumental variables that plausibly affect analysts' visits, but do not directly affect firms' earnings management.

Following Han et al. (2018), we use extreme weather in the locality of a host firm's headquarters as the first instrumental variable. Extreme weather in the area where site visits are scheduled to take place would make it difficult or impossible for analysts to attend, but is not considered a direct motivation for earnings management. The instrumental variable *WEATHER* is measured as the annual percentage of days with extreme weather in the city of a sample firm's headquarters. Extreme weather is defined as either the daily low temperature being below -10°C , or the daily high temperature being above 38°C .⁹ Our second instrumental variable captures the accessibility of headquarters via fast means of transportation. Motivated by the notion that easily accessible headquarters encourage site visits, Chen et al. (2021) report that the opening of high-speed rail lines causes more frequent visits by sell-side analysts. Meanwhile, it is implausible that the accessibility of the headquarters would be directly factored into firms' financial reporting decisions. Operationally, the instrument variable *TRANSPORTATION* takes the value two if the city of a firm's headquarters is accessible by both high-speed trains and airplanes, one if it is accessible by one of those means of transportation, and zero otherwise. Besides the aforementioned instrumental variables, we also include in the first-stage regression the control variables from regression [1].

The instrumental variable regression results are reported in Table 4, with the top part showing the second-stage regression result and the bottom part showing the first-stage regression result. Concerning the number of analyst site visits (*ASV*; see column 1), in the first-stage regression, the coefficients for both the instrumental variables are highly significant and have the predicted signs (*WEATHER*: -1.410 ; *TRANSPORTATION*: 0.148 ; both $p < 0.01$),

⁹ The weather data is taken from the China Surface Climate Dataset, compiled by the China Meteorological Data Sharing Service System (retrieved from http://cdc.cma.gov.cn/cdc_en). Rainfall data, which Han et al. (2018) use, is unavailable to us, and thus not used.

confirming that analyst site visits are driven by exogenous factors such as extreme weather and site accessibility. More importantly, in the second-stage regression the coefficient for *ASV* is still negative and statistically significant (-0.013 ; $p < 0.05$). The results for the number of attending analysts (*ANLST*) are qualitatively similar (column 2).

In an untabulated test, we also follow Yu (2008) and use expected coverage as the instrumental variable to address endogeneity. The results are qualitatively similar and the inferences remain unchanged.

To the extent that the instrumental variables are effective, the results here reinforce the inference from Table 3 that sell-side analysts monitor and constrain firms' accrual earnings management by attending site visits.¹⁰

4.2 Format and substance of analyst site visits and earnings management

Format of analyst site visits

To test Hypothesis 2, we modify regression [1] by breaking up the number of analyst site visits (*ASV*) into the number of visits with a certain feature (*ASV_FEATURE*) and the number of visits without that feature (*ASV_REST*):

$$\begin{aligned} \text{Discretionary accruals} = & b_0 + b_1ASV_FEATURE + b_2ASV_REST & [2] \\ & + \text{Control variables,} \end{aligned}$$

where two features of visits are considered: attendance of star analysts and inclusion of factory tours. Empirically, we follow Lu et al. (2020) and define a visiting analyst as a “star” if they have appeared in the “Star Analyst Ranking” compiled by *New Fortune Magazine*.¹¹ To formally test Hypothesis 2, we perform *F* tests on the equality of the coefficients for

¹⁰ While the instrumental variables here have been used in prior research (e.g., Han et al. 2018; Chen et al. 2021), we acknowledge that they inevitably have limitations, such as being weak instruments and/or not entirely exogenous. A more plausible exogenous shock for discerning causality would be brokerage firm mergers/closures. Unfortunately, such events are rare for our sample during the sample period.

¹¹ *New Fortune Magazine* is one of the leading financial magazines in China (<http://www.xcf.cn/s/index.html>) and its “Star Analyst Ranking” is among the most influential regarding the reputations of sell-side analysts.

ASV_FEATURE and *ASV_REST* (i.e., b_1 and b_2). According to Hypothesis 2, we expect $b_1 > b_2$. The other specifications of regression [2] are the same as in regression [1].

Panel A of Table 5 provides summary statistics of the key features of the analyst site visits described above, among observations featuring analyst site visits (5,206 firm-years). For the average firm-year, 78.5% of its analyst site visits are attended by star analysts, suggesting that star analysts take these visits seriously. Moreover, 9.8% of its analyst site visits include factory tours. The percentage of site visits with factory tours seems low in the overall sample, but this is mainly because this activity is industry-specific: this percentage rises to 15.2% among manufacturing firms.

Panel B of Table 5 reports the results of estimating regression [2]. Column (1) shows that site visits attended by star analysts are negatively and statistically significantly ($p < 0.01$) associated with absolute discretionary accruals. The relation is also economically meaningful: a 1% increase in star-analyst-attended site visits leads to a 10.3% decline in discretionary accruals (relative to the sample median). By contrast, no such relation exists between visits without star analysts and absolute discretionary accruals. Formally, the F test rejects the null hypothesis that the coefficients for *ASV_FEATURE* and *ASV_REST* are equal ($p < 0.05$), confirming Hypothesis 2.a that the involvement of experienced and high-profile analysts would enhance the monitoring effect of site visits. In column 2, both site visits with factory tours and those without have significantly negative coefficients (both $ps < 0.01$), which is expected as analysts are expected to perform monitoring in both cases. Importantly, the equality test of the coefficients ($p < 0.01$) supports Hypothesis 2.b that factory tours will incrementally contribute to the effectiveness of site visits as a means by which analysts constrain management's opportunistic reporting behaviors.

To summarize, we find that site visits attended by star analysts and including factory tours are associated with a greater reduction of discretionary accruals, suggesting that site visits with

proper formats are more effective in restraining firms from engaging in accrual earnings management.

Substance of site visits: analysts' questions

Besides the format, it is reasonable to expect that the substance of analyst site visits affects their effectiveness in reining in earnings management. To shed light on this, we now examine the questions posed by visiting analysts to their hosts during site visits.

