

**Trading Patterns of Corporate Insiders Prior to  
Securities Class Action Announcements**

**XiaoLi Zhang**

A Thesis

In

The John Molson School of Business

Presented in Partial Fulfillment of the Requirements  
for the Degree of Master of Science in Administration

at Concordia University

Montreal, Quebec, Canada

April 2011

© **XiaoLi Zhang, 2011**

**CONCORDIA UNIVERSITY**

**School of Graduate Studies**

This is to certify that the thesis prepared

By: Xiaoli Zhang

Entitled: Trading Patterns of Corporate Insiders Prior to  
Securities Class Action Announcements

and submitted in partial fulfillment of the requirements for the degree of

**Master of Science in Administration**

complies with the regulations of the University and meets the accepted standards with respect to originality and quality.

Signed by the final examining committee:

_____	Chair
Lorne Switzer	Examiner
Rahul Ravi	Examiner
Thomas Walker	Supervisor

Approved by \_\_\_\_\_  
Chair of Department or Graduate Program Director

\_\_\_\_\_  
Dean of Faculty

Date April 7, 2011

## **Abstract**

### **Trading Patterns of Corporate Insiders Prior to Securities Class Action Announcements**

**XiaoLi Zhang**

Securities class action announcements tend to have a significant negative effect on a firm's stock price. This thesis explores whether corporate insiders exhibit trading patterns that would suggest that they exploit any potential information advantages they may have over other market participants. Furthermore, we consider information asymmetries between different types of insiders by comparing abnormal net sales between managers and non-managing insiders, between top-level managers and low-level managers, and between financial managers and non-financial managers. We show that managers have higher abnormal net sales than non-managing insiders, and that top-level managers have higher abnormal net sales than low-level managers prior to lawsuit announcements. Finally, we examine the relation between abnormal stock returns and abnormal net sales prior to lawsuit announcements. We find a significant negative correlation between abnormal stock returns and abnormal net sales by managers and by top-level managers. Our evidence suggests that managers may engage in net selling in anticipation of the negative stock returns that are typically associated with securities class action announcements. In particular, high-rank insiders appear to place more profitable trades than low-rank insiders prior to lawsuit announcements.

## **Acknowledgements**

I would like to express my appreciation to the members of my thesis committee: Dr. Thomas Walker, Dr. Lorne Switzer, and Dr. Rahul Ravi. Especially, I appreciate my thesis supervisor, Dr. Thomas Walker, for his valuable help and insightful guidance throughout this project and more importantly for his continuous encouragement.

I would like to express my gratitude to Dr. Kuntara Pukthuanthong at San Diego State University for her valuable comments and suggestions on this paper. Moreover, I would like to thank my schoolmate, Rui Guo, for his helps in data collection and analysis. Finally, I would like to thank my parents for their emotional support and understanding throughout my studies.

## TABLE OF CONTENTS

List of Tables and Figures .....	vi
1. Introduction .....	1
2. Literature review .....	5
3. Data and sample description .....	9
3.1. Data .....	9
3.2. Descriptive statistics .....	10
4. Methodology .....	13
4.1. Announcement effects .....	13
4.2. Insider trading activities in sued firms .....	15
4.2.1. Measures of insider trading .....	15
4.2.2. Abnormal insider trading activities .....	16
4.2.3. Categorizing insider trades by insider roles .....	17
4.2.4. Factors influencing insider trading .....	18
5. Empirical results .....	20
5.1. Abnormal stock price performance around lawsuit filings .....	21
5.2. Time series patterns in insider trading around lawsuits filings .....	23
5.3. Comparison of abnormal net sales by different types of insiders .....	27
5.4. Univariate analysis .....	30
5.5. Regression analysis .....	32
5.6. Abnormal insider trading and CARs .....	36
6. Conclusions .....	40
References .....	43
Appendix .....	92

## LIST OF TABLES AND FIGURES

Table 1: Sample Description .....	47
Table 2: Summary Statistics of Insider Trading .....	50
Table 3: Average Cumulative Abnormal Returns of Sued Firms .....	51
Table 4: Expected Insider Trading Activities in Sued Firms .....	52
Table 5: Number of Sued Firms with Insider Trades around Lawsuit Filings ....	54
Table 6: Insider Trading Activities around Lawsuit Filings (Trade-Based) ....	56
Table 7: Insider Trading Activities around Lawsuit Filings (Volume-Based) ....	63
Table 8: Comparison of Abnormal Net Sales by Different Types of Insiders (Trade-Based) .....	70
Table 9: Comparison of Abnormal Net Sales by Different Types of Insiders (Volume-Based) .....	74
Table 10: Preliminary Examination of Abnormal Cumulative Returns .....	78
Table 11: Preliminary Examination of Abnormal Net Sales .....	80
Table 12: OLS Regression Analysis of Abnormal Stock Returns .....	83
Table 13: OLS Regression Analysis of Abnormal Insider Trading .....	85
Table 14: OLS Regression Analysis of Abnormal Net Insider Sales on CARs ....	87
Figure 1: Average Abnormal Returns during the 250 Days Before and After Securities Class Action Announcements .....	91

## **1. Introduction**

The majority of securities class actions in the United States are filed under Rule 10b-5 of the 1934 Securities and Exchange Act, which prohibits misstating or omitting material information in connection with the sale or purchase of securities. Securities class action lawsuits originating from private litigation play an important role in the enforcement of Rule 10b-5. Investors who suffer financial losses as a result of the alleged securities law violations by a firm's management can bring a class action suit against the firm and its managers. According to a recent NERA Economic Consulting Report, the median investor loss in settled securities class action cases increased gradually from \$64 million in 1996 to over \$300 million in 2004. In the past three years, driven by the credit crisis, the number of securities class action filings increased from 130 in 2006 to a peak of 253 in 2008. Meanwhile, the median investor loss for cases filed in 2008 and 2009 has been over \$500 million.<sup>1</sup>

In a typical securities class action, a firm and its managers are sued by shareholders for providing misleading information or withholding negative information on material facts for a period of time called the "class period." As a result, investors purchase the firm's stock at an artificially inflated price during the class period. They suffer wealth losses from stock price drops when the true information is revealed and thus are potentially eligible for compensation. Securities class action lawsuits represent a twofold problem for uninformed investors. Investors not only suffer financial losses resulting

---

<sup>1</sup> "Recent Trends in Securities Class Action Litigation: 2009 Year-End Update", page 1, [www.nera.com](http://www.nera.com)

from the managers' illegal behavior. They also face the potential problem that managers use their proprietary knowledge to engage in informed trading prior to lawsuit filings. In this paper, we examine the stock market reaction to the filing of a securities class action lawsuit. Furthermore, we investigate potential information asymmetries among corporate insiders and uninformed investors by examining insider trading patterns prior to lawsuit filings.

We first focus on the wealth effects of securities class action lawsuit filings. A lawsuit filing usually has a detrimental effect on the sued firm's stock performance. Bhagat, Brickley, and Coles (1998) examine the effect of corporate lawsuits on the equity value of the parties. They find that sued firms experience "economically meaningful and statistically significant wealth losses upon the filing of the suit." (page 6). Similarly, Griffin et al. (2000) observe a significant and negative short-term price response to securities class action lawsuit filings. They also suggest that insiders are able to anticipate a lawsuit filing and the average stock price drop following the filing. Loh and Rathinasamy (2004) show that IPO-related class action lawsuits filings result in an abnormal return of  $-2.10\%$  on the announcement day, which is significant at the 1% significant level. Gande and Lewis (2009) examine stock price reactions to the filings of 605 securities class action lawsuits. They observe a CAR of  $-4.66\%$  over the event window  $(-1, 1)$ , representing an average loss of \$355.65 million in shareholder wealth. In line with these studies, we expect that securities class actions to have a significant



negative effect on investors' wealth once they are announced. Thus, we expect significant negative excess stock returns around the filing date. Our event study results support this expectation.

Our main analysis focuses on examining trends in insider trading prior to securities class action lawsuit announcements. Prior research examining insider behavior around selected corporate events such as dividend initiations, bankruptcy or initial public offerings shows that insiders know about forthcoming events and suggests that they may use their privileged access to information in their personal trading decisions (e.g., John and Lang, 1991; Iqbal and Shetty, 2002; and Schultz, 2003). These findings suggest that insiders tend to purchase before events that produce positive stock returns and sell before events that produce negative returns. We hypothesize that securities class action lawsuits are not entirely unexpected for corporate officers, particularly those who were actively engaged in the alleged fraud. Moreover, insiders can act on negative information by selling part or all of their holding or reducing their purchases of stock. Either action increases an insider's net sales, defined as sales minus purchases. Therefore, we expect that insiders display increased net sales prior to securities class action lawsuit filings. Such a finding would indicate a violation of strong form market efficiency.

Furthermore, we examine information asymmetries among different types of insiders. The Securities and Exchange Commission (SEC) defines insiders as officers, directors, and any principal shareholders who hold more than 10% of the ownership in a given firm.

Officers and directors are expected to have greater access to private information than principal shareholders, and their trades are more informative (Seyhun, 1988). Seyhun and Bradley (1997) investigate insider trading prior to bankruptcy filings and find that selling patterns are stronger for officers and top executives. They suggest that top executives are more likely to trade on private information than other insiders. In the context of our study, we expect that managers have an information advantage over non-managing insiders for two reasons: first, it is the managers themselves who likely committed the fraud and thus know about the risk of being sued; second, we expect that higher-rank managers (e.g., top executives) may have an information advantage over lower-rank managers (e.g., divisional officers) in lawsuits. In addition, managers in specific functions may have an information advantage over managers in other areas, especially for certain types of allegations. For example, a firm's CFO, treasurer and controller are in a good role to observe GAAP violations or other accounting-related frauds and may even be responsible for committing these frauds in the first place. Given their superior information, they may sell their privately owned shares to avoid personal financial losses in anticipation of a potential lawsuit. Thus, we expect that insiders with a bigger information advantage tend to exhibit more aggressive trading activities than less informed insiders. Our empirical results support these expectations. From both an ethical and legal perspective, our results provide some interesting new insights into the principal-agent conflict between a firm's management and its shareholders. Not only do shareholders suffer losses as a result of a

firm being sued, they also have to stand by as some managers (who may have committed the securities law violations in the first place) exploit their proprietary knowledge about the firm's heightened litigation risk to trade for their own personal benefit.

Our study contributes to the literature on insider trading in several ways. First, we extend the literature by investigating insider trading behavior prior to shareholder litigation announcements. Second, we provide evidence on the presence of unusual insider trading activity prior to litigation announcements. Lastly, we explore information asymmetries among different types of insiders. The remainder of this paper proceeds as follows: Section 2 reviews some of the related literature on the relevance of insider trading. Section 3 describes our data sources and provides sample characteristics. Section 4 presents our methodology. Section 5 discusses our empirical results. Section 6 concludes.

## **2. Literature review**

There is a wealth of literature on the relevance of insider trading. Most prior studies suggest that insider trading behavior and changes in insiders' stockholdings signal information about the firm's value due to information asymmetries between insiders and outside investors. Earlier studies by Lorie and Jaffe (1974), Rozeff and Zaman (1988), Lin and Howe (1990), Seyhun (1988, 1992), Meulbroek (1992), Jeng, Metrick and Zeckhauser (2003) and Fische and Robe (2004) suggest that insiders are better informed

and can time the market. Their empirical evidence shows significant abnormal stock returns around the reporting date of insider transactions. Insider purchases/sales tend to be preceded by negative/positive abnormal stock returns and are followed by positive/negative abnormal stock returns. Nevertheless, Chopra et al. (1992), Hong et al. (2000) and Lakonishok and Lee (2001) find that insider sales are not informative for large firms, but for smaller firms, which tend to display a higher level of information asymmetry between insiders and outsiders. Moreover, Lakonishok and Lee (2001) suggest that the informativeness of insiders' activities is tied to purchases, not sales, likely because insiders do not have to announce purchases in advance whereas proposed sales have to be announced to the SEC on Form 144 at least three months in advance.

A sizeable stream of research examines insider behavior around corporate events. These events typically cause significant stock price changes apart from the effects of insider sales and purchases. Insider trades are linked to insiders' knowledge of the forthcoming events. While most empirical evidence suggests that insiders trade on their informational advantage, the results are not always consistent. Studies that examine insider trading around corporate events such as takeover bids (Seyhun, 1990), dividend announcements (John and Lang, 1991; Cheng and Leung, 2008), stock repurchases (Lee, Mikkelsen, and Partch, 1992; Chan, Ikenberry, and Lee, 2003), information-sensitive security issues (Lee and Loughran, 1998; Kahle, 2000) and bankruptcy (Seyhun and Bradley, 1997; Iqbal and Shetty, 2002) show that abnormal insider trades increase prior

to these events. However, evidence on the relationship between insider trading and bankruptcy filings is not consistent. Loderer and Sheehan (1989) and Gosnell, Keown, and Pinkerton (1992) find no evidence of insider trading on private information before bankruptcy announcements for firms listed on major exchanges. The evidence on insider trading before earnings announcements is also mixed. Givoly and Palmon (1985), Sivakumar and Waymire (1994) and Noe (1999) find little association between insider trading and subsequent earning announcements. Nevertheless, Ke, Huddart and Petroni (2003) find that insiders trade on their knowledge about forthcoming earnings announcements as long as 2 years prior to the announcements. Moreover, they suggest that insiders engage in little abnormal trading in the two quarters immediately prior to earning announcements to avoid potential legal jeopardy.

Restricting the analysis to securities fraud, studies of corporate litigation events examine the informativeness of insider activities, with mixed findings. Dechow, Sloan, and Sweeney (1996) investigate insider trading patterns in 92 firms that are subject to SEC enforcement actions for violation of GAAP but find no statistically significant abnormal insider sales during the earnings misrepresentation period. Nevertheless, Summers and Sweeney (1998) examine insider trading activities prior to 51 news media announcements of financial statement fraud and find that, prior to these announcement, insiders reduce their stockholding through significant selling activities. Beneish (1999) examines 64 firms subject to SEC enforcement actions for violating GAAP. He finds that

insiders sell their shares before the public discovery of earnings overstatements and suggests that insiders trade on their private information for their personal benefit. Some of the empirical literature on insider trading in relation to class action litigation has focused on the merits of the suits (e.g. whether managers deliberately delayed the disclosure of material negative information). The release of negative information that triggers securities class actions typically causes substantial stock price drops at the end of the class period. Abnormal insider sales during the class period provide evidence on managers' incentives to delay negative information disclosures and thus the merit of a securities class action. Niehaus and Roth (1999) examine insider sales in 63 firms subject to securities class actions and find no abnormal insider sales during the class period. Griffin and Grundfest (2002) use a larger sample of 842 securities class action lawsuits to examine insider trading activities during the class period. They find that net insider sales of sued firms during the class period are higher than those before or after the class period and higher than those of matched firms during the same period. Therefore, they claim that unusual insider sales provide a strong indication of fraud in a securities class action litigation. Iqbal, Shetty, and Wang (2007) examine insider trading in 340 sued firms around securities class actions. They find no significant insider sales during the class period. However, they show that insiders increase their shareholdings immediately before the class period, suggesting that insiders profit from artificially inflated stock prices during the class period.

### **3. Data and sample description**

#### ***3.1. Data***

We use Stanford's Securities Class Action Clearinghouse (SCAC),<sup>2</sup> which tracks federal securities class action lawsuits since 1996, to identify 2,145 lawsuits filed between January 2000 and December 2008. To keep the lawsuits in our sample more homogeneous, we exclude 299 IPO laddering, 67 analyst and 25 mutual fund cases.<sup>3</sup> We further exclude lawsuits in which firms are sued more than once in one year to reduce any estimation biases that may result from overlapping litigations. In addition, we exclude lawsuits in which sued firms do not have price records on the CRSP daily NYSE/AMEX or Nasdaq tapes at least two years before the lawsuit announcement; and those in which sued firms do not have accounting data in the Compustat database at the fiscal year end before the lawsuit announcement. This reduces the size of our litigation sample to 738 securities class action lawsuits. For each lawsuit, we collect information on the filing date, the class period, the alleged securities law violations, and the applicable securities laws under which a case was filed. For each sued firm, we collect daily stock returns and Standard Industrial Classification (SIC) codes from CRSP, and monthly market

---

<sup>2</sup> <http://securities.stanford.edu>

<sup>3</sup> According to the SCAC, in an IPO laddering case, plaintiffs typically allege that the underwriters of IPO shares engaged in undisclosed tactics in connection with allocations of portions of a firm's IPO, and required tie-in purchases of additional stock in the aftermarket at escalating prices. Analyst cases are defined as lawsuits in which plaintiffs allege that brokerage firm analysts falsely provided favorable coverage for certain firms. In mutual fund cases, plaintiffs allege that the practice of timing and late trading in funds violated federal securities laws. In all of these cases, plaintiffs generally do not allege that the involved firm whose shares were traded engaged in any wrongdoing. Therefore, these cases are distinguishable from the large majority of lawsuits in all SCAC database.

capitalization and market-to-book ratios from Compustat.

We construct an insider trading dataset from the Insider Filing Data Feed (IFDF) provided by Thomson Reuters, which captures all U.S. insider holding and trading activity as reported on SEC Forms 3, 4, and 5. From IFDF, we obtain insider transactions data from 1996 to 2009. Following Seyhun (1988), we delete all duplicate, amended, and inconsistent transactions from our data set. In addition, we exclude transactions involving fewer than 100 shares since they are unlikely to represent information-related trading. Finally, we also exclude options exercises since they are likely to be related to employee compensation packages that should be less affected by insider information. We then merge our litigation dataset with the insider trading dataset. We require that the sued firm continuously traded during the 60 months prior to a lawsuit filing and had at least one insider transaction between 60 months before and 24 months after the lawsuit filing. The resulting sample consists of 534 lawsuits for which we can track insider trades.

### ***3.2. Descriptive statistics***

Table 1 presents descriptive statistics for the 543 securities class action lawsuits in our final sample. Following Loughran and Ritter (2004) and Field, Lowry, and Shu (2005), we classify the sample into five industries: regulated, financial, technology, retail and others.<sup>4</sup> Panel A provides information on the number of securities class action

---

<sup>4</sup> We categorize sued firms with a four-digit SIC code in the range 4000-4811, 4814-4898, and 4900-4999 as being in a regulated industry; firms with a four-digit SIC code between 6000 and 6999 as being in the financial industry; firms with a four-digit SIC code including 2833-2836,



lawsuits across the different industries. It shows that the technology industry has the highest securities class action lawsuit filing rate in the full sample while the filing rate in the financial industry increases significantly and is highest in 2008. The regulated and retail industries have a consistently lower filing rate over the sample period. Sorting by SIC code, we find that the number of filings is highest in Computer and Data Processing Services. The 12 listed industries, mainly including technology, financial and pharmaceutical firms, account for nearly one-third of the sample, and the remaining 207 industries account for two-thirds of the sample. Not surprisingly, this suggests that the filing rate is rather high in certain industries, such as in the technology and financial services sector. A higher level of uncertainty about future prospects may contribute to a higher rate of lawsuits in the technology industry. Since the financial industry has direct relations with customers, nonperformance or questionable practices are more likely to be discovered, leading to more securities class action lawsuits in the financial industry (Gande and Lewis (2009)). Moreover, our results show that the credit turmoil beginning in 2007 caused a significant increase in SCA lawsuits in the financial industry.

