

Unraveling Financial Fraud: The Role of the Board of Directors and External Advisors in Conducting Internal Investigations

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ABSTRACT: When faced with allegations of wrongdoing, the Securities and Exchange Commission (SEC) and Department of Justice (DOJ) encourage firms to cooperate by engaging independent leaders and external advisors to conduct internal investigations, and this study examines the role of these parties on investigation outcomes. After controlling for investigation leader determinants, we find that firms whose internal investigations are led by independent teams are more likely to retain outside advisors, have a 38% higher likelihood of CEO turnover, face a 36% lower likelihood of an SEC sanction, and receive smaller SEC fines. The independent leader's effect on CEO turnover and SEC enforcement is partially mediated by the involvement of external advisors. Our findings extend prior work by demonstrating that the SEC rewards cooperation, and they suggest that appointing independent groups to lead internal investigations protects the firm, at the expense of the CEO, following accounting fraud.

Keywords: Internal Investigation, Board of Directors, Audit Committee, Corporate Governance, Executive Turnover, Restatements, Irregularities, SEC Enforcement, Cooperation

JEL Classifications: G32, G14

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1. Introduction

For companies facing serious allegations of misconduct, the Securities and Exchange Commission (SEC) and the Department of Justice (DOJ) have long lauded internal investigations as an integral factor in their decision to offer enforcement leniency to cooperative firms (Ceresney 2015). However, regulators have emphasized that simply performing an internal investigation is not enough to warrant leniency; rather, it is *how* the investigation is conducted that matters—specifically, whether certain parties are involved, such as an independent investigation leader and external counsel (SEC 2001; Caldwell 2015). This study seeks to deepen our understanding of the internal investigation process by identifying the participants that manage and conduct the investigation and then exploring the impact of these participants on two outcomes of financial misconduct: chief executive officer (CEO) turnover and SEC enforcement.

Academic research on corporate internal investigations, which is relatively new, finds that firms conducting an investigation may be more likely to be sanctioned by the SEC compared to those without investigations (Files 2012; Leone, Li, and Liu 2020) and that internal investigations are only weakly associated with regulators' granting of cooperation credit (Files, Martin, and Rasmussen, 2019). We build upon and extend the findings of prior research by focusing *only* on firms that conduct an internal investigation to analyze whether variation in investigation team composition affects financial misconduct outcomes.

We examine 526 accounting irregularity announcements made between 1995 and 2017 in which the firm publicly discloses the initiation of an internal investigation.¹ We find that the

¹ As defined in Hennes, Leone, and Miller (2008), accounting irregularities are a subset of accounting restatements that represent relatively severe misstatement of previously recorded earnings. We use the words “irregularity” and “restatement” interchangeably throughout the text to refer to our sample of severe misreporting issues.

typical internal investigation begins with the firm choosing an investigation leader. In our sample, 40.9% designate the audit committee (AC) as leader, while 10.4% appoint a special committee (SC) comprised of independent board members, and 0.4% disclose the board as leader. Collectively, we consider the aforementioned investigations (51.7% of sample) to be led by *independent* teams, and they are more often assigned as leader when the AC has prior accounting or finance work experience, the CEO has a certified public accountant (CPA) designation, the market consequences of the misconduct are more severe, and the restatement involves stock option backdating allegations, revenue recognition problems, and issues related to foreign entities or related parties. The remaining 48.3% of our sample uses non-independent teams, such as management, to lead the investigation.

Once appointed, the leader then decides whether to retain external advisors, such as legal counsel and/or forensic accountants, which serve complementary roles on the investigation team. Legal counsel coordinates strategy, protects information, stays apprised of legal and regulatory consequences, and assists with document review and witness interviews. Forensic accountants generally analyze financial records, trace misappropriated funds or assets, and assist with asset recovery efforts (Pomerantz and Kim 2019). In our sample, 35.0% of firms hire at least one advisor, and the likelihood of hiring an advisor is higher when the investigation leader is independent or the misconduct is more severe.

Next, we evaluate the association between the investigation participants and two key investigation outcomes: the probability of CEO turnover and SEC enforcement outcomes. Since the simultaneous involvement of investigation leaders and one or more external advisors naturally raises questions about endogeneity, we employ a bivariate probit model (for the outcome tests) and mediation tests (to disentangle each party's effect) (see Section 6).

We examine CEO turnover in the one-year window centered on the accounting irregularity announcement. We find that CEO turnover likelihood is 38.8% higher when the investigation leader is independent and 62.5% (and 7.2%) higher when law advisors (and accounting advisors), respectively, are involved. In our next analysis, we examine the likelihood of the firm being named as a respondent in an SEC enforcement action. The chance of an SEC enforcement action is 36.0% lower when irregularity firms use an independent investigation leader, but we find no association between SEC enforcement likelihood and legal or accounting advisors. In both outcome tests involving CEO turnover and SEC enforcement, we find some evidence of partial mediation from the external advisor variables in the relationship between independent leader and outcomes.

Finally, conditional on the firm being named as a respondent in an SEC enforcement action (21% of the sample), we find that monetary penalties assessed against the firm are significantly lower when an independent leader or accounting advisor manages the investigation. Our enforcement findings are consistent with the SEC rewarding firms that conduct independent-led investigations. Collectively, our results suggest that the use of independent leaders and external advisors in the internal investigation process protects the firm (through regulatory leniency) at the expense of the individual (through CEO turnover).

This study makes several contributions to the extant literature. First, there is limited empirical evidence on the board's role in resolving financial reporting problems *after* fraud is detected.² We use our hand-collected dataset to identify instances in which the AC, SC, or board (rather than management) leads the internal investigation and therefore directly manages the

² Prior research has examined the role of the board of directors in *preventing* financial reporting problems such as restatements and internal control weaknesses (e.g., Beasley 1996; Abbott et al. 2004; Hoitash et al. 2009). Two noteworthy exceptions are Keune and Johnstone (2012) and Schmidt and Wilkins (2013), who examine the role of the AC in determining the materiality of misstatements and the timeliness with which restatement details are announced, respectively.

resolution of fraud. We urge future research to specifically identify the investigation leader to establish the party that has primary authority over restatement outcomes.

Second, our findings build upon prior research, which finds that regulatory enforcement is triggered by the firm's announcement of an internal investigation (Karpoff, Koester, Lee, and Martin 2017) and that conducting these investigations does not necessarily result in regulatory leniency (Files 2012; Files et al. 2019; Leone et al. 2020). We extend these studies by examining a different aspect of cooperation – the composition of the internal investigation team. After controlling for endogeneity, we see that the SEC exercises enforcement leniency towards firms that use independent investigation leaders and hire forensic accounting firms, which implies that the SEC staff was satisfied with the way these internal investigations were conducted. Boards of misreporting firms should find this evidence useful when weighing the costs and benefits of appointing independent leaders and hiring external advisors.

Finally, the evidence in our paper answers the call in Leone and Liu (2010, p. 290) for additional research into the “level of independence involved in the investigatory process” and its impact on executive turnover. We find that greater (lesser) independence by the investigatory team is associated with more severe (less severe) outcomes for the CEO.

Our results are subject to several caveats. First, due to potential endogeneity in the choice of investigation team, our research design cannot establish whether the investigation participants directly cause specific outcomes. Reverse causality may be particularly relevant in our CEO turnover tests because the board may anticipate the departure of the CEO and assign an independent leader to maintain the appearance of objectivity. Our use of a bivariate probit model is intended to mitigate this issue, although we cannot rule it out. Second, we rely on corporate disclosures to identify investigation leaders and the presence or absence of external advisors. If corporate disclosures are factually incorrect, intentionally vague, or non-existent, our sample

classification of leaders and advisors may be incorrect or understated. Third, there may be fundamental differences between firms that conduct an internal investigation and those that do not, and our study is not designed to identify those differences. Finally, due to our relatively small hand-collected sample, our tests may lack sufficient power to observe all the hypothesized effects.

2. Background on internal investigations and related literature

The impact of regulation on internal investigations

An internal investigation is an inquiry conducted by, or on behalf of, a company to discover facts pertaining to corporate misconduct (Duggin 2003). The first wide-spread use of corporate internal investigations began following the SEC's voluntary disclosure program in the 1970s. Under this program, more than 400 U.S. companies established special committees of independent board members to internally investigate allegations of corporate corruption and bribery, with the expectation that the firm would be rewarded by the SEC with either the complete avoidance of an enforcement action or a reduction in assessed penalties.

In the years since, the SEC and DOJ have continued to promote internal investigations as a means through which firms can receive enforcement leniency. Most notably, the SEC issued what is commonly referred to as the Seaboard Report in 2001, which lists internal investigations as one factor the SEC will consider when deciding on enforcement outcomes:

*“Did the company commit to learn the truth, fully and expeditiously? Did it do a **thorough review** of the nature, extent, origins, and consequences of the conduct and related behavior? **Did management, the Board or committees consisting solely of outside directors** oversee the review? Did company employees or **outside persons perform the review**? If outside persons, had they done other work for the company? Where the review was conducted by **outside counsel**, had management previously engaged such counsel? [emphasis added]”*

A number of speeches by SEC and DOJ enforcement officials have further clarified regulators' position regarding internal investigations, namely that “the independence of the investigation [is]

crucial to its credibility (Thomsen 2007, para. 20),” and there is “no bright line that says you cannot use internal staff to conduct the investigation, but the devil’s in the details. Typically, we prefer to see someone brought in who [is] independent [and] not employed by the company or its counsel (McTague 2007).” In a 2015 speech, Leslie Caldwell (Assistant Attorney General, DOJ) also discussed the “hallmarks of [a] good investigation,” one of which is that investigations should be “independent and designed to uncover the facts (Caldwell 2015, para. 11).” Although Caldwell acknowledged that “there is no ‘off the rack’ internal investigation that can be applied to every situation at every company” (Caldwell 2015, para. 11), she warns that regulators will “pressure test a company’s internal investigation...and will consider the adequacy of an internal investigation when evaluating a company’s claim of cooperation (Caldwell 2015, para 14).”

In addition to regulators’ preferences, the Sarbanes-Oxley (SOX) Act in 2002 and Dodd-Frank Wall Street Reform and Consumer Protection Act in 2010 imposed a number of new measures designed to enhance corporate honesty and accountability. SOX mandated, for the first time, the certification of financial statements by the CEO and CFO (SOX § 302, 15 USC 7241). The law also directly impacted internal investigations by (1) requiring ACs to develop procedures to receive and investigate complaints of financial fraud and (2) empowering ACs to hire independent experts to help fulfill such duties (SOX § 301, 15 USC 78j-1). Dodd-Frank’s effect on investigations was indirect; it expanded whistleblower protections and increased civil and criminal penalties for securities law violations, all of which dramatically increased the legal costs associated with a failure to thoroughly investigate corporate misconduct.³

The investigation process: Initiating an internal investigation

³ Most notably, Dodd-Frank in 2010 authorized the SEC to impose civil monetary penalties against entities and individuals in an administrative proceeding, as opposed to federal court. Moreover, it established the SEC’s Whistleblower Program that provides payouts for whistleblowers who voluntarily provide information to the SEC about securities law violations. The SEC explicitly states that it will factor in the company’s internal response to whistleblower allegations when deciding whether to pursue an enforcement action against the firm.

While regulators have discussed the importance of internal investigations, they do not mandate whether or how firms conduct their internal investigation. Several academic studies have focused on whether or not an investigation occurs following allegations of financial misconduct and examine its effect on SEC enforcement. Files (2012) and Leone et al. (2020) find that the likelihood of an SEC sanction is significantly *higher* for the 10% and 29%, respectively, of restatement firms in their sample that publicly disclose an internal investigation. Using a sample of firms subject to SEC or DOJ enforcement, Files et al. (2019) also find that the choice to conduct an internal investigation is not a leading predictor of receiving cooperation credit from regulators. These results are consistent with regulators' claims that simply performing an internal investigation is not enough to warrant enforcement leniency (Caldwell 2015; Ceresney 2015). These studies also find mixed evidence on the relation between internal investigations and firm monetary penalties, which may be due to differing sample periods and models. Files (2012), and Files et al. (2019), find that during 1997-2005, and 1977-2014, respectively, internal investigations reduce firm monetary penalties, consistent with the SEC and DOJ rewarding these behaviors. Leone et al. (2020), however, find that internal investigations in 2002-2014 are associated with increased penalties.

Our paper extends—but is distinct from—prior studies because we examine *only* those firms that conduct an internal investigation following a restatement. This fundamental difference in research design precludes us from replicating the results in Files (2012), Leone et al. (2020), or Files et al. (2019). To our knowledge, the only other study to examine investigation participants is Hogan et al. (2015), who find that AC member litigation risk is not affected by their participation in an internal investigation following a restatement.

The investigation process: Investigation leaders and external advisors

After deciding to conduct an internal investigation, the board assigns a team to lead the investigation and oversee the collection of evidence. In assigning the leader, the primary concern is ensuring that the investigation is not unduly influenced by individuals with conflicting interests in the outcome of the case (Rossiter and Williams 2006). For instance, allegations that potentially implicate members of the senior leadership team, or hint at lax oversight at the company, should be investigated by outside professionals, such as independent board members.⁴

After being appointed, the leader must decide whether to hire an external advisory firm to aid in the investigation.⁵ While the firm may save money by not hiring outside help, having an external advisor to collect and report evidentiary facts can be vital to the integrity of the investigation. External legal counsel and forensic accounting advisors each provide distinct services to their clients. Many law firms have specialized units, often led by former government enforcement officials, that conduct internal investigations. These legal advisors are experts in (1) developing a comprehensive strategy for the company to defend itself against legal and regulatory risks; (2) gathering information through interviews and document review; and (3) interpreting this information in court, the boardroom, or other legal venues (Missal et al. 2015). More importantly, the involvement of legal advisors also preserves the confidentiality of evidence through attorney-client privilege.

⁴ We asked four experts in the field of internal investigations to describe their ideal leadership team for an internal investigation. The current and past job titles of these four individuals include Partner in Forensics and Investigations at a Big 4 accounting firm, AC chairperson, SEC Enforcement Assistant Chief Accountant, Managing Director of Forensic Accounting, and Chief Ethics and Compliance Officer. During our interviews, one interviewee suggested that “managers prefer to keep the issue contained and would, of course, prefer the job to stay with management and not the Board.” Another countered that the “best practice is for the AC or SC to take the lead in the investigation.” However, s/he was quick to add that “every case is unique.” Finally, a third interviewee reiterated that “the leading practice is that the AC or relevant Board committee will be the owner of the investigation [and] they will then hire outside counsel.”

⁵ As an alternative explanation, we explore the possibility that the hiring of external advisors is *mandated* by certain provisions in AC charters, rather than being a voluntary decision by the board. To address this concern, we obtain the audit charters for a random sample of 25 irregularity firms and document multiple cases in which (1) the audit charter states that the AC has the authority to hire external advisors, but no external advisor was hired; and (2) the audit charter did not mention such authority, but an external advisor was hired. We conclude that despite the audit charter provisions, the hiring of external advisors is a choice made by the board.

In contrast, forensic accounting advisors use their expertise to tailor the collection of evidence to the specific accounting issue at hand. They often focus on the analysis of financial records, trace misappropriated funds or assets, and gain a broad understanding of the accounting systems and business processes that facilitated the misconduct. Luis Aguilar, former SEC Commissioner, said this about forensic accountants:

“Accountants in the private sector are an important component to pursuing violations of the securities laws. This is particularly true of forensic accountants. The expertise to undertake corporate internal investigations of accounting fraud...is a necessary skill in today’s world of complicated financial transactions (Aguilar 2009, para 3).”