The extent of the scrutiny from analysts may manifest through aspects of how they question their hosts. The more questions they raise, or the more comprehensive the range of issues covered, the more pressure the hosts are likely to face. The elevated pressure may result simply from being asked for extra information, or from the need to conceal distorted accounting information from better-informed users.

To empirically measure the intensity and coverage of analysts' questioning, we extract from the mandated site-visit disclosures the questions raised by analysts and answered by host firms. In addition to documenting the number of questions, we group questions into nine categories according to their contents, ranging from operational matters and strategic planning to public relations incidents. Appendix A describes this categorization process and the categories in detail.

To test whether the intensity and/or coverage of analysts' questions are associated with firms' earnings management, we estimate a modified version of regression [1]:

$$\text{Discretionary accruals} = c_0 + c_1 \text{Analyst question} + \text{Control variables}, \quad [3]$$

where *Analyst question* is measured in two ways. First, the number of questions over a year (*QSTN*) captures the intensity of analysts' questioning and is (after adding one) converted to a natural logarithm in the regression. Second, to measure the coverage of analysts' questioning, we follow the idea of the Herfindahl Index and calculate the ratio of covered categories (out of

the total of nine categories) for each visit in a year, and then square and average them ($QSTN_CVG$). The coefficient for *Analyst question* (i.e., c_1) is expected to be negative.

Summary statistics (untabulated) show that, for the average firm hosting analyst site visits, about 40 questions are exchanged between visiting analysts and management over a year, or nearly seven questions per visit. Over the year, on average, 2.45 categories of topics are covered, out of a total of nine (the mean and median of $QSTN_CVG$ are 0.285 and 0.271, respectively).

Panel A of Table 6 reports the results of estimating regression [3]. As expected, the coefficient for the number of questions ($QSTN$) is negative and statistically significant ($p < 0.01$). In economic terms, a 1% increase in the number of questions from visiting analysts causes a 5.1% reduction in discretionary accruals (relative to the sample medium), a sizeable impact. Similarly, the coefficient for the question coverage ($QSTN_CVG$) has the expected negative sign and is significant both statistically ($p < 0.01$) and economically.

We further explore whether questions with particular focuses may be especially relevant for monitoring by analysts. Specifically, we consider two focuses: (a) long horizon; (b) corporate governance. Questions with a long-horizon focus are concerned with a firm's long-term projects and/or strategic planning (specifically, categories ii and iv in our categorization scheme). When analysts and, by extension, the broader investment community, are not fixated on short-term financial performance, management may feel less pressured to take myopic decisions, especially those affecting accounting quality. For the second focus of our interest, questions concerning corporate governance include those inquiring into or commenting on top executives (pay, turnover, etc.), dominant shareholders, and related parties (category vi in our categorization scheme). In a similar vein, frequent exchanges between analysts and hosts on corporate governance issues may signal to firms that they are under close scrutiny from external parties, and act as a strong deterrent to firms against opportunistic reporting choices.

To test whether the content of analysts' questions is associated with firms' earnings management, we estimate a modified version of regression [2]:

$$\begin{aligned} \text{Discretionary accruals} = & d_0 + d_1 QSTN_FOCUS + d_2 QSTN_REST & [3.a] \\ & + \text{Control variables,} \end{aligned}$$

where *QSTN_FOCUS* is the number of questions with a certain focus: long horizon or corporate governance, and *QSTN_REST* is the number of other questions. As in the preceding analysis, we test the equality of the coefficients for *QSTN_FOCUS* and *QSTN_REST* (i.e., d_1 and d_2), with the expectation that (in magnitude) $d_1 > d_2$.

Panel B of Table 6 reports the results of estimating regression [3.a]. In column 1, the coefficient for long-horizon questions (*QSTN_FOCUS*) is negative and statistically significant ($p < 0.05$), while the coefficient for other questions (*QSTN_REST*) is insignificant. The coefficient equality test indicates that, with marginally statistical significance ($p < 0.1$), long-horizon questions are associated with greater reductions of discretionary accruals than other questions are. The results and inferences are similar for the corporate-governance questions (column 2). These findings are consistent with the expectation that proper engagement between analysts and hosts at site visits, for example, through the asking of the right kinds of questions, helps to constrain firms' accrual earnings management.

In summary, the examination of analysts' questions during site visits shows that more intense questioning by analysts, or the asking of a broader range of questions, is associated with less earnings management. There is also some evidence that analysts' attention to long horizons and to corporate governance contributes to the effectiveness of site visits as a firm monitoring mechanism.

4.3 Supplementary and robustness analyses

Additional measures of financial reporting quality

Measuring earnings management is empirically challenging, and the existing proxies are likely contaminated with noise (Owens et al., 2017). To mitigate this concern, we supplement

the main analyses in Table 3 by examining two alternative measures of financial reporting quality: (a) the disclosure quality score assessed by the SZSE and (b) financial statement restatement. Both measures avoid the need to model a firm's normal accruals, the main challenge in estimating discretionary accruals.¹²

Panel A of Table 7 reports the summary statistics of the alternative measures of financial reporting quality. For the SZSE disclosure quality score (*DISC_SCORE*), 21.1% of the sample firms achieve the highest score of four, 66.2% score three, 11.0% score two, and 1.7% are given the lowest score of one. This distribution suggests that our focus should be on the likelihood of firms receiving the highest score in the subsequent analysis. With regard to firms restating financial statements (*RESTATEMENT*), 10.1% of the sample restated annual financial statements in order to rectify erroneous or improper accounting choices made earlier.¹³

Panel B reports the results of re-estimating regression [1] with the alternative measures of financial reporting quality as the dependent variables. Because *DISC_SCORE* is an ordered numeral, the regression is estimated using ordered logit regression. As shown in columns i.1-i.3, the coefficients for all three variables of interest (*ASV_DUMMY*, *ASV*, and *ANLST*) are positive as predicted, and statistically significant (all $p\text{-values} < 0.01$). In terms of the economic effect, a firm receiving at least one analyst site visit is 8% more likely to receive the highest disclosure score, while a 1% increase in the number of site visits (visiting analysts) increases this probability by 5.4% (2.6%); these are all economically meaningful improvements.

