# Corporate Culture and Financial Reporting Risk: Looking Through the Glassdoor

**Yuan Ji**
*The Hong Kong Polytechnic University*

**Oded Rozenbaum**
**Kyle Welch**
*The George Washington University*

**June 1, 2017**

## Abstract

We study whether financial reporting risk is associated with job satisfaction, company culture, and opinions of senior leadership. We use novel data on employees' perspectives obtained from the website Glassdoor, covering 14,282 firm-years in the period 2008-2015. We argue that poorly implemented performance objectives leads to pressure and creates a boiler room effect, negatively impacting the corporate climate of the firm and increasing the propensity to manipulate performance metrics. We find that firms with lower levels of job satisfaction (as measured by employees) and lower levels of "culture and values" are more likely to be subjected to SEC fraud enforcement actions and securities class action lawsuits. Consistent with the boiler room effect, we find that a negative corporate climate is also associated with an increased likelihood of narrowly meeting or beating market earnings expectations. Conversely, we find job satisfaction and positive employee opinions of senior leadership to be associated with lower abnormal accruals. We also find that the association between firms' culture and financial reporting risk is stronger for firms with weaker board independence. Thus, the work environment, as perceived by employees, appears to play a critical role in financial reporting risk.

---

We thank Glassdoor for making data on employee ratings available to us. We appreciate the comments and suggestions of Menghai Gao, Sok-Hyon Kang, Susan Kulp, Margaret Ormiston, Eugene Soltes, Steve Stubben, Jenny Zha-Giedt, and of workshop participants at 2017 AAA Mid-Atlantic Meeting, The George Washington University, and the GW Cherry Blossom Conference. All errors are our own.
*E-mail addresses:* yuan.af.ji@polyu.edu.hk (Y. Ji.); orozenbaum@gwu.edu (O. Rozenbaum); kylewelch@gwu.edu (K. Welch)

## 1. Introduction

Wells Fargo's corporate culture was recently called into question after evidence surfaced of systematic fraud, which led to over 1,000 employee terminations each year since 2011. "A thousand people a year!" Congressman Blaine Luetkemeyer exclaimed at a hearing on the scandal. "The only one way that that can happen [is] a culture that allows it to happen year after year after year (United States Congress 2016)."[1] As managers face competitive pressures from striving to meet performance expectations, we argue there is increased potential for a *boiler room* effect which nurtures both a negative corporate climate to push employee performance and incentivizes fraudulent reporting. We generate large sample-evidence on the association between corporate culture and financial-reporting risk using novel data on firm culture from the firm Glassdoor.

Empirical researchers have struggled to explore firm culture and fraud due to data limitations (Graham et al. 2015). The majority of the literature relies on two main proxies: 1) "tone at the top" upper echelons theory proxies and 2) Kinder, Lydenberg, and Domini (KLD) indices, based primarily on firm reported metrics (see Gao et. al. 2014; Hoi et. al. 2012; Kim et al. 2012).[2] Tone at the top measures include surveying top management (see Graham et al. 2015) or by using indirect measures of cavalier attributes expressed by senior leaders of the firm (i.e.

[1] Wells Fargo's chairman and CEO, John Stumpf testified before the House Financial Services Committee about the recent fraud in September 2016. The resulting bipartisan outrage was captured by Representative Mike Capuano of Massachusetts: "You… have run an enterprise that has a culture of corruption. You encourage subordinates to abuse existing customers by opening fake bank accounts. You charge those victims illegal fees, interest and late charges, and then you send some to collection agencies because they didn't pay them. Then, you fired 5,300 workers—as if you care—to cover everybody's tracks."

[2] Other studies have used more unique but less accessible or less generalizable data. For example, the "religiosity" at a firm's headquarters has been used to capture the ethical nature of the firm (McGuire et al. 2012 and Grullon et al. 2010). Industry regulatory compliance issues have been used to identify a culture of weak compliance (Kedia et al. 2016). Popadak (2013) creates culture measures from a text analysis of individual Glassdoor review comments to examine culture, governance and firm performance.

personal pronoun usage, signature size, legal infractions, luxury good ownership, or undiversified personal portfolios).[3]

The benefits of the Glassdoor database to prior measures dominating the literature is somewhat self-evident. We believe that Glassdoor's 1,112,476 employee ratings of 14,282 public firms from 2008-2015 is a more direct way to examine the corporate culture employees experience than upper echelon proxies (e.g. a senior executive's signature size). Glassdoor data also does not suffer from problems of management self-reported metrics like KLD data (which provides the largest alternative proxy for culture).

We define corporate culture as the behavioral protocols that firms use to handle external and internal situations (Schein 1988). One category of protocols identified in research is a competitive culture, which promotes extreme competitiveness and ambition to meet goals.[4] A well-functioning competitive culture can promote both high performance and employee satisfaction (Zhou et al. 2008). Indeed, great firms and managers hope to build a competitive culture that causes their employees to stretch in meeting difficult goals and high employee satisfaction. Firms do build this type of culture, but it is not easy.

A flawed competitive culture—one that sets overly aggressive targets and is intolerant of failure—can promote employee dissatisfaction, instill pressure to commit fraud, and rationalize doing so (Sims and Brinkman 2003; Rockness and Rockness 2005). When managers have poorly implemented performance targets, we posit that they impose aggressive performance targets on

[3] Hambrick and Mason's (1984) upper-echelons theory explicates executive influence on corporate culture. Among the personal attributes identified are narcissism, measured via signature size (Ham et al. 2014, 2015); overconfidence as manifested in undiversified equity holdings (Malmendier and Tate 2005, 2008; Schrand and Zechman 2012); risk-seeking behavior, identified via prior legal infractions (Davidson et al. 2015); and prodigal spending on luxury goods (Davidson et al. 2015).

[4] The four broad types of organizational culture identified in the literature are Clan, Adhocracy, Hierarchy, and Market (Deshpande et al. 1993). In our paper, we refer to the Market culture as competitive culture.

employees to start burning the candle at both ends (Caskey and Ozel 2016). Poorly implemented aggressive performance targets nurtures a negative corporate climate, while also increasing the propensity of financial misreporting.[5] We refer to this latter culture as a boiler room effect. We posit that competitive cultures rely heavily on measurement and benchmarking to assess employees breed financial-reporting risk and that firms with lower rated cultures are more likely to have difficulty reaching those benchmarks. When a flawed competitive culture is implemented, that impacts disposition and demands on employees, and it creates a boiler room work environment. Employees' ratings of a firms' culture and of job satisfaction likely also capture the alternative—the degree to which a firm has an effective implementation of a competitive culture.

As proxies for employee satisfaction and corporate culture, we use employees' ratings of their own *job satisfaction* and of their employers' *culture and values* and *senior leadership* from Glassdoor. Glassdoor maintains the largest available database of employee reviews requiring customers to anonymously rate various aspects of their firm on a 1-5 scale before using their job search function.[6] We aggregate all ratings in a given year to create a firm-year measure.

We find a direct relation between a lower rated culture and fraudulent financial reporting, as indicated by issuance of an Accounting and Auditing Enforcement Releases (AAER) by the Securities and Exchange Commission (SEC) and a firm's exposure to securities class action lawsuits. We expect pressure to meet performance targets at a given firm to vary over time, and

[5] The Auditing Standards Board specifies three prerequisites for fraud, which it characterizes jointly as "the fraud triangle": employees are prone to committing accounting fraud when they (1) face pressure to meet benchmarks, (2) have an opportunity to commit fraud, and (3) can rationalize doing so. The prevailing corporate culture can directly produce one or more of these conditions.

[6] Glassdoor is the oldest (founded in 2008) online resource for prospective job candidates for employee reviews and maintains the largest database, in both number of firms covered and in employee reviews. Moreover, competitive alternatives (i.e. Kununu, RateMyEmployer, JobAdviser, Jobeehive, and TheJobCrowd) were started internationally with low coverage in the United States.

expect employee ratings to reflect this change. Consistent with this hypothesis, we find that employee ratings in a year in which fraud occurs, and the preceding year, predict issuance of an AAER; ratings in the year following a fraud do not predict AAERs. This finding suggests that in periods when managers struggle to reach performance targets, they may pressure employees to start burning the candle at both ends and impose aggressive performance targets on them (Caskey and Ozel 2016). If those actions alone are insufficient to reach the targets, managers may resort to financial misreporting. We find that the negative association of corporate culture and fraud is stronger for firms that are more centralized; suggesting that firm centralization likely reflects managers' increased ability to instill excessive pressure.

We also find that the corporate climate is negatively associated with abnormal accruals and the likelihood of a firm narrowly meeting or beating analysts' EPS benchmarks. We expect that firm culture is important in preventing fraud when firms have weaker corporate governance. Consistent with our hypothesis, we find that the negative association between our measures of corporate culture and financial reporting is stronger for firms with weak board independence and firms with fewer financial experts in the audit committee.

Interpretation of our results is subject to a number of limitations. First, the dataset is a compilation of employee feedback on corporate culture that employees provide at their discretion. Because employees are likely to be more strongly motivated to provide feedback when they hold extreme opinions, respondent's views might not accurately represent the employee consensus on the corporate culture of the firm. This polarization bias causes bimodal or "j-shaped" distributions in ratings. In this regard, Glassdoor data is unique as all users of the job search function need to fill out an employment ratings survey to get access. This provides an economic incentive to provide reviews even when users have no personal incentive to do so—

which reduces this polarization effect. Additionally, we use both mean and median employee ratings for a given firm-year and find consistent results. Second, culture and values are difficult attributes to measure, in part because they are hard to define with precision. Glassdoor uses concise and descriptive succinctness to encourage more reviews in the data-gathering process. Employees define and assess their firms' *culture and values* on their own terms. We argue that employee reviews of a firm capture, at least in part, the quality of the protocols employed by the firm. For example, a firm might use new protocols to exert pressure on employees to meet performance targets by rewarding or punishing types of behavior thought to lead to the goal. Glassdoor ratings reflect the employee opinion of the effectiveness of such protocols. We would expect to find no association between our measures of corporate culture and financial reporting risk if other drivers of employee dissatisfaction, such as low salaries or an unfriendly work environment, dominated our findings. We address this possibility more directly in supplemental analyses. Following Guo et al. (2016), we further control for a firm's level of employee-friendly policies (e.g., unionized employees, retirement benefits, cash profit-sharing plans) using the KLD data and find consistent results. We also use employee rating of their overall satisfaction, which we expect to be correlated with the boiler room effect, and find consistent results.

We have taken several steps to clarify the interpretation of our findings. We perform a two-stage Heckman test to account for the self-selection that arises from the voluntary nature of Glassdoor survey participation. Furthermore, our findings could be attributable to reverse-causality; that is, aggressive and possibly fraudulent accounting could result in employee dissatisfaction, and in turn negative evaluations. We cannot rule out this explanation, but participants in accounting misstatements and aggressive accounting represent a tiny fraction of the workforce of the large firms we examine; the likelihood of our results being influenced by a

few employees who are exposed to the aggressive accounting acts seems low. Furthermore, we find consistent results when we use employees' perceptions of their firm's culture and values in the year *prior* to the year when fraud is committed.

Our main finding—a negative association between the quality of a firm's perceived culture and the likelihood of receiving an AAER—can be interpreted in two distinct ways. First, an inferior competitive corporate culture can be a breeding ground for aggressive accounting and fraud. Alternatively, our measure of corporate culture captures employee dissatisfaction, which increases the probability of whistleblowing. Since AAERs capture the probability of getting caught when fraud is committed, our measure of corporate culture may only capture the probability of getting caught as well.[7]

These limitations aside, our paper makes two main contributions. First, our study is the first empirical archival documentation of the impact of corporate culture, as measured by employees' perspectives, on aggressive accounting and fraud. This evidence is consistent with the boiler room effect capturing a feckless implementation of a competitive culture as the underlying root of the fraud. Only one other notable empirical study by Guiso et al. (2015) examines firm performance in the light of employees' perceptions of management ethics, finding a positive relationship. Second, we introduce a novel measure of firm culture that researchers can use, and offer evidence that our measure captures differences in corporate culture in a financial reporting context. Glassdoor data appears to be more direct and a less costly measure to acquire. For example, in *Executives' "off-the-job" behavior, corporate culture, and financial reporting risk* Davidson et al. (2015) note the high cost of obtaining data drawn from background checks as a shortcoming of their measure of CEOs and culture. Glassdoor's database is among the most

[7] Dyck et al. (2010) note that the most effective mechanisms for detecting corporate fraud are not corporate governance actors (investors, SEC, and auditors), but rather employees, media, and industry regulators.

complete in its coverage of public firms; it offers the perspective of those who directly experience a company's culture, which makes it a promising resource for future research on corporate behavior and performance.

The remainder of this paper is organized as follows. Section 2 reviews the literature and presents our hypotheses. Section 3 describes the sample selection and the research design. Section 4 presents our analyses of firm culture as a factor in fraud and financial reporting outcomes. Section 5 presents additional analyses, and Section 6 provides concluding remarks and points out opportunities for future research.

## 2. Hypothesis development

### *2.1 Overview of the literature*

Public trust is essential for economic growth and efficient capital markets (Putnam 1993; La Porta et al. 1997; Guiso et al. 2008; and Carlin et al. 2009). Fraud erodes public trust. Dyck et al. (2014) estimate that the cost of fraud to investors in fraud-committing firms is 22% of enterprise value and 3% across all firms. Numerous studies have cited corporate culture as a significant determinant of fraud (Graham et al. 2005; Davidson et al. 2015). While numerous studies have cited corporate culture as a significant determinant of fraud (Dyck et al. 2014; Graham et al. 2005; Davidson et al. 2015), archival empirical evidence is scarce. In this section, we review the extant literature on corporate culture and fraud, the literature's proxy measures for culture, and motivate our hypotheses.

### *2.2 Corporate culture, competitive culture, and fraud*

The fraud triangle identifies three prerequisites which every fraud has: (1) the incentive or pressure to commit the fraud, (2) the opportunity to commit the fraud, and (3) the

rationalization of the fraud (SAS 99 Auditing Standards Board, October 2002). The first prerequisite is an incentive or pressure to commit a fraud.

Corporate culture has been defined as the behavioral protocols that firms use to handle external and internal situations (Schein 1988). Prior literature has looked at culture as an additional firm operational control noting that firm culture can improve contractual inefficiencies (Kreps 1996). One of the types of corporate culture protocols identified in management research is a focus on competitive culture, which promotes competition and ambition to achieve goals.[8] While a properly functioning competitive culture can improve performance and employee satisfaction (Zhou et al., 2008), a less effective market-oriented culture—one that sets overly aggressive targets and is intolerable to failure—can lead to *a boiler room* effect and promote employee dissatisfaction, instill pressure to commit fraud, as well as rationalize doing so (Sims and Brinkman 2003; and Rockness and Rockness 2005). For example, Wells Fargo's culture of pressure to meet aggressive performance benchmarks led employees to create 2.1 million unwanted accounts in customers' names, resulting in the dismissal of approximately 5,300 employees (Levine 2016). The protocols deployed by Wells Fargo's culture likely also created a lower quality corporate climate. We posit that competitive cultures that rely on measurement and benchmarking are likely to also breed financial-reporting risk. We argue that employee ratings of firms' culture and of their own job satisfaction capture, at least in part, the excessive pressures they face to achieve goals.