Although Section 301 of SOX empowers the AC or other relevant board committee to directly hire both external legal counsel and forensic accountants, our reading of corporate disclosures suggests that it is more common for hired external legal counsel to then retain forensic accountants to ensure all work is captured under attorney-client privilege. This was confirmed anecdotally by one interviewee, who told us, “It is reasonable that the audit committee directly hires the forensic accountants, but I would consider that the exception, not the rule.”

The investigation process: Collection of evidence and concluding report

Once in place, the investigative team collects evidence to determine the nature and severity of the misconduct. We find that only 20 firms out of our sample of 526 disclose the specific procedures performed during their investigation (which include interviews with individuals, document review of millions of pages, in some cases, and email review) perhaps because of the confidential nature of the information. At its conclusion, the investigation leader submits a report to the board summarizing the findings of the internal investigation. The leader and the board then collectively decide what remedial actions (if any) to take.

3. Hypothesis Development

The objective of this study is to determine if variation in investigation team composition affects financial misconduct outcomes. Because this is a new dataset and a new analysis, we do

not have economic arguments to motivate formal hypotheses for the determinants of the board's choice (to use independent leaders and external advisors). Although the determinants portion is descriptive in nature, we discuss at length our empirical model (see Section 5). Our formal hypotheses focus on how the use of independent leaders or external advisors in the investigation may be associated with the outcomes of CEO turnover or SEC enforcement.

CEO turnover likelihood

Prior research has shown that CEO turnover rates are statistically and economically higher following restatement announcements compared to non-restatement firms (Desai et al. 2006; Hennes et al. 2008; Leone and Liu 2010). An implicit assumption in these studies is that the evidence uncovered in an investigation implicates the CEO, and the board takes actions that result in CEO departure. We envision that the burden is on the investigative team to find evidence that justifies CEO termination,⁶ and different teams may be more or less likely to recommend CEO turnover after an accounting irregularity.

We propose two reasons for why internal investigations led by independent leaders may be associated with higher CEO turnover rates: thoroughness and objectivity. First, independent leaders may perform more thorough investigations because they are outside the firm and not hindered by the day-to-day activities of the business. As a result, these teams may be more agile in their ability to monitor the investigation and adjust the scope as new evidence is uncovered. Moreover, some independent board members are familiar with the internal investigation process from personal or general industry experience, particularly those with a background in law or accounting/finance, which should result in a more thorough investigation.

⁶ As researchers, we can observe CEO turnover rates but cannot draw conclusions about the guilt or innocence of the terminated individual. This remains a limitation of our study. However, given that CEOs are responsible for the accuracy and fairness of financial statements (SOX § 302, 15 USC 7241), a maintained assumption in our study is that the CEO either knew (or should have known) about the misstatement. We then study whether the board holds the CEO responsible by taking actions that result in CEO departure.

Second, independent leaders may be more objective in their review of the evidence and their decision to hold the CEO accountable for the irregularity than non-independent leaders. This argument suggests that (1) the presence of incriminating evidence will prompt independent investigation leaders to terminate the CEO, regardless of any personal ties; and/or (2) independent investigation leaders are more apt to use CEO turnover as a reputation-repair strategy, regardless of the evidence (or lack thereof) against the CEO. For the latter, prior research confirms that CEO turnover leads to a quicker recovery of financial reporting credibility after a restatement (Wilson 2008; Chakravarthy et al. 2014).

We acknowledge that we cannot disentangle the thoroughness versus objectivity explanations, as both may occur simultaneously (see Section 7). As such, our study focuses on the overall association between independent leaders and CEO turnover, and we make the following prediction:

HYPOTHESIS 1(A): *After the discovery of an accounting irregularity, internal investigations led by independent leaders are associated with higher CEO turnover.*

Similar explanations apply to external advisors, as their job is to conduct thorough investigations and interpret the evidence gathered in an objective, unbiased manner. As discussed in Section 2, external legal advisors work extensively to interview witnesses and gather sufficient documentation to identify culpable individuals. Forensic accounting advisors comb through minute details to understand the exact accounting misstatement. If this level of documentation and research is required to compel the board to oust a CEO, we posit that the presence of either external legal advisors or forensic accounting advisors will be associated with increased CEO turnover. We make the following predictions:

HYPOTHESIS 1(B): *After the discovery of an accounting irregularity, investigations involving external legal advisors are associated with higher CEO turnover.*

HYPOTHESIS 1(C): *After the discovery of an accounting irregularity, investigations involving external accounting advisors are associated with higher CEO turnover.*

SEC enforcement outcomes

An SEC enforcement action is costly for firms, with average monetary penalties ranging from \$13 million to \$106 million, depending on the time period studied (Karpoff et al. 2008a,b; Files et al. 2019). These monetary penalties represent only a small portion of the costs borne by sanctioned firms, as Karpoff et al. (2008b) document that firms lose 38% of their market value when news of their misconduct is reported. Given these costs, firms have strong incentives to avoid regulatory sanctions. The SEC's Seaboard Report suggests that enforcement leniency may be granted to firms that initiate an internal investigation, and regulators have further clarified in recent years that they consider the position and independence of the parties leading the investigation (see Section 2). The SEC's primary concern is that they receive "information they can rely on" (McTague 2007), and investigations led by outsiders are more likely to (1) follow the proper procedures for the chain of evidence, so that sabotage is less likely to occur; and (2) maintain confidentiality during interviews with employees, who may fear retaliation. We therefore make the following prediction:

HYPOTHESIS 2(A): *After the discovery of an accounting irregularity, investigations led by independent leaders are less likely to be sanctioned by the SEC and/or will be assessed lower firm monetary penalties.*

Although the SEC's Seaboard Report states that the SEC will factor in whether work was performed by persons inside or outside the firm (SEC 2001), prior research has yet to examine the association between external advisors and SEC enforcement outcomes. In general, external advisors provide greater assurance that the investigation is perceived as independent by regulators, and they use their expertise in investigatory techniques to conduct more thorough internal investigations, all of which should result in SEC enforcement leniency. External legal counsel, in particular, also offer firms the important benefit of attorney-client privilege. However, using external legal counsel to invoke privilege may limit regulators' access to

evidence collected during the internal investigation, making our prediction less clear for these advisors. In fact, the SEC's 2001 Seaboard Report explicitly states that the SEC will consider whether the firm invoked (or waived) its attorney-client privilege when deciding to offer enforcement leniency, though the SEC has since clarified the waiver is not necessary to receive cooperation credit (McTague 2007). Our next hypothesis is non-directional:

HYPOTHESIS 2(B): *After the discovery of an accounting irregularity, the decision to hire external legal advisors is associated with SEC enforcement likelihood and/or the magnitude of firm monetary penalties.*

Finally, because our irregularity sample involves instances of severe accounting misstatements, we posit that forensic accountants provide an additional level of knowledge, expertise, and attention to detail to the investigation that is helpful to regulators (Aguilar 2009). We expect the involvement of accounting advisors to be associated with more lenient SEC enforcement outcomes, leading to the following directional hypothesis:

HYPOTHESIS 2(C): *After the discovery of an accounting irregularity, the decision to hire external forensic accounting advisors is associated with a reduced likelihood of SEC enforcement and/or a reduced magnitude of firm monetary penalties.*

4. Sample Selection and Data Description

Sample selection procedures

Our sample of restatements spans twenty-two years, 1995 to 2017, and is a compilation of data from two sources. The Government Accountability Office (GAO) restatement database identifies 2,687 restatements announced between January 1, 1997 and June 29, 2006 (U.S. GAO 2002, 2003, 2006). We supplement this data with an additional 16,217 restatement observations from the Audit Analytics (AA) restatement database between March 29, 1995 and November 28, 2017. The union of these two sources results in 18,904 initial restatement observations.

Table 1 details the sample attrition due to necessary data requirements. First, we require all restatement observations to have identifiers to link to CRSP data (dropping 7,802

observations), as well as Compustat Total Assets information in the year prior to the restatement (dropping 2,431 observations, consistent with prior research (Scholz 2008; Peterson 2012)); this eliminates a total of 10,233 observations. Next, we use the Hennes et al. (2008) classification scheme to narrow our restatement sample to irregularities (which represent intentional misstatements, as opposed to unintentional errors) using the following conditions: (1) the firm uses variants of the words “irregularity” or “fraud” in describing the misstatement in a press release or SEC filing; (2) the firm announces an independent internal investigation into the misstatement; or (3) the firm announces an SEC or DOJ investigation.⁷ Restatements in which none of the above occur are classified as errors and excluded from our sample, eliminating 7,666 observations. We manually review corporate documents and eliminate (1) 257 observations for which we cannot locate restatement or AC information and (2) 85 observations that represent duplicate restatement events for the same firm (and consolidated information across disclosures). Finally, we drop 137 observations where the firm does not disclose the leader of the investigation. Our final sample consists of 526 accounting irregularities by 478 unique firms.

Table 2, Panels A and B, report the distribution of our irregularity sample by year and Fama and French (1997) 48 industry classifications. The largest number of irregularities ($n = 88$) occurs in 2005. Moreover, a large portion of our sample is from the business services industry ($n = 102$) and the pharmaceuticals industry ($n = 37$). Compared to Compustat firms (shown in the far right column of Panel B), the business services industry is overrepresented in our sample (19.4% vs. 6.4%), while the banking and trading industries are underrepresented (4.0% vs. 12.0% and 4.4% vs. 34.4%, respectively). Table 2, Panel C, shows that our irregularity sample

⁷ For the GAO sample, we use information from Andy Leone’s website (<http://sbaleone.bus.miami.edu>) to categorize each restatement as an error or an irregularity. For the AA sample, we identify irregularities using a two-part method: First, we search firm disclosures for the Hennes et al. (2008) terms (i.e., irregularity, fraud, internal investigation, SEC/DOJ investigation) in the description of the restatement. Second, we identify firm restatements in AA related to fraud (“res_fraud”) or involving an SEC investigation (“res_SEC_invest”). We then manually check each observation from the GAO and AA databases to identify internal investigation information.

has significantly smaller reported net income (both mean and median) than Compustat firms and significantly larger median total assets, annual revenue, and market value of equity.

Hand-collection of internal investigation details

For each of the 526 accounting irregularity observations, we review all corporate press releases and SEC filings beginning six months before and ending (at a minimum) six months after the restatement announcement date to correctly determine the internal investigation end date. We rely on specific wording in the press releases or SEC filings to identify (1) the “investigation,” “inquiry,” or “review” that is being conducted, (2) which individual or collection of individuals has the decision-making authority with respect to the investigation, and (3) whether external advisors are hired (see Appendices A and B for examples of these disclosures in corporate filings).

Tables 3 and 4 provide specifics collected about our sample’s internal investigations. Because we use key word searches to identify the dates when the investigation leader and advisor is *first* mentioned in corporate disclosures, these dates may contain measurement error. Table 3, Panel A, reports that irregularity firms disclose their investigation leader 12.6 days, on average, after the initial restatement announcement (median = 1.0 day). Disclosures pertaining to law and accounting advisors appear an average of 25.2 and 53.1 days, respectively, after the initial restatement announcement (median = 7.0 and 57.0 days, respectively). Because of this disclosure delay, investors or academics that focus solely on the initial restatement announcement may miss pertinent details about the internal investigation.

Table 3, Panel A, also shows that 51.7% ($n = 272$) of our sample appoints an independent group, such as the AC, SC, or board, as investigation leader.⁸ The remaining 48.3% ($n = 254$) of

⁸ We combine audit committee (AC), special committee (SC), and board-led investigations into one “independent” group for several reasons. First, when available, the SC is often a subset of independent AC members. Second, the two board-led investigations in our sample specifically mention using “independent directors”. Thus, all three of

our sample appoint either management ($n = 135$) or the Company ($n = 119$). We also find that 35.0% ($n = 184$) of irregularity firms retain at least one external advisor during the investigation process, with legal counsel being the most frequently mentioned group, followed by accounting advisors. It is rare for irregularity firms to hire only accounting advisors (1.0%), consistent with attorney-client privilege being more difficult to maintain without external law advisors.

Corporate disclosures identify the name of the law firm and accounting firm hired in 25% ($n = 44$) and 36% ($n = 32$) of cases, respectively (see bottom right of Table 3, Panel A). There are 35 unique law firms hired, and the most frequently mentioned law firm is Wilmer, Cutler, and Pickering LLP, which was hired in three cases. We find only 11 unique accounting advisory firms, with PricewaterhouseCoopers LLP as the most frequently hired (8 times), followed by Deloitte & Touche (7 times) and Arthur Andersen (6 times) (untabulated). Table 3, Panel B, shows that when the leader is independent, 60.7% of our irregularity firms hire at least one external advisor, but for the rest of the sample, only 7.5% of firms hire external advisors. This pattern is similar when we examine each advisor-type separately.

Table 3, Panels C and D, highlight the 16 most frequently cited reasons for the irregularity, with Revenue Recognition being the most frequent (214 instances), followed by issues related to Payroll, Selling, General, Administrative (SG&A), and Other Expenses (95 instances); due to firms citing multiple restatement reasons, the “Total” frequency will exceed the sample size. We also see notable differences in the leadership structure of internal investigations, depending on the nature of the allegation.⁹ For instance, among the 25 firms with stock option backdating allegations, 24 firms (96.0%) utilize an independent leader (Panel C) and 22 firms (88.0%) hire an outside advisor (Panel D). Whereas some restatement reason

these leaders are independent from management. Additionally, when we separate the leaders into AC- and SC-led investigations, our inferences for both groups are similar in each regression model.

⁹ We thank an anonymous reviewer for this suggestion.

categories exhibit higher proportions of independent leaders (Foreign, Related Party, Subsidiaries, and Intercompany; Payroll, SG&A, and Other Expenses), other accounting issues involve *lower* proportions of independent leaders/external advisors (Cash Flow Statement; Debt/Equity; and Acquisitions, Mergers, Disposals, and Reorganization).

Table 4 reports the average length (in days) and cost (in millions) of internal investigations, when such details are publicly disclosed. We calculate the length based on the earliest and latest disclosure related to the internal investigation. The mean (median) investigation in our sample lasts 65.7 days (45 days). Of the 111 firms that disclose the cost, the mean firm spends \$5.3 million on the investigation, which represents 1% of total assets, but the median firm spends far less, at \$2.2 million. The minimum investigation cost in our sample is \$200,000 (GA Express Corporation), while the maximum cost is \$47 million (Sirva Inc.). We also see that the average length of an investigation is 15.7 and 32.1 days longer, respectively, when independent leaders and external advisors are used versus when they are not (significant at $p < 0.01$ level), and reported costs are nearly double when one or more external advisors are hired (\$6.6 million versus \$3.3 million, $p = 0.05$).

5. Accounting Irregularity Investigation Leaders and the Hiring of Outside Advisors

Empirical model and variable descriptions predicting independent leaders

We first examine whether AC, firm, and restatement characteristics are associated with the decision to assign an independent investigation leader using the following probit regression:

$$\text{Independent_Leader} = \delta_0 + \delta_{1-3}(\text{AC Characteristics}) + \delta_{4-11}(\text{Restatement Severity and Type}) + \delta_{12-19}(\text{Firm and Executive Characteristics}) + \delta_{20-22}(\text{Regulatory Changes}) + e \quad (1)$$

where *Independent_Leader* is an indicator variable equal to one if firm disclosures indicate that the AC, SC, or board of directors leads the accounting irregularity investigation and zero otherwise. All variables are defined in Appendix C.

