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I.   INTRODUCTION

What is a "meritorious" securities fraud class action?   The only clear answer to this question is one that produces a judgment after trial. Trials, however, are virtually unheard of in this area; cases that are not dismissed are settled. A broader answer to the question is a case that produces a settlement instead of being dismissed. That answer is little better than the first, however, because defendants, anxious to avoid the distraction of litigation, high defense attorney fees, negative publicity surrounding a securities lawsuit, and the specter of potentially bankrupting damages, may be willing to pay a "nuisance" settlement to make the case go away, even when they perceive the plaintiffs likelihood of succeeding at trial as rather low (Pritchard 1999). As a policy matter, if we could screen out suits filed for their nuisance value, while leaving unobstructed suits with substantial evidence of merit, the litigation process would be unambiguously improved. Unfortunately, the difficulty of assessing merit without a judgment makes it impossible to measure precisely the proportion of nuisance settlements to settlements based on the strength of the claims.

Notwithstanding the difficulties inherent in assessing merit in securities fraud class actions, Congress accepted the argument that plaintiffs' attorneys were filing large numbers of claims without substantial evidence of fraud in an effort to "extort" nuisance settlements from defendants. To discourage such "frivolous" litigation, Congress enacted the Private Securities Litigation Reform Act ("PSLRA") in 1995. The PSRLA includes a number of procedural provisions intended to screen out weaker claims early in the litigation process and thereby reduce the costs of defending non-meritorious litigation. The goal of the legislation is to make settlement negotiations turn more on the strength of the evidence of fraud and less on the defense costs to be avoided by settlement. These procedural barriers have resulted in a higher percentage

of securities fraud class actions being dismissed (Foster et al., 2000). The number of suits being filed, however, has not declined. After an initial dip, the number of securities fraud class actions has returned to, and even exceeded in some years, its pre-PSLRA level. (Foster et al., 2005). The larger number of filings suggests that the PSLRA may have done little to discourage the filing of frivolous suits, although it may have increased their likelihood of dismissal.

A contrary view, however, is that the incidence of fraud may have increased even faster than the increase in class action filings. All else equal, the procedural barriers of the PSLRA likely raised the cost to plaintiffs' attorneys to pursue a class action and reduced the expected outcome from litigation. If this view is correct, the barriers erected by the PSLRA may be discouraging not only frivolous litigation, but also litigation that would have been deemed meritorious under the pre-PSLRA standards.

Our study is the first to measure the magnitude of this screening effect. We collect two samples of securities class actions involving allegations of secondary market fraud – one from 1991 to 1995 (pre-PSLRA), and one from 1996-2000 (post-PSLRA). Each sued firm is matched with a firm from the same industry and time period that was not sued. The matching procedure allows us to construct a litigation prediction model for each period based on the firms' characteristics, including market capitalization, share turnover, minimum stock price drop, accounting restatements, insider trading, earnings forecasts, and a variety of governance factors.

We apply our post-PSLRA litigation prediction model to the pre-PSLRA sample. By comparing the model's predictions with the actual incidence of suit, we can identify which firms would have been sued (or not sued) had the PSLRA's provisions been in effect during the 1991 to 1995 period. The firms that the PSLRA model predicts should not have been sued but in fact were sued and paid a non-nuisance settlement in the pre-PSLRA period provide a measure of the

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screening effect of the PSLRA. Our screening analysis allows us to provide evidence on the proportion of firms that proved a profitable target for a securities class action in the pre-PSLRA period but not so in the post-PSLRA period.

The screening may not all occur at the time the decision to file is made; additional screening may be done during the litigation process. Accordingly, we conduct a similar analysis using a settlements model, allowing us to identify firms that paid a settlement greater than nuisance value in the pre-PSLRA period, but likely would not have done so had the PSLRA been in effect at the time.

Taken together, our results suggest that the PSLRA has had a screening effect; a substantial percentage of suits that would have resulted in a non-nuisance settlement prior to the PSLRA would not have been filed after Congress adopted the PSLRA, and even if filed, would be less likely to produce a non-nuisance settlement. The screening effect is not observable, however, if we consider cases with "hard evidence" of securities fraud – a restatement of earnings or revenues or an investigation by the SEC – or abnormal insider trading.

We also find evidence of a different sort of screening effect that Congress would presumably favor – a nuisance suit effect. Applying the post-PSLRA filing model to lawsuits that settled for nuisance value pre-PSLRA, we find that significantly fewer of these suits would have been filed post-PSLRA. Finally, there is evidence of a significant nuisance suit effect for suits based on earnings warnings. These results suggest fewer unwarranted suits against companies.

The paper proceeds as follows. Section II provides institutional background on the PSLRA and discusses related research. Section III develops our hypotheses. Section IV

describes the sample selection procedure and data collected. Section V presents our results. Section VI concludes the paper with a summary and discussion of our major findings.

II.   BACKGROUND

The Private Securities Litigation Reform Act

After extensive hearings, Congress concluded in 1995 that the potentially enormous damages in securities fraud class actions were encouraging frivolous "strike" suits. (H.R. Rep., 1995; S. Rep., 1995). To check these perceived abuses, Congress enacted the PSLRA into law on December 22, 1995. The PSLRA contains a number of new hurdles for plaintiffs filing securities fraud complaints. Perhaps most daunting of these hurdles is the PSLRA's safe harbor for the voluntary disclosure of financial projections and other forward-looking information.[1] To qualify for safe harbor protection, the statements must be identified as forward-looking and be accompanied by "meaningful" cautionary language discussing important factors that could cause actual results to differ from those projected. In the absence of an appropriate disclaimer, the plaintiff must still prove that the statements were made with actual knowledge that they were false or misleading.

A more pervasive barrier to weak claims is the PSLRA's stringent pleading standard, which makes it more difficult for plaintiffs to allege securities fraud without specific evidence of misconduct.[2] Plaintiffs must specify in their complaint each statement alleged to have been misleading and the reasons why the statement is misleading. In addition, plaintiffs must state with particularity facts giving rise to a "strong inference" that the defendant acted with "the required state of mind," i.e., with fraudulent intent.

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[1] See Section 21E, Exchange Act.
[2] Section 21D(b)(2), Exchange Act.

Screening Effect

Both the forward-looking safe harbor and the pleading standard are reinforced by the PSLRA's discovery stay, preventing plaintiffs from conducting discovery while a motion to dismiss is pending.[3] This provision is intended to prevent plaintiffs from engaging in a "fishing expedition" for evidence to build their case, which, it is frequently argued, causes defendants to settle dubious claims simply to avoid the high cost of discovery. Without discovery until after the motion to dismiss has been decided, however, plaintiffs' attorneys face a higher cost in determining the presence of specific misleading statements and omissions and the materiality of such misstatements and omissions. Moreover, plaintiffs face a difficult time in gathering facts related to the state of mind of the defendants, which the PSLRA's pleading standard makes a critical question in resolving the motion to dismiss.

In addition, the PSLRA requires courts to review a securities fraud class action after the "final adjudication" and impose sanctions (including the defendants' attorney's fees) if the court determines that the lawsuit was frivolous.[4] For those suits that lead to a settlement, courts must review attorneys' fees to ensure that they are "reasonable," potentially reducing the expected return to plaintiffs' attorneys for any given settlement or judgment amount.[5] Greater court scrutiny of both the merits of the complaint as well as the reasonableness of attorneys' fees lowers the expected return to plaintiffs' attorneys from bringing a class action. Finally, the PSLRA imposes proportionate liability on defendants of a Rule 10b-5 action, relieving less culpable parties (such as auditors and outside directors) of a portion of the total liability.[6] This may reduce the funds available for settlement, thus also reducing potential returns from filing suit.

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[3] See Section 21D(b)(3)(B), Exchange Act.
[4] See Section 21D(c), Exchange Act.
[5] See Section 21D(a)(6), Exchange Act.
[6] Section 21D(f), Exchange Act.