The second prerequisite is an opportunity to commit the fraud. Internal controls, including both direct and culture-driven protocols, are instrumental in creating or eliminating such opportunities. In fact, internal controls and culture can function as substitutes in preventing

[8] The four general types of organizational cultures identified in the literature are "Clan", "Adhocracy", "Hierarchy", and "Market" (Deshpande et al. 1993). In our paper, we refer to the "Market" culture as competitive culture.

opportunities to commit financial-reporting fraud: a strong-internal-control environment can block opportunities to commit fraud, regardless a firm's culture, but in the absence of a strong internal-control system, a rigorous corporate culture—such as one that promotes ethical conduct or whistleblowing—can decrease opportunities to commit fraud. One of our proxies for corporate culture is employee rankings of a firm's culture and values; this proxy may capture to some extent a firm's commitment to eliminating fraud opportunities via culture. The third requirement is that perpetrators will rationalize committing the fraud. A competitive culture that imposes unattainable benchmarks may serve some employees as a justification to commit fraud. Multiple studies associate specific features of firm culture with performance and accounting quality. Some papers focus on employee trust in management; Guiso et al. (2015) note that firm performance is strengthened when employees perceive top managers as trustworthy and ethical. They also find that governance structures do not seem to affect improvement or maintenance of firm culture. In a related study, Garrett et al. (2014) find that employee trust in upper management improves accounting quality; such trust prompts fuller information sharing on the part of lower-level employees, providing upper management better information with which to construct financial reports. These findings document an association between one aspect of firm culture—trust in management—and both firm performance and accounting quality.

Prior studies also examine the impact of firm policies that promote investment in human capital. For example, Guo et al. (2016) find that liberal employee-treatment policies (i.e., positive union relation, cash profit-sharing plans, worker involvement in governance or ownership, retirement benefits, and health-and-safety programs) are negatively associated with the likelihood of a material control weakness and financial restatements. Better employee benefits, they argue, encourage employees to invest in firm-specific resources, which enables the

firm to retain more skilled and efficient employees. Guo et al. (2016) do not explore the association between corporate culture and financial reporting risk. Garrett et al. (2014) find that employee trust in upper management improves accounting quality; such trust prompts fuller information sharing on the part of lower-level employees, providing upper management better information with which to construct financial reports.

The work of Kedia et al. (2016) is perhaps closest to ours: they find increased financial-reporting risk at companies with a history of noncompliance. Our approach to measuring culture offers three advantages over that study. First, the Glassdoor dataset consists of over 4 million reviews, thus offering wide-ranging coverage of firms and the potential to generalize principles across firms. Second, we believe that Glassdoor's data is a more direct and accurate measure of firm culture than are executive attributes, because it is voluntarily provided by employees. Third, Glassdoor's data-acquisition process and use of data is unrelated to our use of the data. The main purpose of Glassdoor's data is to inform potential employees about firms' cultures and value and about current employees work experience. Such data is likely to be a more direct measure of the quality of the protocols used at various firms to respond to problems—or in other words, a more direct measure of culture.

### *2.3 Culture Proxy Measures*

Researchers have taken three avenues to measure corporate culture using upper echelons theory driven by "tone at the top" management, KLD management reported data, or esoteric measures. Hambrick and Mason's (1984) upper-echelons theory explicates executive influence on corporate culture. Upper-echelons tone at the top measures include surveying top management (see Graham et al. 2015) or by using indirect measures to capture cavalier attributes of management intend to triangulate corporate culture.

A large group of studies rely on Hambrick and Mason's (1984) upper echelons theory, arguing that "the tone at the top" shapes the culture of a firm. These studies pick out specific CEO characteristics that may promote a flawed culture and thus fraud. Schneider et al. (2013) note, however, that though the theoretical psychology literature discusses the influence of upper management on an organization's culture, supporting upper echelon theory, empirical studies in psychology of that relationship are hard to find. Exceptions include Berson et al. (2008); Ogbonna and Harris (2000); and Tsui et al. (2006). Davison et al. (2015) use the upper echelons framework to examine an association closely related to the questions we explore—executives with legal infractions and lavish spending habits tend to maintain looser control over their firms and are more likely to perpetrate fraud. This association is consistent with early work by Bertrand and Schoar (2003), documenting manager fixed effects with respect to corporate investment behavior, performance, and corporate financing. In the accounting literature, manager fixed effects have been found to impact voluntary disclosure (Bamber et al. 2010) and corporate tax avoidance (Dyreng et al. 2010). This literature has also used personal characteristics (e.g. overconfidence and narcissism) to shed light on firm outcomes (Roll, 1986). Executive attributes that the literature has found capable of determining the tone from the top include narcissism, measured via signature size (Ham et al. 2014; 2015) or prevalence of personal pronoun usage (Aktas et al. 2012); overconfidence, via undiversified equity holdings (Malmendier and Tate 2005; 2008; Schrand and Zechman 2012); risk-seeking behavior, via prior legal infractions (Davidson et al. 2015) or possession of small-aircraft pilot licenses (Cain and Mckeon 2016); or prodigal spending via acquisition of luxury goods (Davidson et al., 2015). These studies all provide suggestive evidence on firm mismanagement, but the evidence is mostly specific to the CEO rather than what happens across the frim.

Kinder, Lydenberg, and Domini (KLD) indices, based primarily on firm reported metrics (e.g. CSR), and are the most frequently used measure for culture in research as an alternative to an upper echelon approach (see Gao et al. 2014; Hoi et al. 2012; and Kim et al. 2012).

In contrast to measures motivated by upper echelon theory or KLD data, some more esoteric alternative approaches have also been used to proxy for culture. McGuire et al. (2012) and Grullon et al. (2010) use "religiosity" at the headquarters of the firm to capture the ethical nature of the firm and its effect on financial misconduct and misbehavior. In contrast, Popadak (2013) uses the same data source in our sample, Glassdoor, but in a different aspect. Popadak creates culture measures from a text analysis of Glassdoor review comments to examine culture, governance and firm performance. Kedia et al. (2016) use industry based regulatory compliance issues to proxy for a culture of weak compliance and examine its association with financial-reporting risk. Garrett et al. (2014) use survey data from "Great Places to Work", which provides data on fewer firms and is less accessible than Glassdoor data.

The research and identification advantage of using the Glassdoor database compared to upper echelons measures and KLD data are significant. Glassdoor's 1,112,476 employee ratings of 14,282 public firms from 2008-2015 is a more direct way to examine the corporate culture employees experience than upper echelon proxies, does not suffer from self-reported metrics like KLD data, and provides more flexibility and breadth to measure firm culture than some of the more esoteric proxies like "religiosity" of the firm headquarters.

### *2.4 Testable predictions*

As proxies, we use a firm's employee ratings of their own job satisfaction, ratings of the firm's senior leadership, and ratings of culture and values obtained from Glassdoor. We posit that a competitive culture that pressures employees to achieve unattainable targets will result in dissatisfaction with internal protocols (culture), as captured by our proxies. Firms that promote an over-competitive boiler room culture provide both incentives and rationalizations to commit fraud. If culture varies meaningfully across firms, we expect firms with low-rated cultures to exhibit a higher propensity to intentionally mislead investors.

***H1a: The quality of a company's culture, as measured by its employees' perspectives on job satisfaction, senior leadership, and culture and values, is negatively associated with a propensity to receive an AAER (be subject to securities class action lawsuits).***

Firms encounter greater pressure to commit fraud when faced with targets they cannot achieve. Prior literature documents the negative implications of missing analysts' expectations (Bartov et al. 2002; Kasznik and McNichols 2002; and Skinner and Sloan 2002). When analysts' expectations are unrealistically high, managers may either try to "walk down" the analysts' expectations or pressure their employees to attain the tough targets. Such pressures can promote both employee dissatisfaction and propensity to commit fraud.

***H1b: The quality of a company's culture, as measured by its employees' perspectives on job satisfaction, senior leadership, and culture and values, is negatively associated with a propensity to meet or narrowly beat analysts' expectations.***

AAERs represent the probability of getting caught by the SEC given that the firm has committed fraud. Therefore, AAERs are likely to be characterized by type II errors (i.e., observed firms that commit undiscovered fraud are labeled honest). Prior literature ties abnormal accruals to fraudulent activities (Dechow et al. 2011). We balance the type II errors inherent in

tests using AAERs by examining abnormal accruals, which are probably dominated by type I errors (i.e., honest firms are characterized as fraudulent).

***H1c: The quality of corporate culture, as measured by its employees' perspectives on job satisfaction, senior leadership, and culture and values, is negatively associated with abnormal accruals.***

Garrett et al. (2014) find that employee perceptions of trust are positively associated with accounting quality. They argue that trust within organizations leads to better information flows, resulting in managers having better information when constructing the financial reports. They hypothesize and find that trust is more important in less centralized firms, where top management relies more heavily on information flowing from the bottom-up. Our argument yields an opposite prediction for the strength of the association between corporate culture and financial reporting risk for centralized versus non-centralized firms. Firm centralization may provide more opportunities for upper management to impose excessive pressure on employees and perpetrate financial reporting fraud. Therefore, we predict that the association between corporate culture and the propensity to receive an AAER would be stronger in centralized firms.

***H2: The negative association between the quality of corporate culture and the propensity to receive an AAER is stronger for centralized firms***

Prior studies find a negative association between firms' corporate governance and financial misreporting (e.g. Beasley 1996; Klein 2002; and Xie et al. 2003). Strong corporate governance may be sufficient to prevent financial misreporting. Therefore, we argue that corporate governance could mediate the relationship between corporate culture and fraud. That is, a poor corporate culture that leads to a boiler room effect may not lead to financial misreporting when strong corporate governance can prevent it.

***H3: The negative association between the quality of corporate culture and the propensity to receive an AAER is stronger for firms with weaker board independence.***

## 3. Sample selection and research design

### *3.1 Sample selection*

We construct corporate culture variables from Glassdoor. Glassdoor, founded in 2007, provides company reviews, job-interview reports, salary reports, and CEO approval ratings for both public and private companies. Glassdoor's database is among the most complete in its coverage of public firms, which makes it a likely resource for future research exploring other aspects of corporate behavior and performance. It is also ideal for our study because it is considered the leading source of anonymous employee reviews. Employees opting to issue a review can rate different aspects of their employer on a scale of 1 to 5. We use employee ratings of three firm attributes as a proxy for corporate culture and employee satisfaction.

We obtain employee reviews on public firms for the years 2008 to 2015 with an initial sample of 1,182,511 observations. We limit our sample to public companies with non-missing ticker symbols; we then merge the Glassdoor data with Compustat's Annual Database. This merging process reduce the sample to 1,112,476 observations. Since each company usually has multiple ratings per year, we average all ratings to create a firm-year measure, that is, we use average employee rating of job satisfaction, ratings of culture & values, and rating of senior leadership, as our culture proxies in our regression analyses.[9] The averaging process results in 23,664 firm-year observations.

Finally, we merge the data with other databases, including AAER, Compustat, and CRSP, based on GVKEY and year. This merging process reduce our sample to 14,282 firm-years with 3,983 unique firms. The variables we use in the analyses of aggressive accounting are

[9] Our results are unchanged when we use the median values of ratings.

constructed from the Compustat Annual Database, Audit Analytics and I/B/E/S. Detailed variable definitions appear in Appendix A.

### *3.2 Research design*

#### *3.2.1 Corporate culture and fraudulent reporting: Pooled analysis*

Our first analysis examines the association between multiple measures of corporate culture and the propensity to receive AAERs. We follow Dechow et al. (2011):

$$\begin{aligned} Prob(AAER) = {} & a_0 + a_1 Employee\ Rating + a_2 RSST\ Accruals + a_3 Change\ in\ Receivables + \\ & a_4 Change\ in\ Inventory + a_5 Soft\ Assets + a_6 Change\ in\ Cash\ Sales + \\ & a_7 Change\ in\ ROA + a_8 Real\ EM + a_9 Change\ in\ Employment + \\ & a_{10} Size + a_{11} Book\text{-}to\text{-}Market + a_{12} Market\ Adjusted\ Returns + \\ & a_{13} Lagged\ Market\ Adjusted\ Returns + Industry\ Fixed\text{-}Effects + Year\ Fixed \\ Effects & + e \end{aligned} \quad (1)$$

where the dependent variable is an indicator variable equal to one if the firm committed fraud in year *t*, and zero otherwise.[10] *Employee Rating* represents three different employee ratings obtained from Glassdoor. The first variable, *Job Satisfaction*, represents the average overall employee assessment of the firm. The second variable, *Culture & Values Rating,* captures the average employee appraisal of the firm's culture and values in year *t*. The last variable is *Senior Leadership Rating*, which represents the average employee assessment of the firm's senior leadership. This metric can potentially capture the tone-at-the-top aspect of corporate culture. The remaining independent variables serve as controls. In setting the control variables, we follow Dechow et al. (2011) closely. Our control variables can be subdivided into two groups: the first group addresses accounting-based signals of potential accounting irregularities; the second group addresses broader firm characteristics.

[10] In additional analysis, we replace the dependent variable with an indicator variable that equals one if the firm is subject to a securities class action lawsuit, and zero otherwise. Inferences are unchanged.

*RSST Accruals* is a measure of abnormal accruals, which may be an indicator of accounting misstatements. Because firms may try to misstate sales by manipulating accounts receivable, we control for *Change in Receivables*. Similarly, we include *Change in Inventory* to control for potential manipulation of cost-of-goods-sold. *Soft Assets* controls for assets that are particularly prone to accounting manipulation, namely all assets other than cash and PP&E. We include *Change in ROA, Change in Employment* and *Change in Cash Sales* to control for performance metrics that managers may have incentives to manipulate. *Real EM* is a proxy of real earnings management, which can either complement or substitute accrual based earnings management. We also control for *Size* and *Book-to-Market*, which capture general firm characteristics. Lastly, we consider industry and year fixed effects to control for unobserved firm and time variations in the panel data, and report standard errors clustered by firm. We provide more details on the variables and their construction in Appendix A.

### *3.2.2 Corporate culture and fraudulent reporting: Heckman two-stage regression*

Ratings on Glassdoor are provided on a voluntary basis by employees. Therefore, the universe of firms covered by Glassdoor is incomplete, which may result in systematic bias of our sample. We therefore use a Heckman (1979) two-stage model to control for the endogeneity of Glassdoor coverage. The first stage regression models the determinants of Glassdoor coverage. In the second stage, we incorporate lambda from the first stage regression.

