



*Distinguished Lecture Series  
School of Accountancy  
W. P. Carey School of Business  
Arizona State University*

Yinghua Li  
of  
Baruch College  
The City University of New York  
will present

“Does Shareholder Litigation Deter Insider  
Trading?”

on

November 15, 2013

1:30pm in MCRD164

## **Does Shareholder Litigation Deter Insider Trading?**

C.S. Agnes Cheng  
School of Accounting & Finance  
The Hong Kong Polytechnic University  
Hung Hom, Kowloon, Hong Kong  
Tel: (852) 2766-7772, E-mail: [afagnes@inet.polyu.edu.hk](mailto:afagnes@inet.polyu.edu.hk)  
E. J. Ourso College of Business  
Louisiana State University  
E-mail: [acheng@Lsu.edu](mailto:acheng@Lsu.edu)

Henry He Huang  
Sy Syms School of Business  
Yeshiva University  
New York, NY 10033  
Tel: (832) 276-3834, E-mail: [henry.huang@yu.edu](mailto:henry.huang@yu.edu)

Yinghua Li  
Baruch College  
The City University of New York  
New York, NY 10010-5585  
Tel: (646) 312-3247, E-mail: [Yinghua.Li@baruch.cuny.edu](mailto:Yinghua.Li@baruch.cuny.edu)

October 2013

We are grateful for the very helpful comments from Vishal Baloria, Lamia Chourou, Maria Correia, David Godsell, Darren Roulstone, Steven Salterio, Kam-Ming Wan, and Michael Welker. We also wish to acknowledge the comments from the workshop participants at Loyola Marymount University, Queen's University, University of Hawaii, Yeshiva University, the 2013 American Accounting Association Annual Meeting, the 2013 Canada Accounting Association Annual Meeting, the 2013 European Accounting Association Annual Meeting, and the 2013 China International Conference in Finance.

# Does Shareholder Litigation Deter Insider Trading?

## ABSTRACT

This paper examines the possible deterrent effect of *actual* shareholder litigation on insider trading behavior for both defendant firms and their industry peers. We construct a composite index to capture the strength of a lawsuit as reflected in its merits and the rigorousness of the litigation process. Using a large litigation sample from 1996 to 2009, we find a significant decrease in the intensity of the insider stock sales for defendant firms following lawsuits that score high in the composite strength index. Further analyses indicate that the decrease is mainly driven by the decline in *opportunistic* insider selling. We also find the decrease to be more pronounced when the defendant firm also reduces its earnings management following the litigation. Finally, we find a significant decrease in insider selling for industry peers of defendant firms following strong lawsuits. This paper provides the first evidence on the existence of and variations in the deterrent effect of class action lawsuits on insider trading.

**Keywords:** *insider trading; shareholder litigation; lawsuit strength*

**JEL Classification:** *G32; G34; H26.*

**Data Availability:** *Data are available from sources identified in the text.*

# Does Shareholder Litigation Deter Insider Trading?

## I. INTRODUCTION

Corporate insiders can exploit their information advantages over other market participants by trading their stocks to extract private rents (Beneish 1999; Huddart, Ke, and Shi 2007; Jagolinzer, Larcker, and Taylor 2011). In the last decade, many corporations involved in scandals (e.g., Countrywide Financial, Enron, Global Crossing, HealthSouth, etc.) have their executives engaging in egregious insider stock trading.<sup>1</sup> Recent media reports and academic studies have also indicated widespread opportunistic trades by corporate insiders (Cohen, Malloy, and Pomorski 2012; *Wall Street Journal* 2012a). For instance, by examining the executives' trading activities in the week before their companies make news, the *Wall Street Journal* (2012b) finds that "one of every 33 who dipped in and out posted average returns of more than 20% (or avoided 20% downturns) in the following week". Such informed insider trading undermines the confidence of outsider shareholders on the fairness of the equity markets and reduces their participation. It also makes the deterrence of informed insider trading a top priority for regulators and investors (Bushman, Piotroski, and Smith 2005; Securities and Exchange Commission 2012; *Wall Street Journal* 2012c). In this paper, we investigate whether shareholder securities litigation, a widely used disciplinary mechanism against managerial opportunism, can deter such trading.

Insiders make their stock trading decisions based on the expected benefits and costs from such trades. Although insiders can benefit financially from trading on private information, such trades may also incur significant costs, particularly those arising from securities class action.

---

<sup>1</sup> For instance, in the case of Countrywide Financial, managers are accused of selling more than \$400 million worth of stockholdings at inflated prices.

More specifically, insider trading during the class period reflects the intent (*scienter*) of the insiders to benefit from the alleged fraud, and it can be used as inculpatory evidence by the plaintiffs to strengthen the merits of lawsuits (Billings 2008; Thevenot 2012). Insiders consequently engage in fewer trades when the perceived litigation risk is high (Huddart et al. 2007; Thevenot 2012). After a securities lawsuit, the defendant firm experiences an increase in the perceived litigation risk (Romano 1991; Core 1997; Cao and Narayananamoorthy 2005a and 2005b). This premise suggests that insider trading should decrease following a lawsuit, because the insiders would revise upward the associated litigation risk and revise downward the expected net benefits from the trading. Given that insider sales, as opposed to insider purchases, are much more likely to be used as evidence against insiders in litigation (Cheng and Lo 2006; Rogers 2008; Brochet and Srinivasan 2013), the deterrent effect should be mainly manifested in the decrease in insider selling.

On the other hand, the effectiveness of securities class action lawsuits in constraining managerial opportunism has also received substantial criticism. First, several studies (e.g., Weiss and Beckerman 1995; Baker and Griffith 2009) suggest that securities lawsuits are largely frivolous and driven by the motivation of attorneys to extract settlements from firms experiencing large stock price declines. Second, ownership dispersion provides plaintiffs with weak incentives to monitor the litigation process. Consequently, the plaintiff attorneys are typically in control of the class action, and they prefer a quick settlement over a lengthy and risky litigation to recover their time and efforts invested in the lawsuits (Weiss and Beckerman 1995; Fisch 1997; Berger, Coffey, and Silk 2001). Finally, directors and officers are rarely punished financially by lawsuits because their liabilities are likely covered by the directors and officers (D&O) liability insurance (Black, Cheffins, and Klausner 2006).

These arguments suggest that the deterrent effect of litigation on insider trading should be stronger when a lawsuit has merits and is rigorously litigated. Such strong lawsuits are more likely to increase the perceived litigation risk and decrease executives' expected net benefits from insider trading, thereby reducing opportunistic trading.

To investigate the possible deterrent effect of shareholder litigation on insider trading, we collect a sample of Section 10b-5 securities class action lawsuits filed from January 1, 1996 to October 28, 2009. To control for the characteristics of sued firms, we use propensity-score matching models to construct a group of control firms that have a similar likelihood of being sued as the defendant firms in our sample. Following prior literature (e.g., Cheng and Lo 2006; Rogers 2008; Huddart et al. 2007; Thevenot 2012) that uses the volumes of insider trading to proxy for the intensity of informed insider trading, we examine the *change* in the abnormal volumes of insider trading following lawsuits. We focus on the so-called C-suite executives (i.e., the highest level officers with “chief” in their titles, e.g., Chief Executive Officer (CEO), Chief Financial Officer (CFO), Chief Operating Officer (COO)) because they possess more private information and set the tone at the top (Skaife, Veenman, and Wangerin 2013).

To capture the merits of the lawsuit and the rigorousness of the litigation process, we construct a composite lawsuit strength index comprising seven provisions based on the lawsuit characteristics. Drawing on previous literature, we identify these seven measures, namely, (1) whether the lawsuit involves serious accounting allegations; (2) whether the lawsuit involves a prior financial restatement; (3) whether the lawsuit has an audit firm named as a co-defendant; (4) whether the revelation of potential fraud triggers strong negative market reactions; (5) whether the lawsuit is led by an institutional plaintiff; (6) whether the lawsuit is not dismissed; and (7) whether the lawsuit generates a large amount of settlement. We then examine whether lawsuits

with relatively high scores on the composite strength index have a stronger deterrent effect on subsequent insider trading than the other lawsuits.

We find a significant decrease in the volumes of insider sales for the full lawsuit sample.<sup>2</sup> However, when we conduct the subsample analyses, we find that the decrease is limited to the subsample of lawsuits in the top half of the composite strength index (termed “strong lawsuits” hereinafter). No similar decrease in insider sales is observed for the other subsample (termed “weak lawsuits” hereinafter). We also observe a significant decrease in selling by various types of insiders, including CEOs, CFOs, other officers, and directors, following strong lawsuits. These results suggest that only the meritorious and rigorously litigated lawsuits can effectively deter future informed insider trading in defendant firms.

We conduct a large array of robustness analyses. A possible concern with inferences based on insider sales is that some sales are driven by diversification or portfolio rebalancing motives. Consequently, the decrease in the overall insider selling might not reflect the reduction in opportunistic insider selling. To mitigate this concern, we perform two additional tests. First, following Cohen et al. (2012), we classify insider sales into “opportunistic” and “routine” sales. Cohen et al. (2012) provide robust evidence that their measures of opportunistic trades capture “information-driven” trades, whereas routine trades are not predictive of future returns. We find a significant post-litigation decrease in opportunistic sales but not in routine sales. This finding suggests that the decline in the volumes of insider sales comes mainly from the decrease in opportunistic sales. In contrast, we do not find a similar decrease in opportunistic sales following weak lawsuits. In the second test, in the multivariate regression models, we further control for

---

<sup>2</sup> We find no significant change in insider purchases, which is consistent with the fact that insider sales are associated with higher potential litigation costs than insider purchases (e.g., Cheng and Lo 2006).

option grants and exercises, which are highly correlated with stock sales (Huddart and Ke 2007), and continue to find similar results.

We also conduct several additional analyses of the deterrent effect. First, we compare firms with low and high levels of ex ante litigation risk. We propose that the deterrent effect should be stronger for the group with lower levels of ex ante litigation risk. The increase in litigation risk is likely to be higher for firms with lower levels of ex ante litigation risk, and, accordingly, the deterrent effect will be stronger. As expected, we find a more pronounced decrease in insider sales for firms that have lower levels of ex ante litigation risk.

Second, the significant governance role of accounting in reducing information asymmetry and agency costs (e.g., Bushman and Smith 2001) prompts us to examine the change in insider trading conditional on the change in the accounting quality of defendant firms. We expect improvements in accounting quality to be conducive to reductions in informed insider trading. Consistent with this conjecture, we find that the decrease in the volumes of insider sales is more significant when defendant firms experience simultaneous improvements in accounting quality, as indicated by the decrease in both signed and absolute discretionary accruals.

To examine whether securities lawsuits can generate positive externalities, we expand our examination of the deterrent effect to industry peers of the defendant firms. We find a significant decrease in the intensity of insider sales for peer firms following securities lawsuits. As expected, the decrease is stronger for the lawsuits in the top half of the composite strength index. We interpret this change in insider trading behavior as being driven by the increased “perceived” litigation risk for peer firms following litigation, consistent with previous findings.

This paper makes several contributions to the literature. First, to the best of our knowledge, this is the first paper that examines the impact of *actual* private securities lawsuits on



insider trading. Prior studies (Cheng and Lo 2006; Huddart et al. 2007; Rogers 2008; Cohen et al. 2012; Thevenot 2012) have demonstrated that informed insider trading decreases in the perceived risk of potential private securities litigation. These studies use *ex ante* perceived litigation occurrence risk to evaluate the deterrent effect of litigation on insider trading, and generally document a negative association between *ex ante* perceived litigation risk and insider trading intensity.<sup>3</sup> However, this result does not reveal to what extent actual lawsuits will effectively deter opportunistic insider trading. This is because lawsuits often differ significantly in their merits and the rigorousness of the litigation process, which are not captured by the *ex ante* estimates of litigation likelihoods employed in the prior studies. Examination of the change in insider trading around actual litigation allows us to better identify significant variations in the deterrent effect of lawsuits. Our study suggests that the deterrent effect on subsequent insider trading is contingent upon the merits and the rigorousness of the litigation process of the lawsuits. Future researchers should consider these critically important lawsuit characteristics when they empirically model litigation risk associated with insider trading.