Panel B provides information about the length of the class period and of the interval between the end of the class period and the lawsuit filing date (the litigation interval). It shows that the mean length of the class period is 528 days, the median is 315 days, the minimum is 0 days, and the maximum is 2,310 days. The mean litigation interval is 105

---

3571, 3572, 3575, 3578, 3661, 3663, 3669, 3674, 3812, 3823, 3825-3827, 3829, 3841, 3845, 4812, 4813, 4899, 7370-7375 or 7377-7379 as being in the technology industry; and firms with a four-digit SIC code between 5200 and 5961 as being in the retail industry.

days, along with a median of 25 days, a one-fourth percentile of 7 days and a three-fourth percentile of 99 days.

Panel C provides information about the types of securities class action lawsuits represented in our sample. Following Bhagat et al. (1998) and Bajaj et al. (2000), we identify nine distinct lawsuit categories by allegation type. Some firms are accused of more than one violation of the securities laws. The total number of lawsuit allegations reported in Panel C (831) thus exceeds the total number of lawsuits in our sample (534). Categorizing lawsuits by allegation type allows us to examine whether insiders can anticipate certain types of lawsuits better than other types. Insiders are more likely to increase sales of shares prior to the filings of certain types of lawsuits if they are able to forecast the lawsuits better. Categorizing lawsuits also allows us to examine whether certain groups of insiders can anticipate certain types of lawsuits better than other groups. For example, insiders in leading financial and accounting positions may be better able to foresee lawsuits alleging violation of GAAP standards, while CEOs may be better positioned to foresee lawsuits alleging a failure to disclose existing business problems.

Table 2 presents yearly summary statistics of insider trading activities in the sued firms in our litigation sample. It describes the number of insider trades and the number of shares traded by the insiders in the sued firms during the 84-month period from 60 months before to 24 months after the lawsuit filing in each sample year from 2000 to 2008. Overall, there are more insider sales than insider purchases. In some years, for

example, 2005, 2007 and 2008, there is a significantly higher frequency of insider trading. However, the number of shares traded by insiders in 2005 and 2007 is not higher than that in other years. In 2001, the number of shares sold is largest, 1.75 billion, although the number of sued firms is the second smallest.

## 4. Methodology

### 4.1. Announcement effects

We examine the stock price impact of securities class action lawsuit announcements using standard event study methodology. The methodology measures the abnormal stock return, i.e. the difference between the *actual return* and the *expected return*, around the time of an event. The approach is based on the assumption that the abnormal returns are the result of the announcement and not some other random events occurring on the same day. Abnormal stock returns thus provide a unique means of associating the impact of a lawsuit announcement on the firm's expected profitability in future periods (McWilliams and Siegel, 1997).

We estimate the announcement period returns of sued firms based on the market model. The abnormal stock return on day  $t$  is calculated by subtracting the return predicted by general market trends on the stock from its actual return on that day, as in the following formula:

$$AR_{it} = R_{it} - \alpha_i - \beta_i R_{mt} \quad (1)$$

where

$AR_{it}$  = abnormal return for firm  $i$  on day  $t$ ,

$R_{it}$  = realized return for firm  $i$  on day  $t$ ,

$\alpha_i, \beta_i$  = market model parameter estimates of firm  $i$ , and

$R_{mt}$  = return on the equally-weighted or value-weighted CRSP market index on day  $t$ .

The date of the event, that is, the lawsuit announcement date, is denoted as  $t = 0$ . We estimate the market parameters for each firm over a 500 trading day period from day -750 to day -251 (i.e., approximately two years). Then we calculate the daily abnormal returns of sued firms over the period from day -250 to day 250. The abnormal returns are averaged across  $N$  firms on each event day to estimate an average abnormal return (AAR) over the period.

Under the assumption that the returns on each day are independent and the standard errors are cumulative, accumulating the abnormal returns over a given window  $[t_1, t_2]$  provides the cumulative abnormal return (CAR) for each firm:

$$CAR_i = \sum_{t=t_1}^{t_2} AR_{it} \quad (2)$$

and the average CAR across all firms:

$$\overline{CAR}_i = \frac{1}{N} \sum_{i=1}^N CAR_{it} \quad (3)$$

We calculate CARs of sued firms over various time windows during a period of 250 days before and after the announcement of a lawsuit.

The null hypothesis is that the mean abnormal stock return during the event windows is equal to zero. The statistical significance of CARs is estimated using the Patell t-statistic (Patell (1976)), assuming cross-sectional independence and time-series independence. Moreover, we estimate BMP t-statistics (Boehmer, Musumeci, and Poulsen (1991)) which account for both the time-series and cross-sectional dependence in returns. Finally, because t-tests are based on strong assumptions about the underlying return distribution, we also perform a nonparametric test, the generalized sign test (Cowan (1992)), to ensure the robustness of our results. Brown and Warner (1985) suggest that there is an increase in return variance during the announcement period. Cowan (1992) reports that the generalized sign test is well specified for event date variance increases.

#### ***4.2. Insider trading activities in sued firms***

To investigate insider trading patterns in sued firms around securities class action announcements, we examine the time series patterns in quarterly insider sales, purchases, and net sales during the period from 8 quarters before to 4 quarters after a lawsuit filing. A quarter is defined as 90 calendar days or 63 trading days.

##### ***4.2.1. Measures of insider trading***

We measure insider trading activities by considering the number of transactions (a trade-based measure) and the number of shares traded (a volume-based measure). On a trade basis, net sales are the number of sale transactions minus the number of purchase transactions by insiders in each interval. On a volume basis, net sales are the number of shares sold minus the number of shares purchased by insiders in each interval. As Kahle (1999) points out, trade-based measures weight each sale and purchase transaction equally, regardless of the number of shares traded. Moreover, the number of shares traded by beneficial owners in a given transaction tends to be larger, but the trades are less likely to be information-driven than those by management. Therefore, examining the buy vs. sell decisions made by insiders may be more informative than the number of shares or dollar amounts they traded. We thus start our empirical analysis by focusing on the number of transactions in examining insider trading trends in sued firms around the lawsuit filings. In addition, to ensure that our results are robust across different estimation methods, we also examine the number of shares traded by insiders in sued firms.

#### ***4.2.2. Abnormal insider trading activities***

Insiders in sued firms are expected to trade in anticipation of stock price movements around lawsuit filings. We focus on measures of abnormal insider trading activities, defined as actual insider trading activities minus expected insider trading activities. Expected insider trading activities are measured as the quarterly average insider trading activities in sued firms during a 12-quarter period beginning 20 quarters and ending 8

quarters prior to the announcement of a lawsuit. We argue that the expected insider trading activities are not related to any lawsuit filings. We examine actual quarterly average abnormal insider sales, purchases, and net sales during the period from 8 quarters before to 4 quarters after the lawsuit filing. Inferences drawn from differences in mean insider trading may be attributable to factors other than the lawsuit filing. To ensure that our results are not biased, we control for differences in the trading by each insider group during the pre-event (i.e. estimation) period and consider other possible factors that could influence insider trading activities around the lawsuit filing in a multivariate regression analysis.

#### ***4.2.3. Categorizing insider trades by insider roles***

Using the IFDF definition of insider roles, we form two insider groups, i.e. managers, and non-managing insiders. In addition, we divide managers into (1) top-level vs. low-level managers, and (2) financial vs. non-financial managers. Managers are defined as all corporate officers who are in charge of principal business units, divisions or functions, and any other person who performs a policy-making function (Bettis, Coles, and Lemmon, 2000). Non-managing insiders include the board of directors (besides the chairman), committee members, beneficial owners and all other insiders excluding corporate officers. Top-level managers consist of the chairman of the board, the president (if applicable), the chief executive officer (CEO), the chief operating officer (COO), and the chief financial officer (CFO). Low-level managers consist of all managing insiders

except top-level managers. Financial managers include the firm's CFO, the controller and the treasurer. Non-financial managers include all managing insiders except financial managers (a detailed description of our insider categorization based on the IFDF relationship codes is provided in the Appendix). The six groups of insiders allow us to perform three pairwise comparison tests among insiders: managers vs. non-managing insiders; top-level vs. low-level managers; and financial vs. non-financial managers. Each grouping consists of two mutually exclusive pairs. The trades by the six groups of insiders are separated into six subsamples of insider trading data. In our subsequent analysis, we will compare the trades between each pair of insiders to explore whether there are any apparent differences in the information content of the trades by each group and in each group's trading patterns over time.

#### ***4.2.4. Factors influencing insider trading***

Our regression analysis controls for a variety of factors that have been shown to influence insider trading in prior research. *Firm size* controls for differences in insider trading between small and large firms. Large firms may have more insiders and thus more insider trades than small firms. Seyhun (1986) shows that the ratio of insider purchases to sales in NYSE/AMEX traded firms is inversely related to firm size. Similarly, Lakonishok and Lee (2001) find that insiders in large firms trade more actively and sell more than they purchase. However, Kahle (2000) shows that abnormal insider sales and percent sales (defined as the ratio of sales to sales plus purchases) are



negatively related to firm size. She suggests that insiders in large firms may be subject to more restrictive corporate policies and greater SEC scrutiny, and that large firms may have less information asymmetries and thus less information-based insider trading. We further employ the *market-to-book ratio* to identify overvalued stocks (Lakonishok, Shleifer, and Vishny, 1994). Following Rozeff and Zaman (1998), insiders tend to purchase stock when the market-to-book ratio is low and sell when the market-to-book ratio is high. Therefore, we expect to find more insider sales in firms with high market-to-book ratios. The *volatility* of stock returns is often used to proxy for a firm's risk. When a firm is riskier, insiders in the firm may trade more frequently to diversify their wealth and reduce their holdings in the firm. Thus, firms with a high level of volatility should have more insider trades. The *industry classification* of a firm may also affect the insider trading activities in the firm. Firms in regulated industries tend to have less insider trading since they are subject to more regulations and have fewer information asymmetries. Comparably, firms in industries with a higher level of uncertainty may exhibit more insider trades.

It is worth noting that securities class action lawsuits are frequently preceded by significant stock price drops, often caused by the disclosure of negative information at the end of the class period. Niehaus and Roth (1999) and Iqbal, Shetty, and Wang (2007) show that there are no significant abnormal insider sales in sued firms before the end of the class period. On the other hand, Jaffe (1974) and Seyhun (1986) suggest that the price

drop that is frequently observed at the end of the class period (which often coincides with a negative event such as an earnings restatement) may lead to a decline in insider sales or an increase in insider purchases after the class period. Moreover, the anticipation of potential litigation by insiders may be associated with an increase in insider sales or a decline in insider purchases after the end of the class period. As shown in our descriptive sample, the length of the interval between the end of the class period and the lawsuit filing varies from 0 days to 1,091 days, with an average of 105 days. Although we do not attempt to explore insider trading activities related to the disclosure of negative information, we will consider its possible effect on insider trading patterns around lawsuit filings.

In addition, we include a series of dummy variables that identify the type of allegation in our regression function. This allows us to examine whether insiders can forecast certain types of lawsuits better than other types. If insiders have a large information advantage for some types of lawsuits, we would expect to see more frequent insider trading prior to the announcements of these lawsuits.

## **5. Empirical results**

In this section, we first examine the short-term effects of securities class action announcements on the sued firms' stock performance. Then, we investigate the trends in insider trading activities in sued firms within a period from 8 quarters before to 4 quarters

after the lawsuits filings. In addition, we examine and compare the trading patterns by different types of insiders. Finally, we focus on the relation between a firm's stock price performance and abnormal insider trading.

### ***5.1. Abnormal stock price performance around lawsuit filings***

Figure 1 provides a graphical illustration of the average abnormal returns (AARs) within a period of 250 trading days (about 360 calendar days) before and after the announcement of a securities class action lawsuit. We observe a negative AAR of -1.00% on day 0, the day on which the lawsuit is announced. Moreover, we observe that AARs are consistently negative during the 14 days prior to a lawsuit filing (all AARs are significant at the 0.1% confidence level), with a minimum of -1.75% on day -4, suggesting that the lawsuit filings do not hit the market by surprise. While the lawsuit filings cause a significant price decline on the announcement day, they are preceded by several days of declines. After the announcement, we also observe significant and negative AARs on day 1 and day 2.

Table 3 provides information on the average cumulative abnormal returns (CARs) of sued firms over different event windows during the period (-250, +250). We observe a significant negative CAR of -3.20% over the standard (-1, +1) window. The CARs in longer windows, for example, (-5, -1), (-20, -1) and (-60, -1), also show losses that are significant at the 0.1% level. Overall, our results suggest that sued firms already experience a price drop of approximately 41.69% during the 250 trading days prior to a

lawsuit filing. The chicken vs. egg question of whether the stock price losses cause the firm to be sued or whether the stock price losses are, at least in part, related to investor anticipation of an impending lawsuit is difficult to answer. In either case, however, our results show that lawsuit filings tend to be associated with significant wealth losses.

In the context of our study, we hypothesize that at least part of the pre-announcement price decline may be related to the presence of informed traders or a leakage of information about a forthcoming lawsuit to market participants before the announcement date. In addition, since many securities class action lawsuits are triggered by the disclosure of materially negative information, investors may partially anticipate a potential lawsuit once a firm restates, for example, its prior earnings. On the other hand, increased sales by insiders may put some selling pressure on the stock and may send a negative signal to other investors who may reduce their holdings as well. In addition, as shown in our descriptive statistics, the interval between the last day of the class period and the lawsuit filing date has a median of 25 days. Therefore, the pre-announcement price decline may at least partially be caused by a possible overlap of the pre-announcement period and the class action period. As noted earlier, it is impossible to determine in hindsight what may have caused the pre-announcement stock price decline in each case. We do not attempt to investigate this issue further in the paper. Rather our subsequent analysis focuses on insider trading behavior prior to the lawsuit filings, plus, more importantly, on the ability of different types of insiders to predict a lawsuit.

## ***5.2. Time series patterns in insider trading around lawsuits filings***

In this section, we examine insider trading activities in sued firms during the period from 8 quarters before to 4 quarters after lawsuits filings. Table 4 provides information on the expected insider trading activities by different types of insiders in sued firms. As defined earlier, our estimates of expected insider trading activities are captured by the quarterly average insider sales, purchases, and net sales in sued firms from 20 quarters to 8 quarters before the announcement of a lawsuit. Overall, insiders are net sellers, with 10.22 net sales transactions and 579,390 net sold shares on average. Based on these estimates of “normal” insider trading during our estimation period, we then examine whether actual insider trading activities during our event window are significantly different from their expected level that we observed during the estimation window. Table 5, 6, and 7 provide information on the actual insider trading activities in selected intervals during the period from 8 quarters before to 4 quarters after the lawsuit filing.

Table 5 first provides an overview of insider trading activities around lawsuit filings. It presents the proportion of sued firms that have at least one insider trade and the proportion of sued firms with insider sales, purchases, and net sale transactions in selected intervals. The proportion of sued firms with at least one insider trade is consistent from 7 quarters to 1 quarter before the announcement of a lawsuit, at around 72%. In the last quarter prior to the lawsuit filing, it drops to 64.53%. On a monthly basis, the proportion declines consistently in the three months prior to lawsuit filings. This trend

is accompanied by a consistently declining proportion of sued firms with insider sales, purchases as well as net sales. Basically, the results indicate a trend that insiders reduce trades before the announcement of a lawsuit on average. The number of sued firm with insider trades drops before lawsuit filings although insiders in some sued firms may increase their trades. After lawsuit filings, the frequency of insider trades in sued firms increases gradually, but remains lower than that before lawsuit filings.

Table 6 provides information on the number of insider trades and abnormal insider trades in sued firms around lawsuits filings. We present information on the average number of insider sales and purchases per firm in each interval. We calculate abnormal insider trading activities (sales, purchases, and net sales) defined as actual insider trading minus expected insider trading. We also report whether abnormal insider trading is significantly different from zero. The table presents the results for all insiders in Panel A; for managers in Panel B; for non-managing insiders in Panel C; for top-level managers in Panel D; for low-level managers in Panel E; for financial managers in Panel F; and for non-financial managers in Panel G.

As shown in Panel A of Table 6, insider sales do not change noticeably although insider purchases increase significantly in the last quarter prior to the announcement of a lawsuit. However, insider sales drop noticeably in the last month prior to the announcement. Meanwhile, insider purchases increase greatly compared with the purchases in the previous two months. Both abnormal insider sales and purchases are

positive and significant in the last quarter prior to the announcement of a lawsuit. Actual net sales are significantly different from their expected level with the difference being significant at the 1% significant level. For managers, however, insider purchases do not increase noticeably and abnormal insider purchases are not significantly different from zero in the last quarter prior to the announcement of a lawsuit. Actual net sales are significantly different from their expected level, at the 5% confidence level. For non-managing insiders, there are significant abnormal insider sales and purchases, but there are no significant abnormal net sales. Interestingly, for top-level managers, insider sales as well as abnormal insider sales increase noticeably in the last quarter prior to the announcement of a lawsuit while insider purchases do not change a lot and abnormal insider purchases are not significant. Meanwhile, abnormal net sales are significant and higher than those in the previous two quarters, i.e. during the event windows (-270, -180) and (-180, -90). For low-level managers, there are no significant abnormal sales, purchases or net sales in the last quarter prior to the announcement of a lawsuit. For financial managers, there are no significant abnormal sales, purchases or net sales either in the last quarter or in prior quarters before the announcement of a lawsuit. For non-financial managers, there are significant abnormal sales and net sales, but no abnormal purchases in the last quarter prior to the announcement of a lawsuit. Although different types of insiders demonstrate different trading patterns, they all have positive abnormal net sales in the last quarter prior to the announcement of a lawsuit. After the

announcement, all groups of insiders have negative abnormal net sales. For non-managing insiders and low-level managers, abnormal net sales become negative in the last month prior to the announcement of a lawsuit. However, all negative abnormal net sales are statistically insignificant. After the announcement, all groups of insiders have negative abnormal net sales.