We hand-collect information about each firm's AC, which involves 3,108 biographies,

from the most recent proxy statement (DEF 14A) prior to the restatement announcement. We focus on AC characteristics because the AC represents the majority of independent leader cases (215 of 272 = 79%; see Table 3, Panel A). Prior research finds ACs with greater financial expertise are less likely to waive detected material misstatements (Keune and Johnstone 2012) and are more likely to disclose restatement details quickly to investors (Schmidt and Wilkins 2013). Moreover, the presence of a legal expert on the AC is associated with higher financial reporting quality (Krishnan et al. 2011). Since such experience allows AC members to better understand and resolve complex accounting issues, we posit that ACs with at least one director with accounting or finance work experience (*Accounting_Finance_Experience*) or legal experience (*Lawyer*) will be more likely appointed leader. We also define *AC_Size* as the number of directors on the AC but do not make a signed prediction for its association with *Independent_Leader*.¹⁰

We also incorporate four measures of restatement severity into our model: (1) an indicator variable denoting *Revenue* restatements; (2) *Irregularity_Magnitude_Decile*, which captures the cumulative earnings impact of the restatement, with higher deciles denoting more negative adjustments to previously recorded earnings; (3) the three-day cumulative abnormal *Concurrent_Return* around the restatement announcement; and (4) the natural logarithm of the length of the misstatement in days (*Log(Misstatement_Length)*). We expect boards to assign independent leaders when the restatement is more severe.¹¹ We also include indicator variables that denote *Option_Backdating*, *Foreign/Related_Party*, *Cashflow*, and *Debt_Equity* issues (see

¹⁰ Prior research suggests that larger ACs are legitimized by the board of directors and are more likely to be acknowledged as an authoritative body (Kalbers and Fogarty 1993; Abbott et al. 2004). However, Karamanou and Vafeas (2005) argue that size may limit the ability to monitor due to diffusion of responsibility.

¹¹ Controlling for severity is difficult due to its role before and during the investigative process. In theory, firms undertake an internal investigation to *determine* the severity of the problem. However, based on conversations with business professionals, it is likely that firm management and the board may know the severity of the problem *before* they undertake an internal investigation. To address this concern, severity controls are included in every model.

Table 3, Panel C), but we do not make directional predictions.

Next, we collect information from the most recent proxy statement prior to the restatement announcement about the CEO and the general counsel because these individuals' power may be influential in determining leadership structure (Hopkins et al. 2015). CEOs that are certified public accountants (*CEO_Acct_CPA*) may be held more responsible by the board for accounting failures, and they may try to conduct the investigation themselves. Conversely, they may be guided by accounting ethics principles, or prior experience in auditing or industry, to request independent investigations; thus, we do not make a directional prediction for *CEO_Acct_CPA*. We also determine the annual salary for the CEO ($\text{Log}(\text{CEO_Salary})$) and for the firm's general counsel if he/she is one of the highest compensated executives (*GC_Top5*). We posit that managers with higher compensation have more power to keep the investigation "in-house," and therefore predict negative coefficients on $\text{Log}(\text{CEO_Salary})$ and *GC_Top5*.

Past stock performance (*Prior_Return*) is also used as a proxy for managerial power, with higher returns expected to result in a lower likelihood of an independent leader. We also include an indicator variable for *Big5_Auditor* but do not make a signed prediction. We predict firm size ($\text{Log}(\text{Assets})$) will be positively associated with independent leaders, as larger firms are likely more knowledgeable about the legal and regulatory benefits of independent investigations. *Industry_Irregularities* is the percentage of firms announcing irregularities in the prior year for each Fama French 48 industry classification; we expect firms in an industry with a large percentage of past irregularities to choose a more independent investigation leader. Since a firm's litigation environment may also influence its choice of investigation leader, we create a dummy variable, *Past_Class_Action*, to capture whether a class action lawsuit was filed against the firm beginning the year before the restatement announcement and ending 90 days after the restatement announcement.

Finally, we incorporate non-overlapping time indicator variables to control for different regulatory environments. *D_0206* covers restatements announced in 2002 through 2006, which includes the effect of the SEC's 2001 Seaboard Report and the 2002 Sarbanes-Oxley Act; we expect *D_0206* to be positively associated with *Independent_Leader*. We do not make a signed prediction for *D_0709*, which controls for events in 2007 through 2009 (i.e., the option backdating scandal and sub-prime financial crisis) because the regression already includes *Option_Backdating*. We predict a positive coefficient on *D_1017*, which controls for restatements announced after 2010, the year of the SEC's 2010 Cooperation Initiative and the Dodd-Frank Act, due to a higher cost of non-compliance after this legislation. In every regression, we cluster standard errors by Fama-French 48 industry classifications.

Empirical model and variable descriptions predicting external advisors

Next, we examine the decision to hire external law or accounting advisors using the following probit regression:

$$\begin{aligned} \text{External Advisor Variable} = & a_0 + a_1 \text{Independent_Leader} + a_{2-4}(\text{AC Characteristics}) \quad (2) \\ & + a_{5-12}(\text{Restatement Severity and Type}) + a_{13-20}(\text{Firm and Executive} \\ & \text{Characteristics}) + a_{21-23}(\text{Regulatory Changes}) + e \end{aligned}$$

The dependent variable is a dummy variable denoting firms that hire a *Law_Advisor* or *Accounting_Advisor*, respectively. Model (2) includes *Independent_Leader*, as well as all other control variables included in model (1). We do not make a directional prediction for *Independent_Leader*. On one hand, internal investigations led by the AC, SC, or board may already be legitimized by the use of independent leaders, potentially lessening the need for external advisors, resulting in a negative coefficient on *Independent_Leader*. Alternatively, independent leaders may better understand the value that external advisors provide to an investigation, resulting in a positive coefficient on *Independent_Leader*. Similarly, we do not have *ex ante* predictions on whether ACs with accounting, finance, or legal experience are more

or less likely to hire advisors with similar expertise. Our predictions for all other variables mirror the predictions made in model (1). Table 5 presents the descriptive statistics for our independent and dependent variables.

Regression results

As shown in Table 6, Panel A, we find a coefficient on *Accounting_Finance_Experience* of 0.294, which is significant at the 1% level, meaning that this experience makes the AC a desirable candidate for the investigation leader position. The coefficients on *Lawyer* and *AC_Size* are not significantly different from zero. We also find that firms with *Revenue*, *Option_Backdating*, and *Foreign/Related_Party* restatements are more likely to use an independent leader, as are those where the CEO is a CPA, the firm is larger or has recent experience with class action lawsuits, or the restatement occurs in the post-Seaboard (*D_0206*) or post-Dodd Frank (*D_1017*) periods. Two of the restatement severity measures, *Concurrent_Return* and *Log(Misstatement_Length)*, are also significant in the predicted direction, which suggests that firms with more severe restatements are more likely to hire an independent leader. We also see a negative and significant coefficient on *Log(CEO_Salary)*, consistent with our expectation that more powerful CEOs are reluctant to hand control of the investigation to independent board members.¹²

Table 6, Panel B, shows the results of model (2) predicting *Law_Advisor* (column 1) and *Accounting_Advisor* (column 2). We find a consistently positive and significant ($p = 0.000$) coefficient on *Independent_Leader* in both columns, suggesting that independent leaders are more likely than non-independent parties to hire external advisors to aid in the investigation. The

¹² In untabulated analyses, we incorporate several additional independent variables in the *Independent_Leader* determinants regression, which include (1) the number of AC meetings in the year prior to the restatement; (2) a founder-CEO indicator variable; (3) an indicator variable for CEO-Chairman duality; and (4) an indicator variable for whether the restatement impacted the balance sheet, as opposed to the income statement. These variables did not exhibit significant associations with *Independent_Leader*, and our inferences remain unchanged.

impact is non-trivial; the odds of hiring an external advisor are five times greater when the AC, SC, or board leads the investigation compared to other groups (e.g., in column 1, $e^{1.723} = 5.6$). The findings for the remaining independent variables are generally consistent with our expectations, including the fact that law and accounting advisors are more likely to be hired for severe accounting issues. We also see that the likelihood of hiring an accounting advisor (column 2) is less likely if a lawyer sits on the AC, and more likely as AC size increases, indicating that AC member characteristics influence whether or not a forensic accounting firm is hired.

6. Investigation Outcomes

Controlling for self-selection

Self-selection is a potential problem when modeling the relation between the choice of investigation leader and the outcomes of the investigation. There may be unobservable factors that influence a firm's choice to appoint the AC, SC, or board to lead the investigation, and if those same factors influence CEO turnover or SEC enforcement likelihood, then the coefficient on *Independent_Leader* will be biased. This endogenous selection may be particularly relevant for the CEO turnover tests. In Figure 1, we illustrate the relations among our leader and outcome variables, and we outline a potential reverse causality scenario (in Path D) in which the board has already decided *ex ante* to fire its CEO and, as a result, assigns an independent leader to maintain the appearance of objectivity. Using the same reasoning, a similar reverse causality might motivate an independent leader to hire an outside advisor.

We address potential endogeneity in several ways. First, to the extent possible, we control for restatement severity and type in our determinants tests in Table 6, which mitigates the bias if the unobservable factors are correlated with the severity of allegations. Second, we use a full information maximum likelihood (FIML) bivariate probit model with sample selection correction to simultaneously estimate both a selection and outcome equation (Tucker 2010; Greene 2002;

Farrell and Whidbee 2003; Bates et al. 2018; Harris and O’Brien 2018).¹³ Model (1) is used as the selection equation because it explains a firm’s choice to designate the AC, SC, or board as investigation leader. We employ different outcome equations for CEO turnover and SEC sanction likelihood. The three AC characteristics – *Accounting_Finance_Experience*, *Lawyer*, and *AC_Size* – are used to satisfy the exclusion restrictions in our bivariate probit.¹⁴

Investigation team composition and the probability of CEO turnover

To test H1, we use a FIML bivariate probit model to simultaneously estimate the selection equation in model (1) and the following outcome equation:

$$\begin{aligned}
 CEO_Turnover = & \theta_0 + \theta_1 Independent_Leader + \theta_{2,3}(External\ Advisor\ Type) & (3) \\
 & + \theta_{4,11}(Restatement\ Severity\ and\ Type) + \theta_{12,19}(Firm\ and\ Executive \\
 & Characteristics) + \theta_{20,22}(Regulatory\ Changes) + e
 \end{aligned}$$

where *CEO_Turnover* is an indicator variable equal to one if the CEO six months prior to the restatement date is no longer the CEO six months after the restatement date, and zero otherwise. Using information from both the Boardex and Execucomp databases, we identify CEO turnover information for 392 observations (or 75% of the sample), which we then manually review for accuracy. We see an unconditional CEO turnover rate of 22% among our irregularity firms (Table 5). H1 predicts positive coefficients on *Independent_Leader* and each of the external advisor variables in predicting CEO turnover. The control variables in the outcome equation are identical to those in model (1), with the exception of the three AC characteristics used as

¹³ We acknowledge that a widely used approach to address endogeneity is to estimate the Inverse Mills ratio (IMR) from a first stage probit model predicting *Independent_Leader*, then include the IMR in the second stage outcome. However, as discussed in Tucker (2010), the IMR term does not correct for bias when the second stage model is nonlinear, as is the case in our second stage model. Thus, the most appropriate choice for our sample is a bivariate probit model with sample selection, estimated by FIML.

¹⁴ Han and Vytlačil (2017) provide a discussion of the use of exclusion restrictions in the context of bivariate probit models. Of the three AC characteristics, *Accounting_Finance_Experience* best satisfies the statistical requirements of an exclusion restriction, as it is highly correlated with the decision to appoint an independent leader (correlation coefficient 0.115, $p = 0.008$ untabulated), and it is significantly associated with *Independent_Leader* in Table 6, Panel A. Moreover, *Accounting_Finance_Experience* is not significantly correlated with either CEO Turnover (correlation coefficient of 0.009, $p = 0.860$ untabulated) or SEC enforcement likelihood (correlation coefficient of -0.041, $p = 0.347$ untabulated), nor is it significant if included in the outcome equations.

exclusion restrictions. Our controls include variables that prior research has found to be significant predictors of CEO turnover following restatements, including *Prior_Return*, *Concurrent_Return*, *Revenue*, *Irregularity_Magnitude_Decile*, *Log(Misstatement_Length)*, and *Log(Assets)* (Desai et al. 2006; Hennes et al. 2008; Leone and Liu 2010; Rice et al. 2015).

Table 7 reports the results of the outcome equation predicting *CEO_Turnover*. Columns 1 and 2 differ in their inclusion of *Law_Advisor* and *Accounting_Advisor*, respectively. We find a significant ($p < 0.01$) positive association between *Independent_Leader* and CEO turnover in both columns, which is consistent with H1(A). Having an independent leader increases the likelihood of CEO turnover by approximately 39%, as shown in the marginal effects calculations at the bottom of Table 7. The coefficients on the external advisor variables are also positive and significant, consistent with H1(B) and H1(C). Namely, the presence of a *Law_Advisor* (column 1) or *Accounting_Advisor* (column 2) is associated with an increased CEO turnover likelihood of 62.5% and 7.2%, respectively. Collectively, our results demonstrate that investigation leaders and external advisors differentially impact the CEO turnover decision.

The control variable results are generally consistent with our expectations, as well as with prior research. The negative coefficients on the time period variables (*D_0206*, *D_0709*, and *D_1017*) indicate that the CEO turnover rate following accounting irregularities has declined compared to the benchmark period of 1997-2001; this is consistent with evidence found in Leone et al. (2020).

Investigation team composition and SEC enforcement outcomes

To test H2, we use a FIML bivariate probit model to simultaneously estimate the selection equation in model (1) and the following outcome equation:

$$\text{SEC Enforcement Outcome} = \theta_0 + \theta_1 \text{Independent_Leader} + \theta_{2-3} (\text{External Advisor Type}) + \theta_{4-11} (\text{Restatement Severity and Type}) + \theta_{12-19} (\text{Firm and Executive Characteristics}) + \theta_{20-22} (\text{Regulatory Changes}) + \theta_{23-28} (\text{Other Controls}) + e \quad (4)$$

For each irregularity in our sample, we search the SEC's website to determine if an administrative action or civil complaint (collectively, enforcement action) was filed by the SEC against the firm or any employee or agent of the firm. We then compare details from both the restatement and enforcement action documents to ensure we capture only enforcement actions directly related to the restatement in question. Our first proxy for SEC enforcement outcomes is *Firm_Respondent*, which equals one if the SEC names the firm as a respondent in an SEC enforcement action, and zero otherwise. Twenty-one percent ($n = 113$) of the irregularities in our sample lead to an enforcement action against the firm (see Table 5).

Table 8, Panel A, reports the results of the outcome equation predicting *Firm_Respondent*. This regression uses our full sample of 526 irregularity observations and includes all control variables from model (1), less the three AC characteristics used as exclusion restrictions. We also add an indicator variable (*D_Timeliness*) which equals one for restatements disclosed within 90 days after the end of the misreporting period, and zero otherwise. Files (2012) finds that timely disclosure of a restatement reduces SEC enforcement likelihood. As shown in Table 5, the average value of *D_Timeliness* is 0.22, meaning that less than one-fourth of our sample discloses the restatement within three months of the misconduct.

As hypothesized in H2(A), we find in Table 8, Panel A, that the effect of *Independent_Leader* is negative and statistically and economically significant. For instance, in column 1 the coefficient on *Independent_Leader* is -1.291 ($p = 0.000$), which translates into a 36% lower likelihood of the firm being named as a respondent, compared to investigations by non-independent leaders. The external advisor variables are not significantly different from zero, which is not consistent with H2(B) and H2(C). However, given the small sample size of 526 observations, these tests may lack the power to detect hypothesized effects, so insignificant coefficients should be interpreted with caution (see Blaylock 2016).

