THE INFORMATION EFFECT OF THE PRIVATE SECURITIES LITIGATION REFORM ACT: ANALYSTS' EARNINGS FORECASTS

Huabing (Barbara) Wang, West Texas A&M University

ABSTRACT

This paper examines the information effect of the Private Securities Litigation Reform Act of 1995 (PSLRA) using analyst earnings forecasts in a fixed-effect framework. The results suggest little effect on firms' short-term information environment but a significantly negative effect on firms' long-term information environment as indicated by deteriorated analyst long-term earnings forecasts. Further, the paper documents that analysts from top brokers do not adjust their forecasts more effectively in response to the changed incentives of management disclosure induced by PSLRA. **JEL Classification:** G14, G18, K22

INTRODUCTION

Passed by the Senate over the veto of President Clinton in December 1995, the Private Securities Litigation Reform Act of 1995 (PSLRA) has been controversial. PSLRA has a profound effect on the information environment. One major aspect of PSLRA is the safe harbor provision, which removes public companies' potential legal liabilities associated with forward-looking disclosure. Therefore, PSLRA addresses the chilling effect of litigation on disclosure, and potentially improves the information environment. However, opponents of PSLRA point out that PSLRA reduces the deterrence effect of security litigations on corporate disclosures and encourages corporate crime. Consequently, corporate disclosure may contain so much noise that the information environment actually deteriorates following PSLRA. Motivated by the large number of corporate scandals emerging over the 2000-2002 period, some even have urged its repeal. For example (France, 2001), Harvey J. Goldschmid, a former SEC general counsel, raised the question of whether the safe harbor in PSLRA provided protection for baseless earnings projections, and added that "the present downturn may provide evidence of whether (there was) excessive protection." Repealing PSLRA has since been on the agenda of several public candidates and organizations.

Previous research offers no consensus on how PSLRA affects the information

environment. On the one hand, Spiess and Tkac (1997), Johnson et al. (2000), and Johnson et al. (2001) suggest that PSLRA is beneficial. On the other hand, Ali and Kallapur (2001) report an overall negative market reaction to its passage. Examining auditor behavior, Lee and Mande (2003) and Geiger et al. (2006) both find that Big 6 audit firms become less conservative following PSLRA. Lee et al. (2009) and Boone et al. (2009) document increased cost of equity and suggest poorer accounting information quality following PSLRA. Using analyst forecasts, Leung and Srinidhi (2006) suggest that the PSLRA effect is positive for large firms and for firms with low growth opportunities, but negative for small firms and for firms with high growth opportunities.

This paper examines the PSLRA effect on analyst short-term and long-term earnings forecasts. As documented by prior literature (e.g., Richardson et al. 2004), managers have the pressure to exceed analysts' expectations on the earnings release dates. With the coupling effect of managers' "beating the market" incentive, PSLRA may have little effect on a firm's short-term information environment. However, managers may not constrain their optimism in the firm's long-term disclosure, influencing analysts to issue more optimistic and less accurate long-term earnings forecasts. This study finds consistent evidence of less accurate and more optimistic long-term forecasts following PSLRA for companies with higher litigation risk, although short-term forecasts do not exhibit such a change. Meanwhile, the results suggest little evidence that high quality analysts adjust better than other analysts to the changed information environment after PSLRA.

This paper is different from Leung and Srinidhi (2006), who also examine analyst forecasts, in the following two ways. First, this paper examines how PSLRA affects analyst long-term and short-term earnings forecasts differently. Leung and Srinidhi (2006)'s focus is on the PSLRA effect on firms with different size and growth options. Second, regarding methodology, Leung and Srinidhi (2006) use a pooled model, which is more susceptible to omitted variables. They do caution their readers about the possibility of some omitted variables driving their results. To better extract the PSLRA effect out of contemporaneous influences, this study adopts a fixed-effect framework with analyst-firm effect (in the case of individual analyst forecasts) or firm effect (in the case of consensus forecasts) fixed to control for unobservable analyst-firm or firm level heterogeneities. This paper further includes forecast-level variables to control for possible variations in the attribute of the forecasts made for the same analyst-firm pair or firm, such as the age of the forecasts, as identified by previous papers.

Overall, this paper contributes to the literature by evaluating the information effect of PSLRA from the perspective of financial analysts. Analysts rely directly on company information to make earnings forecasts. Further, they are considered more sophisticated users of the information that managers disclose than the general investing public. How these more sophisticated participants respond to the changed incentives of management disclosure thus has direct bearing on the informational effect of PSLRA. In this regard, the study has important implications for market participants and regulators. First, as long as the more optimistic and less accurate long-term analyst estimates factor into stock prices, the results provide a basis for the claim that PSLRA may be partly responsible for the overall inflated stock prices in the late nineties. Second, the results suggest that even financial analysts, who are considered sophisticated participants in the market, experience problems in forming their long-term forecasts after PSLRA. Relying on the expertise of financial analysts or not, the

general investing public might have similar or even more severe problems processing information and making informed investing decisions after PSLRA.

The remainder of the paper is organized as follows. Section 2 reviews related research. Section 3 develops hypotheses. Section 4 discusses the data, sample, and research design, and presents variables and summary statistics. Section 5 contains the main results. Section 6 conducts robustness checks and examines a related issue on how analyst quality affects the PSLRA effect. Section 7 concludes.

LITERATURE REVIEW

There is a growing body of literature that examines the informational effect of PSLRA. However, the evidence is mixed. Examining investor reaction to the passage of PSLRA, Spiess and Tkac (1997) and Johnson et al. (2000) document positive stock price reaction suggesting that investors consider PSLRA beneficial. In addition, Johnson, Kasznik and Nelson (2001) examine how managers change their practice of disclosing forward looking information around PSLRA, and also suggest that PSLRA has beneficial effects. Specifically, using a sample of 523 high-technology firms, Johnson, Kasznik and Nelson (2001) find a significant increase both in the frequency of firms issuing earnings and sales forecasts and in the mean number of forecasts issued. Proxying for quality by using the biasness and noise of the management forecast, they find no adverse effects.

