

# **When Employees Speak Up: The Role of Confidential Witnesses in Shareholder Litigation of Financial Disclosure Fraud\***

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## **When Employees Speak Up: The Role of Confidential Witnesses in Shareholder Litigation of Financial Disclosure Fraud**

### **Abstract**

Establishing managers' intent to defraud and providing particulars of misstatements are major hurdles for shareholders in securities class action lawsuits. A common practice to overcome these hurdles is to recruit former employees as confidential witnesses. We study the determinants and consequences of involving employee confidential witnesses (ECWs) in securities lawsuits alleging financial disclosure fraud. We find that shareholders are more likely to engage ECWs when public information about misstatements is limited, when soft signals such as credit rating downgrades hint at potential fraud, and when misstating firms have higher labor intensity. ECW involvement is also more likely in firms with higher employee growth and lower employee satisfaction, reflecting weaker employee loyalty and greater disapproval of management behavior. Additional analysis reveals that ECWs' job positions align with specific allegations at issue. The presence of ECWs increases both settlement likelihood and lawsuit duration. Our study sheds new light on the role of rank-and-file employees in disciplining corporate financial disclosure fraud.

**Keywords:** financial disclosure fraud; misstatement, employee confidential witnesses; securities litigation; scienter information; particularity information; corporate governance

## 1. Introduction

Private securities litigation plays an important role in keeping fraudulent financial disclosures at bay (Schantl and Wagenhofer 2020). Shareholders' ability to hold management liable through litigation lies critically on whether they could furnish evidence about management's intent to defraud and the specific details of fraud. These hurdles are so high that they discourage lawsuits with merits (Choi 2007). To overcome these pleading hurdles, shareholders' attorneys are increasingly resorting to former employees as a source of inside information against the defendant company and its management.<sup>1</sup> The efficacy, incentives, and cost-benefit considerations involving the use of employees as confidential witnesses, however, remain largely unexplored in the extant research. Our study fills this void by examining the determinants and consequences of shareholders' use of employee confidential witnesses (ECWs) in securities lawsuits alleging financial disclosure fraud.

Distinct from whistleblowers, who expose potential misconduct before the public is aware of it, ECWs provide details regarding misstatements and management's state of mind after the public already learns about the existence of misstatements. Therefore, the role of ECWs is not to prove or to expose the existence of misstatements but rather is to distinguish intentional misstatements from unintentional ones by providing information to demonstrate the culpability of the management and to support allegations of falsity. The information is provided anonymously through masking the identities of employees testifying in the litigation. While the anonymity serves the purpose of protecting employees from retaliation by their former employers, it also reduces the credibility of their testimony.

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<sup>1</sup> Confidential witnesses in securities class actions are predominantly former employees. In some rarer cases, they may include customers or suppliers of the defendant company.

Their efficacy of holding management liable is further complicated by the fact that employees often possess only partial information about financial misstatements (Dyck, Morse, and Zingales 2010; Call, Kedia, and Rajgopal 2016; Call, Martin, Sharp, and Wilde 2018; Gao and Jia 2021; Berger and Lee 2022) and their opinions could be biased.<sup>2</sup> Accordingly, courts remain divided on the credibility of ECWs (Kaufman and Wunderlich 2010; Mark 2011; Rakoff 2014), leaving the overall effectiveness of ECWs an empirical question.

We examine the role of ECWs in private litigation through two related but distinct perspectives: first is from shareholders' (and their attorneys') cost-benefit considerations of recruiting ECWs and second from former employees' incentives of testifying against their former employers. Specifically, we formulate and test the following hypotheses regarding the net benefit of searching and recruiting ECWs from shareholders' perspectives: the net benefits increases (a) when there is less public information about the specific details of the underlying misstatements (which is termed "hard evidence" hereafter<sup>3</sup>), (b) when there are more indirect and vague signals of misstatements (which is termed "soft evidence" hereafter), such as negative actions by short-sellers, analysts, or credit rating agencies (Desai, Krishnamurthy, and Venkataraman 2006; Miller 2006; Karpoff and Lou 2010; Chen 2016; Huang, Kraft, and Wang 2023), and (c) when there is higher labor intensity, as more employees reduce search costs and increase the likelihood of finding individuals with misstatement-related information.

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<sup>2</sup> We use "misstatements" to refer to fraudulent financial disclosures that allegedly violate Section 10 of the Securities Exchange Act.

<sup>3</sup> We follow Choi (2007) by using "hard" to refer to publicly available information, such as financial restatements, that contains the specifics of misstatement and that helps support the allegations about management's intent.

The analysis of employees' incentive is relatively indirect but potentially provides interesting insights. Considering the fact that ECWs do not receive direct financial incentives but may face retaliation costs, we expect employee satisfaction and loyalty to play an important role in the decision to serve as confidential witnesses. As newer employees are likely less loyal than long-time employees, we expect that the presence of ECWs is associated with a higher growth of employees during the misstatement period, which reflects a greater proportion of new, less loyal employees. We also expect that lower employee satisfaction is likely to weaken employees' loyalty to the firm and heighten their skepticism toward management's actions. As a result, dissatisfied employees may be more attentive to information related to potential misreporting and more willing to come forward as confidential witnesses.

Using 1,447 securities class action (SCA) lawsuits filed between 2002 and 2022 and obtained from the Stanford Securities Class Action Clearinghouse (SCAC) database, we find 657 cases involving ECWs. As expected, the presence of hard evidence, such as restatements, late filings of financial statements and executive turnover, reduces both the likelihood and the number of ECWs involved in the lawsuits, while soft evidence, such as credit-rating downgrades, increases ECW involvement. Labor intensity also significantly boosts ECW involvement. Overall, these results are consistent with a cost-benefit tradeoff in plaintiffs' decisions to involve ECWs.

Regarding the incentives of employees to be ECWs, we find that the growth of employees during the misstatement period is positively associated with the involvement of ECWs. This is consistent with the notion that newer, less loyal employees are more willing to testify against their former employers. We also find that ECW involvement is negatively

associated with employee ratings on Glassdoor.com during the two years preceding the end of the misstatement period. These findings suggest that employees' negative perception of their former employers influence their motivation to support shareholder litigation.

To provide more direct evidence that ECWs possess fraud-related information, we perform additional analysis and find that ECWs' job positions align with the specific allegations at issue. Specifically, accountants are more likely to serve as ECWs in GAAP violation cases, and salespeople are more likely to support fictitious sales allegations. This evidence indicates that employees tend to serve as ECWs when their roles provide them with relevant expertise and access to allegation-specific information. Overall, our findings suggest that competency and incentives both determine employees' decision to stand up against their former employers.

Concerning the efficacy of ECWs in holding managers liable, we examine the likelihood of settlement and the duration of lawsuits. Since courts are cautious about the credibility of confidential sources, the effect of ECWs depends on how convincing their statements are about defendants' culpability. When courts find ECW statements convincing, they may grant plaintiffs more opportunities to gather additional evidence, lengthening the litigation process while increasing settlement likelihood. Our empirical results confirm these predictions and contrast sharply with other factors. For example, whistleblowers increase settlement likelihood without extending litigation duration.

We further analyze the impact of information content provided by ECWs, including scienter information (testimonies revealing managers' intention to deceive) and particularity information (details about misstatements). We find that ECWs presenting either type of information increase the likelihood of settlement and prolong the duration of

litigation compared to cases without such information. However, presenting both types simultaneously does not significantly strengthen the case beyond presenting just one type, suggesting that ECW testimonies serve to complement other sources of information rather than acting as a one-stop information source on their own.

This paper contributes to prior literature in two important ways. First, it adds to the literature that examines the role of rank-and-file employees in disciplining financial disclosure fraud. Extant studies focus on whistleblowers and show that employees have information about fraud (Campbell and Shang 2022) and that whistleblower protections deter fraud (Dyck et al. 2010; Stubben and Welch 2020; Berger and Lee 2022). However, we find that there is a limited presence of whistleblowers in private enforcement actions, which are the main enforcement mechanism of securities regulations. ECWs appear to fill this gap in private lawsuits. Moreover, whistleblowers and ECWs play distinct roles in disciplining fraudulent financial disclosure behavior; the former expose fraud while the latter provide information about management's culpability. Thus, our paper extends prior studies by examining the corporate governance role of employees who serve as ECWs in securities class actions.

Second, this study enhances our understanding of mechanisms to improve the effectiveness of private enforcement actions. Prior studies furnish various evidence for significant impacts of private enforcement on the cost of debt (e.g., Deng, Willis, and Xu 2014; Chen, Li, and Shen 2020), corporate access to external financing (Autore, Hutton, Peterson, and Smith 2014), corporate disclosures (Hopkins 2018; Houston, Lin, Liu, and Wei 2019), corporate governance (e.g., Brochet and Srinivasan 2014; Yang, Yu, and Zheng 2021), etc. However, mechanisms that enhance the effectiveness of private enforcement

actions are less explored. The few studies in this area mainly focus on institutional investors (Cheng, Huang, Li, and Lobo 2010). By showing that rank-and-file employees facilitate the prosecution of financial misstatements when public information of fraud is lacking, this paper extends our understanding of the role of employees as a useful source to strengthen the private enforcement of securities regulations.

## **2. Institutional Background and Hypotheses Development**

### ***2.1. Institutional Background***

Private securities litigation serves as a crucial tool for shareholders to deter and punish financial disclosure fraud. However, to minimize meritless lawsuits, the PSLRA imposes several challenging pleading standards, with scienter and particularity being the most demanding requirements. The scienter standard requires shareholders to provide evidence that strongly suggests defendants' intent to deceive, while the particularity standard mandates that shareholders specify which financial disclosures were misstated and explain why they believe the statements were false or misleading.

Proving management's intent to deceive is inherently difficult without access to insider information. While shareholders can request proprietary documents and records from defendants during the discovery phase to obtain direct evidence of management's involvement in fraud, the PSLRA requires that they first present convincing evidence of management's intent to deceive before proceeding to discovery. This requirement creates a paradoxical situation: shareholders need evidence of management's fraudulent intent so that they can access insider information that would provide such evidence. Employee

witness testimony about management fraudulent intent becomes a crucial source of information to overcome evidentiary challenges and resolve the paradox (Mark 2014).

Similarly, meeting the particularity standard requires shareholders to identify specific information about which statements were misstated, why they were misleading, and when the misstatements occurred. Although financial restatements can potentially provide this information by revealing which accounts were misstated, the reasons for misstatements, and their impact on earnings, they do have limitations. Courts may be skeptical of financial restatements since many restatements do not involve fraud (Pritchard and Sale 2005). Moreover, anticipating that shareholders will use restatements as evidence of fraud, management has incentives to conceal fraud by avoiding restatements altogether. Consequently, the uncertainty surrounding accounting irregularities and the limited availability of clear evidence pose significant obstacles to meeting the scienter and particularity requirements.

To overcome these pleading hurdles, shareholders' attorneys increasingly rely on former employees as confidential witnesses with private information of the company and its management. From the survey feedback we obtained from shareholders' attorneys, they typically identify and locate former employees through several established channels, including third-party investigative firms or research companies, professional networking sites such as LinkedIn, and public sources such as SEC filings and corporate press releases. Then they directly contact the employees to obtain relevant information.

In our survey, attorneys note that employees who testify as witnesses are not compensated or otherwise given financial incentives for their participation. They also note that the costs for these ECWs arise mainly from potential retaliation from the defendant

companies even if the employees had left the company. Therefore, plaintiffs' attorneys put the protection of witness identities as their first priority. Where nondisclosure agreements or related legal obligations are implicated, plaintiffs' attorneys may advise the witnesses to seek independent legal advice or arrange for and pay the cost of independent counsel. Such measures help reduce the risks for the witnesses, increasing the possibility that plaintiffs' attorneys could obtain information that may otherwise be inaccessible.

Although legal studies have long recognized the importance and common use of ECWs in securities litigation (e.g., Mark 2011; Rakoff 2014), the merit and efficacy of relying on ECWs in securities lawsuits remains debated. This debate centers on two opposing views regarding employees' capabilities and incentives to serve as effective witnesses.

The supporting view of ECWs emphasizes employees' unique access to internal corporate information. Rank-and-file employees are deeply embedded in daily operations and often interact closely with management, giving them an advantageous position to observe information unavailable to external parties. Research on employee insights using Glassdoor ratings supports this premise, demonstrating that employee perspectives reveal incremental information about firm performance and value beyond other information sources. For example, Green, Huang, Wen, and Zhou (2019) document that firms with improved employee ratings outperform those with declining ratings, while Huang, Li, and Markov (2020) find that employees' perceptions of their firms' business outlook predict future operating performance and that employees from specific functional areas possess better insights into their function's performance. Similarly, Farhadi and Nanda (2021) show that employee ratings before an IPO can predict post-IPO performance.

