Executive wealth and options trading around litigation:

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Abstract

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In this paper, we examine informed stock options transactions in firms that have been sued for security law violations via shareholder class action lawsuits. We explore whether there is an increase in possibly informed stock option transactions prior to a lawsuit – which may be suggestive of informed insider trading in the options market. In addition, we examine whether the wealth performance sensitivity (WPS) of insiders affects the abnormal trading volume in stock options around litigation announcements. Finally, we examine whether company-specific fundamentals have a significant effect on the abnormal trading volume in stock options surrounding litigation. We calculate abnormal options volume using an event study constant mean approach and use a matched firm analysis to compare the options trading in sued versus non-sued firms. We then estimate a series of regressions to examine the effect of WPS and firm-specific fundamentals on the abnormal trading volume of stock options trading around litigation dates in a multivariate setting. We find that the volume of options traded during the event window preceding a litigation announcement is abnormally high relative to the estimation period and also abnormally high compared to matched firms. Moreover, financial statement variables collected during the financial quarter encompassing the date of the litigation announcement have a substantially more noticeable and prominent effect when corporations are litigated for financial reasons or whose lawsuits pass the defendants' motions to dismiss. Our study is the first to present evidence of unusually high options trading volume prior to impending legal action. In addition, we contribute to the body of knowledge that explores the impact of wealth performance sensitivity on suspicious trading behavior.

Keywords: Informed Trading, Derivatives, Litigation Announcements, Legal Actions, Shareholder Class Action Lawsuits

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Introduction

The relationship between options trading and shareholder class action litigation may not be immediately obvious, but once understood can yield surprising results. The options segment of the derivatives market has proved rewarding for managers who have found interesting and novel ways to profit in it. It has been so successful that payments through derivative options have come to represent a significant chunk of executive salary and bonus packages. Yet, options can also be abused as highlighted by this statement made by Arthur Levitt, the former and longest-serving SEC chairman: "Options give executives strong incentives to use accounting tricks to boost the share price on which their compensation depended" (Levitt, 2002, p. 111). On the other hand, litigation has been a significant issue for companies insofar as it affects company reputation and, ultimately, share prices. Whether litigation is frivolous or genuinely worthy of time and money spent defending accusations laid out in lawsuits, the picture litigation paints of a firm is seldom favorable. Despite this negative outlook, however, the information that a company is about to be engaged in litigation may sometimes be used by company insiders to gain an unfair advantage in the securities market and to generate sizable profits – profits that represent a sure bet against prevailing market sentiment and fly under the radar of financial regulators.

The U.S. has one of the largest and most important securities markets in the world. It is widely regarded as an extremely well-regulated market. Several acts safeguarding market participants, for example U.S. shareholder protection laws, are as robust, or even more so, than the regulations of other world markets (La Porta et al.,1998). The Securities Act of 1933 and the 1934 Securities Exchange Act provide valuable protection and legal recourse to market participants. Section 10(b) Securities Exchange Act of 1934 prescribes any devious or fraudulent behavior in the transaction of tradeable securities, whether or not the security is registered for sale on a public exchange.

Surprisingly, very little research exists to shed light on the impact of litigation on insider trading. Jones et al. (1997) look at the impacts of seasoned equity offerings, company announcements, accounting restatements, and SEC prosecution actions on lawsuits filed under Section 10b-5 of the 1934 Securities Exchange Act. Also, Chen et al. (2013) investigate the relationship between insider trading and its effect on litigation risk and the ongoing concern

regarding auditor statements. To the best of our knowledge, no other research has highlighted the pattern of trading in the securities market related to the timing of company litigation.

In this study, we evaluate available information and try to determine whether there is a pattern to options trading related to firms that subsequently become the subject of widely publicized litigation. We also examine whether measures of wealth performance sensitivity (WPS) of the executives who are privy to this information have any effect on informed trading dependent variables. We further assess whether company-specific control factors significantly affect suspicious trading in the options market. Lastly, we examine alternative explanations for the abnormal trading uncovered, based on the picture portrayed by the regression results.

Our research contributes to the literature in several ways. Our study is the first to track the pattern and effect of several executive wealth performance sensitivity indicators as well as company-specific factors related to suspicious insider trading within a broad sample of firms that subsequently became the subject of litigation. No studies have examined informed trading in options prior to litigation announcements. Related topics around litigation and insider trading have looked only at the effect of the probable variables that lead to litigation and not the actual trading patterns prior to litigation dates which might lead to an unfair trading advantage. Research has been conducted on "strategic silence", i.e., insider selling that invites litigation risk (Billings et al. 2015; Billings, 2008); and investigation of the possible deterrent effect of actual shareholder litigation on insider trading (Cheng et al. 2016).

Our investigation provides insights into the prevalence, sophistication, and potential illegality of informed trading done by those individuals privy to information on future litigation, especially among executives, that occur in the run-up to public litigation announcements. This research is critical because trading on private information before published litigation proven accusations provides a number of advantages compared to trading after the public announcement. For example, it has been established that managers have backdated stock options around litigation dates (Curtis et al. 2015). Sometimes plaintiffs may file a litigation lawsuit to make big on out-of-the-money options. It has also been discovered that negative expected value (NEV) lawsuits are analogous to out-of-the-money call options held by plaintiffs (Grundfest et al. 2005).

Literature Review

Empirical research in law and economics has identified several predictors of corporate litigation. Our research focuses on the underlying coefficients of stock option incentives for executives that significantly affect price manipulation, and are indicative of suspicious trading or abnormal trading around an event date in the options derivatives market. In contrast, much of the current litigation literature takes as its starting point measures of manipulative behavior, accounting exploitation and general characteristics of firms as determinants of the incidence of class action litigation. A number of studies focus directly on the impact of aggressive accounting on the incidence of litigation. Lu (2003) finds that her measure of earnings management over 1988–2000 is associated with allegations of manipulation over the same period in subsequent private securities litigation. Specifically, accruals and revenue growth are abnormally high for firms examined under her sample during alleged periods of manipulation and tend to drop off subsequently.

Moreover, the magnitude of accruals overstatements is greatest for defendant firms subject to SEC accounting and auditing enforcement actions or of having made accounting restatements and least for defendants not facing any accounting allegations. Kasznik (1999) finds that, motivated by concerns about securities litigation, firms manage earnings up toward management voluntary earnings forecast. Ducharme et al. (2004) find that the number of accounting accruals are extraordinarily high around stock offers, and notably high for firms whose offers successively attract lawsuits. Reversals are even more prominent: returns are lower for sued corporations than those not subject to litigation. Heninger (2001) finds a positive relation between abnormal accruals and lawsuits against the auditors of 67 firms from 1969 to 1998. His study provides evidence that the probability of auditor litigation increases as clients report more positive (income-increasing) abnormal accruals.