Analyzing the effect of PSLRA on analysts, Leung and Srinidhi (2006) find that the PSLRA effect is positive for large firms and for firms with low growth opportunities. However, they also find a negative impact of PSLRA for small firms and for firms with high growth opportunities.

There are other papers that suggest deterioration in the information environment following PSLRA. First, Ali and Kallapur (2001) report an overall negative market reaction after accounting for the timing of multiple confounding events, suggesting that shareholders are concerned that the restrictions to sue reduce the deterrence effect of securities litigation, thereby, weakening the financial disclosure system.

Further, Auditors play a vital role in ensuring the quality of mandatory financial information disclosure by public companies. However, prior research suggests that PSLRA also alters auditor behavior by significantly reducing their liability exposure related to litigation involving public audit clients. Specifically, existing literature documents that the Big 6 audit firms become less conservative following PSLRA as reflected in allowing their clients to report significantly higher income-increasing discretionary accruals (Lee and Mande (2003)) and in issuing less going-concern modified audit opinions (Geiger, Raghunandan and Rama (2006)).

Using the cost of equity capital as a proxy for financial information quality, Lee, Mande and Son (2009) and Boone, Khurana and Raman (2009) both document increased cost of equity capital following PSLRA. In particular, Lee, Mande and Son (2009) find increased cost of equity that is more pronounced for Clients of Big N auditors and for firms facing high litigation risk. Boone, Khurana and Raman (2009) show that investors view the increased accounting discretion following PSLRA, resulting in increased firm-specific equity risk premium.

Liu and Elayan (2015) find an overall weakening in the well-documented positive relationship between information asymmetry and conditional conservatism

relationship (e.g., LaFond and Watts, 2008) when ex-ante litigation risk is lowered. They suggest that the legal regime change introduced by PSLRA dampens the governance role of shareholder litigation in disciplining moral hazard incentives.

Meanwhile, Rogers and Van Buskirk (2009) suggest limited influence of PSLRA in corporate disclosure. Examining corporate disclosure behavior of firms involved in 827 disclosure-related class-action securities litigation cases, they document that these firms have reduced the level of information provided after the litigation, despite the increased protection provided by PSLRA. Specifically, these firms are less likely to hold an earnings-related conference call or issue an earnings forecasts. When they do issue earnings forecasts, they cover shorter horizons and are less likely to be quantitative or specific.

In addition to the information effect, prior literature has explored other aspects of PSLRA. For example, PSLRA encourages institutional investors to serve as lead plaintiffs in securities class actions. Pukthuanthong et al (2017) examine the issue and their results suggest shareholder litigation as an effective external monitoring mechanism.

THE TESTABLE PSLRA EFFECT ON ANALYST EARNINGS FORECASTS

PSLRA amends the federal securities law to curb certain abusive practices in private securities litigation and to make it more difficult to bring federal securities claims against public companies. One of the most important, yet controversial aspects of this law, is its safe harbor provision. Section 102 of the law provides certain issuers of securities a safe harbor from liability for forward-looking statements regarding a security's projected performances or operations, if: (1) the statement is immaterial or is identified as a forward-looking statement and accompanied by certain cautionary statements; or (2) the plaintiff fails to prove that the statement was made with either actual knowledge of its false or misleading nature by a natural person, or actual approval by an executive officer. The safe harbor provision applies to both written and oral statements.

PSLRA Effect on Forecast Bias

Prior research indicates that managers are less likely to disclose good news for fear of potential legal liabilities (See, for example, Skinner (1995) for a review of the related literature). PSLRA removes the chilling effect of litigation on corporate speech, and therefore encourages corporate disclosure, especially relating to good news. Sell-side analysts rely directly on company information to make earnings forecasts. Therefore, it is possible that analysts are influenced to be more optimistic about the company and issue more optimistic earnings forecasts.

Meanwhile, Malmendier and Tate (2005) document the tendency of managers to be overly-optimistic about their own firms' prospects. Prior to PSLRA, the fear of potential litigation liabilities may have discouraged managers from airing their genuine optimistic views. Subsequent to PSLRA passage, even if managers do not knowingly provide false information, they may still be more likely to disclose optimistic forecasts.

In addition, Lee and Mande (2003) and Geiger, Raghunandan and Rama

(2006) both find that auditors have become less conservative following PSLRA. The less conservativeness of auditors might, in turn, adversely affect the information environment, hindering the analysts' ability to make informed and unbiased forecasts.

Overall, since the PSLRA safe harbor removes one important disincentive for managers to disclose good news and audit firms have become less conservative following PSLRA, it is expected that analyst earnings forecasts will be more over-optimistic accordingly.

PSLRA Effect on Forecast Accuracy

PSLRA exerts two opposite forces on a company's information environment, which directly affects the ability of analysts to forecast future earnings. First, PSLRA encourages corporate disclosure, especially relating to good news, as discussed in the previous section. Johnson, Kasznik and Nelson's (2001) report increased voluntary management disclosure following PSLRA. A related theoretical paper by Li (2009) models management voluntary disclosure in the setting of equity offering and also suggests that relaxing companies' legal liability may result in more information flow to the public. The increased information flow can positively impact the forecast accuracy of analysts, who rely directly on company information to make earnings forecasts. Indeed, Byard and Shaw (2003) suggest that when forming their annual earnings forecasts, analysts rely more heavily on publicly available financial data than on privileged communications with management, and that higher-quality public information enables analysts to gain better insight into a company. Thus, we expect that the resulting increased information flow from managers assists analysts' forecasting ability.

Second, PSLRA reduces the deterrence effect of security litigation, possibly resulting in a nosier information environment. For example, PSLRA requires plaintiff-investors to present evidence that managers knowingly make unfaithful disclosures. Such evidence is difficult to establish. Therefore, PSLRA may provide overprotection to dishonest managers, encouraging unfaithful disclosure. The resulting higher information uncertainty should make forecasting more challenging for analysts. In addition, as discussed earlier, PSLRA may influence analysts to bias their forecasts, and this bias will hamper analysts' ability to forecast accurately.