Beyond general firm fundamentals, rank-and-file employees may have privileged access to information specifically related to misstatements. Some employees directly observe or are coerced by management to participate in fraudulent disclosure schemes (Dyck et al. 2010). For example, in the 2021 SEC investigation of Exxon Mobil Corporation, lower-level employees revealed that they were pressured to use unrealistic drilling assumptions, demonstrating direct employee involvement in financial reporting misconduct (Matthews and Glazer 2021). Even when employees do not directly observe or participate in misreporting, they may be indirectly affected by managerial pressure or treatment associated with misreporting activities (Call et al. 2016; Caskey and Ozel 2017; Raghunandan 2021; Ji, Rozenbaum, and Welch 2022, 2024). The same forces that drive management to establish overly aggressive profit targets and exert undue pressure on sales personnel to achieve those targets may also motivate fraudulent earnings inflation. Additionally, employees may observe unusual operational activities triggered by fraudulent accounting manipulations (Call et al. 2018), such as abnormal shipments or sales returns near financial reporting dates—tactics commonly employed to inflate revenues. All these channels may expose rank-and-file employees to information that can satisfy scienter requirements, particularity requirements, or both.

The opposing view of ECWs questions employees' expertise and incentives in detecting and disclosing financial misstatements. First, employees may lack sufficient expertise to distinguish legitimate strategic decisions or complex business transactions from accounting manipulations, potentially leading them to misinterpret rare but legitimate transactions as illicit conduct. For instance, employees might incorrectly view abnormal product returns as evidence of revenue manipulation through channel stuffing when the

returns actually result from an unexpected decline in the product's competitive position relative to peer firms.

Second, even when employees possess relevant information about financial misstatements, they may lack sufficient incentives to serve as ECWs. Although courts do not require ECWs to be named, they mandate that plaintiffs describe confidential sources in sufficient detail to verify that these witnesses possess the alleged information (Lichterman 2010).<sup>4</sup> This specificity requirement may heighten employees' concerns about potential retaliation from their employers, reducing their willingness to participate as witnesses. The prospect of job loss and declining value of equity compensation and pensions following fraud revelation (Call et al. 2016; Choi and Gipper 2024) may further discourage employee participation in fraud exposure and litigation. Even former employees may hesitate to serve as witnesses due to concerns about negative repercussions from their previous employers, including potential damage to their professional reputation or future job prospects.

Given the opposite views regarding employees' informational advantages and limitations, the value of ECWs in securities litigation ultimately depends on shareholders' strategic assessment of their costs and benefits as well as employees' incentives of testifying against their employers. Accordingly, understanding when shareholders choose to recruit ECWs and when employees are willing to serve as such is essential for evaluating the role and effectiveness of employee witnesses in private securities litigation.

## ***2.2.Hypotheses Development for the Determinants of Involving CWs***

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<sup>4</sup> Appendix A provides examples of how ECWs are described in litigation complaints.

To understand the value of ECWs in securities litigation, we first analyze factors that affect the net benefits for plaintiffs' attorneys to recruit ECWs.

The first factor concerns the sufficiency of publicly available information about the underlying financial misstatements. When public information adequately meets pleading standards, shareholders are less likely to incur additional costs to recruit ECWs. Prior studies demonstrate that PSLRA has increased shareholders' reliance on financial restatements and other public red flags of financial misstatements (Choi 2007). Accordingly, we predict that shareholders will demand fewer ECWs when public information provides more direct and compelling evidence of financial misstatements.

On the contrary, when public information about fraud is vague and suggestive at best, the net benefits of seeking ECWs would be higher. Research indicates that sophisticated market participants, including short-sellers, banks, analysts, and credit rating agencies, often take negative actions against firms during misstatement periods (Joynt 2002; Desai et al. 2006; Karpoff and Lou 2010; Chen 2016; Huang et al. 2023). These actions may reflect an unfavorable business outlook, private information about financial misstatements, or both. The noise in these negative market events creates a higher benefit of recruiting former employees to distinguish between fraud and bad luck. Therefore, we predict that significant negative market events suggestive of misstatements will increase ECW involvement.

Our last factor concerns the size of the potential employee pool with access to misstatement-related information. Firms with higher labor intensity rely more heavily on human workers than on automated processes, and thus tend to have a greater number of employees who are directly or indirectly involved in day-to-day operations where

misstatements may occur. This larger pool of informed employees increases the statistical likelihood that plaintiffs' attorneys can find at least one worker who has witnessed, participated in, or acquired information of fraudulent activities while also lowering the search costs of finding such a witness. Therefore, we predict that plaintiffs' attorneys are more likely to recruit ECWs when the defendant firm exhibits higher labor intensity, as the broader workforce provides a richer and more accessible source of insider testimony.

In summary, we propose the following hypotheses regarding the determinants of ECWs involvement in securities litigation from the perspective of shareholders' (and their attorneys') cost-benefit considerations:

*H1a: The involvement of ECWs is negatively associated with public information of accounting irregularities.*

*H1b: The involvement of ECWs is positively associated with the presence of significant negative market events.*

*H1c: The involvement of ECWs is positively associated with the labor intensity of the defendant firm.*

Next, we consider two employee-related factors associated with willingness to serve as ECWs: workforce growth and employee satisfaction. First, new hires tend to bring diverse backgrounds and fresh perspectives, making them less susceptible to organizational conformity pressures and more likely to question supervisory decisions. They have also had less time to develop deep loyalty to their employer, which lowers the psychological barriers to reporting misconduct and sharing inside information with outsiders. Thus, we expect that a larger proportion of new employees increases the likelihood of an organization having employees willing to serve as ECWs.

Second, employee satisfaction may significantly influence employees' willingness to speak out. Unethical leadership reduces employees' job satisfaction and fosters negative perceptions of management (Brown, Treviño, and Harrison 2005), which in turn may increase employees' willingness to testify against their employer. In addition, since social approval motivates whistleblowers to expose misconduct to external parties (Butler, Serra, and Spagnolo 2020), we argue that the same logic extends to ECWs: employees who rate their employer poorly are more likely to view testifying against their employer as socially sanctioned and thus more willing to do so. Accordingly, we expect employee satisfaction to be inversely related to the involvement of ECWs.

Based on the foregoing analysis, we propose the following hypotheses regarding the determinants of ECW involvement from the perspective of employee incentives.

*H2a: The involvement of ECWs is positively associated with the population of new employees.*

*H2b: The involvement of ECWs is negatively associated with employee satisfaction with their employers.*

### ***2.3. Hypotheses Development for the Effects of ECWs***

Next, we turn to the impact of ECWs on the process and outcomes of securities litigation. ECW involvement may have mixed effects on settlement likelihood. Courts understand that ECWs face the retaliation risk, which may enhance the perceived credibility of ECW testimony and increase the probability of settlement. However, the confidentiality nature of these witnesses poses verification challenges that can undermine the reliability of their statements. Moreover, judges may suspect that ECWs could exaggerate their employers' wrongdoing or withhold important details (Rakoff 2014), leading to skepticism that could lower settlement probability. Despite these countervailing

forces, we expect that ECW involvement will ultimately boost the overall likelihood of settlement, given the pervasive use of ECWs in securities litigation.

The impact of ECWs on litigation duration is similarly complex. The information provided by ECWs is often soft in nature (e.g., oral statements rather than documentary evidence), requiring plaintiffs to gather additional evidence to meet pleading standards. This increased evidentiary burden can prolong the litigation process, especially when sympathetic courts allow plaintiffs multiple opportunities to refine their complaints. However, when ECW information is robust enough to meet pleading standards independently or effectively enhances existing evidence, their involvement could expedite resolution. Given the cautious judicial approach toward ECWs documented in legal studies (e.g., Kaufman and Wunderlich 2010), we expect that ECW involvement will generally result in a longer litigation process, as courts demand more substantiation of ECW-based claims.

Based on the above discussion, we propose the following hypotheses for the effects of ECWs on lawsuit settlement and duration, respectively.

*H3: The involvement of ECWs is positively associated with the likelihood of settlement in shareholder litigation.*

*H4: The involvement of ECWs is positively associated with the duration of shareholder litigation.*

### **3. Sample and Empirical Design**

#### ***3.1. Data Sources and Sample Selection***

Table 1 outlines our selection procedure. We start with a total of 6,322 SCA lawsuits filed between January 1, 1996 and December 31, 2022, from the SCAC database. We obtain basic information for each lawsuit, including defendant firms, filing dates, start and

end dates of the class period, courts, complaint files, and lawsuit outcomes (dismiss or settle). Following prior literature (Donelson, Kartapanis, McInnis, and Yust 2021; Huang et al. 2023), we define financial misstatement period as the class action period. We remove lawsuits that do not allege violations of Section 10 of the Exchange Act (1,653 cases), those involving misconduct of mutual funds, IPO underwriting, and financial analysts (366 cases), ongoing cases as of December 31, 2022 (373 cases), those missing information of the complaint filing date or class period (7 cases), lawsuits against firms not domiciled in the United States or not listed on a US stock exchange (678 cases), and cases involving defendant firms without Compustat or CRSP identifiers (166 cases).

For the remaining sample, we remove 235 lawsuits that lack complaint files in the SCAC database, as we collect ECW information from these files. In addition, prior to the Second Circuit's ruling in *Novak v. Kasaks* in 2000, the identities of witnesses in private actions may not have been kept confidential (Mark 2011). The Second Circuits made it clear in 2000 that witnesses do not need to be identified by name and the other circuits follow the suit afterward. Prior to such rulings, employees faced substantially higher retaliation risks, which discouraged witness participation and altered the cost-benefit assessments of plaintiffs' attorneys when deciding whether to involve witnesses. Therefore, we drop 1,106 cases filed before the circuits allowed witnesses to maintain their confidentiality.<sup>5</sup> After further requiring the lawsuits to have available data for regression analyses, we arrive at a final sample of 1,447 SCAs.

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<sup>5</sup> The following is a summary of the year and the circuits that issued the rulings from the year: 2000 (2<sup>nd</sup> Circuit), 2001 (8<sup>th</sup> Circuit), 2002 (1<sup>st</sup> and 5<sup>th</sup> Circuits), 2003 (10<sup>th</sup> Circuit), 2004 (3<sup>rd</sup> Circuit), 2005 (9<sup>th</sup> Circuit), 2007 (4<sup>th</sup> Circuit), 2008 (7<sup>th</sup> and 11<sup>th</sup> Circuits), 2009 (6<sup>th</sup> Circuit).

We manually read the complaint files of each SCA to collect ECW information. To identify the involvement of ECWs, we search for the following keywords and their corresponding abbreviations: “confidential witness,” “confidential informant,” “confidential resource,” and “former employee.” Once we identify a confidential witness, we determine whether he/she is a current or former employee of the defendant firm based on the complaint descriptions. Appendix A provides examples of ECW descriptions in litigation complaints. We then construct two measures: (1) *DECW*, a dummy variable that equals one if the complaint lists at least one ECW and zero otherwise; (2) *NECW*, the natural logarithm of one plus the number of ECWs in a complaint. *DECW* and *NECW* indicate the presence and prevalence of ECWs in SCA cases, respectively.

As for other data sources, we collect financial data, stock prices, institutional holdings and insider trading, restatements and internal control weaknesses, auditor changes and executive turnovers, and employee satisfaction from Compustat, CRSP, Thomson Reuters, Audit Analytics, Capital IQ Key Developments, and Glassdoor, respectively.

### ***3.2. Empirical Design for the Determinants of ECW Involvement***

To examine the determinants of the use of ECWs in securities litigation, we estimate the following equation:

$$\begin{aligned}
 ECW = & \beta_0 + \beta_1 \text{Public information of misstatements} \\
 & + \beta_2 \text{Significant negative market events} \\
 & + \beta_3 \text{Labor intensity} \\
 & + \beta_4 \text{Availability of new employees} \\
 & + \beta_5 \text{Employee satisfaction on employers} \\
 & + \sum \beta_i \text{Firm and misstatement characteristics} \\
 & + \text{Industry FE} + \text{Year FE} + \varepsilon_i,
 \end{aligned} \tag{1}$$

where *ECW* is either *DECW* or *NECW*.