¹² The disclosure quality score is collected from the SZSE official website: <http://www.szse.cn/www/disclosure/supervision/check/index.html>. Each year, the SZSE assesses listed firms on the quality of their information disclosure. The assessment covers areas such as the truthfulness, accuracy, completeness and timeliness, and compliance of the information disclosure, penalties and enforcements by the exchange, and the cooperation of listed firms with the exchange, among other things. The score combines both self-assessments by listed firms and the evaluation by the exchange, and ranges from D (lowest) to A (highest). The regression variable *DISC_SCORE* quantifies the letter grades as: 4 for A, 3 for B, etc. The restatement data come from CSMAR.

¹³ Compared to in the U.S., restatements occur much more frequently among Chinese listed firms. Minor issues, clerical errors, or missing supplementary/explanatory information can all lead to restatements of annual financial statements according to the CSRC's rules.

Similar inferences can be drawn from the results of estimating the logit regression with *RESTATEMENT* as the dependent variable, shown in columns ii.1-ii.3. The coefficients for the analyst-site-visit variables are negatively and statistically significant (all $p_s < 0.01$), as predicted. Economically speaking, taking column ii.1 as an example, firms receiving analyst site visits are 2.7 percentage points less likely to restate financial statements than firms receiving no visits.

Overall, the results from the alternative measures of financial reporting quality reinforce those based on discretionary accruals reported in Table 3. Collectively, they lend further support to the main hypothesis that site visits are an effective channel through which sell-side analysts can monitor firms and that this monitoring enhances the quality of firms' financial reporting.

Real earnings management and analyst site visits

In this analysis, we explore the effect of analyst site visits on firms' real earnings management. Real earnings management involves firms altering real activities, such as production, sales, or discretionary spending, in order to misrepresent their accounting results (Roychowdhury, 2006). While real earnings management may be used in connection with, or instead of, accrual earnings management, the former is generally considered to be costlier and more damaging to shareholders than the latter (Cohen and Zarowin, 2010). It is intuitive to expect that monitoring by sell-side analysts, and that done via site visits in particular, could extend to real earnings management. However, Iran and Oesch (2016) report that firms substitute real earnings management for accrual earnings management in response to analysts' monitoring, suggesting that analysts might be more effective in curbing the former than the latter. Therefore, we do not develop formal hypotheses for this analysis.

Empirically, we follow the procedures in Roychowdhury (2006) to construct a measure of real earnings management (*REM*). Panel A of Table 8 shows that, on average, the magnitude

of *REM* is 12.6% of total assets, more than twice that of discretionary accruals. The mean positive (negative) *REM* is 0.125 (−0.128).

We reproduce regression [1] from Table 3, except that now the dependent variable is absolute (signed) *REM*, and report the coefficients for the three analyst-site-visit variables in Panel B of Table 8. When the dependent variable is either absolute or positive *REM*, the coefficient for the number of visits (*ASV*) is negative and statistically significant ($p < 0.05$ and < 0.01 , respectively). Economically speaking, a 1% increase in the number of site visits is associated with a reduction in (earnings-increasing) real earnings management of 5.6% (9.0%), relative to the sample median. The other two variables of interest, *ASV_DUMMY* and *ANLST*, have coefficients insignificantly (or only marginally) different from zero. Moreover, none of the analyst-site-visit variables has a significant coefficient when the dependent variable is negative *REM*.¹⁴

Lastly, Panel C of Table 8 reproduces the instrumental variable regression from Table 4, except that the dependent variable of the second-stage regression is absolute *REM*. In the second-stage regression, the coefficients for *ASV* and *ANLST*, although retaining the signs of Panel B, are no longer significant ($p > 0.10$). One possible explanation is that extreme weather and headquarters' accessibility affect real activities, such as production, sales, and expenditure, more directly than they do discretionary accruals.

These results suggest that the effect of analyst site visits on real earnings management is less clear-cut than that on accrual earnings management, echoing the message in Iran and Oesch (2016) regarding the limits of analysts' monitoring.

¹⁴ In an untabulated analysis, we also examine how analyst site visits affect the components of *REM*: abnormal discretionary expenses, abnormal cash flows, and abnormal production, as in Roychowdhury (2006). We find some evidence that analyst site visits reduce abnormal discretionary expenses, but not the other components.

Media coverage, analyst site visits, and firm earnings management

A firm's external information environment consists of contributions from multiple agents. Besides sell-side analysts, on whom we focus here, the media is another important force ([Bradshaw et al., 2021](#)). Prior literature documents that better media coverage is associated with reduced information asymmetry and enhanced firm transparency (e.g., [Peress, 2014](#)). Moreover, [Bushee and Miller \(2012\)](#) report that small- and mid-sized firms view improving their media coverage as a key to enhancing their visibility, and as more achievable than improving analyst coverage, suggesting a substitution between the media and sell-side analysts. Therefore, we re-examine the effect of analyst site visits on firms' earnings management, while explicitly accounting for media coverage. Following prior research, we measure media coverage by the number of media articles involving a sample firm in a year.¹⁵ We then re-estimate regression [1] with media coverage as an additional control variable. The untabulated results show that all three *ASV* measures retain their predicted sign and statistical significance, suggesting that the monitoring effect of analysts via their site visits is not materially affected by media coverage. The coefficient on media coverage has the expected sign but is statistically insignificant.