Similarly, Table 7 provides information on the average number of shares sold and purchased by insiders, and the abnormal number of shares sold, purchased and net sold by insiders in each interval. From the results in Table 7, we do not find significant abnormal sales, purchases or net sales in our full insider sample, or in our subsamples of insiders in management and non-management positions in the last quarter or even earlier before the announcement of a lawsuit. For top-level managers, we find positive abnormal net sales, which are significant at the 5% confidence level, in the last quarter prior to the announcement of a lawsuit. For non-financial managers, we find positive but insignificant abnormal net sales in the last quarter prior to the announcement of a lawsuit. For the other groups of insiders, abnormal net sales are negative but statistically insignificant. After the announcement, all groups of insiders display negative abnormal net sales. Abnormal net sales in other groups except in the all insider and non-managing insider group are statistically significant. The results in Table 6 and 7 show that insiders tend to engage more frequently in sale rather than purchase transactions (resulting in an increase in the number of net sales transactions) although the number of shares traded



does not necessarily change accordingly. Instead, the number of shares net sold by insiders, except by top-level managers, is smaller than expected.

### ***5.3. Comparison of abnormal net sales by different types of insiders***

The above analysis of insider trading activity for the full sample and our six subsamples, which only comprise trades by certain types of insiders, both ensures the robustness of our results and allows for some interesting comparisons between the sub-groups. Specifically, we compare abnormal net sales between managers and non-managing insiders, between top-level managers and low-level managers, and between financial managers and non-financial managers. Table 8 and 9 present equality tests for a comparison of abnormal net sales among these pairs of insiders, on a trade basis and volume basis, respectively. We use two-sample t-tests to test for the significance of differences in means and Kruskal-Wallis median tests to test for the significance of differences in medians between each pair of groups. Median tests have the advantage of being more robust to outliers and extreme observations.

As shown in Panel A of Table 8, the mean number of abnormal net sales by managers is larger than that by non-managing insiders but the difference is not statistically significant in the last quarter prior to the announcement of a lawsuit. Meanwhile, there is no significant difference in the median number of abnormal net sales between the two groups until two months prior to the announcement. After the announcement, the difference in the median is also statistically significant. From Panel B, we observe that

the mean number of abnormal net sales by top managers is larger than that by low-level managers but the difference is statistically insignificant before or after the announcement of a lawsuit. The difference in the median is statistically significant from two months before to three months after the announcement. In the comparison between financial and non-financial managers in Panel C, we find significant differences in the mean and median number of abnormal net sales in the last quarter prior to the announcement of a lawsuit. The mean number of abnormal net sales by financial managers is negative in the two quarters before the announcement while that by non-financial managers is negative only in the last months before the announcement.

In Table 9, we can observe noticeable difference in the mean number of abnormal net sales between managers and non-managing insiders. In the last quarter prior to the announcement of a lawsuit, managers exhibit positive abnormal net sales while non-managing insiders have negative abnormal net sales. Interestingly, we find a distinctively high positive mean number of abnormal net sales by top-level managers in the last quarter prior to the announcement. Meanwhile, the mean number of abnormal net sales by low-level managers noticeably declines in the last quarter prior to the announcement. However, there is no statistically significant difference in the mean or median number of abnormal net sales between top-level managers and low-level managers before or after the announcement. For financial and non-financial managers, the difference in the mean number of abnormal net sales is insignificant before the

announcement but significant after the announcement.

Overall, before the announcement, we do not find any significant differences in the trade-based or volume-based mean abnormal net sales between top-level managers and low-level managers before the announcement of a lawsuit. The difference in the trade-based mean abnormal net sales between managers and non-managing insiders is not significant on a quarterly basis, but the difference in the median number of abnormal net sales becomes significant in the last two months before the announcement. The difference in volume-based abnormal net sales between managers and non-managing insiders is significant at the 5% significant level. In particular, we find that managers and top-level managers exhibit positive trade-based and volume-based abnormal net sales while non-managing insiders and low-level managers exhibit negative volume-based abnormal net sales in the last quarter before the announcement of a lawsuit. For financial and non-financial managers, we find a significant difference in trade-based abnormal net sales but an insignificant difference in volume-based abnormal net sales. After the announcement, the difference in the median number of abnormal net sales is significant for nearly all comparisons except the comparison of the volume-based abnormal net sales between top-level managers and low-level managers.

#### ***5.4. Univariate analysis***

To provide some intuition for the variables we use in our subsequent regression analysis, we perform a series of univariate tests in which we examine whether mean and

median CARs and abnormal net sales differ across various subsamples of our dataset. We construct subsamples based on various factors that characterize the sued firm or the lawsuit. We distinguish between small and large firms (based on the sued firms' market capitalization), between firms with high and low market-to-book ratios, between firms with high and low volatility, between firms in the technology industry and non-technology industry, and between accounting-related and non-accounting-related lawsuits. To provide a preliminary examination of CARs, we also distinguish between firms with net abnormal sales and firms with net abnormal purchases (on both a volume basis and trade basis) in the last quarter prior to the announcement of a lawsuit. We choose a (-5, 0) event window to capture a sued firm's CAR. The findings are presented in Table 10. In addition, to provide a preliminary examination of abnormal net sales, we also distinguish between firms with positive abnormal stock returns (stock price runups) and firms with negative abnormal stock returns (stock price declines) at the end of the class period. The findings are presented in Table 11.

From Table 10, we observe that firm characteristics except for the market-to-book ratio explain little of the differences in CARs. Firms with higher market-to-book ratios tend to have larger drops in stock prices when they are sued in a securities class action. While firms with higher a market-to-book ratio have average CARs of -8.87%, firms with lower a market-to-book ratio have average CARs of -5.74%. The type of allegation, a factor that pertains directly to lawsuits, provides interesting insights into the reason why

investors react differently to various types of lawsuits. We observe that accounting-related lawsuits cause significantly larger price declines (-12.43%) than non-accounting-related lawsuits (-5.07%). This suggests that investors may incorporate the heightened risk of large legal liability claims in accounting-related cases into their trading decisions. We also observe a significant difference in the CARs between firms with abnormal net sales and firms with abnormal net purchases. In particular, the stock price reaction (-10.08%) for firms with abnormal net sales is significantly larger than for firms with abnormal net purchases (-5.83%). This suggests that in - line with the signaling model of insider trading of John and Mishra (1990) - investors may take insider trading activities into consideration when reacting to a lawsuit filing. When insider sales prior to the announcement of an event are highest, announcement day returns should be most negative since announcement day returns are assumed to reflect information conveyed by insider trading activities.

From Table 11, we observe that differences in firm size are associated with a significant difference in median volume-based abnormal net sales, suggesting that large firms tend to have lower abnormal net sales. Other firm characteristics are not associated with any significant differences in either trade-based or volume-based abnormal net sales. In addition, the type of allegations and the abnormal stock return at the end of the class period explain little of the difference in abnormal net sales. However, although the difference is not statistically significant, firms with positive abnormal stock returns at the

end of the class period have much higher abnormal net sales than firms with negative abnormal stock returns.

### 5.5. Regression analysis

Because univariate analyses only allow us to examine the impact of one factor at a time without controlling for changes in other variables, we estimate a series of ordinary least squares (OLS) regressions for CARs and for abnormal insider trades against a variety of variables that characterize the lawsuits and the sued firms. For CARs, the following regression model is estimated:

$$\begin{aligned}
 CAR_i = & \alpha_i + \beta_1 Size_i + \beta_2 MB_i + \beta_3 Vol_i \\
 & + \sum_{m=1}^4 \beta_{3+m} Ind_{mi} + \sum_{n=1}^8 \beta_{7+n} LS_i + \beta_{15} ANS_i + \varepsilon_i
 \end{aligned} \tag{4}$$

For abnormal insider trading, the following regression model is estimated:

$$\begin{aligned}
 AIT_i = & \alpha_i + \beta_1 Size_i + \beta_2 MB_i + \beta_3 Vol_i \\
 & + \sum_{m=1}^4 \beta_{3+m} Ind_{mi} + \sum_{n=1}^8 \beta_{7+n} LS_i + \beta_{15} Ret_i + \varepsilon_i
 \end{aligned} \tag{5}$$

where

$CAR_i$  = Cumulative abnormal return of the sued firm during the (-5, 0) event window,

$AIT_i$  = Abnormal insider trading (sales, purchases, or net sales) in the last quarter prior to a lawsuit filing.

$Size_i$  = Market capitalization of the sued firm one month prior to the lawsuit filing,

$MB_i$  = Market-to-book ratio of the sued firm one month prior to the lawsuit filing,

$Vol_i$  = Standard deviation of the sued firm's return during the one-year period prior to the

lawsuit filing,

$Ind_{mi}$  = Industry dummies ( $m = 1$ : Regulated; 2: Financial; 3: Technology; 4: Retail; 5: others),

$LS_{ni}$  = Allegation type dummies ( $n = 1$ : IPO-related; 2: Misleading or false statements (General); 3: Failure to disclose material adverse information and known risks about the firm's future (including overoptimistic forecasts); 4: Failure to disclose existing business problems and misrepresentations about financial conditions; 5: Artificially inflated financial results (requiring revenue restatements); 6: Improper accounting practices and violations of GAAP, improper revenue recognition and improper sales practices; 7: Fraudulent transactions (including Enron-related); 8: Illegal insider trading), and

$ANS_i$  = Abnormal net sales dummy. The variable equals one if there are net sales in the quarter prior to the lawsuit filing, and zero otherwise.

$Ret_i$  = Abnormal stock return at the end of the class period.

In Table 12, we present results for four regressions in which we regress CARs over the (-5, 0), (-10, 0), (-20, 0) and (-30, 0) event windows against different subsets of variables as shown in Equation (4). To test for possible multicollinearity among our regressors, we calculate the variance inflation factors for each variable. While the variance inflation factors for some of the variables are high ( $> 5.0$ ), our inferences are not significantly affected if we exclude them.

Our findings are quite consistent with the results from our univariate analysis. We

observe that the sued firms' characteristics do not have a great influence on CARs. However, firm size has a positive relationship with CARs, albeit it is only significant during the (-30, 0) event window. This indicates that large firms tend to experience smaller stock price drops than small firms when they are sued in a securities class action. Although positive, we observe that the coefficient on firm size is insignificant for CARs over the (-5, 0), (-10, 0) and (-20, 0) event windows. The market-to-book ratio is inversely related to CARs over the four examined event windows. The volatility of sued firms' stock returns is positively related to CARs over the (-5, 0) and (-10, 0) event window, but negatively related to CARs over (-20, 0) and (-30, 0) event windows. However, all the relations are statistically insignificant. In addition, we employ four dummy variables that distinguish between the industries of sued firms. The dummy variable, IND4, indentifying the retail industry, is significantly positively related to the firm's CARs over the (-10, 0) and (-20, 0) event windows, suggesting that firms in the retail industry experience smaller stock price drops when they are sued.

Similarly, we differentiate between lawsuit allegations of lawsuits by employing eight dummy variables as explained earlier. The resulting regression coefficients represent CAR differences relative to the excluded category, i.e. other or unknown types of allegations. The dummy variables LT5 and LT6 indentify accounting-related allegations (which were significant in our univariate tests). We observe that the coefficient on LT5 is significant and negative for CARs over the (-5, 0), (-10, 0) and (-30,



0) event windows, and the coefficient on LT6 is negative and significant for CARs over the (-10, 0) event window. For other allegation type dummies, we do not observe that they have a statistically significant relationship with CARs. The results suggest that lawsuits involving artificially inflated financial results cause significant larger stock price declines than other types of lawsuits. On the other hand, abnormal net sales now become insignificant in our regression model (yet retain their negative sign) although they are negative and significant in our univariate tests. The results suggest that increased net sales prior to the announcement of a lawsuit do not cause significant drops in the stock price of sued firms.

In Table 13, we present results for six regressions in which we regress abnormal insider sales, purchases and net sales (on a trade basis and volume basis) in the last quarter prior to the announcement of a lawsuit against different subsets of variables as shown in Equation (5). Our discussion focuses on regression results for trade-based insider trading activities. We observe that sued firms' characteristics do not cause significant differences in abnormal sales, purchases or net sales. Although insignificant, the coefficient on firm size is negative for trade-based abnormal sales, purchases and net sales. This is consistent with the findings by Kahle (1999) who argues that insiders in larger firms trade less around specific event because they are subject to more SEC scrutiny. In addition, large firms should have fewer information asymmetries and thus less information-based insider trades. The market-to-book ratio, usually used to identify

overvalued stocks, is positively related to abnormal sales, purchases and net sales. The volatility of stock returns is negatively related to abnormal sales and net sales, however. In addition, we observe that sued firms in the regulated industry (identified by LT1) and in the technology industry (identified by LT3) have few abnormal insider sales and net sales than firms in other industries. On the other hand, firms in the retail industry have additional 25.69 net sale transactions compared to firms in other industries.

The coefficient on allegation type dummy, LT2, indicating misleading or false statements (general), is significantly negatively related to trade-based abnormal net sales. On the other hand, the coefficient on the allegation type dummy, LT3, indicating failure to disclose material adverse information, is significantly positively related to trade-based abnormal sales and net sales. The results indicate that - compared to other types of lawsuits - lawsuits alleging misleading or false statements significantly reduce net sales by 16.99 while lawsuits alleging failure to disclose material adverse information significantly increase net sales by 15.53. Other types of lawsuits do not cause significant differences in abnormal net sales. In addition, we observe that the abnormal stock return at the end of the class period is not significantly related to abnormal sales, purchase or net sales.

### ***5.6. Abnormal insider trading and CARs***

In Table 6, we show that insiders increase their net sales transactions before the announcement of a lawsuit. Especially, top-level managers have significant positive

trade-based and volume-based abnormal net sales. If insiders increase sales in anticipation of a lawsuit, there would be a positive relation between abnormal net sales prior to the announcement of a lawsuit and abnormal stock returns. To further examine the effect of the lawsuit filing on insider trading activities in the sued firm, we perform an OLS regression of abnormal net insider sales on CARs over a (-5, 0) event window, controlling for other factors that characterize the lawsuits and the sued firms.

$$\begin{aligned}
 AIT_i = & \alpha_i + \beta_1 CAR_i + \beta_2 Size_i + \beta_3 MB_i + \beta_4 Vol_i \\
 & + \sum_{m=1}^4 \beta_{4+m} Ind_{mi} + \sum_{n=1}^8 \beta_{8+n} LS_i + \beta_{16} Ret_i + \varepsilon_i
 \end{aligned} \tag{6}$$

where all variables are as defined earlier in Equation (4) and (5).

In Table 14, we present results for seven regressions in which we regress abnormal net sales by all insiders, managers, non-managing insiders, top-level managers, low-level managers, financial managers and non-financial managers, respectively, against the CARs over the (-5, 0) event window and other different subsets of variables as shown in Equation (6). The results for regressions of trade-based and volume-based abnormal net sales are reported in Panel A and B, respectively.

From Panel A, we observe that there is no significant relation between abnormal net sales and abnormal stock returns for all insiders and six groups of insiders. The coefficient on the CARs is positive for all insiders, managers, top-level managers, and financial managers while the coefficient on CAR is negative for non-managing insiders, low-level managers, and non-financial managers. This is inconsistent with our hypothesis that

insiders increase net sales in anticipation of a stock price drop on the announcement of a lawsuit or managers may net sell more aggressively than non-managing insiders. Instead, the results indicate that all insiders, managers, top-level managers, and financial managers are more likely to reduce their net sales transactions while stock prices drop more greatly. Moreover, non-managing insiders are more likely to increase sale transactions than managers before a lawsuit filing. As shown in Table 6, net sales in the last quarter prior to a lawsuit filing are significantly higher than normal for all insiders, managers, top-level managers, and non-financial managers. Although insiders increase net sales transactions before the announcement of a lawsuit, the abnormal net sales in the last quarter prior to the announcement are not negatively related to the abnormal stock returns. Moreover, from the results in Table 6, we observe that the abnormal net sales in the last quarter before the announcement of a lawsuit are less than those in earlier periods, i.e. two quarters before the lawsuit filing. Therefore, these results do not show that insiders increase net sales in anticipation of a stock price drop on the announcement of a lawsuit although insiders, especially managers, have higher net sale than normal before the announcement. Otherwise, it is possible that litigation risk deters insiders, especially managers, from increasing sales transactions even if they know the bad stock performance resulted from a lawsuit filing.

However, from Panel B we observe that the coefficient on volume-based abnormal net sales is negative for all insiders and the six subgroups of insiders. The coefficient is

statistically significant for managers, top-level managers, and non-financial managers. The results suggest that managers may increase the number of shares sold in anticipation of negative stock returns on the announcement of a lawsuit. Moreover, top-level managers increase their net sales greatly by 671,195.8 shares as abnormal stock returns decline by 1%. Comparably, although negative, the relation between abnormal net sales and abnormal stock returns is not statistically significant for low-level managers. As shown in Table 7, only abnormal net sales by top-level managers are statistically significant in the last quarter prior to the announcement of a lawsuit. The regression results on volume-based net sales are partially consistent with our hypothesis. We find that managers in sued firms which experience the worst abnormal stock returns net sell most shares in the quarter prior to the announcement of a lawsuit. Specifically, only abnormal net sales by top-level managers are inversely related to abnormal stock returns. There is no such relation for non-managing insiders or low-level managers.

In addition, we observe significant relations between abnormal net sales and certain types of allegations. As shown in Panel A, the coefficient on LT1, indicating IPO-related cases, is significant and positive for managers, low-level managers and non-financial managers. The coefficient on LT2, indicating misleading or false statements (general), is significant and negative for all insiders and non-managing insiders. The results indicate that insiders have more trade-based abnormal net sales prior to a lawsuit filing when the case is IPO-related, and have less abnormal net sales when the case is related to

misleading or false statements. On the other hand, from Panel B, we observe that the coefficient on LT3, indicating failure to disclose material adverse information, is significant and positive for managers, top-level managers and non-financial managers. The coefficient on LT8, indicating illegal insider trading, is also significant and positive for managers, top-level managers and non-financial managers. The results indicate that insiders, especially top-level managers, tend to have more volume-based abnormal net sales prior to a lawsuit filing when the case is related to failure to disclose material adverse information or illegal insider trading. The results may suggest that insiders have a higher information advantage for certain types of lawsuits. Especially, the results show that top-level managers engage in more net selling when anticipating negative abnormal stock returns and may net sell more aggressively when the lawsuit is related to failure to disclose material adverse information or illegal insider trading.