Second, it is important to determine the effectiveness of litigation in mitigating informed insider trading, because of the widespread illegal insider trading (Cohen et al. 2012; *Wall Street Journal* 2012b and 2012c) and the high cost of litigation to the society. We provide strong evidence that private securities class actions, especially those that have merits and are rigorously litigated, can effectively constrain future informed insider trading in both defendant firms and their industry peers. Third, our work is the first to provide valuable evidence that securities litigation can deter opportunistic insider sales of the peer firms of defendants. This finding of

---

<sup>3</sup> These studies use the actual litigation occurrence (an indicator variable) as the dependent variable in a logistic regression to estimate the determinants of litigation, and then use the estimated coefficients on these determinants to compute an individual firm's predicted likelihood of being a lawsuit target.

positive externality also provides some justification for the costly securities litigation. Finally, extant literature (e.g., Beneish 1999) suggests that earnings management and insider trading are positively related in providing each other with opportunities and incentives. We extend this line of literature by examining this relation through change analysis, and we find that firms with the reduction in earnings management also experience a greater decrease in insider sales.

The rest of our study is organized as follows. Section II reviews the related literature. Section III describes the sample section and data sources. Section IV presents the empirical analysis on the impact of litigation on insider trading. Sections V and VI present the robustness check and additional analysis. Section VII concludes.

## **II. RELATED LITERATURE**

### **Insider Trading and Litigation Risk**

The courts have long recognized that insider trading can be used to infer fraudulent intent in securities class actions. This evidence of intent helps plaintiffs satisfy the filing requirement and improve their bargaining powers in settlement negotiations. For instance, the Private Securities Litigation Reform Act (PSLRA) of 1995 requires plaintiffs to show strong inference of the fraudulent intent of defendants in their filings (Griffin and Grundfest 2002). Consequently, prior empirical studies have documented a statistical association between insider trading and litigation incidence. Johnson et al. (2007) examine the impact of the PSLRA on a sample of high technology firms. They find a stronger correlation between abnormal insider selling and litigation incidence after the PSLRA. Their result suggests that the PSLRA improves the merits of securities class actions. Rogers, Van Buskirk, and Zechman (2011) examine a sample of disclosure-related litigation, and they report that insider trading incrementally increases litigation

risk when the insiders' firms also issue optimistic disclosures. Recent evidence also suggests a link between insider trading and the litigation settlement. Based on a sample of firms facing large and negative earnings news, Billings (2008) reveals that the abnormal trades of managers prior to negative news revelations are positively associated with litigation incidence and the settlement amount. However, none of these studies examine whether actual litigation constrains insider trading.

### **Effect of Potential Litigation Risk on Insider Trading**

The adverse consequences associated with litigation provide managers with incentives to refrain from trading when the perceived litigation risk is high. Using a sample of restatement firms, Thevenot (2012) shows that the insider sales volume decreases in the perceived possibility of private litigation and SEC enforcement estimated from determinants models. In particular, Thevenot (2012, p. 376) argues that “[i]f the estimate of the litigation likelihood increases by 10 percentage points, the dollar value of net sales decreases by over \$24 million.” Huddart et al. (2007) also examine how the threat of jeopardy (i.e., litigation costs and negative publicity) disciplines insider trading. Based on evidence from 10b-5 class actions, they demonstrate that insiders avoid profitable trades (e.g., trades prior to the announcement of good and bad news) when they perceive the jeopardy associated with such trades to be high. Similarly, Rogers (2008) suggests that the desire to reduce the litigation risk induces managers to provide high quality disclosures before insider sales. Cohen et al. (2012) attempt to identify informative insider trades by classifying insider traders as routine traders and opportunistic traders. Consistent with insider trading dampened by increasing potential legal costs, they report a decrease in the fraction of opportunistic traders following the high-profile coverage of the SEC pursuit of illegal insider

trading cases. Collectively, these studies provide strong evidence that “perceived” litigation risk mitigates the opportunistic trading behavior of insiders.

### **Effect of Litigation on Subsequent Insider Trading**

Prior literature indicates that insiders make trading decisions based on their perceived payoffs from trading and potential litigation costs associated with the trades (Cheng and Lo 2006; Huddart et al. 2007; Rogers 2008; Cohen et al. 2012; Thevenot 2012). On the benefit side, managers can obtain financial gains from their informed trading. On the cost side, informed insider trading can be legally inferred as the intent to commit fraud, and thus increases the risk of both public enforcement and private litigation.

After litigation, insiders are likely to revise their beliefs about the costs and benefits of their trading, thus changing post-litigation trading behaviors. Specifically, insiders are likely to reduce their stock trading if the increased perceived litigation costs exceed the trading profits.<sup>4</sup> Prior research indicates that managers’ perceived litigation costs increase following a lawsuit. For instance, Romano (1991) shows that firms with prior securities litigation are more likely to be sued again. More recent studies (Core 1997; Cao and Narayanamoorthy 2005a and 2005b) indicate that firms with a litigation history carry higher coverage limits of D&O legal liability insurance and are also charged higher premium rates by insurance companies. A lawsuit brings significant damages to the defendant firm and its insiders, such as the cost of legal defense and settlement, reputational damages, managers’ time and attention, and increased difficulty in recruiting directors and auditors (Black et al. 2006; Johnson, Nelson, and Pritchard 2000).

---

<sup>4</sup> Following lawsuits, the net benefit of insider trading can also be lower due to a decrease in the expected benefit of insider trading. For instance, the price declines following lawsuits reduce the profitability of insider trading. We discuss this premise in our additional analysis “whether the results are driven by decreases in stock prices following the lawsuits.”

Consequently, having experienced a lawsuit, insiders are likely to restrain themselves from conducts that could cause future litigation. Insider trading can be used to infer fraudulent intent and increase the litigation likelihood (Johnson et al. 2007; Rogers et al. 2011); at the same time, the risk of private litigation is much higher for insider selling than for insider purchase (Cheng and Lo 2006; Rogers 2008). Thus, insiders in firms that have been sued are likely to revise upward the potential litigation costs of insider sales after the litigation. This reasoning suggests that insiders should decrease their stock selling following litigation.

In contrast, few changes will emerge in post-litigation insider trading practices if the lawsuit has no disciplinary effect on the insiders of defendant firms. Prior research indicates that the disciplinary effect can be limited due to several reasons. First, the filing of a securities lawsuit can be motivated by the desire of attorneys to obtain a settlement from the defendant firm (Sale 1998). Attorneys would target firms experiencing large stock price declines regardless of the presence of any actual fraud (Casey 2008). Consequently, many securities lawsuits are non-meritorious and are settled with the defendant firms that are eager to avoid any further burden of the lengthy and costly litigation process (Baker and Griffith 2009). Second, ownership dispersion causes collective action problems, in which plaintiffs have incentives to “free ride” on the efforts of other plaintiffs. Therefore, plaintiffs have weak incentives to engage in the litigation process (Macey and Miller 1991). The class action litigation aims to address the collective action problems by empowering the lead plaintiffs and the plaintiff attorneys to pursue a single, unified action (Bebchuk 1988). However, this empowerment of plaintiff attorneys causes litigation agency problems when the interests of attorneys are misaligned with those of shareholders. Attorneys typically prefer a quick settlement over a lengthy and risky litigation to recover their time and efforts invested in the lawsuits (Weiss and Beckerman 1995). The litigation agency

problems are most severe when the lead plaintiffs cannot effectively monitor the plaintiff attorneys (Fisch 1997; Berger, Coffey, and Silk 2001). The deterrent effect of a weak lawsuit is likely inconsequential and shall not change the insider trading behavior of executives. Finally, even if a lawsuit has merits and is rigorously litigated, executives typically have their legal liabilities covered by D&O liability insurance, and they rarely have to pay any settlement out of their own pockets (Black et al. 2006; Coffee 2006). These arguments suggest that lawsuits might have no disciplinary effect on insiders and would not deter insider misbehaviors.

The preceding literature review suggests that the effectiveness of a lawsuit in deterring informed insider trading is contingent upon the merits and rigorousness of the lawsuit, which we term “the strength of the lawsuit”. We use several lawsuit characteristics to capture the strength of the lawsuit. First, prior studies (Carleton et al. 1996; Bajaj et al. 2003; Thompson and Sale 2003) indicate that the merits of a lawsuit can be reflected by a number of accounting-related lawsuit characteristics. These characteristics include the following: (1) whether the lawsuit involves allegations of GAAP violation, (2) whether the lawsuit involves a prior restatement, and (3) whether the lawsuit has an accounting firm named as a co-defendant. For instance, Thompson and Sale (2003) provide evidence that post-PSLRA, the majority of the alleged malfeasances involve accounting misrepresentations, implying that accounting-related allegations are more likely to have merits than other types of allegation.<sup>5</sup> Second, a lawsuit is also viewed as having more merits if its revelation event (which marks the end of class period) triggers significant negative market reactions, indicating the severity of misrepresentation and investor losses (Carleton et al. 1996; Bajaj et al. 2003). Third, Cheng, Huang, Lobo, and Li (2010) demonstrate

---

<sup>5</sup> If an allegation of GAAP violation is accompanied by a restatement, such an allegation is evidently supported by hard evidence of wrongdoing (i.e., the restatement). Consequently, Palmrose and Scholz (2004) indicate that lawsuits preceded by accounting restatements, especially those related to core earnings, have merits and significant negative litigation consequences.

that institutional lead plaintiffs tend to litigate rigorously and can improve the effectiveness of discipline on defendant firms.<sup>6</sup> Finally, the merits and the rigorousness of a lawsuit can also be captured by whether the lawsuit survives the motion to dismiss and achieves a large settlement (Johnson et al. 2007; Cheng et al. 2010; Dyck, Morse, and Zingales 2010). Specifically, surviving the motion to dismiss and achieving a large settlement imply that the merits of a lawsuit have been validated by judicial scrutiny and the lawsuits have been rigorously litigated. Our study explicitly identifies these lawsuit characteristics that capture the merits and rigorousness of a lawsuit. We posit that greater monetary and reputational penalties imposed by meritorious and rigorously litigated lawsuits should force insiders to significantly revise upward the perceived litigation costs associated with stock trading, which should subsequently mitigate their desires to engage in future informed trades.

### **III. SAMPLE SELECTION, DATA SOURCE, AND DESCRIPTIVE STATISTICS**

#### **Propensity Score Matching**

Prior studies (e.g., Johnson et al. 2000; Kim and Skinner 2012) indicate that certain firm characteristics are associated with the likelihood of becoming the target of a lawsuit. Our findings will be biased if these ex ante characteristics of lawsuit firms would result in future changes in insider trading even without the lawsuit. Another concern is that a contemporaneous downward trend in insider trading occurring in all firms drives our results. To control for the potential selection bias and market-wide changes of insider trading, we use the propensity score

---

<sup>6</sup> The lead plaintiff has a vital role in litigation by representing all class members in selecting and retaining the class counsel, monitoring the litigation process, and negotiating with the defendant. Institutional investors, as opposed to individual investors, serving as the lead plaintiff can discipline the defendant firms more effectively (Cheng et al. 2010). Furthermore, the highly detrimental impact of opportunistic insider trading on shareholder value (Jagolinzer et al. 2011; *Wall Street Journal* 2012c) provides institutional shareholders with strong incentives to mitigate such trading through securities class actions. For instance, in a class action against Apple Inc., the New York City Employees' Retirement System, as the lead plaintiff, obtains a settlement that contains a provision to require the firm to adopt a stricter insider trading policy (Green 2011).

matching method to construct a sample of control firms.<sup>7</sup> The propensity score is the predicted probability of becoming a lawsuit target in the subsequent year, estimated from a logistic regression model consisting of these determinants in litigation incidence prediction models by Johnson et al. (2000), Roger and Stocken (2005), and Kim and Skinner (2012).<sup>8</sup> Specifically, we regress an indicator variable of being a lawsuit target on firm size, book-to-market, ROA, leverage, sales growth, return skewness, share turnover, market-adjusted annual return, beta, institutional ownership, discretionary accruals, regulated industry, high-tech industry, and retail industry dummies, and year fixed effects.<sup>9</sup> We estimate this logistic regression for all firms in the Compustat database with available data from 1996 to 2009, and then use the obtained coefficients to estimate the propensity score for each firm. Next, we identify non-lawsuit firms with the closest propensity scores as the lawsuit firms in the year prior to the litigation and include these non-lawsuit firms as control firms in our empirical analysis.<sup>10</sup>

## **Sample and Data Source**

We obtain the sample of Section 10b-5 federal private securities class actions from the Securities Class Action Services (SCAS) of Institutional Shareholder Services (ISS).<sup>11</sup> Section 10b-5 prohibits the deployment of manipulative and deceptive practices in connection with stock

---

<sup>7</sup> Propensity score matching is a widely used method for dealing with selection bias; it measures the “treatment effect” as the outcome for the treated firm minus the outcome for an untreated firm with equal treatment probability (e.g., Li and Prabhala 2007; Lawrence et al. 2011).