5. CONCLUSIONS

As one of their essential professional activities, sell-side analysts' visits to corporate sites have been attracting increasing attention in the literature (e.g., [Cheng et al., 2016](#); [Bowen et al., 2018](#); [Han et al., 2018](#); [Chen et al., 2021](#)). Those investigations treat site visits as venues for analysts to acquire information that may lead them to change their decisions. There is, however, another distinctive and plausible dynamic between visiting analysts and host firms: analysts

¹⁵ The media coverage data come from the Financial News Database of Chinese Listed Companies (CNFD), which is widely used by researchers (e.g., [Kim et al., 2019](#)). The database covers publications from more than 600 Chinese financial media entities, including the eight leading Chinese financial newspapers, China Securities Journal, Shanghai Securities News, China Business News, 21st Century Business Herald, China Business Journal, The Economic Observer, Securities Daily, and Securities Times.

may exert a monitoring influence on firms and restrain the latter's earnings management. Meanwhile, emerging evidence suggests that higher followings by sell-side analysts lead to higher-quality financial reporting, but the literature has so far not revealed the details of the "black box" of activities that constitute analysts' monitoring (e.g., Yu, 2008; Irani and Oesch, 2013). This study joins these two streams of literature and seeks to shed light on whether and how analyst site visits influence host firms' earnings management.

Leveraging the disclosure on analyst site visits by firms listed in China's SZSE, we show that more frequent and better-attended site visits by sell-side analysts result in less accrual earnings management. Further analyses confirm that this effect is not an artefact of endogeneity: that is, it is not a result of firms with less earnings management attracting more visiting analysts. Moreover, we find that site visits attended by star analysts or including factory tours are more effective in curtailing earnings management, as also are intense and extensive questioning by analysts. These results suggest that both the format and the substance of site visits affect analysts' monitoring of earnings management. We also show that our results are robust to alternative measures of financial reporting quality, while real earnings management appears not to be definitively attenuated by analyst site visits. Overall, our findings highlight the essential role of site visits as a means by which sell-side analysts exert their monitoring on firms.

Besides the contributions to the two streams of literature mentioned above, our findings also have regulatory and managerial implications, not just for Chinese capital markets but also for developed markets. It is undoubtedly in the interests of the broader investment community that all securities regulators, the U.S. SEC and its counterparts elsewhere, are vigilant in regulating interactions between sell-side analysts and firms, and in guarding against the potential transmission and misuse of material non-public information. However, regulation and enforcement may need to be balanced and fine-tuned, so that analysts and firms are not deterred

from interacting, in particular during site visits, which would deprive the market of the key benefit documented by our study.

Among the caveats of our study, we acknowledge that our sample firms may not experience sufficient within-firm variations in financial reporting quality and in analysts' professional engagements like site visits, and that the simultaneity of these variables may not be fully resolved, despite our empirical treatments. Future research may seek to leverage exogenous shocks that provide a more powerful identification strategy, to strengthen the causality inference. Moreover, while our empirical analyses have controlled for key corporate governance characteristics (e.g., board size, board independence), a fuller consideration of the interaction between the external monitoring by analysts and the internal monitoring by firms' own corporate governance mechanisms could enrich our understanding on the subject matter, both theoretically and empirically.

APPENDICES

A. CATEGORIZATION OF ANALYST QUESTIONS AT SITE VISITS

The standardized disclosure form for site visits includes the event transcript (some are abbreviated). The usual format is a list of questions posed by attendees and answers given by the hosting staff. We follow a three-step process to categorize the contents of the questions and answers exchanged during site visits:

(1) Identification of groupings based on keywords. A sample of analyst-site-visit transcripts is analyzed for keywords. Based on the frequency of keywords, and balancing between simplicity and specificity of grouping, we identify nine categories: (i) operational; (ii) long-term projects; (iii) financing; (iv) industry and markets; (v) strategic planning; (vi) corporate governance; (vii) stock performance; (viii) macro policies; (ix) public relations incidents.

(2) Categorization of transcripts by research assistants. 30 MSc research assistants are split into two teams; each team independently reads the transcripts and assigns each question into one of the nine categories identified in step one.

(3) Review and finalization of the categorization. The categorizations made by the two teams are cross-checked, and inconsistencies are discussed and resolved, which leads to the final categorization.

The table below summarizes the nine categories of questions, their explanations, and summary statistics:

Category of questions	Explanation	Frequency (%)
i. Operational	Related to <ul style="list-style-type: none">- daily business activities, such as product design, production, technology and R&D, supply and distribution channels;- short-term financial performance (sales volumes, revenues, gross margin), etc.	149,438 (72.1%)
ii. Long-term projects	Progress of ongoing or early-stage projects (either solo or joint ventures, including M&As); project funding sources; restructuring or divesture.	15,712 (7.6%)
iii. Financing	Issuance of shares (including public offerings and private placements) and corporate bonds.	3,861 (1.9%)

Category of questions	Explanation	Frequency (%)
iv. Industry and markets	Current and prospective states of industry and markets, industrial policies, and the host's core competitive advantages.	16,834 (8.1%)
v. Strategic planning	Long-term, strategic plans for the group, including potential strategic investors.	12,144 (5.9%)
vi. Corporate governance	Related to <ul style="list-style-type: none"> - top executives: e.g., compensation, shareholding, responsibility, turnover; - major shareholders: e.g., holdings and changes, capital injections; - related parties, associates, and joint ventures. 	5,598 (2.7%)
vii. Stock performance	Stock valuation; share price movements; share repurchases.	581 (0.3%)
viii. Macro policies	Monetary policies, environmental policies, and exchange rate movements.	2,593 (1.3%)
ix. Public relations incidents	Major public relations incidents, litigation, and regulatory actions.	483 (0.2%)
Total		207,244 (100%)