To capture public information of financial misstatements related to H1a, we consider the following six accounting irregularities or corporate events during the misstatement period: (1) accounting restatements, (2) delayed SEC filings, (3) internal control weaknesses, (4) auditor changes, (5) top executive turnover, and (6) abnormal insider trading. Events 1–4 are closely linked to problematic financial disclosures. Event 5 attempts to capture top executives departure due to heightened concerns of potential litigation risks or revelations of misstatements from internal or external investigations (Li, Sun, and Ettredge 2010). Event 6 is considered because courts often view large or suspicious insider trading as evidence that the managers may have intentionally issued misstatements for personal gains (e.g., Sale 2002; Johnson, Nelson, and Pritchard 2007). We construct five dummy variables for events 1–5 (i.e., *Restatement*, *LateFiling*, *ICW*, *AuditorTurnover*, *ExecTurnover*). We measure abnormal insider trading (*AbTrade*) during the misstatement period for event 6, following Cohen, Malloy, and Pomorski (2012). Given the close link between *Restatement*, *LateFiling*, *ICW*, and *AuditorTurnover*, we construct an aggregate dummy variable (*AcctEvent*) that equals one if any of these four variables equals one, and zero otherwise. H1a predicts a negative association between these public events and the involvement of ECWs in the lawsuits, i.e., a negative  $\beta_l$ .

To identify significant negative market events related to H1b, we consider severe negative actions taken by financial analysts, credit rating agencies, and short sellers. We construct three dummy variables to indicate whether in the year before the end of misstatement period, a defendant firm experienced (1) a highly negative change in consensus analyst recommendation (*NegRecom*), defined as a change in recommendation

at the bottom quintile of the sample lawsuits, (2) a downgrade or negative credit watch issued by credit rating agencies (*NegCRA*), and (3) abnormal short-sell interests (*ABSI*) that are in the top quintile of sample lawsuits, where abnormal short-sell interests are calculated following Karpoff and Lou (2010). Again, we construct an aggregate dummy variable (*NegEvent*) that equals one if any negative market event occurs, and zero otherwise. H1b predicts a positive association between the occurrence of significant negative market events and the involvement of ECWs in the lawsuits, i.e., a positive  $\beta_2$ .

To measure labor intensity, as stated in H1c, we consider an indicator for labor intensity (*LaborIntense*), which equals one if the most recent ratio of employee population to total assets preceding the misstatement period ending date is in the top quartile of all sample lawsuits, and zero otherwise. H1c predicts a positive  $\beta_3$ .

Regarding employees' willingness to serve as confidential witnesses, we first measure the population of new employees using the average percentage change in the total number of employees over the three years prior to the misstatement period ending date (*%EmpChg*), with higher employee growth indicating a larger pool of newly-hired employees during the misstatement period. H2a predicts a positive  $\beta_4$ , i.e., the availability of new employees is positively associated with the involvement of ECWs.

Lastly, to capture employee satisfaction with their employers, we use employee ratings from Glassdoor.com. We focus on the overall rating (*OverallRating*), recommendation status (*RecommendStatus*), and the average ratings across five detailed dimensions (*AvgRating*).<sup>6</sup> *OverallRating* and *AvgRating* range between 1 and 5,

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<sup>6</sup> The five dimensions refer to (1) Culture & Values, (2) Work/Life Balance, (3) Senior Management, (4) Compensation and Benefits, and (5) Career Opportunities.

*RecommendStatus* ranges between  $-1$  and  $1$ .<sup>7</sup> H2b predicts a negative association between employee satisfaction with their employers and the involvement of ECWs in the lawsuits, i.e., a negative  $\beta_5$ .

We consider a battery of firm and misstatement characteristics that may affect the likelihood of having ECWs. Firm characteristics include the most recent firm size ( $Ln(AT)$ ), leverage (*Leverage*), market-to-book ratio (*MTB*), return on assets (*ROA*), and institutional ownership (*InstOwn*) immediately preceding the end of the misstatement period. Misstatement characteristics include the length of class period (*Classlength*), potential investor loss during the misstatement period (*PIL*), abnormal market reactions surrounding class period ending dates (*CAR*), *FScore* based on Dechow, Ge, Larson, and Sloan (2011), and the mentions of whistleblowers (*Whistleblowers*) in complaints. Variable definitions are provided in Appendix B in detail. We further control for industry fixed effects (based on Fama-French 48 industry classification) and year fixed effects (based on complaint filing year) and adjust standard errors of coefficient estimates for year clusters.

### ***3.3. Empirical Design for the Consequences of ECWs***

We test H3 and H4 using the following equation:

$$\begin{aligned} \text{Consequence} = & \beta_0 + \beta_1 ECW + \sum \beta_i \text{Controls} + \text{Industry FE} + \text{Year FE} \\ & + \text{Circuit FE} + \varepsilon_i, \end{aligned} \tag{2}$$

where *Consequence* is either the settlement or duration of a lawsuit. *ECW* is either *DECW* or *NECW*. By construction, the lawsuits is settled or dismissed.<sup>8</sup> We define a

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<sup>7</sup> For recommendation status which is not on a scale of 1 to 5, we translate positive/approve rating to 1, neutral rating to 0, and negative/disapprove rating to  $-1$ .

<sup>8</sup> No lawsuit in our sample went to trial.

dummy variable, *Settle*, that equals to one if a lawsuit is settled, and zero otherwise. We measure the duration of a lawsuit (*Duration*) by the natural logarithm of the number of days between the end of the misstatement period and the date when the outcome is announced. We estimate equation (2) using a probit model for *Settle* and an ordinary least squares (OLS) model for *Duration*. Both H3 and H4 predict a positive  $\beta_l$ .

Since factors influencing the use of ECWs may also affect the settlement likelihood or litigation duration, we control for public accounting irregularities, abnormal insider trading, top executive turnover, negative market events, availability of employees with private information as well as firm and misstatement characteristics in equation (2). Moreover, as the negotiation of the settlement amount may prolong the litigation process, we include *Settle* in the regression of *Duration*. Last, we include industry, complaint filing year, and circuit fixed effects in the regressions and adjust standard errors of coefficient estimates for year clusters.

## **4. Empirical Results**

### ***4.1. Descriptive Statistics***

Table 2, Panel A presents the distribution of SCAs in our sample by filing year. Column 1 shows that the number of SCA filings steadily increases from 2002 to 2017. The number of filings is smaller before 2009 because we remove lawsuits filed in circuits that have not officially allowed witnesses to keep their identities confidential. All circuits allowed confidential witnesses by the end of 2009. The number of lawsuits increases thereafter to above 100 until 2019, suggesting a growing trend in private litigation for enforcing securities regulations. The number of lawsuits declines from 2019 to 2022

because we exclude ongoing lawsuits. Columns 2 and 3 report the number and the proportion of lawsuits involving ECWs. On average, 45% of the sample lawsuits involve ECWs, with higher rates between 2007 and 2014. This suggests the pervasive use of ECWs in securities lawsuits. Examining settled and dismissed lawsuits separately, we observe that a higher proportion of settled lawsuits involves ECWs (53%, column 6) than dismissed lawsuits do (38%, column 9).

Table 2, Panel B reports the distribution of SCAs by Fama-French 12 industries. Consistent with findings in the prior literature (Francis, Philbrick, and Schipper 1994; Kim and Skinner 2012), there are more SCAs targeting firms in the business equipment sector, the healthcare, medical equipment, and drugs sector, and the finance sector. While there is no significant variation in the use of ECWs across industries, we observe relatively more involvement of ECWs in the manufacturing sector and the chemicals and allied products sector. Again, the percentage of lawsuits with ECWs is higher for settled lawsuits than dismissed lawsuits.

Table 2, Panel C presents the descriptive statistics for the main variables used in our analyses. Columns 1 to 3 report the descriptive statistics for the full sample. On average, about three employees are recruited in a lawsuit ( $NECW (raw) = 2.648$ ).<sup>9</sup> Around 46% of the lawsuits are settled and the average duration is 2.85 years ( $Duration (raw) = 1,042$  days). About 14%, 14%, 17% and 10% of the lawsuits involve restatements (*Restatement*), delayed filings (*LateFiling*), internal control weaknesses (*ICW*) and auditor turnover (*AuditorTurnover*) during the misstatement period, respectively. Overall, nearly 30% of the lawsuits involve at least one of these accounting irregularities (*AcctEvent*). CEO or

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<sup>9</sup> Among lawsuits that involve ECWs, on average about five employees are recruited.

CFO depart before the misstatement revelation in 36% of the lawsuits (*ExecTurnover*) and defendant firms suffer from negative actions by analysts, credit rating agencies, or short-sellers preceding the litigation in 43% of the lawsuits (*NegEvent*). On average, defendant firms have an annualized employee growth rate of 17% over the three years before misstatement revelation, their misstatement periods last for 5.7 years (*ClassLength*), and they experience a three-day abnormal return of  $-23.1\%$  when their misstatements are revealed (*CAR*).

Columns 4–7 of Table 2, Panel C present the mean value of main variables separately for settled and dismissed cases and compare the difference between the two. Relative to dismissed lawsuits, settled lawsuits involve more ECWs (mean *DECW* for settled and dismissed cases are 0.528 and 0.380, respectively; mean *NECW (raw)* for settled and dismissed cases are 3.299 and 2.095, respectively), take more time to resolve (mean duration in days is 1,397 and 741 for settled and dismissed lawsuits, respectively), have a greater proportion of defendant firms with accounting irregularities (*AcctEvent*), are more likely to have whistleblowers, experience a higher employee growth (*%EmpChg*), and have poorer employee ratings (*OverallRating*, *RecommendStatus*, *AveRating*) during the misstatement period. Defendant firms of settled lawsuits share similar firm characteristics as those of dismissed cases (e.g., *Leverage*, *MTB*, *ROA*, *InstOwn*) except that the former is smaller than the latter (*Ln(AT)*). Lastly, settled lawsuits likely involve more severe misstatements than dismissed cases, as they have longer misstatement periods (*ClassLength*), their misstatement revelation causes a greater stock price crash (*CAR*), and their stock prices are inflated to a greater extent during the misstatement period (*PIL*).

Table 2, Panel D reports the correlation matrix among our measures of ECW involvement, the settlement likelihood, litigation duration, and determinants of ECW involvement. We present the natural logarithm of the number of ECWs (*NECW*) and the number of days in the class period (*Duration*). Univariately, ECW involvement is negatively associated with the presence of most accounting irregularities (*Restatement*, *LateFiling*, *AuditorTurnover*, *AbTrade*, and *ExecTurnover*) and positively associated with the presence of negative market events (*NegRecom*, *NegCRA*, and *ABSI*), and labor intensity (*LaborIntense*). ECW involvement is also positively and significantly correlated with *Settle* and the duration of the lawsuit. These results provide preliminary support for our hypotheses regarding the determinants and consequences of hiring ECWs. Next, we turn to the multivariate analysis.

#### ***4.2.Determinants of ECW Involvement***

Tables 3 and 4 report the estimation results on the determinants of ECW involvement, based on equation (1). Table 3 focuses on factors associated with the cost-benefit considerations of shareholders' attorneys.<sup>10</sup> Columns 1–4 and 5–8 present the probit model and OLS model estimates, respectively, for the likelihood of ECW involvement (*DECW*) and the number of ECWs involved in a lawsuit (*NECW*).

We start with the analysis of H1a regarding public information of financial misstatements. In columns 1 and 5 of Table 3, we find that both *DECW* and *NECW* are significantly and negatively associated with the public disclosures of accounting

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<sup>10</sup> Employee satisfaction is excluded from Table 3 because limited availability of Glassdoor data leads to a substantial reduction in sample size. We analyze the determinants related to employee incentives separately in Table 4.

irregularities (*AcctEvent*), top executive turnovers (*ExecTurnover*), and abnormal insider trades (*AbTrade*). The coefficients are statistically significant at the 5% level or higher. These findings are consistent with H1a, suggesting that when shareholders have sufficiently convincing evidence to meet the pleading standards, they are less likely to recruit ECWs.

Columns 2 and 6 of Table 3 show the effects of significant negative market events on ECW involvement. The two columns show that negative actions taken by market participants motivate shareholders to seek more information from ECWs. Untabulated results suggest that the effects are primarily driven by credit-rating downgrades, while negative actions by financial analysts and short-sellers do not have significant effect. This is likely because credit rating agencies are perceived to have more advantageous access to management for material and private information (Ahn, Bonsall, and Van Buskirk 2019; Huang et al. 2023). The positive coefficient on *NegCRA* supports our H1b that when shareholders observe indirect signals of misstatements, they search for information about management intent and misstatement particularities from employees.