## **6. Conclusions**

Securities class action lawsuits have a negative impact on the stock performance of sued firms when they are announced. We hypothesize that lawsuits are not entirely unexpected for insiders and examine insider trading activities around the lawsuit filings. Using a sample of 543 securities class action lawsuits filed between 2000 and 2008, we show that insiders tend to increase trade-based net sales before the announcement of a lawsuit and reduce trade-based net sales after the announcement. We divide insiders into managers and non-managing insiders and find that managers have positive trade-based

abnormal net sales but non-managing insiders have negative trade-based abnormal net sales in the last quarter prior to the announcement of a lawsuit. Moreover, we divide managers into top-level and low-level managers and find that top-level managers have positive trade-based abnormal net sales but non-managing insiders have negative trade-based abnormal net sales in the last quarter prior to the announcement of a lawsuit. Especially, only top-level managers net sell significantly more shares than normal in the last quarter prior to the announcement of a lawsuit. We also find that managers have more volume-based abnormal net sales than non-managing insiders in the last quarter prior to the announcement of a lawsuit.

Nevertheless, our regression results do not show a significant correlation between abnormal stock returns and trade-based abnormal net sales. However, our regression results show a negative correlation between abnormal stock returns and volume-based abnormal net sales by managers and top-level managers. The results suggest that top-level managers increase the shares net sold before the announcement of a lawsuit in anticipation of the stock price drop resulting from the lawsuit filing. This evidence supports that top-level managers may use their foreknowledge of a lawsuit to engage in informed trading prior to a lawsuit filing.

In addition, we find that trade-based abnormal net sales are positively related to IPO-related lawsuits and negatively related to lawsuits alleging misleading or false statements. Volume-based abnormal net sales are positively related to lawsuits alleging

failure to disclose material adverse information or illegal insider trading. These results suggest that insiders may know certain types of lawsuit better than other types.



## Reference

- Beneish, M. D., 1999, Incentives and Penalties Related to Earnings Overstatements that Violate GAAP, *The Accounting Review*, 74, 425–57.
- Bhagat, S., J. A. Brickley, and J. L. Coles, 1994, The Costs of Inefficient Bargaining and Financial Distress: Evidence from Corporate Lawsuits. *Journal of Financial Economics*, 35, 221-247
- Bhagat, S., J. Bizjak, and J. L. Coles, 1998, The Shareholder Wealth Implications of Corporate Lawsuits, *Financial Management*, 27, 5-27.
- Carr, B. J., J. L. Coles, and M. L. Lemmon, 2000, Corporate Policies Restricting Trading by Insiders, *Journal of Financial Economics*, 57, 191-220.
- Chan, K., D. Ikenberry, and I. Lee, 2003, Do Managers Trade Consistently? Evidence linking Insider trading to actual share repurchase activity, Working paper, College of Business, University of Illinois at Urbana-Champaign.
- Cheng, L. and T. Y. Leung, 2008, Is there information content from insider trading activities preceding earnings and dividend announcements in Hong Kong? *Accounting & Finance* 48 (3): 417-437.
- Field, L., M. Lowry, and S. Shu, 2005, Does Disclosure Deter or Trigger Litigation? *Journal of Accounting and Economics*, 39, 487-507.
- Fishe, R. P. H. and M. A. Robe, 2004, The impact of illegal insider trading in dealer and specialist markets: Evidence from a natural experiment, *Journal of Financial Economics*, 71, 461-488.
- Gande, A. and C. M. Lewis, 2009, Shareholder Initiated Class Action Lawsuits: Shareholder Wealth Effects and Industry Spillovers, *Journal of Financial and Quantitative Analysis*, 44, 823-850.
- Givoly, D. and D. Palmon, 1985, Insider Trading and the Exploitation of Insider Information: Some Empirical Evidence, *Journal of Business*, 58, 69–87.
- Gosnell, T., K. Arthur and J. Pinkerton, 1992, Bankruptcy and Insider Trading: Differences Between Exchange-Listed and OTC Firms, *Journal of Finance*, 67, 349-362.

Givoly, D. and D. Palmon, 1985, Insider Trading and the Exploitation of Inside Information: Some Empirical Evidence, *Journal of Business*, 58, 69-87.

Gosnell, T., A. Keown, and J. Pinkerton, 1992, Bankruptcy and Insider Trading: Differences between Exchange-listed and OTC Firms, *Journal of Finance*, 47, 49-62.

Griffin, A., A. Grundfest, and M. Perino, 2000, The Lethargic Stock Price Response to News of Securities Fraud Litigation: Market Efficiency and the Slow Diffusion of Costly Information, Working Paper Series #208, Stanford Law School.

Griffin, A. and A. Grundfest, 2002, When Does Insider Selling Support a “Strong Inference” of Fraud? Working Paper Series #208, Stanford Law School.

Harrison, H., T. Lim, and J. C. Stein, 2000, Bad News Travels Slowly: Size, Analyst Coverage, and the Profitability of Momentum Strategies, *The Journal of Finance*, 55, 265-295.

Iqbal, Z. and S. Shetty, 2002, Insider trading and stock market perception of bankruptcy, *Journal of Economics and Business*, 54, 525-535.

Jaffe, J., 1974, Special Information and Insider Trading, *Journal of Business*, 47, 410-428.

Jeng, L. A., A. Metrick, and A. Zeckhauser, 2003, Estimating the returns to insider trading: A performance-evaluation perspective, *Review of Economics and Statistics*, 85, 453-471.

John, K. and L. Lang, 1991, Strategic Insider Trading around Dividend Announcements: Theory and Evidence, *Journal of Finance*, 46, 361-389.

Jones, C. L. and E. Weingram, 1997, The Effects of Insider Trading, Seasoned Equity Offerings, Corporate Announcements, Accounting Restatements, and SEC Enforcement Actions on 10b-5 Litigation Risk, Working Paper, Stanford University, Graduate School of Business.

Kahle, K., 2000, Insider Trading and the Long-Run Performance of New Security Issues, *Journal of Corporate Finance*, 6, 25-53.

Ke, B., S. Huddart, and K. Petroni, 2003, What Insiders Know about Future Earnings and How They Use it: Evidence from Insider Trades, *Journal of Accounting and Economics*,

35, 315-346.

Ku, S. and R. Westerfield, 1992, Insider Trading, Inside Ownership, and Initial Dividends, Working Paper, Los Angeles: University of Southern California

Lakonishok, J. and I. Lee, 2001. Are Insider Trades Informative? *Review of Financial Studies*, 14, 79-111.

Lee, D.S., W. H. Mikkelson, and M. M., Partch, 1992, Managers' Trading around Stock Repurchases, *Journal of Finance*, 47, 1947-1961.

Lee, I. and T. Loughran, 1998, Performance Following Convertible Bond Issuance, *Journal of Corporate Finance*, 4, 185-207.

Lin, J. and J. Howe, 1990, Insider Trading in the OTC Market, *Journal of Finance*, 45, 1273-1284.

Loderer, C. F. and D. P. Sheehan, 1989, Corporate Bankruptcy and Manager's Self-serving Behavior, *Journal of Finance*, 44, 59-75.

Loughran, T. and J. Ritter, 2004, Why has IPO Underpricing Changed over Time? *Financial Management*, 33, 5-37.

Meulbroek, L. K., 1992, An Empirical Analysis of Illegal Insider Trading, *Journal of Finance*, 47, 1661-1699.

Navin, C., J., Lakonishok, and J. R. Ritter, 1992, Measuring Abnormal Performance: Do Stocks Overreact? *Journal of Financial Economics*, 31, 235-268.

Niehaus, G. and G. Roth, 1999, Insider Trading, Equity Issues, and CEO Turnover in Firms Subject to Securities Class Actions, *Financial Management*, 28, 52-72.

Noe, C., 1999, Voluntary Disclosures and Insider Transactions, *Journal of Accounting and Economics*, 27, 305-326.

Patricia, D., R. G. Sloan, and A. P. Sweeney, 1996, Causes and Consequences of Earnings Manipulation: An Analysis of Firms Subject to Enforcement Actions by the SEC, *Contemporary Accounting Research*, 13, 1-36.

Rathinasamy, R. S., and C. Loh, 2004, A Study of the Impact of Filing of IPO Class-action Lawsuits on Stockholder Wealth, *Journal of Business & Economics Research*, 2, 69-78.

Rozeff, M. S. and M. A. Zaman, 1988, Market Efficiency and Insider Trading: New Evidence, *Journal of Business*, 61, 25-44.

Seyhun, H. N., 1986, Insiders' Profits, Costs of Trading, and Market Efficiency, *Journal of Financial Economics*, 16, 189-212.

Seyhun, H. N., 1988, The Information Content of Aggregate Insider Trading, *Journal of Business*, 61, 1-24.

Seyhun, H. N., 1990, Overreaction or Fundamentals: Some Lessons from Insiders Response to the Market Crash of 1987, *Journal of Finance*, 45, 1363-1388.

Seyhun, H. N., 1990, Do Bidder Managers Knowingly Pay Too Much for Target Firms? *Journal of Business*, 63, 439-464.

Seyhun, H. N., 1992, Why does Aggregate Insider Trading Predict Future Stock Returns? *Quarterly Journal of Economics*, 107, 1303-1331.

Seyhun, H. N. and Bradley, M., 1997, Corporate Bankruptcy and Insider Trading, *Journal of Business*, 70, 189-216.

Schultz, P., 2003, Pseudo market timing and the long-run underperformance of IPOs, *Journal of Finance*, 58, 483-518.

Sivakumar, K. and G. Waymire, 1994, Insider Trading Following Material News Events: Evidence from Earnings, *Financial Management*, 23, 23-32.

Summers, S. and J. Sweeney, 1998, Fraudulently Misstated Financial Statements and Insider Trading: An Empirical Analysis, *The Accounting Review*, 73, 131-146.

Zahid, I., S. Shetty, and K. Wang, 2007, Further evidence on insider trading and the merits of securities class actions, *The Journal of Financial Research*, 4, 533-545

**Table 1: Sample Description**

This table provides descriptive statistics for securities class action lawsuits filed between 2000 and 2008. Panel A reports the number of lawsuits across different industries by year. The panel employs the industry classification proposed by Loughran and Ritter (2004) and Field, Lowry, and Shu (2005). Panel B provides a more detailed industry breakdown based on four-digit SIC codes. Panel C provides information on the length of the class period and the litigation interval, defined as the period between the end of the class period and the lawsuit filing date. Panel D reports the number of lawsuits by allegation type and year. Following Bhagat et al. (1998) and Bajaj et al. (2000), we identify nine distinct allegation categories. Our sorting criteria are not exclusive, resulting in some firms being accused of more than one violation of the securities laws. The total number of lawsuit allegations reported in Panel B (831) thus exceeds the total number of lawsuits in our sample (543).

Panel A: Number of lawsuits across different industries					
	Regulated	Financial	Technology	Retail	Other
2000	4 9.76%	3 7.32%	12 29.27%	1 2.44%	21 51.22%
2001	1 2.38%	3 7.14%	17 40.48%	2 4.76%	19 45.24%
2002	12 18.18%	10 15.15%	18 27.27%	1 1.52%	25 37.88%
2003	6 9.23%	9 13.85%	20 30.77%	2 3.08%	28 43.08%
2004	5 6.10%	15 18.29%	20 24.39%	6 7.32%	36 43.90%
2005	1 1.59%	11 17.46%	21 33.33%	2 3.17%	28 44.44%
2006	0 0.00%	7 13.73%	17 33.33%	3 5.88%	24 47.06%
2007	1 1.67%	13 21.67%	17 28.33%	4 6.67%	25 41.67%
2008	3 4.11%	27 36.99%	19 26.03%	3 4.11%	21 28.77%
Total	33 6.08%	98 18.05%	161 29.65%	24 4.42%	227 41.80%

---

Panel B: Detailed industry breakdown

---

Industry Breakdown	Number of Lawsuits	Proportion of Lawsuits
Computer and Data Processing Services (SIC 7370)	34	6.22%
Drugs (SIC 2830)	27	4.94%
Electronic Components and Accessories (SIC 3670)	23	4.20%
Pharmaceutical Preparations (SIC 2834)	22	4.02%
Security Brokers and Dealers (SIC 6211)	13	2.38%
Communications Equipment (SIC 3660)	12	2.19%
Electric Services (SIC 4911)	12	2.19%
Administration of Financial Markets (SIC 6711)	10	1.83%
National Commercial Banks (SIC 6021)	9	1.65%
Semiconductors and Related Devices (SIC 3674)	8	1.46%
Electric & Other Services Combined (4931)	8	1.46%
Fire, Marine, and Casualty Insurance (SIC 6331)	7	1.28%
Medical Equipment and Supplies Manufacturers (3840)	7	1.28%
Real Estate Investment Trusts (SIC 6798)	7	1.28%
Prepackaged Software (SIC 7372)	7	1.28%
Others (207 industries)	337	62.34%

---

Panel C: Length of the class period and the litigation interval (in calendar time)

---

Class Period	Days	Litigation Date Interval	Days
Mean	528	Mean	105
Median	315	Median	25
25 percentile	174	25 percentile	7
75 percentile	683	75 percentile	99
Minimum	0	Minimum	0
Maximum	2,310	Maximum	1,091

---

Panel D: Number of lawsuits by allegation type										
	2000	2001	2002	2003	2004	2005	2006	2007	2008	Total
IPO-Related	0	2	1	2	1	0	1	2	1	10
Misleading or False Statements (General)	20	11	18	25	17	36	33	37	36	233
Failure to Disclose Material Adverse Information and Known Risks about the Firm's Future (Including Overoptimistic Forecasts)	4	11	16	8	20	29	17	15	10	130
Failure to Disclose Existing Business Problems; Misrepresentations about Financial Conditions	11	5	16	16	20	17	10	19	25	139
Artificially Inflated Financial Results (Including Revenue Restatements)	9	10	8	20	19	13	10	8	9	106
Improper Accounting Practices and Violations of GAAP, Improper Revenue Recognition and Improper Sales Practices	7	8	20	11	16	12	18	4	3	99
Fraudulent Transactions (Including Enron-Related)	0	2	3	3	8	0	0	2	13	31
Illegal Insider Trading	4	9	7	2	1	4	2	0	1	30
Other or Unknown (Violation of Corporate Disclosure Rules, Breach of Fiduciary Responsibilities, etc.)	3	4	4	5	14	8	7	4	4	53
Total	58	62	93	92	116	119	98	91	102	831

**Table 2: Summary Statistics of Insider Trading**

This table presents yearly summary statistics on insider trading activities in our sample of sued firms from 2000 to 2008. We collect insider trading data from the Insider Filing Data Feed (IFDF) provided by Thomson Reuters. Following Seyhun (1988), we delete all duplicate, amended and inconsistent transactions, and exclude transactions involving fewer than 100 shares as well as options exercises. We merge the insider trading dataset with the litigation dataset in the corresponding period. We require that the sued firm was continuously traded during the 60 months prior to the lawsuit filing and had at least one insider trade transaction between 60 months before and 24 months after the lawsuit filing. The resulting sample consists of 543 securities class action lawsuits. The table describes insider trading activities in the sued firms in each sample year. In columns 3 and 4, we report the number of insider sales and the number of shares sold by the insiders. In columns 5 and 6, we report the number of insider purchases and the number of shares purchased by the insiders.

Year	Number of Firms with Insider Trades	Number of Sale Transactions	Number of Shares Sold (Million)	Number of Purchase Transactions	Number of Shares Purchased (Million)
2000	41	3,977	238.94	1,149	21.67
2001	42	7,367	1,750.12	1,924	25.17
2002	66	8,090	249.18	2,095	27.10
2003	65	11,004	560.69	5,059	55.04
2004	82	21,305	660.22	3,403	123.27
2005	63	36,489	415.37	4,466	25.84
2006	51	24,231	625.56	1,434	27.12
2007	60	31,471	469.66	1,490	23.34
2008	73	36,868	1,104.36	2,771	111.32
Total	543	180,802	6,074.09	23,791	439.88



**Table 3: Average Cumulative Abnormal Returns of Sued Firms**

This table provides information on the cumulative abnormal returns (CARs) of sued firms, derived from the market model using the CRSP equally weighted index, over different event windows during a period of 250 trading days before and after the announcement of a lawsuit filing. The sample consists of 534 lawsuits filed between 2000 and 2008. In columns 2 and 3, we report the average and median CARs for the respective event windows. In columns 4, 5, and 6, we provide the results for three types of significance tests: the Patell t-statistic, the BMP t-statistic and the test statistic for the generalized sign test, respectively. The p-values for each test are provided in parentheses below the test statistics. The symbols \*, \*\*, and \*\*\* denote statistical significance at the 0.05, 0.01 and 0.001 levels, respectively, using a two-tailed test.

Number of Days Before/After the Announcement	Mean	Median	Patell Z	BMP Z	Generalized Sign Z
(-250,-1)	-41.69%	-32.51%	-17.775 (<.001)***	-13.699 (<.001)***	-10.81 (<.001)***
(-125,-1)	-33.55%	-27.45%	-20.947 (<.001)***	-13.249 (<.001)***	-12.949 (<.001)***
(-60,-1)	-23.88%	-20.17%	-23.44 (<.001)***	-13.215 (<.001)***	-10.981 (<.001)***
(-20,-1)	-14.82%	-12.05%	-26.167 (<.001)***	-11.61 (<.001)***	-9.184 (<.001)***
(-10,-1)	-10.44%	-5.68%	-26.384 (<.001)***	-10.029 (<.001)***	-8.039 (<.001)***
(-5,-1)	-6.73%	-2.43%	-25.097 (<.001)***	-8.332 (<.001)***	-6.583 (<.001)***
(-3,-1)	-4.07%	-1.39%	-21.843 (<.001)***	-6.95 (<.001)***	-4.271 (<.001)***
(-2,-1)	-2.59%	-0.78%	-17.675 (<.001)***	-5.303 (<.001)***	-1.577 (0.115)***

(-1,0)	-2.40%	-0.66%	-15.22 ( $<.001$ ) ***	-4.384 ( $<.001$ ) ***	-2.691 (0.007) ***
(-1,+1)	-3.20%	-1.17%	-14.744 ( $<.001$ ) ***	-5.182 ( $<.001$ ) ***	-3.634 ( $<.001$ ) ***
(0,+1)	-1.80%	-0.84%	-9.217 ( $<.001$ ) ***	-3.918 ( $<.001$ ) ***	-4.405 ( $<.001$ ) ***
(0,+2)	-2.30%	-1.09%	-10.37 ( $<.001$ ) ***	-4.143 ( $<.001$ ) ***	-3.72 ( $<.001$ ) ***
(0,+3)	-2.33%	-1.15%	-8.564 ( $<.001$ ) ***	-3.84 ( $<.001$ ) ***	-2.948 (0.003) **
(0,+5)	-2.82%	-1.55%	-8.584 ( $<.001$ ) ***	-3.805 ( $<.001$ ) ***	-3.205 (0.001)
(0,+10)	-2.70%	-1.71%	-5.969 ( $<.001$ ) ***	-3.303 ( $<.001$ ) ***	-2.605 (0.009) **
(0,+20)	-2.59%	-0.76%	-2.996 (0.003) **	-2.093 (0.036) *	-0.205 (0.837)
(0,+60)	-3.84%	-2.24%	-2.564 (0.01) **	-1.755 (-0.079)	-0.548 (0.584)
(0,+125)	-8.18%	-4.83%	-4.095 ( $<.001$ ) ***	-2.689 (0.007) **	-1.655 (0.098)
(0,+250)	-9.07%	-5.14%	-0.64 (0.522)	-0.48 (0.631)	-1.056 (0.291)

**Table 4: Expected Insider Trading Activities in Sued Firms**

This table provides information on expected insider trading, defined as the quarterly average insider trading in sued firms from 20 quarters to 8 quarters before the announcements of a lawsuit filing. It presents expected insider sales, purchases and net selling by all insiders, as well as managers, non-managing insiders, top-level managers, low-level managers, financial managers and non-financial managers. For each firm, we define the number of net sale transactions as the number of sale transactions minus the number of purchase transactions in each interval. Similarly, the number of net sold shares for each firm is defined as the number of shares sold minus the number of shares purchased in each interval. In columns 2 to 4, we report the number of insider sale, purchase, and net sale transactions. In columns 5 to 7, we report the number of shares purchased and sold by insiders as well as the number of net sold shares for each interval. All missing transactions are assigned a zero value.