Our second proxy for SEC enforcement outcomes is *Firm_Monetary_Penalty*, defined as the sum of disgorgement of profits, prejudgment interest, and regulatory penalties assessed against the firm by the SEC in an enforcement action. This analysis is limited to only 113 observations for which the firm is named as a respondent in an enforcement action (because penalties cannot be assessed against a firm not named). Following Call et al. (2018) and Files et al. (2019), we use a Poisson pseudo-maximum likelihood (PPML) equation to predict firm monetary penalties. The PPML estimator is well-suited to modeling data characterized by a disproportionate number of zeros and severe skewness, which is the case for firm penalties.

In addition to the control variables used in our previous tests, we include in the PPML model additional hand-collected variables denoting (1) firms that *Self_Report* the violation to the SEC, (2) firms granted *Cooperation_Credit* by the SEC, (3) the number of chief-level executives and other employees or agents named as a respondent in the enforcement action (*C_Level_Respondents* and *Other_Respondents*, respectively), and (4) the magnitude of monetary penalties levied against all individuals and agents in the enforcement action (*Other_Penalty*) (Files et al. 2019). Table 5 shows that the mean (median) *Firm_Monetary_Penalty* is \$12.4 million (\$0), and the mean (median) *Other_Penalty* is \$31.9 million (\$75,000). At the median, the enforcement actions in our sample include one C-level respondent and one “other” respondent. We find that 15% are cited for self-reporting their misconduct to the SEC, and 52% are cited for cooperating with regulators during the investigatory process.

Table 8, Panel B, shows the results of the PPML equations predicting *Firm_Monetary_Penalty*. The coefficient on *Independent_Leader* is negative at the 10% level in column 1, suggesting that the SEC reduces monetary penalties for firms that use independent investigation leaders. The coefficient on *Law_Advisor* is not significantly different from zero.

When *Accounting_Advisor* is used in the regression (in column 2), we see that its coefficient is significantly negative at the 5% level, but the coefficient on *Independent_Leader* loses statistical significance. Our control variable results are generally consistent with prior research. Our inferences are the same if we use an OLS regression, instead of PPML, to predict *Firm_Monetary_Penalty*. Taken together, these results support H2(A) and H2(C).

Collectively, our findings suggest that the SEC rewards “the hallmarks of [a] good investigation,” namely the use of independent leaders and the hiring of accounting advisors, with a reduction in enforcement likelihood and, if sanctioned, a reduction in monetary penalties (Caldwell 2015, para. 11).

Mediation Analysis

Since an internal investigation may simultaneously involve both an independent leader and one or more external advisors, it is difficult to disentangle which party plays the *primary* role in affecting financial misreporting outcomes. Figure 1 outlines several possible scenarios. Independent leaders may directly affect financial misreporting outcomes, regardless of whether an external advisor is present (Path C), which is consistent with H1(A) and H2(A).¹⁵ However, the independent leader may also be indirectly associated with irregularity outcomes through their decision to hire an external advisor (Path AB). That is, external advisors *mediate* the association between independent leaders and financial misreporting outcomes. To test for mediation, we use the approaches outlined in Baron and Kenny (1986; hereafter “BK”) and Sobel (1982), operationalized using the following three regressions (variables are defined in Appendix C):¹⁶

¹⁵ Additionally, we explore potential endogeneity and a reverse causality scenario with Path D (in Figure 1), which is discussed in Section 6 “Controlling for self-selection.”

¹⁶ BK (1986) use a “causal steps approach,” whereby mediation is inferred if certain statistical criteria are met. Sobel (1982) uses a “product of coefficients approach,” whereby a researcher can quantify the mediation, or indirect effect, and derive a test statistic to determine statistical significance. As Hayes (2009) points out, it is possible for these two approaches to lead to different conclusions regarding mediation, and, if so, a researcher should rely on the Sobel test over BK’s approach. Nevertheless, there are documented limitations to the Sobel test – namely the

$$\text{External Advisor Variable} = a_0 + a_1 \text{Independent_Leader} + a_{2-4}(\text{AC Characteristics}) + a_{5-12}(\text{Restatement Severity and Type}) + a_{13-20}(\text{Firm and Executive Characteristics}) + a_{21-23}(\text{Regulatory Changes}) + e \quad (5)$$

$$\text{CEO_Turnover or Firm_Respondent} = \beta_0 + \beta_1 \text{Independent_Leader} + \beta_{2-9}(\text{Restatement Severity and Type}) + \beta_{10-17}(\text{Firm and Executive Characteristics}) + \beta_{18-20}(\text{Regulatory Changes}) + \beta_{21}(\text{Other Controls}) + e \quad (6)$$

$$\text{CEO_Turnover or Firm_Respondent} = \theta_0 + \theta_1 \text{Independent_Leader} + \theta_{2-3}(\text{External Advisor Type}) + \theta_{4-11}(\text{Restatement Severity and Type}) + \theta_{12-19}(\text{Firm and Executive Characteristics}) + \theta_{20-22}(\text{Regulatory Changes}) + \theta_{23}(\text{Other Controls}) + e \quad (7)$$

Model (5) is identical to model (2), while model (7) is based on models (3) and (4). Regressions in models (6) and (7) are the outcome equation from FIML bivariate probit models.

As applied to our setting, the BK criteria suggests that for mediation to occur, the following must hold: First, there must be a significant association between *Independent_Leader* and the external advisor variable(s) in model (5), which is captured by a_1 . Second, it is necessary for *Independent_Leader* to significantly affect the outcome variable(s) in the absence of the mediator, as shown by β_1 in model (6). Finally, *Law_Advisor* or *Accounting_Advisor* must significantly affect the outcome variable(s) in model (7), as shown by θ_2 or θ_3 , respectively. We label these conditions BK1, BK2, and BK3, respectively. Full (partial) mediation occurs if the effect of *Independent_Leader* in model (7) is reduced to zero (retains statistical significance), respectively. The Sobel (1982) test statistic is used to determine the size and significance of the mediation effect; it is based on the coefficients a_1 and θ_1 , above, and their standard errors, s_{a1} and $s_{\theta 1}$, respectively.¹⁷

In Table 9, we report the results of our mediation analyses for four separate scenarios. Scenarios 1 and 2 examine *CEO_Turnover* as the outcome variable, coupled with *Law_Advisor* (Panel A) and *Accounting_Advisor* (Panel B) as the respective mediator. For Scenario 1 in Panel

assumption that the sample is normally distributed – so we use both the BK and Sobel tests in a complementary fashion to identify mediation.

¹⁷ The Sobel test statistic is computed as: $(a_1 * \theta_1) / \sqrt{(\theta_1^2 * s_{a1}^2) + (a_1^2 * s_{\theta 1}^2) + (s_{a1}^2 * s_{\theta 1}^2)}$.

A, we find that all three BK conditions hold at the 10% level, and the Sobel test statistic confirms there is a significant indirect effect of *Independent_Leader* on CEO turnover through law advisors (0.400, $t = 3.147$). The direct effect of *Independent_Leader* on CEO turnover also remains highly significant in column 7 (1.437, $p = 0.001$). For Scenario 2 in Panel B, we again see evidence that all three conditions (BK1, BK2, and BK3) hold, that *Independent_Leader* retains statistical significance in column 7, and that the Sobel test statistic shows significant mediation (0.421, $t = 3.612$). These results demonstrate that independent leaders have a significant direct effect and indirect effect (through external advisors) on CEO turnover.

Scenarios 3 and 4 examine *Firm_Respondent* as the outcome variable, paired with *Law_Advisor* (Panel C) and *Accounting_Advisor* (Panel D) as the respective mediator. In both panels, the coefficient on *Independent_Leader* remains negative and significant at the $p < 0.01$ level in column 7 after including the mediating variables. This suggests there is a direct link between independent investigation leaders and a reduction in SEC enforcement likelihood. Moreover, although only two of the three BK conditions for mediation are satisfied at the 10% significance level, the Sobel test statistic shows that both external advisor variables have a significant mediating effect on the negative association between independent leaders and SEC sanction likelihood. As such, we conclude that partial mediation from the external advisor variables also occurs when predicting *Firm_Respondent*.

Overall, the mediation tests show that independent investigation leaders have both a direct effect (Path C in Figure 1) and indirect effect (Path AB in Figure 1) on financial misreporting outcomes. Partial mediation also occurs from the external advisor variables.

7. Additional Analyses

In this section, we report the results of several additional tests. First, in our hypothesis development, we argue that the positive association between independent leaders, external

advisors, and CEO turnover may be due to either increased thoroughness in the investigation process or increased objectivity when faced with evidence against the CEO. We conduct an exploratory analysis to attempt to differentiate between these explanations.^{18,19} While we find some evidence that in low severity samples, the presence of law advisors is associated with higher turnover (which supports the objectivity argument), this result is not robust to using alternate measures of low severity. As such, we conclude that thoroughness and objectivity are equally viable explanations for the positive associations.

Second, while all regressions have standard errors clustered by industry, we also run untabulated robustness tests including Fama-French 12 industry fixed effects. Our inferences are identical in all regressions, with the exception of the prediction of firm monetary penalties in Table 8, Panel B, where our variables of interest are no longer significant.

We also explore whether the identity of the external advisor potentially drives our results. In an untabulated test, we create an indicator variable *Top_Law_Firm* which equals one if the firm discloses the name of their legal advisor (which occurs in 25% of the cases) and the legal advisor is ranked on either Vault's Top 10 Law Firms for 2020 or 2007, The Legal 500 Tier 1 Law Firms, or U.S. News 2020 Best Lawyers, and zero otherwise. We replace the *Law_Advisor* variable in Tables 7 and 8 with *Top_Law_Firm*, and we find the coefficient is not significantly different from zero.

¹⁸ We cannot empirically test our first explanation – thoroughness – due to the lack of publicly-available data on the procedures performed during the investigation. We can test our second explanation – objectivity – by evaluating whether independent leaders and advisors recommend CEO turnover when the severity of the accounting issue is low. We create a dummy variable, *Income_Increasing*, which equals one for the 52 irregularities where the restatement improved the firm's financial position, and zero otherwise. In untabulated analyses, we interact *Income_Increasing* with our leader and advisor variables and find that *Law_Advisor*Income_Increasing* is significantly positive at the 5% level, which indicates that CEO turnover is incrementally *higher* following income-increasing irregularities when an external law advisor is present versus when one is not.

¹⁹ When distinguishing between thoroughness and objectivity, we use interaction terms in our regressions. Because of the difficulty in interpreting interaction effects in a bivariate probit model (Norton, Wang, and Ai 2004), we first run a selection equation predicting *Independent_Leader* (model 1) and compute an Inverse Mills Ratio (IMR). We then include the IMR in our probit outcome equation predicting *CEO_Turnover* (model 3). We use the Stata INTEFF command to identify the corrected coefficient and p-value for our interaction terms.

Finally, we use a hazard model to explore whether the presence of an independent leader or external advisor helps the firm mitigate subsequent accounting problems (proxied by increases in the length of time to the next restatement event). Our variables of interest are positive (as predicted), but insignificant, so we cannot determine if independent leaders reduce the incidence of future misreporting. We leave this to future research to explore.

8. Conclusion

Our study is the first to examine how the leadership structure of internal investigations affects key outcomes of accounting irregularities. We hand-collect data for a sample of firms that all conduct internal investigations. We document that over half of the irregularity firms in our sample heed the advice of SEC and DOJ officials and appoint an independent team to spearhead their internal investigation. Investigations led by independent groups are more likely to hire external law or accounting advisors for extra assistance.

Our main findings are that internal investigations led by independent parties are associated with a higher likelihood of CEO turnover, a lower chance of receiving an SEC sanction, and, if sanctioned, reduced SEC monetary penalties, compared to investigations led by non-independent parties. Taken together, our overall evidence suggests that in their role as investigators of accounting misconduct, independent leaders protect the firm (through regulatory leniency), at the expense of executives (through CEO turnover). Our results also extend the findings of prior research by showing that regulators grant enforcement leniency to firms that exhibit the “hallmarks of [a] good [internal] investigation” (Caldwell 2015, para. 11).

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APPENDIX A
Corporate Disclosure Excerpts: Accounting Irregularity Investigation Team

	Excerpt	Team Leader
1	<p>“The Company has become aware of certain accounting irregularities, and <u>the audit committee of the Company's board of directors is conducting an investigation of these irregularities</u>. The audit committee has engaged the law firm of Dechert Price & Rhoads to assist with its investigation...”</p> <p>[Source: Dollar General 8K dated April 30, 2001 at https://www.sec.gov/Archives/edgar/data/29534/000091431701500039/exhibit99.txt]</p>	audit committee
2	<p>“<u>The Company and the Special Committee of the Board of Directors, which was established to investigate the matter, are investigating the transactions and the surrounding circumstances and attempting to obtain additional information to resolve uncertainties which have arisen.</u>”</p> <p>[Source: Pier 1 Imports Inc 10Q dated January 16, 1996 at https://www.sec.gov/Archives/edgar/data/278130/0000897423-96-000006.txt]</p>	special committee
3A	<p>“In January 2002, <u>the Company's Board of Directors appointed an independent member of the Board to conduct an investigation</u> of the circumstances surrounding the procurement and accounting treatment of the agreement with the insurance company and related matters.”</p> <p>[Source: Brightpoint 10K dated March 2, 2002 at https://www.sec.gov/Archives/edgar/data/918946/000095013702000996/c67780a3e10-ka.txt]</p>	board of directors (independent director)
3B	<p>“TriTeal Corporation (Nasdaq: TEAL - news), announced today that it has discovered errors in the recording of Company revenue in its fiscal year ended March 31, 1997 and that, <u>based upon an ongoing review performed by special counsel to the independent directors of the Company...it preliminarily expects to restate quarterly operating results for at least three quarters in the fiscal year ended March 31, 1997 and affect the first two quarters of fiscal 1998.</u>”</p> <p>[Source: Tritel 8K dated January 26, 1998 at https://www.sec.gov/Archives/edgar/data/1000925/0000936392-98-000069.txt]</p>	board of directors (independent directors)
4	<p>“In response to comments raised by the staff of the SEC concerning the lack of disclosure relating to our change from the LIFO method of accounting to the FIFO method for inventory of heat pump products within our Climate Control segment, <u>our management agreed with the SEC to disclose the change and restate our 2004 audited financial statements...</u>”</p> <p>[Source: LSB Industries Inc 10Q dated November 21, 2005 at https://www.sec.gov/Archives/edgar/data/60714/0000060714-05-000044.txt]</p>	management
5	<p>“...in April 2010 Molex launched an investigation into unauthorized activities in its Japanese subsidiary...<u>The Company retained outside legal counsel and they retained forensic accountants, to investigate the matter and that investigation has now been completed.</u>”</p> <p>[Source: Molex 8K dated October 26, 2010 at https://www.sec.gov/Archives/edgar/data/67472/000095012310096129/c60944exv99w1.htm]</p>	the company

APPENDIX B
Corporate Disclosure Excerpts: The Hiring of External Advisors

	Excerpt	External Advisor
1	<p>“...in March 2004, in connection with our audit for the fiscal year ended December 31, 2003, our management discovered certain intentional overstatements of revenues, inventories and work in progress related to our Canadian subsidiary. <u>Our Audit Committee retained independent counsel to conduct a thorough investigation</u>; counsel, in turn, retained an independent forensic accounting firm to assist its investigation.”</p> <p>[Source: Mastec Inc 10K dated July 29, 2004 at https://www.sec.gov/Archives/edgar/data/15615/000095014404007457/g90004e10vk.htm]</p>	independent counsel
2	<p>“The Audit Committee of the Board subsequently engaged independent external counsel and <u>independent forensic accountants to complete the investigation</u>. Based on the investigation findings, the Company’s conclusions are as follows...”</p> <p>[Source: Donaldson Company 10K dated November 10, 2015 at https://www.sec.gov/Archives/edgar/data/29644/000089710115001507/donaldson153370s1_10k.htm]</p>	forensic accountants