Columns 3 and 7 show that both *DECW* and *NECW* are positively associated with labor intensity (*LaborIntense*). The results support our H1c that higher labor intensity increases shareholders' chance of finding employees with misstatement-related information.

To examine the aggregate effects of our hypothesized determinants related to plaintiffs' cost-benefit considerations, we combine all types of determinants into one regression. Columns 4 and 8 of Table 3 show that the likelihood and number of ECWs involved in a lawsuit continue to be significantly associated with public information of

misstatements (*AccEvent*, *AbTrade*, *ExecTurnover*) and negative market events (*NegEvent*) in the predicted way. However, the effect of labor intensity becomes weaker, suggesting that labor intensity is likely not as important as other factors in determining the involvement of ECWs.

Next, we examine two factors associated with employees' incentives to serve as ECWs: employee growth and satisfaction ratings. We require a minimum of three Glassdoor reviews during the two years preceding the end of the misstatement period. This additional data requirement substantially reduces the sample size from 1,447 cases to 629 cases. Panel C of Table 2 shows that employee satisfaction ratings for the defendant firm (*OverallRating*) and the defendant management (*AveRating*) are on average both around 3 on a scale of 5.

Table 4 presents the regression results, with columns 1–3 and columns 4–6 showing the effects of employee incentives on the likelihood and the number of ECWs involved, respectively. Both *DECW* and *NECW* are higher for firms with a higher employee growth rate (*%EmpChg*) during the misstatement period, supporting our H2a that ECW involvement is positively associated with the availability of new employees. We find the same results when using the full sample (columns 3-4 and 7-8 of Table 3).

With respect to employee satisfactions, all columns of Table 4 report a significantly negative coefficient on employee ratings regardless of the measure of ratings. The results are consistent with the prediction in H2b that lower employee approval of management strengthens employees' incentive to serve as ECWs and testify against their firms.

With regard to the effects of firm and misstatement characteristics on ECW involvement, Tables 3 and 4 show that shareholders of defendant firms with higher

leverage (*Leverage*) and institutional ownership (*InstOwn*) are more likely to recruit and recruit more ECWs, possibly because large stakeholders are more likely to spend resources on searching and recruiting ECWs. A longer misstatement period (*ClassLength*) is also positively associated with the involvement of ECWs, likely because an extended misstatement duration exposes a greater number of employees to misstatement-related information. The presence of whistleblowers (*Whistleblower*) is positively associated with the likelihood of ECW involvement, though this effect is not statistically significant. This pattern likely reflects the dual and competing roles that whistleblower information plays in shaping the demand for ECWs. On one hand, credible whistleblower disclosures can lower plaintiffs' evidence-gathering costs, thereby reducing the need for ECWs. On the other hand, whistleblower allegations tend to focus on exposing misstatements rather than establishing individual executive liability, leaving a gap that shareholders may turn to ECWs to fill and, in turn, strengthen their cases against specific defendants.

Overall, the findings in Tables 3 and 4 support our hypotheses that ECW involvement is associated with plaintiffs' cost-benefit considerations and employees' incentives to serve as confidential witnesses. Specifically, shareholders are less likely to rely on ECWs in securities litigation when misstatement-related information is more publicly available, but more likely to do so when negative market events signal fraud or when a larger pool of employees has access to misstatement-related information. ECWs involvement is also more prevalent in cases where defendant firms experienced greater workforce growth during the misstatement period or where employees report lower satisfaction with their employers.

### ***4.3. CW Employment Position and Information***

In this section, we provide more direct evidence that ECWs possess misstatement-related information by examining whether the nature of the alleged misconduct is linked to the job positions held by ECWs.

Prior studies suggest that accounting violations are a major form of fraud, with inflated sales revenue being the most prevalent type (Bonner, Palmrose, and Young 1998; Pritchard and Sale 2005; Cornerstone Research 2020). Hence, we focus on violations of generally accepted accounting principles (GAAP) and revenue-related misstatements. We posit that among the various functions and departments in a company, employees in accounting departments are most likely to possess information about GAAP violations and those in sales departments more knowledgeable about the actual sales performance. To test these predictions, we manually collect the allegation data and ECWs' job titles from complaint files.

Panel A of Table 5 reports the sample distribution of lawsuits involving allegations on accounting violations and revenue misstatements, as well as the distribution of ECWs' job positions. We identify 460 cases (32% of the litigation sample) involving GAAP violations, with 201 cases (14% of the litigation sample) specifically related to revenue misstatements. Among the 648 cases involving ECWs, 151 cases (23%) and 199 cases (31%) recruit ECWs from accounting and sales departments, with 52 cases (8%) involving ECWs from both accounting and sales departments.

Table 5, Panel B presents the multinomial logit regression results for the association between ECW job positions and allegation types. Columns 1–2 of Table 5, Panel B show the results for the likelihood of involving ECWs from accounting and non-accounting

departments, respectively. We find that GAAP violations (*GAAP*) are positively and significantly associated with the likelihood of involving ECWs in both accounting and non-accounting positions. However, the  $\chi^2$  test reported at the bottom of the table indicates that the association between *GAAP* and accounting ECWs is significantly more positive than that between *GAAP* and non-accounting ECWs ( $\chi^2 = 19.20$ , significant at the 1% level). This result is consistent with the notion that shareholders are more likely to obtain GAAP violation information from accounting ECWs than from non-accounting ECWs.

Columns 3–4 of Table 5, Panel B show the results for the likelihood of involving ECWs from sales and non-sales departments, respectively. Again, we find that revenue-related allegations (*Revenue*) are positively and significantly associated with the likelihood of involving ECWs from both sales and non-sales positions, but the association is significantly more positive for sales than for non-sales ECWs ( $\chi^2 = 4.95$ , significant at the 1% level). These findings support the notion that shareholders are more likely to obtain fictitious revenue information from sales ECWs.

In sum, our findings show that ECWs' job positions are systematically linked to the nature of the alleged misconduct, suggesting that shareholders strategically obtain misstatement-related information from employees with the most relevant functional expertise.

#### ***4.4. The Consequences of Involving ECWs in Litigation Lawsuits***

In this section, we turn to the efficacy of ECWs in facilitating private enforcement of financial misstatements. Table 6 reports the estimation results for equation (2), which tests our H3–H4 for the effects of ECWs on settlement and litigation duration. Columns 1–2

show that the presence (*DECW*) and the number of ECWs (*NECW*) are positively and significantly associated with the likelihood of settlement (*Settle*), respectively.<sup>11</sup> This result is consistent with H3 that ECWs help strengthen plaintiff shareholders' allegations of misstatements. The economic effect is significant, as recruiting an ECW increases the likelihood of settlement by 12%, compared to the sample-level unconditional probability of settlement 46%.<sup>12</sup> Columns 3–4 show that both the presence and the number of ECWs are positively and significantly associated with the length of time to resolve a case (*Duration*), consistent with H4. The relationship is also economically significant, as the presence of ECWs increases case duration by 38%, or about 342 days using the mean value of duration for lawsuits without ECWs involved ( $= 899 \text{ days} \times 38\%$ ).<sup>13</sup>

To address the concern that lawsuits with and without ECWs are inherently different, we estimate equation (2) using an entropy balancing approach. Entropy balancing is a multivariate matching approach which equalizes the distribution of determinants across treatment and control samples by assigning weights to control variables (Hainmueller 2012). Prior research finds that this method maintains sufficient power while achieving proper specification (e.g., McMullin and Schonberger 2020), which is suitable for our analysis with a relatively small sample size. We balance on the first, second and third moments of the control variables in equation (2) and set the tolerance level at 0.01. The estimation results are reported in columns 5-8 of Table 6. We continue to find that ECW

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<sup>11</sup> Note that six cases automatically drop from our sample lawsuits due to singletons in the logistic regression with fixed effects in Table 6 Column (1).

<sup>12</sup> The economic significance is calculated as the difference in predicted probability of settlement when *DECW* changes from zero to one while holding all other variables at their sample mean values.

<sup>13</sup> The economic significance is calculated as  $(\exp^{0.322} - 1)$ , where 0.322 is the coefficient estimate on *DECW* in column 3 of Table 6.

involvement is positively associated with the probability of settlement and the duration of the litigation.

To gain further insights into the effectiveness of ECWs in litigation lawsuit enforcement, we examine whether their testimonies provide the required information about defendants' intent to deceive (*scienter*) and the specific details of the misstatements (*particularity*). We collect ECWs' testimonies (i.e., their statements) from complaint files and classify the information based on the following criteria. To determine whether ECWs provide *scienter* information, we manually review the statement to identify whether ECWs specifically name a defendant and describe his/her actions related to the alleged misstatements.<sup>14</sup> For ECW statements not naming any individual defendant, we further examine whether the statement refers to defendants *as a whole* for their culpability. If so, such statements would be classified as containing *scienter* information as well.<sup>15</sup> To evaluate whether ECWs provide *particularity* information, we examine whether their statements contain any of the following details about financial misconduct: what, where, when, how much, and how. Specifically, "what" refers to the nature of misstatement; "where" indicates the geographic location(s) associated with the misstatement; "when" specifies the time period of misstatement; "how much" describes the quantitative magnitude of the misstatement; and "how" explains how the misstatement was concealed or how the misconduct was carried out. Appendix A provides example statements of each type.<sup>16</sup>

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<sup>14</sup> An example statement is: "*CW X was personally told of the unlawful agreement by defendant Y.*"

<sup>15</sup> For example, an ECW may state that "*all defendants knew about the misstatements.*"

<sup>16</sup> All authors independently classified a test sample and reconciled their classifications. A research assistant (a master student in accounting) was then hired to perform the classification by first reconciling his classification with the authors' using the test sample and then performing the classification for all cases. Last, the authors randomly selected a sample of the research assistant's work and confirmed that the classification conforms to the guidance.

Panel A of Table 7 presents the sample distribution by the information type contained in ECWs' testimonies. First, plaintiff shareholders gather scienter and particularity information in 62% and 74% of the lawsuits involving ECWs. The results align with the intuition that detecting defendants' intent to defraud (scienter) is more challenging than observing details of the misstatements (particularity). Second, nearly half of the sample cases with ECWs acquire both scienter and particularity information (48%), while a small but not trivial portion of the sample (80 cases, 12 %) fails to collect either type of information. A closer examination on a randomly selected sample of these 80 cases reveals that plaintiffs gather misstatement-related information from other sources and use ECWs' testimonies to confirm background details about company policies or business practices.

We then modify equation (2) by replacing *ECW* with indicator variables that reflect the specific information provided by ECWs. We separately examine the following scenarios: (1) ECWs provide scienter information (*DECW\_Scienter*), (2) ECWs provide particularity information (*DECW\_Particular*), and (3) ECWs provide scienter but not particularity information (*DECW\_ScienterOnly*), particularity but not scienter information (*DCW\_ParticularOnly*), or both types of information (*DECW\_Both*). Panel B of Table 7 presents regression results for how the information content in ECW testimony affects *Settle* (columns 1–3) and *Duration* (columns 4–6). Columns 1–2 show that both scienter (*DECW\_Scienter*) and particularity information (*DECW\_Particular*) is positively and significantly associated with the likelihood of settlement. Untabulated statistics indicate that the difference in the coefficients between *DECW\_Scienter* and *DECW\_Particular* is statistically insignificant. Column 3 shows that the coefficient on *DECW\_Both* is insignificantly different from that on *DECW\_ScienterOnly* and *DECW\_ParticularOnly*,

suggesting that presenting both types of information simultaneously does not strengthen the case than presenting just one type. Columns 4–6 offer similar insight for the impact of ECWs’ information content on lawsuit duration. Overall, Table 7 supports the idea that shareholders use ECWs to fulfill the information requirements established by pleading standards in securities class actions.

Taken together, our results in Tables 6–7 suggest that ECWs provide misstatement-related information that increases the settlement likelihood of SCAs and prolongs the duration of the litigation.