Insiders	Number of insider transactions			Number of shares traded by insiders (Thousand)		
	Sale transactions	Purchase transactions	Net sales	Sale transactions	Purchase transactions	Net sales
All Insiders	11.36	1.14	10.22	600.63	21.24	579.39
Management	7.26	0.42	6.83	165.46	4.93	160.53
Non-management	4.10	0.72	3.39	435.17	16.31	418.86
Top Management	3.34	0.27	3.08	92.93	3.93	89.00
Low Management	3.92	0.16	3.76	72.53	1.00	71.53
Financial Management	0.86	0.05	0.81	10.67	0.33	10.34
Non-financial Management	6.89	0.37	6.51	147.17	4.82	142.35

**Table 5: Proportion of Sued Firms with Insider Trades around Lawsuit Filings**

We examine trends in insider trading activity within a period of eight quarters before to four quarters after the announcement of 543 securities class action lawsuits in our litigation sample. The table provides an overview of insider trading activities in specific intervals around a lawsuits filing. In column 2, we report the proportion of sued firm that have at least one insider trade. In column 3, 4, and 5, we report the proportion of sued firm with insider sales, purchase, and net sale transactions. We classify a firm as having net sale transactions in a particular interval if the number of shares sold by its insiders is greater than the number of shares purchased by its insiders during that period.

Trade Interval	Proportion of firms with insider trades	Proportion of firms with sale transactions	Proportion of firms with purchase transactions	Proportion of firms with net sales
(-720, -630)	69.65%	59.23%	23.03%	55.76%
(-630, -540)	72.21%	62.71%	23.40%	58.50%
(-540, -450)	72.94%	62.89%	23.58%	58.87%
(-450, -360)	72.76%	62.89%	23.03%	59.05%
(-360, -270)	73.49%	63.99%	22.67%	59.96%
(-270, -180)	72.39%	62.52%	24.68%	58.14%
(-180, -90)	71.30%	63.07%	21.94%	58.68%
(-90, 0)	64.53%	53.20%	23.95%	48.63%
(-90, -60)	43.69%	35.28%	12.43%	34.00%
(-60, -30)	38.76%	32.54%	10.60%	31.08%
(-30, 0)	29.25%	23.77%	8.04%	22.49%
(0, 30)	29.25%	15.54%	21.76%	12.98%

(30, 60)	38.76%	17.55%	15.36%	15.36%
(60, 90)	43.69%	14.08%	10.42%	13.35%
(0, 90)	55.21%	31.44%	35.47%	26.33%
(90, 180)	50.82%	33.64%	26.69%	29.98%
(180, 270)	52.29%	41.50%	21.57%	36.56%
(270, 360)	55.76%	42.41%	23.22%	37.48%

---

**Table 6: Insider Trading Activities around Lawsuit Filings (Trade-Based)**

We examine trends in insider trading activity within a period of eight quarters before to four quarters after the announcement of 543 securities class action lawsuits in our litigation sample. The table presents the number of insider trades and abnormal insider trades in specific intervals around a lawsuits filing. In column 2 and 3, we report the average number of insider sales and purchases per firm during each interval. In column 4 and 5, we calculate abnormal insider sales (purchases) as actual insider sales (purchases) minus expected insider sales (purchases). The expected insider sales (purchases) are the mean quarterly insider sales (purchases) of that firm during the 3-year period beginning 5 years prior to the announcement of a lawsuit and ending 2 years prior to the announcement. In column 6, we calculate net sales during each period, where net sales are defined as the number of sale transactions minus the number of purchase transactions by insiders in each interval. We present results for all insiders in panel A; managers in panel B; non-managing insiders in panel C; top-level managers in panel D; low-level managers in panel E; financial managers in panel F; and non-financial managers in panel G. The symbols \*, \*\*, and \*\*\* denote statistical significance at the 0.05, 0.01 and 0.001 levels, respectively, using a two-tailed test.

---

Panel A: All Insiders

---

Trade Interval	Insider Sales	Insider Purchases	Abnormal Insider Sales	Abnormal Insider Purchases	Abnormal Insider Net Sales
(-720, -630)	19.17	5.92	7.81***	4.78***	3.03
(-630, -540)	20.01	1.94	8.65***	0.80***	7.85***
(-540, -450)	21.75	1.40	10.38***	0.26	10.12***
(-450, -360)	18.80	1.27	7.44***	0.13	7.31***
(-360, -270)	21.97	1.69	10.61***	0.55**	10.06***
(-270, -180)	23.35	1.64	11.99***	0.50*	11.49***
(-180, -90)	20.82	1.14	9.46***	0.00	9.46***
(-90, 0)	20.48	3.05	9.12***	1.91***	7.21***
(-90, -60)	7.54	0.61	3.75**	0.23	3.52**

(-60, -30)	7.18	0.82	3.39**	0.44***	2.96*
(-30, 0)	5.77	1.62	1.98	1.24***	0.74
(0, 30)	2.08	1.20	-1.71	0.82*	-2.53
(30, 60)	2.90	0.69	-0.89	0.31*	-1.19
(60, 90)	2.33	0.33	-1.46	-0.05	-1.41
(0, 90)	7.31	2.21	-4.06	1.07***	-5.13*
(90, 180)	7.93	1.86	-3.44	0.72***	-4.15
(180, 270)	6.34	4.67	-5.02*	3.53***	-8.54***
(270, 360)	6.26	3.01	-5.10*	1.87***	-6.97***

---

Panel B: Managers

---

Trade Interval	Insider Sales	Insider Purchases	Abnormal Insider Sales	Abnormal Insider Purchases	Abnormal Insider Net Sales
(-720, -630)	14.54	0.26	7.29***	-0.17	7.45***
(-630, -540)	12.27	0.37	5.02**	-0.05	5.07**
(-540, -450)	12.13	0.38	4.88**	-0.04	4.92**
(-450, -360)	10.31	0.29	3.05	-0.13	3.18
(-360, -270)	14.97	0.59	7.71***	0.17	7.54***
(-270, -180)	14.48	0.41	7.23***	-0.01	7.24***
(-180, -90)	13.75	0.39	6.49***	-0.03	6.52***
(-90, 0)	12.34	0.37	5.08**	-0.05	5.13**
(-90, -60)	4.62	0.20	2.20*	0.06	2.14*
(-60, -30)	4.24	0.10	1.82	-0.04	1.87
(-30, 0)	3.47	0.07	1.05	-0.07	1.12
(0, 30)	1.54	0.52	-0.88	0.38***	-1.26

(30, 60)	2.23	0.29	-0.19	0.15**	-0.34
(60, 90)	1.58	0.13	-0.84	-0.01	-0.83
(0, 90)	5.34	0.95	-1.91	0.52***	-2.44
(90, 180)	5.15	0.55	-2.11	0.13	-2.24
(180, 270)	3.63	0.45	-3.63*	0.02	-3.66*
(270, 360)	3.99	0.46	-3.26	0.04	-3.30

---

Panel C: Non-managers

---

Trade Interval	Insider Sales	Insider Purchases	Abnormal Insider Sales	Abnormal Insider Purchases	Abnormal Insider Net Sales
(-720, -630)	4.63	5.66	0.53	4.95***	-4.42***
(-630, -540)	7.74	1.56	3.63***	0.85***	2.78**
(-540, -450)	9.61	1.02	5.51***	0.31	5.20***
(-450, -360)	8.50	0.98	4.39***	0.26	4.13***
(-360, -270)	7.00	1.10	2.90**	0.38	2.52*
(-270, -180)	8.87	1.23	4.76***	0.52**	4.25***
(-180, -90)	7.07	0.75	2.97**	0.03	2.94**
(-90, 0)	8.14	2.68	4.04***	1.96***	2.08
(-90, -60)	2.91	0.41	1.54*	0.17	1.37*
(-60, -30)	2.94	0.72	1.57*	0.48***	1.09
(-30, 0)	2.29	1.55	0.93	1.31***	-0.39
(0, 30)	0.54	0.67	-0.83	0.44***	-1.26
(30, 60)	0.67	0.39	-0.70	0.16	-0.85
(60, 90)	0.75	0.20	-0.62	-0.04	-0.58
(0, 90)	1.96	1.27	-2.14	0.55**	-2.69*



(90, 180)	2.78	1.30	-1.33	0.59**	-1.91
(180, 270)	2.72	4.22	-1.39	3.50***	-4.89***
(270, 360)	2.27	2.55	-1.84	1.83***	-3.67***

---

Panel D: Top-level managers

---

Trade Interval	Insider Sales	Insider Purchases	Abnormal Insider Sales	Abnormal Insider Purchases	Abnormal Insider Net Sales
(-720, -630)	8.14	0.14	4.80***	-0.13	4.93***
(-630, -540)	5.38	0.19	2.04*	-0.08	2.12*
(-540, -450)	6.10	0.16	2.76**	-0.11	2.86**
(-450, -360)	5.27	0.20	1.93*	-0.06	1.99*
(-360, -270)	8.91	0.19	5.57***	-0.07	5.64***
(-270, -180)	6.54	0.22	3.20***	-0.04	3.24***
(-180, -90)	6.56	0.20	3.22***	-0.06	3.28***
(-90, 0)	7.94	0.22	4.59***	-0.04	4.64***
(-90, -60)	2.48	0.14	1.37**	0.05	1.32**
(-60, -30)	2.91	0.03	1.79***	-0.05	1.85***
(-30, 0)	2.54	0.05	1.43**	-0.04	1.47**
(0, 30)	0.99	0.36	-0.13	0.27***	-0.40
(30, 60)	1.60	0.15	0.49	0.06	0.43
(60, 90)	1.03	0.05	-0.09	-0.04	-0.05
(0, 90)	3.61	0.55	0.27	0.29***	-0.01
(90, 180)	2.56	0.39	-0.78	0.13	-0.91
(180, 270)	1.47	0.29	-1.88*	0.02	-1.90*
(270, 360)	1.24	0.30	-2.10	0.04**	-2.14

Panel E: Low-level Managers

Trade Interval	Insider Sales	Insider Purchases	Abnormal Insider Sales	Abnormal Insider Purchases	Abnormal Insider Net Sales
(-720, -630)	6.40	0.12	2.48**	-0.04	2.52**
(-630, -540)	6.90	0.19	2.98***	0.03	2.95***
(-540, -450)	6.04	0.22	2.12*	0.06*	2.06*
(-450, -360)	5.04	0.09	1.12	-0.07**	1.19
(-360, -270)	6.06	0.40	2.14*	0.24***	1.90*
(-270, -180)	7.94	0.19	4.03***	0.03	4.00***
(-180, -90)	7.19	0.19	3.27***	0.03	3.24***
(-90, 0)	4.40	0.15	0.49	-0.01	0.50
(-90, -60)	2.14	0.06	0.83	0.01	0.82
(-60, -30)	1.33	0.06	0.03	0.01	0.02
(-30, 0)	0.93	0.02	-0.37	-0.03	-0.35
(0, 30)	0.55	0.17	-0.75	0.11***	-0.87
(30, 60)	0.63	0.14	-0.68	0.09***	-0.77
(60, 90)	0.55	0.09	-0.75	0.03	-0.79
(0, 90)	1.73	0.39	-2.19**	0.24***	-2.42**
(90, 180)	2.59	0.16	-1.33	0.00	-1.33
(180, 270)	2.16	0.16	-1.75	0.01	-1.76
(270, 360)	2.75	0.16	-1.17	0.00	-1.16

---

Panel F: Financial Managers

---

Trade Interval	Insider Sales	Insider Purchases	Abnormal Insider Sales	Abnormal Insider Purchases	Abnormal Insider Net Sales
(-720, -630)	2.47	0.04	1.61***	-0.02	1.62***
(-630, -540)	1.08	0.02	0.22	-0.04*	0.25
(-540, -450)	0.94	0.04	0.08	-0.02	0.09
(-450, -360)	0.96	0.07	0.10	0.02	0.08
(-360, -270)	1.11	0.06	0.25	0.01	0.24
(-270, -180)	1.02	0.05	0.16	-0.01	0.17
(-180, -90)	0.80	0.03	-0.07	-0.02	-0.05
(-90, 0)	0.71	0.03	-0.16	-0.02	-0.14
(-90, -60)	0.32	0.02	0.03	0.00	0.03
(-60, -30)	0.34	0.01	0.06	-0.01	0.06
(-30, 0)	0.05	0.00	-0.24	-0.02	-0.22
(0, 30)	0.06	0.09	-0.23	0.07***	-0.30
(30, 60)	0.04	0.05	-0.25	0.03***	-0.28
(60, 90)	0.04	0.01	-0.25	0.00	-0.24
(0, 90)	0.14	0.15	-0.73**	0.10***	-0.82**
(90, 180)	0.28	0.08	-0.58*	0.03*	-0.61*
(180, 270)	0.47	0.08	-0.39	0.03	-0.42
(270, 360)	0.37	0.08	-0.49	0.03*	-0.52

---

Panel G: Non-financial Managers

Trade Interval	Insider Sales	Insider Purchases	Abnormal Insider Sales	Abnormal Insider Purchases	Abnormal Insider Net Sales
(-720, -630)	12.07	0.22	5.19***	-0.15	5.34***
(-630, -540)	11.19	0.35	4.31**	-0.02	4.32**
(-540, -450)	11.19	0.34	4.31**	-0.03	4.34**
(-450, -360)	9.35	0.22	2.46	-0.15	2.61
(-360, -270)	13.86	0.54	6.97***	0.16	6.81***
(-270, -180)	13.46	0.37	6.57***	-0.01	6.58***
(-180, -90)	12.95	0.36	6.06***	-0.01	6.08***
(-90, 0)	11.63	0.34	4.74**	-0.03	4.78**
(-90, -60)	4.31	0.18	2.01*	0.06	1.95*
(-60, -30)	3.90	0.09	1.60	-0.04	1.64
(-30, 0)	3.42	0.07	1.13	-0.05	1.18
(0, 30)	1.48	0.44	-0.81	0.31***	-1.13
(30, 60)	2.19	0.24	-0.11	0.12**	-0.22
(60, 90)	1.54	0.12	-0.76	-0.01	-0.75
(0, 90)	5.21	0.80	-1.68	0.43***	-2.10
(90, 180)	4.87	0.47	-2.02	0.10	-2.12
(180, 270)	3.15	0.37	-3.73**	0.00	-3.73**
(270, 360)	3.62	0.38	-3.26*	0.00	-3.27*

**Table 7: Insider Trading Activities around Lawsuit Filings (Volume-Based)**

We examine trends in insider trading activity within a period of eight quarters before to four quarters after the announcements of a securities class action lawsuit. In column 2 and 3, we calculate the average number of sales and purchases per firm during each interval. In column 4 and 5, we calculate abnormal sales (purchases) defined as actual sales (purchases) minus expected sales (purchases). The expected sales (purchases) are the mean quarterly sales (purchases) of that firm in the 3-year period beginning 5 years prior to the announcement of a lawsuit and ending 2 years prior to the announcement. In column 6, we calculate net sales during each period, where net sales are defined as the number of shares sold minus the number of shares purchased by insiders in each interval. We present results for all insiders in panel A; managers in panel B; non-managing insiders in panel C; top-level managers in panel D; low-level managers in panel E; financial managers in panel F; and non-financial managers in panel G. The symbols \*, \*\*, and \*\*\* denote statistical significance at the 0.05, 0.01 and 0.001 levels, respectively, using a two-tailed test.