In terms of the link between insider trading activity and litigation incidence, Jones and Weingram (1996) find that insider trading does not increase a firms litigation risk. Niehaus and Roth (1999) find that, for lawsuits filed between 1988 to 1994, insider managers are net sellers of their company stock during the class action period, but that sales do not vary significantly from their prior selling practices. Johnson et al. (2002) find insider net sales are significant for post-PSLRA 1995 litigation but not pre-PSLRA litigation. We contribute to the literature by analyzing

both insider trading and options activity and investigate the possible indication of the role of *ex-ante* executive pay parameters as predictors and indicators of insider trading. Our insider trading measure also controls for litigation type and firm characteristics that are novel to this study of the options pattern around litigation of public and private firms.

Compensation packages and executive pay schemes can also reveal much about the options trading pattern around litigation date, as has been noted in prior literature. Healy (1985) and Guidry et al. (1999) find evidence that managerial accounting decisions are related to the incentives provided by executive bonus contracts. The self-centered decisions of executives, also, at times, invite the wrath of shareholder litigation lawsuits. Executive compensation has been tied to earnings manipulation by way of accruals or understatements leading to a vicious cycle of litigation lawsuits. Gao and Shrieves (2002), Bergstresser and Philippon (2005), & Cheng and Warfield (2005) find convincing evidence for the presence of a higher portion of stock and options packages comprising executive pay among firms found to have inaccurate accounting statements and that are subsequently sued.

While literature on options trading patterns around litigation is scarce, we have endeavored to find research that is closely related to our topic. Liu et al. (2020) & Pukthuanthong et al. (2017) perform their own literature review and develop a model to predict shareholder litigation on insider trading, litigation risk, and institutional monitoring using machine learning models. In addition they examine accounting statements and several variables that measure management motives to generate self-favoring values, opportunistic benefits, or both. These variables include cash ratio, size, change in size, concentration ratio, dormant period, previous mergers, price run-up, ROA, resource-growth-mismatch, sales growth, sales shock, sales shock squared, and share turnover.

Our study provides a novel approach by looking at several aspects of options trading patterns around litigation dates of companies under regulatory scrutiny. It also complements several previous studies by Peng et al. (2007), which have attempted to find a relationship between executive pay and shareholder litigation. We investigate the possibility of informed options trading before and around the date of litigation news or rumors. The focus of our study and our sample differs from Liu et al. (2020) & Pukthuanthong et al. (2017) in that we focus on informed options trading in firms around litigation dates even if the rumored litigation announcement does not result in a formal judicial trial or procedure. This not only results in a much larger data sample but also

addresses different research questions, including the impact of litigation rumors that, in general, do not reach the threshold of courtroom trials and are often settled out of court. Our research questions are crucial as knowledge of an impending litigation announcement can be a key source that is independent of any forthcoming legal proceedings, but related to sudden price fluctuations. Unscrupulous option traders and managers may benefit unfairly from prior knowledge of litigation lawsuits.

Hypothesis Development

Prior studies in this area have looked at different ways litigation affects the reputation of the firm or the cost incurred by the firm. The total dollar amount of settlements in class action security proceedings soared from $150 million in 1997 to a staggering $9.7 billion in 2005 (Zingales, 2007). Although these sums are high, settlement sums often merely pay legal fees and do not directly benefit plaintiff stakeholders. (Romano, 1991). A number of factors can predict the likelihood of companies being involved as a defendant in a lawsuit. Ex-ante proxy, which is one of the most popular indicators of litigation risk, is set as an indicator variable with a value of one for businesses that become defendants in a lawsuit in the following year, otherwise the value assigned is zero (e.g., Lowry and Shu, 2002; Field et al., 2005; Arena and Julio, 2015). We analyze the options market for firms that are a defendant in lawsuits filed against them. We conduct an event study to determine the nature of trading activities of the defendant firms around the litigation announcement date. Further, we compare company options trading activities against matching firms to detect any abnormal pattern in the trading activities.

Our first hypothesis is in line with the general assumption that if there is no informational advantage related to the litigation announcement date, then no pattern of abnormal trading should be found in the event study. Neither should the number of event studies be significant when considered individually or when seen in comparison to matching firms. Specifically, we also expect the put option volume to be higher than the call option volume because litigation announcements generally bring negative publicity or reputation-harming scenarios to sued firms.

H$_1$: There is no significantly abnormal trading pattern in the options market around the litigation announcement date of the defendant firm (Hypothesis H$_{1A}$)[1] or comparable matching firms (Hypothesis H$_{1B}$).

We believe that if there is no significant difference in the volume of trades around litigation dates when compared to the options trading activity of the defendant firms, it can be said that there exists no information advantage with regard to the litigation announcement. We go on to compare and match the firms based on asset size and search to see if there is a distinct pattern that would suggest spikes of options trading for firms that are a defendant in lawsuits as against their industry peers. If our results suggest significant spikes in trading volume around litigation announcement dates compared to company historical trading numbers and against their industry peers, we believe there exists a case for informational advantage and informational asymmetry, which may be used for profitmaking by a few market participants. Therefore, we further propose that:

H$_2$: Wealth performance sensitivity (WPS) and financial statement items are not significantly correlated with suspicious trading variables such as the abnormal Amihud measure.

Kim and Skinner (2012) find that the addition of firm characteristics radically increases the predictive power of future lawsuits. Their regressions involve firm attributes that are associated with the prevalence of litigation. Conventional variables of these models are market capitalization, stock returns, stock volatility, and stock turnover, as well as industry indicator variables consistent with Francis et al. (1994a, b). Market capitalization is related to the risk of litigation, as larger companies are more likely to settle with higher payments to plaintiffs. This makes them more attractive as targets for lawsuits. Stock performance variables are related to the incidence of security class action lawsuits since such suits are often triggered by large stock price declines, high stock volatility, or excessive turnover surrounding the period of the alleged fraud (Alexander, 1991; Jones and Weingram, 1996; Skinner, 1997; Dyl, 1999; Simmons and Hoyt, 1993; Gande and Lewis, 2009). Johnson et al. (2000a) and Johnson et al. (2007) include additional explanatory variables such as stock beta, return skewness, insider trading, external financing, CEO power often proxied by WPS, and management monitoring. Insider trading and high external financing activity may be used to exploit high stock valuation obtained through misleading releases of information,

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[1] For the sake of brevity we have not explicitly stated the Alternative Hypothesis but our alternative hypothesis is just the rejection of null in all our Proposed Hypothesis.ss

activities that increase the risk of litigation (Brown et al., 2005); Dechow et al. (1996). Our research, however, departs from the others by looking at the options market activities instead of stock activities. We assume that the same financial statement characteristics will have a similar effect on the options market. Instead of using litigation lawsuits as our dependent variable, suspicious trading is proxied by Abnormal Amihud, which measures the amount of return generated for every dollar invested and if there is any abnormal pattern against historical values. We also seek to test the effect of independent variables on dependent variables depending on the severity of lawsuits companies have filed against them (defendant firms). We define severity by using the dummy variable. If the company ends up in court the dummy variable is assigned the value of '1', and if they have settled outside of court or the case is dropped or settled through any other means, the dummy variable assigned is '0'.

H$_3$: If a lawsuit passes the defendant's motion to dismiss, WPS and financial statement items have no significant effect on suspicious trading variables (Abnormal Amihud) relative to lawsuits that are dismissed.