## **5. Conclusion**

This study examines the determinants and consequences of shareholders’ use of employee confidential witnesses (ECWs) in securities class action lawsuits alleging financial disclosure fraud. Analyzing 1,447 securities class action lawsuits filed between 2002 and 2022, we find that shareholders’ decisions to recruit ECWs reflect a careful cost-benefit calculus. The presence of hard evidence, such as accounting restatements, late filings of financial statements, and top executive turnover, reduces both the likelihood and the number of ECWs involved in lawsuits, as such evidence already furnishes strong indication of management's culpability. In contrast, soft evidence, which signals potential fraud without providing specific details, increases ECW involvement. Furthermore, higher labor intensity in targeted firms increases ECW involvement by expanding the pool of employees likely to possess misstatement-relevant information and reducing the search costs associated with recruiting witnesses. Together, these findings are consistent with a cost-benefit framework governing plaintiffs’ decisions to engage ECWs.

Beyond shareholders' recruitment decisions, we also shed light on the incentives and competencies that shape employees' willingness to serve as ECWs. We find that higher employee growth rates during the misstatement period, reflecting a greater proportion of newer, less loyal employees, are positively associated with ECW involvement. Lower employee satisfaction, as measured by Glassdoor ratings in the two years preceding the end of the misstatement period, is similarly associated with greater ECW involvement, suggesting that dissatisfied employees are more attuned to potential misreporting and more willing to come forward. Additional analyses reveal that employees' job positions align with the specific allegations at issue: accountants are more likely to serve as ECWs in GAAP violation cases, while salespersons more commonly support fictitious sales allegations. This evidence indicates that both incentives and relevant expertise jointly determine employees' decisions to testify against their former employers.

Regarding the efficacy of ECWs, we find that their involvement increases both the likelihood of case settlement and the duration of litigation, a pattern that contrasts meaningfully with the role of whistleblowers, who increase settlement likelihood without prolonging litigation. This divergence is consistent with courts' cautious treatment of anonymous confidential sources, which prompts more extensive evidentiary proceedings before resolution. We further find that ECWs providing scienter information or particularity information each independently increase settlement likelihood and prolong litigation duration. However, presenting both types of information simultaneously does not significantly strengthen the case beyond presenting either type alone, suggesting that ECW testimony complements, rather than substitutes for, other sources of evidence.

This study extends research on the role of rank-and-file employees in disciplining financial disclosure fraud by examining ECWs as a distinct mechanism from whistleblowing. Our findings highlight an important and previously unexplored corporate governance role for employees in private enforcement actions, the primary mechanism through which securities regulations are enforced. This study also advances understanding of the mechanisms that enhance the effectiveness of private securities litigation, demonstrating that rank-and-file employees serve as a valuable source of inside information precisely when public information about fraud is lacking, thereby strengthening shareholders' ability to hold management accountable.

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**Appendix A**  
**ECW Background Descriptions and Statements in Litigation Complaints**

***Panel A: Examples of ECW Background Descriptions***

1. “This practice was also described by CW 12, a former Order Entry Manager in Sunnyvale, California from 2005 to June 2009.” (*In Re: Arthrocare Corporation Securities Litigation*)
2. “Confidential Witness Number 2 (“CW2”) is a former Reddy Ice employee that held several different positions at Reddy Ice during the Class Period and specifically from January 2006 through March 2008, including: (i) Internal Auditor, (ii) Area Controller, and (iii) Utilities Specialist.” (*In Re: John Chamberlain, et al. v. Reddy Ice Holdings, Inc., et al.*)

***Panel B: Examples of ECW Statements***

**Example 1: In Re: Arthrocare Corporation Securities Litigation**

- A. “This practice was also described by CW 12, a former Order Entry Manager in Sunnyvale, California from 2005 to June 2009. Up until approximately the last six months of CW 12’s employment, every quarter and year end Boracchia and another large distributor, State of the Art (“SOTA”), made large orders on the last day of the quarter and the fiscal year. In approximately January 2009, the Company became more careful and the sales practices a bit more discrete because of ongoing internal investigations.”
- B. “If ArthroCare had already hit its quarterly targets, Costelli or Raffle would contact CW 12 by phone or email and tell her to have her department stop entering orders. At quarter end, for every quarter and every fiscal year during CW 12’s employment, CW 12 received a phone call or email from Costelli or Raffle telling CW 12 “which orders to enter, and which orders not to enter.” Costelli and Raffle “let them know when to cut it off.” Costelli or Raffle never explained the practice explicitly. Costelli would tell CW 12 to stop “because we’d hit our number.” It seemed clear this was an effort to shift orders after this quarter’s numbers were met, to start the next quarter with some sales and progress towards sales goals.”

Information in above ECW statements is classified into alternative types of particularities as below:

- (1) What: *Boracchia and another large distributor, State of the Art (“SOTA”), made large orders on the last day of the quarter and the fiscal year.... If ArthroCare had already hit its quarterly targets, Costelli or Raffle would contact CW 12 by phone or email and tell her to have her department stop entering orders. At quarter end, for every quarter and every fiscal year during CW 12’s employment, CW 12 received a phone call or email from Costelli or Raffle telling CW 12 “which orders to enter, and which orders not to enter.”*

- (2) When: *Up until approximately the last six months of CW 12's employment, every quarter and year end.*
- (3) How: *At quarter end, for every quarter and every fiscal year during CW 12's employment, CW 12 received a phone call or email from Costelli or Raffle telling CW 12 "which orders to enter, and which orders not to enter." Costelli and Raffle "let them know when to cut it off." Costelli or Raffle never explained the practice explicitly. Costelli would tell CW 12 to stop "because we'd hit our number." It seemed clear this was an effort to shift orders after this quarter's numbers were met, to start the next quarter with some sales and progress towards sales goals.*

**Example 2: In Re: Acuity Brands Inc. Securities Litigation**

“Former Acuity employees also described multiple specific transactions involving large amounts of prematurely shipped product at quarter-end. For example, CW 16 recalled one project involving Primary Corporate Account #1, one of Acuity's major corporate accounts. CW 16 stated that Acuity supplied over seventy Primary Corporate Account #1 mall and parking lot projects around the U.S. in 2015 and 2016. During this timeframe, CW 16 stated that Acuity prematurely shipped products to projects in California and on the East Coast in order to meet quarter and year-end sales goals. CW 16 stated that the prematurely shipped orders involved all types of LED fixtures, including indoor and outdoor, and also included “smart” lighting products. CW 16 stated her belief that the premature shipments involved orders ranging from \$200 thousand up to \$1 million.”

Information in above ECW statements is classified into alternative types of particularities as below:

- (1) What: *prematurely shipped products to projects in California and on the East Coast in order to meet quarter and year-end sales goals.*
- (2) When: *in 2015 and 2016.*
- (3) Where: *California and on the East Coast.*
- (4) How: *prematurely shipped products [...] the prematurely shipped orders involved all types of LED fixtures, including indoor and outdoor, and also included “smart” lighting products.*
- (5) How much: *ranging from \$200 thousand up to \$1 million.*

## Appendix B Variable Definition

Variable	Definition
<b><i>Dependent Variables</i></b>	
<i>DECW</i>	A dummy variable set to one if the complaint lists at least one ECW, and zero otherwise.
<i>NECW</i>	The natural logarithm of one plus the number of ECWs in a complaint.
<i>NECW (raw)</i>	The number of ECWs in a complaint.
<i>Settle</i>	A dummy variable set to one if the case is settled and zero if it is dismissed.
<i>Duration</i>	The natural logarithm of the length in days between the class period ending date and the first date on which a dismissal/settlement decision is made.
<i>Duration (raw)</i>	The length in days between the class period ending date and the first date on which a dismissal/settlement decision is made.
<b><i>Determinants of ECWs</i></b>	
<i>Restatement</i>	A dummy variable set to one if the defendant firm makes accounting restatements during the misstatement period, and zero otherwise.
<i>LateFiling</i>	A dummy variable set to one if the defendant firm delays SEC filings during the misstatement period, and zero otherwise.
<i>ICW</i>	A dummy variable set to one if the defendant firm reports internal control weaknesses during the misstatement period, and zero otherwise.
<i>AuditorTurnover</i>	A dummy variable set to one if the defendant firm experiences auditor changes during the misstatement period, and zero otherwise.
<i>AcctEvent</i>	A dummy variable set to one if the defendant firm makes accounting restatements, delays filings, discloses internal control weaknesses or changes auditor during the misstatement period, and zero otherwise.
<i>AbTrade</i>	Total number of shares that insiders traded during the misstatement period minus total number of shares that insiders traded during a pre-misstatement period with the same length, scaled by total number of shares outstanding at the beginning of the respective period.
<i>ExecTurnover</i>	A dummy variable set to one if the defendant firm experiences CEO or CFO turnover during the misstatement period, and zero otherwise.
<i>NegRecom</i>	An indicator for highly negative change in consensus analyst recommendation in the year preceding the misstatement period ending date. It is set to one if the change in consensus analyst recommendation is in the bottom quintile of sample lawsuits and zero otherwise.

<b>Variable</b>	<b>Definition</b>
<i>NegCRA</i>	An indicator for negative credit rating actions (including rating downgrades and negative credit watch) in the year preceding the misstatement period ending date.
<i>ABSI</i>	An indicator for abnormal short-sell interests in the year preceding the misstatement period ending date. It is set to one if abnormal short-sell interests are in the top quintile of sample lawsuits and zero otherwise. Anormal short interest is calculated following Karpoff and Lou (2010).
<i>NegEvent</i>	A dummy variable set to one if the defendant firm experiences any typ off negative market events (including <i>NegRecom</i> , <i>NegCRA</i> , <i>ABSI</i> during the year preceding the misstatement period ending date.
<i>LaborIntense</i>	An indicator for labor intensive firms, which equals one if the ratio of number of employees to total assets at the end of year preceding the misstatement period ending date is in the top quartile of sample lawsuits, and zero otherwise.
<i>%EmpChg</i>	The average percentage change in the total number of employees over the three years prior to the misstatement period ending date.
<i>OverallRating</i>	The average value of Glassdoor employee ratings for the defendant firm during two years before the misstatement period, which ranges between 1 and 5.
<i>RecommendStatus</i>	The average value of Glassdoor Recommend status for the defendant firm during two years before the misstatement period, which ranges between -1 and 1.
<i>AveRating</i>	The average value of five employee ratings on Glassdoor for the defendant firm during two years before the misstatement period: Work Life Balance, Culture Values, Career Opportunities, Compensation and Benefits and Senior Management.
<b>Control Variables</b>	
<i>Ln(AT)</i>	Natural logarithm of total assets in millions of US dollars at the end of the most recent fiscal year before the misstatement period ending date.
<i>Leverage</i>	The ratio of total liability to total assets at the end of the most recent fiscal year before the misstatement period ending date.
<i>MTB</i>	The ratio of the market value of equity to the book value of equity at the end of the most recent fiscal year before the misstatement period ending date.
<i>ROA</i>	The ratio of income before extraordinary items in the most recent fiscal year before the misstatement period ending date to beginning total assets.
<i>InstOwn</i>	Percentage of shares owned by institutional investors at the end of the most recent calendar quarter before the misstatement period ending date.

<b>Variable</b>	<b>Definition</b>
<i>ClassLength</i>	The natural logarithm of the length of the class period in days.
<i>CAR</i>	The three-day cumulative abnormal return surrounding the class period ending date.
<i>PIL</i>	Potential investor loss, calculated as the difference between the highest value of the market capitalization during the class period and the market capitalization on the day after the end of the class period, scaled by the market value at the most recent fiscal year-end preceding the class period end date.
<i>FScore</i>	F-score based on the values of Model 2 components and the corresponding coefficient estimates in Dechow et al. (2011).
<i>Whistleblower</i>	A dummy variable set to one if the securities class action complaint contains mentions of whistleblowers, and zero otherwise. We conduct a keyword search using the following words to identify the presence of whistleblowers: “whistleblow,” “whistle blow,” “whistle blower,” “whistle-blower,” “whistle blowing,” “whistle-blowing,” “blow the whistle,” “blowing the whistle,” and “blew the whistle.”
<b>Information Type</b>	
<i>DECW_Scienter</i>	A dummy variable set to one if any of the ECWs’ statements includes information about defendants’ intent to deceive (scienter), and zero otherwise. A statement is considered to include information about scienter if it specifically names a defendant and describe his/her actions related to the alleged misstatement or targets defendants as a whole for their culpability.
<i>DECW_Particular</i>	A dummy variable set to one if any of the ECWs’ statements includes information about defendants’ intent to deceive, and zero otherwise. A statement is considered to include information about particularity if it mentions any of the following: refers to the nature of misstatement (“what”); the geographic location(s) associated with the misstatement (“where”); the time period of misstatement (“when”); the quantitative magnitude of the misstatement (“how much”); how the misstatement was concealed or how the misconduct was carried out (“how”).
<i>DECW_ScienterOnly</i>	A dummy variable set to one if any of the ECWs’ statements includes information about scienter and does not include information about particularity, and zero otherwise.
<i>DECW_ParticularOnly</i>	A dummy variable set to one if any of the ECWs’ statements includes information about particularity and does not include information about scienter, and zero otherwise.
<i>DECW_Both</i>	A dummy variable set to one if any of the ECWs’ statements includes information about both scienter and particularity, and zero otherwise.