No prior studies have investigated the determinants of coverage on Glassdoor's website. We thus postulate that both firm-level characteristics and issuance of stock options to employees influence the probability of being rated on Glassdoor. Large firms are more likely to be covered by Glassdoor because they have more employees. Firm performance also affects the probability of being rated: strong (weak) performance may illicit employees to provide higher (lower)

ratings. Finally, stock options are more likely to be granted by misreporting firms. Call et al. (2016) argue that such firms issue stock options to rank-and-file employees to deter employees from whistleblowing. Similarly, employees with stock options may be deterred from filling out negative reviews since it could have an adverse impact on their stock option holdings. To study the determinants of coverage on Glassdoor, we estimate a logit selection model that applies to all firms:

$$Prob(Glassdoor) = b_0 + b_1 Size + b_2 Book\text{-}to\text{-}Market + b_3 Growth + b_4 ROA + b_5 Market\ Adjusted\ Returns + b_6 Employee\ stock\ options + Industry\ Fixed\text{-}Effects + Year\ Fixed\ Effects + e \quad (2)$$

where *Glassdoor* is equal to one if the firm is rated on the Glassdoor website in year *t* and zero otherwise. *Book-to-Market*, *ROA,* and *Market-Adjusted Returns* proxy for firm growth and performance. *Employee stock options* is measured as the number of options granted to rank-and-file employees in the year deflated by the total number of shares outstanding (Call et al. 2016). We also control for industry and year effects and cluster standard errors by firm in all logit models. Lambda obtained from Eq. (2) is included in Eq. (1) for the Heckman second-stage analysis on the relation between corporate culture and fraud. All continuous variables are winsorized at the 1% and 99% level. We provide more details on the variables and their construction in Appendix A.

### *3.2.3 Corporate culture and financial reporting outcomes*

Studying the impact of corporate culture on fraudulent reporting entails examining the influence of culture on financial misreporting outcomes. Thus, we examine two aspects of such outcomes: the likelihood of meeting or narrowly beating analysts' expectations and abnormal

accruals.[11] Our second proxy for financial misreporting outcome is whether firms narrowly meet-or-beat analysts' consensus expectations to proxy for firms that are suspect of earnings management. Prior literature documents that firms manage earnings per share in order to exceed analysts' consensus forecast and avoid adverse stock market reaction (Doyle et al. 2013). Furthermore, we argue that an adverse corporate culture that imposes tough objectives on the management will lead to two outcomes: (1) the managers will impose pressure on the employees, leading to a boiler room environment, which will result in employee dissatisfaction; and (2) pressure the management to manage earnings. Consequently, we examine whether our measures of corporate culture and employee satisfaction are associated with the firm's likelihood to meet or beat analysts' expectations We employ a logit model:

$$Prob(Meet\ or\ Beat) = d_0 + d_1 Employee\ Rating + d_2 ROA + d_3 Book\text{-}to\text{-}Market + d_4 Size + d_5 Institutional\ Ownership + d_6 Sales\ Growth + d_7 Big\ 4\ Auditor + d_8 Lambda + Industry\ Fixed\text{-}Effects + Year\ Fixed\text{-}Effects + e \quad (3)$$

where *Meet or Beat* equals one if actual earnings per share minus the median of analysts' consensus is greater than zero but less than five cents and zero otherwise. Similar to Eq. (1), our variables of interest are the average ratings for *Job Satisfaction*, *Culture & Values* and *Senior Leadership* from Glassdoor. Following Doyle et al. (2013), we control for firm performance (*ROA*), Sales growth and risk (*Book-to-Market*, *Sales Growth*), and for corporate governance constraints (*Institutional ownership*). Prior research suggests that Big 4 auditors constrain earnings management through discretionary accruals, since they are more experienced and invest more resources in auditing (DeFond and Jiambalvo, 1991, 1993; Becker et al., 1998). We therefore include an indicator variable that is equal to one if the firm is audited by a big-4 auditor and zero otherwise. Lastly, we include lambda from Eq. (2) to correct for potential sample bias,

[11] We find similar results (un-tabulated) when examining corporate culture and the likelihood of having internal control weaknesses.

and industry and year fixed-effects to control for unobserved industry and year characteristics (Petersen, 2009). We provide detailed definitions of the variables in Appendix A.

We also employ the following ordinary least square (OLS) regression to test the relation between corporate culture and abnormal accruals:

$$\textit{Abnormal Accruals} = c_0 + c_1\textit{Employee Rating} + c_2\textit{ROA} + c_3\textit{Book-to-Market} + c_4\textit{Size} + c_5\textit{Institutional Ownership} + c_6\textit{Cash Flows} + c_7\textit{NOA} + c_8\textit{Profitable} + c_9\textit{Big 4 Auditor} + c_{10}\textit{Lambda} + \textit{Firm Fixed-Effects} + \textit{Year Fixed-Effects} + e \quad (4)$$

where abnormal accruals are measured as the absolute value of residuals from the modified Jones (1991) model. Larger values represent more aggressive accrual-based earnings management. Appendix B describes the estimation procedures. *Employee Rating* represents three different employee ratings obtained from Glassdoor. Similar to Eq. (1), our variables of interest are the average ratings for *Job Satisfaction*, *Culture & Values* and *Senior Leadership* from Glassdoor. We follow Zang (2012) and control for a number of variables that are likely to influence the level of abnormal accruals. *ROA* controls for firm performance. We also include *Book-to-Market* to control for risk and unrecorded assets. *Institutional Ownership* signifies the percentage of institutional ownership in year *t*. We follow Barton and Simko (2002) and include net operating assets (*NOA*) to proxy for the extent of accrual earnings management in prior years. Prior research suggests that Big 4 auditors constrain earnings management through discretionary accruals since they are more experienced and invest more resources in auditing. (DeFond and Jiambalvo 1991, 1993; Becker et al. 1998). We therefore include an indicator variable that is equal to one if the firm is audited by a big-4 auditor and zero otherwise. Lastly, we include lambda from Eq. (2) to correct for potential sample bias, and firm and year fixed-effects to control for unobserved firm and year characteristics (Petersen, 2009). We provide detailed definitions of the variables in Appendix A.

### *3.2.4 The influence of firm centralization on the relation between corporate culture and financial reporting outcomes*

H2 examines the moderating effect of firm centralization on the relation between corporate culture and AAERs. We use a similar centralization proxy as the one used by Garrett et al. (2014). This proxy is constructed in two steps. First, we rank each of the following variables: (1) the number of geographic segments; (2) the number of business segments; and (3) the number of employees in the firm. We then calculate the average of those three ranked variables to create a firm-year measure of firm centralization. Note that a greater value of the proxy indicates a less centralized (or "more dispersed") organization structure. We then split the sample at the median value of this centralization ranking proxy and re-examine Eq. (1). We argue that it is easier for managers to perpetrate financial reporting fraud in more centralized firms. We therefore expect our results to be stronger in the subsample of more centralized entities.

### *3.2.5 The influence of corporate governance on the relation between corporate culture and financial reporting outcomes*

H3 examines the moderating effect of corporate governance on the relation between corporate culture and AAERs. We use two measures of the quality of corporate governance (1) board independence, measured as the proportion of independent directors on the board, and (2) the number of financial experts on the audit committee. In the analyses, we partition our sample into two groups based on the median value of board independence. Firms with values above the median are classified as firms with strong corporate governance and firms with values below the median are classified as firms with weak corporate governance. We expect to find a stronger negative association between corporate culture and financial reporting risk for firms with weak corporate governance.

## 4. Main results

### *4.1 Descriptive Statistics*

Table 1, Panel A, presents descriptive statistics on our main variables. Mean AAER is 0.001, indicating a very small portion of firms receiving AAERs. This value is consistent with the prior literature (Dechow et al., 2011; Bao et al., 2015). Our first proxy for corporate culture, *Job Satisfaction*, has an average of 3.068 out of 5.000. Similarly, *Culture & Values Rating* has a mean (median) of 3.053 (3.000). *Senior Leadership Rating* has a relatively lower average value, with a mean (median) of 2.769 (2.754). *Real EM* has a mean (median) of 0.032 (0.037), similar to the findings in Zang (2012). *RSST accruals* have a mean (median) of -0.058 (0.005). Un-tabulated analysis indicates that the mean of *RSST accruals* of fraudulent reporting firms is 0.128, consistent with Dechow et al. (2011). The *Book-to-Market* mean (median) is 0.358 (0.338).

Table 1, Panel B, reports descriptive statistics on our corporate-culture proxies. The results suggest that the culture proxies vary over time: specifically, we find that *Job Satisfaction* and *Culture & Values Rating* increase slowly during the sample period. For example, *Job Satisfaction* increases from a mean value of 2.993 in 2008 to 3.163 in 2015. By the same token, the average value of *Culture & Values Rating* rises from 3.080 in 2012 to 3.101 in 2015. We begin the *Culture and Values* sample in 2012 because of limited data prior to that year. Lastly, we find that no obvious pattern exists for the *Senior Leadership Rating* over time. We also report the number of *Job Satisfaction* reviews per firm year in Panel C. We find that prior 2012, an average of up to 17 employees filled out reviews for a given firm in a given year. This number significantly goes up to 92 average reviews per firm-year in 2015.

Table 2 shows the correlation matrix with Spearman (Pearson) reported below (above) the diagonal. Column 1 reports that fraudulent reporting is negatively associated with all of our variables of interest (*Job Satisfaction*, *Culture and Values Rating*, and *Senior Leadership Rating*). These correlations suggest that firms with better employee ratings are less likely to commit fraud, which provides initial support to our hypothesis that corporate culture is significantly associated with firm fraudulent reporting activities. We also find that *Real EM* is significantly negatively associated with our three culture ratings, as expected. We also find that our corporate culture proxies are positively correlated with each other (correlations ranging from 0.812 to 0.822), suggesting that while these constructs are similar to each other, they are not identical.

### *4.2 Test of H1: The relation between corporate cultures and fraudulent reporting*

Table 3 provides results of pooled analysis of the relation between corporate culture and fraudulent reporting documented in AAERs. Column (1) reports the baseline model with no corporate culture proxies. Columns (2), (3) and (4) report the results from logistic models with both industry and year fixed effects when using the average of *Job Satisfaction*, *Culture & Values Rating* and *Senior Leadership Rating* as variables of interests, respectively.

Column (1) replicates the logit regression in Dechow et al. (2011), which also controls for fraudulent-reporting predictors; the results are generally consistent with what Dechow et al. (2011) documents. Specifically, *Real EM* is positive and significant (coefficient estimate = 0.729 and z-statistic = 3.427), suggesting that firms with more real earnings management are also more likely to receive an AAER. The coefficient estimate on *Change in receivables* is positive and significant (coefficient estimate = 9.189 and z-statistic = 2.466), suggesting that firms misstate sales by inflating accounts receivable. Furthermore, lagged market adjusted returns

(*Lagged Market Adjusted Returns*) are positively associated with AAER, suggesting that firms with strong stock market performance may manage earnings to hide diminishing performance.

Column (2) presents the results using *Job Satisfaction* as the variable of interest. The coefficient estimate of *Job Satisfaction* is -0.349 (z-statistic = 2.509), which suggests that corporate culture, as captured by employees' overall rating, curbs financial misreporting. Similarly, the results in column (3) suggest that *Corporate Culture & Values Rating* is negatively associated with financial misreporting (coefficient estimate = -0.106 and z-statistic = -3.505). Lastly, *Senior Leadership Rating* in column 4 generates similar results (coefficient estimate = -0.352 and z-statistic = -2.197). The coefficient estimates on the control variables are consistent across all columns.

Overall, these findings provide preliminary evidence that firms with higher quality corporate culture and employee satisfaction are less likely to receive an AAER. The results support our first hypothesis, suggesting that managers will pressure employees to meet ambitious performance benchmarks, leading to employee dissatisfaction, and are more likely to engage in fraudulent reporting.

### *4.3 Addressing sample selection in the Glassdoor data*

To address the question of selection bias, we perform a Heckman two-stage regression analysis. Panel B of Table 3 presents the results from the Heckman first-stage model. Consistent with our conjectures, we find that larger firms (*Size*) are more likely to be rated on Glassdoor (coefficient estimate = 0.160 and z-statistic = 34.967). Firms with higher performance, measured by *ROA* and *market adjusted returns*, are more likely to receive more employee ratings. Finally, firm that grant stock options to rank-and-file employees (*Employee stock options*) are more likely to by rated on Glassdoor (coefficient estimate = 0.004 and z-statistic = 2.555). These

results mitigate the concern that disgruntled employees dominate our sample. Lambda generated from the first stage is included in second-stage logit models.

The results from Heckman second-stage regression appear in Panel C. Similar to Panel A of Table 3, Column (1) reports the baseline model; Columns (2) - (4) present results using our corporate culture proxies. The baseline model results remain the same as those in Panel A after controlling for selection bias. Specifically, the coefficient estimate on *RSST Accruals* is significantly positive (coefficient estimate = 0.796 and z-statistic = 3.116), in line with the argument that accruals manipulation positively impacts fraud. *Lagged market adjusted returns* is positive and significant (coefficient estimate = 0.274 and z-statistic = 2.715), suggesting that managers misreport in response to pressure by investors to increase firm value. Column (2) presents results using the *Job Satisfaction* as the variable of interest. The coefficient estimate on *Job Satisfaction* is negative and significant (coefficient estimate = -0.414; z-statistic = -2.611), suggesting that firms with better employee satisfaction are less likely to receive an AAER, after controlling for the sample selection bias. Similar results appear in Columns (3) and (4); where we use *Culture & Values Rating* and *Senior Leadership Rati*ng as our proxies for corporate culture. The coefficient estimates on *Culture & Values Rating* and *Senior Leadership Rati*ng are -0.134 (z-statistic = 4.383) and -0.399 (z-statistic = -2.101), respectively. The coefficient estimates on the other control variables are similar to those in Panel A of Table 3.

In summary, results in Panel C provide strong evidence that corporate culture plays an important role in shaping firm reporting activities. Specifically, they are consistent with the argument that corporate culture quality and employee satisfaction have a negative relationship with the likelihood of fraudulent reporting, after controlling for measures of accounting quality and other firm characteristics.

### *4.4 The association between AAERs and lead, lag, and contemporaneous culture proxies*

Our main analyses use the contemporaneous culture proxies, i.e., we measure the culture variables in the same year the fraud was committed. Consequently, our results are subject to reverse causality. That is, the fraud leads to employee dissatisfaction, which is reflected in poor reviews on Glassdoor. We address this potential issue by including lead and lagged culture variables. For the reverse causality argument to hold we should expect to find an association between AAERs and employee satisfaction *after* the misreporting has occurred. We provide the results in Table 4. We find a negative and significant association between the propensity to receive an AAER and overall emoployee ratings in year *t-1* (coefficient estimate = -0.320 and z-statistic = -4.522) and in year *t* (coefficient estimate = -0.414 and z-statistic = -2.611). The coefficient estimate on *Job Satisfaction* in year *t*+1 is -0.107 (z-statistic = -0.900), and is not significant at conventional levels. These results provide greater support to our claim that culture affects firm fraudulent misreporting, and not vice versa. These results further suggest that in the wake of pressure to meet performance benchmarks, managers first attempt to pressure employees, and consequently may resort to fraudulent reporting.

### *4.5 Corporate culture and financial reporting outcomes: meeting or narrowly beating analysts' expectations and abnormal accruals*

#### *4.5.1 The probability of meeting or narrowly beating analysts' expectations*

We conduct two additional analyses to examine how culture affects financial misreporting outcomes. Specifically, we examine the association between our proxies of corporate culture and both the likelihood of a firm meeting or narrowly beating analysts' expectations (*meet or beat*) and the level of abnormal accruals (*Abnormal accruals*).