Data

We use the same dataset as Davis et al. (2017). We are thankful to the authors for sharing their data. We construct our financial misconduct data set by retrieving and merging information from three databases: the General Accounting Office, Audit Analytics, and the Federal Securities Regulation (provided by Karpoff et al., 2014; see Hegde and Zhou, 2014, for the matching procedure). This merged database is used to identify whether the Wealth performance sensitivity (WPS) of top executives has any significant correlation with Abnormal Amihud variables, the respective announcement and detection dates, and the severity of the incident. We also employ an alternative method to identify financial misconduct that draws on private securities class actions, using data from Stanford University's Securities Class Action Clearinghouse (http://securities.stanford.edu), which provides detailed information on more than 3,500 shareholder class action lawsuits against publicly traded U.S. firms as well as related settlements since 1995. The Securities and Exchange Commission (SEC) defines a corporate insider as an executive, officer, director, controlling person of the firm, or any principal shareholder who owns more than 10 percent of the total common stock outstanding for a firm. Besides requiring insiders

to report their holdings to the SEC on an annual basis, U.S. securities laws mandate the reporting of any changes to those holdings, plus the announcement of restricted share sales in advance.

Davis et al. (2016) construct an insider trading data set using the Insider Filing Data Feed (IFDF) provided by Thomson Reuters, which captures all U.S. insider holdings and trading activity as reported on SEC Forms 3, 4, and 5. Following the literature investigating the presence of informed insider trading [2], we omit all duplicate, amended, and inconsistent transactions from our data set. We categorize trades according to managing insiders (directors and officers) and non-managing insiders (committee members, affiliates, beneficial owners, and others), as classified by Thomson Reuters, hypothesizing that trades by principal shareholders who are not officers or directors may not convey identical information. For each firm covered in our insider data set, we retrieve daily return data and Standard Industrial Classification (SIC) codes from the Center for Research in Securities Prices (CRSP). In addition, we collect information on the monthly market capitalization for each firm from Compustat as well as their asset size for each firm, book-to-market value, volatility data, leverage data, and return on asset data.

We match our insider data set with a litigation data set hand-collected from Stanford's Securities Class Action Clearinghouse (SCAC)[3], which has tracked federal securities class action lawsuits since 1996. Our litigation data set covers the period from January 1996 to December 2016 and contains 3,157 lawsuits that were filed against publicly traded firms.

We exclude lawsuits in which firms are sued more than once in any year in order to reduce any estimation biases that may result from overlapping litigations. In addition, we exclude IPO-related cases and lawsuits in which sued firms do not have price records on the CRSP daily database at least two years before the lawsuit announcement. Finally, when analyzing the trading behavior of insiders prior to lawsuit/settlement announcements, we further drop firms in which we fail to find a matching firm meeting our criteria for the control sample used later in our study. We report summary statistics for the remaining 1,872 firms used in our analysis.

We also use Stanford's SCAC as well as the Securities Class Action Alert (SCAA) to retrieve information on securities class action settlements. We retrieve detailed information on 1,049 securities class action cases that were settled in the period from January 1996 to December 2016. Also, we gather information on companies that ended up in court and did not have outside settlements. This classification is useful because we use this data subsequently for one of our

regressions. Our data set, therefore, includes information on insider transactions, securities class action lawsuits, securities class action settlements, and corresponding financial market data.

We use Compustat to gather data about asset size for matching companies. Our data consist of information 3,156 companies, out of which we find matching companies for only 1,872 firms and use these firms for the event study. For the second part of our study, we drop the sample to the 756 companies we use in the regression. The loss of firms results from the unavailability of WPS data. WPS is a variable that requires a lot of inputs in order to calculate one single variable. such as expected dividend yield, stock return volatility, risk-free interest rate, closing stock price, options exercise price and time to maturity in years.

Summary Statistics

Table I, Panel A presents descriptive statistics for the 1,872 securities class action lawsuits in our sample. We report the yearly number of lawsuits with details of the associated industry using the firms' SIC codes. In table 1, Panel B, we also provide the mean, median, standard deviation, lower quartile and upper quartile of our variables used in the regression. It is clear from these tables that the majority of companies that have been sued operate in the Transportation, Finance, and Real Estate industries, although these numbers are not markedly different from those of other industries. In addition, the table reveals that during the 2007 Financial Crisis, a greater number of cases end up in court.

Methodology and Results

We employ two types of analysis to determine our results. Primarily, we take the volume data of options trading for all the firms under litigation during the sample period and we examine whether abnormal options trading exists before litigation dates. To calculate abnormal option volume, we adhere to the accepted event methodology and apply a constant mean model. Our estimation window is from 240 to 31 calendar days before the announcement (seven months), and the event period is from 30 to 1 calendar days before the announcement. We then compute the normal trading volume by taking the average of the daily raw trading volume in the estimation

window and the daily abnormal trading volume by subtracting the normal trading volume from the daily trading volume in the event window (see Eqs. (1) and (2)).

Finally, we follow the methodology of Khadivar et al. (2022) to compute cumulative abnormal trading volume (CAVOL) by collecting daily abnormal trading volumes over the thirty days leading up to the announcement date (event period). We estimate CAVOL separately for calls and puts, respectively, in Eqs. (1) and (2):

$$\text{CAVOL}_{C,j} = \sum_{i=-t}^{-1} \left(VOL_i^{\text{call}} - \text{VOLB}_j^{\text{call}} \right), \quad (1)$$

$$\text{CAVOL}_{P,j} = \sum_{i=-t}^{-1} \left(VOL_i^{\text{put}} - VOLB_j^{\text{put}} \right), \quad (2)$$

We tabulate various option volume statistics over the benchmark periods and event periods. Where VOLicall(put) is the call (put) options volume of a firm under litigation, firm j on the date I, VOLBjcall(put) is the mean daily average trading volume of a firm facing litigation, firm j in the estimation window, and t denotes the start of the event period. During regular market times, we follow the standard expectation. CAVOL for calls and puts is expected to be close to zero. According to data from Cuijpers et al. (2011), and in the absence of any notable events, Volatility is anticipated to be close to zero. CAVOL for calls and puts is predicted to be close to zero during regular market hours (Charoenwong et al. 2009). When our intuition is correct, however, and there is informed trading in options markets, we expect CAVOL to deviate significantly from zero for calls and puts during the lead-up to the litigation announcement date by the reporting agencies or media, whichever is the first date of the public announcement of the firm facing charges for any misdoing. Table 2A gives volume statistics for daily options volume and the CAVOL measures before the litigation announcements. We first calculate (see panel A in Table 2A) the average daily volume separately over the benchmark window (-31 to -240 days before the Litigation announcement) and event window (-30 to -1 day/s before the Litigation announcement). We observe significant abnormal calls and put option volumes in the month before litigation announcements (see panel B in Table 2A). Also, these numbers seem to be significantly different from their benchmark as per the P-Value statistics, which indicates that there may be some devious

activity or trading based on prior knowledge of firms coming under scrutiny for litigation. This is further supported when we divide the Average cumulative abnormal volume by the average benchmark volume (see panel C in Table 2A).[2] We can see that, in the event window, there is relatively more trading (44.08% and 43.3% respectively) of put and call options, compared to their benchmark in the seven months (-240 to -31) before the event window (-30 to -1). We try to match the firms with similar characteristics (see Table x, below). We calculate the P-value of volumes of call and put options trading stratified by moneyness between the sample firms and controlled/matching firms. As seen in Table 2B, there are no significant P values for the difference of options volume traded between litigation firms and matching firms in the estimation period and this supports the veracity of the matching procedure.