Due to these conflicting effects, this paper hypothesizes that the net effect of PSLRA on forecasting accuracy depends on the relative effect of the benefits of increased information versus the costs of higher information uncertainty.

PSLRA Effect, Ex Ante Litigation Exposure, and Forecast Horizon

The effect of PSLRA depends on the level of *ex ante* litigation risk affecting the company. Companies with higher ex ante litigation risk are more likely affected by PSLRA compared with those with lower ex ante litigation risk. Johnson, Kasznik and Nelson (2001) find that changes in corporate voluntary disclosure vary cross-sectionally with their sample firms' *ex ante* risk of litigation. This study also expects PSLRA to have a larger effect on companies with high litigation risk exposure and smaller or no effect on those with low litigation risk exposure. As in Johnson, Kasznik

and Nelson (2001), this paper shall adopt the low-litigation risk companies as a control group to exclude the possible influences of contemporaneous factors.

In addition, this study expects that PSLRA is more likely to adversely affect analysts' long-term forecasts. While the safe harbor of PSLRA relieves managers from concerns of potential litigation liabilities, managers still face the hurdle of "beating the market." This issue will likely dominate litigation concerns as the earnings date draws near. In addition, inaccurate disclosure subjects managers to reputation losses. This reputation-based disincentive to disclose, opposing the effect of PSLRA, should become more pronounced as the official earnings dates approach and managers have fewer opportunities to correct inaccurate disclosures. Richardson, Teoh and Wysocki (2004) suggest that firms and analysts engage in an "earnings-guidance game" where analysts first issue optimistic earnings forecasts and then "walk down" their estimates to a level that firms can beat at the official earnings announcement date. With managers more likely to issue overly-optimistic information on their companies' long-term prospects, analysts are more likely to be influenced to issue more optimistic long-term forecasts accordingly. Therefore, this study expects PSLRA to have a more adverse effect on the information environment affecting a firm's long-term prospects, e.g. analysts' long-term forecasts.

DATA, SAMPLE, VARIABLES, AND RESEARCH DESIGN

Data and Sample

This study obtains analyst earnings forecasts and actual earnings from the Institutional Brokers Estimate System (I/B/E/S) Detail History file and Detail History Actuals file (unadjusted). Stock prices are from the I/B/E/S Summary History Actuals and Pricing & Ancillary file (unadjusted). The complete series of quarterly earnings forecasts without missing values of major variables such as stock prices, actual earnings, analysts, and industry affiliation between October 1994 and December 1996 is collected. Forecasts made in the fourth quarter of 1995 are excluded because it is unclear how PSLRA might affect the information environment around the time of passage. Thus, the forecast data include forecasts made four quarters before and after the passage quarter of PSLRA. Although this sample period may not be able to capture the long-term effect of PSLRA with such a window, the effect of other influences on the results is reduced. the sample period is later expanded to June 1998 as a robustness check and the results are similar. According to the Business Cycle Dating Committee of the National Bureau of Economic Research, the economy over the sample period is in an expansion with the previous trough dated in March 1991 and the forthcoming peak dated in March 2001. According to CRSP, all the forecasts in the sample are generally made during a bullish period. The value weighted index level of NYSE/AMEX/NASDAQ generally demonstrates an upward trend over the sample period with the exception of 1994. The annual value weighted returns including distributions are 11.6% for year 1993, -0.75% for year 1994, 36% for year 1995, 21% for year 1996, 30% for year 1997, and 22% for year 1998. For the convenience of presentation, the sample is limited to firms with fiscal years ending in March, June, September, and December. This paper excludes forecasts made after the fiscal quarter ends because they should not be affected by corporate forward-looking disclosures.

To account for the timing of forecasts, this study focuses on forecasts made in two windows: a short-term window (the one-quarter period before the fiscal quarter end) and a long-term window (the one-quarter period that begins five quarters before the fiscal quarter end). Overall, the sample consists of analyst one-quarter-ahead and five-quarter-ahead earnings forecasts made during calendar quarters 1994:4-1995:3 and 1996:1-1996:4. This study excludes stale forecasts and only keep the latest forecasts made by a given analyst within each forecast window. Following prior studies on analyst forecasts, this study requires stock prices to be greater than $1 and winsorize the forecast bias variable at the 99 percentiles at both ends to reduce the influence of outliers. This paper also requires each analyst-firm pair to be associated with at least one forecast both before and after PSLRA. The analyses are performed using both individual analyst forecasts and firm-level consensus forecasts, defining the consensus forecasts as the median of all the latest forecasts prepared for a given company during a forecast window.

Variable Definition and Research Design

This study examines how analyst optimism and accuracy change around PSLRA within a fixed-effect framework with firm-analyst effect fixed for the individual forecast sample, and with firm effect fixed for the firm-level consensus sample. Instead of examining short-term and long-term forecasts separately, this paper pools both types of forecasts together and examine them jointly. A dummy variable, ST, as defined later in the section, indicates whether the forecast is a short-term or long-term forecast.

The dependent variable is forecast bias (*Fb or Med_Fb*) or net forecast error (*Nfe or Med_Nfe*). Specifically, this paper defines individual forecast bias, *FB*, as 100 times the difference between actual earnings and the analyst forecasts divided by the company's stock price in the middle of the last month in the fiscal quarter that is four quarters before the end of the associated fiscal quarter. Consensus forecast bias, *Med_Fb*, is 100 times the difference between actual earnings and the median analyst forecasts divided by the company's stock price in the middle of the last month in the fiscal quarter that is four quarters before the end of the associated fiscal quarter. If analysts are optimistic (pessimistic), *Fb* or *Med_Fb* will take negative (positive) values. This study measures forecast accuracy by defining net forecast error (*Nfe or Med_Nfe*) as the absolute value of forecast bias (*Fb or Med_Fb)*.