Our first test examines whether a firm's culture is associated with the likelihood of meeting or narrowly beating analysts' expectations. We use the likelihood of meeting or beating analysts' consensus estimates (*Meet or Beat*) as a proxy to capture firms that are likely to employ aggressive accounting policies, as well as instill pressure on employees to meet tough performance benchmarks. *Meet or Beat* is equal to one if actual EPS minus the median of analysts' consensus is greater than 0 but less than 5 cents, and zero otherwise. These results are presented in Table 5. The coefficient on the first proxy of corporate culture, *Job Satisfaction*, is negative and significant (coefficient estimate = -0.028 and z-statistic = -2.056), suggesting that firms with better *Job Satisfaction* are less likely to meet or narrowly beat analysts' expectations. By the same token, Columns (3) provides consistent results. Specifically, *Culture & Values Rating* is negatively associated with the propensity to meet or beat analysts' expectations (coefficient estimate = -0.043 and z-statistic = -2.686). Lastly, we find that *Senior Leadership Rating* is not significantly associated with likelihood of meeting or narrowly beating analysts' expectations.

Our control variables are generally consistent with the findings from prior literature (Doyle et al. 2013). Specifically, we find that firms with better performance (*ROA*) and higher sale growth rate (*Sales Growth*) are more likely to meet or narrowly beat analysts' expectations. Overall, the results suggest that corporate culture is negatively associated with another proxy for financial misreporting – the likelihood of meeting or narrowly beating analysts' expectations. The results also suggest that an adverse corporate culture that imposes tough objectives on the management may lead to two outcomes: (1) the managers will impose pressure on the employees, leading to a boiler room environment, which will result in employee dissatisfaction; and (2) pressure the management to manage earnings.

### *4.5.2 Abnormal accruals*

We present the results from testing the association between corporate culture and abnormal accruals in Table 6. As before, column (1) reports the baseline model with abnormal accruals as the dependent variable and Columns (2) – (4) show the results using different corporate culture proxies. The coefficient estimate on *Job Satisfaction* is negative and significant (coefficient estimate = -0.006 and t-statistic= -1.993), suggesting that firms with better employee rating usually have lower values of abnormal accruals. In terms of the economic significance, a one standard deviation increase in *Job Satisfaction* is associated with a 0.53% ( = 0.876 × -0.006) reduction in the level of abnormal accruals. *Senior Leadership Rating* is marginally significant in Column (4), suggesting that firms with higher senior leadership rating have lower levels of abnormal accruals. With respect to the economic significance, we find that a one standard deviation decrease in senior leadership rating is associated with a 0.26% decrease in abnormal accruals. We do not find that *Culture & Values Rating* is significantly associated with abnormal accruals, which may be due to the smaller sample size.

The control variables have the predicted sign. Firms with a higher Book-to-Market ratio (*Book-to-Market*) and a higher level of net operating assets (*NOA*) have lower levels of abnormal accruals (Zang, 2012). Furthermore, *Institutional ownership* is negative and significant in columns (1), (2), and (4), suggesting that monitoring by institutional investors is associated with lower abnormal accruals. Overall, the results in Table 6 support our hypothesis that corporate culture is associated with financial reporting quality.

### *4.6 The influence of firm centralization*

H2 examines the relation between our corporate culture proxies and AAER and the moderating effect of firm centralization. We follow Garrett et al. (2014) to construct our proxy

for centralization, and re-examine our main analysis. We report the results in Table 7. We expect and find a stronger association between our proxies of firm culture and AAERS for centralized firms. Columns (1) and (2) present the results using *Job Satisfaction* as our main proxy. We find that in more centralized firms, *Job Satisfaction* is significantly negative (coefficient estimate = -0.734; z-statistic = -3.521), whereas the coefficient estimate for the less-centralized sample is marginally significant (coefficient estimate = -0.246 and z-statistic = -1.844). The results suggest that the association between corporate culture and AAER is magnified when firms are more centralized. Columns (3) and (4) show the results when we use *Culture & Values Rating* as the variable of interest. We find that in both subsamples, *Culture & Values Rating* is negative and significant; however, the magnitude of the coefficient estimate is significantly larger for centralized firms. Specifically, the coefficient estimate is -0.612 (z-statistic = -3.973) and -0.153 (z-statistic = -4.838) for centralized and non-centralized firms, respectively. We find consistent results in columns (5) and (6), where we use *Senior Leadership Rating* to measure corporate culture. The coefficient estimate is -0.612 (z-statistic = -3.687) and -0.139 (z-statistic = -1.067) for centralized and less centralized firms, respectively. Control variables behave similar to those in Panel C of Table 3. In summary, Table 7 presents evidence consistent with firm culture having a greater impact on centralized firms, which are more susceptible to financial misreporting.

### *4.7 The moderating effect of corporate governance on the relation between corporate culture and AAERs*

H3 proposes that the negative association between firm culture and the likelihood of receiving AAERs is stronger for firms with weaker corporate governance, since prior studies show that effective corporate governance can prevent fraud. To test our hypothesis, we estimate Eq. (1) separately for firms that we classify as having weak (strong) corporate governance. Our

proxy for corporate governance is board independence. We classify firms with a percentage of independent board members below (above) the population's median as firms with weak (strong) corporate governance. We present the results in Table 8. We find that the negative coefficient estimate on *Job Satisfaction* is significantly lower for firms with low board independence. Specifically, the coefficient estimate is -0.703 (z-statistic = -5.812) for firms with low board independence and -0.127 (z-statistic = -0.673) for firms with high board independence. We find consistent results for our additional measures of corporate culture, *Culture & Values* and *Sr Leadership*. The coefficient estimate on *Culture & Values* is -0.562 (z-statistic = -2.852) and -0.415 (z-statistic = -2.401) for firms with low and high board independence, respectively. Similarly, the coefficient estimate on *Sr Leadership* -0.675 (z-statistic = -4.841) and -0.112 (z-statistic = -0.745) for firms with low and high board independence, respectively. Overall, the results are consistent with our hypothesis, that the negative association between corporate culture and financial misreporting is stronger for firms with weak corporate governance.[12]

## 5. Additional analyses

### *5.1 High versus low abnormal accruals.*

This section examines a firm's propensity to commit fraud under two different conditions as a means of exploring the significance of our culture measure. If our culture measure has predictive value, we would expect it to be a significant predictor of fraud regardless of the particular fraudulent method employed. Thus, we subdivide our AAER sample into firms with high and low abnormal accruals and separately examine the association between corporate culture on issuance of an AAERs.

[12] In untabulated analysis we partition the sample on the median of the number of finanacial experts on the audit committee (*#FinExperts*). The results are qualitatively unchanged.

As Table 9 shows, culture plays similar roles in high and low abnormal accruals. Column (1) presents the results when firms have low abnormal accruals. The coefficient estimate of our variable of interest, *Job Satisfaction*, is negative and significant (coefficient estimate = -0.413; z-statistic = -2.134), suggesting that firms with low abnormal accruals are less likely to receive an AAER if they have higher Job Satisfaction. Similarly, results in Column (2) provide consistent evidence that *Job Satisfaction* is significantly negatively associated with AAER for firms having high abnormal accruals (coefficient estimate= -0.399; z-statistic = -2.278). Thus, we find that a lower-quality culture is a strong predictor of fraud, regardless of accounting quality.

### *5.2 Corporate culture and Employee Benefits*

Our proxy of corporate culture is based on employees' voluntary ratings. While this proxy has many advantages, the definition of corporate culture is very broad, which may result in both heterogeneity in the way employees define culture and in employees perceiving culture as their satisfaction from their compensation. While the association between rank-and-file employee satisfaction from their compensation and financial misreporting is unclear, we perform an additional test. We follow Guo et al. (2016) and further control for employee benefits obtained from the KLD ratings of employee relations. We present the results in Table 10. The relation between employee job satisfaction and AAERs still holds after controlling for employee benefits. We present the baseline model in column (1) and introduce the culture variables in columns (2) – (4). The coefficient estimate on our culture variables are -0.396 (z-statistic = -2.963), -0.240 (z-statistic = -3.696), and -0.394 (z-statistic = -2.503), in columns (2) to (4), respectively, In summary, the results in Table 10 support our main findings that corporate culture, as measured by Glassdoor employee ratings, is negatively associated with the propensity to receive an AAER, after controlling for employee benefits.

### *5.4 The association between the propensity to receive a securities class-action lawsuit and contemporaneous culture proxies*

As a robustness test, we follow Kedia et al. (2016) and replace our main dependent variable, firms receiving an AAER in year *t*, with an indicator variable that equals one if a firm is a defendant in a securities class-action lawsuit filed in year *t*, and zero otherwise. We present the results in Table 11. The results are consistent with our previous findings. Specifically, the coefficient estimate on *Job Satisfaction* is -0.037 (z-statistic = -2.810). Similarly, the coefficient estimates on *Culture & Values* and *Sr Leadership* are -0.062 (z-statistic = -2.470) and -0.053 (z-statistic = -4.181), respectively. In summary, we have used four different proxies for financial reporting: (1) the issuance of AAERs, (2) firms that meet or just beat analysts' expectations, (3) abnormal accruals, and (4) firms that are defendants in a securities class-action lawsuit. Our inferences are not sensitive to the choice of financial misreporting proxy.

## 6. Conclusion

We examine how corporate culture impacts financial reporting risk. We document that firms with lower (higher) rated corporate cultures face higher (lower) likelihood of receiving an AAER. Lower rated corporate cultures are also more likely to narrowly beating analysts' expectations. We find similar (less significant) results when examining abnormal accruals. In additional tests, we partition our sample to more and less centralized firms, high and low abnormal accruals, introduce a lead-lag test, and control for employee benefits. We find results consistent with our main analyses. Our findings suggest that in periods when managers struggle to reach performance targets, they may pressure employees to start burning the candle at both ends and impose aggressive performance targets on them. If those actions alone are insufficient to reach the targets, managers may resort to financial misreporting. These results suggest that

while a competitive corporate culture may be desirable, under circumstances when the benchmarks set to the management are unattainable, there could be unintended consequences, namely, managers will impose excessive pressure on their employees and may resort to fraudulent reporting.

Our paper is subject to a number of limitations. First, the period of our sample is relatively brief, ranging from 2008 to 2015. Second, our main measure of fraud includes cases of fraudulent reporting that are detected, leaving out a likely large group of firms that have gone undetected committing fraud. Third, the dataset we use might endogenously sort reviews of firms that might bias our results. Lastly, the definition of corporate culture is very broad, and our measure may capture other aspects that are not the focal point of this study. We have taken steps to mitigate those concerns, but do not eliminate them.

**Appendix A– Variable definitions**

| Variable Name | Definitions |
|---|---|
| *AAER* | An indicator variable that equals to one for fraud firm years and zero otherwise (AAER). |
| *Abnormal accruals* | The absolute value of residuals from the modified Jones model (see Appendix B). |
| *Big 4 Auditor* | An indicator variable that equals to one if the firm's auditor (AU) is a member of the Big 4, and zero otherwise (Compustat). |
| *Board Independence* | The proportion of independent directors on the board (ISS). |
| *Book-to-Market* | The ratio of book value of equity (CEQ) and market value of equity (PRCC_F*CSHO) (Compustat). |
| *Cash Flows* | Operating cash flow (OANCF) deflated by total assets (AT) (Compustat). |
| *Change in Cash Sales* | Percentage change in cash sales (SALES- ΔRECT) (Compustat). |
| *Change in Employment* | Percentage change in the number of employees (EMP) minus the percentage change in total assets (AT) (Compustat). |
| *Change in Inventory* | Change in inventory (INVT) deflated by average total assets (AT) (Compustat). |
| *Change in Receivables* | Change in accounts receivable (RECT) deflated by average total assets (AT) (Compustat). |
| *Change in ROA* | Earnings (IB) deflated by total assets (AT) at year t minus earnings deflated by total assets at year t-1 (Compustat). |
| *Class* | An indicator variable that equals to one for firms that are defendants in securities fraud lawsuits filed in year *t*, and zero otherwise (Stanford Law School Securities Class Action Database). |
| *Culture & Values Rating* | The average of employee culture & values rating for firm *i* in year *t* (Glassdoor). |
| *Employee Benefits* | Employee relations-number of strengths (EMP_STR_NUM) (Compustat KLD). |
| *Employee Stock Options* | The percentage of total options granted to the employees (PCTTOTOPT) (ExecuComp). |
| *Firm Centralization* | The average of three ranking variables of the number of geographic segments (GEOSEG), the number of business segments (BUSSEG) and the number of employees in the firm year (EMPS) (Compustat Segment File). |
| *Growth* | Change in sales (SALE) for firm year i from year t-1 to year t deflated by total assets (AT) at year t (Compustat). |
| *Institutional Ownership* | Percentage of firm ownership held by institutional investors (HELD_PCT) (Thomson Financial). |
| *Lagged Market Adjusted Returns* | Previous year cumulative annual buy-and-hold return inclusive of delisting returns (RET) minus the annual buy-and-hold value- |

| | |
|---|---|
| | weighted market return (VWRETD) (CRSP). |
| *Market Adjusted Returns* | Cumulative annual buy-and-hold return inclusive of delisting returns (RET) minus the annual buy-and-hold value-weighted market return (VWRETD) (CRSP). |
| *Meet or Beat* | An indicator variable that equals to one if actual EPS (ACTUAL) minus the median of analysts' consensus (MEDEST) is greater than 0 but less than 5 cents, and zero otherwise (I/B/E/S). |
| *NOA* | An indicator variable that equals to one if the net operating assets (CEQ-CH+DT) deflated by lagged sales (SALE) is above the median, and zero otherwise (Compustat). |
| *Job Satisfaction* | The average overall employee rating for firm *i* in year *t* (Glassdoor). |
| *Profitable* | An indicator variable that equals to one if net income (NI) is greater than zero, and zero otherwise (Compustat). |
| *Real EM* | The sum of three real earnings management proxies, which are abnormal cash flow from operations, abnormal discretionary expenses and abnormal production costs (see Appendix B). |
| *ROA* | Earnings (IB) deflated by total assets (AT) for firm i in year *t* (Compustat). |
| *RSST Accruals* | Change in working capital + change in NCO + change in FIN, deflated by average total assets; working capital = ACT-CHE-(ACL-DLC); NCO = AT-ACT-IVAO-(LT-LCT-DLTT); FIN = IVST+IVAO-(DLTT+DLC+PSTK) (Compustat). |
| *Sales Growth* | Sales (SALE) in year *t* minus sales in year *t*-1, deflated by sales (SALE) in yeat *t* (Compustat). |
| *Senior Leadership Rating* | The average rating of senior leadership for firm *i* in year *t* (Glassdoor). |
| *Size* | Log of total assets (AT) (Compustat). |
| *Soft Assets* | Total assets minus property, plant and equipment (PPENT) and cash and cash equivalent (CH), deflated by total assets (AT) (Compustat). |
| *#FinExperts* | The number of financial experts on the audit committee (ISS). |

Data sources are in the parentheses.