B. VARIABLE DEFINITION

Acronym	Label	Computation
Main dependent variable		
<i>DA</i>	Discretionary accruals, scaled by total assets	Estimated using the performance-matched modified Jones model (Kothari et al., 2005).
Alternative dependent variables		
<i>DISC_SCORE</i>	SZSE disclosure quality score	The SZSE annually assesses firms listed on it on information disclosure quality, and assigns letter grades ranging from A (highest quality) to D (lowest quality). In the regression, the letter grades are converted to integers from one (for D) to four (for A).
<i>RESTATEMENT</i>	An indicator of financial statement restatement	One if any annual financial statement is subsequently restated, and zero otherwise.
<i>REM</i>	Measure of real earnings management, scaled by total assets	Estimated according to Roychowdhury (2006).
Variables related to analyst site visits		
<i>ANLST*</i>	Total number of visiting analysts over a year	Summed across multiple visits, if applicable, in a year.
<i>ASV_DUMMY</i>	An indicator for hosting at least one site visit	Equal one if a firm receives at least one analyst site visit during a year, and zero otherwise.
<i>ASV*</i>	Number of analyst site visits over a year	Only site visits attended exclusively by sell-side analysts.
<i>ASV_FEATURE*</i> (<i>ASV_REST</i>)	Number of analyst site visits over a year with (without) a particular feature	Two features are considered: (i) attendance of star analysts; (ii) inclusion of factory tours. A visiting analyst is marked as a “star” if they are in the Star Analyst Ranking compiled by New Fortune Magazine in the current or prior year(s).
<i>QSTN*</i>	Total number of analysts’ questions over a year	Summed across multiple visits, if applicable, in a year.
<i>QSTN_CVG</i>	Coverage of analysts’ questions	$\frac{1}{N} \sum_{n=1}^N (NCAT_n/9)^2$, where $NCAT_n$ is the number of question categories covered in each site visit, and N is the total number of visits in a year.
<i>QSTN_FOCUS*</i> (<i>QSTN_REST</i>)	Number of analysts’ questions with (without) a particular focus	Two focuses are considered: (a) long horizon (category ii: long-term projects; and category iv: strategic planning); (b) corporate governance (category vi: corporate governance). See Appendix A for details on the categorizing of analysts’ questions.
Control variables		

Acronym	Label	Computation
<i>BIG4</i>	An indicator for a Big 4 auditor	Equal one if audited by one of the Big Four auditing firms, and zero otherwise.
<i>BM</i>	Book-to-market ratio	Shareholders' equity divided by market cap at the fiscal year-end.
<i>BOARD*</i>	Board size	Number of directors.
<i>COVERAGE*</i>	Analyst coverage	Number of analysts following a firm.
<i>IH</i>	Institutional holding	Percentage of total shares outstanding.
<i>INDEP</i>	Board independence	Percentage of independent directors on the board.
<i>LEV</i>	Leverage	Total debts divided by total assets.
<i>LGST_SHR</i>	The largest shareholder's holding	Percentage of total shares outstanding.
<i>LOSS</i>	An indicator for loss	Equal one if net income is negative, and zero otherwise.
<i>RETSTD</i>	Daily return volatility	Standard deviation of daily returns over a year.
<i>ROA</i>	Return on total assets	Net income/average total assets.
<i>SIZE</i>	Market capitalization (mil. RMB)	As of the fiscal year-end (31 December); converted into a natural logarithm in the regression.
<hr/> Instrumental variable <hr/>		
<i>TRANSPORTATION</i>	An index indicating accessibility via fast means of transportation	Equal two if the city of a firm's headquarters can be accessed by both high-speed trains and airplanes, one if accessible by either high-speed trains or airplanes, and zero otherwise.
<i>WEATHER</i>	Annual percentage of days of extreme weather in the city where a sample firm is headquartered	Extreme weather is defined as a daily high (low) temperature above 38°C (below -10°C). The weather data are from the China Surface Climate Dataset (retrieved from http://cdc.cma.gov.cn/cdc_en).

* When used in the regressions, these variables are, after adding one, converted into natural logarithms.

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Table 1. Sample Construction

Steps in constructing the sample	Firm-years
1. Construct the initial sample	
Firms listed in the Shenzhen Stock Exchange (SZSE) during 2013-2017	11,527
Less:	
Financial institutions	(244)
ST, *ST and PT firms (subject to special trading arrangements)	<u>(301)</u>
Initial sample	10,982
2. Construct the final sample	
Less:	
Missing accounting data	(1,771)
Missing price/return data	(1,236)
Industry groups with fewer than five peer firms	(894)
3. Final Sample (1,764 unique firms), of which	7,081
Subsample with at least one analyst site visit (attended primarily by sell-side analysts) in a year	5,206

Table 2. Summary Statistics**Panel A. Analyst site visits**

(N = 7,081)	Mean	STD	Min	Q1	Median	Q3	Max
At least one visit per year (<i>ASV_DUMMY</i>)	0.735	0.441	0	0	1	1	1
Number of analyst site visits (<i>ASV</i> ; not logged)	4.215	5.377	0	0	2	6	29
Number of visiting analysts (<i>ANLST</i> ; not logged)	27.81	45.03	0	0	9	35	263
Number of analysts per visit	5.429	9.258	0	0	2	7	170

Panel B. Variables for regression

(N = 7,081)	Mean	STD	Min	Q1	Median	Q3	Max
Discretionary accruals (<i>DA</i>), absolute	0.057	0.056	0.000	0.017	0.039	0.076	0.295
Positive (N = 3,791)	0.061	0.061	0.000	0.018	0.042	0.082	0.295
Negative (N = 3,290)	-0.052	0.050	-0.226	-0.069	-0.037	-0.016	-0.000
Firm characteristics and control variables							
Market cap (<i>mil. RMB</i>)	9,407	9,518	1,418	3,957	6,382	10,809	60,769
<i>SIZE</i>	22.633	0.777	21.073	22.099	22.577	23.104	24.830
<i>BM</i>	0.654	0.640	0.077	0.276	0.453	0.767	3.843
<i>LEV</i>	0.388	0.199	0.047	0.225	0.371	0.534	0.854
<i>ROA</i>	0.046	0.047	-0.142	0.024	0.043	0.069	0.182
<i>RETSTD</i>	0.032	0.011	0.013	0.024	0.029	0.038	0.062
<i>BIG4</i>	0.019	0.136	0	0	0	0	1
<i>LOSS</i>	0.076	0.265	0	0	0	0	1
<i>COVERAGE</i> (not logged)	7.450	8.489	0	1	5	11	59
<i>LGST_SHR</i>	0.328	0.139	0.091	0.218	0.305	0.420	0.705
<i>IH</i>	0.353	0.227	0.001	0.151	0.344	0.530	0.833
<i>BOARD</i> (not logged)	8.363	1.505	5	7	9	9	13
<i>INDEP</i>	0.376	0.053	0.333	0.333	0.333	0.429	0.571