The explanatory variable of interest is *PSLRA*, which is a dummy variable that takes the value one if the forecast occurs after Dec. 1995, and zero before Dec. 1995. To examine the effect of PSLRA on forecasts of different horizons, this study introduces a dummy variable, *ST*, which equals one if the forecast is a short-term forecast made during the one-quarter period before the fiscal year end, and zero if the forecast is a long-term forecast made during the one-quarter period that begins five quarters before the fiscal year end.

In addition, this paper examines the PSLAR effect conditional on firm-level ex ante litigation risk. This paper follows Rogers and Stocken (2005) to measure a company's ex ante litigation risk, which is a composite measure that takes into account various variables relating to a company's litigation exposure, such as a company's industry membership and stock volatility. Specifically, a probit model is run with a lawsuit dummy as the dependent variable.[1] All the independent variables are as identified by Rogers and Stocken (2005). It is worth noting that unlike Rogers and Stocken

(2005) who use quarterly observations of all the First Call companies from the fourth quarter of 1995 to the fourth quarter of 2000, this study usees yearly observations of all the CRSP companies from 1991 to 1993, the three-year period before our sample period starts. Table 1 Panel A reports the results. As in Rogers and Stocken (2005), this study finds that firm size, turnover, beta, and membership in the computer software industry are positively associated with lawsuits, that the minimum of daily stock returns is negatively associated with lawsuits, and that the coefficients of both skewness and retail industry indicator are insignificant. The predicted probability for each firm-year observation is then obtained and the time series average of the predicted lawsuit probability is defined as the ex ante litigation risk of a given company. Table 1 Panel B reports the summary statistics of the predicted probability for the sample firms. The litigation probability for the sample firms ranges from 0.04% to 19.72%. Overall, the sample of individual forecasts has a mean litigation probability of 2.35%, and the sample of consensus forecasts has a mean litigation probability of 1.83%.

This study introduces two dummy variables based on a firm's litigation risk. *Hilitg* equals one for companies with an average predicted lawsuit probability above the 70th percentile, and zero otherwise. *Lowlitg* equals one if the company has an average predicted lawsuit probability of no more than the value of the 30th percentile, and zero otherwise. Companies in the middle have *Hilitig* and *Lowlitig* missing and are dropped from the test.

In addition to the above mentioned variables, this study includes forecast-level control variables as in Agrawal, Chadha and Chen (2006). *Lage* is Ln (*Age*+1), where *Age* is the number of days between the forecast date and the fiscal quarter ending date. *Avg_Lage* is defined similarly using the average value of *Age* for a given firm. *Loss* is a dummy variable, which equals one if the company's actual earnings for the fiscal quarter are negative. *Decline* is also a dummy variable, which takes the value one if the company's actual earnings are lower than the actual earnings of the same quarter the previous year. *Shock* is defined as the absolute value of the difference between the actual earnings of the quarter forecasted and the actual earnings four quarters before the forecasted quarter, scaled by the company's stock price four quarters prior. In addition, Clement (1999) finds that forecast accuracy is positively associated with analyst experience. Therefore, this paper also includes the variable *Exp* (*Avg_Exp*), defined as the (average) number of quarters analysts have issued earnings forecasts for the company since 1983 when the sample period of I/B/E/S starts.

Summary Statistics

The final sample includes 38,596 individual forecasts and 13,386 consensus forecasts. Table 2 Panel A presents summary statistics by forecast window. On the individual forecast level, there are 33,625 short-term forecasts and 4,971 long-term forecasts. On the consensus forecast level, there are 9,980 short-term forecasts and 3,406 long-term forecasts. The numbers of firms represented are 1,739 and 969, respectively. On average, there are 3.37 analysts covering one firm for the short-term window and 1.46 for the long-term window. Consistent with prior literature, this paper documents optimism in analyst forecasts and find that *Nfe* (*Fb*) is increasing (decreasing) with forecast windows. For each forecasting window, approximately 49% of the observations occur after PSLRA.

Table 2 Panel B presents a comparison of *Nfe* (*Fb*) post- and pre-PSLRA for the

combined sample. The paired *t*-test and Wilcoxon signed rank testare used to analyze differences in means and medians. Short-term forecasts are generally more optimistic and accurate following PSLRA. There is generally no change in optimism or accuracy for long-term forecasts. The univariate tests illustrate the general trend in *Nfe* (*Fb*) around PSLRA, but they do not control for other variables. We will perform formal tests in later sections.

EMPIRICAL RESULTS

This paper introduces a multivariate fixed-effect framework with firm-analyst effect fixed for the individual forecast sample and with firm effect fixed for the firm level consensus sample. The model is as follows.

$$Fb_{it}(Nfe_{it}) = \beta_0 + \beta_1 \text{PSLRA}_{it} * \text{Hilitg}_{it} * \text{ST}_{it} + \beta_2 \text{PSLRA}_{it} * \text{Hilitg}_{it} * (1 - \text{ST}_{it}) + \beta_3 \text{PSLRA}_{it} * \text{Lowlitg}_{it} * \text{ST}_{it} + \beta_4 \text{PSLRA}_{it} * \text{Lowlitg}_{it} * (1 - \text{ST}_{it}) + \beta_5 X_{it} + \alpha_i + \varepsilon_{it} \quad (1)$$

where Fb_{it} is the forecast bias of firm-analyst pair (or firm) i for quarter t, and Nfe_{it} is the forecast bias of firm-analyst pair (or firm) i for quarter t. X_{it} refers to the set of control variables as defined in previous section. In order to measure the differential effect of PSLRA, this paper tests for the difference between the coefficients of the following four interactive terms: *PSLRA*Hilitg*ST, PSLRA*Hilitg*(1-ST), PSLRA*Lowlitg*ST,* and *PSLRA*Lowlitg*(1-ST)*.