APPENDIX C
Variable Definitions

Variable Name (in alphabetical order)	Variable Definition
<i>Accounting_Advisor</i>	An indicator variable equal to 1 if firm disclosures indicate the accounting irregularity investigation involves forensic accounting advisors and 0 otherwise. This information is hand-collected by reviewing all corporate press releases and SEC filings beginning six months before and ending (at a minimum) six months after the initial restatement announcement.
<i>Accounting_Finance_Experience</i>	An indicator variable equal to 1 if any member of the audit committee has previous accounting or finance work experience and 0 otherwise. Accounting experience is defined as: (a) being a certified public accountant or the equivalent (CPA); (b) having employment experience as a chief accounting officer, chief financial officer, vice president of finance, controller, or treasurer; or (c) having employment experience at a Big 5 accounting firm. To determine the accounting experience of each audit committee member, we search firm disclosures for the following key terms, which are not case-sensitive: “certified public” “chartered account”, “CPA”, “C.P.A.”, “chief acc”, “chief financ”, “vice president” & “finance”, “vice-president” & “finance”, “vice president finance”, “vice president of finance”, “vice president-finance” , “controller”, “treasurer”, “Arthur Andersen”, “Ernst”, “KPMG”, “Deloitte”, “Pricewater”, and “Peat Mar”. Finance experience is defined as having a degree or work experience in finance, as determined by the term “financ” being included in the audit committee member’s biography. This information is obtained from the most recent proxy statement (DEF 14A) prior to the restatement date.
<i>AC_Size</i>	The number of directors on the audit committee, collected from the most recent proxy statement (DEF 14A) prior to the restatement date.
<i>Big5_Auditor</i>	An indicator variable equal to 1 if the firm’s auditor (au) listed on Compustat is a Big 5 auditor and 0 otherwise. We consider the Big 5 accounting firms to be Arthur Andersen, Deloitte & Touche or predecessor, Ernst & Young or predecessor, KPMG Peat Marwick, and PricewaterhouseCoopers or predecessor.
<i>Cashflow</i>	An indicator variable equal to 1 if the restatement involves misstated cash flows and 0 otherwise. This information is collected from the GAO and Audit Analytics databases, where available, or from hand collection from restatement press releases and SEC filings.
<i>CEO_Acct_CPA</i>	An indicator equal to 1 if the CEO’s biography indicates that he/she is a Certified Public Accountant and 0 otherwise. CEO biography information is obtained from the most recent proxy statement (DEF 14A) prior to the restatement date.
<i>CEO_Turnover</i>	An indicator variable equal to 1 if the CEO as of six months prior to the restatement date had departed the firm (or was no longer the CEO) within six months after the restatement date and 0 otherwise. We use corporate proxy statements (DEF 14A) to identify the CEO name six months before and 6 months after the initial restatement announcement.
<i>C_Level_Respondents</i>	The total number of chief-level executives named as respondents in an SEC enforcement action. This information is hand-collected from SEC enforcement documents, available on the SEC’s website (www.sec.gov).
<i>Concurrent_Return</i>	The raw buy and hold return minus the CRSP equally-weighted portfolio return calculated from the trading day prior to the announcement until the

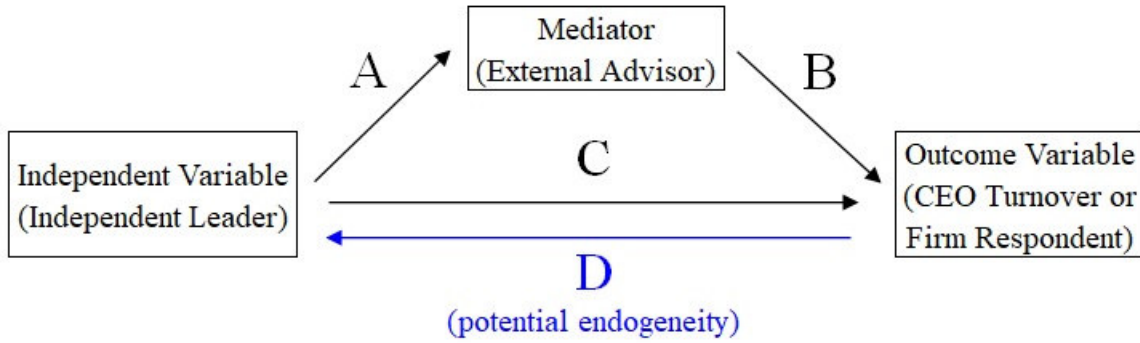
	trading day after the restatement announcement [-1,+1], with prices obtained from CRSP.
<i>Cooperation_Credit</i>	An indicator variable equal to 1 if the firm was given credit for cooperating with the SEC, and 0 otherwise. This information is hand-collected from SEC enforcement documents, available on the SEC's website (www.sec.gov).
<i>Cost of Investigation (millions)</i>	The cost of the firm's internal investigation, in millions, when available. This information is hand collected from restatement press releases and SEC filings.
<i>Cost/Assets</i>	The cost of the firm's internal investigation (<i>Cost of Investigation (millions)</i>), scaled by the firm's assets (at).
<i>Cost/Sales</i>	The cost of the firm's internal investigation (<i>Cost of Investigation (millions)</i>), scaled by the firm's revenues (revt).
<i>Debt_Equity</i>	An indicator variable equal to 1 if the restatement is caused by issued related to debt or equity and 0 otherwise. This information is collected from the GAO and Audit Analytics databases, where available, or from hand collection from restatement press releases and SEC filings.
<i>D_Timeliness</i>	An indicator variable equal to 1 if the restatement was announced within 90 days of the end of the misreporting period, and 0 otherwise. The misreporting end date is obtained from Audit Analytics or hand collection from restatement press releases and SEC filings.
<i>D_0206</i>	An indicator variable equal to 1 for restatements announced between 2002 and 2006 and 0 otherwise. This time period represents years immediately following the SEC's Seaboard Report, which was announced on October 23, 2001, and the Sarbanes-Oxley Act, which was enacted on July 30, 2002.
<i>D_0709</i>	An indicator variable equal to 1 for restatements announced between 2007 and 2009 and 0 otherwise.
<i>D_1017</i>	An indicator variable equal to 1 for restatements announced between 2010 and 2017 (the end of our sample period) and 0 otherwise. This time period represents the years following the Dodd-Frank Wall Street Reform and Consumer Protection Act, announced on July 21, 2010, and the SEC's 2010 Cooperation Initiative, announced on January 13, 2010.
<i>Firm_Monetary_Penalty</i>	The sum of disgorgement of profits, prejudgment interest, and regulatory penalties assessed against the firm by the SEC in an enforcement action. This information is hand-collected from SEC enforcement documents, available on the SEC's website (www.sec.gov).
<i>Firm_Respondent</i>	An indicator variable equal to 1 if the SEC names the firm as a respondent in an enforcement action related to the restatement and 0 otherwise. This information is hand-collected from SEC enforcement documents, available on the SEC's website (www.sec.gov).
<i>Foreign/Related_Party</i>	An indicator variable equal to 1 if the restatement was caused by issues at a foreign subsidiary or related party transactions and 0 otherwise. This information is collected from the GAO and Audit Analytics databases, where available, or from hand collection from restatement press releases and SEC filings.
<i>GC_Top5</i>	An indicator equal to 1 if the firm has a general counsel whose biography and salary are disclosed in the most recent proxy statement (DEF 14A) prior the restatement date, and 0 otherwise. Companies are required to disclose salary information for its top 5 highest paid executives.
<i>Independent_Leader</i>	An indicator variable equal to 1 if firm disclosures indicate the audit committee, special committee, and/or the Board of Directors leads the accounting irregularity investigation and 0 otherwise. This information is hand-collected by reviewing all corporate press releases and SEC filings beginning six months before and ending (at a minimum) six months after the initial restatement announcement.

<i>Industry_Irregularities</i>	The percentage of irregularities announced by firms in the same Fama French 48 industry classification as the restatement firm in our sample. The percentage is calculated in the year prior to the restatement announcement for our sample firm and is based on all restatements reported in the GAO database and Audit Analytics with Compustat industry information.
<i>Irregularity_Magnitude_Decile</i>	Deciles for the cumulative earnings impact of the restatement, scaled by lagged total assets. Smaller numbers (e.g., deciles 0, 1, 2, etc.) indicate more positive adjustments to previously recorded net income. Larger numbers (e.g., deciles 7, 8, 9) indicate more negative adjustments to previously recorded net income. The restatement amount is collected from the following sources in order of priority: the Audit Analytics variables for cumulative change in net income, if available, then the cumulative change in retained earnings, and the Compustat variable “rea” (retained earnings adjustment). If no values are available, restatement amount is set to zero.
<i>Law_Advisor</i>	An indicator variable equal to 1 if firm disclosures indicate the accounting irregularity investigation involves an external law firm and 0 otherwise. This information is hand-collected by reviewing all corporate press releases and SEC filings beginning six months before and ending (at a minimum) six months after the initial restatement announcement.
<i>Lawyer</i>	An indicator variable equal to 1 if any member of the audit committee has previous legal work experience and 0 otherwise, collected from the most recent proxy statement (DEF 14A) prior to the restatement date.
<i>Log(Assets)</i>	The natural logarithm of total assets (at) in the year prior the restatement announcement, collected from Compustat.
<i>Log(CEO_Salary)</i>	The natural logarithm of the sum of the CEO’s yearly salary, bonuses, and incentive compensation, as disclosed in the most recent proxy statement (DEF 14A) prior the restatement date. Companies are required to disclose salary information for its top 5 highest paid executives.
<i>Log(Misstatement_Length)</i>	The natural logarithm of the length of the misstatement in days. The misstatement length is determined by comparing the violation beginning and ending dates from Audit Analytics, where available, or from hand collection from restatement press releases and SEC filings for all other observations.
<i>Length of Investigation (in days)</i>	The number of days between the earliest and latest disclosure related to the internal investigation. This information is obtained by hand collection from restatement press releases and SEC filings.
<i>Market Value</i>	Market value, as calculated by price per share (prcc_f) multiplied by the number of shares outstanding (csho), in millions, collected from Compustat.
<i>Net Income</i>	Net income (ni), in millions, collected from Compustat.
<i>Option_Backdating</i>	An indicator variable equal to 1 if the restatement was caused by option backdating allegations and 0 otherwise. This information is collected from the GAO and Audit Analytics databases, where available, or from hand collection from restatement press releases and SEC filings.
<i>Other_Penalty</i>	The sum of fines plus disgorgement and interest (in millions) levied by the SEC against all individuals and agents named as respondents in an SEC enforcement action. This information is hand-collected from SEC enforcement documents, available on the SEC’s website (www.sec.gov).
<i>Other_Respondents</i>	The total number of non-executive employees or other agents not employed at the firm (e.g., audit firm partner) that are named as respondents in an SEC enforcement action. This information is hand-collected from SEC enforcement documents, available on the SEC’s website (www.sec.gov).
<i>Past_Class_Action</i>	An indicator variable equal to 1 if the firm is listed in the Stanford Law School Securities Action Clearinghouse Database as having a lawsuit filed against it in the year prior to the restatement until ninety days after the restatement announcement and 0 otherwise. See

<http://securities.stanford.edu/index.html>

<i>Prior_Return</i>	The buy and hold return from the 250th trading day prior to the restatement announcement until the 8th trading day prior to the restatement announcement [-250,-8], with prices obtained from CRSP.
<i>Revenue</i>	An indicator variable equal to 1 if the restatement was caused by revenue recognition issues and 0 otherwise. This information is collected from the GAO and Audit Analytics databases, where available, or from hand collection from restatement press releases and SEC filings.
<i>Revenues</i>	Revenues (revt), in millions, collected from Compustat.
<i>Self_Report</i>	An indicator variable equal to 1 if the firm voluntarily reports the restatement to the Securities and Exchange Commission (SEC), and 0 otherwise. This information is collected from SEC enforcement documents, available on the SEC's website (www.sec.gov).
$\Delta SGA_{t+1}/Assets$	The change in selling, general, and administrative expenses (xsga) from year t to $t+1$, scaled by total assets (at), obtained from Compustat.
<i>Total Assets</i>	Total assets (at), in millions, collected from Compustat.

Figure 1: Mediation Analysis and Possible Scenarios for Leader, External Advisor, and Outcome Variables



Path AB

Leader → External Advisor → Outcome Variable

Path C

Leader → Outcome Variable

Path D

Outcome Variable → Leader

TABLE 1
Sample Selection Procedures

	Number of Observations
Restatement observations with either CIK or GVKEY identifiers from:	
(a) Government Accountability Office (GAO), January 1997 - June 29, 2006	2,687
(b) Audit Analytics (AA) database, March 29, 1995 - November 28, 2017	16,217
<i>Total GAO and AA Restatement Observations</i>	18,904
Less: restatement observations missing Compustat and CRSP information	(10,233)
Less: restatement observations not considered accounting irregularities ^a	(7,666)
<i>Accounting Irregularities Initial Sample Used for Hand-Collection</i>	1,005
Less: restatement observations with missing restatement information or audit committee information (from SEC Edgar filings)	(257)
Less: duplicate restatement events ^a	(85)
Less: restatement observations where leader is not disclosed	(137)
Final Sample of Accounting Irregularities (478 unique ciks)	526

Notes: This table explains the sample composition. The GAO prepared its initial report on restatements for the U.S. Senate Committee on Banking, Housing, and Urban Affairs in 2002, with two additional reports in 2006. The first report identified unique firm restatement announcements spanning from January 1, 1997 to June 20, 2002. The second report identified restatements announced between July 1, 2002 and September 30, 2005. The third identified restatements between October 1, 2005 and June 29, 2006. The earliest restatement announcement in the Audit Analytics database occurred on March 29, 1995, with increasing coverage of restatement events starting in 2001. We use the classification scheme developed in Hennes et al. (2008) to determine accounting irregularities. Specifically, each restatement is initially classified as an accounting irregularity if any one of the following conditions is met: (1) the firm uses variants of the words “irregularity” or “fraud” in describing the misstatement in a press release; (2) the firm announces an independent internal investigation into the misconduct; or (3) the misstatement involves a Securities and Exchange Commission (SEC) or Department of Justice (DOJ) investigation into the misconduct. We apply the Hennes et al. (2008) method to identify irregularities from both the GAO database and the Audit Analytics database.

^a We manually examine every instance in which the same firm is listed more than once in our irregularity sample. We identify 85 instances in which the observations from the GAO or AA datasets referenced the same underlying restatement event. For these observations, we consolidate information across various disclosures to create one observation per restatement event.