<sup>8</sup> The results are similar if we use any of the three litigation risk models in Kim and Skinner (2012) to estimate the probability of becoming a lawsuit target. The results are also similar if we identify control firms using alternative matching methods, such as matching by industry and then by size, book-to-market, and return momentum quintiles.

<sup>9</sup> These variables have been documented by prior literature (e.g., Francis, Philbrick, and Schipper 1994; Jones and Weingram 1996; Johnson et al. 2000; Roger and Stocken 2005; Kim and Skinner 2012) as related to the lawsuit occurrence.

<sup>10</sup> We allow one lawsuit firm to be matched to a maximum of three control firms that have the closest propensity scores. In addition, we require the distance of propensity scores to be within 0.005.

<sup>11</sup> Although not all private securities class actions involve allegations of illegal insider trading, the levels of insider trading are documented to be associated with lawsuit occurrences (e.g., Johnson et al. 2007). Prior studies (e.g., Thevenot 2012; Huddart et al. 2007) have focused on the effect of potential private securities litigation (i.e., 10b-5 litigation) threat on deterring informed insider trading regardless of the presence of allegations of insider trading.



sales or purchases.<sup>12</sup> Insider trading is often used in 10b-5 lawsuits to infer the fraudulent intent. We restrict the sample to lawsuits filed after 1995 to reduce heterogeneity in the litigation environment owing to the substantial impact of PSLRA on private securities litigation. The ending date of our SCAS lawsuit sample is October 28, 2009. We collect information on the class period, filing date, allegation type, lead plaintiff type (institutional or individual), and litigation outcomes (whether the lawsuit is settled or dismissed, and settlement amounts if the case is settled) from the SCAS.

In addition to lawsuit data, we obtain the required financial statement data from Compustat, insider trading data from Thomson Reuters Insider Filing Data Files, institutional ownership data from Thomson's 13F database, and daily stock return data from CRSP. The Appendix provides a detailed definition of each variable used in our empirical analysis. Our final sample consists of 1,611 Section 10b-5 private securities lawsuits that have the required data available.

In our regression models, our sample includes firm-years of both sued and control firms from the three years prior to the class period start date to three years after the lawsuit filing date. This process yields a final sample consisting of 40,646 firm-year observations with available data.

## **Descriptive Statistics**

---

<sup>12</sup> Section 10b-5 of the Securities Exchange Act of 1934 states that "It shall be unlawful for any person, directly or indirectly, by the use of any means or instrumentality of interstate commerce, or of the mails or of any facility of any national securities exchange, (a) To employ any device, scheme, or artifice to defraud, (b) To make any untrue statement of a material fact or to omit to state a material fact necessary in order to make the statements made, in the light of the circumstances under which they were made, not misleading, or (c) To engage in any act, practice, or course of business which operates or would operate as a fraud or deceit upon any person, in connection with the purchase or sale of any security."

Table 1 shows the descriptive statistics on our regression sample. With regard to insider trading during the sample period, C-suite executives on average sell 0.204 percent and buy 0.033 percent of the outstanding shares of their firms, or 0.301 percent and 0.027 percent of the firm market value, respectively.<sup>13</sup> Of the 1,611 lawsuits in our sample, 30 percent have been dismissed and 46.9 percent have reached a settlement by October 28, 2009. Up to 28 percent of our sample lawsuits are led by institutional lead plaintiffs. Up to 40.2 percent of sample lawsuits allege accounting violations by the defendant firms, and accounting firms are named as defendants in 3.8 percent of sample lawsuits.

#### IV. EMPIRICAL RESULTS

##### Main Regression Model

We estimate Equation (1) to test the change in insider trading around the filing of lawsuits. The sample includes firm-years of both sued and control firms from the three years prior to the class period start date to three years after the lawsuit filing date with required data.

$$\begin{aligned} Insider\ Trading_{it} = & \beta_0 + \beta_1 CLASSPRD_{it} + \beta_2 POSTFILING_{it} + \beta_3 DSUED_i \\ & + \beta_4 DSUED_i \times CLASSPRD_{it} + \beta_5 DSUED_i \times POSTFILING_{it} \\ & + \beta_6 LAGSIZE_{it} + \beta_7 LAGBM_{it} + \beta_8 LAGRET_{it} + \beta_9 INDAVG\_IT_{it} + \varepsilon_{i,t}, \quad (1) \end{aligned}$$

where *Insider Trading* represents the scaled number of shares of insider sales (*SALESHR*), the scaled dollar value of insider sales (*SALEVALUE*), the scaled number of shares of insider purchases (*BUYSHR*), and the scaled dollar value of insider purchases (*BUYVALUE*) in separate tests, respectively. Specifically, *SALESHR* (*BUYSHR*) denotes the total number of shares sold (purchased) by insiders during the fiscal year, scaled by the number of shares outstanding. *SALEVALUE* (*BUYVALUE*) represents the total dollar value of shares sold (purchased) by

---

<sup>13</sup> During the class period, the C-suite executives in lawsuit firms sell 0.427 percent and buy 0.034 percent of the outstanding shares of their firms, or 0.647 percent and 0.018 percent of the firm market value, respectively (untabulated).

insiders during the fiscal year, scaled by beginning market value of equity. Our main analysis examines trading by the C-suite executives. We focus on C-suite executives because they have the greatest access to their firms' private information that can be used to extract rents via stock trading, and they are responsible for setting the "tone at the top" for a company's ethical culture (COSO 1992; Skaife et al. 2013). Our insider trading measures (i.e., *SALESHR*, *SALEVALUE*, *BUYSHR*, and *BUYVALUE*) capture the insider trading volumes, which are used by prior literature (e.g., Cheng and Lo 2006; Rogers 2008; Huddart et al. 2007; Thevenot 2012) to proxy for the intensity of informed insider trading. Because these insider trading variables are left-censored at zero, we use Tobit models to estimate these regressions.

In terms of explanatory variables, *CLASSPRD* is an indicator variable that takes the value of one if the firm-year overlaps with the class period, and zero otherwise. *POSTFILING* is an indicator variable that takes the value of one if the firm-year is in or after the year of lawsuit filing, and zero otherwise. We follow Rogers and Van Buskirk (2009) and select the benchmark period for the change in insider trading as the three years prior to the class period start date. We do not choose the class period as the benchmark period, because insider trading during the class period is abnormally high (Griffin and Grundfest 2002) and would cause difficulty in interpreting any decrease relative to this abnormal period. *DSUED* is an indicator variable that takes the value of one if the firm is a lawsuit defendant firm, and zero otherwise. We interact *DSUED* with *POSTFILING* to test the post-lawsuit change in insider trading for sued firms.<sup>14</sup>

Following prior literature (e.g., Jagolinzer et al. 2011; Thevenot 2012), we use the logarithm of the market value of equity at the beginning of fiscal year (*LAGSIZE*), book-to-

---

<sup>14</sup> In an alternative specification, we use three-year indicator variables (for the three years after lawsuit filing, respectively) instead of *POSTFILING* in Equation (1) and interact *DSUED* with these year variables. The results (untabulated) indicate that insider selling in the first two years after litigation is significantly lower than the level prior to the class period, whereas the negative coefficient on the interaction between the year 3 indicator variable and *DSUED* is marginally significant.

market ratio at the beginning of fiscal year (*LAGBM*), and buy-and-hold abnormal returns over the previous fiscal year (*LAGRET*) as control variables. We also control for the industry effect by including the average insider trading of firms in the same two-digit SIC industry during the fiscal year (*INDAVG\_IT*). Thus, our regression model essentially examines the change in *abnormal* insider trading following litigation.

### **Change in Insider Trading after the Lawsuit Filing**

Table 2 reports the estimation results for Equation (1) using the full sample of lawsuits. We find significantly negative coefficients on  $DSUED \times POSTFILING$  for the insider sales measures (coeff. = -1.105 for *SALESHR* and -1.688 for *SALEVALUE*), but not for the insider purchases measures (i.e., *BUYSHR* and *BUYVALUE*). This result indicates that litigation elicits a change in insider sales but not purchases, consistent with litigation focusing only on insider sales (Cheng and Lo 2006; Rogers 2008; Brochet and Srinivasan 2013).

To test whether the decrease in insider sales shown in Table 2 is associated with the merits and rigorousness of lawsuits, we construct a composite strength index to capture the lawsuit merits and rigorousness in the litigation process. The index comprises seven provisions that have been shown (as discussed in the literature review section) to be indicators of merits and rigorousness of a lawsuit (Carleton et al. 1996; Bajaj et al. 2003; Thompson and Sale 2003; Cheng et al. 2010; Dyck et al. 2010).<sup>15</sup> Specifically, we add one point to the index for the presence of each one of the following seven lawsuit characteristics:

---

<sup>15</sup> Admittedly, these lawsuit characteristics may be correlated with each other. For instance, prior studies (Carleton et al. 1996; Bajaj et al. 2003; Cheng et al. 2010, Johnson et al. 2007) indicate that settlement amount is positively associated with allegation of GAAP violation, having an accounting firm as a co-defendant, and the magnitude of negative market returns around the revelation event. However, the complexity of a lawsuit allows an aggregated measure (i.e., the composite strength index) to more effectively capture the overall strength of a lawsuit. For instance, when we test the deterrent effect based on individual lawsuit characteristics (one at a time), we find the characteristic of having an institutional lead plaintiff is associated with the strongest deterrent effect, but it is still not

- (1) The lawsuit involves accounting allegations;
- (2) The lawsuit involves a prior financial restatement;
- (3) The lawsuit has an audit firm named as a co-defendant;
- (4) Market reaction to the lawsuit-triggering news is below the sample median;
- (5) The lawsuit is led by an institutional investor;
- (6) The lawsuit is not dismissed; and
- (7) The lawsuit generates a settlement greater than \$3 million (Dyck et al. 2010).

We find the 25 percentile, median, mean, and 75 percentile of the composite strength index to be 1, 2, 2.395, and 3, respectively (untabulated results). We classify these lawsuits with a composite strength index score of greater than (equal to or less than) two as strong (weak) lawsuits.

In Table 3, we partition our sample into two subsamples based on the composite lawsuit strength index. We then estimate Equation (1) for these two subsamples, respectively. Table 2 indicates that the significant change only occurs for insider *sales*. Therefore, from this point on, we focus only on insider sales.<sup>16</sup> When the dependent variable is *SALESHR*, the coefficient on  $DSUED \times POSTFILING$  is significantly negative for the subsample of strong lawsuits (coeff. = -2.677), but not for the subsample of weak lawsuits. This finding indicates that in the post-lawsuit period, the defendant firms of strong lawsuits experience a significant decrease in insider sales relative to the pre-litigation period. We observe similar results when the dependent variable is *SALEVALUE*.

In sum, although Table 2 shows a significant decrease of insider sales following litigation, Table 3 provides evidence that the decrease is limited to strong lawsuits.

---

as strong as using the aggregated measure.

<sup>16</sup> In the untabulated results, we find no significant change in insider purchases regardless of the strength of the lawsuits.

### **Change in Insider Sales for All Types of Insiders**

CEOs and CFOs are more likely than other insiders to be listed as co-defendants; hence, the effect of lawsuits on constraining insider trading is more likely to be manifested in their insider trading following the lawsuits. Nevertheless, we also extend our analysis to directors and other officers. In Table 4, we present the results for strong and weak lawsuits in Panel A and Panel B, respectively. When conducting the analysis, we employ both insider selling measures (*SALESHR* and *SALEVALUE*). In Panel A, all four types of insiders experience a significant decrease in stock sales following the lawsuits, as indicated by the significantly negative coefficients on  $DSUED \times POSTFILING$  across all columns. Meanwhile, consistent with the results in Table 3, in Panel B (i.e., weak lawsuits), the coefficients on  $DSUED \times POSTFILING$  are not significant in any specification. In sum, Table 4 shows that strong lawsuits can deter stock selling by all types of insiders.