Note that since the litigation risk measure is invariant over time within each panel (firm or firm-analyst), it is impossible to introduce the interactive term between litigation risk and PSLRA, along with PSLRA and litigation to test for the different effect of PSLRA on firms with different litigation risk. The same is true for *ST* and 1-*ST*, and in later tests, the presence of institutional investors and *Top15* (only at the individual forecast level). By construction, these variables are time-invariant and cannot be included in the fixed-effect model.

For the litigation risk effect, since this study does not have a prior about how analyst forecast accuracy should change around PSLRA for high- versus low-litigation firms, the *p*-value from two-tailed tests for the null hypothesis that the coefficients are equal is adopted. Regarding the litigation risk effect on forecast bias, this study expects increased optimism in analyst forecasts made for firms with high litigation risk following PSLRA, especially for longer-term forecasts, and therefore reports the p-value from one-tailed tests for the null hypothesis that *PSLRA*Hilitg* is smaller than *PSLRA*Lowlitg*. This study also examines the horizon effect for the combined sample and for the high- and low-litigation firms separately. Since there is a directional prior that long-term forecasts are more likely to increase in optimism and forecast error following PSLRA, this study reports the *p*-value from one-tailed tests for the horizon effect.

The results are in Table 3. To conserve space, the presentation omits the coefficients of the control variables and only reports the coefficients and *t*-statistics of the four interactive terms. This paper finds strong evidence that analyst long-term forecasts have become more optimistic and less accurate for companies with high ex ante litigation risk at both the individual and the consensus level. Low-litigation risk firms do not experience significant changes in long-term forecasts. Comparing the coefficients of

*PSLRA*HiLitg*(1-ST)* with those of *PSLRA*LowLitg*(1-ST),* this study finds a strong litigation risk effect on long-term forecasts, which have become less accurate and more optimistic for firms with high ex ante litigation risk relative to those with low ex ante litigation risk. Regarding short-term forecasts, this study finds that they become less optimistic (at the individual forecast level only), and more accurate (at the consensus forecast level only) for high-litigation risk firms. However, there is no significant difference between high- and low- litigation risk firms. Therefore, the change is less likely driven by PSLRA, but rather some other concurrent factors that affect both high- and low-litigation risk firms similarly. The results also confirm the existence of a horizon effect for firms with high litigation risk, meaning that long-term analyst forecasts are more likely to become more optimistic and inaccurate than short-term forecasts after PSLRA. There is no such horizon effect for firms with low litigation risk.

Taken together, this study documents that PSLRA has no significant effect on analyst short-term forecasts, but a significantly negative effect on analyst long-term forecasts, indicating deteriorated long-term information environment following PSLRA.

OTHER ISSUES

Robustness Tests

The main analysis focuses on analyst forecasts made one year around the passage of PSLRA. While this short testing window helps exclude concurrent influences as much as possible, it might also be advantageous to investigate a longer window. For example, it is possible for investors and analysts to learn from past miscalculation of manager unfaithfulness or optimism regarding the firm's long-term prospects. In addition, there may have been ambiguity on how the courts would interpret PSLRA before the dismissal of the Silicon Graphic class action case under PSLRA on June 16, 1997. Filed on January 29, 1996, the Silicon Graphic case was the first securities class action case filed after PSLRA. The complaints alleged that the company violated various federal securities laws through material misrepresentations and omissions during the class period between October 19 and December 29, 1995. The case was dismissed under PSLRA and cleared the uncertainty over how courts interpret PSLRA. Before that case, companies might have acted conservatively in dealing with the uncertainty of court interpretation. The sample period is expanded to June 1998, one year after the Silicon Graphic class case. The paper reruns the earlier Table 4 tests using the expanded sample and the results are in Table 4. The results are somewhat similar to Table 3. Specifically, the results reveal significant litigation risk effect for long-term forecasts; e.g. long-term forecasts have become more optimistic and less accurate for high-litigation firms relative to low-litigation firms. The horizon effect for high-litigation firms only is again documented.

The only difference is about short-term forecasts. Table 4 reports improved short-term forecasts for both high- and low- litigation firms. Comparing high- and low-litigation firms, there is significantly more improvement (i.e., reduced optimism, and increased accuracy) for high-litigation firms than for low-litigation firms at the individual forecast level. This result might suggest improved short-term information environment. However, the result from consensus forecasts is insignificant. Overall, the negative

PSLRA effect on long-term forecasts is confirmed with the expanded sample period.

To exclude the possibility of a time trend driving the results, in unreported tests, this paper introduces a year variable that equals the year the forecasts are made. The year variable is insignificant for NFE, and is significantly positive for FB for the individual forecast sample. However, the main results regarding the interactive terms are unchanged.

Analyst Quality

This section examines how analyst quality affects the PSLRA effect. High-quality analysts should be able to better understand the incentives of management to issue overly-optimistic forward-looking disclosures under the protection of the safe harbor, and therefore make better adjustments in their earnings forecasts. Hence, this paper expects that high-quality analysts are less likely to issue more optimistic forecasts than low-quality analysts. In addition, it is expected that the quality of analyst forecasts issued by low-quality analysts is more likely to decrease following PSLRA.

Analyst quality is measured using analysts' broker affiliations. Specifically, Top15 is a dummy variable indicating whether the forecasting analysts are affiliated with brokers that appear as top 15 in "the leader list" of the magazine *Institutional Investor* for any year over the sample period. Table 8 reports the results from individual analyst forecasts issued for high-litigation firms. This paper does not find evidence of any different changes in forecast quality or optimism between the forecasts issued by high quality analysts and low quality analysts. Overall, the results suggest that analysts from top brokers do not adjust more effectively their forecasts to the changed incentives of management disclosure induced by PSLRA.