Identifying Abnormal Trading Volumes Relative to Matching Firms

This section examines whether abnormal options trading exists before litigation announcement dates. We follow Ordu et al. (2015) and standard event methodology and use a constant mean model to compute abnormal option volume. We use an estimation window of (-240, -31) days before the Litigation announcement date to obtain estimates of the model to compute abnormal volume in an event window of (-30, -1) days relative to the litigation announcement.

Table 3 presents the abnormal option volume statistics with results stratified by option moneyness. Column (1) gives the results for all options, while Columns (2), (3), and (4) present the results for ITM, ATM, and OTM options, respectively. We follow the literature (e.g., Wang, 2013; Augustin et al., 2014) and define option moneyness as follows: call options are ITM if the strike price is less than 95% of the underlying stock price, ATM if the strike price falls between 95 and 105% of the stock price, and OTM if the strike price is greater than 105% of the stock price. We conduct an event study for each category to compute abnormal volumes and present the results in Table 2A. Column (1) of Table 3 (Panel A) results suggest significantly positive cumulative average abnormal trading volumes for both call and put options.

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[2] For example, if the average volume of options traded in the benchmark window was 100 and soared to 140 in the event window, this represents a 40% increase in trading activity relative to the previous normal volume.

In addition, in Columns (2) and (3), we find the abnormal trading volume in OTM call (OTM put) options within 30 days before the initial publication of litigation announcements to be significantly higher than that of either ATM call (ATM put) or ITM call (ITM put) options. We present the results for a series of paired t-tests for the differences in the means of respective categories in Columns (5) and (6). This evidence is in line with prior studies (Cao et al., 2005; Augustin et al., 2019), which find that before stock price jumps, informed traders are more likely to trade in OTM options than shares due to the higher expected profitability from options trading. Our findings demonstrate the importance of the litigation announcement period in discovering abnormal trading activities in the options market. While we assert that the observed abnormal options trading before the announcement indicates informed trading, an alternative proposition suggests that market participants, especially insiders or those privy to the information of firms facing or nearing to face litigation, might trigger unusual pre-announcement trading in the options market. If this explanation is correct, we would expect to observe comparable levels of options trading activity in firms with similar characteristics to those firms soon to be subject to litigation. Therefore, we construct a control sample based on firm-specific traits. We match on asset size. We take the average of 3 quarters before the quarter of the event window of the sample firms assets and try to find a matching firm in the range of 70-130%. In each case, we choose that firm as the matching or control firm with the closest asset size relative to the sample firm.

Next, we compute abnormal option volumes for control firms constructed using the first best matches, with our results presented in Panel B of Table 3. No category of moneyness is statistically significant for matching firms. Further, in Panel C of Table 3, we report the results from paired t-tests for the differences in the means of the cumulative average abnormal volumes between sample and control groups (i.e., the sample firm mean minus the control firm mean). We find that for both call options and put options, irrespective of the moneyness, this difference is significantly positive, as displayed in Columns (1 to 4). We are somewhat puzzled by the findings because we anticipate the difference between sample companies and their matched peers to be substantially larger, notably for OTM options (including calls and puts), than for corresponding ATM or ITM options. However, as shown in Columns (5 to 7), our findings indicate that the increasing volume of OTM options seen in corporations which are about to face litigation has a corresponding, sizable increase in ATM or ITM options. Our findings are not consistent with the notion that privately informed traders are specifically purchasing OTM call/put options before the expected share price jump/drop

resulting from litigation announcements, as OTM options are considered to represent the most profitable mechanism when utilizing private information (Cao et al., 2005; Augustin et al., 2019). Choosing out-of-the-money calls has the effect of increasing leverage. However, OTM options generally are less liquid (with higher relative bid-ask spreads) than ATM and ITM options. But, in the presence of superior information, the leverage effect may dominate the liquidity consideration. In contrast, our results suggest that market participants have vigorously made call/put option trades in the event window, irrespective of their money.

Regression Results

Our second research objective is to examine effect of company employees; specifically, whether those in executive positions are opportunistically using or sharing their stakeholder-relevant private information before the public release of that information can be established. Intuitively, if the litigation announcement of the sample firm contains stakeholder-relevant news, executives who have access to relevant information can trade on or share the information with outsiders, resulting in abnormal trading activity in the sample firm *before* the litigation announcement. Note that our objective in this study segment is to focus on documenting whether executive wealth performance sensitivity (WPS) has any significant effect on the abnormal trading volumes pattern around the event window. We do not attempt to determine whether any shady/shadow dealing occurs as a result of the severity of the litigation or pinpoint the specific kind of executives or industries that are most vulnerable to trades made on valuable nonpublic information.

We use the following metrics to measure suspicious trading, using data from CRSP and Option Metrics. The first metric is the "Abnormal Amihud" (A.A.) measure based on Amihud (2002) capturing informational asymmetry-based trades (see Mehta et al., 2014). Greater values of the A.A. measure indicate higher information asymmetry and generally reflect more informed trading. Markets. Abnormal Amihud is our measure of suspicious trading, and thus it is our dependent variable in the equation.

In the past, abnormal options returns around the event date have been used to indicate insider/informed/suspicious trading, regardless of whether the underlying asset is a stock or an

option. Several studies have examined the relationship between options liquidity and insider/suspicious/shadow trading. Christoffersen et al. (2018) and Kim and Verrecchia (1994) equate increased options trading volume surrounding earnings announcements with the risk of trading against knowledgeable traders. Glosten and Milgrom (1985) state that market makers adjust the bid-ask spread around earnings announcements to compensate insiders. Some studies employ Abnormal Amihud as a measure of options volume liquidity in the context of insider/suspicious/shadow trading, liquidity risk, and expected option return (Siu Kai Choy, Jason Wei 2020, Stefan Kanne et al., 2022; Ruslan Goyenko 2020). "The harm of insider trading is so broad and great, and since market participants are likely to continue to find creative new ways to trade on material nonpublic information in violation of fiduciary duties, the government needs some vagueness in the law to address new predatory trading as it arises." (Heminway, 2018).

The main independent variables (incentives to engage in illegal insider trading) are Edmans et al.'s (2009) WPS measure. We use the ordinary least squares (OLS regression model to suspicious trading before the revelation of financial misconduct and related lawsuit and settlement announcements. Our main test specifications are as follows

$$\{\boldsymbol{Abnormal\ Amihud\ (AA)}\} = \boldsymbol{\alpha} + \boldsymbol{\beta_1} \cdot \boldsymbol{WPS} + \sum_i \boldsymbol{\gamma_i} \cdot \boldsymbol{Firm\ Controls_i} + \boldsymbol{\phi_k} + \boldsymbol{\xi_l} + \boldsymbol{\varepsilon,}$$

Where α is the constant, *WPS* is Edmans et al.'s (2009) measure. *Firm Controls* represent a series of firm-specific characteristics for each company (including the firm book-to-market ratio, leverage, ROA, and Volatility, we have used firm-specific numbers majorly from their financial statements and split them into two different time frames. We have two time periods: "3quarter" is the average of the three quarters prior to the quarter, including the event date, and "same quarter" is the time period that contains the event date.