---

Panel A: All Insiders

---

Trade Interval	Insider Sales	Insider Purchases	Abnormal Insider Sales	Abnormal Insider Purchases	Abnormal Insider Net Sales
(-720, -630)	344.83	34.38	-255.80	13.14	-268.94
(-630, -540)	807.61	26.89	206.99	5.64	201.34
(-540, -450)	412.44	57.21	-188.19	35.96***	-224.15
(-450, -360)	476.56	91.94	-124.07	70.70***	-194.76
(-360, -270)	231.91	15.44	-368.72	-5.80	-362.91
(-270, -180)	277.38	24.10	-323.25	2.86	-326.11
(-180, -90)	226.31	21.27	-374.32	0.03	-374.35
(-90, 0)	257.02	16.31	-343.61	-4.94	-338.68
(-90, -60)	70.29	5.78	-129.92	-1.30	-128.62
(-60, -30)	144.00	4.28	-56.21	-2.81	-53.40

(-30, 0)	42.73	6.25	-157.48	-0.83	-156.65
(0, 30)	50.61	17.32	-149.60	10.24*	-159.84
(30, 60)	94.15	152.47	-106.06	145.39*	-251.45
(60, 90)	18.31	4.67	-181.90	-2.41	-179.50
(0, 90)	163.06	174.46	-437.57	153.22***	-590.78
(90, 180)	78.45	20.16	-522.18	-1.08	-521.10
(180, 270)	419.69	32.43	-180.94	11.19	-192.13
(270, 360)	201.57	34.64	-399.06	13.39	-412.45

---

Panel B: Managers

---

Trade Interval	Insider Sales	Insider Purchases	Abnormal Insider Sales	Abnormal Insider Purchases	Abnormal Insider Net Sales
(-720, -630)	148.80	5.20	-16.66	0.27	-16.94
(-630, -540)	329.87	5.35	164.40***	0.42	163.99***
(-540, -450)	165.93	5.84	0.47	0.90	-0.43
(-450, -360)	150.20	2.21	-15.27	-2.73	-12.54
(-360, -270)	161.69	3.70	-3.77	-1.23	-2.54
(-270, -180)	197.23	2.51	31.76	-2.42	34.18
(-180, -90)	143.55	2.65	-21.91	-2.29	-19.63
(-90, 0)	167.73	1.85	2.27	-3.08	5.35
(-90, -60)	48.67	0.63	-6.48	-1.01	-5.47
(-60, -30)	88.04	0.30	32.89	-1.34	34.23
(-30, 0)	31.02	0.92	-24.14	-0.73	-23.41
(0, 30)	17.52	4.55	-37.64*	2.90**	-40.54*
(30, 60)	15.87	4.14	-39.28*	2.50**	-41.78*

(60, 90)	10.74	1.46	-44.41**	-0.19	-44.22**
(0, 90)	44.13	10.15	-121.33***	5.22**	-126.54***
(90, 180)	44.22	6.26	-121.24***	1.33	-122.57***
(180, 270)	230.75	4.39	65.28*	-0.55	65.83*
(270, 360)	59.83	9.87	-105.63***	4.93**	-110.57***

---

Panel C: Non-managing insiders

---

Trade Interval	Insider Sales	Insider Purchases	Abnormal Insider Sales	Abnormal Insider Purchases	Abnormal Insider Net Sales
(-720, -630)	196.03	29.18	-239.14	12.87	-252.00
(-630, -540)	477.75	21.54	42.58	5.23	37.36
(-540, -450)	246.51	51.37	-188.66	35.06***	-223.72
(-450, -360)	326.36	89.73	-108.80	73.42***	-182.22
(-360, -270)	70.22	11.74	-364.95	-4.58	-360.37
(-270, -180)	80.16	21.59	-355.01	5.28	-360.29
(-180, -90)	82.76	18.63	-352.41	2.32	-354.73
(-90, 0)	89.29	14.46	-345.88	-1.85	-344.03
(-90, -60)	21.62	5.15	-123.44	-0.29	-123.15
(-60, -30)	55.96	3.98	-89.09	-1.46	-87.63
(-30, 0)	11.71	5.33	-133.35	-0.11	-133.24
(0, 30)	33.09	12.77	-111.96	7.33	-119.29
(30, 60)	78.27	148.33	-66.78	142.89	-209.67
(60, 90)	7.56	3.22	-137.49	-2.22	-135.27
(0, 90)	118.93	164.31	-316.24	148.00	-464.24
(90, 180)	34.22	13.90	-400.94	-2.41	-398.53

(180, 270)	188.94	28.05	-246.23	11.74	-257.96
(270, 360)	141.74	24.77	-293.43	8.46	-301.89

---

Panel D: Top-level managers

---

Trade Interval	Insider Sales	Insider Purchases	Abnormal Insider Sales	Abnormal Insider Purchases	Abnormal Insider Net Sales
(-720, -630)	82.67	4.28	-10.26	0.35	-10.61
(-630, -540)	89.76	2.64	-3.17	-1.29	-1.88
(-540, -450)	99.42	5.20	6.49	1.27	5.21
(-450, -360)	96.60	1.59	3.67	-2.33	6.01
(-360, -270)	99.91	2.39	6.98	-1.54	8.53
(-270, -180)	124.98	1.25	32.05	-2.68	34.73
(-180, -90)	82.08	1.58	-10.85	-2.35	-8.50
(-90, 0)	127.47	1.11	34.54	-2.81	37.35*
(-90, -60)	28.43	0.33	-2.55	-0.98	-1.56
(-60, -30)	77.67	0.12	46.69***	-1.19	47.87***
(-30, 0)	21.37	0.66	-9.60	-0.65	-8.96
(0, 30)	11.78	3.66	-19.20	2.35**	-21.55*
(30, 60)	12.09	1.76	-18.89	0.46	-19.35
(60, 90)	7.96	0.57	-23.02*	-0.73	-22.28*
(0, 90)	31.82	6.00	-61.11***	2.07	-63.18***
(90, 180)	20.20	4.78	-72.73***	0.85	-73.58***
(180, 270)	48.47	3.66	-44.46**	-0.27	-44.19**
(270, 360)	25.73	6.46	-67.20***	2.53	-69.73***



---

Panel E: Low-level Managers

---

Trade Interval	Insider Sales	Insider Purchases	Abnormal Insider Sales	Abnormal Insider Purchases	Abnormal Insider Net Sales
(-720, -630)	66.13	0.92	-6.40	-0.08	-6.32
(-630, -540)	240.11	2.71	167.58***	1.71***	165.87***
(-540, -450)	66.52	0.63	-6.02	-0.37	-5.65
(-450, -360)	53.59	0.61	-18.94	-0.39	-18.55
(-360, -270)	61.78	1.32	-10.75	0.31	-11.07
(-270, -180)	72.25	1.26	-0.29	0.26	-0.54
(-180, -90)	61.46	1.07	-11.07	0.06	-11.13
(-90, 0)	40.26	0.73	-32.27	-0.27	-32.00
(-90, -60)	20.24	0.30	-3.94	-0.03	-3.90
(-60, -30)	10.38	0.18	-13.80	-0.16	-13.64
(-30, 0)	9.64	0.26	-14.53	-0.08	-14.45
(0, 30)	5.74	0.89	-18.44	0.56**	-19.00
(30, 60)	3.79	2.38	-20.39	2.04	-22.43
(60, 90)	2.78	0.88	-21.39	0.55**	-21.94
(0, 90)	12.31	4.15	-60.22**	3.15***	-63.37**
(90, 180)	24.02	1.49	-48.51	0.48	-48.99*
(180, 270)	182.28	0.73	109.75***	-0.28	110.03***
(270, 360)	34.09	3.41	-38.44	2.40***	-40.84

---

Panel F: Financial Managers

Trade Interval	Insider Sales	Insider Purchases	Abnormal Insider Sales	Abnormal Insider Purchases	Abnormal Insider Net Sales
(-720, -630)	16.21	0.11	5.54*	-0.22	5.76**
(-630, -540)	16.17	0.16	5.50*	-0.17	5.67**
(-540, -450)	15.62	0.12	4.95*	-0.20	5.15*
(-450, -360)	14.89	0.32	4.22	-0.01	4.23
(-360, -270)	7.15	0.11	-3.52	-0.21	-3.31
(-270, -180)	12.36	0.31	1.69	-0.02	1.71
(-180, -90)	9.42	0.16	-1.25	-0.17	-1.08
(-90, 0)	7.00	0.39	-3.67	0.06	-3.73
(-90, -60)	2.48	0.09	-1.08	-0.02	-1.06
(-60, -30)	4.20	0.03	0.64	-0.08	0.73
(-30, 0)	0.32	0.27	-3.23*	0.17	-3.40*
(0, 30)	0.26	0.29	-3.30**	0.18	-3.48**
(30, 60)	0.19	0.37	-3.37**	0.26	-3.63**
(60, 90)	0.09	0.03	-3.46**	-0.07	-3.39**
(0, 90)	0.54	0.69	-10.13***	0.36	-10.49***
(90, 180)	2.27	0.50	-8.40***	0.17	-8.57***
(180, 270)	2.13	0.29	-8.54***	-0.03	-8.51***
(270, 360)	2.78	0.56	-7.89***	0.23	-8.12***

---

Panel G: Non-financial Managers

---

Trade Interval	Insider Sales	Insider Purchases	Abnormal Insider Sales	Abnormal Insider Purchases	Abnormal Insider Net Sales
(-720, -630)	132.59	5.09	-14.58	0.27	-14.85
(-630, -540)	313.70	5.19	166.52***	0.37	166.15***
(-540, -450)	150.32	5.71	3.14	0.89	2.26
(-450, -360)	135.31	1.89	-11.87	-2.93	-8.93
(-360, -270)	154.54	3.59	7.37	-1.24	8.61
(-270, -180)	184.87	2.21	37.70	-2.62	40.32
(-180, -90)	134.13	2.48	-13.04	-2.34	-10.70
(-90, 0)	160.73	1.46	13.56	-3.37	16.92
(-90, -60)	46.19	0.54	-2.86	-1.07	-1.80
(-60, -30)	83.84	0.27	34.78*	-1.33	36.12*
(-30, 0)	30.69	0.64	-18.36	-0.96	-17.40
(0, 30)	17.26	4.26	-31.80	2.65**	-34.45*
(30, 60)	15.69	3.78	-33.37	2.17	-35.54*
(60, 90)	10.65	1.42	-38.41*	-0.19	-38.22*
(0, 90)	43.60	9.46	-103.57***	4.64**	-108.21***
(90, 180)	41.96	5.77	-105.22***	0.94	-106.16***
(180, 270)	228.62	4.09	81.45**	-0.73	82.18**
(270, 360)	57.05	9.31	-90.12**	4.48*	-94.61***

---

**Table 8: Comparison of Abnormal Net Sales by Different Types of Insiders (Trade-Based)**

We categorize insiders into two distinct groups: i.e. managers, and non-managing insiders. We further divide managers into top-level vs. low-level managers, and financial vs. non-financial managers. The table presents results for a series of univariate tests in which we compare the net sales by different groups of insiders. Specifically, we compare the abnormal net sales between managing and non-managing insiders in Panel A, between top-level managers and low-level managers in Panel B, and between financial managers and non-financial managers in Panel C. In columns 2 and 3, we present the average number of abnormal net sales during each interval. In columns 4 and 5, we present the median number of abnormal net sales during each interval. In columns 6 and 7, we report the results for a t-test of differences in means and for a Kruskal-Wallis test of differences in medians, respectively. The symbols \*, \*\*, and \*\*\* denote statistical significance at the 0.05, 0.01 and 0.001 levels, respectively, using a two-tailed test.

Panel A: Comparison of managing and non-managing insiders						
Trade Interval	Abnormal Net Sales				Equality Tests	
	Mean		Median		T-test p-value	Median Test p-value
	Managers	Non-managing insiders	Managers	Non-managing insiders		
(-720, -630)	7.45	-4.42	-0.17	0.00	0.02*	0.74
(-630, -540)	5.07	2.78	0.00	0.00	0.25	0.75
(-540, -450)	4.92	5.20	0.00	0.00	0.93	0.22
(-450, -360)	3.18	4.13	-0.08	0.00	0.77	0.89
(-360, -270)	7.54	2.52	0.00	-0.08	0.16	0.09
(-270, -180)	7.24	4.25	0.00	0.00	0.37	0.31
(-180, -90)	6.52	2.94	0.00	0.00	0.12	0.11
(-90, 0)	5.13	2.08	-0.42	-0.17	0.39	0.49
(-90, -60)	2.14	1.37	-0.19	-0.08	0.55	0.68

(-60, -30)	1.87	1.09	-0.28	-0.06	0.63	0.01**
(-30, 0)	1.12	-0.39	-0.39	-0.08	0.42	0.00***
(0, 30)	-1.26	-1.26	-0.69	-0.19	1.00	0.00***
(30, 60)	-0.34	-0.85	-0.61	-0.17	0.60	0.00***
(60, 90)	-0.83	-0.58	-0.61	-0.11	0.76	0.00***
(0, 90)	-2.44	-2.69	-2.00	-0.75	0.90	0.00***
(90, 180)	-2.24	-1.91	-1.33	-0.58	0.87	0.00***
(180, 270)	-3.66	-4.89	-1.08	-0.50	0.74	0.00***
(270, 360)	-3.30	-3.67	-1.00	-0.42	0.87	0.01**

Panel B: Comparison of top-level and low-level managers

Trade Interval	Abnormal Net Sales				Equality Tests	
	Mean		Median		T-test p-value	Median Test p-value
	Top-level Managers	Low-level Managers	Top-level Managers	Low-level Managers		
(-720, -630)	4.93	2.52	0.00	-0.17	0.38	0.04*
(-630, -540)	2.12	2.95	0.00	-0.08	0.41	0.73
(-540, -450)	2.86	2.06	0.00	-0.08	0.59	0.36
(-450, -360)	1.99	1.19	0.00	-0.08	0.55	0.39
(-360, -270)	5.64	1.90	0.00	-0.08	0.12	0.19
(-270, -180)	3.24	4.00	0.00	-0.08	0.66	0.45
(-180, -90)	3.28	3.24	0.00	0.00	0.98	0.97
(-90, 0)	4.64	0.50	-0.08	-0.33	0.03	0.03
(-90, -60)	1.32	0.82	-0.06	-0.14	0.51	0.06
(-60, -30)	1.85	0.02	-0.08	-0.22	0.07	0.00***
(-30, 0)	1.47	-0.35	-0.14	-0.28	0.06	0.00***

(0, 30)	-0.40	-0.87	-0.19	-0.36	0.40	0.01**
(30, 60)	0.43	-0.77	-0.17	-0.33	0.15	0.00***
(60, 90)	-0.05	-0.79	-0.17	-0.36	0.22	0.00***
(0, 90)	-0.01	-2.42	-0.58	-1.08	0.11	0.00***
(90, 180)	-0.91	-1.33	-0.42	-0.75	0.78	0.10
(180, 270)	-1.90	-1.76	-0.50	-0.67	0.90	0.36
(270, 360)	-2.14	-1.16	-0.42	-0.58	0.42	0.27

Panel C: Comparison of financial managers and non-financial managers

Trade Interval	Abnormal Net Sales				Equality Tests	
	Mean		Median		T-test p-value	Median Test p-value
	Financial Managers	Non-financial Managers	Financial Managers	Non-financial Managers		
(-720, -630)	1.62	5.34	0.00	-0.17	0.20	0.04*
(-630, -540)	0.25	4.32	0.00	-0.08	0.00***	0.09
(-540, -450)	0.09	4.34	0.00	0.00	0.01**	0.62
(-450, -360)	0.08	2.61	0.00	-0.08	0.09	0.26
(-360, -270)	0.24	6.81	0.00	-0.17	0.01**	0.32
(-270, -180)	0.17	6.58	0.00	-0.08	0.00***	0.20
(-180, -90)	-0.05	6.08	0.00	0.00	0.00***	0.45
(-90, 0)	-0.14	4.78	0.00	-0.50	0.01**	0.00***
(-90, -60)	0.03	1.95	-0.03	-0.19	0.01**	0.00***
(-60, -30)	0.06	1.64	-0.03	-0.33	0.13	0.00***
(-30, 0)	-0.22	1.18	-0.03	-0.42	0.16	0.00***
(0, 30)	-0.30	-1.13	-0.03	-0.69	0.20	0.00***
(30, 60)	-0.28	-0.22	-0.03	-0.58	0.95	0.00***

(60, 90)	-0.24	-0.75	-0.03	-0.56	0.48	0.00***
(0, 90)	-0.82	-2.10	-0.08	-1.92	0.48	0.00***
(90, 180)	-0.61	-2.12	-0.08	-1.25	0.38	0.00***
(180, 270)	-0.42	-3.73	-0.08	-1.08	0.01**	0.00***
(270, 360)	-0.52	-3.27	-0.08	-1.08	0.05*	0.00***

---

**Table 9: Comparison of Abnormal Net Sales by Different Types of Insiders (Volume-Based)**

We categorize insiders into two distinct groups: i.e. managers, and non-managing insiders. We further divide managers into top-level vs. low-level managers, and financial vs. non-financial managers. The table presents results for a series of univariate tests in which we compare the net sales by different groups of insiders. Specifically, we compare the abnormal net sales between managing and non-managing insiders in Panel A, between top-level managers and low-level managers in Panel B, and between financial managers and non-financial managers in Panel C. In column 2 and 3, we present the average number of abnormal net sales during each interval. In column 4 and 5, we present the median number of abnormal net sales during each interval. In column 6 and 7, we report the results for a t-test of differences in means and for a Kruskal-Wallis test of differences in medians, respectively. The symbols \*, \*\*, and \*\*\* denote statistical significance at the 0.05, 0.01 and 0.001 levels, respectively, using a two-tailed test.

