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By

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ABSTRACT

THE INTERACTION OF LAW AND CORPORATE DECISIONS

By

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This dissertation studies the interaction of law and corporate decisions. The first essay investigates the litigation risk hypothesis (LRH) of the Initial Public Offering (IPO) underpricing puzzle based on evidence from the Private Securities Litigation Reform Act of 1995 (PSLRA). Lowry and Shu (2002) construct a simultaneous equations system and find evidence supporting the LRH. On one hand, issuers expecting higher litigation risk will underprice their IPOs more as a form of insurance against future lawsuits (insurance effect). On the other hand, issuers with higher IPO underpricing have a better chance of deterring lawsuits (deterrence effect). Using the passage of the Private Securities Litigation Reform Act in 1995 as a stronger instrumental variable than the one used in their studies, we find empirical results countering the insurance effect of the LRH and find that the reported systematic link between litigation risk and IPO underpricing is mainly driven by the choice of their instrumental variable. Furthermore, using a slightly different sample period than theirs, we find no significant deterrence effect of the LRH either prior to or following the enactment of the PSLRA. Their results are not persistent in our sample period. In summary, our results are against the LRH for both insurance effect and deterrence effect. We additionally show that the PSLRA did reduce IPO firms' litigation risk and that there is less "deep pocket" digging and less "racing to the courthouse" in the post-PSLRA period.

In the second essay, we study the role that the legal environment might play in recent corporate scandals. Some legislators believe the PSLRA, instead of deterring frivolous lawsuits as it was intended to, deterred meritorious lawsuits and resulted in many of the recent corporate frauds. They further argue that the Sarbanes-Oxley Act of 2002 (SOA) is an important counter to the PSLRA. Using several event study approaches, we investigate shareholder reaction to a series of legislative events related to the passage of the PSLRA and the SOA. From the shareholders' point of view, we find both statistically and economically significant negative abnormal returns during the passage of the PSLRA in the group of high litigation risk firms that are more likely to face meritorious lawsuits; conversely, there is no significant stockholder reaction to the passage of PLSRA in the group of high litigation risk firms which are likely to face frivolous lawsuits. Furthermore, shareholders of both groups react negatively and significantly to the passage of the SOA. Our results suggest that shareholders believed the PSLRA would deter meritorious lawsuits instead of frivolous lawsuits as it was intended to. In addition, the PSLRA reduces the important legal monitoring achieved by meritorious lawsuits and increases the incidence of fraud. Even more disappointing, shareholders did not believe the recently passed SOA would counter the effect of the PSLRA by bringing better protections for investors against corporate fraud.

To my parents and husband

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Chapter 1

IS IPO UNDERPRICING RELATED TO LITIGATION RISK? EVIDENCE BASED ON THE PRIVATE SECURITIES LITIGATION REFORM ACT OF 1995

1.1 Introduction

Initial public offerings (IPOs) typically experience a significant increase of the first day closing price from the offer price. Loughran and Ritter (2004) document a 15% first-day return during 1990-1998. As summarized by Ritter (2003), there are at least eight potential explanations for IPO underpricing including dynamic information acquisition, prospect theory, corruption, the winner's curse, informational cascades, signaling, marketing event, and litigation risk. This paper concentrates on the discussion of the litigation risk hypothesis (LRH).

The debate on the LRH has persisted for decades. Supporters argue that issuers and investment banks may use IPO underpricing as insurance against possible future lawsuits, because lowering the offer prices reduces both the probability of being sued and the potential damages that plaintiffs can recover (Ibbotson (1975), Tinic (1988), Hughes and Thakor (1992), Hensler (1995), and Lowry and Shu (2002) etc.). Opponents are unconvinced whether IPO underpricing actually deters lawsuits given that these lawsuits are typically triggered by unfavorable (and probably unexpected) news in the aftermarket, regardless of offer price level. They also argue that underpricing seems too costly to be used as insurance against lawsuits, since the frequency of IPO lawsuits, as well as the size of the settlement, tends to be low (Ibbotson, Sindelar, and Ritter (1988), Alexander

(1993), Drake and Vetsuypens (1993), Keloharju (1993), Prabhala and Puri (1999), and Ritter (2003) etc.). This paper belongs in the group of opponents.