## Appendix B
## Estimation of earnings management proxies

### A. Real earnings management proxies (Real EM)

We generate the expected (normal) level of cash flow from operations (CFO), discretionary expenses, and production costs following Cohen and Zarowin (2010) and Zang (2012), who implement the real earnings management model originally developed by Roychowdhury (2006). We express normal CFO as a linear function of sales and changes in sales. We estimate the following cross-sectional regression for each two-digit industry and year, to obtain a measure of normal CFO:

$$\frac{CFO_{it}}{Assets_{i,t-1}} = k_{1t}\frac{1}{Assets_{i,t-1}} + k_{2t}\frac{Sales_{it}}{Assets_{i,t-1}} + k_{3t}\frac{\Delta \text{Sales}_{\text{it}}}{Assets_{i,t-1}} + \varepsilon_{\text{it}}. \quad \text{(A.1)}$$

Abnormal CFO (ABCFO) is actual CFO (Compustat OANCF) minus the normal level of CFO calculated using the estimated coefficients from (A.1).

Production costs are the sum of cost of goods sold (COGS) and the change in inventory (INVT) during the year. We obtain the normal level of production costs as:

$$\frac{\text{Prod}_{\text{it}}}{Assets_{i,t-1}} = k_{1t}\frac{1}{Assets_{i,t-1}} + k_{2t}\frac{Sales_{it}}{Assets_{i,t-1}} + k_{3t}\frac{\Delta Sales_{it}}{Assets_{i,t-1}} + k_{4t}\frac{\Delta \text{Sales}_{\text{it}-1}}{Assets_{i,t-1}} + \varepsilon_{\text{it}}. \quad \text{(A.2)}$$

To avoid inducing a mechanical correlation between current sales and current discretionary expense discussed in Cohen and Zarowin (2010), we model discretionary expenses as a function of lagged sales to derive normal levels of discretionary expenses (SG&A (XSGA), Advertising (XAD), and R&D (XRD) expense):

$$\frac{DiscExp_{it}}{Assets_{i,t-1}} = k_{1t}\frac{1}{Assets_{i,t-1}} + k_{2t}\frac{Sales_{it-1}}{Assets_{i,t-1}} + \varepsilon_{\text{it}}. \quad \text{(A.3)}$$

Finally, we multiply Abnormal CFO and Abnormal discretionary expense by minus one, so that the higher the value, the more likely the firm is to use real earnings management to report

higher earnings. Real EM used in the paper is the sum of abnormal CFO, abnormal production and abnormal dictionary expense.

**B. Accrual-based earnings management proxies (Abnormal accruals)**

We estimate the following modified Dechow et al., (1995) regression for each two-digit SIC industry-year with more than 20 observations:

$$Accruals_t = \beta_0 + \beta_1 (\Delta Sales_t - \Delta REC_t) + \beta_2 \Delta PPE_t + \varepsilon_t, \quad \text{(B.1)}$$

where accruals is income before extraordinary items minus operating cash flows, $\Delta Sales$ is the change in sales; $\Delta REC$ is the change in accounts receivable, $\Delta PPE$ is the change in year-end property, plant and equipment, and all variables are scaled by lagged total assets. The absolute value of residual from (B.1) is denoted *Abnormal Accruals*.

**References**


Aktas, N., E. De Bodt, H. Bollaert, and R. Roll. 2012. CEO narcissism and the takeover process: From private initiation to deal completion. In AFA 2012 Chicago Meetings Paper.

Auditing Standards Board (ASB). 2002. Statement on Auditing Standards No. 99: Consideration of Fraud in a Financial Statement Audit. New York: AICPA. Issued October 2002.

Bamber, L. S., J. Jiang, and I. Y. Wang. 2010. What's my style? The influence of top managers on voluntary corporate financial disclosure. *The Accounting Review* 85(4), 1131-1162.

Bao, Y., B. Ke, B. Li, J. Yu, and J. Zhang. 2015. Detecting accounting frauds in publicly traded U.S. firms: New Perspectives and New Method. Unpublished working paper.

Barton, J., and P. Simko. 2002. The balance sheet as an earnings management constraint. *The Accounting Review* 77(s-1), 1–27.

Bartov, E., D. Givoly, and C. Hayn. 2002. The rewards to meeting or beating earnings expectations. *Journal of Accounting and Economics* 33, 173-204.

Beasley, M.. 1996. An empirical analysis of the relation between the board of director compositions and financial statement fraud. *The Accounting Review* 71(4), 443-465.

Becker, C., M. DeFond, J. Jiambalvo, and K. Subramanyam. 1998. The effect of audit quality on earnings management. *Contemporary Accounting Research* 15(1), 1-24.

Berson, Y., S. Oreg, and T. Dvir. 2008. CEO values, organizational culture and firm outcomes. J*ournal of Organizational Behavior* 29(5), 615–633.

Bertland, M., and A. Schoar. 2003. Managing with style: The effect of managers on firm policies. *Quarterly Journal of Economics* 118(4), 1169–1208.

Cain, M. D. and S. B. McKeon. 2016. CEO personal risk-taking and corporate policies. *Journal of Financial and Quantitative Analysis* 51(1), 139-164.

Call, A. C., S. Kedia, and S. Rajgopal. 2016. Rank and file employees and the discovery of misreporting: The role of stock options. *Journal of Accounting and Economics* (forthcoming)

Carlin, B. I., F. Dorobantu, and S. Viswanathan. 2009. Public trust, the law, and financial investment. *Journal of Financial Economics* 92(3), 321-341.

Caskey, J., and N. B. Ozel. 2016. Earnings expectations and employee safety. *Journal of Accounting and Economics* (Forthcoming).

Cohen, D., and P. Zarowin. 2010. Accrual-based and real earnings management activities around seasoned equity offering. *Journal of Accounting and Economics* 50(1), 2-19.

Davidson, R., A. Dey, and A. Smith. 2015. Executives' off-the-job behavior, corporate culture, and financial reporting risk. *Journal of Financial Economics* 117(1), 5-28.

Dechow, P. M., W. Ge, C. R. Larson, and R. G. Sloan. 2011. Predicting material accounting misstatements. *Contemporary Accounting Research* 28(1), 17-82.

Dechow, P. M., R. G. Sloan, and A. P. Sweeney. 1995. Detecting earnings management. *The Accounting review* 70(2), 193–225.

DeFond, M., and J. Jiambalvo. 1991. Incidence and circumstances of accounting errors. *The Accounting Review* 66 (3), 643–655.

DeFond, M., and J. Jiambalvo. 1993. Factors related to auditor-client disagreements over income-increasing accounting methods. *Contemporary Accounting Research* 9(2), 415-431.

Deshpande, R., J. U. Farley, and F. E. Webster. 1993. Corporate Culture, Customer Orientation, and Innovativeness in Japanese Firms: A Quadrad Analysis. *Journal of Marketing* 57(1), 23-37.

Doyle, J.T., J.N. Jennings, and M. T. Soliman. 2013. Do managers define non-GAAP earnings to meet or beat analyst forecasts? *Journal of Accounting and Economics* 56(1), 40-56.

Dyck, A., Morse, A., and L. Zingales. 2010. Who blows the whistle on corporate fraud? *The Journal of Finance* 65(6), 2213-2253.

Dyck, A., A. Morse, and L. Zingales. 2014. How pervasive is corporate fraud? Working paper.

Dyreng, S. D., M. Hanlon, and E. L. Maydew. 2010. The effects of executives on corporate tax avoidance. *The Accounting Review* 85(4), 1163-1189.

Gao, F., L.L. Lisic, and I.X. Zhang. 2014. Commitment to social good and insider trading, *Journal of Accounting and Economics* 57, 149-175.

Garrett, J., R. Hoitash, and D. F. Prawitt. 2014. Trust and financial reporting quality. *Journal of Accounting Research* 52(5), 1087-1125.

Grullon, G., G. Kanatas, and J. Weston. 2010. Religion and Corporate (Mis)Behavior. Working Paper, Rice University.

Graham, J. R., C. R. Harvey, J. Popadak, and S. Rajgopal. 2015. Corporate culture: evidence from the field. Technical report, Working Paper, Duke University.

Graham, J. R., C. R. Harvey, and S. Rajgopal. 2005. The economic implications of corporate financial reporting. *Journal of Accounting and Economics* 40(1-3), 3-73.

Guiso L., P. Sapienza, and L. Zingales. 2008. Social capital as good culture. *The Journal of the European Economic Association* 6(2-3), 295-320.

Guiso, L., P. Sapienza, and L. Zingales. 2015. The value of corporate culture. *Journal of Financial Economics* 117(1) 60-76.

Guo, J., Y. Zhang, and N. Zhou. 2016. The effect of employee treatment policies on internal control weaknesses and financial restatements. *The Accounting Review* 91(4), 1167-1194.

Ham, C., N. Seybert, S. Wang, J. L. Lundblad, M. Sevilir, G. Tate, D. Williams, and P. Zarowin. 2014. Narcissism is a bad sign: CEO signature size, investment, and performance. UNC Kenan-Flagler Research Paper.

Ham, C. C., M. H. Lang, N. Seybert, and S. Wang. 2015. CFO narcissism and financial reporting quality. Robert H. Smith School Research Paper No. RHS 2581157.

Hambrick, D. C., and P. A. Mason. 1984. Upper echelons: The organization as a reflection of its top managers. *Academy of Management Review* 9(2), 193–206.

Heckman, J.. 1979. Sample selection bias as a specification error. *Econometrica* 47(1), 153-161.

Hoi, C.K., Q. Wu, and H. Zhang. 2013. Is corporate social responsibility (CSR) associated with tax avoidance? Evidence from irresponsible CSR Activities. *The Accounting Review* 88, 2025-2059.

Jones, J. J.. 1991. Earnings management during import relief investigations. *Journal of Accounting Research* 92(2), 193-228.

Kasznik, R., and M. F. McNichols. 2002. Does meeting earnings expectations matter? Evidence from analyst forecast revisions and share prices. *Journal of Accounting Research* 40(3), 727-759.

Kedia, S. S. Luo, and S. Rajgopal. 2016. Culture of weak compliance and financial reporting risk. Working paper.

Kim, Y., M.S. Park, and B. Wier. 2012. Is earnings quality associated with corporate social responsibility? *The Accounting Review* 87, 761-796.

Klein, A.. 2002. Audit committee, board of director characteristics, and earnings management. *Journal of Accounting and Economics* 33(3), 375-400.

Kreps, D. M..1996. Corporate culture and economic theory. Firms, Organizations and Contracts, Oxford University Press, Oxford, 221–275.

La Porta, R., F. Lopez-de-Silanes, A. Shleifer, and R. Vishny. 1997. Trust in large organizations. *American Economic Review* 87(2), 333–338.

Levine, M.. "Wells Fargo Opened a Couple Million Fake Accounts." Bloomberg.com. Bloomberg, 09 Sept. 2016.

Malmendier, U., and G. Tate. 2005. CEO overconfidence and corporate investment. *The Journal of Finance* 60(6), 2661–2700.

Malmendier, U., and G. Tate. 2008. Who makes acquisitions? CEO overconfidence and the market's reaction. *Journal of Financial Economics* 89(1), 20–43.

McGuire, S., T. Omer, and N. Sharp. 2012. The Impact of Religion on Financial Reporting Irregularities. *The Accounting Review* 87, 645-673.

Ogbonna, E., and L. C. Harris. 2000. Leadership style, organizational culture and performance: empirical evidence from UK companies. *International Journal of Human Resource Management* 11(4), 766-788.

Petersen, M. A.. 2009. Estimating standard errors in finance panel data sets: Comparing approaches. *Review of Financial Studies* 22(1), 435–466.

Popadak, J.. 2013. A corporate culture channle: how increased shareholder governance reduces firm value. Working paper, SSRN.

Putnam, R.. 1993. Making Democracy Work: Civic Traditions in Modern Italy. Princeton University Press, Princeton, NJ.

Rockness, H., and J. Rockness. 2005. Legislated ethics: from Enron to Sarbanes-Oxley, the impact of corporate America. *Journal of Business Ethics* 57(1), 31-54.

Roll, R.. 1986. The hubris hypothesis of corporate takeovers. *Journal of Business* 59(2), 197-216.

Roychowdhury, R.. 2006. Earnings management through real activities manipulation. *Journal of Accounting and Economics* 42(3), 335-370.

Schein, E. H.. 1988. Organizational culture. Sloan School of Management, Massachusetts Institute of Technology.

Schneider, B., M. G. Ehrhart, and W. H. Macey. 2013. Organizational climate and culture. *Annual review of psychology* 64, 361-388.

Schrand, C. M., and S. L. Zechman. 2012. Executive overconfidence and the slippery slope to financial misreporting. *Journal of Accounting and Economics* 53(1), 311–329.

Sims, R. R., and J. Brinkman. 2003. Enron ethics (or: culture matters more than codes). *Journal of Business Ethics* 45(3), 243-256.

Skinner, D. J., and R. G. Sloan. 2002. Earnings surprises, growth expectations, and stock returns or don't let an earnings torpedo sink your portfolio. *Review of Accounting Studies* 7, 289- 312.

Tsui, A. S., H. Wang, and K. R. Xin. 2006. Organizational culture in china: An analysis of culture dimensions and culture types. *Management and Organization Review* 2(3), 345-376

United States. Congress. House. Financial Services Committee. Holding Wall Street Accountable: Investigating Wells Fargo's Opening of Unauthorized Customer Accounts. Sept. 29, 2016. 114th Congress 2nd Sess. Transcript online: http://www.wsj.com/articles/transcript-wells-fargo-ceo-john-stumpfs-house-testimony-1475193854

Xie, B., W. N. Davidson, and P. J. DaDalt. 2003. Earnings management and corporate governance: the role of the board and the audit committee. *Journal of Corporate Finance* 9(3), 295-316.

Zang, A.Y.. 2012. Evidence on the trade-off between real activities manipulation and accrual-based earnings management. *The Accounting Review* 87(2), 675-703.

Zhou, K. Z., J. J. Li, N. Zhou, and C. Su. 2008. Market orientation, job satisfaction, product quality, and firm performance: evidence from China. *Strategic Management Journal* 29(9), 985-100.