The primary dependent variable, *Suspicious Trading*, is defined as Abnormal Amihud. Amihud measure (Amihud 2002), is calculated as the absolute value of daily stock returns scaled by the daily dollar volume. This measure of informational asymmetry builds on the idea that market makers cannot distinguish between order flow that is generated by informed traders and that generated by noise traders; thus, market makers set prices that are an increasing function of the imbalance in the order flow, which may indicate informed trading (Kyle, 1985). The Amihud measure does not utilize detailed order flow information, but is positively and strongly related to

the microstructure estimate of Kyle's measure (Amihud, 2002; Brennan and Subrahmanyam, 1996), and it has been shown to perform well when compared to measures using intraday data (Goyenko et al., 2009). Greater values of Amihud indicate higher information asymmetry and more severe informed trading. Our second measure for shadow trading, labeled "*Abnormal Amihud*," is calculated as ([sample firm *i's* average daily Amihud before sample firm quarterly litigation announcement (day t-30 to t-1) divided by sample firm *i's* average daily Amihud for the year outside of *sample firms* litigation announcement windows] - 1). WPS measure, which can be interpreted as the dollar change in executive wealth given a 100-percentage point change in firm value, divided by annual flow compensation

The formula used to determine the WPS of company top executives (EX-WPS) and CEOs (CEO-WPS) is based on Execucomp and Compustat data. With the exception of the CEOs, we compute the sensitivities for all executives available in Execucomp for a specific firm, then take their averages for measuring CEO-WPS values using Edmans et al. (2009) approach. Using a modified Black-Scholes (1973) method that takes dividend payments into account, we first determine the delta of each option position held by the CEOs.

$$e^{-dt}N\left[\frac{\ln\left(\frac{S}{x}\right) + \left(r - d + \frac{\sigma^2}{2}\right)}{\sigma\sqrt{T}}\right]$$

N is the cumulative probability function for the normal distribution, d is the dividend yield expected (represented by the Execucomp variable bs yield), and r is the Volatility of stock returns (represented by the Execucomp variable bs volatility). In addition, r represents the risk-free interest rate, which is obtained by downloading data from Yahoo Finance and matching it with the date of the event. S represents the closing stock price (the Execucomp variable price), whereas X is the option exercise price. Depending on the option category, the time to maturity (T) is calculated differently. T is computed for newly granted options using the maturity date (i.e., the Execucomp variable exdate). Core and Guay (2002) recommend using a maturity one year less than newly granted options for non-exercisable options, whereas the maturity of exercisable options is assumed to be three years less than that of non-exercisable options. In the final step, the maturities of exercisable and unexercisable options are multiplied by 70% to account for the fact that executives typically exercise options before they reach maturity.

Next, the overall delta is calculated for each executive. Multiplying the delta values for each type of option grant (current year option awards, previously awarded unexercisable options, and previously granted exercisable options) by the number of shares of each type of grant and then adding the results. Total delta (delta total) represents the dollar change in wealth caused by a \$1 change in stock prices. The final step is to calculate WPS for a given executive.

$$WPS_{i,t} = \frac{\text{delta\_total}_{i,t} \times S}{\text{TDC}_{i,t}}$$

Where TDC1it is an Execucomp variable describing the total flow compensated from salaries, rewards, and additional grants of shares and options for executive I in company t, we calculate the WPS for every firm t once all firm executives have been paid. The resulting sensitivity represents the \$ change in executives' stock and option portfolios in response to a 1% fluctuation in stock prices, divided by their annual compensation.

We have divided company fundamentals into "same quarter" and "3 quarter" frames because we believe that the coefficient on the same quarter should significantly affect the Abnormal Amihud, as opposed to longer run-ups in the event window during the three quarters preceding the event window quarter.

In Table 4, we present the results of our primary regression, in which we attempt to depict the factors that drive the abnormal returns around the event window. As our dependent variable, we have Abnormal Amihud, which is calculated as the absolute value of daily stock returns multiplied by the daily dollar volume. This measure of informational asymmetry is based on the notion that market makers cannot distinguish between order flow generated by informed traders and that generated by noise traders. As a result, market makers set prices that are a growing function of the imbalance in order flow, which may indicate informed trading (Kyle, 1985). The Amihud measure does not utilize detailed order flow information, but it is positively and strongly related to the microstructure estimate of Kyle's measure (Amihud, 2002; Brennan and Subrahmanyam, 1996) and has been shown to perform well when compared to intraday data-based measures (Goyenko et al., 2009). The greater the value of Amihud, the greater the information asymmetry and the more intense the informed trading. ([target firm i's average daily Amihud before firm going under litigation (day t-30 to t-1) divided by target firm i's average daily Amihud for the three quarters outside of A's -30 days before the litigation announcement date) / target firm

i's average daily Amihud for the three quarters outside of A's -30 days before the litigation announcement date.

Examining the results of the regression, we find that WPS, our first independent variable, has a significant effect on Abnormal Amihud, indicating that informed trading increases when WPS increases. Comparability of WPS measurements across firms. Edmans et al. (2009) demonstrate that their scaled WPS measure is independent of firm size both theoretically and empirically. Traders may be motivated to purchase options or implement strategies in order to avoid anticipated relatively brief losses (we refer to this phenomenon as the hedging motive based on Edman et al. 2009). We demonstrate that WPS has a strong correlation with abnormal return predictability, and we believe this provides a strong basis for further investigation into whether suspicious pre-announcement trading can be attributed to WPS of top executives. This is seen as a strong argument in favour of hedging. But inside managers and executives aren't the only ones who could be trading suspiciously. Consultants, lawyers, and hedge funds are just a few of the many people who could be trading. We explain some suspicious trading and give a lot of real-world evidence to support a case for hedging that is based on incentives. The evidence does suggest that other people in the "insider circle" who know about the litigation announcement, like attorneys, auditors, advisors, and certain other employees, may be responsible for trading volumes on the options market. We argue that the relationship between WPS and suspicious trading stays the same even when a number of other possible explanations are taken into account. This supports the hedging argument.

Our other independent variables are directly related to the financial records of the companies undergoing litigation. We have used information gleaned from financial statements to create a link between firms that undergo litigation and informed trading. We have used financial statement items as the independent variable based on many previous studies that have found a significant relation between insider trading measures and the financial statements that predict informed trading or informational asymmetries. Skaife et al. (2013) find links between inaccuracies in financial reporting and the profitability of insider trading. Baiman et al. (1996) find that more accurate financial disclosure reduces the likelihood of manager insider trading profits and probability of insider trading.