CONCLUSION

This study investigates the information effect of PSLRA. The first issue examined is whether analyst forecasts become more optimistic following PSLRA. Second, arguing that the direction analyst forecast quality evolves indicates the net effect of PSLRA on the information environment, this paper examines whether analyst forecast quality has improved or deteriorated following PSLRA. To exclude other compounding factors, the study examines the PSLRA effect in a fixed-effect framework with analyst-firm or firm effect fixed across various forecast horizons and across firms with different litigation exposure, to make inferences about the PSLRA effect.

The paper documents deterioration in analyst long-term forecasts for firms with high litigation risk. This result indicates that, although PSLRA may exert little effect on firms' short-term information environment, it can have a significantly negative effect on firms' long-term environment. Examine an expanded sample period and with a time trend does not change the main results. Finally, the paper finds find little evidence that high quality analysts are able to better respond to the changed information environment induced by PSLRA.

This study provides another piece of evidence regarding the informational impact of PSLRA by evaluating the short-term and long-term earnings forecasts issued by financial analysts. The results indicate that even financial analysts, who are considered

sophisticated participants in the market, experience problems in forming their long-term forecasts after PSLRA. Admittedly, financial analysts face other incentives such as investment banking relationships in forming their earnings forecast expectations, and their experienced problems following PSLRA might be driven by these other incentives rather than the information environments. Future studies attempting to disentangle these other incentives might offer a cleaner picture of the PSLRA's informational effect.

END NOTES

[1]The author thanks Doug Skinner for generously providing the data for earnings-related class action lawsuits between 1988 and 1994.

REFERENCES

Agrawal, A., S. Chadha and M. A. Chen (2006). Who is afraid of Reg FD? The behavior and performance of sell-side analysts following the sec's fair disclosure rules. *Journal of Business* 79, 2811-2834.

Ali, A. and S. Kallapur (2001). Securities price consequences of the Private Securities Litigation Reform Act of 1995 and related events. *Accounting Review* 76, 431-460.

Byard, D. and K. W. Shaw (2003). Corporate disclosure quality and properties of analysts' information environment. *Journal of Accounting, Auditing and Finance* 18, 355-378.

Boone, J. P., Inder K. Khurana and K. K. Raman (2009). Litigation reform, accounting discretion, and the cost of equity. Journal of Contemporary Accounting & Economics 5(2), 80-94

Clement, M.B. (1999). Analyst forecast accuracy: Do ability, resources, and portfolio complexity matter? *Journal of Accounting and Economics* 27, 285-303.

France, M. (2001, March). This crash won't make lawyers rich: Fraud suits are surprisingly rare in this market meltdown. *Business Week* , pp. 147-148.

Geiger, Marshall A., K. Raghunandan, and Dasaratha V. Rama (2006). Auditor decision-making in different litigation environments: The Private Securities Litigation Reform Act, audit reports and audit firm size, *Journal of Accounting and Public Policy* 25, 332–353.

Johnson, M.F., R. Kasznik and K. K. Nelson (2000). Shareholder wealth effects of the Private Securities Litigation Reform Act of 1995. *Review of Accounting Studies* 5, 217-233.

Johnson, M.F., R. Kasznik and K. K. Nelson (2001). The impact of Securities Litigation Reform on the disclosure of forward-looking information by high technology firms. *Journal of Accounting Research* 39, 297-327.

LaFond, R, and R.L. Watts (2008). The information role of conservatism. *Accounting Review* 83, 447–478.

Lee, H.Y. and V. Mande (2003). The effect of the Private Securities Reform Act of 1995 on accounting discretion of client managers of Big 6 and non-Big 6 auditors. *Auditing: A Journal of Practice and Theory* 22 (1), 93–108.

Lee, H.Y., V. Mande and M. Son (2009). The effect of the private securities Litigation Reform Act of 1995 on the cost of equity capital. *Quarterly Journal of Finance and Accounting* 48 (2), 85-106.

Leung, Sidney and Bin Srinidhi (2006). The effect of the Private Securities Litigation Reform Act on analyst forecast properties: The impact of firm size and growth opportunities. *Journal of Business Finance & Accounting* 33, 767-792.

Li, Yinghua (2009). Shareholder litigation, management forecasts, and productive decisions during the initial public offerings. *Journal of Accounting and Public Policy* 28, 1–15.

Liu, Z., and Elayan, F. (2015). Litigation risk, information asymmetry and conditional conservatism. *Review of Quantitative Finance and Accounting*, 44(4), 581-608.

Malmendier, U. and G. Tate (2005). CEO overconfidence and corporate investment.

Journal of Finance 60, 2661-2770.
Pukthuanthong, k., Turtle,H. J., Walker,T. J., and & J. Wang (2017). Litigation risk and institutional monitoring. *Journal of Corporate Finance, 45*, 342-359.
Richardson, S., S.H. Teoh and P. D. Wysocki (2004). The walk down to beatable analyst forecasts: The role of equity issuance and insider trading incentives. *Contemporary Accounting Research* 21, 885-924.
Rogers, J. L. and P. C. Stocken (2005). Credibility of management forecasts. *Accounting Review* 80, 1233-1260.
Rogers, J. L., and Van Buskirk, A. (2009). Shareholder litigation and changes in disclosure behavior. *Journal of Accounting and Economics* 47(1), 136-156.
Spiess, D.K. and P. A. Tkac (1997). The Private Securities Litigation Reform Act of 1995: The stock market casts its vote. *Managerial and Decision Economics* 18, 545-561.