Panel A: Comparison of managing and non-managing insiders						
Trade Interval	Abnormal Net Sales				Equality Tests	
	Mean		Median		T-test p-value	Median Test p-value
	Managers	Non-managing insiders	Managers	Non-managing insiders		
(-720, -630)	-16.94	-252.00	-2.11	-1.17	0.17	0.89
(-630, -540)	163.99	37.36	-1.16	-1.19	0.70	0.44
(-540, -450)	-0.43	-223.72	-2.32	-1.67	0.14	0.69
(-450, -360)	-12.54	-182.22	-2.19	-1.56	0.48	0.76
(-360, -270)	-2.54	-360.37	-2.03	-2.37	0.03*	0.23
(-270, -180)	34.18	-360.29	-1.17	-3.33	0.02*	0.02*
(-180, -90)	-19.63	-354.73	-1.22	-3.29	0.04*	0.06
(-90, 0)	5.35	-344.03	-4.51	-4.06	0.04*	0.57
(-90, -60)	-5.47	-123.15	-2.32	-2.05	0.03*	0.90



(-60, -30)	34.23	-87.63	-3.40	-1.92	0.11	0.17
(-30, 0)	-23.41	-133.24	-6.65	-1.75	0.04*	0.00***
(0, 30)	-40.54	-119.30	-9.50	-2.90	0.20	0.00***
(30, 60)	-41.78	-209.67	-8.75	-2.94	0.29	0.00***
(60, 90)	-44.22	-135.27	-8.58	-2.42	0.09	0.00***
(0, 90)	-126.54	-464.24	-25.83	-8.82	0.13	0.00***
(90, 180)	-122.57	-398.53	-22.77	-7.28	0.09	0.00***
(180, 270)	65.83	-257.96	-22.09	-7.28	0.25	0.00***
(270, 360)	-110.57	-301.89	-17.88	-7.84	0.31	0.17

Panel B: Comparison of top-level and low-level managers

Trade Interval	Abnormal Net Sales				Equality Tests	
	Mean		Median		T-test p-value	Median Test p-value
	Top-level Managers	Low-level Managers	Top-level Managers	Low-level Managers		
(-720, -630)	-10.61	-6.32	-0.17	-1.59	0.83	0.49
(-630, -540)	-1.88	165.87	-0.05	-1.25	0.30	0.48
(-540, -450)	5.21	-5.65	-0.17	-1.01	0.62	0.79
(-450, -360)	6.01	-18.55	-0.67	-1.19	0.27	0.88
(-360, -270)	8.53	-11.07	-0.83	-1.03	0.38	0.49
(-270, -180)	34.73	-0.54	-0.05	-1.25	0.32	0.67
(-180, -90)	-8.50	-11.13	-1.09	-1.00	0.89	0.48
(-90, 0)	37.35	-32.00	-2.00	-3.58	0.22	0.58
(-90, -60)	-1.56	-3.90	-0.77	-1.34	0.76	0.79
(-60, -30)	47.87	-13.64	-1.53	-2.17	0.19	0.28
(-30, 0)	-8.96	-14.45	-2.41	-2.55	0.59	0.55

(0, 30)	-21.55	-19.00	-3.68	-3.12	0.76	0.92
(30, 60)	-19.35	-22.43	-3.54	-3.00	0.70	0.61
(60, 90)	-22.28	-21.94	-3.53	-3.28	0.96	0.68
(0, 90)	-63.18	-63.37	-10.79	-8.71	0.99	0.94
(90, 180)	-73.58	-48.99	-8.36	-6.34	0.11	0.23
(180, 270)	-44.19	110.03	-9.52	-6.03	0.35	0.11
(270, 360)	-69.73	-40.84	-7.42	-6.23	0.10	0.40

Panel C: Comparison of financial managers and non-financial managers

Trade Interval	Abnormal Net Sales				Equality Tests	
	Mean		Median		T-test p-value	Median Test p-value
	Financial Managers	Non-financial Managers	Financial Managers	Non-financial Managers		
(-720, -630)	5.76	-14.85	0.00	-3.41	0.29	0.00***
(-630, -540)	5.67	166.15	0.00	-2.17	0.32	0.00***
(-540, -450)	5.15	2.26	0.00	-2.19	0.90	0.00***
(-450, -360)	4.23	-8.93	0.00	-3.45	0.51	0.00***
(-360, -270)	-3.31	8.61	0.00	-3.14	0.58	0.00***
(-270, -180)	1.71	40.32	0.00	-1.81	0.28	0.03*
(-180, -90)	-1.08	-10.70	0.00	-1.70	0.61	0.03*
(-90, 0)	-3.73	16.92	-0.03	-5.38	0.70	0.00***
(-90, -60)	-1.06	-1.80	-0.11	-2.70	0.93	0.00***
(-60, -30)	0.73	36.12	-0.10	-4.39	0.43	0.00***
(-30, 0)	-3.40	-17.40	-0.17	-6.56	0.18	0.00***
(0, 30)	-3.48	-34.45	-0.22	-8.78	0.00***	0.00***
(30, 60)	-3.63	-35.54	-0.23	-8.79	0.00***	0.00***

(60, 90)	-3.39	-38.22	-0.22	-8.48	0.00***	0.00***
(0, 90)	-10.49	-108.21	-0.71	-24.78	0.00***	0.00***
(90, 180)	-8.57	-106.16	-0.50	-20.83	0.00***	0.00***
(180, 270)	-8.51	82.18	-0.63	-20.73	0.58	0.00***
(270, 360)	-8.12	-94.61	-0.50	-16.97	0.00***	0.00***

---

**Table 10: Preliminary Examination of Abnormal Cumulative Returns**

We form several subsets of our litigation sample along various dimensions. In particular, we distinguish between small and large firms (based on the sued firms' market capitalization), between firms with a high or low market-to-book ratio, between firms with high or low volatility, between tech or non-tech firms, between accounting-related lawsuits and non-accounting-related lawsuits, and between firms with net abnormal sales and firms with net abnormal purchases (on a trade basis and volume basis) in the latest quarter prior to the announcement of a lawsuit filing. For each subsample, we report the number of observations N, as well as the mean and median cumulative abnormal returns (CARs) during a (-5, 0) event window. We employ t-tests and Kruskal-Wallis tests to test for the equality of mean and median CARs between each set of subsamples. The last column reports p-values for both tests. The symbols \*, \*\*, and \*\*\* denote statistical significance at the 0.05, 0.01 and 0.001 levels, respectively, using a two-tailed test.

Subsample 1	N	Subsample 2	N	Tests of differences
	Mean		Mean	Mean (p-value)
	Median		Median	Median (p-value)
Large firms (Market capitalization > \$1454.94 m)	271 -6.44% -2.17%	Small firms (Market capitalization ≤ \$1454.94 m)	272 -8.17% -3.83%	0.2693 0.3449
Firms with a high market-to-book ratio (market-to-book ratio > 2.112)	271 -8.87% -3.40%	Firms with a low market-to-book ratio (market-to-book ratio ≤ 2.112)	272 -5.74% -2.37%	0.0457* 0.0801
Firms with high volatility (volatility > 2.984%)	271 -7.16% -2.94%	Firms with low volatility (volatility ≤ 2.984%)	272 -7.46% -2.55%	0.8488 0.4624

Firms in the technology industry	113	Firms in non-technology industries	520	
	-8.22%		-7.07%	0.5523
	-3.35%		-2.75%	0.7293
Accounting-related lawsuits	165	Non-accounting-related lawsuits	378	
	-12.43%		-5.07%	0.0000***
	-6.21%		-1.82%	0.0001***
Firms with net abnormal sales (trade-based)	189	Firms with net abnormal purchases (trade-based)	354	
	-10.08%		-5.83%	0.0097**
	-3.83%		-2.12%	0.0128*
Firms with net abnormal sales (volume-based)	228	Firms with net abnormal purchases (volume-based)	315	
	-9.14%		-5.98%	0.0462*
	-3.81%		-1.93%	0.0067**

---

**Table 11: Preliminary Examination of Abnormal Net Sales**

We form several subsets of our litigation sample along various dimensions. In particular, we distinguish between small and large firms (based on the sued firms' market capitalization), between firms with a high or low market-to-book ratio, between firms with high or low volatility, between tech or non-tech firms, between accounting-related lawsuits and non-accounting-related lawsuits, and between firms with a stock price runup and firms with a stock price decline at the end of the class period. For each subsample, we report the number of observations N, as well as mean and median cumulative abnormal net sales in the latest quarter prior to the lawsuit filings. We present the results for trade-based net sales in Panel A and volume-based net sales (in thousands) in Panel B, respectively. We employ t-tests and Kruskal-Wallis tests to test for the equality of mean and median abnormal net sales between each set of subsamples. The last column reports p-values for both tests. The symbols \*, \*\*, and \*\*\* denote statistical significance at the 0.05, 0.01 and 0.001 levels, respectively, using a two-tailed test.

Panel A: Trade-based Abnormal Net Sales				
Subsample 1	N	Subsample 2	N	Tests of differences
	Mean		Mean	Mean (p-value)
	Median		Median	Median (p-value)
Large firms (Market capitalization > \$1454.94m)	271 11.37 -1.75	Small firms (Market capitalization ≤ \$1454.94 m)	272 3.05 -0.63	0.1766 0.1491
Firms with high a market-to-book ratio (market-to-book ratio > 2.112)	271 9.19 -0.50	Firms with a low market-to-book ratio (market-to-book ratio ≤ 2.112)	272 5.22 -1.25	0.5191 0.1414
Firms with high volatility (volatility > 2.984%)	271 1.40	Firms with low volatility (volatility ≤ 2.984%)	272 12.98	0.0598

	-0.83		-1.13	0.9357
Firms in the technology industry	113	Firms in non-technology industries	430	
	4.91		7.81	0.7026
	-0.08		-1.04	0.2354
Accounting-related lawsuits	165	Non-accounting-related lawsuits	378	
	5.61		7.90	0.7332
	-1.08		-0.83	0.7975
Firms with a stock price runup	69	Firms with a stock price decline	474	
	12.20		6.48	0.5365
	-1.83		-0.83	0.3447

---

Panel B: Volume-based Abnormal Net Sales

---

Subsample 1	N	Subsample 2	N	Tests of differences
	Mean		Mean	Mean (p-value)
	Median		Median	Median (p-value)
Large firms (Market capitalization > \$1454.94 m)	271	Small firms (Market capitalization ≤ \$1454.94 m)	272	
	-412.665		-278.398	0.6974
	-50.288		-8.965	0.0002***
Firms with high a market-to-book ratio (market-to-book ratio > 2.112)	271	Firms with a low market-to-book ratio (market-to-book ratio ≤ 2.112)	272	
	-371.949		-318.965	0.8781
	-29.412		-19.420	0.3929

Firms with high volatility (volatility > 2.984%)	271 -526.098 -14.516	Firms with low volatility (volatility ≤ 2.984%)	272 -165.382 -32.676	0.2960 0.2315
Firms in the technology industry	113 -754.961 -20.842	Firms in non-technology industries	430 -237.781 -26.229	0.2237 0.7454
Accounting-related lawsuits	165 -309.206 -28.530	Non-accounting-related lawsuits	378 -361.210 -23.687	0.8898 0.9751
Firms with a stock price runup	69 254.108 -19.191	Firms with a stock price decline	474 -432.679 -24.873	0.1849 0.8261

---



**Table 12: OLS Regression Analysis of Abnormal Stock Returns**

We examine whether investors distinguish between different types of lawsuits by regressing the cumulative abnormal returns over assorted event windows against various characteristics of the lawsuits and the sued firms. We characterize sued firms by firm size based on the sued firms' market capitalization (MC), market-to-book ratio (MB), volatility of stock returns (VOL), and industry types identified by four dummy variables (IND<sub>1</sub> – IND<sub>4</sub>). Specifically, we differentiate between firms that operate in a regulated industry, as well as firms that operate in the financial, technology, or retail sector. All other firms are captured by a separate dummy variable. We further include eight dummy variables to differentiate between different types of allegations in our lawsuit sample (LT<sub>1</sub>-LT<sub>8</sub>). Finally, we include abnormal net insider sales in the last quarter prior to the lawsuit filings (ANS) as an independent variable. For each variable, we report the coefficient and the corresponding p-value in parentheses below. The symbols \*, \*\*, and \*\*\* denote statistical significance at the 0.05, 0.01 and 0.001 levels, respectively, using a two-tailed test.

Variable	(-5,0) CARs	(-10,0) CARs	(-20,0) CARs	(-30,0) CARs	VIF
	Coefficient (p-value)	Coefficient (p-value)	Coefficient (p-value)	Coefficient (p-value)	
Intercept	<b>-0.0638</b> <b>(0.0110)*</b>	<b>-0.0762</b> <b>(0.0090)**</b>	<b>-0.1057</b> <b>(0.0010)**</b>	<b>-0.1305</b> <b>(0.0000)***</b>	
MC	0.0002 (0.3870)	0.0005 (0.0680)	0.0007 (0.0150)	<b>0.0009</b> <b>(0.0080)**</b>	1.20
MB	-0.0010 (0.1130)	-0.0012 (0.1060)	-0.0011 (0.1930)	-0.0009 (0.3190)	1.02
VOL	0.1461 (0.7390)	0.0579 (0.9100)	-0.2166 (0.6990)	-0.0618 (0.9210)	1.18
IND1	0.0552 (0.0910)	0.0382 (0.3140)	0.0278 (0.5030)	0.0266 (0.5640)	1.10
IND2	0.0003	0.0031	0.0009	0.0062	1.27

	(0.9910)	(0.9060)	(0.9750)	(0.8460)	
IND3	-0.0034	-0.0110	-0.0277	-0.0219	1.23
	(0.8710)	(0.6530)	(0.3040)	(0.4630)	
IND4	0.0756	<b>0.1107</b>	<b>0.0991</b>	0.1004	1.07
	(0.0530)	<b>(0.0150)*</b>	<b>(0.0460)*</b>	(0.0690)	
LT1	-0.0694	-0.0385	0.0363	0.0458	1.08
	(0.2460)	(0.5800)	(0.6340)	(0.5880)	
LT2	0.0094	-0.0053	-0.0113	-0.0242	1.15
	(0.5740)	(0.7880)	(0.5990)	(0.3090)	
LT3	-0.0033	-0.0107	-0.0028	-0.0108	1.05
	(0.8580)	(0.6200)	(0.9070)	(0.6820)	
LT4	-0.0258	-0.0395	-0.0450	<b>-0.0533</b>	1.13
	(0.1700)	(0.0710)	(0.0610)	<b>(0.0460)*</b>	
LT5	<b>-0.0569</b>	<b>-0.0613</b>	-0.0435	<b>-0.0613</b>	1.17
	<b>(0.0070)**</b>	<b>(0.0130)*</b>	(0.1060)	<b>(0.0400)*</b>	
LT6	-0.0379	<b>-0.0578</b>	-0.0400	-0.0431	1.12
	(0.0740)	<b>(0.0190)*</b>	(0.1390)	(0.1510)	
LT7	-0.0137	-0.0121	0.0047	0.0145	1.19
	(0.7060)	(0.7750)	(0.9190)	(0.7780)	
LT8	0.0498	-0.0231	-0.0276	-0.0484	1.04
	(0.1510)	(0.5660)	(0.5330)	(0.3230)	
ANS	0.0000	0.0000	-0.0001	-0.0001	1.04
	(0.8790)	(0.9740)	(0.5420)	(0.6880)	
Adjusted R <sup>2</sup>	2.40%	3.10%	2.12%	2.60%	
F-Statistic	1.83	2.08	1.73	1.90	

**Table 13: OLS Regression Analysis of Abnormal Insider Trading**

The table provides results for a series of regressions of abnormal insider trading against a variety of variables that characterize the lawsuits and the sued firms. We characterize sued firms by firm size based on the sued firms' market capitalization (MC), market-to-book ratio (MB), volatility of stock returns (VOL), and industry types identified by four dummy variables (IND<sub>1</sub> – IND<sub>4</sub>). Specifically, we differentiate between firms that operate in a regulated industry, as well as firms that operate in the financial, technology, or retail sector. All other firms are captured by a separate dummy variable. We further include eight dummy variables to differentiate between different types of allegations in our lawsuits sample (LT<sub>1</sub>-LT<sub>8</sub>). RET measures the abnormal stock return of each sued firm at the end of the class period. The dependent variables are i) abnormal insider sales, ii) abnormal insider purchases, and iii) abnormal net insider sales. For each variable, we report the coefficient and the corresponding p-value in parentheses below. The symbols \*, \*\*, and \*\*\* denote statistical significance at the 0.05, 0.01 and 0.001 levels, respectively, using a two-tailed test.

Variable	Number of insider transactions			Number of shares traded by insiders (Thousand)			VIF
	Abnormal Sales	Abnormal Purchases	Abnormal Net Selling	Abnormal Sales	Abnormal Purchases	Abnormal Net Sales	
	Coefficient (p-value)	Coefficient (p-value)	Coefficient (p-value)	Coefficient (p-value)	Coefficient (p-value)	Coefficient (p-value)	
Intercept	<b>18.2585</b> <b>(0.0400)*</b>	-4.1518 (0.4130)	<b>22.4103</b> <b>(0.0290)*</b>	-387.6124 (0.5060)	-37.2993 (0.0190)	-350.3130 (0.5480)	
MC	-0.1192 (0.1480)	-0.0061 (0.8970)	-0.1131 (0.2360)	3.5821 (0.5080)	0.0450 (0.7600)	3.5370 (0.5130)	1.23
MB	0.1014 (0.6400)	0.0092 (0.9410)	0.0922 (0.7140)	3.9895 (0.7800)	-0.1861 (0.6310)	4.1755 (0.7700)	1.02
VOL	-230.1087 (0.1270)	27.3956 (0.7500)	-257.5043 (0.1400)	-2590.6120 (0.7930)	<b>667.4898</b> <b>(0.0130)*</b>	-3258.1020 (0.7420)	1.19
IND1	-11.5401	-1.5969	-9.9432	101.6348	-13.5362	115.1710	1.10

	(0.3010)	(0.8020)	(0.4410)	(0.8900)	(0.4970)	(0.8750)	
IND2	-4.8300	-1.3117	-3.5182	124.9424	10.5112	114.4313	1.28
	(0.5360)	(0.7690)	(0.6970)	(0.8070)	(0.4510)	(0.8230)	
IND3	-4.1186	-0.9532	-3.1653	-572.7509	-7.4489	-565.3020	1.23
	(0.5690)	(0.8170)	(0.7050)	(0.2280)	(0.5640)	(0.2340)	
IND4	22.5870	-3.1049	25.6919	777.6352	15.3974	762.2379	1.07
	(0.0910)	(0.6840)	(0.0970)	(0.3750)	(0.5190)	(0.3850)	
LT1	27.5059	2.1197	25.3862	24.7259	43.6531	-18.9272	1.08
	(0.1790)	(0.8560)	(0.2830)	(0.9850)	(0.2320)	(0.9890)	
LT2	-11.0779	5.9138	<b>-16.9916</b>	-165.4262	18.6306	-184.0568	1.14
	(0.0530)	(0.0700)	<b>(0.0100)*</b>	(0.6590)	(0.0690)	(0.6240)	
LT3	<b>14.5502</b>	-0.9822	<b>15.5324</b>	31.8124	-10.7650	42.5773	1.04
	<b>(0.0220)*</b>	(0.7860)	<b>(0.0350)*</b>	(0.9390)	(0.3430)	(0.9190)	
LT4	11.1713	<b>8.0675</b>	3.1037	13.3877	4.9422	8.4455	1.13
	(0.0840)	<b>(0.0290)*</b>	(0.6780)	(0.9750)	(0.6690)	(0.9840)	
LT5	-1.8434	3.0205	-4.8639	195.3871	6.3663	189.0208	1.17
	(0.7980)	(0.4640)	(0.5600)	(0.6800)	(0.6220)	(0.6900)	
LT6	-6.9997	-1.4827	-5.5170	-254.1349	-5.8909	-248.2440	1.12
	(0.3340)	(0.7200)	(0.5100)	(0.5930)	(0.6490)	(0.6020)	
LT7	2.4471	5.9573	-3.5101	-96.1608	15.0757	-111.2364	1.19
	(0.8440)	(0.4020)	(0.8080)	(0.9060)	(0.4980)	(0.8920)	
LT8	11.3150	-1.7783	13.0933	1292.1370	-40.2323	1332.3690	1.04
	(0.3400)	(0.7930)	(0.3400)	(0.0970)	(0.0580)	(0.0870)	
RET	-2.4235	-4.9269	2.5034	-671.9285	-15.3170	-656.6116	1.12
	(0.8720)	(0.5650)	(0.8850)	(0.4950)	(0.5680)	(0.5050)	
Adjusted R <sup>2</sup>	1.52%	-1.06%	0.97%	-1.77%	0.49%	-1.73%	
F-Statistic	1.52	0.64	1.33	0.41	1.17	0.42	

**Table 14: OLS Regression Analysis of Abnormal Net Insider Sales on CARs**

The table provides results for a series of regressions of abnormal net insider sales on CARs over a (-5, 0) event window, controlling for a variety of variables that characterize the lawsuits and the sued firms. We characterize sued firms by firm size based on the sued firms' market capitalization (MC), market-to-book ratio (MB), volatility of stock returns (VOL), and industry types identified by four dummy variables (IND<sub>1</sub> – IND<sub>4</sub>). Specifically, we differentiate between firms that operate in a regulated industry, as well as firms that operate in the financial, technology, or retail sector. All other firms are captured by a separate dummy variable. We further include eight dummy variables to differentiate between different types of allegations in our lawsuits sample (LT<sub>1</sub>-LT<sub>8</sub>). RET measures the abnormal stock return of each sued firms at the end of the class period. The dependent variables are i) abnormal net insider sales measured in terms of the number of transactions (Panel A) and ii) abnormal net insider sales measured in terms of the number of shares traded (Panel B). For each variable, we report the coefficient and the corresponding p-value in parentheses below. The symbols \*, \*\*, and \*\*\* denote statistical significance at the 0.05, 0.01 and 0.001 levels, respectively, using a two-tailed test.