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<b>Variable</b>	<b>Definition</b>
<i>DECW_Either</i>	A dummy variable set to one if any of the ECWs' statements includes information about either scienter or particularity but not both, and zero otherwise

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**Table 1**  
**Sample Selection**

This table presents the procedures used to select our sample of financial misstatement events from the Securities Class Action Clearinghouse (SCAC) database.

	<b>#Cases</b>
Securities Class Action Filings in SCAC database from 1996 to 2022	6,322
Drop: Non-Section 10 cases	(1,653)
Cases against IPO, mutual fund, analysts misconduct	(366)
On-going cases	(373)
Cases missing complaint filing dates or class period	(7)
Cases against non-US firms and firms listed in foreign exchanges	(678)
Cases missing GVKEY or PERMNO for the defendant firm	(166)
Cases missing complaints	(235)
Cases filed before the circuits allowed witnesses to maintain their confidentiality	(1,106)
Cases missing main variables for regression analysis	(291)
<b>Final sample</b>	<b>1,447</b>

**Table 2**  
**Descriptive Statistics**

This table presents the descriptive statistics for sample distribution and misstatement characteristics. Panels A and B present the sample distribution by year and industry, respectively. Panel C presents descriptive statistics for firm and misstatement characteristics. Panel D presents the correlation matrix of main variables of interest. Statistics in bold represent significance at the 10% level and above.

**Panel A: Yearly Distribution of Sample Lawsuits**

Year	Full Sample			Settled			Dismissed		
	#Cases	# Cases with ECW	%ECW	#Cases	# Cases with ECW	%ECW	# Cases	# Cases with ECW	%ECW
	<b>(1)</b>	<b>(2)</b>	<b>(3)</b>	<b>(4)</b>	<b>(5)</b>	<b>(6)</b>	<b>(7)</b>	<b>(8)</b>	<b>(9)</b>
2002	12	3	25%	8	2	25%	4	1	25%
2003	29	12	41%	15	5	33%	14	7	50%
2004	30	12	40%	19	7	37%	11	5	45%
2005	51	33	65%	30	23	77%	21	10	48%
2006	61	24	39%	38	17	45%	23	7	30%
2007	70	44	63%	43	30	70%	27	14	52%
2008	89	44	49%	44	28	64%	45	16	36%
2009	67	43	64%	30	24	80%	37	19	51%
2010	68	42	62%	28	20	71%	40	22	55%
2011	67	36	54%	31	17	55%	36	19	53%
2012	83	46	55%	41	28	68%	42	18	43%
2013	95	53	56%	42	32	76%	53	21	40%
2014	90	46	51%	53	29	55%	37	17	46%
2015	98	24	24%	41	10	24%	57	14	25%
2016	112	36	32%	48	16	33%	64	20	31%
2017	114	44	39%	45	21	47%	69	23	33%
2018	111	35	32%	45	15	33%	66	20	30%
2019	104	38	37%	43	16	37%	61	22	36%
2020	60	20	33%	12	5	42%	48	15	31%
2021	28	10	36%	7	5	71%	21	5	24%
2022	8	3	38%	2	1	50%	6	2	33%
<b>Total</b>	<b>1,447</b>	<b>648</b>	<b>45%</b>	<b>665</b>	<b>351</b>	<b>53%</b>	<b>782</b>	<b>297</b>	<b>38%</b>

**Table 2, Continued**

**Panel B: Industry Distribution of Sample Lawsuits**

Industry Sector	Full Sample			Settled			Dismissed		
	#Case	# Case w/ ECW	%ECW	#Case	# Case w/ ECW	%ECW	#Case	# Case w/ ECW	%ECW
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Business Equipment - Computers, Software, and Electronic Equipment	298	136	46%	144	76	53%	154	60	39%
Chemicals and Allied Products	25	14	56%	11	7	64%	14	7	50%
Consumer Durables - Cars, TV's, Furniture, Household Appliances	36	15	42%	12	8	67%	24	7	29%
Consumer NonDurables - Food, Tobacco, Textiles, Apparel, Leather, Toys	61	23	38%	16	8	50%	45	15	33%
Finance	216	95	44%	104	54	52%	112	41	37%
Healthcare, Medical Equipment, and Drugs	354	151	43%	165	79	48%	189	72	38%
Manufacturing - Machinery, Trucks, Planes, Off Furn, Paper, Com Printing	92	48	52%	48	30	63%	44	18	41%
Oil, Gas, and Coal Extraction and Products	36	15	42%	17	8	47%	19	7	37%
Telephone and Television Transmission	38	13	34%	18	5	28%	20	8	40%
Utilities	14	4	29%	10	4	40%	4	0	0%
Wholesale, Retail, and Some Services (Laundries, Repair Shops)	134	54	40%	54	27	50%	80	27	34%
Other - Mines, Constr, BldMt, Trans, Hotels, Bus Serv, Entertainment	143	80	56%	66	45	68%	77	35	45%
<b>Total</b>	<b>1,447</b>	<b>648</b>	<b>45%</b>	<b>665</b>	<b>351</b>	<b>53%</b>	<b>782</b>	<b>297</b>	<b>38%</b>

**Table 2, Continued**

**Panel C: Descriptive Statistics**

	Full Sample			Settled	Dismissed	Diff (4)–(5)	p-value
	Mean	Median	Std	Mean	Mean		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
<i>DECW</i>	0.448	0.000	0.497	0.528	0.380	0.148	<b>0.000</b>
<i>NECW</i> (raw)	2.648	0.000	4.422	3.299	2.095	1.205	<b>0.000</b>
<i>NECW</i> (in log)	0.776	0.000	0.959	0.938	0.637	0.301	<b>0.000</b>
<i>Settle</i>	0.460	0.000	0.499	1.000	0.000	1.000	<b>0.000</b>
<i>Duration</i> (raw)	1,042	925	662	1,397	741	656	<b>0.000</b>
<i>Duration</i> (in log)	6.703	6.831	0.811	7.141	6.330	0.810	<b>0.000</b>
<i>Restatement</i>	0.135	0.000	0.342	0.167	0.109	0.058	<b>0.001</b>
<i>LateFiling</i>	0.135	0.000	0.342	0.150	0.121	0.029	0.109
<i>ICW</i>	0.171	0.000	0.376	0.195	0.150	0.046	<b>0.021</b>
<i>AuditorTurnover</i>	0.096	0.000	0.295	0.117	0.078	0.039	<b>0.012</b>
<i>AcctEvent</i>	0.307	0.000	0.461	0.350	0.270	0.081	<b>0.001</b>
<i>AbTrade</i>	0.005	0.000	0.111	0.005	0.005	0.000	0.942
<i>ExecTurnover</i>	0.357	0.000	0.479	0.362	0.353	0.009	0.708
<i>NegRecom</i>	0.215	0.000	0.411	0.230	0.202	0.028	0.196
<i>NegCRA</i>	0.091	0.000	0.287	0.095	0.087	0.008	0.608
<i>ABSI</i>	0.209	0.000	0.407	0.220	0.199	0.020	0.350
<i>NegEvent</i>	0.425	0.000	0.495	0.429	0.422	0.007	0.801
<i>Whistleblower</i>	0.088	0.000	0.284	0.120	0.061	0.059	<b>0.000</b>
<i>LaborIntense</i>	0.248	0.000	0.432	0.250	0.247	0.003	0.902
<i>%EmpChg</i>	0.171	0.070	0.358	0.195	0.152	0.043	<b>0.022</b>
<i>CAR</i>	-0.231	-0.188	0.192	-0.251	-0.215	-0.036	<b>0.000</b>
<i>PIL</i>	0.972	0.639	1.252	1.093	0.869	0.225	<b>0.001</b>
<i>ClassLength</i>	5.737	5.811	1.021	5.788	5.693	0.095	<b>0.076</b>
<i>FScore</i>	-6.077	-6.006	0.852	-5.986	-6.153	0.167	<b>0.000</b>
<i>Ln(AT)</i>	7.194	7.001	2.350	7.047	7.320	-0.273	<b>0.028</b>
<i>Leverage</i>	0.252	0.187	0.266	0.257	0.247	0.011	0.448
<i>MTB</i>	4.390	2.798	9.070	4.218	4.536	-0.317	0.507
<i>ROA</i>	-0.092	0.017	0.388	-0.102	-0.084	-0.018	0.371
<i>InstOwn</i>	0.495	0.585	0.393	0.482	0.506	-0.024	0.244
<i>OverallRating</i>	3.165	3.213	0.640	3.012	3.290	-0.278	<b>0.000</b>
<i>RecommendStatus</i>	0.077	0.121	0.455	-0.026	0.161	-0.188	<b>0.000</b>
<i>AveRating</i>	3.094	3.100	0.565	2.962	3.203	-0.241	<b>0.000</b>

**Table 2, Continued**

**Panel D: Correlation Matrix**

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
(1) <i>DECW</i>	1														
(2) <i>NECW</i>	<b>0.898</b>	1													
(3) <i>Settle</i>	<b>0.148</b>	<b>0.156</b>	1												
(4) <i>Duration</i>	<b>0.289</b>	<b>0.301</b>	<b>0.498</b>	1											
(5) <i>Restatement</i>	-0.023	-0.031	<b>0.085</b>	0.008	1										
(6) <i>LateFiling</i>	-0.030	<b>-0.045</b>	0.042	-0.024	<b>0.341</b>	1									
(7) <i>ICW</i>	0.020	-0.004	<b>0.061</b>	-0.011	<b>0.363</b>	<b>0.456</b>	1								
(8) <i>AuditorTurnover</i>	-0.025	<b>-0.050</b>	<b>0.066</b>	0.020	<b>0.173</b>	<b>0.208</b>	<b>0.151</b>	1							
(9) <i>AbTrade</i>	<b>-0.061</b>	<b>-0.057</b>	0.002	0.014	-0.021	0.019	0.001	0.022	1						
(10) <i>ExecTurnover</i>	-0.002	-0.013	0.010	0.024	<b>0.206</b>	<b>0.183</b>	<b>0.221</b>	<b>0.134</b>	<b>-0.045</b>	1					
(11) <i>NegRecom</i>	0.023	0.030	0.034	<b>0.058</b>	-0.020	0.025	-0.005	0.012	0.011	-0.004	1				
(12) <i>NegCRA</i>	<b>0.055</b>	<b>0.081</b>	0.014	<b>0.076</b>	0.016	-0.026	-0.022	-0.021	0.023	<b>0.046</b>	<b>0.052</b>	1			
(13) <i>ABSI</i>	0.037	0.040	0.025	0.003	<b>-0.049</b>	0.021	0.038	-0.040	-0.008	-0.010	0.021	-0.008	1		
(14) <i>Whistleblower</i>	<b>0.052</b>	<b>0.073</b>	<b>0.103</b>	<b>0.079</b>	0.026	-0.009	-0.005	-0.019	-0.035	0.042	-0.015	0.012	-0.034	1	
(15) <i>LaborIntense</i>	<b>0.075</b>	<b>0.094</b>	0.003	0.026	0.034	0.026	-0.010	0.014	0.006	0.019	-0.032	0.003	<b>-0.067</b>	0.024	1
(16) <i>%EmpChg</i>	<b>0.055</b>	0.043	<b>0.060</b>	0.036	-0.040	0.017	0.024	0.005	-0.020	<b>-0.062</b>	-0.003	<b>-0.067</b>	<b>0.065</b>	-0.033	-0.029

**Table 3**  
**Determinants of ECW Involvement: Plaintiffs' Attorney's Cost-Benefit Considerations**

This table presents the regression estimates for the determinants of ECW involvement in private securities litigations against financial disclosure fraud for the factors associated with plaintiffs' attorney's cost-benefit considerations. Dependent variables are the indicator (columns 1–4) and the number (columns 5–8) for ECWs involved in a lawsuit, respectively. See Appendix B for definitions of other variables. Robust statistics, in parentheses, are clustered at the lawsuit filing year. \*\*\*, \*\*, \* represent the significance at 1%, 5% and 10% two-tailed level, respectively.