TABLE 2
Distribution of Irregularities across Year and Industry

Panel A: Distribution of Irregularities by Year

Year	No. of irregularity announcements	Percent of sample	Year	No. of irregularity announcements	Percent of sample
1995	2	0.4	2007	21	4.0
1996	1	0.2	2008	9	1.7
1997	8	1.5	2009	10	1.9
1998	18	3.4	2010	10	1.9
1999	28	5.3	2011	13	2.5
2000	33	6.3	2012	12	2.3
2001	19	3.6	2013	8	1.5
2002	45	8.6	2014	7	1.3
2003	41	7.8	2015	11	2.1
2004	65	12.4	2016	5	1.0
2005	88	16.7	2017	4	0.7
2006	68	12.9	Total	526	100.0

Panel B: Distribution of Irregularities by Industry

Industry Description	No. of irregularity announcements	Percent of sample	Percent of Compustat firms	Industry Description	No. of irregularity announcements	Percent of sample	Percent of Compustat firms
1 Agriculture	3	0.6	0.2	26 Defense	1	0.2	0.1
2 Food Products	9	1.7	0.7	27 Precious Metals	2	0.4	2.3
3 Soda & Candy	1	0.2	0.2	28 Industrial Metal Mining	3	0.6	3.2
4 Beer and Liquor	0	0.0	0.2	29 Coal	2	0.4	0.2
5 Tobacco Products	1	0.2	0.1	30 Petroleum and Nat. Gas	11	2.1	3.5
6 Recreational Products	1	0.2	0.2	31 Utilities	14	2.7	2.4
7 Entertainment	5	1.0	0.7	32 Communication	17	3.2	1.4
8 Printing and Publishing	2	0.4	0.2	33 Personal Services	6	1.1	0.5
9 Consumer Goods	3	0.6	0.5	34 Business Services	102	19.4	6.4
10 Apparel	6	1.1	0.4	35 Computers	29	5.5	0.9
11 Healthcare	14	2.7	0.7	36 Electronic Equipment	32	6.1	2.3
12 Medical Equipment	7	1.3	1.7	37 Lab Equipment	4	0.8	0.7
13 Pharmaceutical Products	37	7.0	7.2	38 Business Supplies	1	0.2	0.4
14 Chemicals	6	1.1	1.0	39 Shipping Containers	1	0.2	0.1

15 Rubber and Plastic Prod.	7	1.3	0.3	40 Transportation	10	1.9	1.8
16 Textiles	4	0.8	0.1	41 Wholesale	12	2.3	1.5
17 Construction Materials	6	1.1	0.9	42 Retail	36	6.8	2.0
18 Construction	8	1.5	0.5	43 Restaurants, Hotel	5	1.0	0.9
19 Steel Works	5	1.0	0.5	44 Banking	21	4.0	12.0
20 Fabricated Products	2	0.4	0.1	45 Insurance	14	2.7	2.4
21 Machinery	20	3.8	1.4	46 Real Estate	3	0.6	1.0
22 Electrical Equipment	3	0.6	0.7	47 Trading	23	4.4	34.4
23 Automobiles and Trucks	10	1.9	0.7	48 Other	16	3.0	0.4
24 Aircraft	1	0.2	0.2				
25 Shipbuilding, Railroad	0	0.0	0.1	Total	526	100.0	100.0

Panel C: Descriptive Statistics of Compustat Population vs. Irregularity Sample (in millions)

	Compustat Population (n = 195,605)	Irregularity Sample (n = 526)	Difference	P-Value
Total Assets				
Mean	\$8,365.46	\$3,796.79	\$4,568.67	0.18
Median	\$233.84	\$451.56	(\$217.72)	0.00
Revenues				
Mean	\$2,385.21	\$2,053.84	\$331.37	0.53
Median	\$113.32	\$367.70	(\$254.38)	0.00
Net Income				
Mean	\$141.29	(\$94.20)	\$235.49	0.00
Median	\$2.24	\$1.28	\$0.96	0.00
Market Value				
Mean	\$3,046.36	\$2,613.38	\$432.98	0.53
Median	\$161.98	\$364.15	(\$202.17)	0.00

Notes: This table presents the distribution of the sample of accounting irregularity announcements across years and industries (Panels A and B, respectively). In Panel B, industry groupings are based on Fama and French (1997), and the Compustat sample spans the years 1994-2018. Panel C compares various firm characteristics between the irregularity sample and the Compustat population. P-values are computed using t-tests for differences in mean and Wilcoxon-Signed Rank Median test for differences in median.

TABLE 3
Accounting Irregularity Investigation Teams

Panel A: Investigation Team Details

Disclosure Date of Investigation Team <i>(relative to initial restatement announcement)</i>	N	Mean Difference in Days	Median Difference in Days
Date Leader Disclosed – Initial Restate Date	526	12.6	1.0
Date Law Advisor Disclosed – Initial Restate Date	176	25.2	7.0
Date Accounting Advisor Disclosed – Initial Restate Date	76	53.1	57.0

	Frequency	Percent of Sample (n = 526)
Independent Leader		
Audit Committee (AC)	215	40.9%
Special Committee (SC)	55	10.4%
Board of Directors	<u>2</u>	<u>0.4%</u>
<i>Independent Leader Total</i>	272	51.7%
Other (Non-Independent) Leader		
Management	135	25.7%
Company	<u>119</u>	<u>22.6%</u>
<i>Other Leader Total</i>	254	48.3%
External Advisors		
(A) Law Advisor Only	95	18.1%
(B) Accounting Advisor Only	5	1.0%
(C) Both Law and Accounting Advisor	<u>84</u>	<u>15.9%</u>
<i>External Advisors (any) Total</i>	184	35.0%
<i>Law Advisors Total (A + C)</i>	179	34.0%
<i>Accounting Advisors Total (B + C)</i>	89	16.9%

Disclosure of Advisory Firm Name				
	<i>Yes</i>	<i>%</i>	<i>No</i>	<i>%</i>
<i>Law Advisors Total (A + C)</i>	44	25%	135	75%
<i>Accounting Advisors Total (B + C)</i>	32	36%	57	64%

Panel B: Contingency Table of Independent Team Leader and the Hiring of External Advisors

Independent Leader	<u>External Advisor (any)</u>		Chi-Square	p-value	<u>Law Advisor</u>		Chi-Square	p-value	<u>Accounting Advisor</u>		Chi-Square	p-value
	Yes	No			Yes	No			Yes	No		
Yes	165	107	12.37	0.00	161	111	9.19	0.00	83	189	41.31	0.00
Row %	(60.7%)	(39.3%)			(59%)	(41%)			(31%)	(69%)		
No	19	235	183.69	0.00	18	236	187.1	0.00	6	248	230.57	0.00
Row %	(7.5%)	(92.5%)			(7%)	(93%)			(2%)	(98%)		
Total	184	342			179	347			89	437		
Column %	34.9%	65.0%			34.0%	66.0%			16.9%	83.1%		
Chi-Square	116.00	47.91			114.24	45.03			66.62	7.97		
p-value	0.00	0.00			0.00	0.00			0.00	0.00		

Panel C: Restatement Reason, Split by Independent Leader

Restatement Reason	Total Frequency	Independent Leader = YES		Independent Leader = NO		Diff. % (1)-(2)
		Frequency	Percent of Total (1)	Frequency	Percent of Total (2)	
Revenue Recognition	214	127	59.4%	87	40.7%	18.7%***
Payroll, Selling, General, Administrative, and Other Expenses	95	58	61.1%	37	39.0%	22.1%**
Fixed Asset or Intangible Asset Valuation Issues (excl. goodwill)	84	42	50.0%	42	50.0%	0.0%
Foreign, Related Party, Subsidiary, and Intercompany	81	50	61.7%	31	38.3%	23.4%**
Liabilities, Payables, Reserves, and Accrual Estimates	80	48	60.0%	32	40.0%	20.0%*
Acquisitions, Mergers, Disposals, and Reorganization	75	23	30.7%	52	69.3%	-38.6%***
Inventory, Vendor, and Cost of Sales	73	44	60.3%	29	39.7%	20.6%*
Accounts/loans Receivable, Investments, and Cash	64	33	51.6%	31	48.4%	3.2%
Debt and Equity	53	12	22.6%	41	77.4%	-54.8%***
Stock-based and Executive Compensation (excl. option backdating)	47	27	57.5%	20	42.6%	14.9%
Lease, SFAS 5, Legal, and Contingency Issues	41	24	58.5%	17	41.5%	17.0%
Tax	35	15	42.9%	20	57.1%	-14.2%
Cash Flow Statement	29	5	17.2%	24	82.8%	-65.6%***
Depreciation, Depletion, and Amortization	26	10	38.5%	16	61.5%	-23.0%
Stock Option Backdating	25	24	96.0%	1	4.0%	92.0%***
Consolidation	23	10	43.5%	13	56.5%	-13.0%

Panel D: Restatement Reason, Split by External Advisors

Restatement Reason	Total Frequency	External Advisor = YES		External Advisor = NO		Diff. % (1)-(2)
		Frequency	Percent of Total (1)	Frequency	Percent of Total (2)	
Revenue Recognition	214	84	39.3%	130	60.8%	-21.5%***
Payroll, Selling, General, Administrative, and Other Expenses	95	40	42.1%	55	57.9%	-15.8%
Fixed Asset or Intangible Asset Valuation Issues (excl. goodwill)	84	28	33.3%	56	66.7%	-33.4%***
Foreign, Related Party, Subsidiary, and Intercompany Liabilities, Payables, Reserves, and Accrual Estimates	81	36	44.4%	45	55.6%	-11.2%
Acquisitions, Mergers, Disposals, and Reorganization	80	39	48.8%	41	51.2%	-2.4%
Inventory, Vendor, and Cost of Sales	75	16	21.3%	59	78.7%	-57.4%***
Accounts/loans Receivable, Investments, and Cash	73	36	49.3%	37	50.7%	-1.4%
Debt and Equity	64	29	45.3%	35	54.7%	-9.4%
Stock-based and Executive Compensation (excl. option backdating)	53	12	22.6%	41	77.4%	-54.8%***
Lease, SFAS 5, Legal, and Contingency Issues	47	22	46.8%	25	53.2%	-6.4%
Tax	41	20	48.8%	21	51.2%	-2.4%
Cash Flow Statement	35	15	42.9%	20	57.1%	-14.2%
Depreciation, Depletion, and Amortization	29	5	17.2%	24	82.8%	-65.6%***
Stock Option Backdating	26	7	26.9%	19	73.1%	-46.2%**
Consolidation	25	22	88.0%	3	12.0%	76.0%***
	23	7	30.4%	16	69.6%	-39.2%*

Notes: This table provides descriptive statistics about the assigned leader of the accounting irregularity investigation and the external advisors that are hired. Panel A outlines the disclosed frequency of leaders and external advisors of the internal investigations, as well as how long after the initial restatement announcement these details were announced. Panel B includes 2x2 contingency tables documenting the frequency of observations with independent leaders (e.g., investigations led by the Audit Committee, a Special Committee, or the Board of Directors) and external advisors across several sample splits. Chi-square goodness of fit statistics are shown, along with the associated p-values (two-tailed). Panels C and D show the frequency of the disclosed restatement reason across several sample splits. The reason for the restatement is collected from the GAO and Audit Analytics databases, when available, or from hand-collection from restatement press releases and/or SEC filings. For each restatement reason, Panel C reports the frequency and percent of internal investigations that are led by independent leaders. For each restatement reason, Panel D reports the frequency and percent of internal investigations that involve external advisors. The “Percent of Total” columns in Panels C and D do not total 100% because (a) one restatement may be driven by several issues simultaneously, and (b) this list includes only those restatement reasons with the highest cumulative frequencies. In both Panels C and D, the “Diff. %” column is computed as the percentage in column (1) less the percentage in column (2). ***, **, and * represent a significant chi-square goodness of fit test for differences in proportions at the $p < 0.01$, $p < 0.05$, and $p < 0.10$ level, respectively.

TABLE 4
Cost and Length of Accounting Irregularity Internal Investigations

Full Sample	<u>N</u>	<u>Mean</u>	<u>Median</u>	<u>Min</u>	<u>Max</u>
Length of Investigation (days)	526	65.7	45	0	397
Cost of Investigation (millions)	111	\$5.27	\$2.20	\$0.20	\$47
Cost/Assets	111	0.01	0.00	0.00	0.04
Cost/Sales	111	0.02	0.01	0.00	0.53
$\Delta\text{SGA}_{t+1}/\text{Assets}$	466	0.02	0.01	-3.02	1.33

	Independent Leader		Other Leader		<u>Diff.</u>	<u>p-value</u>	External Advisor		No External Advisor		<u>Diff.</u>	<u>p-value</u>
	<u>N</u>	<u>Mean</u>	<u>N</u>	<u>Mean</u>			<u>N</u>	<u>Mean</u>	<u>N</u>	<u>Mean</u>		
Sample Splits												
Length of Investigation (days)	272	73.3	254	57.6	15.71	0.01	184	86.6	342	54.5	32.11	0.00
Cost of Investigation (millions)	86	\$5.69	25	\$3.81	1.88	0.34	67	\$6.55	44	\$3.32	3.23	0.05
Cost/Assets	86	0.01	25	0.01	0.00	0.75	67	0.01	44	0.01	0.00	0.99
Cost/Sales	86	0.02	25	0.01	0.01	0.56	67	0.01	44	0.02	-0.01	0.24
$\Delta\text{SGA}_{t+1}/\text{Assets}$	239	0.01	227	0.04	-0.03	0.09	158	0.00	308	0.03	-0.03	0.08

Notes: This table outlines the disclosed cost and length of the internal investigations undertaken by irregularity firms in our sample. Data on the length of the investigation is inferred by comparing the first and last disclosure dates discussing the internal investigation, and this information is available for our full sample of 526 accounting irregularities. Since some firms voluntarily disclose the cost of the investigation in public filings, this data is only available for a subset of the sample. T-tests are used to compare sample means, with two-tailed p-values reported. Variables are defined in Appendix C.

TABLE 5
Descriptive Statistics for Full Sample

<u>Independent Variables:</u>	N	Mean	Median	Std.Dev.	P25	P75
<i>Independent Leader</i>	526	0.52	1.00	0.50	0.00	1.00
<i>Law_Advisor</i>	526	0.34	0.00	0.47	0.00	1.00
<i>Accounting_Advisor</i>	526	0.17	0.00	0.38	0.00	0.00
<i>CEO Turnover</i>	392	0.22	0.00	0.42	0.00	0.00
<i>Firm_Respondent</i>	526	0.21	0.00	0.41	0.00	1.00
<i>Firm_Monetary_Penalty (\$mm)</i>	113	\$12.36	\$0.00	\$46.41	\$0.00	\$3.00
 <u>Audit Committee Characteristics:</u>						
<i>Accounting_Finance_Experience</i>	526	0.73	1.00	0.44	0.00	1.00
<i>Lawyer</i>	526	0.27	0.00	0.45	0.00	1.00
<i>AC_Size</i>	526	3.29	3.00	0.77	3.00	4.00
 <u>Restatement Severity and Type:</u>						
<i>Revenue</i>	526	0.41	0.00	0.49	0.00	1.00
<i>Option_Backdating</i>	526	0.05	0.00	0.21	0.00	0.00
<i>Foreign/Related Party</i>	526	0.15	0.00	0.36	0.00	0.00
<i>Cashflow</i>	526	0.06	0.00	0.23	0.00	0.00
<i>Debt_Equity</i>	526	0.10	0.00	0.30	0.00	0.00
<i>Irregularity Magnitude Decile</i>	526	5.24	5.00	2.42	4.00	7.00
<i>Concurrent_Return [-1,+1]</i>	526	-0.07	-0.04	0.14	-0.11	0.01
<i>Misstatement_Length (days)</i>	526	960.14	823.22	615.22	545.0	1276.0
 <u>Firm and Executive Characteristics:</u>						
<i>CEO_Salary (\$mm)</i>	526	1.58	0.75	2.24	0.40	1.62
<i>CEO_Acct_CPA</i>	526	0.02	0.00	0.12	0.00	0.00
<i>GC_Top5</i>	526	0.28	0.00	0.45	0.00	1.00
<i>Big5_Auditor</i>	526	0.79	1.00	0.41	1.00	1.00
<i>Prior_Return</i>	526	0.04	-0.07	0.71	-0.41	0.23
<i>Log(Assets)</i>	526	6.21	6.11	1.97	4.79	7.50
<i>Industry_Irregularities</i>	526	8.22	5.00	7.87	2.00	10.00
<i>Past_Class_Action</i>	526	0.16	0.00	0.37	0.00	0.00
 <u>Regulatory Changes & Other Controls:</u>						
<i>D_0206</i>	526	0.58	1.00	0.49	0.00	1.00
<i>D_0709</i>	526	0.08	0.00	0.27	0.00	0.00
<i>D_1017</i>	526	0.13	0.00	0.34	0.00	0.00
<i>D_Timeliness</i>	526	0.22	0.00	0.42	0.00	0.00
<i>Self_Report</i>	113	0.15	0.00	0.36	0.00	0.00
<i>Cooperation_Credit</i>	113	0.52	1.00	0.50	0.00	1.00
<i>C_Level_Respondents</i>	113	1.50	1.00	1.51	1.00	2.00
<i>Other_Respondents</i>	113	1.85	1.00	2.70	0.00	2.00
<i>Other_Penalty (\$mm)</i>	113	\$31.97	\$0.075	\$309.49	\$0.00	\$0.33

Notes: This table presents descriptive statistics for each of the dependent and independent variables in our regression models. Variable definitions are presented in Appendix C.