We split the financial statement data into two parts: our first set of data contains the item of the financial statement from the same quarter in which the litigation announcement took place. We expect to have all the independent factors from financial statements to have a significant effect on the informed trading or Abnormal Amihud. On the basis of our limited research, we hesitate to conclude that when CEOs become aware of a litigation announcement, they alter the financial statements to make them appear more favorable or to conceal suspicious activity. There may be other reasons for these alterations. For instance, they may be related to changes in the book value or employee stock option grants on the balance sheet, or attempts to adhere to debt covenants, which they assume will be disrupted by market reaction to upcoming litigation announcements. This debt covenant maintenance is typically accomplished by polishing the numbers to their greatest advantage. In view of the association between Abnormal Amihud and independent variables, we have endeavor to present this preliminary study in order to pave the way for further, more in-depth research in the field.

Our other set of independent variables is from the three quarters occurring before the quarter containing the event window. We have used this selection of data to show that, most frequently, evidence of financial statements being altered occurs when executives are certain their firms will be undergoing litigation, and not before. Thus, there would be strong correlation between abnormal returns activity in the options market and financial statements data, during, and not before this period.

While our findings differ to some small degree from our predictions, they do make some intuitive sense and the differences can be easily explained. Our primary finding is that firm book-to-market values in the same quarter as the litigation announcement occurs are significantly correlated with Abnormal Amihud, suggesting that such values may be used to predict suspicious trading in the options market during the litigation announcement window. We do not find a significant correlation between the B/m variable and Abnormal Amihud in the prior three quarters. We hypothesize that other items in the same quarter financials (which includes the litigation announcement date) would correlate significantly with Abnormal Amihud, but we find no such correlation. We do find, interestingly, that the Abnormal Amihud has an effect on the firm leverage, not in the quarter that includes the litigation announcement date, but in the three quarters prior to the event. Also unexpected was the finding that Volatility did not significantly affect

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Abnormal Amihud in either the current quarter or the three prior quarters. It is possible (as is often the case in regression) that Volatility is significant on some other dependent variable but not on Abnormal Amihud, but we find this to be unlikely. Although previous event studies have shown a notable difference in the Volatility of options trading in the event window compared to outside of the event window and relative to comparable firms, we find no such difference in our current study.

The appendix contains information (output from SAS) on the tests for multicollinearity we use to test the endogeneity among the independent variables. Based on the characteristics of the variables, we expect the absence of significant endogeneity which makes our results all the more reliable.

In table 5, we break out the companies based on the companies that have gone undergone litigation for financial irregularities or accounting statement misrepresentation to see if there are any differences in independent variable coefficients that affect the dependent variable Abnormal Amihud performance. We use this criteria, because, as we have seen in the literature, when companies have undergone litigation for financial statement discrepancies, there is a pattern that is reflected in regression for these companies. Also, in the literature, we find that most financial companies that are undergoing litigation have some discrepancy reflected in their books and which was also a major reason for the litigation arising in the first place. The information gleaned from the literature details the factors and outcomes of securities class action proceedings against organizations and auditors from a financial reporting quality perspective.

Our study is inspired, to a considerable degree, by the critical role that regulation plays in safeguarding participant interests against managerial misdeeds. Litigation is, thus, a significant factor in determining the root causes of financial irregularities and discouraging future offenders. We expand on prior research that shows that poor quality financial reporting, as shown by earnings restatements, has been the main cause of class action lawsuits against companies and auditors. We also claim that items contained in these financial statements can predict abnormal trading activity patterns. Sari et al. (2020) examine and analyze the result of financial distress and growth opportunities on accounting conservatism with litigation risk as a moderating variable and find that the litigation risk is strengthened in companies that fall on the extreme end of accounting conservatism. Malm et al. (2023) find that firms that are under litigation have lower performing return on assets (ROA) and return on equity (ROE). Using ROA and ROE as proxies for operating

performance they have advanced knowledge of the substantial role of litigation in shaping corporate behavior by finding and emphasizing the negative relationship between legal risk and firm performance. Their results suggest that sued firms demonstrate lower performance as reflected in ROA and ROE.

Our results are aligned with our expectations confirming that firms undergoing litigation for financial reasons, more often than not, have some correlation between their books and the signaling of a discrepancy. We find a significant correlation between almost all the financial statement items that are independent variables in our study on the dependent variable called Abnormal Amihud. We interpret these results as having the capacity to signal the possibility of suspicious trading. In our results, we find a significant correlation among all the variables contained in the same quarter as the event of the litigation announcement. One surprising finding is that the correlation is more significant than expected in the previous three quarters. We highlight this result as a focus for further study. Our results help to support the literature on the factors that can predict suspicious trading in the options market.

Our last set of regressions (presented in table 6) investigates whether there is any difference between litigation lawsuits that have ended in court and those settled outside of court or dropped. We use this regression to see if there is a more significant or pronounced effect of independent variables on the dependent variable Abnormal Amihud in the case of companies whose lawsuits reach the courts. This question is important for a number of reasons related to the relative strength of the case. In some scenarios, the company believes that its case is strong that their chances of winning a favorable verdict are good. In others, the plaintiff is pressing for a favorable result We expect our results to show either a very significant correlation between independent variables and Abnormal Amihud or a very insignificant relation between these variables.

Our results indicate that there is a significant correlation between all independent variables from the same quarter and abnormal amihud. In addition to "WPS," we discovered that "Book to market value same quarter," "Leverage same quarter," "Return on Asset same quarter," and "Volatility same quarter" have a strong correlation with the variable for suspicious trading. This regression is performed using a dummy variable with the value '1' if the firm goes to court and '0' if the case is settled outside of court or is dropped. We examine multicollinearity with the aid of a

correlation matrix. In the regression model, we find that none of the variables have an endogeneity issue.

Conclusion

The equity options of companies that are soon to be involved in litigation tend to trade at abnormally high volumes prior to the initial litigation announcement date. Even after controlling for publicly available information and comparing to a sample of firms matched according to asset size, we find that abnormal trading volume is present across the lines of moneyness and the type of options being called or put. Our data supports the finding that well-informed private investors have been trading options based on the announcement of upcoming litigation dates. From the literature, we see that educated investors are more likely to participate in the options market than the stock market. According to the model developed by Easley et al. (1998b), a savvy investor will allocate time and resources between the stock and options markets in order to maximize expected returns while minimizing trading costs in the time period immediately before the event being studied. We also quantify the variables known to have a material impact on suspicious trading. Almost all of our pre-test hypotheses have been confirmed by our results, which we obtained using OLS regression. WPS was found to have a significant correlation with Abnormal Amihud, a trading variable that has been the subject of trading irregularities. Moreover, we discover that companies facing financial litigation are more likely to disclose factors from their financial statements that have a significant correlation with suspicious trading, and that these factors are significantly correlated when companies end up in the courts. Our study has important policy implications. The vast majority of regulatory (and academic) attention on insider trading has centered on executives who use private information to trade for their benefit. Our findings suggest a need for greater regulatory scrutiny and possibly for the development of additional disclosure requirements imposed on executives regarding their trading activity on their business partners and competitors. We believe additional research in this area can lead to pinpointing patterns of irregular options trading and further clarifying the relationship between wealth performance sensitivity (WPS) and suspicious trading.