## **V. ROBUSTNESS CHECK**

### **Change in Opportunistic and Routine Insider Sales after the Lawsuit Filing**

The previously documented decrease in the volume of insider sales might be caused by reduced routine trades (i.e., trades driven by portfolio diversification or rebalancing instead of the private information of insiders). To rule out this explanation, we conduct an additional test to analyze whether a substantial decrease in opportunistic (non-routine) sales occurs following litigation. We estimate Equation (2) for this test. As in Equation (1), the sample includes firm-years of both sued and control firms from the three years prior to the class period start date to three years after the lawsuit filing date with required data.

$$\begin{aligned}
\text{Opportunistic/Routine Sales}_{i,t} = & \alpha_0 + \alpha_1 \text{CLASSPRD}_{i,t} + \alpha_2 \text{POSTFILING}_{i,t} + \alpha_3 \text{DSUED}_i \\
& + \alpha_4 \text{DSUED}_i \times \text{CLASSPRD}_{i,t} + \alpha_5 \text{DSUED}_i \times \text{POSTFILING}_{i,t} + \beta_6 \text{LAGSIZE}_{i,t} \\
& + \beta_7 \text{LAGBM}_{i,t} + \beta_8 \text{LAGRET}_{i,t} + \beta_9 \text{INDAVG\_IT}_{i,t} + \varepsilon_{i,t}, \quad (2)
\end{aligned}$$

where *Opportunistic/Routine Sales* represents opportunistic/routine sales, measured by the number of shares of opportunistic/routine sales scaled by outstanding shares (*SALESHR*) or by the value of opportunistic/routine sales scaled by the market value of equity (*SALEVALUE*). Following Cohen et al. (2012), we classify insider trades as either opportunistic or routine trades based on the trading history of the insider.<sup>17</sup> At the beginning of each calendar year, we designate an insider as a routine trader if he or she has placed a trade in the same calendar month for at least three consecutive years. We define opportunistic traders as those for whom no obvious discernible pattern in the past timing of their trades exists. All subsequent trades that are made after categorizing each insider as either routine or opportunistic are accordingly classified as either “routine trades” or “opportunistic trades.” The other variables in Equation (2) are defined as in Equation (1).

Table 5 shows the change in opportunistic and routine sales following lawsuit filings, which are analyzed using Equation (2). Panel A examines the change following strong lawsuits. First, we analyze the opportunistic sales and find that the coefficients on *DSUED* × *POSTFILING* are significantly negative (coeff.= -2.890 and -4.549, respectively) for both *SALESHR* and *SALEVALUE*. Second, when examining the routine sales, we find no significance for the coefficients on *DSUED* × *POSTFILING* under either insider selling measures. The results in Panel A suggest that compared with the levels prior to the class period, opportunistic sales (but not routine sales) significantly decrease following the filing of strong lawsuits. Panel B examines the change following weak lawsuits. No significant coefficient on *DSUED* ×

---

<sup>17</sup> Cohen et al. (2012) provide robust evidence that their measures of opportunistic trades capture “information-driven” trades, whereas routine trades are not predictive of future returns.

*POSTFILING* exists for either opportunistic or routine sales. Overall, Table 5 suggests that the significant post-litigation decrease in insider selling among the defendant firms of strong lawsuits is mainly driven by the decrease in opportunistic insider sales.<sup>18</sup> This finding is consistent with meritorious and rigorously fought litigation constraining opportunistic information-driven insider trades.

### **Controlling for Stock Options**

We perform another test to further rule out the possibility that our results are driven by the change in liquidity-driven trades. The grants or exercises of stock options induce insider sales because such activities promote the need for stock diversifications and rebalancing (Huddart and Ke 2007). We control for the option grants and exercises in all applicable multivariate regression models, in order to address the concern that the post-litigation decrease in insider sales is caused by the decrease in the granting and exercising of stock options. All the models produce similar results (untabulated).

### **Controlling for Executive Turnovers**

Executive turnovers following lawsuits could confound our results because new executives have portfolio holdings different from their predecessors. Comparing the trading behaviors of incumbent and previous executives may not be a meaningful means of identifying the effect of litigation on insider trading. Therefore, we conduct some tests to ensure the robustness of our results after controlling for the post-litigation executive turnovers. We choose

---

<sup>18</sup> We perform a similar analysis for insider purchases and find no significant change in either routine or opportunistic insider purchases after the lawsuit filing.



to focus on changes of CEOs and CFOs because these executives are more likely to experience post-litigation turnovers.

Table 6 presents our estimations of Equation (1) after controlling for executive turnovers. Panels A and B represent the results for the subsample of lawsuits with high and low composite strength scores, respectively. We re-estimate Equation (1) in each panel after initially excluding lawsuits followed by CEO turnovers and then excluding lawsuits with CFO turnovers. Specifically, in the first two columns of Panel A, we examine lawsuit cases without CEO turnovers. Significantly negative coefficients on  $DSUED \times POSTFILING$  (coeff. = -2.153) exist when  $SALESHR$  is the dependent variable. Results are similar for the other insider selling measure ( $SALEVALUE$ ). Even after we exclude lawsuit cases with CFO turnovers, we continue to observe a significant decrease in insider selling after the litigation.

Table 6 Panel B presents the analysis for the subsample of weak lawsuits after excluding lawsuits cases with CEO and CFO turnovers. Consistent with our prior findings, the coefficients on  $DSUED \times POSTFILING$  are insignificant, which suggests that weak lawsuits have no deterrent effect on subsequent insider trading.

### **Alternative Litigation Risk Models**

As previously discussed, we use the propensity score matching method to construct a sample of control firms with similar likelihoods of being sued as our sample lawsuit firms. This likelihood is estimated based on a logistic regression model, which uses the determinants of litigation risk, as documented by Johnson et al. (2000) and Roger and Stocken (2005). As a robustness check, we estimate the litigation likelihood in Table 7 using the three litigation risk models proposed by Kim and Skinner (2012). The results are very similar to those presented in

Table 3. We find significantly negative coefficients on  $DSUED \times POSTFILING$  for all three litigation risk models after estimating Equation (1) in Panel A for the strong lawsuits, whereas we do not find any significant coefficient on  $DSUED \times POSTFILING$  in Panel B for the weak lawsuits. These results suggest that our main findings are not likely to be driven by the selection of a particular litigation risk model.

## VI. ADDITIONAL ANALYSIS

### Analysis Conditional on Ex Ante Litigation Risk

We argue that the observed decrease in insider selling following shareholder lawsuits is caused by an increase in the perceived litigation risk associated with insider trading. In this case, the decrease in insider selling should be more pronounced for firms that experience a greater increase in the perceived litigation risk after the lawsuit. Defendant firms with lower ex ante litigation risk should experience a greater increase in litigation risk following the actual litigation than their counterparts. Consequently, the deterrent effect of the litigation is likely to be stronger for these firms. We thus test whether the post-litigation decrease in insider selling is more pronounced for firms with lower ex ante litigation risk. The results are presented in Table 8.

First, we analyze strong lawsuits as identified by our composite strength index. We partition these strong lawsuits into two subsamples based on their levels of ex ante litigation risk, which is the predicted probability of becoming a lawsuit target in the subsequent year estimated from the logistic regression model previously described in the propensity scoring matching subsection. We then estimate Equation (1) for both subsamples. Under both insider selling measures ( $SALESHR$  and  $SALEVALUE$ ), all four coefficients on  $DSUED \times POSTFILING$  are significantly negative. Furthermore, the decrease in insider sales is significantly greater for the

subsample of firms with lower ex ante litigation risk. For instance, under *SALESHR*, the coefficients on  $DSUED \times POSTFILING$  are -1.575 and -4.090 for the subsamples of high and low ex ante litigation risk, respectively (chi-squared of 5.08 for the difference between these two coefficients). When examining weak lawsuits, we find similar results that defendant firms with lower levels of ex ante litigation risk experience a greater decrease in insider sales. For instance, under the *SALESHR* measure, the coefficient on  $DSUED \times POSTFILING$  is significantly negative only for the subsample of defendant firms with lower levels of ex ante litigation risk. Table 8 shows that the decrease in insider sales is negatively associated with the *ex ante* level of litigation risk, which is consistent with our argument that the post-litigation decrease in insider sales is driven by the increase in the perceived litigation risk.

### **Conditional on the Change in Earnings Management**

We further test whether the post-litigation change in insider trading could vary with the concurrent change in the earnings management. There could be a complementary relation between earnings management and insider trading. On the one hand, earnings management contributes to greater information asymmetry that can give rise to informed insider trading; on the other hand, insiders are motivated to overstate their firms' earnings to allow them to sell their stockholdings at inflated prices (e.g., Beneish 1999). Consequently, prior literature (e.g., Beneish 1999; Agrawal and Cooper 2008; Skaife et al. 2013) has shown a positive association between earnings management and insider trading. Agrawal and Cooper (2008) find that the top managers of firms involved in accounting scandals tend to sell their stocks when their firms' earnings are overstated. Our litigation setting allows us to examine this relation by using a changes analysis. Specifically, we examine the change in post-litigation insider selling conditional on whether the

defendant firm concurrently decreases its earnings management. We posit that a greater decrease in insider selling should be observed in firms that reduce the earnings management.

Table 9 provides evidence on whether the change in insider sales is associated with whether a firm reduced its earnings management following the lawsuit. We measure earnings management with the signed and absolute discretionary accruals from the modified Jones's discretionary accruals model (Dechow et al. 1995). Our measures of insider sales are scaled number of shares (*SALESHR*) and the scaled dollar value of shares (*SALEVALUE*) as in previous analyses. In the first (last) four columns, we partition the sample based on whether a decrease exists in the signed (absolute) discretionary accruals post-litigation, and then separately estimate Equation (1) for each subsample. For instance, the first two columns examine the change in insider sales (as measured by *SALESHR*) for the two subsamples partitioned on whether there is a post-litigation decrease in the signed discretionary accruals. Although both coefficients on  $DSUED \times POSTFILING$  are significantly negative (coeff. = -2.785 and -1.257, respectively), as predicted, the coefficient is significantly more negative for the subsample with a concurrent decrease in the signed discretionary accruals (chi-squared of 4.19 and *p*-value of 0.04). We find similar results for other pairs of columns in Table 9 (i.e., columns 3 and 4, 5 and 6, and 7 and 8), suggesting that the subsamples with a decrease in the discretionary accruals experience a greater decrease in insider sales. In sum, the evidence supports a complementary relation between earnings management and insider trading.<sup>19</sup>

---

<sup>19</sup> We do not make any causal inference on whether the decrease in insider trading is caused by the decrease in earnings management or vice versa.

## Effect of Litigation on Insider Selling of the Peer Firms

In this section, we examine the deterrent effect of litigation on the insider selling of peer firms. One important motivation for investors, especially institutional investors, to file lawsuits is to generate positive spillover effects on corporate America in general and on their portfolio firms in particular (Del Guercio and Hawkins 1999). However, evidence on such positive externalities of securities litigation is scant. Jennings, Kedia, and Rajgopal (2011) report that securities litigation can deter the aggressive earnings management of industry peers. To determine whether a similar deterrent effect can be found on the insider trading of industry peers, we modify Equation (1) as follows:

$$\begin{aligned} Insider\ Sales_{it} = & \beta_0 + \beta_1 POSTFILING_{it} + \beta_2 LAGSIZE_{it} + \beta_3 LAGBM_{it} + \beta_4 LAGRET_{it} \\ & + \beta_5 INDAVG\_IT_{it} + \varepsilon_{i,t}, \end{aligned} \quad (3)$$

where *Insider Sales* represents the scaled number of shares (*SALESHR*) and the scaled dollar value (*SALEVALUE*) for insider sales and opportunistic/routine sales as defined in Equation (2). All other variables are defined as in Equation (1). The sample includes the firm-years of industry peer firms (i.e., non-sued firms with the same four-digit SIC code as the sued firms) from the three years prior to the lawsuit filing date to the three years after the lawsuit filing date with required data.<sup>20</sup>

Panel A of Table 10 presents the spillover effect on the industry peers of defendant firms following strong lawsuits. We examine the change in the volumes of insider sales, opportunistic sales, and routine sales as measured by both the scaled number of shares and the scaled dollar value (*SALESHR* and *SALEVALUE*). We find a significant decrease in both total insider selling and opportunistic selling.

---

<sup>20</sup> Our results are similar if we define the peer firms based on three-digit SIC codes.

Meanwhile, Panel B shows the spillover effect for the subsample of weak lawsuits. We do not find the coefficients on *POSTFILING* to be significant (although still negative) when the dependent variables are measures of insider sales. However, the coefficients on *POSTFILING* are significantly negative when the two measures of opportunistic sales are used as dependent variables, similar to the results presented in Panel A. These findings suggest that lawsuits, regardless of merit, have a deterrent effect on the opportunistic inside selling in peer firms. Such an effect is particularly strong for high-merit lawsuits with rigorous litigation processes.