Panel C. Correlations among key regression variables

(N = 7,081)	<i>DA</i>	<i>ASV</i>	<i>ANLST</i>	<i>SIZE</i>	<i>BM</i>	<i>LEV</i>	<i>ROA</i>	<i>RETSTD</i>	<i>BIG4</i>	<i>LOSS</i>	<i>COVERAGE</i>	<i>LGST_SHR</i>	<i>IH</i>	<i>BOARD</i>
<i>ASV</i>	-0.059***													
<i>ANLST</i>	-0.048***	0.867***												
<i>SIZE</i>	0.039***	0.262***	0.317***											
<i>BM</i>	0.012	-0.078***	-0.130***	-0.033***										
<i>LEV</i>	0.142***	-0.056***	-0.084***	0.084***	0.591***									
<i>ROA</i>	-0.039***	0.200***	0.222***	0.309***	-0.186***	-0.232***								
<i>RETSTD</i>	0.061***	0.044***	0.081***	0.173***	-0.314***	-0.067***	-0.072***							
<i>BIG4</i>	-0.007	0.038***	0.012	0.096***	0.088***	0.052***	0.044***	-0.049***						
<i>LOSS</i>	0.094***	-0.140***	-0.145***	-0.131***	0.016	0.099***	-0.618***	0.061***	-0.001					
<i>COVERAGE</i>	-0.014	0.487***	0.536***	0.494***	-0.064***	-0.045***	0.385***	-0.0170	0.040***	-0.204***				
<i>LGST_SHR</i>	0.010	0.019	0.012	0.087***	0.105***	0.064***	0.105***	-0.0150	0.066***	-0.060***	0.017			
<i>IH</i>	0.001	0.084***	0.071***	0.290***	0.189***	0.200***	0.093***	-0.074***	0.071***	-0.048***	0.193***	0.344***		
<i>BOARD</i>	-0.015	0.046***	0.014	0.084***	0.177***	0.147***	0.028**	-0.082***	0.0130	-0.027**	0.048***	-0.018	0.158***	
<i>INDEP</i>	0.018	-0.027**	0.004	0.009	-0.051***	-0.040***	-0.020*	0.039***	-0.030**	0.016	-0.007	0.035***	-0.064***	-0.605***

See Table 1 for sample construction. The variables (except binary ones) are winsorized by 1% at both tails. Panel C shows the Pearson correlations between the key variables. ***, **, and * stand for significance at 1%, 5%, and 10%, respectively.

Table 3. Analyst Site Visits and Earnings Management: Regression

Panel A. Absolute discretionary accruals

(N = 7,081)	Predicted	Dependent variable: <i>Absolute DA</i>		
Independent variables	sign	(1)	(2)	(3)
Analyst site visits				
<i>ASV_DUMMY</i>	–	-0.007*** (-3.92) [-0.179]		
<i>ASV</i>	–		-0.003*** (-3.93) [-0.077]	
<i>ANLST</i>	–			-0.002*** (-3.29) [-0.051]
Control variables				
<i>SIZE</i>		0.003** (2.06)	0.003** (2.13)	0.003** (2.20)
<i>BM</i>		-0.010*** (-5.71)	-0.010*** (-5.80)	-0.010*** (-5.84)
<i>LEV</i>		0.051*** (9.10)	0.051*** (9.17)	0.051*** (9.20)
<i>ROA</i>		0.077*** (2.90)	0.077*** (2.93)	0.078*** (2.95)
<i>RETSTD</i>		0.528*** (4.18)	0.521*** (4.13)	0.538*** (4.27)
<i>BIG4</i>		-0.003 (-0.47)	-0.002 (-0.36)	-0.003 (-0.45)
<i>LOSS</i>		0.024*** (6.99)	0.024*** (7.07)	0.024*** (7.12)
<i>COVERAGE</i>		-0.000 (-0.43)	-0.000 (-0.23)	-0.000 (-0.33)
<i>LGST_SHR</i>		0.003 (0.55)	0.003 (0.47)	0.003 (0.49)
<i>IH</i>		-0.006* (-1.74)	-0.006 (-1.62)	-0.006 (-1.64)
<i>BOARD</i>		-0.005 (-0.93)	-0.005 (-0.85)	-0.005 (-0.90)
<i>INDEP</i>		0.002 (0.14)	0.003 (0.17)	0.004 (0.23)
Fixed effects		Industry and year		
Adj. R^2		0.076	0.076	0.076

Panel B. Signed discretionary accruals

		Dependent variable: <i>Signed DA</i>						
Independent		+DA (N = 3,791)			-DA (N = 3,290)			
variables	Sign	(i.1)	(i.2)	(i.3)	Sign	(ii.1)	(ii.2)	(ii.3)
<i>ASV_DUMMY</i>	-	-0.009*** (-3.36) [-0.214]			+	0.005** (2.37) [0.135]		
<i>ASV</i>	-		-0.004*** (-3.39) [-0.095]		+		0.002** (2.02) [0.054]	
<i>ANLST</i>	-			-0.002*** (-2.88) [-0.048]	+			0.001** (2.09) [0.027]
Controls and fixed effects		Same as Panel A						
Adj. R^2		0.096	0.096	0.095		0.114	0.114	0.114

Panels A and B show, respectively, the results of regressing absolute and signed discretionary accruals on the analyst-site-visit variables and control variables (i.e., regression [1]). The sample construction is detailed in Table 1 and the variables are defined in Appendix B. All regressions include industry and year fixed effects. t -statistics (in parentheses) are based on standard errors that are heteroskedasticity consistent and clustered by firm. ***, **, and * indicate significance at 1%, 5%, and 10%, respectively, in two-sided tests. Provided that the coefficient for a variable is significant at least at 5%, its economic effect (in brackets) is calculated as the estimated coefficient divided by the median of the dependent variable.