In this study, we used multivariate dummy regressions to control for various aspects of litigation that may explain abnormal trading activity in the options markets, and to assess the predictability of independent variables surrounding suspicious trading. We find that financial statement variables play a more prominent and significant role in explaining suspicious pre-announcement trading when companies are litigated for financial reasons and the litigation proceeds to court. This lends considerable credibility to the justification for hedging. However, we

do not attribute all questionable trading to insiders such as managers and executives. Consultants, attorneys, and hedge funds are examples of additional potential participants. Our research has uncovered a number of salient factors that are both intuitively and evidentially linked to suspicious trading.

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Table 1, Panel A: Sued firm summary statistics

Year	# of Lawsuits	Petro-leum	Finance & Real Estate	Con-sumer Durables	Basic In-dustries	Food & Tobacco	Con-struction	Capital Goods	Trans-portation	Utilities	Textiles & Trade	Services	Leisure	% Severity
1996	69	8	4	4	8	9	5	2	3	4	9	7	6	0.20
1997	135	6	15	6	17	8	11	13	18	17	12	6	7	0.25
1998	103	9	16	14	11	7	13	1	14	11	2	6	0	0.29
1999	129	10	19	3	5	2	20	16	14	9	10	18	3	0.69
2000	176	13	26	2	24	3	11	14	25	2	15	21	20	0.64
2001	164	11	5	34	10	12	3	22	3	27	22	7	9	0.36
2002	227	31	19	31	29	11	24	13	26	2	17	10	16	0.81
2003	223	23	31	29	15	28	9	6	28	31	1	19	3	0.41
2004	238	8	36	1	29	33	12	13	44	17	26	0	19	0.71
2005	91	9	6	6	10	8	9	1	12	14	2	7	8	0.43
2006	123	15	13	3	2	17	6	13	12	20	4	15	4	0.35
2007	161	3	22	2	4	28	14	23	8	8	26	16	7	0.82
2008	189	2	50	3	9	5	26	21	21	25	10	8	1	0.83
2009	128	7	35	3	5	0	2	17	5	9	21	17	7	0.89
2010	167	28	27	8	24	17	15	22	2	2	3	21	1	0.52
2011	196	15	16	19	5	18	22	27	19	24	12	4	16	0.39
2012	160	22	11	6	18	29	2	10	2	25	17	5	13	0.30
2013	180	8	4	17	27	26	27	10	13	9	12	16	1	0.47
2014	113	1	19	11	0	7	12	12	12	14	6	10	9	0.11
2015	79	9	3	5	2	12	12	14	1	6	14	1	11	0.24
2016	105	10	13	19	6	8	6	13	13	4	4	9	1	0.48
Total	3157	247	389	225	259	287	260	282	294	279	244	222	161	

Notes: This table provides summary statistics for our sample of 3157 securities class action lawsuits filed between January 1996 and December 2016. We collect insider trading data from the Insider Filing Data Feed (IFDF) provided by Thomson Reuters. We delete all duplicate, amended, and inconsistent transactions as well as option exercises. We merge the insider trading data set with the litigation data set for the period between four quarters before and four quarters after the lawsuit filing. We report the number of companies belonging to each industry classification. We also define % severity based on the proportion of firms that were sued in a given year and for which the defendants' "motion to dismiss" was denied, resulting in court proceedings.

Table 1, Panel B: Descriptive statistics of the variables used in the regression

Variables	Mean	Median	Std.Dev.	Lower Quartile	Upper Quartile
Abnormal Amihud	0.08	0.06	0.28	-0.09	0.23
WPS	2.62	1.90	3.06	0.42	2.72
B/M same Quarter	2.37	1.71	2.97	1.05	2.84
Leverage Same Quarter	0.53	0.56	0.29	0.30	0.77
ROASame Quarter	1.23	1.33	12.02	0.00	6.38
Volatility Same Quarter	0.156	0.016	0.662	0.06	0.42
3 Quarter B/M	1.98	1.45	4.33	0.99	2.34
3 Quarter Leverage	0.18	0.13	0.20	0.02	0.28
3 Quarter ROA	0.04	0.39	3.20	0.00	3.65
3 Quarter Volatility	0.14	0.12	0.07	0.09	0.16

Notes: In this table we present the Mean, Median, Standard deviation, as well as the lower and upper quartile of all the independent as well as dependent variables used in the regression.

Table 2A: Abnormal trading in sued firms

Average daily volume	Put Options	Call Options
Panel A: Average daily volume		
Estimation Window	76.60	56.01
Event Window	110.37	80.27
Panel B: Average cumulative abnormal volume		
Event Period	44.19	31.86
P-value	0.00	0.00
Panel C: Average cumulative abnormal volume relative to average benchmark volume		
Event period	44.08%	43.30%

Notes: This table presents the volume data of firms under litigation segmented by the nature of options being Put and call we also present the P value for the significance relevance. In Panel A we show the volume of call and put options of firms under litigation during estimation and event window, in Panel B we show the Average cumulative abnormal volume during Event period and for significance, we have presented P values. In panel C we the percentage of the difference between average abnormal volume relative to the average benchmark volume.

Table 2B: Differences in option volume traded between sued firms and matched non-sued firms

	P-value						
	All	OTM	ATM	ITM	OTM-ATM	OTM-ITM	ATM-ITM
Put	0.46	0.16	0.84	0.61	0.96	0.89	0.98
Call	0.40	0.56	0.73	0.10	0.97	0.86	0.95

Notes: This table is used to present the difference in options volume traded between firms that are facing litigation announcements against them and firms that are matched against this sample. We have used the P-values to show the lack of Significance during estimation window in order to present the veracity of the matching procedure as well as no significant difference during estimation and significance only present durthe ing event window.

Table 3: Abnormal options trading volume (sued & matched non-sued firms)

	ALL	P-value	ITM	P-value	ATM	P-value	OTM	P-value	OTM-ATM	P-value	OTM-ITM	P-value	ATM-ITM	P-value
Panel A: Sued Firms														
Put	44.19	0.06	16.37	0.05	94.34	0.08	56.62	0.10	-37.72	0.09	40.25	0.18	77.97	0.11
Call	31.86	0.08	37.35	0.07	75.48	0.04	19.71	0.07	-55.78	0.02	-17.65	0.36	38.13	0.08
Panel B: Matching Firms														
Put	28.14	0.23	7.68	0.33	-80.68	0.13	41.75	0.22	-38.93	0.19	34.08	0.25	73.01	0.13
Call	18.65	0.29	25.94	0.20	61.66	0.10	8.53	0.55	-53.14	0.09	-17.41	0.36	35.72	0.11
Panel C: Differences														
Put	16.05	0.02	8.70	0.03	175.03	0.01	14.87	0.03	1.21	0.03	6.17	0.00	4.96	0.00
Call	13.21	0.02	11.41	0.03	13.82	0.02	11.18	0.06	-2.64	0.00	-0.23	0.00	2.41	0.00

Notes: This table presents average cumulative abnormal options trading volumes for our sample of rumored firms (Panel A) and their matched peers (Panel B) over an event window of (30,1) days relative to the Litigation publication date. Abnormal volume is computed using an event study approach, as discussed previously. Results stratified by moneyness (ITM = in the money, ATM = at the money, and OTM = out of the money) are based only on those options expiring after the litigation date (Columns (2)-(4)). Columns (5)-(7) report the results of t-tests for the differences in the cumulative average abnormal volumes between categories of moneyness during the estimation window. Control or matching firms are selected using a matching bandwagon range of 70% − 130% of several company-specific fundamental factors, such as sales, assets, etc. Panel C reports the results of t-tests of the differences in means of the cumulative average abnormal volumes between the firms facing litigation and control groups (i.e., the ' firms under scanner accused of illegal activities' mean minus 'the control or matching firms' mean). P-values are reported in red beside each column for their respective identifier.