Overall, the findings in Table 10 support our conjecture that securities litigation, especially strong lawsuits, can deter insiders of peer firms from engaging in opportunistic stock selling.

### **Whether the Results are Driven by Stock Price Decreases Following the Lawsuits**

Following a lawsuit, if the stock price of the defendant firm significantly drops and is no longer overvalued, the insiders may have little incentives to engage in stock selling. In this case, our documented decrease in insider sales could merely reflect this decrease in incentives to sell. We have conducted several tests to address this concern. First, in all of our regression analyses, we explicitly control for the stock return momentum and other determinants of insider trading. Consequently, we should be capturing the change in the abnormal volume of insider trading after controlling for the stock performance of the firm. Second, if the decrease in insider sales is driven by the decrease in the stock prices, we would have observed a decrease in the volumes of both opportunistic and routine sales. However, we only observe a decrease in the intensity of opportunistic trades in Table 6. Finally, we conduct an additional analysis by limiting our sample

to those lawsuits with no significant stock price decrease following the filings, and we continue to find a significant decrease in insider selling following strong lawsuits.

## VII. CONCLUSION

Prior literature proposes that perceived litigation risk should deter insiders from trading their stockholdings (e.g., Cheng and Lo 2006; Huddart et al. 2007; Rogers 2008; Cohen et al. 2012; Thevenot 2012). We examine the effect of actual private securities litigation on insider trading. We propose that a lawsuit will prompt insiders to revise upward the estimates of litigation risk and revise downward the expected benefits of the insider trading, which should result in a post-litigation decrease in insider trading. In addition, such a deterrent effect is likely contingent upon the strength of the lawsuit (specifically, merits and the rigorousness of the litigation process), because weak lawsuits tend to have little disciplinary power over corporate misbehaviors.

Our analyses, based on a large sample of lawsuits from 1996 to 2009, find a significant decrease in insider sales following lawsuit filings. However, such a decrease exists only for lawsuits that have strong merits and are rigorously pursued as identified by our composite lawsuit strength index. We also observe significant declines in stock selling by various types of insiders including CEOs, CFOs, directors, and other firm officers.

We conduct several robustness checks. Following Cohen et al. (2012), we identify opportunistic trades that tend to be informed and profitable. Consistent with our main conclusions, we find significant reductions in opportunistic insider sales following strong lawsuits. We also check the robustness of our results by controlling for executive turnovers and

stock option grants/exercises, and by using alternative specifications of the litigation risk estimation model.

Furthermore, to ascertain that our findings are mainly driven by the increase in “perceived” litigation risk after lawsuits, we identify a subset of defendant firms that have a lower level of ex ante litigation risk and therefore should experience a greater increase in litigation risk subsequent to the suit. Results show that insiders in these firms indeed reduce their selling to a greater extent. We also document that the decrease in insider sales is more pronounced when the defendant firms reduce their earnings management as proxied by discretionary accruals, thus implying a complementary relation between these two actions. Finally, we demonstrate that the deterrent effect can be extended to the industry peers of defendant firms as insiders in these peer firms similarly cut down the intensity of stock sales.

Shareholder litigation imposes significant deadweight costs on investors and the judiciary. It is often asserted that deterrence is the only rationale that can justify these costs (e.g., Coffee 2006). This paper provides the first evidence on the existence of and variations in the deterrent effect of shareholder lawsuits on insider trading. Overall, our findings suggest that securities lawsuits—particularly high-merit and rigorously litigated lawsuits—can be used as effective mechanisms for constraining opportunistic insider trading, partially justifying the social costs of litigation. Another implication of our findings is that future researchers should consider the merits and rigorousness of a lawsuit when assessing the potential effects of litigation costs on insider trading and other opportunistic behaviors.



## REFERENCES

- Agrawal, A. and T. Cooper. 2008. Insider trading before accounting scandals. Working paper, University of Alabama.
- Bajaj, M., S. Mazumdar, and A. Sarin. 2003. Empirical analysis of securities class action settlements. *Santa Clara Law Review* 43: 101-132.
- Baker, T., and S. J. Griffith. 2009. How the merits matter: D&O insurance and securities settlements. *University of Pennsylvania Law Review* 157: 755–832.
- Bebchuk, L. 1988. Suing solely to extract a settlement offer. *Journal of Legal Studies* 17: 437–450.
- Beneish, M. 1999. Incentives and penalties related to earnings overstatements that violate GAAP. *The Accounting Review* 74(4): 425–457.
- Berger, M., J. Coffey, and G. Silk. 2001. A forward-looking statement: Institutional investors as lead plaintiffs: Is there a new and changing landscape? *St. John Law Review* 75: 31-46.
- Black, B., B. Cheffins, and M. Klausner. 2006. Outside director liability, *Stanford Law Review* 58: 1055–1159.
- Billings, M. 2008. Disclosure timeliness, insider trading opportunities and litigation consequences. Working paper, New York University.
- Brochet, F., and S. Srinivasan. 2013. Accountability of independent director: Evidence from firms subject to securities litigation. *Journal of Financial Economics*, forthcoming.
- Bushman, R., and A. Smith. 2001. Financial accounting information and corporate governance. *Journal of Accounting and Economics* 32: 237–333.
- Bushman, R., J. Piotroski, and A. Smith. 2005. Insider trading restrictions and analysts' incentives to follow firms. *Journal of Finance* 60(1): 35 – 66.
- Cao, Z., and G. Narayannamoorthy. 2005a. Accounting and litigation risk. Working paper, Yale School of Management.
- Cao, Z., and G. Narayannamoorthy. 2005b. The effect of litigation risk on management earnings forecasts. Working paper, Yale School of Management.
- Carleton, M., M. Weisbach, and E. Weiss. 1996. Securities class action lawsuits: A descriptive study. *Arizona Law Review* 38: 491–511.
- Casey, L.L. 2008. Class action criminality. *Journal of Corporate Law* 34: 153–159.

- Cheng, Q., and K. Lo. 2006. Insider trading and voluntary disclosure. *Journal of Accounting Research* 44: 815–848.
- Cheng, A.S., H. Huang, G. Lobo, and Y. Li. 2010. Institutional monitoring through shareholder litigation. *Journal of Financial Economics* 95: 356–383.
- Coffee, J. 2006. Reforming the securities class action: An essay on deterrence and its implementation. *Columbia Law Review* 106, 1534–1586.
- Cohen, L., C. Malloy, and L. Pomorski. 2012. Decoding insider information. *Journal of Finance* 67: 1009–1043.
- Core, J. 1997. On the corporate demand for directors' and officers' insurance. *The Journal of Risk and Insurance* 64: 63–87.
- Committee of Sponsoring Organizations (COSO). 1992. Internal Control Integrated Framework.
- Dechow, P., R. Sloan, and A. Sweeney. 1995. Detecting earnings management. *The Accounting Review* 70: 193–225.
- Del Guercio, D., and J. Hawkins. 1999. The motivation and impact of pension fund activism. *Journal of Financial Economics* 52: 293–340.
- Dyck, A., A. Morse, and L. Zingales. 2010. Who blows the whistle on corporate fraud? *Journal of Finance* LXV (December): 2213–2253.
- Fisch, J. 1997. Class action reform: Lessons from securities litigation. *Arizona Law Review* 39: 533–559.
- Francis, J., D. Philbrick, K. Schipper. 1994. Shareholder litigation and corporate disclosures. *Journal of Accounting Research* 32: 137–164.
- Green, L. 2011. Governance reform through securities class action. Securities Class Action Services, Boston: MA.
- Griffin, P., and J. Grundfest. 2002. When does insider selling support a “strong inference” of fraud? Working paper, University of California, Davis and Stanford University.
- Huddart, S. and B. Ke. 2007. Information asymmetry and cross-sectional variation in insider trading. *Contemporary Accounting Research* 24(1): 195–232.
- Huddart, S., B. Ke., and C. Shi. 2007. Jeopardy, non-public information, and insider trading around SEC 10-K and 10-Q filings. *Journal of Accounting and Economics* 43: 3–36.
- Jagolinzer, A. D. Larcker, and D. Taylor. 2011. Corporate governance and the information content of insider trades. *Journal of Accounting Research* 49 (5): 1249–1274.

Jennings, J., S. Kedia, and S. Rajgopal. 2011. The deterrent effects of SEC enforcement and class action litigation. Working paper, University of Washington, Rutgers University, and Emory University.

Johnson, M., K. Nelson, and A. C. Pritchard. 2000. In Re Silicon Graphics Inc.: Shareholder wealth effects resulting from the interpretation of the Private Securities Litigation Reform Act's pleading standard. *Southern California Law Review* 73: 773–810.

Johnson, M., K. Nelson, and A. C. Pritchard. 2007. Do the merits matter more? The impact of the Private Securities Litigation Reform Act. *The Journal of Law, Economics, and Organization*: 627–652.

Jones, C., and S. Weingram. 1996. The Determinants of 10b-5 Litigation Risk. Working paper, George Washington University.

Kim, I. and D. Skinner. 2012. Measuring securities litigation risk. *Journal of Accounting and Economics* 53: 290–310.

Lawrence, A., M. Minutti-Meza, and P. Zhang. 2011. Can Big 4 versus non-Big 4 differences in audit quality proxies be attributed to client characteristics? *The Accounting Review* 86(1): 259–286.

Li, K., and N. Prabhala. 2007. Self-selection models in corporate finance. In *Handbook of Corporate Finance*, edited by Eckbo, E., 37–86. Amsterdam, Holland: North-Holland.

Macy, J., and G. Miller. 1991. The plaintiffs' attorney's role in class action and derivative litigation: economic analysis and recommendations for reform. *University of Chicago Law Review* 58: 1–118.

Palmrose Z. and S. Scholz. 2004. The circumstances and legal consequences of Non-GAAP reporting: Evidence from restatements. *Contemporary Accounting Research* 21(1): 139–180.

Rogers, J. 2008. Disclosure quality and management trading incentives. *Journal of Accounting Research* 46 (5): 1265–1296.

Rogers, J., and A. Van Buskirk. 2009. Shareholder litigation and changes in disclosure behavior. *Journal of Accounting and Economics* 47: 136–156.

Rogers, J., A. Van Buskirk, and S. Zechman. 2011. Disclosure tone and shareholder litigation. *The Accounting Review* 86 (6): 2155–2183.

Rogers, J., and P. Stocken. 2005. Credibility of management forecasts. *The Accounting Review* 80: 1233–1260.

Romano, R. 1991. The shareholder suit: Litigation without foundation? *Journal of Law, Economics, & Organization* 7: 55–87.

Sale, H.A. 1998. Heightened pleading and discovery stays: An analysis of the effect of the PSLRA's internal-information standard on '33 and '34 Act claims. *Washington University Law Quarterly* 76 (2): 537–595.

Securities and Exchange Commission. 2012. Insider trading. Available at: <http://www.sec.gov/answers/insider.htm>.

Skaife, H. D. Veenman, and D. Wangerin. 2013. Internal control over financial reporting and managerial rent extraction: Evidence from the profitability of insider trading. *Journal of Accounting and Economics* 55: 91–110.

Thevenot, M. 2012. The factors affecting illegal insider trading in firms with violations of GAAP. *Journal of Accounting and Economics* 53: 375–390.

Thompson, R.B., and H.A. Sale. 2003. Securities fraud as corporate governance: Reflections upon Federalism, *Vanderbilt Law Review* 56: 859–910.

Wall Street Journal. 2012a. Insider targets expanding. Strasburg, J., and R. Albergotti. February 28, A1.

Wall Street Journal. 2012b. Executives' good luck in trading own stock. Pulliam, S., and R. Barry. November 28, A1.

Wall Street Journal. 2012c. Pension funds seek insider curbs. M.Siconolfi. December 31, C1.

Weiss, E., and J. Beckerman. 1995. Let the money do the monitoring: How institutional investors can reduce agency costs in securities class actions. *Yale Law Journal* 104: 2053–2128.