**Table 1: Descriptive statistics**

**Panel A: Descriptive statistics on main variables**

| | N | Mean | Std. Dev. | P25 | P50 | P75 |
|---|---|---|---|---|---|---|
| *AAER* | 14,282 | 0.001 | 0.024 | 0.000 | 0.000 | 0.000 |
| *Job Satisfaction* | 14,282 | 3.068 | 0.794 | 2.625 | 3.000 | 3.522 |
| *Culture & Values Rating* | 9,643 | 3.053 | 0.876 | 2.519 | 3.000 | 3.600 |
| *Senior Leadership Rating* | 14,139 | 2.769 | 0.850 | 2.250 | 2.754 | 3.233 |
| *Real EM* | 14,282 | 0.032 | 0.674 | -0.123 | 0.037 | 0.426 |
| *RSST Accruals* | 14,282 | -0.058 | 0.670 | -0.119 | 0.005 | 0.119 |
| *Size* | 14,282 | 7.667 | 2.033 | 6.273 | 7.632 | 9.006 |
| *Book-to-Market* | 14,282 | 0.358 | 3.475 | 0.101 | 0.338 | 0.608 |
| *Change in Receivables* | 14,282 | -0.038 | 2.675 | -0.011 | 0.001 | 0.016 |
| *Change in Inventory* | 14,282 | 0.000 | 0.042 | 0.000 | 0.000 | 0.005 |
| *Soft Assets* | 14,282 | 0.479 | 0.300 | 0.232 | 0.540 | 0.736 |
| *Change in Cash Sales* | 14,282 | 6.468 | 17.158 | 0.036 | 0.542 | 3.805 |
| *Change in ROA* | 14,282 | -0.004 | 0.169 | -0.020 | 0.000 | 0.018 |
| *Change in Employment* | 14,282 | -0.019 | 0.262 | -0.098 | -0.019 | 0.059 |
| *Market Adjusted Returns* | 14,282 | 0.024 | 0.229 | -0.073 | -0.002 | 0.076 |
| *Lagged Market Adjusted Returns* | 14,282 | 0.029 | 0.244 | -0.076 | -0.003 | 0.082 |
| *Abnormal Accruals* | 10,036 | 0.105 | 0.171 | 0.023 | 0.061 | 0.128 |
| *Class* | 14,282 | 0.025 | 0.159 | 0.000 | 0.000 | 0.000 |
| *Board Ind* | 7,298 | 0.798 | 0.107 | 0.727 | 0.818 | 0.888 |
| *#FinExperts* | 9,110 | 2.000 | 1.237 | 1.000 | 2.000 | 3.000 |

**Panel B: Descriptive statistics on Glassdoor ratings**

***Job Satisfaction***

| Year | N | Mean | Std. Dev. | P25 | P50 | P75 |
|---|---|---|---|---|---|---|
| 2008 | 1,395 | 2.993 | 0.890 | 2.500 | 3.000 | 3.640 |
| 2009 | 1,123 | 2.990 | 0.823 | 2.500 | 3.000 | 3.500 |
| 2010 | 1,324 | 2.937 | 0.809 | 2.480 | 3.000 | 3.400 |
| 2011 | 1,470 | 2.964 | 0.807 | 2.500 | 3.000 | 3.500 |
| 2012 | 1,693 | 3.081 | 0.805 | 2.600 | 3.000 | 3.571 |
| 2013 | 2,030 | 3.068 | 0.797 | 2.611 | 3.022 | 3.533 |
| 2014 | 2,167 | 3.109 | 0.717 | 2.700 | 3.081 | 3.527 |
| 2015 | 3,080 | 3.163 | 0.764 | 2.750 | 3.179 | 3.600 |

***Culture & Values Rating***

| Year | N | Mean | Std. Dev | P25 | P50 | P75 |
|---|---|---|---|---|---|---|
| 2012 | 1,699 | 3.080 | 0.964 | 2.500 | 3.000 | 3.750 |
| 2013 | 2,301 | 3.013 | 0.985 | 2.500 | 3.000 | 3.549 |
| 2014 | 2,723 | 3.053 | 0.856 | 2.545 | 3.000 | 3.574 |
| 2015 | 2,920 | 3.101 | 0.835 | 2.600 | 3.100 | 3.625 |

***Senior Leadership Rating***

| Year | N | Mean | Std. Dev | P25 | P50 | P75 |
|---|---|---|---|---|---|---|
| 2008 | 1,395 | 2.808 | 0.966 | 2.125 | 2.857 | 3.500 |
| 2009 | 1,123 | 2.772 | 0.884 | 2.175 | 2.786 | 3.286 |
| 2010 | 1,324 | 2.737 | 0.877 | 2.214 | 2.750 | 3.250 |
| 2011 | 1,470 | 2.806 | 0.844 | 2.300 | 2.800 | 3.333 |
| 2012 | 1,677 | 2.781 | 0.864 | 2.250 | 2.784 | 3.280 |
| 2013 | 1,999 | 2.707 | 0.839 | 2.191 | 2.692 | 3.116 |
| 2014 | 2,143 | 2.714 | 0.793 | 2.250 | 2.682 | 3.143 |
| 2015 | 3,008 | 2.816 | 0.825 | 2.333 | 2.800 | 3.250 |

**Number of firm reviews**

| Year | N | Mean | Std. Dev. | P25 | P50 | P75 |
|---|---|---|---|---|---|---|
| 2008 | 1,395 | 16 | 54 | 1 | 3 | 9 |
| 2009 | 1,123 | 14 | 51 | 1 | 3 | 8 |
| 2010 | 1,324 | 15 | 57 | 1 | 3 | 11 |
| 2011 | 1,470 | 17 | 74 | 1 | 4 | 12 |
| 2012 | 1,693 | 24 | 114 | 2 | 4 | 16 |
| 2013 | 2,030 | 41 | 221 | 2 | 7 | 27 |
| 2014 | 2,167 | 62 | 394 | 3 | 10 | 37 |
| 2015 | 3,080 | 92 | 492 | 3 | 11 | 41 |

**Table 2: Correlations**

| | | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| (1) | *AAER* | | **-0.017** | -0.017 | **-0.014** | **0.009** | 0.005 | 0.001 | 0.006 | -0.002 | **0.008** |
| (2) | *Job Satisfaction* | **-0.018** | | **0.822** | **0.812** | **-0.028** | 0.010 | **0.087** | **-0.024** | 0.006 | -0.002 |
| (3) | *Culture & Values Rating* | -0.016 | **0.825** | | **0.815** | **-0.048** | 0.017 | **0.079** | **-0.032** | -0.003 | 0.003 |
| (4) | *Senior Leadership Rating* | **-0.018** | **0.811** | **0.814** | | **-0.021** | 0.004 | **0.066** | **-0.031** | 0.008 | -0.002 |
| (5) | *Real EM* | **-0.009** | **-0.028** | **-0.048** | **-0.021** | | 0.007 | 0.001 | 0.019 | -0.001 | **0.016** |
| (6) | *RSST Accruals* | 0.002 | 0.008 | 0.017 | 0.004 | 0.001 | | **0.036** | **0.048** | **0.079** | **0.041** |
| (7) | *Size* | -0.002 | **0.103** | **0.088** | **0.096** | **0.019** | 0.005 | | **0.177** | **0.027** | **0.031** |
| (8) | *Book-to-Market* | 0.008 | **-0.063** | **-0.097** | **-0.095** | -0.001 | **0.041** | **0.150** | | **0.028** | **0.037** |
| (9) | *Change in Receivables* | -0.004 | -0.005 | -0.007 | 0.004 | **-0.014** | **0.070** | **0.032** | **0.011** | | **0.281** |
| (10) | *Change in Inventory* | 0.003 | -0.003 | -0.003 | 0.004 | **0.016** | **0.043** | **0.050** | **0.028** | **0.226** | |
| (11) | *Soft Assets* | -0.002 | **-0.046** | **-0.089** | **-0.083** | **-0.009** | 0.002 | -0.007 | **0.063** | **0.035** | **0.028** |
| (12) | *Change in Cash Sales* | -0.003 | **-0.020** | 0.001 | -0.005 | **-0.02** | **0.019** | **0.204** | **0.149** | **0.067** | **0.115** |
| (13) | *Change in ROA* | -0.001 | 0.007 | 0.015 | 0.013 | **0.056** | **0.090** | **0.027** | **-0.022** | **0.055** | **0.020** |
| (14) | *Change in Employment* | -0.002 | -0.008 | -0.014 | **-0.016** | **-0.009** | **-0.031** | **-0.080** | **-0.010** | **-0.081** | **-0.046** |
| (15) | *Market Adjusted Returns* | 0.001 | **0.040** | **0.050** | **0.072** | 0.001 | **0.034** | **0.133** | **0.181** | **0.037** | **0.018** |
| (16) | *Lagged Market Adjusted Returns* | 0.001 | **0.050** | **0.055** | **0.062** | 0.001 | **0.040** | **0.139** | **-0.114** | **0.062** | **0.068** |
| (17) | *Abnormal Accruals* | 0.005 | **-0.003** | -0.038 | **-0.043** | -0.078 | -0.008 | **-0.456** | **-0.179** | **-0.027** | **-0.025** |
| (18) | *Class* | **0.014** | 0.009 | -0.001 | 0.004 | -0.009 | 0.007 | **0.056** | -0.003 | 0.009 | **0.022** |
| (19) | *Board Ind* | -0.005 | **0.050** | **0.046** | 0.005 | **0.041** | **-0.059** | **0.278** | **-0.064** | 0.002 | 0.004 |
| (20) | *#FinExperts* | 0.009 | **0.059** | **0.080** | **0.047** | -0.001 | -0.044 | **0.202** | **-0.029** | -0.022 | -0.005 |

| | | (11) | (12) | (13) | (14) | (15) | (16) | (17) | (18) | (19) | (20) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| (1) | *AAER* | 0.000 | -0.001 | -0.001 | -0.003 | 0.001 | **0.013** | -0.001 | **0.014** | -0.005 | 0.006 |
| (2) | *Job Satisfaction* | **-0.045** | **0.027** | -0.003 | -0.001 | -0.002 | 0.013 | **-0.022** | 0.010 | **0.046** | **0.059** |
| (3) | *Culture & Values Rating* | **-0.086** | **0.022** | 0.010 | -0.005 | 0.018 | **0.036** | **-0.025** | -0.002 | **0.035** | **0.072** |
| (4) | *Senior Leadership Rating* | **-0.085** | **0.016** | 0.008 | -0.006 | 0.026 | **0.023** | **-0.020** | 0.004 | -0.005 | **0.049** |
| (5) | *Real EM* | **-0.009** | **-0.020** | **0.056** | **-0.009** | 0.001 | 0.001 | -0.078 | -0.008 | **0.026** | **0.022** |
| (6) | *RSST Accruals* | **-0.027** | **-0.018** | **0.085** | **-0.077** | 0.016 | **0.034** | **-0.037** | 0.001 | -0.028 | -0.035 |
| (7) | *Size* | **0.012** | **0.311** | **0.052** | **-0.049** | **0.013** | **0.019** | **-0.491** | **0.063** | **0.242** | **0.230** |
| (8) | *Book-to-Market* | **-0.041** | **0.029** | **0.041** | **-0.029** | **-0.062** | **-0.036** | **-0.236** | 0.000 | **-0.051** | 0.005 |
| (9) | *Change in Receivables* | **0.022** | **0.023** | **0.031** | **-0.094** | **0.019** | **0.043** | **-0.017** | 0.002 | 0.021 | -0.039 |
| (10) | *Change in Inventory* | **0.016** | **0.046** | **0.018** | **-0.036** | **-0.017** | **0.051** | **-0.014** | -0.007 | -0.010 | **-0.139** |
| (11) | *Soft Assets* | | **0.200** | **-0.027** | **0.012** | **0.023** | **0.033** | **0.011** | 0.001 | **0.040** | **0.069** |
| (12) | *Change in Cash Sales* | **0.312** | | 0.002 | **-0.015** | -0.010 | -0.002 | **-0.062** | **0.063** | 0.035 | **0.094** |
| (13) | *Change in ROA* | **-0.012** | **-0.017** | | **-0.075** | **0.104** | **0.038** | **-0.059** | 0.001 | -0.011 | 0.000 |
| (14) | *Change in Employment* | 0.004 | **-0.072** | **-0.044** | | **-0.036** | **-0.027** | **0.024** | 0.002 | -0.005 | 0.004 |
| (15) | *Market Adjusted Returns* | **0.022** | 0.004 | **0.222** | **-0.054** | | **-0.037** | -0.013 | 0.008 | **-0.042** | -0.009 |
| (16) | *Lagged Market Adjusted Returns* | **0.051** | **0.011** | **0.104** | **-0.039** | -0.004 | | **-0.022** | 0.025 | -0.012 | -0.009 |
| (17) | *Abnormal Accruals* | **-0.031** | **-0.112** | **-0.014** | **0.047** | **-0.054** | **-0.057** | | **-0.016** | **-0.023** | **-0.039** |
| (18) | *Class* | 0.000 | **0.061** | 0.000 | 0.017 | **-0.016** | **0.014** | **-0.015** | | 0.011 | **0.025** |
| (19) | *Board Ind* | **0.049** | **0.296** | **0.026** | -0.002 | -0.009 | 0.011 | **-0.065** | 0.012 | | **0.162** |
| (20) | *#FinExperts* | **0.071** | **0.251** | 0.014 | -0.002 | 0.002 | -0.001 | **-0.054** | 0.019 | **0.154** | |

Note: This table presents correlations among all variables with Pearson (Spearman) correlations reported above (below) the diagonal. Values in bold are significant at the 1% level. All variables are defined in Appendix A.

**Table 3: Corporate culture and AAERs**

**Panel A: Pooled analysis**

| Dependent variable: | (1) AAER | (2) AAER | (3) AAER | (4) AAER |
|---|---|---|---|---|
| *Intercept* | -13.436*** | -25.132** | -4.591*** | -11.554*** |
| | (-4.279) | (-2.431) | (-3.327) | (-6.012) |
| *Job Satisfaction* | | -0.349** | | |
| | | (-2.509) | | |
| *Culture & Values Rating* | | | -0.106*** | |
| | | | (-3.505) | |
| *Senior Leadership Rating* | | | | -0.352** |
| | | | | (-2.197) |
| *Real EM* | 0.729*** | 0.736*** | 0.697** | 0.902*** |
| | (3.427) | (3.571) | (1.967) | (3.176) |
| *RSST Accruals* | 0.031 | 0.575* | 0.342** | 0.380 |
| | (0.123) | (1.717) | (2.016) | (1.095) |
| *Size* | 0.026 | 0.065 | 0.010 | 0.057 |
| | (0.314) | (0.672) | (0.166) | (0.567) |
| *Book-to-Market* | 0.074 | 0.081 | 0.061 | 0.055 |
| | (1.378) | (1.316) | (1.174) | (1.114) |
| *Change in Receivables* | 9.189** | 4.780* | 0.164 | 9.179** |
| | (2.466) | (1.661) | (0.390) | (2.399) |
| *Change in Inventory* | 6.094 | 11.701 | 6.864** | 13.526 |
| | (1.573) | (1.330) | (1.962) | (1.581) |
| *Soft Assets* | 0.285 | -0.240 | -1.012** | 0.070 |
| | (0.522) | (-0.486) | (-2.187) | (0.140) |
| *Change in Cash Sales* | -0.008 | -0.005 | -0.026*** | 0.005 |
| | (-0.505) | (-0.334) | (-3.077) | (0.353) |
| *Change in ROA* | 0.692 | 0.732 | 0.511*** | 0.705 |
| | (1.308) | (1.431) | (3.490) | (1.201) |
| *Change in Employment* | 0.236 | 0.090 | 0.036 | 0.151 |
| | (0.470) | (0.165) | (0.126) | (0.302) |
| *Market Adjusted Returns* | -0.828 | -0.739 | -3.509* | -0.569 |
| | (-0.942) | (-0.878) | (-1.664) | (-0.700) |
| *Lagged Market Adjusted Returns* | 0.292*** | 0.282*** | 2.332*** | 0.307*** |
| | (2.664) | (2.621) | (3.143) | (2.935) |
| Industry Effects | Yes | Yes | Yes | Yes |
| Year Effects | Yes | Yes | Yes | Yes |
| Clustered Standard Errors | Firm | Firm | Firm | Firm |
| Pseudo R-squared | 0.321 | 0.349 | 0.326 | 0.362 |
| Observations | 14,282 | 14,282 | 9,643 | 14,139 |

Notes: This table presents results of the relation between corporate culture and AAER. All variables are defined in Appendix A. z-statistics are in parentheses and adjusted for within cluster correlation by firm. *, **, and *** indicate significance at the two-tailed probability levels of 10%, 5%, and 1%, respectively.