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Related Literature

The earliest work in this area focuses on the market's reaction to the PSLRA. Spiess and Tkac (1997) and Johnson, Kasznik, and Nelson (2000) document that, on average, the PSLRA was wealth-increasing for stockholders. Specifically, there was a significant negative market reaction to news releases indicating that President Clinton would veto the legislation, followed by a significant positive reaction to the veto override.[7] Moreover, the market response is increasing in firms' overall risk of litigation, but decreasing in the incremental probability of being sued for fraud (Johnson, Kasznik, and Nelson 2000). Also consistent with this evidence, Johnson, Nelson, and Pritchard (2000) find an overall positive market reaction to a related event, a Ninth Circuit court decision adopting a particularly stringent interpretation of the PSLRA's pleading standard. The reaction is particularly strong for firms headquartered in the Ninth Circuit and those at greatest risk of being sued in a securities class action. Taken together, this evidence suggests that shareholders viewed the PSLRA's restrictions on securities litigation to be beneficial.

Other studies focus more directly on the effect of the PSLRA on litigation. Studies describing the frequency of lawsuit filings and the type of allegations show that lawsuit filings initially declined under the PSLRA, but subsequently recovered to pre-PSLRA levels (Grundfest and Perino 1997; PricewaterhouseCoopers 2000; Perino 2003).[8] In addition, allegations of accounting irregularities and insider trading increased, while cases based on allegations of false forecasts decreased.

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[7] Ali and Kallapur (2001), however, argue that the positive abnormal return at the time of the PSLRA's enactment is more likely a response to the presidential veto rather than the override, and thus shareholders considered the PSLRA to be harmful.

[8] Most of the decline appears to be due to plaintiffs shifting venue to state courts to avoid the PSLRA. However, the Securities Litigation Uniform Standards Act was passed on November 3, 1998, effectively closing this loophole.

Screening Effect

Pritchard and Sale (2005) study how judges in the Second and Ninth Circuit apply the PSLRA to resolve motions to dismiss securities fraud complaints. They find that complaints are significantly more likely to be dismissed in the Ninth Circuit. They also find that allegations of insider trading in complaints correlate with dismissal in both circuits, but that the circuits vary in their approaches to allegations of accounting violations and false-forward looking statements. Their study is limited, however, to the allegations made in the complaints and they do not compare the pre-and post-PSLRA periods. Beatty, Drake and Hogan (2001) find that the risk of litigation in connection with an IPO declined significantly following the enactment of the PSLRA, but they do not provide evidence on the determinants of those filings. Finally, Bajaj, Mazumdar and Sarin (2003) find that although mean settlements increased after the passage of the PSLRA, investors recovered a smaller percentage of potential losses. They do not, however, compare systematically whether the determinants of those settlements have changed with the adoption of the PSLRA.

Two prior studies relate most directly to this one. Johnson, Nelson, and Pritchard (JNP) (2007) analyze whether merit-related factors matter more in the post-PSLRA period. They find that certain indicia of fraud, such as accounting restatements, are more significant in explaining the incidence and outcome of suits filed after the PSLRA relative to suits filed before the Act. They also find that forward-looking statements are less significant in explaining the incidence and outcome of suits post-PSLRA.[9] That paper, however, does not address the related question of whether the PSRLA has screened out claims that would have been deemed meritorious under pre-PSLRA standards. Choi (2007) examines this question in connection with firms making

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[9] Johnson et al. (2001) examine whether firms changed their disclosure policies in response to the safe harbor. They find a significant increase in the frequency of firms issuing forecasts and the number of forecasts issued in the first year following enactment of the PSLRA, and that the change in disclosure is increasing in firms' ex ante risk of litigation. Although this evidence suggests that managers believe the safe harbor reduced legal exposure, Johnson et al. (2001) do not examine the relation between disclosure and litigation in the post-PSLRA period.

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initial public offerings. He finds that companies engaged in smaller offerings or with a lower secondary market volume (and therefore reduced potential damage awards) are significantly less likely to find themselves the target of a securities class action in the post-PSLRA period. He also provides evidence that the pre-PSLRA non-nuisance claims lacking obvious hard evidence indicia of fraud (an accounting restatement or SEC action) would have faced a lower probability of suit and a greater likelihood of receiving a dismissal or low-value settlement in the post-PSLRA period. He posits that the PSLRA caused plaintiffs' attorneys to shift their attention to the subset of fraud cases where the presence of hard evidence made it easier for such attorneys to meet enhanced pleading requirements under the PSLRA absent discovery.

Choi (2007) limits his study, however, to lawsuits arising out of initial public offerings. The primary liability exposure for IPO firms is under the main Securities Act antifraud provision, § 11. Only part of the PSLRA applies to Securities Act claims. Although plaintiffs must show the presence of a materially misleading statement or omission, § 11 does not require that plaintiffs plead scienter on the part of defendants. Thus, the central provision of the PSLRA's pleading standard does not apply to Securities Act claims. Moreover, the safe harbor for forward-looking statements does not shelter statements made by IPO firms. Therefore, a comprehensive evaluation of the screening effect of the PSLRA requires the study of open-market fraud claims litigated under Rule 10b-5, were Congress's principal focus in enacting the PSLRA. These claims are also considerably more common that § 11 claims.

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III.   RESEARCH HYPOTHESES

Nuisance Claims

It is widely agreed that the PSLRA has made it more difficult to file a securities fraud complaint that can withstand a motion to dismiss. Given the higher bar erected by the PSLRA, we posit that suits resulting in dismissal or nuisance settlement before the enactment of the law will be less likely to be filed post-PSLRA. These higher standards, however, may have screened out some of the wheat with the chaff. Accordingly, we focus our tests on whether the PSLRA's higher standards mean that some suits which resulted in a non-trivial settlement prior to the PSLRA will not be filed under the new regime.[10]

> **Hypothesis 1A (Nuisance Claims)**
> Plaintiffs' attorneys are less likely post-PSLRA to file suits that would have resulted in dismissal or a low value settlement pre-PSLRA.
> **Hypothesis 1B (Non-Nuisance Claims)**
> Plaintiffs' attorneys are less likely post-PSLRA to file suits that would have resulted in a high value settlement pre-PSLRA.

Hard Evidence

The impact of the PSLRA in raising the costs for pursuing meritorious actions may not be uniform. Some potential cases will have pre-filing hard evidence of fraud, increasing the probability of recovery, in some cases making recovery essentially a foregone conclusion. Hard evidence of fraud facilitates the ability of plaintiff attorneys' to meet the various PSLRA-imposed requirements, including the heightened pleading requirements at the motion to dismiss stage for Rule 10b-5 actions (before any discovery has taken place). Therefore, hard evidence increases the probability of recovery, and holding the stakes available constant, increases the expected value of filing suit.

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[10] All hypotheses are stated in alternative form.

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To have an objective measure of hard evidence, we define pre-filing hard evidence as a public announcement prior to the filing of suit of an accounting restatement (or an inquiry that is expected to lead to a restatement) or an SEC investigation or enforcement action. A key element of any securities fraud claim is a material misstatement or omission. Some of the strongest evidence to satisfy this requirement available to plaintiffs' lawyers is a violation of generally accepted accounting principles (GAAP) that results in an earnings restatement. A restatement is not required unless there has been a material misstatement. Moreover, given the importance that investors place on earnings in valuing a company's stock, a restatement of earnings is likely to correlate with large expected damages.

The existence of an SEC investigation does not establish any element of the plaintiff's claim, but it does suggest a substantial likelihood of fraud. The SEC has limited resources, but many instances of fraudulent conduct it can pursue. One plausible theory of the SEC's enforcement strategy is that the strength of the available evidence of fraud is one important factor (among others) guiding the agency's enforcement decisions. The more egregious the fraud, the easier the case is to prove. On this theory, an SEC enforcement action signals to plaintiffs' lawyers a high probability of recovery.