Dep Var = Determinants =	<i>Prob (DECW=1)</i>				<i>NECW</i>			
	<b>Public Information</b>	<b>Neg. Mkt Events</b>	<b>Employee Avail.</b>	<b>Overall</b>	<b>Public Information</b>	<b>Neg. Mkt Events</b>	<b>Employee Avail.</b>	<b>Overall</b>
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
<b>Public Information:</b>								
<i>AcctEvent</i>	-0.159*** (-2.766)			-0.156*** (-2.648)	-0.143** (-2.591)			-0.140** (-2.579)
<i>ExecTurnover</i>	-0.865*** (-3.061)			-0.840*** (-2.931)	-0.497*** (-3.791)			-0.478*** (-3.717)
<i>AbTrade</i>	-0.183*** (-2.928)			-0.180*** (-2.777)	-0.154*** (-3.334)			-0.151*** (-3.155)
<b>Negative Events:</b>								
<i>NegEvent</i>		0.116* (1.718)		0.119* (1.695)		0.079* (2.017)		0.083* (2.068)
<b>Labor Intensity:</b>								
<i>LaborIntense</i>			0.171 (1.642)	0.164 (1.557)			0.114* (1.748)	0.107 (1.618)
<b>Workforce Growth:</b>								
<i>%EmpChg</i>			0.287** (2.388)	0.266** (2.240)			0.220*** (3.024)	0.201** (2.833)
<b>Controls:</b>								
<i>Ln(AT)</i>	-0.029 (-1.529)	-0.025 (-1.262)	-0.011 (-0.624)	-0.019 (-1.095)	-0.004 (-0.255)	-0.000 (-0.002)	0.009 (0.717)	0.002 (0.177)
<i>Leverage</i>	0.350** (2.306)	0.290* (1.883)	0.330** (2.105)	0.357** (2.290)	0.269** (2.515)	0.229** (2.121)	0.260** (2.366)	0.275** (2.566)

<i>MTB</i>	0.000 (0.127)	0.001 (0.416)	0.000 (0.034)	-0.001 (-0.209)	-0.000 (-0.113)	0.001 (0.329)	-0.000 (-0.112)	-0.001 (-0.489)
<i>ROA</i>	-0.131 (-1.523)	-0.121 (-1.426)	-0.079 (-0.809)	-0.093 (-0.951)	-0.011 (-0.199)	-0.007 (-0.138)	0.028 (0.407)	0.021 (0.322)
<i>InstOwn</i>	0.173* (1.912)	0.188** (2.120)	0.194** (2.168)	0.162* (1.778)	0.169** (2.684)	0.187*** (2.934)	0.190*** (2.952)	0.160** (2.521)
<i>CAR</i>	-0.136 (-0.812)	-0.160 (-0.906)	-0.164 (-0.941)	-0.135 (-0.826)	-0.142 (-1.149)	-0.165 (-1.288)	-0.164 (-1.305)	-0.135 (-1.128)
<i>PIL</i>	0.028 (0.951)	0.014 (0.454)	0.027 (0.942)	0.034 (1.193)	0.035 (1.717)	0.024 (1.129)	0.034 (1.699)	0.041* (2.025)
<i>ClassLength</i>	0.146*** (3.874)	0.093*** (2.629)	0.087** (2.543)	0.147*** (3.888)	0.101*** (3.960)	0.056** (2.585)	0.052** (2.460)	0.101*** (3.972)
<i>FScore</i>	0.021 (0.403)	0.020 (0.404)	-0.012 (-0.243)	-0.002 (-0.040)	0.027 (0.892)	0.023 (0.755)	0.001 (0.016)	0.012 (0.393)
<i>Whistleblower</i>	0.214 (1.225)	0.226 (1.282)	0.227 (1.243)	0.218 (1.241)	0.209 (1.627)	0.221 (1.690)	0.222 (1.661)	0.211 (1.656)
#Cases	1,447	1,447	1,447	1,447	1,447	1,447	1,447	1,447
Filing Year FE	YES	YES	YES	YES	YES	YES	YES	YES
Industry FE	YES	YES	YES	YES	YES	YES	YES	YES
Pseudo R <sup>2</sup>								
/Adj R <sup>2</sup>	0.094	0.088	0.091	0.100	0.123	0.113	0.119	0.130

**Table 4**  
**Determinants of ECW Involvement: Employees' Incentives to Serve as ECWs**

This table presents the regression estimates for the determinants of ECW involvement in private securities litigations against financial disclosure fraud for factors associated with employees' incentives to serve as ECWs. Dependent variables are the indicator (columns 1–3) and the number (columns 4–6) for ECWs involved in a lawsuit, respectively. See Appendix B for definitions of other variables. Robust statistics, in parentheses, are clustered at the lawsuit filing year. \*\*\*, \*\*, \* represent the significance at 1%, 5% and 10% two-tailed level, respectively.

Dep Var = Ratings =	<i>Prob (DECW=1)</i>			<i>NECW</i>		
	<i>Overall Rating</i>	<i>Recommend Status</i>	<i>Ave Rating</i>	<i>Overall Rating</i>	<i>Recommend Status</i>	<i>Ave Rating</i>
	(1)	(2)	(3)	(4)	(5)	(6)
<i>%EmpChg</i>	<b>0.532***</b> (3.454)	<b>0.542***</b> (3.492)	<b>0.538***</b> (3.417)	<b>0.392**</b> (2.834)	<b>0.400**</b> (2.898)	<b>0.393**</b> (2.848)
<i>Ratings</i>	<b>-0.199***</b> (-3.322)	<b>-0.299***</b> (-2.656)	<b>-0.273***</b> (-4.377)	<b>-0.134***</b> (-4.168)	<b>-0.211***</b> (-4.495)	<b>-0.168***</b> (-5.359)
<i>AcctEvent</i>	-0.109 (-0.868)	-0.114 (-0.934)	-0.113 (-0.892)	-0.137 (-1.479)	-0.142 (-1.569)	-0.139 (-1.519)
<i>ExecTurnover</i>	-0.589 (-1.422)	-0.623 (-1.501)	-0.579 (-1.393)	-0.461* (-1.879)	-0.484* (-1.986)	-0.458* (-1.876)
<i>AbTrade</i>	-0.244** (-2.309)	-0.234** (-2.196)	-0.251** (-2.316)	-0.131* (-1.776)	-0.124 (-1.656)	-0.135* (-1.848)
<i>NegEvent</i>	0.153 (1.271)	0.150 (1.225)	0.154 (1.308)	0.125 (1.758)	0.123 (1.705)	0.126* (1.804)
<i>Whistleblower</i>	0.093 (0.367)	0.095 (0.369)	0.090 (0.357)	0.123 (0.687)	0.124 (0.682)	0.123 (0.693)
<i>LaborIntense</i>	<b>0.330***</b> (3.295)	<b>0.335***</b> (3.412)	<b>0.314***</b> (3.125)	<b>0.217***</b> (3.348)	<b>0.220***</b> (3.458)	<b>0.209***</b> (3.193)
<i>Ln(AT)</i>	0.011 (0.288)	0.014 (0.355)	0.012 (0.304)	0.002 (0.099)	0.005 (0.208)	0.002 (0.081)
<i>Leverage</i>	0.303 (1.004)	0.281 (0.914)	0.285 (0.955)	0.232 (1.461)	0.216 (1.333)	0.224 (1.441)
<i>MTB</i>	0.002 (0.619)	0.002 (0.624)	0.002 (0.613)	0.001 (0.500)	0.001 (0.522)	0.001 (0.437)
<i>ROA</i>	0.315 (1.193)	0.298 (1.125)	0.300 (1.161)	0.206 (1.268)	0.194 (1.204)	0.196 (1.224)
<i>InstOwn</i>	0.064 (0.388)	0.064 (0.384)	0.069 (0.411)	0.094 (0.880)	0.092 (0.864)	0.096 (0.891)
<i>CAR</i>	0.043 (0.119)	0.045 (0.128)	0.036 (0.101)	-0.070 (-0.297)	-0.064 (-0.273)	-0.076 (-0.326)
<i>PIL</i>	0.169** (2.309)	0.163** (2.206)	0.168** (2.320)	0.078** (2.257)	0.075* (2.098)	0.078** (2.218)
<i>ClassLength</i>	<b>0.209***</b> (4.708)	<b>0.213***</b> (4.797)	<b>0.211***</b> (4.685)	<b>0.145***</b> (4.164)	<b>0.147***</b> (4.289)	<b>0.146***</b> (4.228)
<i>FScore</i>	0.006 (0.054)	0.014 (0.128)	-0.003 (-0.026)	0.025 (0.454)	0.029 (0.529)	0.021 (0.379)
#Cases	629	629	629	629	629	629

Filing Year FE	YES	YES	YES	YES	YES	YES
Industry FE	YES	YES	YES	YES	YES	YES
Pseudo/Adj. R <sup>2</sup>	0.111	0.112	0.114	0.120	0.122	0.121

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**Table 5**  
**Accounting Allegations and ECWs Job Positions**

This table presents the association between litigation allegations and ECWs' job positions. Panel A presents the sample distribution for litigation allegations related to GAAP violations and revenue misstatements, along with ECWs in accounting and sales departments. Panel B reports the multinomial logistic regression results for the likelihood of involving ECWs from accounting (sales) department when allegations involve GAAP violations (revenue misstatements). The dependent variable *Accounting (Sales)* is set to one if job titles relate to the accounting department, the internal audit function, or the finance department (sales department), and zero otherwise. *GAAP (Revenue)* is a dummy variable that equals one for cases when the allegations involve GAAP violations (revenue-related misstatements). See Appendix B for definitions of other variables. Robust statistics, in parentheses, are clustered at the lawsuit filing year. \*\*\*, \*\*, \* represent the significance at 1%, 5% and 10% two-tailed level, respectively.

**Panel A: Distribution of Misstatement Allegations and ECWs Job Positions**

	<b># Cases</b>	<b>%</b>
<b>Allegations:</b>		
<b>Accounting (GAAP Violations)</b>	<b>460</b>	<b>32%</b>
– Revenue-Related Misstatements	201	14%
<b>Non-Accounting</b>	<b>987</b>	<b>68%</b>
<b>Total</b>	<b>1,447</b>	<b>100%</b>
<b>CW Position in:</b>		
<b>Accounting</b>	<b>151</b>	<b>23%</b>
<b>Sales</b>	<b>199</b>	<b>31%</b>
– Both Accounting and Sales	52	8%
<b>Non-Accounting/non-sales</b>	<b>350</b>	<b>54%</b>
<b>Total</b>	<b>648</b>	<b>100%</b>

Table 5, Continued

Panel B: Multinomial Logistic Regressions

CW Positions:	<i>Non-</i>		<i>Sales</i>	<i>Non-Sales</i>
	<i>Accounting</i>	<i>Accounting</i>		
	(1)	(2)	(3)	(4)
<b>GAAP</b>	<b>1.378***</b> <b>(0.000)</b>	<b>0.336**</b> <b>(0.030)</b>		
<b>Revenue</b>			<b>1.025***</b> <b>(0.000)</b>	<b>0.456**</b> <b>(0.025)</b>
<i>AcctEvent</i>	-0.237 (0.344)	-0.496*** (0.002)	-0.567** (0.014)	-0.264* (0.099)
<i>AbTrade</i>	-2.015** (0.033)	-1.115* (0.055)	-0.617 (0.449)	-1.629*** (0.006)
<i>ExecTurnover</i>	-0.153 (0.510)	-0.360** (0.013)	-0.596*** (0.005)	-0.214 (0.149)
<i>NegEvent</i>	0.256 (0.238)	0.173 (0.182)	0.243 (0.178)	0.186 (0.167)
<i>LaborIntense</i>	0.446 (0.108)	0.191 (0.282)	0.049 (0.839)	0.344* (0.060)
<i>%EmpChg</i>	-0.008 (0.980)	0.558*** (0.002)	0.746*** (0.004)	0.354* (0.064)
<i>Ln(AT)</i>	-0.001 (0.992)	-0.035 (0.374)	-0.036 (0.526)	-0.014 (0.737)
<i>Leverage</i>	1.006** (0.027)	0.456* (0.083)	1.141*** (0.002)	0.309 (0.262)
<i>MTB</i>	-0.009 (0.565)	-0.000 (0.992)	0.001 (0.889)	-0.003 (0.689)
<i>ROA</i>	-0.398 (0.321)	-0.075 (0.705)	0.084 (0.781)	-0.272 (0.189)
<i>InstOwn</i>	0.424 (0.135)	0.250 (0.139)	0.453* (0.061)	0.197 (0.260)
<i>CAR</i>	-0.304 (0.621)	-0.110 (0.762)	0.125 (0.811)	-0.291 (0.439)
<i>PIL</i>	-0.014 (0.872)	0.077 (0.176)	0.044 (0.607)	0.060 (0.299)
<i>ClassLength</i>	0.473*** (0.001)	0.201*** (0.006)	0.233** (0.029)	0.250*** (0.001)
<i>FScore</i>	0.226 (0.175)	-0.075 (0.444)	-0.033 (0.816)	-0.014 (0.888)
#Cases		1,447		1,447
Pseudo R <sup>2</sup>		0.152		0.129
<b>Test: GAAP (1) = (2)</b>		$\chi^2 = 19.20^{***}$ <b>(0.000)</b>		
<b>Test: Revenue (3) = (4)</b>			$\chi^2 = 4.95^{**}$ <b>(0.026)</b>	

**Table 6**  
**ECW Involvement and Litigation Settlement and Duration**

This table presents the regression estimates for the association between ECW involvement and the settlement likelihood and litigation duration. Columns 1-4 and 5-8 report the results of the main analysis and robustness test using entropy balancing method, respectively. *Settle* is a dummy variable set to one if a lawsuit is settled, and zero if dismissed. *Duration* is the natural logarithm of the length between the misstatement period ending date and the first date on which a dismissal/settlement decision is made. See Appendix B for definitions of other variables. Robust statistics, in parentheses, are clustered at the lawsuit filing year. \*\*\*, \*\*, \* represent the significance at 1%, 5% and 10% two-tailed level, respectively.