## Appendix. Definitions of Variables

Variable name	Definition
<u>Insider Trading Variables</u>	
SALESHR	Total number of shares sold by insiders during the fiscal year, scaled by the number of shares outstanding.
BUYSHR	Total number of shares purchased by insiders during the fiscal year, scaled by the number of shares outstanding.
SALEVALUE	Total dollar value of shares sold by insiders during the fiscal year, scaled by beginning market value of equity.
BUYVALUE	Total dollar value of shares purchased by insiders during the fiscal year, scaled by beginning market value of equity.
Opportunistic and Routine Trades	Following Cohen et al. (2012), we classify insider trades as opportunistic and routine trades based on the trading history of the insider. In the beginning of each calendar year, we classify an insider as a routine trader if he or she places a trade in the same calendar month for at least three consecutive years. An insider is classified as an opportunistic trader if there is no discernible pattern in his or her trading history. All subsequent trades of these insiders are classified as either “routine trades” or “opportunistic trades.” To preserve the insider trade observations, we classify the trades made by insiders who do not have a trading activity for the past three years as opportunistic trades.
<u>Insider Trading Determinants</u>	
LAGSIZE	Logarithm of market value of equity at the beginning of the fiscal year.
LAGBM	Book-to-market ratio at the beginning of the fiscal year.
LAGRET	Buy-and-hold abnormal returns over the previous fiscal year.
INDAVG_IT	Average insider trading of firms in the same SIC2 industry during the fiscal year. The specific insider trading measure is consistent with the dependent insider trading variable used in the regression.

---

### Lawsuit Characteristics and Strength Index

CLASSPRD	One if a firm-year has the earnings announcement date falling between the class period of the lawsuit, and zero otherwise.
POSTFILING	One for any firm-years beyond YEAR 0, and zero otherwise. YEAR 0 is the fiscal year in which the lawsuit was filed. If the class period end date falls into the year of lawsuit filing, then YEAR 0 is defined as the year immediately after the lawsuit filing year.
DSUED	One if the observation is a defendant firm, and zero otherwise.
D_ILP	One if the lawsuit has an institutional investor as lead plaintiff, and zero otherwise.
D_GAAP	One if a Generally Accepted Accounting Principles (GAAP) violation is alleged, and zero otherwise.
D_RESTATE	One if the lawsuit is preceded by an accounting restatement, and zero otherwise.
D_ACCTFIRM	One if an accounting firm is named as a defendant, and zero otherwise.
CAR3_REV	The three-day CAR around class period end.
D_CAR3	One if the three-day CAR around class period end (CAR3_REV) is below sample median, and zero otherwise.
D_DISMISS	One if the lawsuit is dismissed, and zero otherwise.
TOTAL_AMOUNT	Total amount of settlement for a lawsuit including cash and non-cash amounts (in thousands).
CASH_AMOUNT	Total cash amount of settlement for a lawsuit (in thousands).
D_BIGSET	One if the lawsuit generates a large TOTAL_AMOUNT (greater than 3 millions), and zero otherwise.
STRENGTHINDEX	A composite index of lawsuit strength based on seven lawsuit characteristics, and is expressed as follows: $STRENGTHINDEX = D\_ILP + D\_GAAP + D\_RESTATE + D\_ACCTFIRM + D\_CAR3 + (1 - D\_DISMISS) + D\_BIGSET$ . Lawsuits are divided into strong and weak lawsuits based on the sample median of the strength index.

---

**Table 1. Descriptive Statistics**

This table presents the descriptive statistics on the sample for the analysis of the change in insider trading intensity around the filing of shareholder lawsuits. We focus on the trading transactions of C-Suite executives, such as Chief Executive Officers (CEOs), Chief Financial Officers (CFOs), Chief Operating Officers (COOs), and Chief Investment Officer (CIOs). The sample includes firm-years of both sued and control firms from the three years prior to the class period start date to three years after the lawsuit filing date with required data. Control firms are identified as firms that have never been sued during our sample period but have the closest propensity scores as the sued firms. The propensity score indicates the probability for a firm to be targeted by a lawsuit in the following year, which is estimated from the model in which the lawsuit target indicator variable is regressed on firm size, book-to-market, ROA, leverage, sales growth, return skewness, share turnover, market-adjusted annual return, beta, institutional ownership, discretionary accruals, regulated industry, high-tech industry, retail industry indicator variables, and year-fixed effects. The values of insider trading measures are expressed in percentages. The Appendix contains the definitions of variables.

**Panel A: Regression Sample**

<b>Variable</b>	<b>N</b>	<b>Mean</b>	<b>Std</b>	<b>5%</b>	<b>25%</b>	<b>Median</b>	<b>75%</b>	<b>95%</b>
<b><u>Insider Trading Measures</u></b>								
SALESHR (%)	40,646	0.204	0.636	0.000	0.000	0.000	0.107	1.036
BUYSHR (%)	40,646	0.033	0.217	0.000	0.000	0.000	0.000	0.105
SALEVALUE (%)	40,646	0.301	1.040	0.000	0.000	0.000	0.123	1.466
BUYVALUE (%)	40,646	0.027	0.196	0.000	0.000	0.000	0.000	0.074
<b><u>Control Variables</u></b>								
LAGSIZE	40,646	6.664	2.096	3.149	5.204	6.695	8.127	10.155
LAGBM	40,646	0.474	0.533	0.048	0.195	0.368	0.623	1.339
LAGRET	40,646	0.134	0.859	-0.749	-0.354	-0.041	0.325	1.622

**Panel B: Underlying Lawsuit Sample**

<b>Variable</b>	<b>N</b>	<b>Mean</b>	<b>Std</b>	<b>5%</b>	<b>25%</b>	<b>Median</b>	<b>75%</b>	<b>95%</b>
D_ILP	1,611	0.281	0.450	0.000	0.000	0.000	1.000	1.000
D_GAAP	1,611	0.402	0.490	0.000	0.000	0.000	1.000	1.000
D_RESTATE	1,611	0.221	0.415	0.000	0.000	0.000	0.000	1.000
D_ACCTFIRM	1,611	0.038	0.192	0.000	0.000	0.000	0.000	0.000
D_DISMISS	1,611	0.323	0.468	0.000	0.000	0.000	1.000	1.000
TOTAL_AMOUNT	755	13.783	40.008	0.300	1.350	3.700	10.000	46.600
CASH_AMOUNT	754	12.535	34.181	0.300	1.275	3.500	10.000	44.000
CAR3_REV	1,611	-0.168	0.405	-0.603	-0.323	-0.153	-0.020	0.179

**Table 2. Change in Insider Trading Intensity after lawsuit Filing**

This table presents the change in the intensity of insider trading of both sued and matched control firms around the filing date of shareholder lawsuits. We focus on trading transactions by C-suite executives. The sample includes firm-years of both sued and control firms from the three years prior to the class period start date to three years after the lawsuit filing date with required data. Control firms are identified as firms that have never been sued during our sample period but have the closest propensity scores as the sued firms. The propensity score indicates the probability for a firm to be targeted by a lawsuit in the following year, which is estimated from the model in which the lawsuit target indicator variable is regressed on firm size, book-to-market, ROA, leverage, sales growth, return skewness, share turnover, market-adjusted annual return, beta, institutional ownership, discretionary accruals, regulated industry, high-tech industry, retail industry indicator variables, and year-fixed effects. The intercepts are included but are not reported in this table. The coefficients are multiplied by 1000 for expositional purposes. The t-statistics enclosed in parentheses are based on the heteroscedasticity robust standard errors clustered by the firm. Here, \*, \*\*, and \*\*\* indicate statistical significance at 10%, 5% and 1% levels, respectively. The Appendix contains the definitions of variables.

Dependent Variable	SALESHR	SALEVALUE	BUYSHR	BUYVALUE
CLASSPRD	0.939*** (4.04)	1.340*** (3.46)	0.635*** (4.05)	0.574*** (3.94)
POSTFILING	0.645** (2.17)	0.457 (1.00)	0.499*** (3.17)	0.348** (2.53)
DSUED	0.434 (1.07)	0.378 (0.59)	0.272 (1.16)	0.177 (0.88)
DSUED × CLASSPRD	0.752* (1.81)	1.086 (1.61)	0.092 (0.34)	-0.064 (-0.29)
DSUED × POSTFILING	-1.105** (-2.21)	-1.688** (-2.21)	0.252 (0.95)	0.184 (0.81)
LAGSIZE	0.417*** (5.88)	0.464*** (4.25)	-0.527*** (-10.80)	-0.502*** (-10.62)
LAGBM	-2.682*** (-8.68)	-3.983*** (-8.42)	0.435*** (3.14)	0.529*** (4.07)
LAGRET	1.903*** (13.54)	2.717*** (11.79)	-0.235*** (-2.81)	-0.193** (-2.39)
INDAVG_IT	0.457*** (10.36)	0.374*** (12.75)	0.138*** (6.06)	-0.000 (-0.16)
<i>No. of Observations</i>	40,646	40,646	40,646	40,646
<i>F statistic</i>	47.054	45.356	21.160	18.013
<i>P-value</i>	0.000	0.000	0.000	0.000



**Table 3. Analysis Conditional on the Composite Index of Lawsuit Strength**

This table presents the change in the intensity of insider trading of both the sued and matched control firms around the filing date of shareholder lawsuits, which are conditional on a composite index of lawsuit strength (STRENGTHINDEX). We focus on trading transactions by C-suite executives. The sample includes firm-years of both sued and control firms from the three years prior to the class period start date to three years after the lawsuit filing date with required data. Control firms are identified as firms that have never been sued during our sample period but have the closest propensity scores as the sued firms. The propensity score indicates the probability for a firm to be targeted by a lawsuit in the following year, which is estimated from the model in which the lawsuit target indicator variable is regressed on firm size, book-to-market, ROA, leverage, sales growth, return skewness, share turnover, market-adjusted annual return, beta, institutional ownership, discretionary accruals, regulated industry, high-tech industry, retail industry indicator variables, and year-fixed effects. The intercepts are included but are not reported in this table. The coefficients are multiplied by 1000 for expositional purposes. The *t*-statistics enclosed in parentheses are based on the heteroscedasticity robust standard errors clustered by the firm. Here, \*, \*\*, and \*\*\* indicate statistical significance at 10%, 5% and 1% levels, respectively. The Appendix contains the definitions of variables.

Dependent Variable	SALESHR		SALEVALUE	
	Strong Lawsuits	Weak Lawsuits	Strong Lawsuits	Weak Lawsuits
CLASSPRD	0.972*** (3.68)	0.934*** (2.82)	1.427*** (3.27)	1.287** (2.29)
POSTFILING	1.158*** (3.12)	0.229 (0.61)	1.301** (2.34)	-0.248 (-0.41)
DSUED	0.605 (1.22)	0.275 (0.51)	0.696 (0.88)	0.097 (0.11)
DSUED × CLASSPRD	0.685 (1.33)	0.827 (1.36)	0.972 (1.17)	1.190 (1.22)
DSUED × POSTFILING	-2.677*** (-4.36)	0.029 (0.04)	-4.152*** (-4.39)	0.043 (0.04)
Control Variables	YES	YES	YES	YES
<i>No. of Observations</i>	19,270	20,938	19,270	20,938
<i>F statistic</i>	35.071	32.355	33.466	30.697
<i>P-value</i>	0.000	0.000	0.000	0.000
<i>Comparing Coefficients on DSUED × POSTFILING</i>	Chi-squared 15.39 <i>p</i> -value 0.00		Chi-squared 14.92 <i>p</i> -value 0.00	

**Table 4. Analysis Conditional on the Type of Insiders**

This table presents the change in the intensity of insider selling of both sued and matched control firms around the filing date of shareholder lawsuits conditional on the type of insiders. Panel A and Panel B report the results for two subsamples partitioned by the median of a composite index of lawsuit strength (STRENGTHINDEX). The sample includes firm-years of both sued and control firms from the three years prior to the class period start date to three years after the lawsuit filing date with required data. Control firms are identified as firms that have never been sued during our sample period but have the closest propensity scores as the sued firms. The propensity score indicates the probability for a firm to be targeted by a lawsuit in the following year, which is estimated from the model in which the lawsuit target indicator variable is regressed on firm size, book-to-market, ROA, leverage, sales growth, return skewness, share turnover, market-adjusted annual return, beta, institutional ownership, discretionary accruals, regulated industry, high-tech industry, retail industry indicator variables, and year-fixed effects. The intercepts are included but are not reported in this table. The coefficients are multiplied by 1000 for expositional purposes. The *t*-statistics enclosed in parentheses are based on the heteroscedasticity robust standard errors clustered by the firm. Here, \*, \*\*, and \*\*\* indicate statistical significance at 10%, 5% and 1% levels, respectively. The Appendix contains the definitions of variables.