Conversely, we predict that the PSLRA discourages litigation that would have been deemed non-nuisance under pre-PSLRA standards, but lacks pre-filing hard evidence of fraud. The absence of an announcement of an accounting restatement or SEC investigation prior to the filing of suit does not mean that a suit is without merit. Misstatements unrelated to financial results are equally actionable, and given that the SEC has finite enforcement resources, many instances of fraud may escape SEC investigation. Prior to the PSLRA, the discovery process allowed plaintiffs' attorneys to obtain evidence of the fraud from the defendants to aid in drafting

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an adequate complaint. Congress adopted the PSLRA's discovery stay provision to discourage "fishing expedition" discovery, but it may also have discouraged meritorious suits for which evidence was not publicly available. Thus, plaintiffs' attorneys may also react to the PSLRA differentially based on whether there exists hard evidence of fraud prior to the filing of suit.

> **Hypothesis 2 (Hard Evidence)**
> Plaintiffs' attorneys are less likely post-PSLRA to file suits that would have resulted in a high value settlement pre-PSLRA without pre-filing hard evidence of fraud.

Insider Trading

Insider trading contemporaneous with the alleged fraud can be used to show that the defendants acted with the requisite scienter to meet the PSLRA's pleading standard. With certain exceptions, insiders must publicly disclose their trades in Form 4 filings with the SEC. In these respects, insider trading provides an alternative to the hard evidence provided by SEC investigations and accounting restatements for plaintiffs' lawyers seeking to draft a complaint that will withstand a motion to dismiss.

Insider trading differs from those types of hard evidence, however, because it offers less clear cut support to a claim of fraud. Insider sales are quite common in many industries due to the prevalence of compensation schemes relying heavily on options. Pritchard and Sale (2005) show that, relative to other complaints, complaints alleging insider trading are more likely to be dismissed, suggesting that plaintiffs' attorneys have been somewhat scattershot with their allegations of insider trading. The doctrinal explanation for the higher dismissal rates related to insider trading based complaints is that courts hold that insider trading must be unusual in amount or timing to support an inference that the defendant acted with fraudulent intent. Given the generally high incidence of insider trading allegations post-PSLRA, we posit that claims lacking

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evidence of *abnormal* selling by insiders are less likely to be filed post-PSLRA, if they also lack hard evidence of fraud.

> **Hypothesis 3 (Abnormal Insider Trading)**
> Plaintiffs' attorneys are less likely post-PSLRA to file suits that would have resulted in a high value settlement pre-PSLRA without evidence of abnormal insider trading or hard evidence of fraud.

Earnings Warnings

In enacting the PSLRA, Congress expressed concern that companies failing to meet earnings expectations were vulnerable to securities fraud class actions. A failure to meet expectations, with the inevitable drop in the stock price, triggered a search by plaintiffs' attorneys for a prior optimistic statement that could now be alleged to be fraudulent. Fear of liability exposure, it was argued, discouraged firms from making earnings forecasts, despite the importance of such disclosures to the pricing of securities. Congress addressed this concern with a forward-looking safe harbor, which makes it more difficult to bring fraud claims based on projections. Consequently, courts subject these statements to more exacting scrutiny than other general allegations of misleading statements or omissions. In effect, Congress raised the standard for what counts as "meritorious" for a class of claims that legislators suspected had a very low correlation with fraud. This more stringent definition of merit may have discouraged plaintiffs' claims triggered by the failure to meet earnings expectations. On the other hand, it costs little to include a forward-looking allegation in a complaint that also includes allegations based on hard evidence of fraud or abnormal insider trading. JNP present evidence of only a slight decline in forecasting allegations, but they note a sharp drop in the incidence of stand-alone forecasting allegations, i.e., unaccompanied by an accounting allegation or an insider trading allegation.

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Hypothesis 4 (Earnings Warnings)
Plaintiffs' attorneys are less likely post-PSLRA to file suits that would have resulted in a high value settlement pre-PSLRA based on a failure to meet earnings forecasts without evidence of abnormal insider trading or hard evidence of fraud.

Outcomes

The filing of claims by plaintiffs' attorneys presumably is informed by their expectations regarding the outcomes of those cases. Given the barriers erected by the PSLRA, claims lacking hard evidence or evidence of abnormal insider trading may be more likely to be dismissed or settled for negligible amounts. Moreover, suits triggered by earnings warnings lacking hard evidence or abnormal insider trading are also more likely to be dismissed or settled on the cheap.

Hypothesis 5A (Hard Evidence Outcomes)
Suits lacking hard evidence of fraud that received a non-nuisance outcome pre-PSLRA are more likely to receive a dismissal or low value settlement post-PSLRA.

Hypothesis 5B (Abnormal Insider Trading Outcomes)
Suits lacking evidence of abnormal insider trading or hard evidence of fraud that received a non-nuisance outcome pre-PSLRA are more likely to receive a dismissal or low value settlement post-PSLRA.

Hypothesis 5C (Earnings Warning Outcomes):
Suits triggered by earning warnings without evidence of abnormal insider trading or hard evidence of fraud that received a non-nuisance outcome pre-PSLRA are more likely to receive a dismissal or low value settlement post-PSLRA.

IV.   SAMPLE SELECTION AND DATA

Sample

The first portion of our sample, drawn from JNP, consists of firms in the computer hardware (SIC codes 3570-3577) and computer software (SIC codes 7370-7379) industries during 1991-2000. The high technology sector has been the most common target for class actions both before and after the PSLRA, unlike other sectors where the incidence of litigation has

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fluctuated over time for reasons unrelated to passage of the PSLRA.[11] In order to broaden the generalizability of our findings, we include an equal number of firms randomly selected from other (non-financial services) industries.

Data

We use the Securities Class Action Alert to identify firms sued in securities fraud class actions in the pre-PSLRA period (1991-1995), and the Stanford Securities Class Action Clearinghouse to identify firms sued in the post-PSLRA period (1996-2000). Data from these sources, along with disclosures in firms' periodic SEC filings, discussions of cases in judicial opinions, websites of various claims administrators, and data provided by PricewaterhouseCoopers, were used to identify the date the lawsuit was filed, the class period, and the lawsuit outcome.

Market and accounting data were obtained from the CRSP and Compustat tapes. Data on accounting restatements and voluntary management earnings forecasts were obtained from a Lexis search of news stories as well as the company's periodic filings with the SEC. Insider trading data were obtained from Thomson Financial. Finally, information regarding corporate governance structure was obtained from firms' last proxy statement prior to the beginning of the class period, if available; if not, the first available proxy after the beginning of the class period was used.

Descriptive Statistics

As shown in Table 1, Panel A, our lawsuit sample consists of 219 firms with the requisite data, 98 of which were sued pre-PSLRA and 121 post-PSLRA. As in JNP, the proportion of lawsuits alleging accounting fraud and insider trading rises sharply after the PSLRA, while the

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[11] For example, litigation against finance companies declined significantly in the post-PSLRA period due to the end of the savings and loan crisis and an associated reduction in loan loss reserve litigation (Grundfest and Perino 1997).

percentage of suits alleging false forecasts declines, although not as precipitously. These trends are consistent with plaintiffs' lawyers relying more on objective evidence to support their claims of fraud and the forward-looking safe harbor discouraging, to some extent, the filing of allegations based on forecasts.

Table 1, Panel B summarizes the outcomes of these suits. Mean settlements values are nearly double post-PSLRA, although this trend appears to be driven by a few large settlements, as the median is essentially unchanged from the pre-PSLRA period. Another notable difference is the increase in suits dismissed, from 20% pre-PSLRA to nearly 32% post-PSLRA.

To examine factors associated with lawsuit filings, we construct a control sample by matching each lawsuit firm with a firm from the same industry that was not sued, but which experienced a similar one-day stock price decline during the sued firm's class period.[12] Losses suffered by investors are a critical element in determining damages, and thus a stock price decline is a necessary, but not sufficient, condition for litigation. Plaintiffs' attorneys use price declines as an initial screen in selecting which firms to sue. Not all of these firms are sued, however, as plaintiffs' attorneys search for other factors useful in establishing liability, such as those discussed in the preceding section, that suggest a lawsuit has sufficient probability of recovery.