Table 4. Analyst Site Visits and Earnings Management: Instrumental Variable Regression

(N = 7,081)	Pred.	Dependent: <i>Absolute DA</i>	
2 nd -stage regression	sign	(1)	(2)
<i>ASV</i>	–	-0.013** (-2.26)	
<i>ANLST</i>			-0.008** (-2.22)
Controls and fixed effects		Same as Table 3	
Adj. R^2		0.058	0.051
1 st -stage regression	Pred.	Dependent variable	
	sign	<i>ASV</i>	<i>ANLST</i>
<i>WEATHER</i>	–	-1.410*** (-9.52)	-2.077*** (-7.85)
<i>TRANSPORTATION</i>	+	0.148*** (8.41)	0.245*** (8.05)
<i>SIZE</i>	+	0.022 (1.24)	0.100*** (3.20)
<i>BM</i>	–	-0.028 (-1.27)	-0.079** (-2.17)
<i>LEV</i>	–	-0.130** (-2.08)	-0.190* (-1.75)
<i>ROA</i>		-0.489* (-1.70)	-0.780 (-1.53)
<i>RETSTD</i>		-0.259 (-0.17)	9.727*** (3.48)
<i>BIG4</i>		0.133* (1.73)	-0.066 (-0.54)
<i>LOSS</i>		-0.177*** (-3.99)	-0.279*** (-3.58)
<i>COVERAGE</i>		0.415*** (39.15)	0.786*** (42.78)
<i>LGST_SHR</i>		0.091 (1.21)	0.282** (2.20)
<i>IH</i>		-0.026 (-0.53)	-0.103 (-1.23)
<i>BOARD</i>		0.189*** (2.65)	0.227* (1.80)
<i>INDEP</i>		-0.171 (-0.74)	0.227 (0.57)
Adj. R^2		0.294	0.342

This table re-estimates regression [1] using instrumental variable regression (2SLS), in which *ASV* (*ANLST*) is treated as endogenous. The first instrumental variable of exclusion is the annual percentage of days of extreme weather in the city where a sample firm is headquartered (*WEATHER*); extreme weather is defined as either the day's high temperature being above 38°C or the day's low temperature being below –10°C. The second

instrumental variable is the accessibility of a firm's headquarters via fast transportation (*TRANSPORTATION*), which equals two if the city of the headquarters can be accessed by both high-speed trains and airplanes, one if it is accessible by either one of them, and zero otherwise.

Table 5. Features of Analyst Site Visits and Earnings Management

Panel A. Features of analyst site visits

Number of visits featuring (% of annual visits)	Mean	STD	Min	Q1	Median	Q3	Max
Attendance of star analysts	4.488 (78.5%)	4.444	0	1	3 (85.7%)	6	23
Factory tours	0.471 (9.8%)	1.515	0	0	0 (0.0%)	0	10

Panel B. Features of analyst site visits and earnings management: regression

		Dependent variable: <i>Absolute DA</i>	
(N = 7,081)	Pred.	Feature of analyst site visits	
Independent variables	sign	Star analysts (1)	Factory tour (2)
<i>ASV_FEATURE</i> (b_1)	–	-0.004*** (-4.13) [-0.103]	-0.007*** (-5.34) [-0.179]
<i>ASV_REST</i> (b_2)	?	0.001 (0.39) [n/a]	-0.002*** (-2.78) [-0.051]
Controls and fixed effects		Same as Table 3	
Adj. R^2		0.076	0.078
Equality test of the coefficients for <i>ASV_FEATURE</i> and <i>ASV_REST</i> (b_1 vs. b_2)			
F -stat		5.62**	10.68***

Panel A reports descriptive statistics for analyst site visits featuring the attendance of star analysts and factory tours, among all firms with visits (N = 5,206). Panel B reports the results of regressing absolute discretionary accruals (*DA*) on the number of visits with a feature (*ASV_FEATURE*) and the number of visits without that feature (*ASV_REST*), i.e., regression [2]. The sample construction is detailed in Table 1 and the rest of the variables are defined in Appendix B. All regressions include industry and year fixed effects. *t*-statistics (in parentheses) are based on standard errors that are heteroskedasticity consistent and clustered by firm. ***, **, and * indicate significance at 1%, 5%, and 10%, respectively, in two-sided tests. The economic effect of a variable is calculated as in Table 3. At the bottom of Panel B are the *F*-statistics from the equality tests of the coefficients for *ASV_FEATURE* and *ASV_REST*.

Table 6. Analysts' Questions at Site Visits and Earnings Management: Regression

Panel A. Intensity and coverage of analyst questioning and earnings management

(N = 5,206)	Pred.	Dependent variable: <i>Absolute DA</i>	
		(1)	(2)
Independent variables	sign		
<i>QSTN</i>	–	-0.002*** (-3.34) [-0.051]	
<i>QSTN_CVG</i>	–		-0.008*** (-3.99) [-0.205]
Controls and fixed effects		Same as Table 3	
Adj. R^2		0.076	0.075

Panel B. Focus of analyst questions and earnings management

(N = 5,206)	Pred.	Dependent variable: <i>Absolute DA</i>	
		Focus of analyst questions	
		Long horizon	Corporate governance
Independent variables	sign	(1)	(2)
<i>QSTN_FOCUS</i> (d_1)	–	-0.001** (-2.12) [-0.026]	-0.002* (-1.75) [n/a]
<i>QSTN_REST</i> (d_2)	?	0.002 (1.60)	0.001 (0.69)
Controls and fixed effects		Same as Table 3	
Adj. R^2		0.071	0.071
Equality test of the coefficients for <i>QSTN_FOCUS</i> and <i>QSTN_REST</i> (d_1 vs. d_2)			
F -stat		3.69*	3.92**