TABLE 1. ESTIMATING EX ANTE LITIGATION RISK

Panel A. Probit model		
y=*litigation*	*Coefficient*	*z*
Firm size	**0.128*** **	**5.58**
Turnover	**0.031*** **	**7.48**
Beta	**0.163*** **	**4.41**
Buy and hold stock returns	12.004	1.00
Standard deviation of daily returns	**-9.327*** **	**-2.80**
Minimum of daily returns	**-2.146*** **	**-3.65**
Skewness of daily returns	-0.030	-0.82
High litigation risk industry indicator:		
Biotech	**0.465*** **	**4.01**
Computer_hardwaree	0.169	1.08
Electronics	0.202	1.48
Retailing	0.062	0.45
Computer_software	**0.254***	**1.85**
Cons	-16.322	-1.35
N	17,468	
Psedu R^2	0.1643	

Panel B. Summary statistics of average estimated litigation probability for sample firms

Average predicted litigation probability	*N*	*Mean*	Std	Min	30%	Median	70%	Max
Individual forecasts	32,183	.0235	.0230	.0004	.0111	.0158	.0236	.1972
Consensus forecasts	12,893	.0183	.0203	.0004	.0077	.0118	.0182	.1972

Notes:
***Indicates statistical significance at the 0.001 level.
**Indicates statistical significance at the 0.01 level.
*Indicates statistical significance at the 0.05 level.

TABLE 2. SUMMARY STATISTICS

Panel A	Combined		Short-term		Long-term	
	Mean	*Median*	*Mean*	*Median*	*Mean*	*Median*
Individual forecasts						
Nfe	0.36	0.15	0.30	0.04	0.82	0.51
Fb	-0.11	0	-0.04	0.02	-0.60	-0.36
PSLRA	0.48	0	0.49	0	0.47	0
Lage	3.82	3.97	3.50	3.85	6.02	6.03
Loss	0.07	0	0.07	0	0.07	0
Decline	0.39	0	0.38	0	0.45	0
Shock	0.0081	0.0042	0.0082	0.0042	0.0072	0.0041
Exp	17.16	14	16.83	14	19.40	16
Hilitig	0.42	0	0.37	0	0.48	0
Lowlitig	0.25	0	0.27	0	0.22	0
Sample size	38,596		33,625		4,971	
Consensus forecasts						
Med_Nfe	0.46	0.19	0.34	0.15	0.80	0.48
Med_Fb	-0.19	0	-0.07	0.01	-0.56	-0.31
PSLRA	0.49	0	0.49	0	0.49	0
Avg_Lage	4.22	3.95	3.60	3.78	6.01	6.02
Loss	0.09	0	0.10	0	0.07	0
Decline	0.38	0	0.37	0	0.42	0
Shock	0.0080	0.0042	0.0084	0.0043	0.0071	0.0040
Avg_Exp	15.75	14	14.70	13.20	18.84	16
Hilitig	0.32	0	0.29	0	0.44	0
Lowlitig	0.29	0	0.41	1	0.21	0
Sample size	13,386		9,980		3,406	
# of analysts per firm			3.37	2	1.46	1
# of firms			1,739		969	

Panel B

	Number of observations		Mean			Median		
Forecast windows	Pre-PSLRA	Post-PSLRA	Pre-PSLRA (1)	Post-PSLRA (2)	Diff (1)-(2)	Pre-PSLRA (3)	Post-PSLRA (4)	Diff (3)-(4)
Forecast bias (*Fb*):								
Individual forecasts								
Short-term	17,282	16,343	-0.02	-0.06	-0.04***	0.03	0.01	-0.02***
Long-term	2,644	2,327	-0.58	-0.62	-0.04	-0.35	-0.36	-0.01*
Consensus forecasts								
Short-term	5,044	4,936	-0.05	-0.09	-0.04***	0.02	0.01	-0.01**
Long-term	1,744	1,662	-0.56	-0.55	+0.01	-0.31	-0.31	0.00
Net forecast error (*Nfe*):								
Individual forecasts								
Short-term	17,282	16,343	0.30	0.29	0.01	0.13	0.11	0.02***
Long-term	2,644	2,327	0.82	0.83	-0.01	0.51	0.51	0
Consensus forecasts								
Short-term	5,044	4,936	0.33	0.34	-0.01	0.15	0.14	0.01**
Long-term	1,744	1,662	0.81	0.79	0.02	0.48	0.48	0.00

Notes: ***Indicates statistical significance at the 0.001 level.
**Indicates statistical significance at the 0.01 level.
*Indicates statistical significance at the 0.05 level.

TABLE 3. PSLRA EFFECT CONDITIONAL ON EX ANTE LITIGATION EXPOSURE AND HORIZON

	Y=Fb		*Y=Nfe*	
	Coefficient	*t*	*Coefficient*	*T*
Individual forecasts				
(1) *PSLRA*Hilitg*ST*	**0.046***	**1.94**	-0.015	-0.75
(2) *PSLRA*Lowlitg*ST*	0.037	1.53	0.001	0.07
(3) *PSLRA*Hilitg*(1-ST)*	**-0.119****	**-2.35**	**0.095****	**2.20**
(4) *PSLRA*Lowlitg*(1-ST)*	0.006	0.09	-0.065	-1.19
Overall R^2	0.2471		0.2468	
Sample Size	25,757			
p-value:				
Litigation risk effect: *Fb*: (1)+(3) >(2) +(4) *Nfe*: (1)+(3)=(2)+(4)	**0.0865***		**0.0410****	
Litigation risk effect for short-term forecasts: *Fb*: (1) >(2); *Nfe*: (1)=(2)	0.3298		0.3143	
Litigation risk effect for long-term forecasts: *Fb*: (3)>(4); *Nfe*: (3)=(4)	**0.0625***		**0.0182****	
Horizon effect: *Fb*: (1)+(2) < (3)+(4) *Nfe*: (1)+(2) >(3)+(4)	**0.0084*****		0.2647	
Horizon effect for high-litigation firms: *Fb*: (1) < (3); *Nfe*: (1)> (3)	**0.0003*****		**0.0039*****	
Horizon effect for low-litigation firms: *Fb*: (2) < (4); *Nfe*: (2)> (4)	0.3185		0.1150	
Consensus forecasts				
(1) *PSLRA*Hilitg*ST*	0.032	1.07	**-0.047***	**-1.81**
(2) *PSLRA*Lowlitg*ST*	0.025	0.90	-0.010	-0.40
(3) *PSLRA*Hilitg*(1-ST)*	**-0.136****	**-2.31**	**0.087***	**1.75**