In Table 2 we compare the pre- and post-PSLRA samples. Our variable, *Restatement*, is an indicator equal to one if the firm restated class period earnings.[13] This variable is significantly higher for the post-PSLRA firms, with 19% restating earnings versus only 7% pre-PSLRA. Of greater use to plaintiffs' attorneys are restatements disclosed prior to lawsuit filing (*Prefiling Restatement).* Fifteen percent of the post-PSLRA firms had prefiling restatements,

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[12] For a small number of firms we had difficulty finding matches with all other data items available. For these firms, we extended the search for a match with a similar price drop up to three months after the end of the class period.

[13] All variables are defined in the Appendix.

relative to only 5% pre-PSLRA. Taken together, both variables suggest that restatements are considerably more prevalent post-PSLRA.

A smaller percentage of firms were subject to SEC investigations, but again the percentage is higher post-PSLRA, 13% relative to 9% (although the difference is not significant at conventional levels). Given the long time frame for many SEC investigations, it is not surprising to find that only 1.5% of the sued firms had prefiling SEC investigations pre-PSLRA and only 4.5% post-PSLRA.

We create a third set of indicator variables, *Hard Evidence* and *Prefiling Hard Evidence*, set to one if the firm had either a restatement or an SEC investigation. Both versions of this indicator variable are significantly greater in the post-PSLRA period. The PSLRA required that plaintiffs plead with particularity facts giving rise to a strong inference that the defendants' had the requisite scienter for Rule 10b-5 liability. Public restatements or announcements of an SEC investigation or enforcement action that occurred prior to the filing of a lawsuit (as indicated in the *Prefiling Hard Evidence* variable) provide plaintiffs a "smoking gun" at which to point in meeting the heightened pleading requirements of the PSLRA and thereby avoid an early dismissal.

Following JNP (2007), we measure our insider trading variable, *Abnormal Insider Trading*, as the difference between the net amount of shares traded (in millions) by directors and officers during the class period and the net amount of shares traded by directors and officers during an equal number of days preceding the start of the class period. For example, if the class period is 120 days, we subtract the net amount of insider shares traded during the 120 days prior to the start of the class period from the net amount of insider shares traded during the class period. A negative (positive) value for these variables indicates net sales (purchases). We find

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Screening Effect

that *Abnormal Insider Trading* is more negative in the post-PSLRA period (significant at the .06 level).

We utilize three indicator variables to capture firms' forward-looking disclosures. First, voluntarily warning of bad earnings news can cause a sudden stock price drop that attracts the attention of the plaintiffs' bar (e.g., Francis et al., 1994; Skinner, 1997). Thus, the variable *Earnings Warning* is equal to one if the firm issued a bad news earnings forecast on either the last day of the class period or the day with the most negative stock return during the class period.[14] Second, firms may attempt to avoid litigation by managing expectations downward. Thus, the variable *Negative Forecast* is equal to one if the firm issues an unfavorable earnings projection at any point during the class period other than on the last day or the minimum return date. Finally, forecasting good earnings news leaves the firm vulnerable to litigation if the projections are not realized. Thus, the variable, *Positive Forecast*, is equal to one if the firm issues an optimistic earnings forecast during the class period. None of these three variables are statistically significantly different between the two periods.

We also consider the role of corporate governance in securities litigation. Although weak governance does not provide direct evidence of fraud, several studies document that weak governance is associated with enforcement actions by the SEC (e.g., Beasley 1996; Dechow et al. 1996). Thus, our analysis includes the following governance variables: (i) *Avg. Tenure*, the average number of years outside directors have served on the Board, (ii) *Busy*, the average number of other directorships held by outside directors, (iii) *Independent*, the percentage of outside directors, (iv) *Audit Meetings*, the number of meetings held by the firm's audit committee, and (v) *Independent Audit*, the percentage of independent directors on the audit

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[14] Our definition of the class period includes one trading day following the end of the class period specified in the lawsuit. This is because the revelation of potential fraud that triggers the suit may occur after the market closed, resulting in a negative market reaction the following trading day.

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committee. Only one of the governance variables, *Independent Audit*, is significantly different between the pre- and post-PSLRA periods, with audit committees more independent after the PSLRA.

Prior research indicates that the market value of equity (*MarketCap*) and share turnover (*Turnover*) – both factors in the determination of potential damages – are positively associated with the incidence of lawsuits (e.g., Francis et al. 1994; Jones and Weingram 1996a; JNP). The results in Table 2 indicate that there is no statistical difference in firm size between the pre- and post-PSLRA periods, although share turnover is significantly higher post-PSLRA. Finally, Table 2 reports descriptive statistics for the minimum one-day return (*Min. Return*) during the class period.[15] The results reveal that *Min. Return* is significantly more negative in the post-PSLRA period.

Table 3 compares the lawsuit firms with the control sample. In the pre-PSLRA period (Panel A), lawsuits firms are significantly more likely to have a restatement or an SEC investigation, but the difference is not significant for either of the prefiling versions of those variables. The same pattern holds for *Hard Evidence* and *Prefiling Hard Evidence*. In the post-PSLRA period (Panel B), the sued firms once again have more restatements, SEC investigations, and *Hard Evidence*, but the differences are significant both overall and prefiling. For our abnormal insider trading variable, we find no significant differences between the sued firms and the control firms in the pre-PSLRA period. Post-PSLRA, however, sued firm insiders are significantly greater net sellers. For the forecasting variables, we find that sued firms are significantly more likely to make positive forecasts and to have had an earnings warning at the

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[15] For most of the sued firms, the minimum return occurs on the day the bad news giving rise to the lawsuit is revealed, which is typically the last day of the class period or the day after.

end of the class period. These relations hold for both periods. We find no difference between the two sub-samples for the *Negative Forecast* variable.

Turning to the governance variables, we find no significant differences between the sued firms and the control sample pre-PSLRA. Post-PSLRA, we find significant differences between the sued firms and control firms for all of the governance variables except for *Avg. Tenure*, but the difference in three of the four variables are opposite of the predicted direction. Sued firms have more independent boards and more independent audit committees which meet more frequently. The outside board members of the sued firms do, however, sit on more boards than their counterparts on the boards of the firms in the control sample. Overall, these differences suggest that our sued firms may have recognized that they were in need of more intensive monitoring, but that more intensive monitoring was not sufficient to protect them from suit. The governance variables, however, correlate fairly highly with firm size, so these differences may simply reflect plaintiffs' lawyers preference for suing larger firms. Finally, our three measures relating to damages, *Market Cap.*, *Turnover*, and *Min. Return*, are all significantly greater for the sued firms, as predicted. This relation holds for both periods.

V.   RESULTS

Screening of Lawsuit Filings

Has the PSLRA had the effect of excluding cases that would have been brought under the pre-PSLRA regime? Of course, we would expect to find some cases excluded if the PSLRA is working as Congress intended – Congress explicitly intended to discourage "nuisance" litigation. If such frivolous litigation existed prior to the PSLRA, a finding that it continued to be brought after the enactment of the PSLRA would suggest that the PSLRA was a failure. Congress

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claimed, however, that it did not want to discourage "meritorious" litigation in enacting the PSLRA. Screening frivolous litigation without discouraging meritorious litigation would be a neat trick, the policy equivalent of a free lunch. Has Congress provided courts with the tools to achieve it in the PSLRA?

We cannot measure directly the frivolous litigation that the PSLRA discouraged; cases not brought leave no paper trail. We can, however, ask whether the PSLRA has discouraged litigation that would have been deemed meritorious pre-PSLRA, as well as litigation that would have been deemed frivolous. This inquiry requires a definition of merit. For purposes of our analysis, we use settlements that are over 0.5% of market capitalization as a proxy for non-nuisance suits.[16]

To test whether *non-nuisance* suits lacking pre-filing hard evidence were less likely to be brought after the enactment of the PSLRA, we examine how non-nuisance suits in the *pre-PSLRA* period would have done in the *post-PSLRA* period using the following methodology:

1. Non-nuisance suits filed in the pre-PSLRA period and their corresponding matched firms are identified based on receiving a settlement of at least 0.5% of market capitalization (termed the "reference" sample).

2. A logit model for the decision to file suit is estimated solely for the post-PSLRA period.

3. The estimated logit model is used to generate *predicted* probabilities of suit in the post-PSLRA period for subsamples of firms drawn from the pre-PSLRA reference sample.