Dep Var =	Main Analysis				Robustness Test - Entropy Balancing Method			
	<i>Settle</i>		<i>Duration</i>		<i>Settle</i>		<i>Duration</i>	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
<i>DECW</i>	<b>0.312***</b> (4.573)		<b>0.322***</b> (11.930)		<b>0.368***</b> (4.834)		<b>0.256***</b> (9.353)	
<i>NECW</i>		<b>0.185***</b> (4.842)		<b>0.162***</b> (9.059)		<b>0.218***</b> (5.224)		<b>0.130***</b> (8.115)
<i>Settle</i>			0.733*** (18.729)	0.731*** (18.306)			0.635*** (15.362)	0.631*** (14.900)
<i>AcctEvent</i>	0.148** (2.460)	0.159*** (2.658)	-0.079 (-1.684)	-0.073 (-1.518)	0.099 (1.431)	0.114* (1.658)	-0.047 (-1.133)	-0.041 (-0.966)
<i>AbTrade</i>	0.050 (0.210)	0.050 (0.204)	0.214* (1.939)	0.201 (1.703)	0.075 (0.267)	0.076 (0.266)	0.242** (2.123)	0.243** (2.091)
<i>ExecTurnover</i>	-0.080 (-1.069)	-0.072 (-1.005)	-0.002 (-0.042)	0.002 (0.037)	-0.155* (-1.739)	-0.144* (-1.699)	-0.028 (-0.725)	-0.023 (-0.601)
<i>NegEvent</i>	0.024 (0.313)	0.024 (0.307)	0.006 (0.104)	0.006 (0.109)	0.049 (0.616)	0.050 (0.632)	0.003 (0.048)	0.002 (0.045)
<i>Whistleblower</i>	0.503*** (4.681)	0.495*** (4.532)	0.071 (1.103)	0.063 (0.983)	0.481*** (4.336)	0.471*** (4.165)	0.105* (1.825)	0.096 (1.688)
<i>LaborIntense</i>	0.026 (0.234)	0.024 (0.218)	0.047 (0.834)	0.048 (0.870)	-0.035 (-0.281)	-0.038 (-0.308)	0.057 (1.430)	0.056 (1.402)
<i>%EmpChg</i>	0.116 (1.367)	0.108 (1.354)	0.001** (2.501)	0.002*** (3.276)	0.027 (0.420)	0.019 (0.290)	0.001 (1.256)	0.001* (1.802)
<i>Ln(AT)</i>	-0.032* (-1.069)	-0.036* (-1.005)	0.060*** (1.939)	0.057*** (1.703)	-0.050** (-1.739)	-0.054** (-1.699)	0.056*** (1.825)	0.053*** (1.688)

	(-1.693)	(-1.839)	(4.813)	(4.674)	(-1.961)	(-2.101)	(5.375)	(5.216)
<i>MTB</i>	-0.000	0.000	0.001	0.001	0.002	0.002	0.001	0.001
	(-0.020)	(0.029)	(0.406)	(0.452)	(0.371)	(0.459)	(0.341)	(0.449)
<i>Leverage</i>	0.004	-0.009	-0.062	-0.068	-0.009	-0.022	-0.074	-0.077
	(0.026)	(-0.062)	(-1.087)	(-1.207)	(-0.055)	(-0.125)	(-1.047)	(-1.079)
<i>ROA</i>	0.025	0.012	-0.011	-0.022	0.175	0.154	-0.150**	-0.158**
	(0.217)	(0.108)	(-0.163)	(-0.324)	(1.297)	(1.119)	(-2.320)	(-2.668)
<i>InstOwn</i>	-0.059	-0.070	0.067*	0.060	-0.094	-0.106	0.037	0.027
	(-0.754)	(-0.888)	(1.938)	(1.605)	(-1.086)	(-1.252)	(1.089)	(0.760)
<i>CAR</i>	-0.616***	-0.611***	-0.377***	-0.373***	-0.840***	-0.836***	-0.313***	-0.308***
	(-3.418)	(-3.315)	(-3.783)	(-3.761)	(-3.399)	(-3.280)	(-3.593)	(-3.498)
<i>PIL</i>	0.077**	0.073*	0.022	0.019	0.038	0.035	0.016	0.015
	(2.048)	(1.943)	(1.302)	(1.193)	(1.542)	(1.389)	(1.208)	(1.128)
<i>ClassLength</i>	-0.001	-0.003	0.036	0.036	0.047	0.044	0.057**	0.055**
	(-0.013)	(-0.062)	(1.608)	(1.606)	(1.021)	(0.956)	(2.728)	(2.635)
<i>FScore</i>	0.245***	0.244***	-0.006	-0.007	0.265***	0.265***	-0.012	-0.013
	(4.110)	(4.053)	(-0.227)	(-0.285)	(3.554)	(3.523)	(-0.542)	(-0.595)
<i>#Cases</i>	1,441	1,441	1,441	1,441	1,441	1,441	1,441	1,441
<i>Filing Year FE</i>	YES	YES	YES	YES	YES	YES	YES	YES
<i>Industry FE</i>	YES	YES	YES	YES	YES	YES	YES	YES
<i>Circuit FE</i>	YES	YES	YES	YES	YES	YES	YES	YES
<i>Pseudo/Adj R<sup>2</sup></i>	0.121	0.123	0.362	0.358	0.158	0.162	0.355	0.353

**Table 7**  
**Information Content of ECW Testimonies and Litigation Settlement and Duration**

This table presents the effect of the information content of ECWs' statements on the settlement likelihood and litigation duration. Panel A shows the sample distribution by the information types of ECW testimonies. *Scienter* is a dummy variable that equals one if ECWs' testimony contains information about defendants' intent to misstate, and zero otherwise. *Particularity* is a dummy variable that equals one if ECWs' testimony contains information about the particularities of the misstatement, and zero otherwise. Panel B presents regression results using *Settle* and *Duration* as the dependent variable, respectively. See Appendix B for definitions of the variables. Robust statistics, in parentheses, are clustered at the lawsuit filing year. \*\*\*, \*\*, \* represent the significance at 1%, 5% and 10% two-tailed level, respectively.

**Panel A: Sample Distribution of Information Content of ECW Testimonies**

	<i>Particularity</i>		
	No	Yes	
<i>Scienter</i>			
<b>No</b>	80 [12.3%]	169 [26.1%]	249 [38.4%]
<b>Yes</b>	90 [13.9%]	309 [47.7%]	399 [61.6%]
<b>Total</b>	170 [26.2%]	478 [73.8%]	648

**Table 7, Continued**

**Panel B: The Effect of ECW Testimonies on Litigation Settlement and Duration**

Dep Var =	<i>Settle</i>			<i>Duration</i>		
	(1)	(2)	(3)	(4)	(5)	(6)
<i>DECW_Scienter</i>	<b>0.207**</b> (2.280)			<b>0.281***</b> (8.760)		
<i>DECW_Particular</i>		<b>0.283***</b> (4.055)			<b>0.303***</b> (9.990)	
<i>DECW_ScienterOnly</i>			<b>0.257**</b> (2.118)			<b>0.202***</b> (3.969)
<i>DECW_ParticularOnly</i>			<b>0.366***</b> (2.583)			<b>0.246***</b> (6.608)
<i>DECW_Both</i>			<b>0.283***</b> (2.961)			<b>0.367***</b> (9.057)
<i>Settle</i>				0.751*** (17.596)	0.741*** (18.096)	0.738*** (17.814)
<i>AcctEvent</i>	0.143** (2.405)	0.132** (2.314)	0.144** (2.405)	-0.080 (-1.670)	-0.094* (-1.968)	-0.083 (-1.715)
<i>AbTrade</i>	0.003 (0.010)	0.025 (0.101)	0.024 (0.100)	0.177 (1.493)	0.188* (1.726)	0.199* (1.792)
<i>ExecTurnover</i>	-0.093 (-1.235)	-0.090 (-1.214)	-0.084 (-1.109)	-0.013 (-0.258)	-0.012 (-0.242)	-0.009 (-0.183)
<i>NegEvent</i>	0.029 (0.365)	0.029 (0.365)	0.024 (0.306)	0.005 (0.101)	0.009 (0.184)	0.004 (0.086)
<i>Whistleblower</i>	0.512*** (4.414)	0.488*** (4.339)	0.488*** (4.427)	0.076 (1.201)	0.052 (0.751)	0.055 (0.830)
<i>LaborIntense</i>	0.044 (0.394)	0.034 (0.311)	0.028 (0.259)	0.064 (1.146)	0.054 (1.001)	0.055 (1.003)
<i>%EmpChg</i>	0.120 (1.455)	0.114 (1.407)	0.117 (1.429)	0.002*** (4.000)	0.002** (2.725)	0.002*** (3.019)
<i>Ln(AT)</i>	-0.034*	-0.031	-0.032*	0.059***	0.062***	0.061***

	(-1.823)	(-1.605)	(-1.645)	(4.829)	(4.809)	(4.829)
<i>MTB</i>	-0.000	-0.000	-0.000	0.001	0.001	0.001
	(-0.055)	(-0.025)	(-0.015)	(0.328)	(0.376)	(0.360)
<i>Leverage</i>	0.020	0.002	0.004	-0.054	-0.063	-0.067
	(0.145)	(0.018)	(0.030)	(-0.938)	(-1.053)	(-1.131)
<i>ROA</i>	0.015	0.022	0.024	-0.020	-0.012	-0.013
	(0.125)	(0.192)	(0.205)	(-0.311)	(-0.185)	(-0.194)
<i>InstOwn</i>	-0.037	-0.065	-0.068	0.091**	0.061*	0.069*
	(-0.502)	(-0.842)	(-0.901)	(2.520)	(1.742)	(1.963)
<i>CAR</i>	-0.605***	-0.639***	-0.630***	-0.358***	-0.400***	-0.379***
	(-3.371)	(-3.635)	(-3.414)	(-3.379)	(-4.081)	(-3.625)
<i>PIL</i>	0.075**	0.078**	0.075**	0.019	0.022	0.020
	(1.979)	(2.114)	(2.020)	(1.224)	(1.299)	(1.191)
<i>ClassLength</i>	0.006	0.005	0.004	0.040*	0.042*	0.038
	(0.120)	(0.115)	(0.079)	(1.856)	(1.865)	(1.716)
<i>FScore</i>	0.247***	0.245***	0.248***	-0.004	-0.006	-0.005
	(4.351)	(4.094)	(4.118)	(-0.156)	(-0.233)	(-0.185)
<i>#Cases</i>	1,441	1,441	1,441	1,441	1,441	1,441
Filing Year FE	YES	YES	YES	YES	YES	YES
Industry FE	YES	YES	YES	YES	YES	YES
Circuit FE	YES	YES	YES	YES	YES	YES
Pseudo/Adj R <sup>2</sup>	0.115	0.118	0.120	0.349	0.354	0.359