Panel A: Strong Lawsuits

Type of Insiders	CEOs		CFOs		Other Officers		Directors	
Dependent Variable	SALESHR	SALEVALUE	SALESHR	SALEVALUE	SALESHR	SALEVALUE	SALESHR	SALEVALUE
CLASSPRD	1.020*** (2.86)	1.517*** (2.72)	0.217*** (3.30)	0.316*** (2.67)	-0.081 (-0.51)	-0.331 (-1.30)	-0.152 (-0.27)	-0.651 (-0.81)
POSTFILING	1.615*** (3.34)	2.055*** (2.99)	0.204*** (2.68)	0.257* (1.85)	-0.561*** (-3.12)	-1.575*** (-5.50)	-1.680*** (-2.84)	-3.153*** (-3.74)
DSUED	0.285 (0.44)	0.397 (0.40)	0.071 (0.62)	0.064 (0.32)	-0.220 (-0.70)	-0.423 (-0.88)	-0.476 (-0.54)	-0.539 (-0.42)
DSUED × CLASSPRD	1.205* (1.81)	1.775* (1.70)	-0.021 (-0.17)	0.010 (0.05)	0.435 (1.29)	0.542 (1.05)	1.343 (1.26)	2.529* (1.65)
DSUED × POSTFILING	-3.054*** (-3.86)	-4.875*** (-4.09)	-0.691*** (-4.89)	-1.124*** (-4.42)	-1.203*** (-3.42)	-1.724*** (-3.21)	-3.016*** (-2.97)	-4.533*** (-3.12)
Control Variables	YES	YES	YES	YES	YES	YES	YES	YES
<i>No. of Observations</i>	19,270	19,270	19,270	19,270	19,270	19,270	19,270	19,270
<i>F statistic</i>	26.345	25.774	32.173	28.093	42.546	34.289	30.375	27.850
<i>P-value</i>	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

Panel B: Weak Lawsuits

Type of Insiders	CEOs		CFOs		Other Officers		Directors	
Dependent Variable	SALESHR	SALEVALUE	SALESHR	SALEVALUE	SALESHR	SALEVALUE	SALESHR	SALEVALUE
CLASSPRD	0.721*	0.979	0.202**	0.426***	0.190	0.340	0.381	0.683
	(1.75)	(1.45)	(2.52)	(2.65)	(1.07)	(1.15)	(0.67)	(0.79)
POSTFILING	0.416	0.234	-0.071	-0.184	-0.391*	-1.322***	-2.115***	-3.769***
	(0.89)	(0.32)	(-0.76)	(-1.05)	(-1.94)	(-4.11)	(-3.44)	(-3.92)
DSUED	-0.272	-0.615	-0.032	-0.049	-0.127	-0.156	-0.700	-0.366
	(-0.38)	(-0.55)	(-0.25)	(-0.20)	(-0.39)	(-0.29)	(-0.78)	(-0.27)
DSUED × CLASSPRD	1.613**	2.834**	-0.022	-0.201	0.834**	0.240	1.652	1.045
	(2.11)	(2.27)	(-0.16)	(-0.78)	(2.06)	(0.38)	(1.59)	(0.68)
DSUED × POSTFILING	0.097	0.070	0.025	0.016	0.236	0.147	0.774	0.663
	(0.11)	(0.05)	(0.16)	(0.05)	(0.61)	(0.23)	(0.70)	(0.41)
Control Variables	YES	YES	YES	YES	YES	YES	YES	YES
<i>No. of Observations</i>	20,938	20,938	20,938	20,938	20,938	20,938	20,938	20,938
<i>F statistic</i>	24.222	22.581	23.578	22.053	39.578	30.419	18.396	17.003
<i>P-value</i>	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

**Table 5. Change in the Intensity of *Opportunistic* and *Routine* Insider Sales after Lawsuit Filing**

This table presents the change in the intensity of opportunistic and routine insider trades of both sued and matched control firms around the filing date of shareholder lawsuits. Panel A and Panel B report the results for two subsamples partitioned by the median of a composite index of lawsuit strength (STRENGTHINDEX). We focus on trading transactions by C-suite executives. The sample includes firm-years of both sued and control firms from the three years prior to the class period start date to three years after the lawsuit filing date with required data. Control firms are identified as firms that have never been sued during our sample period but have the closest propensity scores as the sued firms. The propensity score indicates the probability for a firm to be targeted by a lawsuit in the following year, which is estimated from the model in which the lawsuit target indicator variable is regressed on firm size, book-to-market, ROA, leverage, sales growth, return skewness, share turnover, market-adjusted annual return, beta, institutional ownership, discretionary accruals, regulated industry, high-tech industry, retail industry indicator variables, and year-fixed effects. The intercepts are included but are not reported in this table. The coefficients are multiplied by 1000 for expositional purposes. The *t*-statistics enclosed in parentheses are based on the heteroscedasticity robust standard errors clustered by the firm. Here, \*, \*\*, and \*\*\* indicate statistical significance at 10%, 5% and 1% levels, respectively. The Appendix contains the definitions of variables.

Panel A: Strong Lawsuits

Dependent Variable	Opportunistic Insider Sales		Routine Insider Sales	
	SALESHR	SALEVALUE	SALESHR	SALEVALUE
CLASSPRD	0.871*** (3.32)	1.236*** (2.80)	0.373 (0.82)	0.552 (0.84)
POSTFILING	0.966*** (2.62)	1.025* (1.87)	1.061** (2.15)	1.432** (1.98)
DSUED	0.588 (1.26)	0.686 (0.91)	-0.390 (-0.48)	-0.616 (-0.50)
DSUED × CLASSPRD	0.715 (1.38)	1.079 (1.28)	-0.077 (-0.11)	-0.162 (-0.15)
DSUED × POSTFILING	-2.890*** (-4.70)	-4.549*** (-4.79)	-0.311 (-0.39)	-0.352 (-0.29)
Control Variables	YES	YES	YES	YES
<i>No. of Observations</i>	19,270	19,270	19,270	19,270
<i>F statistic</i>	33.508	31.320	13.690	13.718
<i>P-value</i>	0.000	0.000	0.000	0.000

Panel B: Weak Lawsuits

Dependent Variable	Opportunistic Insider Sales		Routine Insider Sales	
	SALESHR	SALEVALUE	SALESHR	SALEVALUE
CLASSPRD	1.085*** (3.22)	1.623*** (2.81)	-0.059 (-0.16)	-0.085 (-0.16)
POSTFILING	0.225 (0.60)	-0.196 (-0.32)	0.696 (1.34)	0.830 (1.23)
DSUED	0.281 (0.53)	0.079 (0.09)	-1.239 (-1.44)	-1.781 (-1.49)
DSUED × CLASSPRD	0.957 (1.54)	1.398 (1.39)	-0.171 (-0.25)	-0.288 (-0.30)
DSUED × POSTFILING	0.050 (0.07)	0.053 (0.05)	0.424 (0.53)	0.711 (0.64)
Control Variables	YES	YES	YES	YES
<i>No. of Observations</i>	20,938	20,938	20,938	20,938
<i>F statistic</i>	31.551	28.829	8.442	9.247
<i>P-value</i>	0.000	0.000	0.000	0.000

**Table 6. Controlling for Executive Turnovers**

This table presents the change in the intensity of insider trading of both sued and matched control firms around the filing date of shareholder lawsuits when the executive turnovers after the filing of lawsuits are controlled. Panel A and Panel B report results for two subsamples partitioned by the median of a composite index of lawsuit strength (STRENGTHINDEX). We focus on trading transactions by C-suite executives. The sample includes firm-years of both sued and control firms from the three years prior to the class period start date to three years after the lawsuit filing date with required data. Control firms are identified as firms that have never been sued during our sample period but have the closest propensity scores as the sued firms. The propensity score indicates the probability for a firm to be targeted by a lawsuit in the following year, which is estimated from the model in which the lawsuit target indicator variable is regressed on firm size, book-to-market, ROA, leverage, sales growth, return skewness, share turnover, market-adjusted annual return, beta, institutional ownership, discretionary accruals, regulated industry, high-tech industry, retail industry indicator variables, and year-fixed effects. The intercepts are included but are not reported in this table. The coefficients are multiplied by 1000 for expositional purposes. The *t*-statistics enclosed in parentheses are based on the heteroscedasticity robust standard errors clustered by the firm. Here, \*, \*\*, and \*\*\* indicate statistical significance at 10%, 5% and 1% levels, respectively. The Appendix contains the definitions of variables.

Panel A: Strong Lawsuits

Dependent Variable	Excluding Cases with CEO Turnovers		Excluding Cases with CFO Turnovers	
	SALESHR	SALEVALUE	SALESHR	SALEVALUE
CLASSPRD	1.290*** (4.32)	1.843*** (3.77)	1.048*** (3.46)	1.484*** (3.03)
POSTFILING	1.598*** (3.67)	1.854*** (2.91)	1.246*** (2.76)	1.292* (1.95)
DSUED	0.472 (0.85)	0.417 (0.47)	0.483 (0.83)	0.465 (0.51)
DSUED × CLASSPRD	0.666 (1.11)	0.897 (0.94)	0.687 (1.12)	1.016 (1.04)
DSUED × POSTFILING	-2.153*** (-2.99)	-3.240*** (-3.00)	-1.910** (-2.55)	-2.848** (-2.54)
Control Variables	YES	YES	YES	YES
<i>No. of Observations</i>	15,080	15,080	14,554	14,554
<i>F statistic</i>	32.955	32.337	27.654	27.969
<i>P-value</i>	0.000	0.000	0.000	0.000

Panel B: Weak Lawsuits

Dependent Variable	Excluding Cases with CEO Turnovers		Excluding Cases with CFO Turnovers	
	SALESHR	SALEVALUE	SALESHR	SALEVALUE
CLASSPRD	1.046*** (2.72)	1.420** (2.19)	1.214*** (3.07)	1.766*** (2.62)
POSTFILING	0.252 (0.58)	-0.232 (-0.34)	0.182 (0.42)	-0.331 (-0.47)
DSUED	0.286 (0.45)	0.051 (0.05)	0.352 (0.54)	-0.037 (-0.04)
DSUED × CLASSPRD	1.033 (1.44)	1.427 (1.25)	0.834 (1.15)	1.290 (1.13)
DSUED × POSTFILING	0.525 (0.64)	0.801 (0.64)	0.483 (0.58)	0.979 (0.77)
Control Variables	YES	YES	YES	YES
<i>No. of Observations</i>	18,071	18,071	17,291	17,291
<i>F statistic</i>	28.795	27.098	28.185	26.969
<i>P-value</i>	0.000	0.000	0.000	0.000

**Table 7. Alternative Litigation Risk Models for Estimating Propensity Scores**

This table presents the change in the intensity of insider selling of both sued and matched control firms around the filing date of shareholder lawsuits, using alternative litigation risk models for estimating propensity scores. Panel A and Panel B report results for two subsamples partitioned by the median of a composite index of lawsuit strength (STRENGTHINDEX). We focus on trading transactions by C-suite executives. The sample includes firm-years of both sued and control firms from the three years prior to the class period start date to three years after the lawsuit filing date with required data. Control firms are identified as firms that have never been sued during our sample period but have the closest propensity scores as the sued firms. Propensity score is the predicted probability of becoming a lawsuit target in the following year, estimated from one of the three litigation risk models in Kim and Skinner (2012). The intercepts are included but are not reported in this table. The coefficients are multiplied by 1000 for expositional purposes. The *t*-statistics enclosed in parentheses are based on the heteroscedasticity robust standard errors clustered by the firm. Here, \*, \*\*, and \*\*\* indicate statistical significance at 10%, 5% and 1% levels, respectively. The Appendix contains the definitions of variables.