Table 4 presents the results of the logit model for the post-PSLRA period (step 2 in the above methodology).[17] Both *Prefiling Hard Evidence* and *Abnormal Insider Trading* are

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[16] This proxy for a non-nuisance suit is from JNP (2007).
[17] Following JNP, we also perform a multinomial logistic regression examining determinants of lawsuit filings. Multinomial logit is an extension of the binary logit model to multiple choices. The procedure estimates the

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significant determinants of suit post-PSLRA. Earnings warnings are also an important determinant of lawsuits. *Positive Forecast* and *Negative Forecast*, however, are both insignificant. Examining our control variables, none of the coefficients on the governance variables are statistically significant, but our three damages variables (*Market Cap.*, *Turnover*, and *Min. Return*), are all significant. Plaintiffs' attorneys may be adjusting to a greater likelihood of dismissal (i.e., a lower probability of recovery), by requiring a greater amount of potential damages, thereby maintaining the expected value of filing. Finally, our control variable for the high-technology firms from the JNP dataset, *Hitech*, is insignificant.

Table 5 reports the results of the third step of our screening methodology, comparing the actual fraction of the reference sample sued in the pre-PSLRA period with the fraction that the post-PSRLA logit model predicts would be sued. Not surprisingly, Panel A shows a significant nuisance suit effect. The actual fraction of nuisance suits is 50% pre-PSLRA; our prediction model suggests that only 41% of these firms would have been sued under the PSLRA regime. These suits, of course, are the ones that Congress sought to deter by adopting the PSRLA, so the law is to some extent working as intended. We also find, however, an even more substantial screening effect for *non-nuisance* suits. Here the actual fraction of sued firms is 51%; our prediction model suggests that only 36% of these firms would have been sued under the post-PSLRA regime. Thus, the PSLRA is not merely screening claims that would have been deemed meritless under the prior rules, but also those with some indicia of merit. Overall, these results support both Hypotheses 1A and 1B.

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probability of a particular alternative relative to the probabilities of all other alternatives. In the analysis of lawsuit filings, there are three alternatives: (i) no lawsuit, (ii) lawsuit in the pre-PSLRA period, and (iii) lawsuit in the post-PSLRA period. We perform a similar analysis for the settlement model presented below. The results for both regressions are substantially the same as JNP, so we do not tabulate them here.

Which non-nuisance claims are being screened? Panel B of Table 5 provides evidence supporting the hard evidence hypothesis (Hypothesis 2); a significant fraction of non-nuisance suits lacking pre-filing hard evidence that plaintiffs' attorneys brought in the pre-PSLRA period would not have been brought in the post-PSLRA period. Most firms (104) lacked pre-filing hard evidence, but nonetheless 48% were sued in the pre-PSLRA period. Applying the post-PSLRA prediction model indicates that only 33% of these firms would have been sued under the PSLRA regime. These results suggest that plaintiffs' lawyers require more objective evidence of fraud before they are willing to file suit under the more demanding standards of the PSLRA.

Panel C shows that the screening effect persists if we include abnormal insider trading along with pre-filing hard evidence. Of the 88 firms that lacked pre-filing hard evidence and abnormal insider trading, our model predicts that only 33% of the firms that paid non-nuisance settlements would have been sued under the PSLRA regime. This difference is significant at the 1% level. Notably, we find no significant difference for the firms with either prefiling hard evidence or abnormal insider trading. This evidence is consistent with Hypothesis 3.

The results also support Hypothesis 4 (Plaintiffs' attorneys are less likely to file suits based on a failure to meet earnings forecasts post-PSLRA). Panel D of Table 5 shows a significantly reduced probability of a suit for claims based on an *Earnings Warning.* Of the 36 firms in our reference sample that had an earnings warning near the end of the class period, 78% were actually sued. Applying the post-PSLRA prediction model yields a figure of 61%. The difference between the two percentages is significant at the 1% level. Once again, the screening effect is most pronounced for firms lacking pre-filing hard evidence and abnormal insider trading. Of the 23 firms having these characteristics in the reference sample, 87% were actually

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sued, but under our prediction model the incidence of suit drops to 63%. The difference between these two percentages is also significant at the 1% level.

It is possible that we have set the definition for "nuisance" settlements too low. If we have underestimated defense and distraction costs, a nuisance settlement would be correspondingly higher. As a robustness check, we used a series of higher cutoffs for nuisance value. The results are presented in Table 6. We find a lower predicted incidence of litigation under the PSLRA for firms lacking prefiling hard evidence and abnormal insider trading up to 4% of market capitalization. Thus, the finding that the PSLRA acts as a screen for suits that would have been deemed meritorious under the pre-PSLRA regime appears to be robust.[18]

Outcomes

One explanation for the reluctance of plaintiffs' attorneys to pursue non-nuisance litigation absent pre-filing hard evidence post-PSLRA is a possible shift in the expected outcomes of suits. Recall that Table 1 reported a higher likelihood of dismissal for suits filed post-PSLRA. To assess whether the PSLRA has a comparable screening effect on outcomes as well as filings, we repeat the screening analysis presented in Table 5, but this time applying the post-PSLRA outcome model to predict the likelihood of a non-nuisance outcome for the pre-PSLRA suits if they were subject to the PSRLA regime.

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[18] As a further robustness check, we use an alternative definition of non-nuisance, specifically, suits that result in a settlement of over $2 million. See Joseph A. Grundfest, Why Disimply, 108 Harv. L. Rev. 727, 740-41 (1995). Grundfest adopts the rule of thumb that settlements for less than a cutoff ranging from $2.5 to $1.5 million are nuisance in the sense that "the merits may not have mattered at all in the resolution of the litigation." Id. at 742-43. Although settlements under $2 million likely include both nuisance and non-nuisance suits (some of which may have settled for small amounts because the defendants lacked assets and insurance coverage), settlements over $2 million are likely to have at least some merit. To the extent defendants settle nuisance suits to avoid defense litigation costs as well as possible distraction on management and negative publicity, the maximum amount defendants will settle a nuisance claim typically will not exceed $2 million. (Settlement amounts have been normalized into 2000 dollars.) The predicted incidence of litigation is significantly lower using a $2 million cutoff, and continues to be lower up to a cutoff of $6 million, a relatively generous definition of defense costs. The results from this analysis are substantially similar to our results using the settlement to market capitalization ratio, so we have not tabulated them here.

For this analysis, we classify a lawsuit as a dismissal if it was resolved in the company's favor. Thus, dismissals include lawsuits that were dismissed or settled for a small fraction of the firm's market value. We consider these "nuisance" settlements, defined as a settlement of less than 0.5 percent of a firm's market value ten days before the end of the class period, as tantamount to a dismissal.[19]

The post-PSLRA logit regression for settlements in Table 7 has a number of differences from the filing model above. Because we are concerned with the likelihood of recovery rather than the amount of recovery, we omit the damages-related variables (*Market Cap.*, *Turnover*, and *Min. Return*) from this model. We also omit our governance variables as being only secondary indicators of potential fraud, as well as the High Tech indicator variable, which also should not influence the lawsuit outcome. In addition, we substitute *Hard Evidence* for *Prefiling Hard Evidence*. The *Hard Evidence* variable is coded one if there is an SEC investigation or restatement any time prior to the announcement of the settlement. *Hard Evidence* includes not only *Prefiling Hard Evidence*, but also public restatements and announcements of a SEC investigation or enforcement action related to the litigation that occurs anytime after the filing of suit up to the outcome date of the litigation. The occurrence of a restatement or SEC investigation even after the filing of suit may pressure defendants into a more generous settlement. We also add an indicator variable that may correlate with likelihood of success, *High Volume Court*, which is coded one for suits filed in the Southern District of New York or a district court in any of the California districts.[20]

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[19] Following JNP, we do not estimate a linear model using the actual settlement amount as the dependent variable due to the lack of data on directors & officers insurance coverage (an important determinant of the actual settlement amount).

[20] Grundfest and Pritchard (2000) present evidence that courts in these districts with a substantial number of securities fraud class actions may be more skeptical of such claims.