**Panel B: First-stage Heckman regression**

| | (1) |
|---|---|
| Dependent Variable: | Glassdoor |
| *Intercept* | -2.184*** |
| | (-9.903) |
| *Size* | 0.160*** |
| | (34.967) |
| *Book-to-Market* | -0.142*** |
| | (-11.340) |
| *Growth* | -0.109*** |
| | (-4.053) |
| *ROA* | 0.256*** |
| | (9.513) |
| *Market Adjusted Returns* | 0.231*** |
| | (5.725) |
| *Employee Stock Options* | 0.004** |
| | (2.555) |
| Year Effects | Yes |
| Industry Effects | Yes |
| Cluster Standard Errors | Firm |
| Pseudo R-squared | 0.304 |
| Observations | 74,095 |

Notes: This table presents the Heckman first-stage regression results of the determinants of Glassdoor coverage. All variables are defined in Appendix A. z-statistics are in parentheses and adjusted for within cluster correlation by firm. *, **, and *** indicate significance at the two-tailed probability levels of 10%, 5%, and 1%, respectively.

**Panel C: Second-stage Heckman regression**

| | (1) | (2) | (3) | (4) |
|---|---|---|---|---|
| Dependent variable: | AAER | AAER | AAER | AAER |
| *Intercept* | -25.324** | -21.525** | -3.255** | -9.431*** |
| | (-2.279) | (-2.374) | (-2.283) | (-10.071) |
| *Job Satisfaction* | | -0.414*** | | |
| | | (-2.611) | | |
| *Culture & Values Rating* | | | -0.134*** | |
| | | | (-4.383) | |
| *Senior Leadership Rating* | | | | -0.399** |
| | | | | (-2.101) |
| *Real EM* | 0.069 | 0.324 | 0.251 | 0.209 |
| | (0.197) | (0.781) | (1.341) | (0.540) |
| *RSST Accruals* | 0.796*** | 0.826*** | 0.797** | 0.817*** |
| | (3.116) | (3.253) | (2.224) | (3.164) |
| *Size* | -0.052 | -0.111 | -0.055 | -0.109 |
| | (-0.468) | (-0.866) | (-0.771) | (-0.824) |
| *Book-to-Market* | 0.130 | 0.133 | 0.087* | 0.125 |
| | (1.395) | (1.544) | (1.697) | (1.533) |
| *Change in Receivables* | 5.177 | 4.349 | 0.497* | 8.928** |
| | (1.559) | (1.569) | (1.703) | (2.228) |
| *Change in Inventory* | 5.802 | 11.778 | 9.258** | 13.868* |
| | (1.429) | (1.368) | (2.472) | (1.665) |
| *Soft Assets* | 0.402 | 0.322 | -0.763* | 0.199 |
| | (0.619) | (0.506) | (-1.690) | (0.332) |
| *Change in Cash Sales* | 0.004 | -0.008 | -0.029*** | -0.008 |
| | (0.719) | (-0.469) | (-3.882) | (-0.489) |
| *Change in ROA* | 0.645 | 0.670 | 0.693*** | 0.566 |
| | (1.209) | (1.186) | (4.531) | (0.983) |
| *Change in Employment* | 0.391 | 0.310 | -0.035 | 0.342 |
| | (0.764) | (0.725) | (-0.097) | (0.815) |
| *Market Adjusted Returns* | -1.019 | -0.950 | 3.856* | -0.822 |
| | (-1.041) | (-1.003) | (1.761) | (-0.882) |
| *Lagged Market Adjusted Returns* | 0.274*** | 0.263*** | 2.361*** | 0.272*** |
| | (2.715) | (2.748) | (3.224) | (2.917) |
| *Lambda* | -1.361 | -1.819 | -1.320*** | -1.703 |
| | (-1.209) | (-1.480) | (-7.639) | (-1.336) |
| Industry Effects | Yes | Yes | Yes | Yes |
| Year Effects | Yes | Yes | Yes | Yes |
| Clustered Standard Errors | Firm | Firm | Firm | Firm |
| Pseudo R-squared | 0.372 | 0.318 | 0.346 | 0.377 |
| Observations | 14,282 | 14,282 | 9,643 | 14,139 |

**Table 4: Lead-lag analysis for the association between corporate culture and AAERs**

| Dependent variable: | (1) AAER | (2) AAER | (3) AAER | (4) AAER |
|---|---|---|---|---|
| *Intercept* | -6.020*** | -5.714*** | -7.114*** | -39.920*** |
| | (-7.164) | (-7.618) | (-10.282) | (-3.149) |
| *Job Satisfaction$_{t-1}$* | -0.320*** | | | -0.453*** |
| | (-4.522) | | | (-3.681) |
| *Job Satisfaction$_{t}$* | | -0.414*** | | -0.564*** |
| | | (-2.611) | | (-4.566) |
| *Job Satisfaction$_{t+1}$* | | | -0.107 | 0.009 |
| | | | (-0.900) | (0.031) |
| *Real EM* | -0.302 | 0.324 | 0.412** | 1.357*** |
| | (-0.873) | (0.781) | (1.963) | (4.981) |
| *RSST Accruals* | 0.757* | 0.826*** | -0.023 | -0.566 |
| | (1.702) | (3.253) | (-0.100) | (-0.852) |
| *Size* | -0.054 | -0.111 | -0.000 | -0.021 |
| | (-0.423) | (-0.866) | (-0.003) | (-0.118) |
| *Book-to-Market* | 0.049 | 0.133 | 0.069 | 0.124 |
| | (1.091) | (1.544) | (1.090) | (1.305) |
| *Change in Receivables* | 0.484** | 4.349 | 0.410* | 9.940** |
| | (2.256) | (1.569) | (1.873) | (2.159) |
| *Change in Inventory* | 24.991*** | 11.778 | 9.703* | 26.022** |
| | (3.927) | (1.368) | (1.661) | (2.281) |
| *Soft Assets* | 0.532* | 0.402 | 0.949* | 0.308 |
| | (1.802) | (0.619) | (1.715) | (0.360) |
| *Change in Cash Sales* | -0.005 | -0.008 | 0.003 | 0.016 |
| | (-0.255) | (-0.469) | (0.170) | (0.919) |
| *Change in ROA* | 0.751** | 0.670 | 0.373 | 1.953*** |
| | (2.274) | (1.186) | (1.076) | (3.361) |
| *Change in Employment* | 0.233 | 0.310 | 0.822** | 1.302** |
| | (0.615) | (0.725) | (2.402) | (2.206) |
| *Market Adjusted Returns* | 1.632** | -0.950 | -0.169 | 3.855*** |
| | (2.303) | (-1.003) | (-0.245) | (4.818) |
| *Lagged Market Adjusted* | 0.193* | 0.263*** | 0.264*** | 0.457*** |
| | (1.876) | (2.748) | (3.425) | (4.338) |
| *Lambda* | -1.154* | -1.819 | -0.526 | -3.641*** |
| | (-1.648) | (-1.480) | (-0.596) | (-2.749) |
| Industry Effects | Yes | Yes | Yes | Yes |
| Year Effects | Yes | Yes | Yes | Yes |
| Clustered Standard Errors | Firm | Firm | Firm | Firm |
| Pseudo R-squared | 0.336 | 0.318 | 0.230 | 0.528 |
| Observations | 12,484 | 14,282 | 14,691 | 10,929 |

**Table 5: Corporate culture and meeting or beating analysts' consensus**

| | (1) | (2) | (3) | (4) |
|---|---|---|---|---|
| Dependent variable: | Meet or Beat | Meet or Beat | Meet or Beat | Meet or Beat |
| *Intercept* | 0.084 | -0.175* | 0.299*** | 0.056 |
| | (0.887) | (-1.676) | (2.669) | (0.545) |
| *Job Satisfaction* | | -0.028** | | |
| | | (-2.056) | | |
| *Culture & Values rating* | | | -0.043*** | |
| | | | (-2.686) | |
| *Senior Leadership Rating* | | | | -0.010 |
| | | | | (-0.761) |
| *ROA* | 0.013 | 0.732*** | 0.500*** | 0.013 |
| | (0.938) | (6.130) | (4.648) | (0.924) |
| *Book-to-Market* | -0.158*** | 0.001 | -0.170*** | -0.156*** |
| | (-5.780) | (1.244) | (-4.309) | (-5.658) |
| *Size* | -0.001 | -0.006 | -0.006 | 0.002 |
| | (-0.163) | (-0.708) | (-0.619) | (0.273) |
| *Institutional Ownership* | 0.156*** | 0.100** | -0.009 | 0.155*** |
| | (3.774) | (2.440) | (-0.176) | (3.742) |
| *Sales Growth* | 0.293*** | 0.004 | 0.208*** | 0.310*** |
| | (5.954) | (0.794) | (3.572) | (6.144) |
| *Big 4 Auditor* | 0.001 | 0.019 | 0.002 | -0.027 |
| | (0.022) | (0.298) | (0.029) | (-0.404) |
| *Lambda* | -0.254*** | -0.162*** | -0.214*** | -0.250*** |
| | (-5.081) | (-3.121) | (-3.112) | (-4.976) |
| Industry Effects | Yes | Yes | Yes | Yes |
| Year Effects | Yes | Yes | Yes | Yes |
| Clustered Standard Errors | Firm | Firm | Firm | Firm |
| Pseudo R-squared | 0.028 | 0.022 | 0.028 | 0.028 |
| Observations | 14,282 | 14,282 | 9,643 | 14,139 |

Notes: This table presents the regression results of corporate culture and the likelihood of meet or beat analyst forecasts. All variables are defined in Appendix A. z-statistics are in parentheses and adjusted for within cluster correlation by firm. *, **, and *** indicate significance at the two-tailed probability levels of 10%, 5%, and 1%, respectively.

**Table 6: Corporate culture and abnormal accruals**

| Dependent variable: | (1) Abnormal Accruals | (2) Abnormal Accruals | (3) Abnormal Accruals | (4) Abnormal Accruals |
|---|---|---|---|---|
| *Intercept* | 0.160*** | 0.168*** | 0.279*** | 0.140*** |
| | (5.553) | (5.548) | (3.662) | (7.237) |
| *Job Satisfaction* | | -0.006** | | |
| | | (-1.993) | | |
| *Culture & Values Rating* | | | -0.004 | |
| | | | (-0.610) | |
| *Senior Leadership Rating* | | | | -0.003* |
| | | | | (-1.708) |
| *ROA* | -0.000 | -0.000 | -0.003 | 0.000 |
| | (-0.158) | (-0.130) | (-0.885) | (0.257) |
| *Book-to-Market* | -0.017*** | -0.001*** | -0.008 | -0.018*** |
| | (-3.555) | (-5.880) | (-0.467) | (-3.965) |
| *Size* | -0.000 | -0.000 | -0.002 | -0.000 |
| | (-0.085) | (-0.043) | (-0.476) | (-0.158) |
| *Institutional Ownership* | -0.048** | -0.051** | -0.062 | -0.038*** |
| | (-2.392) | (-2.551) | (-0.895) | (-3.768) |
| *Cash Flows* | -0.034 | -0.039 | -0.138 | 0.002 |
| | (-0.468) | (-0.543) | (-0.665) | (0.056) |
| *NOA* | -0.041*** | -0.041*** | -0.067** | -0.034*** |
| | (-3.805) | (-3.796) | (-2.125) | (-3.875) |
| *Profitable* | -0.004 | -0.002 | -0.010 | -0.003 |
| | (-0.829) | (-0.447) | (-0.903) | (-0.735) |
| *Big 4 Auditor* | 0.002 | 0.002 | 0.001 | 0.006 |
| | (0.168) | (0.116) | (0.032) | (0.550) |
| *Lambda* | 0.006 | 0.006 | -0.036 | 0.017 |
| | (0.373) | (0.366) | (-0.773) | (1.410) |
| Firm Effects | Yes | Yes | Yes | Yes |
| Year Effects | Yes | Yes | Yes | Yes |
| Clustered Standard Errors | Firm | Firm | Firm | Firm |
| Observations | 13,237 | 13,237 | 7,192 | 13,134 |
| Adjusted R-squared | 0.588 | 0.589 | 0.648 | 0.579 |

Notes: This table presents the regression results of corporate culture and abnormal accruals. All variables are defined in Appendix A. t-statistics are in parentheses and adjusted for within cluster correlation by firm. *, **, and *** indicate significance at the two-tailed probability levels of 10%, 5%, and 1%, respectively.

**Table 7: Corporate culture and AAERs for centralized and non-centralized firms**

| | (1) | (2) | (3) | (4) | (5) | (6) |
|---|---|---|---|---|---|---|
| Sample: | More centralized | Less centralized | More centralized | Less centralized | More centralized | Less centralized |
| Dependent variable: | AAER | AAER | AAER | AAER | AAER | AAER |
| *Intercept* | -5.227*** | -1.936* | -8.339*** | -1.684*** | -4.808*** | -2.204* |
| | (-8.599) | (-1.868) | (-7.061) | (-3.368) | (-5.818) | (-1.863) |
| *Job Satisfaction* | -0.734*** | -0.246* | | | | |
| | (-3.521) | (-1.844) | | | | |
| *Culture & Values Rating* | | | -0.612*** | -0.153*** | | |
| | | | (-3.973) | (-4.838) | | |
| *Senior Leadership Rating* | | | | | -0.612*** | -0.139 |
| | | | | | (-3.687) | (-1.067) |
| *Real EM* | 1.392*** | 0.190 | 0.234 | 0.374*** | 0.447 | 0.219* |
| | (2.631) | (1.426) | (0.267) | (5.304) | (0.657) | (1.869) |
| *RSST Accruals* | 0.763 | 0.094 | 0.427 | 0.361** | 0.269 | -0.097 |
| | (1.058) | (0.401) | (1.054) | (2.016) | (0.654) | (-0.303) |
| *Size* | 0.217*** | -0.084 | 0.154*** | -0.177*** | 0.075 | -0.094 |
| | (5.467) | (-0.705) | (3.536) | (-7.255) | (1.296) | (-0.751) |
| *Book-to-Market* | 0.150 | 0.107 | -0.114 | 0.099** | -0.032 | 0.091 |
| | (1.309) | (1.442) | (-1.542) | (2.083) | (-0.384) | (1.259) |
| *Change in Receivables* | 0.149 | -0.734 | -1.843** | -0.584 | 8.125** | -0.389 |
| | (1.007) | (-0.846) | (-1.983) | (-0.613) | (2.169) | (-0.324) |
| *Change in Inventory* | 26.779*** | -2.963 | 3.579 | 0.540 | 25.546*** | -3.146 |
| | (3.760) | (-1.444) | (1.558) | (0.794) | (3.836) | (-1.595) |
| *Soft Assets* | -2.079** | -0.037 | -4.816*** | -0.368*** | 2.637*** | 0.022 |
| | (-2.092) | (-0.144) | (-4.041) | (-3.131) | (2.682) | (0.087) |
| *Change in cash sales* | -0.014 | -0.001 | -0.068*** | -0.148 | 0.028** | 0.123 |
| | (-1.607) | (-0.103) | (-4.962) | (-0.437) | (2.412) | (0.357) |
| *Change in ROA* | 0.177 | 1.127*** | -0.025 | 1.110*** | 0.277* | 0.884*** |
| | (0.196) | (3.300) | (-0.196) | (4.131) | (1.810) | (3.698) |
| *Change in Employment* | 0.349 | 1.251* | 0.911 | -0.054 | 0.056 | 1.304** |
| | (0.901) | (1.943) | (1.098) | (-0.229) | (0.142) | (2.190) |
| *Market Adjusted Returns* | -0.470 | -0.794 | -1.900 | 2.075*** | -0.403 | -0.751 |
| | (-0.429) | (-1.127) | (-1.604) | (6.535) | (-0.572) | (-1.054) |
| *Lagged Market Adjusted Returns* | 0.223 | 0.847*** | 2.755*** | 1.874*** | 0.139 | 0.552*** |
| | (0.576) | (2.633) | (3.284) | (7.704) | (0.839) | (3.581) |
| *Lambda* | 0.022 | -0.260 | 1.662*** | -1.208*** | 0.383 | -0.253 |
| | (0.043) | (-0.450) | (2.978) | (-5.842) | (1.003) | (-0.427) |
| Industry Effects | Yes | Yes | Yes | Yes | Yes | Yes |
| Year Effects | Yes | Yes | Yes | Yes | Yes | Yes |
| Clustered Standard Errors | Firm | Firm | Firm | Firm | Firm | Firm |
| Pseudo R-squared | 0.43 | 0.23 | 0.42 | 0.21 | 0.35 | 0.17 |
| Observations | 6,445 | 6,376 | 4,525 | 4,386 | 6,581 | 6,622 |