Panel A: Trade-based Abnormal Net Sales								
Variable	All Insiders	Managers	Non- Managing Insiders	Top-level Managers	Low-level Managers	Financial Managers	Non-financial Managers	VIF
	Coefficient (p-value)	Coefficient (p-value)	Coefficient (p-value)	Coefficient (p-value)	Coefficient (p-value)	Coefficient (p-value)	Coefficient (p-value)	
Intercept	<b>22.4095</b> <b>(0.0290)*</b>	8.0414 (0.2420)	14.3681 (0.1390)	6.3489 (0.2500)	1.6924 (0.5750)	-0.1828 (0.8190)	7.8092 (0.2330)	
CAR	1.9623 (0.9170)	2.1996 (0.8610)	-0.2373 (0.9890)	3.7774 (0.7080)	-1.5778 (0.7750)	2.1685 (0.1390)	-0.4579 (0.9700)	1.25
MC	-0.1128 (0.2370)	-0.0870 (0.1730)	-0.0258 (0.7750)	-0.0603 (0.2390)	-0.0267 (0.3410)	-0.0042 (0.5740)	-0.0851 (0.1620)	1.23
MB	0.0944 (0.7080)	0.0976 (0.5630)	-0.0031 (0.9890)	-0.0102 (0.9400)	0.1077 (0.1470)	0.0098 (0.6190)	0.0904 (0.5740)	1.02
VOL	-258.6635	-38.2945	-220.3691	-9.8385	-28.4559	19.3567	-52.0739	1.20

	(0.1390)	(0.7430)	(0.1830)	(0.9170)	(0.5800)	(0.1550)	(0.6410)	
IND1	-10.0167	-1.7187	-8.2981	-2.2400	0.5214	0.0244	-1.8604	1.1
	(0.4390)	(0.8430)	(0.4980)	(0.7470)	(0.8910)	(0.9810)	(0.8220)	
IND2	-3.4803	1.1229	-4.6033	-1.7839	2.9068	-1.2727	2.6708	1.29
	(0.7010)	(0.8530)	(0.5910)	(0.7140)	(0.2750)	(0.0710)	(0.6440)	
IND3	-3.1529	-1.0498	-2.1030	-0.7536	-0.2962	-0.2255	-1.3022	1.23
	(0.7060)	(0.8510)	(0.7910)	(0.8670)	(0.9040)	(0.7290)	(0.8070)	
IND4	25.6144	14.6591	10.9554	13.3178	1.3413	-0.1284	14.9051	1.08
	(0.0980)	(0.1570)	(0.4550)	(0.1100)	(0.7680)	(0.9150)	(0.1320)	
LT1	25.5390	<b>31.5324</b>	-5.9934	10.1441	<b>21.3882</b>	-1.2520	<b>33.6621</b>	1.08
	(0.2820)	<b>(0.0470)*</b>	(0.7890)	(0.4260)	<b>(0.0020)**</b>	(0.4980)	<b>(0.0260)*</b>	
LT2	<b>-17.0219</b>	-2.9124	<b>-14.1095</b>	-4.5463	1.6339	0.2884	-3.1800	1.14
	<b>(0.0100)*</b>	(0.5110)	<b>(0.0250)*</b>	(0.2020)	(0.4010)	(0.5760)	(0.4520)	
LT3	15.5467	3.4848	12.0619	6.3920	-2.9072	0.1176	2.6480	1.04
	(0.0350)	(0.4780)	(0.0830)	(0.1060)	(0.1790)	(0.8370)	(0.5720)	
LT4	3.1282	6.6632	-3.5349	6.7866	-0.1235	0.1716	6.1275	1.13
	(0.6760)	(0.1830)	(0.6170)	(0.0920)	(0.9550)	(0.7680)	(0.2000)	
LT5	-4.7702	6.8479	-11.6180	7.3755	-0.5276	1.2092	5.9149	1.18
	(0.5710)	(0.2240)	(0.1440)	(0.1030)	(0.8310)	(0.0650)	(0.2700)	
LT6	-5.4366	-6.4635	1.0268	-6.0468	-0.4166	-0.4235	-5.8027	1.12
	(0.5190)	(0.2520)	(0.8970)	(0.1820)	(0.8660)	(0.5190)	(0.2810)	
LT7	-3.4533	-2.9406	-0.5127	0.6294	-3.5700	0.3981	-3.7489	1.19
	(0.8110)	(0.7610)	(0.9700)	(0.9350)	(0.4000)	(0.7230)	(0.6840)	
LT8	13.0195	5.5324	7.4870	0.1800	5.3525	0.2768	5.0489	1.05
	(0.3440)	(0.5470)	(0.5650)	(0.9810)	(0.1850)	(0.7960)	(0.5650)	
RET	1.7292	17.6129	-15.8838	11.4124	6.2006	<b>2.9024</b>	15.0113	1.32
	(0.9270)	(0.1630)	(0.3740)	(0.2610)	(0.2640)	<b>(0.0490)*</b>	(0.2130)	
Adjusted R <sup>2</sup>	0.78%	-0.10%	-0.69%	0.06%	0.43%	0.50%	0.02%	
F-Statistic	1.25	0.97	0.78	1.02	1.14	1.16	1.01	

Panel B: Volume-based Abnormal Net Sales

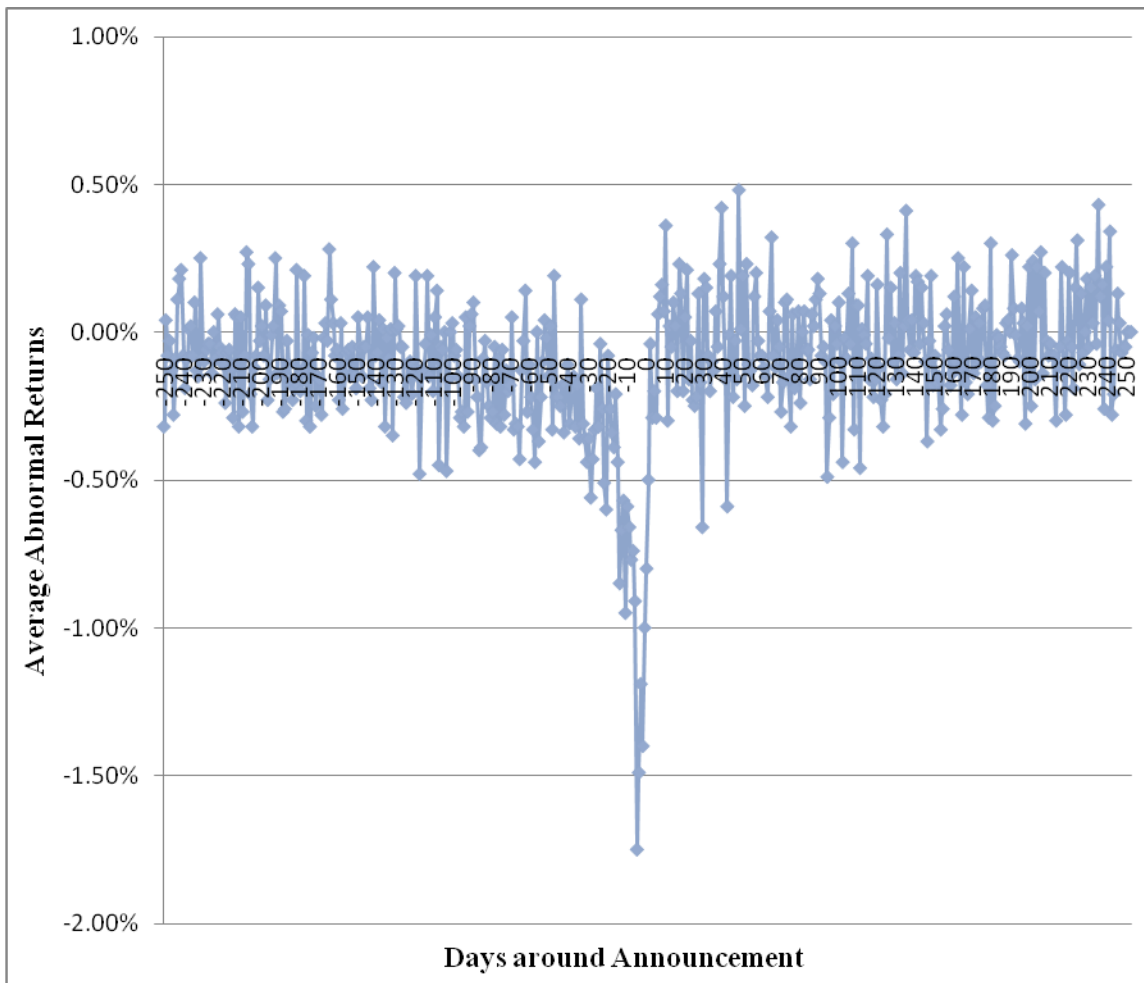
Variable	All Insiders	Managers	Non- Managing Insiders	Top-level Managers	Low-level Managers	Financial Managers	Non-financial Managers	VIF
	Coefficient (p-value)	Coefficient (p-value)	Coefficient (p-value)	Coefficient (p-value)	Coefficient (p-value)	Coefficient (p-value)	Coefficient (p-value)	
Intercept	-350.0501 (0.5480)	-154.8347 (0.4000)	-195.2154 (0.7230)	-125.5945 (0.4850)	-29.2402 (0.4450)	-12.1630 (0.1270)	-123.5906 (0.4870)	
CAR	-846.5432 (0.4270)	<b>-735.6407</b> <b>(0.0290)*</b>	-110.9026 (0.9120)	<b>-671.1958</b> <b>(0.0420)*</b>	-64.4449 (0.3570)	-12.3822 (0.3960)	<b>-710.9074</b> <b>(0.0290)*</b>	1.25
MC	3.4089 (0.5290)	2.6996 (0.1140)	0.7093 (0.8900)	<b>3.7011</b> <b>(0.0270)*</b>	<b>-1.0015</b> <b>(0.0050)**</b>	0.0252 (0.7330)	2.8561 (0.0840)	1.23
MB	3.2095 (0.8230)	4.4442 (0.3250)	-1.2346 (0.9270)	4.5724 (0.3000)	-0.1283 (0.8910)	-0.0081 (0.9670)	4.5187 (0.3010)	1.02
VOL	-2758.4820 (0.7810)	4778.4130 (0.1270)	-7536.8940 (0.4210)	4889.5220 (0.1100)	-111.1091 (0.8650)	205.0364 (0.1310)	4440.1990 (0.1430)	1.20
IND1	146.9096 (0.8410)	65.3996 (0.7780)	81.5100 (0.9060)	37.6023 (0.8680)	27.7973 (0.5640)	-0.7384 (0.9410)	42.7268 (0.8490)	1.1
IND2	98.1068 (0.8480)	-176.0193 (0.2770)	274.1261 (0.5720)	-184.7934 (0.2430)	8.7741 (0.7950)	0.0216 (0.9980)	-170.9759 (0.2750)	1.29
IND3	-570.6718 (0.2300)	<b>-303.5605</b> <b>(0.0430)*</b>	-267.1113 (0.5510)	<b>-312.1229</b> <b>(0.0330)*</b>	8.5624 (0.7840)	-7.5050 (0.2480)	<b>-303.2951</b> <b>(0.0370)*</b>	1.23
IND4	795.7011 (0.3650)	-98.5945 (0.7220)	894.2957 (0.2810)	-75.2821 (0.7810)	-23.3125 (0.6860)	2.2847 (0.8490)	-108.8588 (0.6850)	1.08
LT1	-84.8472 (0.9500)	-214.8336 (0.6130)	129.9864 (0.9180)	-112.7504 (0.7860)	-102.0832 (0.2480)	-13.3145 (0.4690)	-166.0374 (0.6860)	1.08
LT2	-171.0114 (0.6490)	-39.1568 (0.7410)	-131.8546 (0.7100)	-23.0190 (0.8430)	-16.1378 (0.5130)	1.6960 (0.7410)	-53.7877 (0.6390)	1.14

LT3	36.4271 (0.9300)	<b>306.1808</b> <b>(0.0200)*</b>	-269.7537 (0.4930)	<b>299.1660</b> <b>(0.0200)*</b>	7.0149 (0.7980)	5.2109 (0.3610)	<b>286.3077</b> <b>(0.0250)*</b>	1.04
LT4	-2.1380 (0.9960)	8.9829 (0.9470)	-11.1209 (0.9780)	-28.4056 (0.8280)	37.3885 (0.1800)	2.5745 (0.6570)	-0.6311 (0.9960)	1.13
LT5	148.5513 (0.7560)	-55.4181 (0.7130)	203.9694 (0.6510)	-50.7064 (0.7300)	-4.7117 (0.8800)	-2.6077 (0.6890)	-56.3106 (0.6990)	1.18
LT6	-282.9009 (0.5540)	-200.0488 (0.1850)	-82.8521 (0.8540)	-190.9840 (0.1950)	-9.0649 (0.7730)	-4.0761 (0.5330)	-181.8138 (0.2130)	1.12
LT7	-135.7497 (0.8680)	-140.7144 (0.5860)	4.9647 (0.9950)	-152.4013 (0.5460)	11.6869 (0.8280)	2.1706 (0.8460)	-136.3272 (0.5850)	1.19
LT8	1364.2300 (0.0810)	<b>1229.4040</b> <b>(0.0000)**</b> *	134.8266 (0.8550)	<b>1140.4350</b> <b>(0.0000)***</b>	88.9686 (0.0830)	31.7300 (0.0030)	<b>1190.3320</b> <b>(0.0000)***</b>	1.05
REt	-322.9998 (0.7630)	473.0489 (0.1620)	-796.0486 (0.4310)	472.7208 (0.1530)	0.3281 (0.9960)	7.8037 (0.5940)	451.9434 (0.1670)	1.32
Adjusted R <sup>2</sup>	-1.80%	5.24%	-2.29%	5.12%	0.10%	-0.31%	5.26%	
F-Statistic	0.44	2.76	0.29	2.72	1.03	0.90	2.77	



**Figure 1: Average Abnormal Returns during the 250 Days before and after Securities Class Action Announcements**

This figure presents average abnormal returns (AARs) during the 250 trading days prior to and after securities class action announcements. Our sample consists of 543 securities class action lawsuits filed between January 2000 and December 2008. Daily abnormal returns are derived from the market model that uses the CRSP equally-weighted index as a proxy for the market return.



## Appendix

### Insider categorization

Insider Groups	Relationship Code	Description
<b>Managers</b>	CB	Chairman of the Board
	H	Officer, Director, and Beneficial Owner
	OD	Officer and Director
	AV	Assistant Vice President
	CEO	Chief Executive Officer
	CFO	Chief Financial Officer
	CI	Chief Investment Officer
	CO	Chief Operating Officer
	CT	Chief Technology Officer
	EVP	Executive Vice President
	O	Officer
	OB	Officer and Beneficial Owner of more than 10% of a Class of Security
	OP	Officer of Parent Company
	OS	Officer of Subsidiary Company
	OT	Officer and Treasurer
	OX	Divisional Officer
	P	President
	S	Secretary
	SVP	Senior Vice President
	VP	Vice President
C	Controller	
CP	Controlling Person	
GM	General Manager	
OE	Other Executive	
TR	Treasurer	

Insider Groups	Relationship Code	Description
<b>Non-managing Insiders</b>	D	Director
	DO	Director and Beneficial Owner of more than 10% of a Class of Security
	VC	Vice Chairman
	AC	Member of the Advisory Committee
	CC	Member of the Compensation Committee
	EC	Member of the Executive Committee
	FC	Member of the Finance Committee
	MC	Member of Committee or Advisory Board
	SC	Member of the Science/Technology Committee
	AF	Affiliated Person
	AI	Affiliate of Investment Advisor
	GC	General Counsel
	IA	Investment Advisor
	B	Beneficial Owner of more than 10% of a Class of Security
	BC	Beneficial Owner as Custodian
	BT	Beneficial Owner as Trustee
	DS	Indirect Shareholder
	F	Founder
	FO	Former
	GP	General Partner
	LP	Limited Partner
	M	Managing Partner
	MD	Managing Director
R	Retired	
SH	Shareholder	
T	Trustee	
UT	Unknown	
VT	Voting Trustee	
X	Deceased	

<b>Insider Groups</b>	<b>Relationship Code</b>	<b>Description</b>
<b>Top-level Managers</b>	CB CEO CFO CI CO CT P	Chairman of the Board Chief Executive Officer Chief Financial Officer Chief Investment Officer Chief Operating Officer Chief Technology Officer President
<b>Low-level Managers</b>	H OD AV EVP O OB OP OS OT OX S SVP VP C CP GM OE TR	Officer, Director and Beneficial Owner Officer and Director Assistant Vice President Executive Vice President Officer Officer and Beneficial Owner of more than 10% of a Class of Security Officer of Parent Company Officer of Subsidiary Company Officer and Treasurer Divisional Officer Secretary Senior Vice President Vice President Controller Controlling Person General Manager Other Executive Treasurer
<b>Financial Management</b>	CFO OT C TR	Chief Financial Officer Officer and Treasurer Controller Treasurer

<b>Insider Groups</b>	<b>Relationship Code</b>	<b>Description</b>
<b>Non-financial Management</b>	CB	Chairman of the Board
	H	Officer, Director and Beneficial Owner
	OD	Officer and Director
	AV	Assistant Vice President
	CEO	Chief Executive Officer
	CI	Chief Investment Officer
	CO	Chief Operating Officer
	CT	Chief Technology Officer
	EVP	Executive Vice President
	O	Officer
	OB	Officer and Beneficial Owner of more than 10% of a Class of Security
	OP	Officer of Parent Company
	OS	Officer of Subsidiary Company
	OX	Divisional Officer
	P	President
	S	Secretary
	SVP	Senior Vice President
	VP	Vice President
CP	Controlling Person	
GM	General Manager	
OE	Other Executive	