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We report the results of this regression in Table 7. We find that *Hard Evidence* correlates significantly with a non-nuisance settlement post-PSRLA. The screening effect that we found in our analysis of filing decisions appears to be a rational response by plaintiffs' attorneys to a shift in the probability of recovery. Turning to insider trading, the coefficient on *Abnormal Insider Trading* is not significant. Despite its strong influence on filings post-PSLRA, insider trading appears to be only a weak predictor of outcomes. Our forecasting variables are also insignificant, as is *High Volume Court*.

The results for the screening methodology presented in Table 8, once again show a significant screening effect. Panel A shows that the actual incidence of non-nuisance outcomes is 59% for the pre-PSRLA suits; the predicted incidence under the post-PSRLA outcome model for these suits drops to 47%, a difference significant at the 0.01 level. Also consistent with our earlier results, the screening effect is less pronounced for cases with hard evidence (Panel B). The effect becomes more pronounced when we add abnormal insider trading. For suits without either type of evidence (Panel C), the predicted incidence of non-nuisance outcome post-PSLRA is 39%, as opposed to the 56% of these suits that actually produced a non-nuisance settlement pre-PSLRA. For suits that have hard evidence or abnormal insider trading, however, the actual pre-PSLRA figure is 65%, while the predicted post-PSLRA figure is 61%, an insignificant difference. Thus, our outcome screening analysis supports Hypotheses 5A and 5B.

We also find a significant screening effect for the suits based on earnings warnings (Panel D). In the pre-PSLRA period, 50% of these suits produced non-nuisance outcomes, but our prediction model suggests that only 41% would have yielded a non-nuisance outcome in the post-PSRLA period. The screening effect is only slightly more pronounced, however, for the earnings warning suits lacking hard evidence and abnormal insider trading. For these suits, the

actual percentage was 49%, but our prediction model percentage is 37%, still a significant difference, but not substantially greater than the screening effect for earnings warning suits overall.

To test the robustness of these results, we present the results of alternative definitions of high value settlement in Table 9. We find a significantly lower probability of a high value settlement up to 2.5% of market capitalization, a fairly stringent definition of a non-nuisance settlement. We conclude that our finding of a screening effect for case outcomes is reasonably robust to alternative specifications of a non-nuisance suit.

VI.   CONCLUSION

Our primary finding supports the existence of a screening effect; many suits that would have been deemed non-nuisance prior to the PSLRA likely would not have been filed after Congress adopted the PSLRA. Moreover, the suits, if filed, would be less likely to generate a non-nuisance outcome. We also find, however, that a significantly lower percentage of suits that produced a nuisance value settlement or dismissal pre-PSLRA would have been brought post-PSLRA. In particular, the PSLRA seems to have a strong screening effect for suits based on earnings warnings.

Our findings suggest, not surprisingly, that there is no free lunch. Congress's efforts to discourage frivolous litigation may have succeeded, but that success comes at the price of discouraging securities fraud class actions which would likely have been deemed meritorious prior to the PSLRA. If such actions had a useful deterrent effect, reducing the incidence of such actions came at the price of reduced deterrence. Our finding of a screening effect cannot tell us whether the benefits to companies of reduced exposure to litigation outweigh any diminution in

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deterrence. To answer that question would require a measure of the marginal deterrence provided by securities fraud class action; finding such a measure is an important task for future research into the effect of securities fraud class actions.

We conclude that Congress effectively elevated the definition of merit in adopting the largely procedural requirements of the PSLRA. Substance and procedure are inextricably intertwined. Assessing whether Congress has set the level of "merit" too high or too low cannot be answered within the framework of this study. It may be that the suits discouraged by the adoption of the PSLRA, although sufficient to generate non-nuisance settlements under the then-prevailing standards, may have added little to the deterrent effect provided by securities fraud class actions. Currently available econometric methods cannot tell us whether this trade-off was worth it, but they can help show that the trade-off is real.

APPENDIX

Variable Definitions

Variable		Prediction
Restatement	Indicator variable equal to one if the firm restated class period earnings; zero otherwise	+
Prefiling Restatement	Indicator variable equal to one if the firm restated class period earnings before the filing of the complaint; zero otherwise	+
SEC Investigation	Indicator variable equal to one if the firm was investigated by the SEC for conduct during the class period; zero otherwise	+
Prefiling SEC Investigation	Indicator variable equal to one if the firm was investigated by the SEC for conduct during the class period before the filing of the complaint; zero otherwise	+
Hard Evidence	Indicator variable equal to one if the firm restated class period earnings or was investigated by the SEC for conduct during the class period; zero otherwise	+
Prefiling Hard Evidence	Indicator variable equal to one if the firm restated class period earnings or was investigated by the SEC for conduct during the class period before the filing of the complaint; zero otherwise	+
Abnormal Insider Trading	Shares purchased less shares sold during the class period by directors, CEOs, COOs, CFOs, Presidents and Vice-Presidents less the same measure for the number of days in the class period preceding the class period	−
Positive Forecast	Indicator variable equal to one if firm made a positive forecast during the class period; zero otherwise	+
Negative Forecast	Indicator variable equal to one if firm made a negative forecast during the class period other than on the minimum return date or the end of the class period; zero otherwise	−
Earnings Warning	Indicator variable equal to one if firm made a negative forecast on either the class end or minimum return dates; zero otherwise	+
Avg. Tenure	Mean number of years that outside directors have been on board	−
Busy	Mean number of external directorships of public companies held by outside directors	+
Independent	The percentage of outside directors on the firm's board	−

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Audit Meetings	Number of meetings held by the audit committee	−
Independent Audit	The percentage of outside directors on the audit committee	−
Market Cap.	Log of market value of common equity at the end of the fiscal year preceding the beginning of the class period	+
Turnover	$1 - (1 - \text{Turn})^X$, where Turn is average daily trading volume divided by the number of shares outstanding, and X is the number of trading days during the class period	+
Min. Return	Minimum one-day return during the class period plus one day after the end of the class period	−
HiTech	Indicator variable equal to one if the firm is in the SIC codes 3570-3577 or 7370-7379; zero otherwise	+
High Volume Court	Indicator variable equal to one if the lawsuit is in the SDNY, SD Cal, ND Cal, CD Cal ; zero otherwise	−

The governance variables are obtained from the last available proxy statement preceding the beginning of the class period, if available; if not, the first available proxy after the beginning of the class period was used.

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Table 1

Panel A: Number of filings and allegations

Lawsuit Filing Year	Number of Lawsuits	Accounting Allegations	Insider Trading Allegations	Forecast Allegations
1991	18	6 (35.3%)	4 (25.0%)	12 (70.6%)
1992	22	7 (36.8%)	5 (26.3%)	15 (79.0%)
1993	16	6 (42.9%)	3 (21.4%)	12 (85.7%)
1994	23	7 (30.4%)	9 (39.1%)	17 (73.9%)
1995	19	6 (31.6%)	5 (26.3%)	13 (68.4%)
Pre-PSLRA Total	98	32 (34.8%)	26 (28.6%)	69 (75.0%)
1996	12	7 (58.3%)	10 (83.3%)	5 (41.7%)
1997	25	12 (48.0%)	16 (64.0%)	17 (68.0%)
1998	32	20 (64.5%)	17 (54.8%)	17 (54.8%)
1999	29	15 (51.7%)	20 (69.0%)	20 (69.0%)
2000	23	11 (50.0%)	13 (59.0%)	14 (63.6%)
Post-PSLRA Total	121	65 (54.6%	76 (63.9%)	73 (61.3%)
Total	219	97 (46.0%)	102 (48.6%)	142 (67.3%)

Panel B: Lawsuit Outcomes

Outcome	Pre-PSLRA	Post-PSLRA
Dismissed	21 (21.4%)	37 (30.8%)
Settled (in millions)		
< $2	15 (15.3%)	13 (10.8%)
$2 - < $5	19 (19.4%)	23 (19.2%)
$5 - < $10	20 (20.4%)	20 (16.7%)
> $10	20 (20.4%)	27 (22.5%)
Trial Verdict for Defendants	3 (3.1%)	0 (0.0%)
Total	98 (100.0%)	120 (100.0%)
Amount (in millions):		
Mean	11.26	19.00
(including dismissals)	8.50	13.14
Median	5.76	5.59
(including dismissals)	3.20	3.38
Maximum	123.08	251.83