TABLE 6
Determinants of the Accounting Irregularity Investigation Team

Panel A: Determinants of Independent Team Leader

Variable	Probit Model with Dependent Variable = <i>Independent Leader</i>	
	Prediction	Coefficient/P-value
Intercept		-0.415 (0.372)
<u><i>Audit Committee Characteristics</i></u>		
<i>Accounting_Finance_Experience</i>	(+)	0.294*** (0.009)
<i>Lawyer</i>	(+)	-0.004 (0.511)
<i>AC Size</i>	?	-0.074 (0.343)
<u><i>Restatement Severity and Type</i></u>		
<i>Revenue</i>	(+)	0.207** (0.041)
<i>Irregularity_Magnitude_Decile</i>	(+)	0.012 (0.340)
<i>Concurrent Return</i>	(-)	-1.652*** (0.000)
<i>Log(Misstatement Length)</i>	(+)	0.131* (0.077)
<i>Option_Backdating</i>	?	1.491*** (0.000)
<i>Foreign/Related Party</i>	?	0.406** (0.030)
<i>Cashflow</i>	?	-1.044*** (0.000)
<i>Debt_Equity</i>	?	-0.836*** (0.000)
<u><i>Firm and Executive Characteristics</i></u>		
<i>Log(CEO_Salary)</i>	(-)	-0.054* (0.037)
<i>CEO_Acct_CPA</i>	?	1.249** (0.025)
<i>GC_Top5</i>	(-)	0.123 (0.802)
<i>Big5_Auditor</i>	?	-0.262** (0.050)
<i>Prior_Return</i>	(-)	0.020 (0.603)
<i>Log(Assets)</i>	(+)	0.061* (0.062)
<i>Industry_Irregularities</i>	(+)	0.007 (0.184)
<i>Past_Class_Action</i>	(+)	0.271* (0.061)
<u><i>Regulatory Changes</i></u>		
<i>D_0206</i>	(+)	0.729*** (0.000)
<i>D_0709</i>	?	0.171 (0.555)
<i>D_1017</i>	(+)	0.672*** (0.000)
<i>N</i>		526
<i>Pseudo R²</i>		17.49%

Panel B: Determinants of Hiring an External Advisor

Variable	Pred.	Probit Model with Dependent Variable:	
		(1)	(2)
		<i>Law Advisor</i>	<i>Accounting Advisor</i>
Intercept		-2.719*** (0.000)	-4.164*** (0.000)
<i>Independent_Leader</i>	?	1.723*** (0.000)	1.581*** (0.000)
<u><i>Audit Committee Characteristics</i></u>			
<i>Accounting_Finance_Experience</i>	?	-0.174 (0.246)	-0.276 (0.213)
<i>Lawyer</i>	?	-0.046 (0.736)	-0.445** (0.020)
<i>AC Size</i>	?	0.093 (0.222)	0.287*** (0.001)
<u><i>Restatement Severity and Type</i></u>			
<i>Revenue</i>	(+)	0.153 (0.139)	0.013 (0.473)
<i>Irregularity_Magnitude_Decile</i>	(+)	0.056** (0.014)	0.048** (0.033)
<i>Concurrent Return</i>	(-)	0.149 (0.597)	-1.694** (0.002)
<i>Log(Misstatement Length)</i>	(+)	0.015 (0.447)	0.143 (0.138)
<i>Option_Backdating</i>	?	1.072*** (0.001)	0.359 (0.348)
<i>Foreign/Related Party</i>	?	0.198 (0.322)	0.050 (0.800)
<i>Cashflow</i>	?	0.056 (0.878)	0.494 (0.229)
<i>Debt_Equity</i>	?	0.413 (0.225)	0.102 (0.780)
<u><i>Firm and Executive Characteristics</i></u>			
<i>Log(CEO_Salary)</i>	(-)	0.014 (0.667)	0.028 (0.851)
<i>CEO_Acct_CPA</i>	?	0.653 (0.103)	0.916 (0.124)
<i>GC_Top5</i>	(-)	-0.002 (0.494)	-0.212 (0.146)
<i>Big5_Auditor</i>	?	0.036 (0.827)	0.170 (0.229)
<i>Prior_Return</i>	(-)	-0.057 (0.245)	0.004 (0.512)
<i>Log(Assets)</i>	(+)	0.074** (0.040)	0.029 (0.292)
<i>Industry_Irregularities</i>	(+)	0.001 (0.436)	0.002 (0.414)
<i>Past_Class_Action</i>	(+)	0.055 (0.359)	0.037 (0.440)
<u><i>Regulatory Changes</i></u>			
<i>D_0206</i>	(+)	-0.158 (0.790)	0.066 (0.381)
<i>D_0709</i>	?	-0.237 (0.448)	0.161 (0.668)

<i>D 1017</i>	(+)	-0.243 (0.833)	0.516* (0.075)
<i>N</i>		526	526
Pseudo R ²		31.18%	26.93%
Area Under ROC		84.56%	83.99%

Notes: Panel A presents the results of probit models predicting whether the irregularity firm assigns the Audit Committee, Special Committee, or the Board of Directors to lead its internal investigation (*Independent Leader*). Panel B presents the results of probit models predicting whether the irregularity firm hires an external advisor to assist with the internal investigation. In Panel B, the dependent variable used in each model is listed at the top of the column, with the dependent variable in column 1 = *Law Advisor* and column 2 = *Accounting Advisor*. P-values are in parentheses beneath coefficient estimates (bold values indicate $p < 0.10$). Two-tailed p-values are shown for variables without a signed prediction; one-tailed p-values are shown for variables with a signed prediction if the coefficient sign is in the predicted direction, otherwise (1 - one-tailed p-values) are shown. T-statistics and p-values are based on robust standard errors clustered by industry. *, **, and *** indicate the coefficient is significantly different from zero at the $p = 0.10$, $p = 0.05$ and $p = 0.01$ levels, respectively. Variable definitions are found in Appendix C. Area Under ROC (Receiver Operating Characteristic) is reported as a measure of discriminatory power.

TABLE 7
The Impact of the Investigation Team on CEO Turnover

FIML Bivariate Probit – simultaneous equation of the following models [*selection model results excluded for brevity*]
Selection Equation: $Independent_Leader = \alpha + \beta_{1-3}(\text{Audit Committee Characteristics}) + \beta_{4-11}(\text{Restatement Type and Severity}) + \beta_{12-18}(\text{Firm and Executive Characteristics}) + \beta_{19-21}(\text{Regulatory Changes}) + \varepsilon$

Outcome Equation: $CEO_Turnover = \alpha + \beta_1 Independent_Leader + \beta_{2-6}(\text{External Advisor Type}) + \beta_{7-14}(\text{Restatement Type and Severity}) + \beta_{15-21}(\text{Firm and Executive Characteristics}) + \beta_{22-24}(\text{Regulatory Changes}) + \varepsilon$

Variable	Outcome Equation with Dependent Variable = <i>CEO Turnover</i>		
	Pred.	(1)	(2)
Intercept		-2.107*** (0.002)	-2.162*** (0.001)
<i>Independent_Leader</i>	(+)	1.437*** (0.001)	1.460*** (0.000)
<i>Law_Advisor</i>	(+)	0.232* (0.053)	
<i>Accounting_Advisor</i>	(+)		0.266** (0.042)
<u><i>Restatement Severity and Type</i></u>			
<i>Revenue</i>	(+)	-0.088 (0.678)	-0.083 (0.670)
<i>Irregularity_Magnitude_Decile</i>	(+)	0.053* (0.052)	0.057** (0.038)
<i>Concurrent_Return</i>	(-)	0.397 (0.700)	0.472 (0.750)
<i>Log(Misstatement Length)</i>	(+)	-0.122 (0.863)	-0.123 (0.866)
<i>Option_Backdating</i>	?	-0.702* (0.062)	-0.667* (0.061)
<i>Foreign/Related_Party</i>	?	-0.418* (0.059)	-0.401* (0.079)
<i>Cashflow</i>	?	0.280 (0.422)	0.255 (0.449)
<i>Debt_Equity</i>	?	0.685*** (0.005)	0.697*** (0.004)
<u><i>Firm and Executive Characteristics</i></u>			
<i>Log(CEO_Salary)</i>	(-)	0.050 (0.894)	0.053 (0.902)
<i>CEO_Acct_CPA</i>	?	-0.483 (0.217)	-0.498 (0.189)
<i>GC_Top5</i>	?	0.175 (0.364)	0.189 (0.304)
<i>Big5_Auditor</i>	?	0.135 (0.549)	0.126 (0.569)
<i>Prior_Return</i>	(-)	-0.269 (0.121)	-0.294* (0.091)
<i>Log(Assets)</i>	?	0.043 (0.146)	0.046 (0.122)
<i>Industry_Irregularities</i>	?	-0.012** (0.048)	-0.013** (0.047)
<i>Past_Class_Action</i>	(+)	0.079 (0.334)	0.085 (0.321)
<u><i>Regulatory Changes</i></u>			
<i>D_0206</i>	?	-0.550** (0.015)	-0.541** (0.016)
<i>D_0709</i>	?	-0.586*	-0.618*

<i>D_1017</i>	?	(0.069) -0.837***	(0.060) -0.885***
		(0.007)	(0.004)
<i>N</i>		392	392
Wald Test of Rho = 0:			
<i>Chi</i> ²		1.855	2.600
<i>Prob</i> > <i>Chi</i> ²		0.173	0.107
Area Under ROC ^a		73.54%	73.86%
Marginal Effects for:			
<i>Independent Leader</i>	(+)	0.388*** (0.002)	0.394*** (0.000)
<i>Law Advisor</i>	(+)	0.625* (0.096)	
<i>Accounting Advisor</i>	(+)		0.072* (0.077)

Notes: This table presents the results of a full information maximum likelihood (FIML) bivariate probit model. The selection equation predicts whether the firm assigns an independent team (e.g., the Audit Committee, Special Committee, and/or the Board of Directors) to lead its internal investigation (selection equation regression results are not tabulated due to space constraints). This table presents the outcome equation results predicting the likelihood of CEO Turnover. Columns 1-2 show different external advisor variables. P-values are in parentheses beneath coefficient estimates (bold values indicate $p < 0.10$). Two-tailed p-values are shown for variables without a signed prediction; one-tailed p-values are shown for variables with a signed prediction if the coefficient sign is in the predicted direction, otherwise (1 - one-tailed p-values) are shown. T-statistics and p-values are based on robust standard errors clustered by industry. *, **, and *** indicate the coefficient is significantly different from zero at the $p = 0.10$, $p = 0.05$ and $p = 0.01$ levels, respectively. Variable definitions are found in Appendix C.

^a Area Under ROC (Receiver Operating Characteristic) is reported as a measure of discriminatory power; for the outcome equations, the Area Under ROC was calculated for the separate probit regression only (as opposed to the bivariate probit joint regressions).

TABLE 8
The Impact of the Investigation Team on SEC Enforcement Outcomes

Panel A: Determinants of the Firm Being Named as a Respondent in an SEC Enforcement Action

FIML Bivariate Probit – simultaneous equation of the following models [*selection model results excluded for brevity*]

Selection Equation: $Independent_Leader = \alpha + \beta_{1-3}(\text{Audit Committee Characteristics}) + \beta_{4-11}(\text{Restatement Type and Severity}) + \beta_{12-18}(\text{Firm and Executive Characteristics}) + \beta_{19-21}(\text{Regulatory Changes}) + \varepsilon$

Outcome Equation: $Firm_Respondent = \alpha + \beta_1 Independent_Leader + \beta_{2-6}(\text{External Advisor Type}) + \beta_{7-14}(\text{Restatement Type and Severity}) + \beta_{15-21}(\text{Firm and Executive Characteristics}) + \beta_{22-24}(\text{Regulatory Changes}) + \varepsilon$

Variable	Outcome Equation with Dependent Variable = <i>Firm Respondent</i>		
	Pred.	(1)	(2)
Intercept		-2.010 *** (0.000)	-2.047*** (0.000)
<i>Independent_Leader</i>	(-)	-1.291*** (0.000)	-1.237*** (0.000)
<i>Law_Advisor</i>	?	0.045 (0.710)	
<i>Accounting_Advisor</i>	(-)		-0.092 (0.212)
<u><i>Restatement Severity and Type</i></u>			
<i>Revenue</i>	(+)	0.335*** (0.007)	0.333*** (0.006)
<i>Irregularity_Magnitude_Decile</i>	(+)	0.102*** (0.000)	0.105*** (0.000)
<i>Concurrent_Return</i>	(-)	-2.195*** (0.000)	-2.215*** (0.000)
<i>Log(Misstatement_Length)</i>	(+)	0.121* (0.087)	0.122* (0.080)
<i>Option_Backdating</i>	?	-0.155 (0.705)	-0.146 (0.722)
<i>Foreign/Related_Party</i>	?	0.185* (0.099)	0.188* (0.090)
<i>Cashflow</i>	?	-0.627*** (0.001)	-0.611*** (0.000)
<i>Debt_Equity</i>	?	-0.423** (0.012)	-0.413** (0.019)
<u><i>Firm and Executive Characteristics</i></u>			
<i>Log(CEO_Salary)</i>	?	0.012 (0.586)	0.013 (0.556)
<i>CEO_Acct_CPA</i>	?	-0.227 (0.453)	-0.203 (0.469)
<i>GC_Top5</i>	?	-0.076 (0.498)	-0.086 (0.436)
<i>Big5_Auditor</i>	?	-0.185* (0.098)	-0.178 (0.104)
<i>Prior_Return</i>	(+)	0.090 (0.150)	0.093 (0.125)
<i>Log(Assets)</i>	(+)	0.161*** (0.000)	0.164*** (0.000)
<i>Industry_Irregularities</i>	?	-0.007 (0.306)	-0.007 (0.374)
<i>Past_Class_Action</i>	?	0.215* (0.079)	0.208* (0.088)
<u><i>Regulatory Changes</i></u>			
<i>D_0206</i>	?	0.341**	0.334**