Panel A: Strong Lawsuits

Litigation Risk Models in Kim and Skinner (2012)						
Dependent Variable	Model 1		Model 2		Model 3	
	SALESHR	SALEVALUE	SALESHR	SALEVALUE	SALESHR	SALEVALUE
CLASSPRD	1.500*** (4.29)	2.388*** (4.20)	0.932*** (3.36)	1.300*** (3.02)	1.140*** (4.49)	1.732*** (4.12)
POSTFILING	1.310*** (3.49)	1.291** (2.29)	1.056*** (3.37)	1.074** (2.29)	1.006*** (3.74)	1.078** (2.51)
DSUED	0.776 (1.48)	1.235 (1.54)	0.058 (0.12)	-0.028 (-0.04)	0.242 (0.58)	0.295 (0.45)
DSUED × CLASSPRD	0.114 (0.20)	-0.082 (-0.09)	0.693 (1.33)	1.052 (1.29)	0.412 (0.91)	0.294 (0.40)
DSUED × POSTFILING	-2.855*** (-4.53)	-4.140*** (-4.28)	-2.568*** (-4.51)	-3.932*** (-4.45)	-2.053*** (-4.19)	-3.221*** (-4.18)
Control Variables	YES	YES	YES	YES	YES	YES
<i>No. of Observations</i>	18,697	18,697	20,037	20,037	27,299	27,299
<i>F statistic</i>	48.865	49.089	41.605	42.608	47.468	48.034
<i>P-value</i>	0.000	0.000	0.000	0.000	0.000	0.000



Panel B: Weak Lawsuits

Litigation Risk Models in Kim and Skinner (2012)						
Dependent Variable	Model 1		Model 2		Model 3	
	SALESHR	SALEVALUE	SALESHR	SALEVALUE	SALESHR	SALEVALUE
CLASSPRD	1.559*** (4.49)	2.302*** (3.90)	1.025*** (3.44)	1.429*** (2.86)	0.607 (1.45)	0.957 (1.46)
POSTFILING	1.273*** (3.60)	1.174** (2.16)	0.673* (1.95)	0.359 (0.63)	0.130 (0.30)	-0.197 (-0.30)
DSUED	1.100** (2.01)	1.691** (1.99)	0.126 (0.23)	-0.050 (-0.06)	-1.415** (-2.15)	-2.145** (-2.18)
DSUED × CLASSPRD	0.114 (0.18)	0.001 (0.00)	0.650 (1.08)	0.934 (0.98)	1.451* (1.92)	2.576** (2.18)
DSUED × POSTFILING	-0.582 (-0.82)	-0.637 (-0.59)	-0.223 (-0.32)	-0.253 (-0.23)	1.303 (1.61)	1.822 (1.54)
Control Variables	YES	YES	YES	YES	YES	YES
<i>No. of Observations</i>	22,063	22,063	22,528	22,528	8,361	8,361
<i>F statistic</i>	47.293	41.713	18.806	21.285	23.872	22.859
<i>P-value</i>	0.000	0.000	0.000	0.000	0.000	0.000

**Table 8. Analysis Conditional on Ex Ante Litigation Risk**

This table presents the change in the intensity of insider selling of both sued and matched control firms around the filing date of shareholder lawsuits, which are conditional on the level of ex ante litigation risk. We focus on trading transactions by C-suite executives. The sample includes firm-years of both sued and control firms from the three years prior to the class period start date to three years after the lawsuit filing date with required data. Control firms are identified as firms that have never been sued during our sample period but have the closest propensity scores as the sued firms. The propensity score indicates the probability for a firm to be targeted by a lawsuit in the following year, which is estimated from the model in which the lawsuit target indicator variable is regressed on firm size, book-to-market, ROA, leverage, sales growth, return skewness, share turnover, market-adjusted annual return, beta, institutional ownership, discretionary accruals, regulated industry, high-tech industry, retail industry indicator variables, and year-fixed effects. The intercepts are included but are not reported in this table. The coefficients are multiplied by 1000 for expositional purposes. The *t*-statistics enclosed in parentheses are based on the heteroscedasticity robust standard errors clustered by the firm. Here, \*, \*\*, and \*\*\* indicate statistical significance at 10%, 5% and 1% levels, respectively. The Appendix contains the definitions of variables.

Dependent Variable	Strong Lawsuits				Weak Lawsuits			
	SALESHR		SALEVALUE		SALESHR		SALEVALUE	
	Ex Ante Litigation Risk		Ex Ante Litigation Risk		Ex Ante Litigation Risk		Ex Ante Litigation Risk	
	High	Low	High	Low	High	Low	High	Low
CLASSPRD	0.222 (0.68)	1.866*** (4.37)	-0.004 (-0.01)	3.041*** (4.26)	0.971** (2.16)	0.945** (2.01)	0.965 (1.23)	1.788** (2.30)
POSTFILING	0.154 (0.39)	2.124*** (3.57)	-0.355 (-0.53)	2.882*** (3.55)	-0.231 (-0.44)	0.786* (1.65)	-1.361 (-1.59)	1.065 (1.44)
DSUED	0.414 (0.73)	1.952** (2.26)	0.498 (0.52)	2.626** (1.99)	1.002 (1.33)	1.029 (1.27)	1.452 (1.19)	1.709 (1.34)
DSUED × CLASSPRD	1.328** (2.00)	0.224 (0.24)	2.274** (2.16)	0.477 (0.31)	1.835** (2.06)	0.851 (0.84)	2.274 (1.61)	1.233 (0.74)
DSUED × POSTFILING	-1.575** (-2.24)	-4.090*** (-3.79)	-2.409** (-2.08)	-6.400*** (-3.99)	0.901 (0.90)	-1.746* (-1.71)	0.745 (0.49)	-2.551 (-1.52)
Control Variables	YES	YES	YES	YES	YES	YES	YES	YES
<i>No. of Observations</i>	8,086	11,184	8,086	11,184	11,980	8,958	11,980	8,958
<i>F statistic</i>	14.447	26.013	15.168	23.709	16.022	21.698	15.523	22.006
<i>P-value</i>	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
<i>Comparing Coefficients on DSUED × POSTFILING</i>	Chi-squared 5.08 <i>p</i> -value 0.02		Chi-squared 5.12 <i>p</i> -value 0.02		Chi-squared 5.90 <i>p</i> -value 0.02		Chi-squared 3.41 <i>p</i> -value 0.06	

**Table 9. Analysis Conditional on the Change in Earnings Management**

This table presents the change in the intensity of insider trading of both sued and matched control firms around the filing date of shareholder lawsuits, which are conditional on the change in earnings management. The change in earnings management is measured by the change in the signed and absolute discretionary accruals in the Post-Filing Period relative to the Pre-Damage Period. We focus on trading transactions by C-suite executives. The sample includes firm-years of both sued and control firms from the three years prior to the class period start date to three years after the lawsuit filing date with required data. Control firms are identified as firms that have never been sued during our sample period but have the closest propensity scores as the sued firms. The propensity score indicates the probability for a firm to be targeted by a lawsuit in the following year, which is estimated from the model in which the lawsuit target indicator variable is regressed on firm size, book-to-market, ROA, leverage, sales growth, return skewness, share turnover, market-adjusted annual return, beta, institutional ownership, discretionary accruals, regulated industry, high-tech industry, retail industry indicator variables, and year-fixed effects. The intercepts are included but are not reported in this table. The coefficients are multiplied by 1000 for expositional purposes. The *t*-statistics enclosed in parentheses are based on the heteroscedasticity robust standard errors clustered by the firm. Here, \*, \*\*, and \*\*\* indicate statistical significance at 10%, 5% and 1% levels, respectively. The Appendix contains the definitions of variables.

Dependent Variable	SALESHR		SALEVALUE		SALESHR		SALEVALUE	
	Decrease in Signed Discretionary Accruals		Decrease in Signed Discretionary Accruals		Decrease in Absolute Discretionary Accruals		Decrease in Absolute Discretionary Accruals	
	Yes	No	Yes	No	Yes	No	Yes	No
CLASSPRD	0.838** (2.49)	0.720** (2.33)	1.006* (1.77)	1.018** (2.03)	0.611** (2.00)	1.013*** (3.16)	0.724 (1.45)	1.454*** (2.64)
POSTFILING	0.682* (1.66)	1.028*** (2.97)	0.419 (0.66)	1.155** (2.11)	0.833** (2.25)	0.908** (2.32)	0.770 (1.38)	0.847 (1.35)
DSUED	0.921 (1.55)	-0.011 (-0.02)	0.907 (0.97)	-0.100 (-0.12)	1.165** (2.16)	-0.424 (-0.79)	1.574* (1.87)	-1.016 (-1.19)
DSUED × CLASSPRD	0.511 (0.80)	0.932 (1.64)	1.213 (1.16)	1.666* (1.84)	1.128* (1.92)	-0.011 (-0.02)	2.143** (2.27)	0.131 (0.14)
DSUED × POSTFILING	-2.785*** (-3.90)	-1.257** (-2.01)	-4.082*** (-3.64)	-1.963** (-2.02)	-2.510*** (-3.84)	-1.320* (-1.95)	-3.980*** (-3.96)	-1.630 (-1.53)
Control Variables	YES	YES	YES	YES	YES	YES	YES	YES
<i>No. of Observations</i>	14,859	16,597	14,859	16,597	18,690	12,766	18,690	12,766
<i>F statistic</i>	23.004	27.376	23.232	27.704	31.270	23.105	32.741	22.502
<i>P-value</i>	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
<i>Comparing Coefficients on DSUED × POSTFILING</i>	Chi-squared 4.19 <i>p</i> -value 0.04		Chi-squared 3.29 <i>p</i> -value 0.07		Chi-squared 2.66 <i>p</i> -value 0.10		Chi-squared 4.20 <i>p</i> -value 0.04	

**Table 10. Change in the Insider Selling Intensity of Industry Peer Firms after Lawsuit Filing**

This table presents the change in the intensity of insider selling of non-sued industry peer firms (firms with the same 4-digit SIC code as the sued firms) around the filing date of shareholder lawsuits. Panels A and B show the results for the two subsamples partitioned by the median of a composite index of lawsuit strength (STRENGTHINDEX). If multiple lawsuits are filed in a year in the same industry, we compute the average strength index for all lawsuits. The sample includes firm-years of industry peer firms from the three years prior to the lawsuit filing date to three years after the lawsuit filing date with required data. The intercepts are included but are not reported in this table. The coefficients are multiplied by 1000 for expositional purposes. The *t*-statistics enclosed in parentheses are based on the heteroscedasticity robust standard errors clustered by the firm. Here, \*, \*\*, and \*\*\* indicate statistical significance at 10%, 5% and 1% levels, respectively. The Appendix contains the definitions of variables.

Panel A: Strong Lawsuits

Dependent Variable	Insider Sales		Opportunistic Insider Sales		Routine Insider Sales	
	SALESHR	SALEVALUE	SALESHR	SALEVALUE	SALESHR	SALEVALUE
POSTFILING	-0.581*** (-4.02)	-0.724*** (-3.31)	-0.599*** (-4.22)	-0.766*** (-3.48)	1.926*** (6.78)	2.466*** (6.83)
LAGSIZE	0.810*** (9.34)	1.073*** (8.43)	0.702*** (8.88)	0.939*** (7.75)	1.662*** (10.63)	2.096*** (10.33)
LAGBM	-2.913*** (-9.40)	-4.396*** (-9.19)	-2.640*** (-9.87)	-4.110*** (-9.40)	-2.897*** (-4.51)	-3.692*** (-4.45)
LAGRET	2.741*** (13.63)	4.039*** (12.42)	2.641*** (14.02)	4.002*** (12.84)	1.072*** (3.10)	1.376*** (2.94)
INDAVG_IT	0.583*** (13.46)	0.407*** (12.81)	0.516*** (12.86)	0.353*** (11.87)	0.240*** (3.49)	0.171*** (4.17)
Control Variables	YES	YES	YES	YES	YES	YES
<i>No. of Observations</i>	62,887	62,887	62,887	62,887	62,887	62,887
<i>F statistic</i>	22.664	19.252	23.532	20.524	31.062	26.597
<i>P-value</i>	0.000	0.000	0.000	0.000	0.000	0.000

Panel B: Weak Lawsuits

Dependent Variable	Insider Sales		Opportunistic Insider Sales		Routine Insider Sales	
	SALESHR	SALEVALUE	SALESHR	SALEVALUE	SALESHR	SALEVALUE
POSTFILING	-0.068 (-0.58)	-0.149 (-0.81)	-0.185* (-1.67)	-0.335* (-1.83)	2.368*** (9.05)	2.991*** (9.23)
LAGSIZE	0.856*** (11.41)	1.231*** (10.86)	0.730*** (10.77)	1.079*** (10.03)	1.912*** (11.38)	2.441*** (12.16)
LAGBM	-2.122*** (-9.56)	-3.265*** (-9.18)	-2.023*** (-9.92)	-3.238*** (-9.40)	-1.449*** (-3.00)	-1.781*** (-2.88)
LAGRET	2.519*** (16.80)	3.760*** (14.93)	2.456*** (16.87)	3.809*** (15.07)	1.009*** (4.16)	1.199*** (3.71)
INDAVG_IT	0.524*** (13.12)	0.390*** (14.34)	0.470*** (12.70)	0.351*** (13.68)	0.304*** (4.97)	0.221*** (6.05)
Control Variables	YES	YES	YES	YES	YES	YES
<i>No. of Observations</i>	83,309	83,309	83,309	83,309	83,309	83,309
<i>F statistic</i>	32.937	32.149	31.154	29.378	36.601	40.273
<i>P-value</i>	0.000	0.000	0.000	0.000	0.000	0.000