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Table 2: Descriptive Statistics Comparing Pre- and Post-PSLRA Periods

Variables	Pre-PSLRA			Post-PSLRA			Test of Differences	
	Mean	Median	Std. Dev.	Mean	Median	Std. Dev.	Mean	Median
Restatement	0.071	0.000	0.258	0.178	0.000	0.383	0.001	0.001
Prefiling Restatement	0.051	0.000	0.221	0.149	0.000	0.357	0.001	0.001
SEC Investigation	0.087	0.000	0.282	0.103	0.000	0.305	0.559	0.559
Prefiling SEC Investigation	0.015	0.000	0.123	0.037	0.000	0.190	0.164	0.164
Hard Evidence	0.123	0.000	0.328	0.198	0.000	0.400	0.033	0.033
Prefiling Hard Evidence	0.066	0.000	0.250	0.149	0.000	0.357	0.006	0.007
Abnormal Insider Trading	−0.012	0.000	0.259	−0.091	0.000	0.539	0.060	0.027
Positive Forecast	0.255	0.000	0.437	0.248	.0.000	0.433	0.864	0.864
Negative Forecast	0.184	0.000	0.388	0.157	0.000	0.365	0.461	0.460
Earnings Warning	0.347	0.000	0.477	0.372	0.000	0.484	0.590	0.589
Avg. Tenure	5.486	4.548	4.253	5.064	4.292	3.594	0.261	0.485
Busy	1.581	1.333	1.391	1.392	1.250	1.107	0.115	0.335
Independent	0.568	0.580	0.184	0.588	0.600	0.191	0.254	0.192
Audit Meetings	2.253	2.000	1.698	2.318	2.000	1.937	0.713	0.906
Independent Audit	0.737	0.800	0.320	0.798	1.000	0.295	0.039	0.027
Market Cap.(mill.)	2208.1	173.9	8683.2	3566.7	205.0	16050.6	0.287	0.692
Turnover	0.551	0.527	0.325	0.690	0.794	0.299	0.000	0.000
Min. Return	-0.216	−0.205	0.115	−0.278	−0.267	0.149	0.000	0.000

Variable definitions are in the Appendix. The pre-PSLRA period is 1991-1995 and the post-PSLRA period is 1996-1999.

Table 3: Comparison of Lawsuit and Control Firms

Panel A: Pre-PSLRA Period

Variables	Lawsuit Firms (N=98)			Control Firms (N=98)			Test of Differences	
	Mean	Median	Std. Dev.	Mean	Median	Std. Dev.	Mean	Median
Restatement	0.112	0.000	0.317	0.031	0.000	0.173	0.027	0.027
Prefiling Restatement	0.071	0.000	0.259	0.031	0.000	0.173	0.196	0.195
SEC Investigation	0.163	0.000	0.372	0.010	0.000	0.101	0.000	0.000
Prefiling SEC Investigation	0.020	0.000	0.142	0.010	0.000	0.101	0.563	0.562
Hard Evidence	0.204	0.000	0.405	0.041	0.000	0.199	0.000	0.001
Prefiling Hard Evidence	0.092	0.000	0.290	0.041	0.000	0.199	0.153	0.152
Abnormal Insider Trading	−0.022	0.000	0.335	−0.001	0.000	0.148	0.585	0.633
Positive Forecast	0.337	0.000	0.475	0.174	0.000	0.145	0.009	0.009
Negative Forecast	0.214	0.000	0.412	0.153	0.000	0.362	0.271	0.270
Earnings Warning	0.571	0.000	0.497	0.123	0.000	0.109	0.000	0.000
Avg. Tenure	5.070	4.175	3.381	5.902	5.339	4.957	0.172	0.545
Busy	1.603	1.500	1.149	1.558	1.225	1.602	0.821	0.245
Independent	0.551	0.517	0.181	0.584	0.600	0.186	0.206	0.198
Audit Meetings	2.449	2.000	1.568	2.058	2.000	1.806	0.107	0.131
Independent Audit	0.763	1.000	0.305	0.711	0.708	0.335	0.256	0.242
Market Cap. (mill.)	3470.6	605.2	11749.6	945.5	71.6	3209.2	0.042	0.000
Turnover	0.693	0.766	0.282	0.409	0.373	0.303	0.000	0.000
Min. Return	−0.242	−0.235	0.108	−0.189	−0.164	0.116	0.001	0.000

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Panel B: Post-PSLRA Period

Variables	Lawsuit Firms (N=121)			Control Firms (N=121)			Test of Differences	
	Mean	Median	Std. Dev.	Mean	Median	Std. Dev.	Mean	Median
Restatement	0.298	0.000	0.459	0.058	0.000	0.234	0.000	0.000
Prefiling Restatement	0.240	0.000	0.429	0.058	0.000	0.234	0.000	0.000
SEC Investigation	0.198	0.000	0.400	0.008	0.000	0.091	0.000	0.000
Prefiling SEC Investigation	0.066	0.000	0.250	0.008	0.000	0.091	0.017	0.018
Hard Evidence	0.339	0.000	0.475	0.058	0.000	0.234	0.000	0.000
Prefiling Hard Evidence	0.240	0.000	0.429	0.058	0.000	0.234	0.000	0.000
Abnormal Insider Trading	−0.185	−0.023	0.584	0.002	0.000	0.473	0.007	0.000
Positive Forecast	0.314	0.000	0.466	0.182	0.000	0.387	0.017	0.018
Negative Forecast	0.190	0.000	0.394	0.124	0.000	0.331	0.159	0.159
Earnings Warning	0.595	0.000	0.493	0.149	0.000	0.357	0.000	0.000
Avg. Tenure	4.900	4.400	2.837	5.227	4.000	4.223	0.480	0.637
Busy	1.615	1.600	1.074	1.169	1.000	1.100	0.002	0.001
Independent	0.623	0.647	0.184	0.554	0.571	0.192	0.004	0.005
Audit Meetings	2.645	2.000	1.962	1.992	2.000	1.864	0.009	0.004
Independent Audit	0.853	1.000	0.246	0.743	1.000	0.329	0.004	0.007
Market Cap (mill.)	6348.4	544.8	22055.7	785.0	70.0	3916.0	0.007	0.000
Turnover	0.808	0.924	0.246	0.572	0.573	0.301	0.000	0.000
Min. Return	−0.312	−0.310	-0.310	−0.242	-0.208	0.137	0.000	0.001

Variable definitions are in the Appendix. The pre-PSLRA period is 1991-1995 and the post-PSLRA period is 1996-1999.

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Table 4: Factors Associated with Lawsuit Filings in the post-PSLRA period

Variable	Post-PSLRA Coeff.	p-value
Prefiling Hard Evidence	2.372	0.000
Abnormal Insider Trading	-1.014	0.015
Positive Forecast	0.447	0.383
Negative Forecast	-0.315	0.582
Earnings Warning	1.044	0.021
Tenure	-0.046	0.465
Busy	-0.046	0.820
Independent	-0.922	0.478
Meetings	-0.156	0.244
Independent Audit	0.737	0.380
Log (Market Cap.)	0.719	0.000
Turnover	2.017	0.011
Min. Ret	-4.052	0.009
Hitech (JNP Dataset)	-0.537	0.183
Constant	-6.437	0.000
Pseudo R2	0.444	
N	229	

Variable definitions are in the Appendix. The results are for a logistic regression estimated solely for the post-PSLRA period. Dependent variable is defined as equal to 1 if there was a lawsuit filing and 0 otherwise. All *p*-values are one-tailed.