<i>D_0709</i>	?	(0.032) -0.203 (0.478)	(0.046) -0.213 (0.394)
<i>D_1017</i>	?	0.027 (0.869)	0.017 (0.918)
<u>Other Controls</u>			
<i>D Timeliness</i>	(-)	-0.051 (0.292)	-0.056 (0.235)
<i>N</i>		526	526
Wald Test of Rho = 0:			
<i>Chi²</i>		2.97	1.66
<i>Prob > Chi²</i>		0.085	0.197
<i>Area Under ROC^a</i>		79.88%	79.90%
Marginal Effects for:			
<i>Independent_Leader</i>	(-)	-0.360*** (0.000)	-0.345*** (0.000)
<i>Law Advisor</i>	(?)	0.012 (0.710)	
<i>Accounting Advisor</i>	(-)		-0.026 (0.419)

Panel B: Determinants of Firm Monetary Penalties in SEC Enforcement Actions

Variable	PPML Regression with Dependent Variable = <i>Firm Monetary Penalty</i>		
	Pred.	(1)	(2)
Intercept		7.106*** (0.010)	7.517*** (0.003)
<i>Independent_Leader</i>	(-)	-0.975* (0.051)	-0.064 (0.442)
<i>Law_Advisor</i>	?	0.698 (0.169)	
<i>Accounting_Advisor</i>	(-)		-0.859** (0.018)
<u><i>Restatement Severity and Type</i></u>			
<i>Revenue</i>	(+)	0.406 (0.155)	0.895** (0.020)
<i>Irregularity_Magnitude_Decile</i>	(+)	0.097 (0.135)	0.021 (0.404)
<i>Concurrent_Return</i>	?	5.488** (0.017)	4.613** (0.018)
<i>Log(Misstatement_Length)</i>	(+)	1.338*** (0.000)	0.920*** (0.000)
<i>Option_Backdating</i>	?	-1.142* (0.098)	-0.499 (0.456)
<i>Foreign/Related_Party</i>	?	-0.251 (0.510)	-0.252 (0.521)
<i>Cashflow</i>	?	-1.189 (0.205)	0.560 (0.610)
<i>Debt_Equity</i>	?	-3.961*** (0.000)	-2.032*** (0.004)
<u><i>Firm and Executive Characteristics</i></u>			
<i>Log(CEO_Salary)</i>	?	-0.158 (0.237)	-0.033 (0.817)
<i>CEO_Acct_CPA</i>	?	2.488* (0.065)	1.603 (0.150)
<i>GC_Top5</i>	?	-0.307 (0.371)	-0.344 (0.256)
<i>Big5_Auditor</i>	?	-1.204* (0.096)	-0.809 (0.227)
<i>Prior_Return</i>	(+)	0.339 (0.168)	0.318 (0.145)
<i>Log(Assets)</i>	(+)	0.775*** (0.000)	0.632*** (0.000)
<i>Industry_Irregularities</i>	?	0.090** (0.017)	0.066*** (0.008)
<i>Past_Class_Action</i>	?	0.116 (0.737)	-0.029 (0.946)
<u><i>Regulatory Changes</i></u>			
<i>D_0206</i>	?	1.937 (0.143)	1.645 (0.145)
<i>D_0709</i>	?	3.211** (0.019)	1.982 (0.110)
<i>D_1017</i>	?	3.572** (0.029)	2.190 (0.120)
<u><i>Other Controls</i></u>			
<i>Self_Report</i>	(-)	-0.504 (0.202)	0.443 (0.756)
<i>Cooperation_Credit</i>	(-)	0.198	-0.246

<i>D_Timeliness</i>	(-)	(0.687) -1.513***	(0.247) -1.350*
		(0.006)	(0.062)
<i>C_Level_Respondents</i>	?	-0.282**	-0.220**
		(0.011)	(0.031)
<i>Other_Respondents</i>	?	0.166***	0.141***
		(0.000)	(0.000)
<i>Log(Other_Penalty)</i>	(+)	0.140***	0.116***
		(0.006)	(0.004)
<i>N</i>		113	113
<i>Pseudo R²</i>		91.8%	91.8%

Notes: This table examines the association between the leadership structure of internal investigations and SEC enforcement outcomes. Panel A presents the results of a full information maximum likelihood (FIML) bivariate probit model. The selection equation predicts whether the firm assigns an independent team (e.g., the Audit Committee, Special Committee, and/or the Board of Directors) to lead its internal investigation (selection equation regression results are not tabulated due to space constraints). The outcome equation results predicting the likelihood of the firm being named as a respondent in an SEC enforcement action are presented in columns 1-2. Panel B presents the results of a Poisson pseudo-maximum likelihood (PPML) equation predicting total fines, disgorgement of profits, and prejudgment interest that are assessed by the SEC against the firm in an enforcement action related to the accounting irregularity. This analysis only includes the 113 firms in our sample that are named as respondents in an SEC enforcement action, since penalties cannot be assessed against firms not named. P-values are shown in parentheses beneath coefficient estimates (bold values indicate $p < 0.10$). Two-tailed p-values are shown for variables without a signed prediction; one-tailed p-values are shown for variables with a signed prediction if the coefficient sign is in the predicted direction, otherwise (1 - one-tailed p-values) are shown. T-statistics and p-values are based on robust standard errors clustered by industry. *, **, and *** indicate the coefficient is significantly different from zero at the $p = 0.10$, $p = 0.05$ and $p = 0.01$ levels, respectively. Variable definitions are found in Appendix C.

^a Area Under ROC (Receiver Operating Characteristic) is reported as a measure of discriminatory power; for the outcome equations, the Area Under ROC was calculated for the separate probit regression only (as opposed to the bivariate probit joint regressions).

TABLE 9
Mediation Analysis

Operationalization of Baron and Kenny (1986) for our setting: Column:
 External Advisor Variable = $a_0 + a_1 \text{Independent_Leader} + a_{2-4}(\text{AC Characteristics}) + a_{5-12}(\text{Restatement Severity and Type})$
 + $a_{13-20}(\text{Firm and Executive Characteristics}) + a_{21-23}(\text{Regulatory Changes}) + e$ (5)

FIML Bivariate Probit Outcome Equation (selection equation is shown for *Independent Leader*):
 $\text{CEO_Turnover or Firm_Respondent} = \beta_0 + \beta_1 \text{Independent_Leader} + \beta_{2-9}(\text{Restatement Severity and Type}) + \beta_{10-17}(\text{Firm and Executive Characteristics})$
 + $\beta_{18-20}(\text{Regulatory Changes}) + \beta_{21}(\text{Other Controls}) + e$ (6)

FIML Bivariate Probit Outcome Equation (selection equation is shown for *Independent Leader*):
 $\text{CEO_Turnover or Firm_Respondent} = \theta_0 + \theta_1 \text{Independent_Leader} + \theta_{2-3}(\text{External Advisor Type}) + \theta_{4-11}(\text{Restatement Severity and Type})$
 + $\theta_{12-19}(\text{Firm and Executive Characteristics}) + \theta_{20-22}(\text{Regulatory Changes}) + \theta_{23}(\text{Other Controls}) + e$ (7)

Panel A. Scenario 1 – Mediator (*Law Advisor*) and Outcome Variable (*CEO Turnover*)

	(5)	BK1 Holds at 10% Level?		(6)	BK2 Holds at 10% Level?		(7)	BK3 Holds at 10% Level?
<i>Regression Type</i>	Probit		Bivariate Probit			Bivariate Probit		
<i>Dependent Variable</i>	<i>Law Advisor</i>		<i>Independent Leader</i>	<i>CEO Turnover</i>		<i>Independent Leader</i>	<i>CEO Turnover</i>	
<u>Variable</u>	Table 6 Panel B Col. 1						Table 7 Col. 1	
Intercept	-2.719*** (0.000)		-0.690 (0.272)	-2.234*** (0.001)		-0.676 (0.282)	-2.107*** (0.002)	
<i>Independent_Leader</i>	1.723*** 0.000	Yes		1.541*** 0.000	Yes		1.437*** (0.001)	
<i>Law_Advisor</i>							0.232* (0.053)	Yes
Control Variables?	Included		Included	Included		Included	Included	

Effect of *Independent_Leader* on *CEO_Turnover*:

Total Effect = β_1 in column 6 1.541***
 Direct Effect = θ_1 in column 7 1.437***
 Indirect Effect through Law Advisor = $a_1 * \theta_2 = (1.723) * (0.232)$ 0.400
 Sobel Test Statistic = $(a_1 * \theta_1) / \sqrt{(\theta_1^2 * s_{a_1}^2) + (a_1^2 * s_{\theta_1}^2) + (s_{a_1}^2 * s_{\theta_1}^2)}$ 3.147***

<i>N</i>	526	392	392		392	392
Pseudo R ²	31.18%					
<i>Wald Chi</i> ²	2,399.93					
Wald Test of Rho = 0:						
<i>Chi</i> ²			1.593			1.855
<i>Prob > Chi</i> ²	0.000		0.207			0.173

Panel B. Scenario 2 - Mediator (*Accounting Advisor*) and Outcome Variable (*CEO Turnover*)

	(5)	BK1 Holds at 10% Level?		(6)	BK2 Holds at 10% Level?		(7)	BK3 Holds at 10% Level?
<i>Regression Type</i>	Probit		Bivariate Probit			Bivariate Probit		
<i>Dependent Variable</i>	<i>Accounting Advisor</i>		<i>Independent Leader</i>	<i>CEO Turnover</i>		<i>Independent Leader</i>	<i>CEO Turnover</i>	
<u>Variable</u>	Table 6 Panel B Col. 2						Table 7 Column 2	
Intercept	-4.164*** (0.000)		-0.690 (0.272)	-2.234*** (0.001)		-0.668 (0.284)	-2.162*** (0.001)	
<i>Independent_Leader</i>	1.581*** (0.000)	Yes		1.541*** (0.000)	Yes		1.460*** (0.000)	
<i>Accounting_Advisor</i>							0.266* (0.042)	Yes
Control Variables?	Included		Included	Included		Included	Included	

Effect of *Independent_Leader* on *CEO_Turnover*:

Total Effect = β_1 in column 6

1.541***

Direct Effect = θ_1 in column 7

1.460***

Indirect Effect through *Accounting Advisor* = $a_1 * \theta_3 = (1.581) * (0.266)$

0.421

Sobel Test Statistic = $(a_1 * \theta_1) / \sqrt{(\theta_1^2 * s_{a_1}^2) + (a_1^2 * s_{\theta_1}^2) + (s_{a_1}^2 * s_{\theta_1}^2)}$

3.612***

<i>N</i>	526		392	392		392	392	
Pseudo R ²	26.93%							
<i>Wald Chi</i> ²	3,353.88							
Wald Test of Rho = 0:								
<i>Chi</i> ²				1.593			2.600	
<i>Prob > Chi</i> ²	0.000			0.207			0.107	

Panel C. Scenario 3 - Mediator (*Law Advisor*) and Outcome Variable (*Firm Respondent*)

	(5)	BK1 Holds at 10% Level?		(6)	BK2 Holds at 10% Level?		(7)	BK3 Holds at 10% Level?
<i>Regression Type</i>	Probit		Bivariate Probit			Bivariate Probit		
<i>Dependent Variable</i>	<i>Law Advisor</i>		<i>Independent Leader</i>	<i>Firm Respondent</i>		<i>Independent Leader</i>	<i>Firm Respondent</i>	
<u>Variable</u>	Table 6 Panel B Col. 1						Table 8 Panel A Col. 1	
Intercept	-2.719*** (0.000)		-0.710 (0.100)	-2.026*** (0.000)		-0.713* (0.078)	-2.010*** (0.000)	
<i>Independent_Leader</i>	1.723*** (0.000)	Yes		-1.267*** (0.000)	Yes		-1.291*** (0.000)	
<i>Law_Advisor</i>							0.045 (0.710)	No
Control Variables?	Included		Included	Included		Included	Included	

Effect of *Independent_Leader* on *Firm_Respondent*:

Total Effect = β_1 in column 6

Direct Effect = θ_1 in column 7

Indirect Effect through Law Advisor = $a_1 * \theta_2 = (1.723) * (0.045)$

Sobel Test Statistic = $(a_1 * \theta_1) / \sqrt{(\theta_1^2 * s_{a1}^2) + (a_1^2 * s_{\theta_1}^2) + (s_{a1}^2 * s_{\theta_1}^2)}$

<i>N</i>	526		526	526		526	526	
Pseudo R ²	31.18%							
<i>Wald Chi</i> ²	2,399.93							
Wald Test of Rho = 0:								
<i>Chi</i> ²				0.557			2.973	
<i>Prob > Chi</i> ²	0.000			0.455			0.085	

Panel D. Scenario 4 - Mediator (*Accounting Advisor*) and Outcome Variable (*Firm Respondent*)

	(5)	BK1 Holds at 10% Level?		(6)	BK2 Holds at 10% Level?		(7)	BK3 Holds at 10% Level?
<i>Regression Type</i>	Probit	Yes	Bivariate Probit		Yes	Bivariate Probit		No
<i>Dependent Variable</i>	<i>Accounting Advisor</i>		<i>Independent Leader</i>	<i>Firm Respondent</i>		<i>Independent Leader</i>	<i>Firm Respondent</i>	
<u>Variable</u>	Table 6 Panel B Col. 2						Table 8 Panel A Column 2	
Intercept	-4.164*** (0.000)		-0.710 (0.100)	-2.026*** (0.000)		-0.714* (0.093)	-2.047*** (0.000)	
<i>Independent_Leader</i>	1.581*** (0.000)		-1.267*** (0.000)		-1.237*** (0.000)			
<i>Accounting_Advisor</i>					-0.092 (0.212)			
Control Variables?	Included		Included	Included		Included	Included	

Effect of *Independent_Leader* on *Firm_Respondent*:

Total Effect = β_1 in column 6	-1.267***
Direct Effect = θ_1 in column 7	-1.237***
Indirect Effect through Accounting Advisor = $a_1 * \theta_3 = (1.581) * (-0.092)$	(0.145)
Sobel Test Statistic = $(a_1 * \theta_1) / \sqrt{(\theta_1^2 * s_{a1}^2) + (a_1^2 * s_{\theta 1}^2) + (s_{a1}^2 * s_{\theta 1}^2)}$	8.499***

<i>N</i>	526	526	526	526	526
Pseudo R ²	3,353.88				
<i>Wald Chi</i> ²	0.2693				
Wald Test of Rho = 0:					
<i>Chi</i> ²			0.557		1.638
<i>Prob > Chi</i> ²	0.000		0.455		0.201

This table reports the results of mediation analyses as discussed in Baron and Kenny (1986)'s Causal Steps Approach and Sobel (1982)'s Product of Coefficients Approach. To test for mediation, Baron and Kenny (1986) specify three regression equations, which are applied to our setting and shown in equations (5), (6), and (7) at the top of this table. In each panel, we note that the equations in columns 6 and 7 are the outcome equations of a FIML bivariate probit model. The selection equation is model (1) in our study predicting *Independent_Leader*. The relevant outcome variable (either *CEO_Turnover* or *Firm_Respondent*) and relevant mediator (either *Law_Advisor* or *Accounting_Advisor*) are listed in the description of each panel.

Baron and Kenny (1986) assert that for mediation to occur, three conditions must hold (which we label BK1, BK2, and BK3):

[BK1] "First, the independent variable must affect the mediator in the first equation;

[BK2] second, the independent variable must be shown to affect the dependent variable in the second equation;

[BK3] and third, the mediator must affect the dependent variable in the third equation.”

To assess the significance, the Sobel Test Statistic is used, which is equal to $(a_1 * \theta_1) / \sqrt{(\theta_1^2 * s_{a_1}^2) + (a_1^2 * s_{\theta_1}^2) + (s_{a_1}^2 * s_{\theta_1}^2)}$.