Table 4: Regression results with the Abnormal Amihud measure as the dependent variable

Adjusted R Square	0.20							
Standard Error	1.74							
Observations	757.00							

	Coefficient	Standard Error	t Stat	P-value	Lower 95%	Upper 95%	Lower 95.0%	Upper 95.0%
Intercept	-1.02	1.23	-0.83	0.41	-3.43	1.40	-3.43	1.40
WPS	0.24	0.05	4.93	0.00	0.15	0.34	0.15	0.34
B/M same Quarter	0.03	0.01	3.14	0.00	0.01	0.05	0.01	0.05
Leverage Same Quarter	0.00	0.00	1.74	0.08	0.00	0.00	0.00	0.00
ROASame Quarter	-0.09	0.09	-0.92	0.36	-0.27	0.10	-0.27	0.10
Volatility Same Quarter	0.00	0.04	-0.06	0.95	-0.08	0.08	-0.08	0.08
3 Quarter B/M	-0.01	0.01	-0.47	0.64	-0.03	0.02	-0.03	0.02
3 Quarter Leverage	-0.01	0.00	-2.26	0.02	-0.01	0.00	-0.01	0.00
3 Quarter ROA	0.00	0.09	0.02	0.98	-0.17	0.18	-0.17	0.18
3 Quarterly Volatility	0.02	0.08	0.28	0.78	-0.14	0.19	-0.14	0.19

Note(s): we present in table 4 the regression of suspicious trading variable Abnormal Amihud as the dependent variable with several independent variables such as (WPS) wealth performance sensitivity of the executives, (B/M Same quarter) which presents the average value of the book to market of the firms in the same quarter containing the date of event in our case litigation announcement date (3 quarter B/M) is the variable that defines the average value of Book to market for 3 quarters prior to the quarter containing event. (Leverage Same quarter) which presents the value of leverage of litigations firms in the same quarter containing the date of event in our case litigation announcement date (3 quarter Leverage) is the variable that defines the average value of leverage for 3 quarters prior to the quarter containing event date. (ROA Same quarter) which presents the average value of Return on asset of the firms in the same quarter containing the date of event in our case litigation announcement date (3 quarter ROA) is the variable that defines the average value of Return on asset for 3 quarters prior to the quarter containing event. (Volatility Same quarter) which presents the average value of Volatility of firms options trading volume of the firms in the same quarter containing the date of event in our case litigation announcement date ((3 quarter Volatility) is the variable that defines the average value of Volatility of volumes of options traded for 3 quarters prior to the quarter containing event.

Table 5: Regression results with the Abnormal Amihud measure as the dependent variable and controlling for firms sued for financial reasons

Adjusted R Square	0.180307							
Standard Error	1.757399							
Observations	757							

	Coefficient	Standard Error	t Stat	P-value	Lower 95%	Upper 95%	Lower 95.0%	Upper 95.0%
Intercept	-1.81	1.18	-1.54	0.12	-4.13	0.50	-4.13	0.50
Litigation related to financials	0.07	0.13	0.62	0.54	-0.17	0.33	-0.17	0.33
WPS	0.09	0.03	3.33	0.00	0.04	0.15	0.04	0.15
B/M same Quarter	0.04	0.01	3.82	0.00	0.02	0.06	0.02	0.06
Leverage Same Quarter	0.00	0.00	1.44	0.15	0.00	0.00	0.00	0.00
ROASame Quarter	0.18	0.06	3.08	0.00	0.07	0.30	0.07	0.30
Volatility Same Quarter	-0.06	0.03	-1.84	0.07	-0.11	0.00	-0.11	0.00
3 Quarter B/M	0.00	0.01	-0.07	0.95	-0.03	0.02	-0.03	0.02
3 Quarter Leverage	-0.01	0.00	-2.27	0.02	-0.01	0.00	-0.01	0.00
3 Quarter ROA	0.05	0.09	0.58	0.56	-0.13	0.23	-0.13	0.23
3 Quarter Volatility	0.06	0.08	0.74	0.46	-0.10	0.22	-0.10	0.22

Notes: In this table, we have used the same variables as table 4 with an added dummy variable that describes if firms were sued for any of the following reasons. Discrepancy financials statements reporting, Financials in violation of GAAP. Improper reporting of subsidiaries income and unjustified uses of acquisition method of reporting subsidiaries, accounting errors by Auditors of the company, excessive optimism or conservatism in order to use cookie jar method of accounting for financial statement items requiring management discretion. These are some of the reasons among many along the same lines under which firms were sued for financial misreporting or financial fraudulent activities. The dummy variable is 1 if the lawsuits were for any of these reasons and 0 in all other cases.

Table 6: Regression results with the Abnormal Amihud measure as the dependent variable and controlling for litigation severity

Adjusted R Square	0.197267	
Standard Error	1.742464	
Observations	751	

	Coefficient	Standard Error	t Stat	P-value	Lower 95%	Upper 95%	Lower 95.0%	Upper 95.0%
Intercept	-1.00	1.24	-0.81	0.42	-3.43	1.43	-3.43	1.43
Severity	-0.16	0.13	-1.25	0.21	-0.41	0.09	-0.41	0.09
WPS	0.24	0.05	4.86	0.00	0.14	0.34	0.14	0.34
B/Same Quarter	0.03	0.01	3.11	0.00	0.01	0.05	0.01	0.05
Leverage Same Quarter	0.00	0.00	1.73	0.08	0.00	0.00	0.00	0.00
ROASame Quarter	-0.08	0.09	-0.89	0.08	-0.27	0.10	-0.27	0.10
Volatility Same Quarter	0.00	0.04	-0.05	0.06	-0.08	0.08	-0.08	0.08
3 Quarter B/M	-0.01	0.01	-0.38	0.70	-0.03	0.02	-0.03	0.02
3 Quarter Leverage	-0.01	0.00	-2.32	0.02	-0.01	0.00	-0.01	0.00
3 Quarter ROA	0.01	0.09	0.06	0.95	-0.17	0.18	-0.17	0.18
3 Quarter Volatility	0.02	0.08	0.29	0.77	-0.14	0.19	-0.14	0.19

Notes: In this table, we have used the same variables as table 4 with an added dummy variable that describes the severity of the lawsuit on the basis of if the lawsuits against firms Case Status Settled outside the Court, Dismissed by the Court, went to trial in the Court in front of a jury, lastly received a verdict or are pending cases. The dummy variable is 1 if the lawsuits had went to trial in the Court in front of a jury or received a verdict and 0 in all other cases.