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Table 5: Comparison of Actual Fraction of Suit Filings for Pre-PSLRA Sample Versus Predicted Fraction of Suit Filings Based on Post-PSLRA Logit Model of the Filing of Suit

	N	*Actual Fraction Pre-PSLRA*	*Predicted Fraction Post-PSLRA*	*p-value*
Panel A				
Nuisance Suits	80	0.500	0.413	0.016
Non-Nuisance Suits	112	0.509	0.362	0.000
Panel B				
Non-Nuisance – No Prefiling Hard Evidence	104	0.480	0.334	0.000
Non-Nuisance – Prefiling Hard Evidence	8	0.875	0.734	0.157
Panel C				
Non-Nuisance – No Prefiling Hard Evidence and No Abnormal Insider Trading	88	0.500	0.327	0.000
Non-Nuisance – Prefiling Hard Evidence or Abnormal Insider Trading	24	0.542	0.493	0.234
Panel D				
Non-Nuisance – Earnings Warning	36	0.778	0.611	0.006
Non-Nuisance – Earnings Warning and No Prefiling Hard Evidence and No Abnormal Insider Trading	23	0.870	0.632	0.005

Predicted fraction of lawsuit filings is based on a logistic regression model as reported in Table 4. A non-nuisance outcome is defined as having a settlement amount/market cap. ratio over 0.005. p-value is for a one-tailed t-test of the difference between pre-PSLRA actual and pre-PSLRA predicted mean values.

Table 6: Comparison of Actual Fraction of Suits for Pre-PSLRA Sample Versus Predicted Suits Based on Post-PSLRA Logit Model of the Filing of Suit for Varying Cut-Off Values for the Settlement Amount/Market Cap Ratio [No Prefiling Hard Evidence and No Abnormal Insider Trading].

Settlement Amt/Market Cap	N	Actual Fraction Pre-PSLRA	Predicted Fraction Post-PSLRA	p-value
>=0.005	88	0.500	0.327	0.000
>=0.01	80	0.475	0.294	0.000
>=0.015	61	0.508	0.286	0.000
>=0.02	45	0.533	0.291	0.000
>=0.025	42	0.548	0.306	0.000
>=0.03	35	0.543	0.290	0.000
>=0.035	27	0.556	0.258	0.000
>=0.04	23	0.565	0.243	0.001

The Actual and Predicted fraction of suits is determined in the following steps. (1) The pool of Pre-PSLRA suit firms that satisfy the specified settlement amount/market cap. ratio are selected along with their corresponding matching firms. (2) Only those suit and match firms in the pool that have no Prefiling Hard Evidence and no Abnormal Insider Trading are identified. (3) The Actual fraction of Pre-PSLRA suits is equal to the fraction of firms that faced a suit in the sample derived from step (2). (4) The Predicted fraction of Post-PSLRA suits is equal to the mean probability of suit for the sample derived from step (2) applying the logistic regression model from Table 4. All p-values are one-tailed.

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Table 7: Post-PSLRA Model of Factors Associated with Dismissed versus Settled Lawsuits

Variable	Post-PSLRA Coeff.	p-value
Hard Evidence	0.882	0.002
Abnormal Insider Trading	0.287	0.152
Positive Forecast	0.507	0.064
Negative Forecast	-0.185	0.546
Earnings Warning	-0.302	0.224
High Volume Court	0.372	0.155
Constant	0.103	0.803
Log Likelihood	-199.873	
Wald χ^2	15.30	
N	230	
Censored N	114	
Uncensored N	116	

Variable definitions are in the Appendix. The reported results are for Stage 2 of a two-stage Heckman model (estimated using Stata's HECKPROB procedure) estimated solely for the post-PSLRA period. Stage 1 (unreported) is a probit model for the decision to file suit in the post-PSLRA period as follows:

Prob(suit) = f(turnover, abnormal min. ret., hitech, tenure, busy, independent, meetings, independent audit)

Stage 2 is a probit model where the dependent variable is equal to 1 for where the settlement amount/market cap. ratio is over 0.005:

Prob(non-nuisance outcome) = f(hard evidence, abnormal insider trading, positive forecast, negative forecast, earnings warning, high volume court)

The pre-PSLRA period is 1991-1995 and the post-PSLRA period is 1996-2000.

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Table 8

Actual and Predicted Non-Nuisance Fraction for Pre-PSLRA Suits (Predictions Based on Model Estimated for Suits Filed in the Post-PSLRA Period Only)

	N	Actual pre-PSLRA fraction of non-nuisance outcomes	Predicted post-PSLRA fraction of non-nuisance outcomes	p-value
Panel A				
Pre-PSLRA Suits	97	0.588	0.469	0.007
Panel B				
Pre-PSLRA Suits – No Hard Evidence	78	0.513	0.397	0.020
Pre-PSLRA Suits – Hard Evidence	19	0.895	0.765	0.054
Panel C				
Pre-PSLRA Suits – No Abnormal Insider Trading	81	0.630	0.475	0.002
Pre-PSLRA Suits – Abnormal Insider Trading	16	0.375	0.441	0.714
Panel D				
Pre-PSLRA Suits – No Hard Evidence and No Abnormal Insider Trading	63	0.556	0.394	0.005
Pre-PSLRA Suits – Hard Evidence or Abnormal Insider Trading	34	0.647	0.609	0.292
Panel E				
Pre-PSLRA Suits – Earnings Warning	56	0.500	0.414	0.090
Pre-PSLRA Suits – Earnings Warning and No Hard Evidence and No Abnormal Insider Trading	35	0.488	0.368	0.085

Predicted fraction of non-nuisance outcomes is based on a Heckman two-stage model (estimated with the Stata HECKPROB procedure). Stage 1 is a probit model for the decision to file suit in the post-PSLRA period as follows:

Prob(suit) = f(turnover, abnormal min. ret., hitech, tenure, busy, independent, meetings, independent audit)

Stage 2 is a probit model where the dependent variable is equal to 1 for where the settlement amount/market cap. ratio is over the specified cutoff given in the Table as follows:

Prob(non-nuisance outcome) = f(hard evidence, abnormal insider trading, positive forecast, negative forecast, earnings warning, high volume court)

The Predicted Fraction of high value outcomes in the post-PSLRA period is conditional on the firm facing a class action lawsuit and is equal to the mean of Prob(Outcome above the Dollar Cutoff = yes & Suit Filed = yes) / Prob(Suit Filed = yes). Non-nuisance outcomes are defined to include suits that result in a settlement/market capitalization ratio at least 0.005. p-value is for a one-tailed t-test of the difference between pre-PSLRA actual and pre-PSLRA predicted mean values.

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Table 9: Robustness Tests on the Actual and Predicted Fraction Pre-PSLRA Suits Without Hard Evidence of Fraud or Abnormal Insider Trading that Receive a High-Value Settlement

Settlement Amt/Market Cap	*N*	*Actual pre-PSLRA fraction of outcomes above the Cutoff*	*Predicted post-PSLRA fraction of outcomes above the Cutoff*	*p-value*
>=0.005	63	0.556	0.394	0.005
>=0.01	63	0.460	0.261	0.001
>=0.015	63	0.365	0.204	0.007
>=0.02	63	0.270	0.192	0.096
>=0.025	63	0.254	0.155	0.042
>=0.03	63	0.190	0.142	0.176
>=0.035	63	0.127	0.143	0.638
>=0.04	63	0.111	0.097	0.367

The predicted fraction of high value outcomes is based on a Heckman two-stage model (estimated with the Stata HECKPROB procedure). Stage 1 is a probit model for the decision to file suit in the post-PSLRA period as follows:

Prob(suit) = f(turnover, abnormal min. ret., hitech, tenure, busy, independent, meetings, independent audit)

Stage 2 is a probit model where the dependent variable is equal to 1 for where the settlement amount/market cap. ratio is over the specified cutoff given in the Table as follows:

Prob(Settlement Amount/Market Cap > Cutoff) = f(hard evid, abnormal insider trading, positive forecast, negative forecast, earnings warning, high volume court)

The Predicted Fraction of high value outcomes in the post-PSLRA period is conditional on the firm facing a class action lawsuit and is equal to the mean of Prob(Outcome above the Dollar Cutoff = yes & Suit Filed = yes) / Prob(Suit Filed = yes). p-value is for a one-tailed t-test of the difference between pre-PSLRA actual and pre-PSLRA predicted mean values.