**Table 8: Corporate culture and AAERs for firms with low (high) board independence.**

| | (1) | (2) | (3) | (4) | (5) | (6) |
|---|---|---|---|---|---|---|
| Board independence | Low | High | Low | High | Low | High |
| Dependent Variable: | AAER | AAER | AAER | AAER | AAER | AAER |
| *Intercept* | -2.029 | -0.050 | 6.569*** | -3.409*** | -2.469 | -0.340 |
| | (-1.079) | (-0.038) | (2.593) | (-3.511) | (-1.297) | (-0.290) |
| *RSST Accrual* | -0.218 | 0.812 | -4.477** | 2.184 | -0.224 | 0.873 |
| | (-0.709) | (1.306) | (-2.393) | (1.272) | (-0.840) | (1.058) |
| *Job Satisfaction* | -0.703*** | -0.127 | | | | |
| | (-5.812) | (-0.673) | | | | |
| *Culture & Values Rating* | | | -0.562*** | -0.415** | | |
| | | | (-2.852) | (-2.401) | | |
| *Senior Leadership Rating* | | | | | -0.675*** | -0.112 |
| | | | | | (-4.841) | (-0.745) |
| *Real EM* | 0.026 | 1.782*** | 0.751*** | 0.042 | 0.030 | 1.879*** |
| | (0.236) | (3.456) | (2.678) | (0.213) | (0.273) | (4.706) |
| *Size* | 0.018 | -0.409 | -1.002*** | -0.173** | 0.025 | -0.409* |
| | (0.102) | (-1.595) | (-4.120) | (-2.525) | (0.152) | (-1.735) |
| *Book-to-Market* | 0.012 | 0.444*** | 1.039*** | 0.710*** | -0.056 | 0.516*** |
| | (0.048) | (3.301) | (3.971) | (3.488) | (-0.226) | (4.210) |
| *Change in Receivable* | 0.603 | 7.088*** | 23.731 | 3.612** | 0.818 | 6.889*** |
| | (0.327) | (4.042) | (0.789) | (2.136) | (0.468) | (3.785) |
| *Change in Inventory* | -0.208 | 17.917*** | 22.973*** | 8.605* | -0.202 | 16.570*** |
| | (-0.757) | (3.831) | (2.817) | (1.906) | (-0.713) | (2.858) |
| *Soft Assets* | -1.235** | 0.468** | 0.207 | -2.506*** | -1.212* | 0.447* |
| | (-1.979) | (2.072) | (0.447) | (-3.160) | (-1.890) | (1.696) |
| *Change in cash sale* | 0.023 | -0.077** | 0.078 | -0.113*** | -0.063 | -0.075*** |
| | (0.578) | (-2.518) | (0.124) | (-4.688) | (-0.078) | (-2.635) |
| *Change in ROA* | 0.994 | 0.706** | 11.529*** | 1.351*** | 1.217** | 0.711** |
| | (1.426) | (2.330) | (4.877) | (4.328) | (2.035) | (2.310) |
| *Change in Employment* | 0.547** | 0.899*** | -0.975 | 0.319 | 0.297 | 1.004*** |
| | (2.304) | (4.416) | (-1.266) | (0.380) | (1.260) | (4.223) |
| *Market adjusted return* | -1.730 | -0.786 | 4.952*** | -0.142 | -1.536 | -0.291 |
| | (-1.603) | (-0.619) | (2.645) | (-0.549) | (-1.411) | (-0.211) |
| *Lagged Market adjusted return* | 1.371*** | -0.978 | 2.695** | 11.943*** | 1.395*** | -0.578 |
| | (7.241) | (-1.444) | (2.075) | (4.416) | (8.204) | (-0.965) |
| *Lambda* | -0.440 | -0.805 | -6.207*** | -2.671*** | -0.164 | -0.887 |
| | (-0.600) | (-1.159) | (-3.689) | (-3.397) | (-0.222) | (-1.458) |
| Industry Effects | Yes | Yes | Yes | Yes | Yes | Yes |
| Year Effects | Yes | Yes | Yes | Yes | Yes | Yes |
| Clustered Standard Errors | Firm | Firm | Firm | Firm | Firm | Firm |
| Pseudo R-squared | 0.271 | 0.402 | 0.5 | 0.463 | 0.263 | 0.401 |
| Observations | 3,653 | 3,645 | 2,321 | 2,457 | 3,541 | 3,537 |

Notes: This table presents the regression results of corporate culture and AAER for firms with low (high) board independence. All variables are defined in Appendix A. z-statistics are in parentheses and adjusted for within cluster correlation by firm. *, **, and *** indicate significance at the two-tailed probability levels of 10%, 5%, and 1%, respectively.

**Table 9: Corporate culture, abnormal accruals, and AAERS**

| | (1) | (2) |
|---|---|---|
| Sample: | Low Accruals | High Accruals |
| Dependent Variable: | AAER | AAER |
| *Intercept* | -6.211*** | -6.356*** |
| | (-4.575) | (-5.898) |
| *Job Satisfaction* | -0.413** | -0.399** |
| | (-2.134) | (-2.278) |
| *Size* | -0.163 | 0.342*** |
| | (-1.123) | (8.206) |
| *Book-to-Market* | 0.217 | 0.009 |
| | (1.124) | (0.211) |
| *RSST Residuals Level:* | -0.277 | 0.473 |
| | (-0.403) | (1.601) |
| *Change in Receivables* | 11.474** | 1.687 |
| | (2.163) | (1.057) |
| *Change in Inventory* | 18.536** | 8.008* |
| | (2.106) | (1.658) |
| *Soft Assets* | -1.034 | -1.030*** |
| | (-1.364) | (-3.807) |
| *Change in Cash Sales* | 0.001 | -0.010* |
| | (0.584) | (-1.675) |
| *Change in ROA* | 0.185 | 0.006 |
| | (0.320) | (1.444) |
| *Change in Employment* | -1.489* | 0.121 |
| | (-1.756) | (0.720) |
| *Market Adjusted Returns* | 0.101 | 4.267* |
| | (0.143) | (1.748) |
| *Lagged Market Adjusted Returns* | 0.322*** | -0.086 |
| | (3.316) | (-0.266) |
| *Lambda* | -0.952 | -0.034 |
| | (-0.790) | (-0.071) |
| Year Effects | Yes | Yes |
| Industry Effects | Yes | Yes |
| Cluster Standard Errors | Firm | Firm |
| Pseudo R-squared | 0.357 | 0.321 |
| Observations | 6,344 | 6,343 |

Notes: This table presents the regression results of corporate culture and AAER under different levels of abnormal accruals. All variables are defined in Appendix A. z-statistics are in parentheses and adjusted for within cluster correlation by firm and product code. *, **, and *** indicate significance at the two-tailed probability levels of 10%, 5%, and 1%, respectively.

**Table 10: Corporate culture and AAERs, controlling for employee benefits**

| | (1) | (2) | (3) | (4) |
|---|---|---|---|---|
| Dependent variable: | AAER | AAER | AAER | AAER |
| *Intercept* | -12.060*** | -11.447*** | -3.143** | -10.628*** |
| | (-7.861) | (-5.384) | (-2.214) | (-8.293) |
| *Job Satisfaction* | | -0.396*** | | |
| | | (-2.963) | | |
| *Culture & Values Rating* | | | -0.240*** | |
| | | | (-3.696) | |
| *Senior Leadership Rating* | | | | -0.394** |
| | | | | (-2.503) |
| *Employee Benefits* | -0.002 | -0.008 | -0.251** | -0.001 |
| | (-0.037) | (-0.145) | (-2.473) | (-0.017) |
| *Real EM* | 0.792*** | 1.040*** | 0.943* | 1.002*** |
| | (3.856) | (3.568) | (1.903) | (3.633) |
| *RSST Accruals* | -0.094 | 0.141 | 0.677 | 0.092 |
| | (-0.372) | (0.445) | (1.391) | (0.324) |
| *Size* | -0.033 | -0.004 | -0.269*** | -0.006 |
| | (-0.291) | (-0.028) | (-4.574) | (-0.046) |
| *Book-to-Market* | 0.088 | 0.077 | 0.245** | 0.081 |
| | (0.924) | (0.908) | (2.111) | (0.966) |
| *Change in Receivables* | 10.140*** | 6.884** | 1.839 | 10.355** |
| | (2.691) | (2.193) | (1.551) | (2.508) |
| *Change in Inventory* | 6.366* | 14.998* | 7.211 | 15.024* |
| | (1.762) | (1.722) | (1.478) | (1.755) |
| *Soft Assets* | 0.331 | -0.108 | -1.493** | 0.064 |
| | (0.533) | (-0.179) | (-2.309) | (0.112) |
| *Change in Cash Sales* | -0.018 | -0.015 | -0.039*** | 0.017 |
| | (-0.962) | (-0.814) | (-3.697) | (0.874) |
| *Change in ROA* | 0.729 | 0.823 | 2.349*** | 0.776 |
| | (1.302) | (1.443) | (2.779) | (1.430) |
| *Change in Employment* | 0.949 | 1.067** | -0.294 | 0.993* |
| | (1.583) | (1.968) | (-0.722) | (1.656) |
| *Market Adjusted Returns* | -1.153 | -1.161 | 5.024** | -0.962 |
| | (-1.216) | (-1.157) | (2.025) | (-1.009) |
| *Lagged Market Adjusted Returns* | 0.301*** | 0.345*** | 5.265*** | 0.335*** |
| | (2.608) | (3.102) | (3.015) | (3.018) |
| *Lambda* | -1.183 | -1.523 | -6.117*** | -1.438 |
| | (-1.092) | (-1.334) | (3.990) | (-1.203) |
| Industry Effects | Yes | Yes | Yes | Yes |
| Year Effects | Yes | Yes | Yes | Yes |
| Cluster Standard Errors | Firm | Firm | Firm | Firm |
| Pseudo R-squared | 0.296 | 0.346 | 0.456 | 0.346 |
| Observations | 7,037 | 7,037 | 3,249 | 7,007 |

**Table 11: Corporate culture and securities class action lawsuits**

| | (1) | (2) | (3) | (4) |
|---|---|---|---|---|
| Dependent Variable: | Class | Class | Class | Class |
| *Intercept* | -2.294*** | -2.186*** | -1.929*** | -2.128*** |
| | (-14.952) | (-13.205) | (-8.796) | (-12.458) |
| *RSST Accrual* | 0.153 | 0.155 | 0.402 | 0.106 |
| | (0.329) | (0.333) | (1.038) | (0.233) |
| *Job Satisfaction* | | -0.037*** | | |
| | | (-2.810) | | |
| *Culture & Values Rating* | | | -0.062** | |
| | | | (-2.470) | |
| *Senior Leadership Rating* | | | | -0.053*** |
| | | | | (-4.181) |
| *Real EM* | 0.153*** | 0.156*** | 0.138*** | 0.155*** |
| | (3.671) | (3.762) | (2.792) | (3.709) |
| *Size* | 0.045*** | 0.047*** | 0.011 | 0.046*** |
| | (2.638) | (2.802) | (0.652) | (3.158) |
| *Book-to-Market* | 0.003 | 0.003 | 0.005 | 0.003 |
| | (1.162) | (1.155) | (0.132) | (1.290) |
| *Change in Receivable* | -0.429 | -0.433 | -0.279 | -0.284 |
| | (-0.869) | (-0.876) | (-0.526) | (-0.734) |
| *Change in Inventory* | -0.080*** | -0.080*** | 4.816* | -0.081*** |
| | (-6.535) | (-6.542) | (1.708) | (-7.264) |
| *Soft Assets* | 0.147* | 0.156* | 0.163* | 0.166** |
| | (1.873) | (1.943) | (1.784) | (2.116) |
| *Change in cash sale* | -0.005 | -0.005 | -0.003 | 0.004 |
| | (-0.854) | (-0.867) | (-0.598) | (0.731) |
| *Change in ROA* | -0.092 | -0.097 | -0.147 | -0.072 |
| | (-1.404) | (-1.519) | (-1.547) | (-0.913) |
| *Change in Employment* | 0.253** | 0.252** | 0.029 | 0.447 |
| | (2.243) | (2.258) | (0.093) | (1.003) |
| *Market adjusted return* | -0.098 | -0.090 | 0.040 | -0.193 |
| | (-0.417) | (-0.391) | (0.154) | (-0.729) |
| *Lagged Market adjusted return* | 0.439*** | 0.443*** | 0.473*** | 0.450*** |
| | (3.067) | (3.114) | (3.140) | (3.190) |
| *Lambda* | -0.161 | -0.159 | -0.280 | -0.176* |
| | (-1.611) | (-1.567) | (-1.472) | (-1.790) |
| Industry Effects | Yes | Yes | Yes | Yes |
| Year Effects | Yes | Yes | Yes | Yes |
| Clustered Standard Errors | Firm | Firm | Firm | Firm |
| Pseudo R-squared | 0.039 | 0.04 | 0.038 | 0.036 |
| Observations | 14,282 | 14,282 | 9,643 | 14,139 |

Notes: This table presents the regression results of corporate culture and the likelihood that a firm is a defendant in a securities class action lawsuit. All variables are defined in Appendix A. z-statistics are in parentheses and adjusted for within cluster correlation by firm. *, **, and *** indicate significance at the two-tailed probability levels of 10%, 5%, and 1%, respectively.