Panel A reports the results of regressing absolute discretionary accruals (*DA*) on the number of questions (*QSTN*; column 1) and the coverage of questions (*QSTN_CVG*; column 2), i.e., regression [3]. *QSTN* is the total number of questions over a year, and *QSTN_CVG* is the content coverage of the questions, calculated as $\frac{1}{N} \sum_{n=1}^N (NCAT_n/9)^2$, where $NCAT_n$ is the number of question categories covered in each site visit, and N is the total number of visits in a year. Panel B reports the results of regressing absolute *DA* on the number of questions with a particular focus (*QSTN_FOCUS*) and on the number of remaining questions (*QSTN_REST*), i.e., regression [3.a]. All count variables (i.e., *QSTN*, *QSTN_FOCUS*, *QSTN_REST*) are converted to natural logarithms (after adding one) for the regression. The sample construction is detailed in Table 1 and the rest of the variables are defined in Appendix B. All regressions include industry and year fixed effects. t -statistics (in parentheses) are based on standard errors that are heteroskedasticity consistent and clustered by firm. ***, **, and * indicate significance at 1%, 5%, and 10%, respectively, in two-sided tests. The economic effect of a variable is calculated as in Table 3. At the bottom of Panel B are the F -statistics from the equality tests of the coefficients for *QSTN_FOCUS* and *QSTN_REST*.

Table 7. Analyst Site Visits and Financial Reporting Quality: Alternative Measures

Panel A. Alternative measures of financial reporting quality: descriptive statistics

Measures	Value	Frequency (#)	Percentage (%)
<i>DISC_SCORE</i>	4 (Highest)	1,496	21.1
	3	4,689	66.2
	2	778	11.0
	1 (Lowest)	118	1.7
	Total	7,081	100.0
<i>RESTATEMENT</i>	Yes	718	10.1
	No	6,363	89.9
	Total	7,081	100.0

Panel B. Regression

Independent variables	Sign	Dependent variable						
		<i>DISC_SCORE</i> (ordered logit)			<i>RESTATEMENT</i> (logit)			
		(i.1)	(i.2)	(i.3)	Sign	(ii.1)	(ii.2)	(ii.3)
<i>ASV_DUMMY</i>	+	0.642*** (9.54) [0.080]			-	-0.027*** (-2.85) [-0.027]		
<i>ASV</i>	+		0.394*** (12.06) [0.054]		-		-0.017*** (-3.50) [-0.017]	
<i>ANLST</i>	+			0.185*** (9.77) [0.026]	-			-0.008*** (-2.87) [-0.008]
Controls and fixed effects		Same as Table 3						
Pseudo R^2		0.133	0.137	0.133		0.029	0.030	0.029

Panel A reports descriptive statistics of alternative measures of financial reporting quality: the SZSE disclosure score (*DISC_SCORE*) and an indicator variable for financial statement restatement (*RESTATEMENT*). Panel B reports the results of estimating regression [1], with dependent variables *DISC_SCORE* (columns i.1-i.3, using ordered logit regression) and *RESTATEMENT* (ii.1-ii.3, using logit regression). The control variables and other model features are the same as those in Panel B of Table 3. The variables are defined in Appendix B. *t*-statistics (in parentheses) are based on standard errors that are heteroskedasticity consistent and clustered by firm. ***, **, and * indicate significance at 1%, 5%, and 10%, respectively, in two-sided tests. The economic effect of an independent variable of interest (in brackets) is, for the ordered logit regression (i.1-i.3), the variable's marginal effect when *DISC_SCORE* = 4, and for the logit regression (ii.1-ii.3), the marginal effect.

Table 8. Analyst Site Visits and Real Earnings Management

Panel A. Descriptive statistics of the measure for real earnings management (*REM*)

	N	Mean	STD	Min	Q1	Median	Q3	Max
<i>REM</i> , absolute	7,081	0.126	0.123	0.000	0.040	0.089	0.169	0.566
Positive	3,444	0.125	0.120	0.000	0.041	0.089	0.170	0.561
Negative	3,637	-0.128	0.126	-0.566	-0.168	-0.090	-0.039	-0.000

Panel B. Regression coefficients for ASV variables

	Dependent variable				
	Pred. sign	<i>Absolute REM</i> (N = 7,081)	+ <i>REM</i> (N = 3,444)	Pred. sign	- <i>REM</i> (N = 3,637)
<i>ASV_DUMMY</i>	–	-0.006 (-1.51)	-0.009* (-1.74)	+	-0.001 (-0.13)
<i>ASV</i>	–	-0.005** (-2.39)	-0.008*** (-2.89)	+	-0.000 (-0.04)
		[-0.056]	[-0.090]		[n/a]
<i>ANLST</i>	–	-0.001 (-0.59)	-0.001 (-0.81)	+	-0.000 (-0.35)

Panel C. Control for endogeneity: Instrumental variable regression

		Dependent variable: <i>Absolute REM</i>	
		Endogenous variable	
(N = 7,081)	Pred. sign	<i>ASV</i> (1)	<i>ANLST</i> (2)
2 nd -stage regression	–	-0.012 (-1.03)	-0.007 (-0.97)
Controls and fixed effects		Same as Table 3	
Adj. <i>R</i> ²		0.118	0.114
1 st -stage regression		Same as Table 4	

Panel A shows descriptive statistics of the measure for real earnings management (*REM*), calculated according to Roychowdhury (2006). Panel B reproduces regression [1], except that the dependent variable is absolute (signed) *REM*, and reports the coefficients for the three analyst-site-visit variables. Panel C reproduces the instrumental variable regression from Table 4, with the dependent variable of the second-stage regression being absolute *REM*. *t*-statistics (in parentheses) are based on standard errors that are heteroskedasticity consistent and clustered by firm. ***, **, and * indicate significance at 1%, 5%, and 10%, respectively, in two-sided tests. Provided that the coefficient of a variable is significant to at least 5%, its economic effect (in brackets) is calculated as the estimated coefficient divided by the median of the dependent variable.