(4) *PSLRA*Lowlitg*(1-ST)*	0.058	0.68	-0.096	-1.33
Overall R^2	0.2752		0.3030	
Sample Size	8,213			
p-value:				
Litigation risk effect: *Fb*: (1)+(3) >(2) +(4) *Nfe*: (1)+(3)=(2)+(4)	**0.0478****		0.1184	
Litigation risk effect for short-term forecasts: *Fb*: (1) >(2); *Nfe*: (1)=(2)	0.4246		0.2595	
Litigation risk effect for long-term forecasts: *Fb*: (3)>(4); *Nfe*: (3)=(4)	**0.0284****		**0.0333****	
Horizon effect: *Fb*: (1)+(2) < (3)+(4) *Nfe*: (1)+(2) >(3)+(4)	**0.0982***		0.2990	
Horizon effect for high-litigation firms: *Fb*: (1) < (3); *Nfe*: (1)> (3)	**0.0020*****		**0.0050*****	
Horizon effect for low-litigation firms: *Fb*: (2) < (4); *Nfe*: (2)> (4)	0.3528		0.1261	

Notes: ***Indicates statistical significance at the 0.001 level.
**Indicates statistical significance at the 0.01 level.
*Indicates statistical significance at the 0.05 level.

TABLE 4. LONGER-TERM EVIDENCE: 1994:4-1998:3

	Y=Fb		*Y=Nfe*	
	Coefficient	*t*	Coefficient	*t*
Individual forecasts				
(1) *PSLRA*Hilitg*ST*	**0.103*****	**6.26**	**-0.076*****	**-5.37**
(2) *PSLRA*Lowlitg*ST*	**0.070*****	**4.33**	**-0.037*****	**-2.71**
(3) *PSLRA*Hilitg*(1-ST)*	**-0.147*****	**-3.22**	**0.104*****	**2.75**
(4) *PSLRA*Lowlitg*(1-ST)*	-0.003	-0.05	-0.052	-1.11
Overall R^2	0.2777		0.3314	
Sample Size	35,278			
p-value:				
Litigation risk effect: *Fb*: (1)+(3) >(2) +(4) *Nfe*: (1)+(3)=(2)+(4)	0.0711		**0.0592***	
Litigation risk effect for short-term forecasts: *Fb*: (1) >(2); *Nfe*: (1)=(2)	**0.0211****		**0.0039*****	
Litigation risk effect for long-term forecasts: *Fb*: (3)>(4); *Nfe*: (3)=(4)	**0.0230****		**0.0092*****	
Horizon effect: *Fb*: (1)+(2) < (3)+(4) *Nfe*: (1)+(2) >(3)+(4)	**0.0000*****		**0.0034*****	
Horizon effect for high-litigation firms: *Fb*: (1) < (3); *Nfe*: (1)> (3)	**0.0000*****		**0.0000*****	
Horizon effect for low-litigation firms: *Fb*: (2) < (4); *Nfe*: (2)> (4)	0.0992		0.3718	
Consensus forecasts				
(1) *PSLRA*Hilitg*ST*	**0.053***	**1.87**	**-0.069*****	**-2.87**
(2) *PSLRA*Lowlitg*ST*	**0.044****	**2.29**	**-0.037****	**-2.18**
(3) *PSLRA*Hilitg*(1-ST)*	**-0.176*****	**-3.03**	**0.123****	**2.55**
(4) *PSLRA*Lowlitg*(1-ST)*	-0.033	-0.56	-0.017	-0.34

Overall R^2	0.3219		0.3746	
Sample Size	14,690			
p-value:				
Litigation risk effect: *Fb*: (1)+(3) >(2) +(4) *Nfe*: (1)+(3)=(2)+(4)	0.0820		0.1596	
Litigation risk effect for short-term forecasts: *Fb*: (1) >(2); *Nfe*: (1)=(2)	0.3842		0.2115	
Litigation risk effect for long-term forecasts: *Fb*: (3)>(4); *Nfe*: (3)=(4)	**0.0460****		**0.0453****	
Horizon effect: *Fb*: (1)+(2) < (3)+(4) *Nfe*: (1)+(2) >(3)+(4)	**0.0002*****		**0.0017*****	
Horizon effect for high-litigation firms: *Fb*: (1) < (3); *Nfe*: (1)> (3)	**0.0001*****		**0.0001*****	
Horizon effect for low-litigation firms: *Fb*: (2) < (4); *Nfe*: (2)> (4)	0.1009		0.3488	

Notes: ***Indicates statistical significance at the 0.001 level.
**Indicates statistical significance at the 0.01 level.
*Indicates statistical significance at the 0.05 level.

TABLE 5. PSLRA EFFECT AND ANALYST QUALITY

	Y=*Fb*		Y=*Nfe*	
	Coefficient	*t*	*Coefficient*	*t*
Individual forecasts				
(1) *PSLRA*Top15*ST*	**0.076*****	**2.60**	**-0.074*****	**-2.92**
(2) *PSLRA*NotTop15*ST*	**0.088*****	**2.92**	**-0.085*****	**-3.36**
(3) *PSLRA*Top15*(1-ST)*	-0.070	-0.79	-0.014	-0.18
(4) *PSLRA*NotTop15*(1-ST)*	-0.086	-1.46	0.059	1.20
Overall R^2	0.2754		0.2959	
Sample Size	16,057			
p-value:				
Analyst quality effect: *Fb*: (1)+(3)>(2)+(4) *Nfe*: (1)+(3)<(2)+(4)	0.4826		0.2408	
Analyst quality effect for short-term forecasts: *Fb*: (1)>(2); *Nfe*: (1)<(2)	0.3034		0.2948	
Analyst quality effect for long-term forecasts: *Fb*: (3)>(4); *Nfe*: (3)<(4)	0.4355		0.1977	

Notes: ***Indicates statistical significance at the 0.001 level.
**Indicates statistical significance at the 0.01 level.
*Indicates statistical significance at the 0.05 level.