The LRH predicts that firms with higher litigation risk should have higher IPO underpricing in general. On December 22, 1995, Congress enacted the Private Securities Litigation Reform Act of 1995 (PSLRA), which adopted a series of procedural hurdles to securities fraud class actions (described in detail later). Evidence has been shown that this law reduced firms' litigation risk (Grundfest and Perino (1997), Beatty, Drake, and Hogan (2002), Perino (2003), Bajaj, Mazumdar, and Sarin (2003) etc.). Interestingly, instead of a decrease in IPO underpricing as predicted by the LRH, Loughran and Ritter (2004) find an increase in IPO underpricing in the years 1995 and after. According to their numbers, the average underpricing in every year from 1995 to 1998 was higher than that in any year between 1981 and 1994. Though this observation alone is not definitive evidence against the LRH, it does serve as a motivation for the empirical tests of this paper.

Our tests of LRH are based on the simultaneous equations system used in Lowry and Shu (2002). They argue that IPO firms' litigation risk and IPO underpricing are actually two interdependent endogenous variables. The relationship between these two can be expressed through two effects: the insurance effect and the deterrence effect. On one hand, issuers expecting higher litigation risk will underprice their IPOs more as a form of insurance against future lawsuits. On the other hand, issuers with higher IPO underpricing have a better chance of deterring lawsuits. They find strong evidence supporting both effects using the two-stage estimation method suggested in Maddala (1983). Our tests differ from theirs in four major respects. First, we use a different

instrumental variable in testing the insurance effect. The choice of the instrumental variable is very critical in the two-stage estimation. We show that the one they use (matched firms' stock turnover) may lead to biased regression results because it may be strongly related to the investor interest in IPO aftermarket trading, which is likely to be positively related to IPO underpricing. Fortunately, the passage of the PSLRA of 1995 offers us a more appropriate one, which is significantly correlated with firms' litigation risk and completely exogenous in estimating IPO underpricing. Second, in addition to the two-stage estimation method, we use an alternative generated instrument approach developed in Wooldridge (2001). We argue that this method is better in terms of coefficient estimation and standard error and test statistics adjustments. Third, our sample of sued IPOs includes all IPO-related class action lawsuits, which include those filed under Section 11 or 12 of the Securities Act of 1933 (1933 Act) as well as those filed under Rule 10b-5 of the Securities Exchange Act of 1934 (1934 Act). Though Lowry and Shu (2002) include only cases filed under Section 11 of the Securities Act of 1933, we argue that all three laws should be included in identifying an IPO-related class action lawsuit from both legal and technical perspectives. Fourth, our tests cover the post-PSLRA period when the legal environment is significantly changed.

Due to the usage of the two-stage estimation method and the new instrumental variable, we actually test both the significance of the LRH and the impact of the PSLRA of 1995 simultaneously. Therefore, this paper contributes to the literature in two ways. First, our results offer evidence against the LRH of IPO underpricing. We find results opposite to earlier research by using a new exogenous instrumental variable, a new methodology, a new sample selection standard, and a new sample period. Second, we test

the effectiveness of the PSLRA on IPO firms' litigation risk using a multivariate test after controlling for IPO underpricing. We also test the sued and non-sued firms' characteristic differences in both the pre- and post-PSLRA periods. Both of these two approaches disclose the impact of the PSLRA better than prior research does.

There are four major results of this paper. First, our empirical results counter the LRH of IPO underpricing for both insurance and deterrence effects. Issuers expecting higher litigation risk do not underprice their IPOs more. Moreover, issuers with higher IPO underpricing do not have an advantage in deterring lawsuits. Second, we show the significant insurance effect found in the earlier research is driven by their choice of instrumental variable. The significance disappears after we use a new and stronger instrument. Third, we further find no significant deterrence effect either prior to or following the enactment of the PSLRA. The deterrence effect found in the earlier research is not there in our sample period. Fourth, the PSLRA of 1995 does reduce the IPO firms' litigation risk in our sample period (1990 to 1998). We find less "deep pocket" digging and less "racing to the courthouse" in the post-PSLRA period.

The rest of this chapter is organized as follows. Section 1.2 further discusses the related literature about the LRH and the PSLRA. Section 1.3 describes the data selection process and provides descriptive statistics of sued and non-sued firms' characteristic differences in both pre- and post-PSLRA periods. Section 1.4 discusses the simultaneous equations system and alternative testing approaches. Section 1.5 presents evidence on the impact of the PSLRA and the relationship between IPO underpricing and litigation risk. Section 1.6 is the conclusion.

1.2 Related literature

1.2.1 Litigation risk hypothesis

Ibbotson (1975) first suggests the hypothesis that issuers and investment banks may use IPO underpricing as insurance against possible future lawsuits. Tinic (1988) models expected legal liabilities as the increasing function of IPO offer price. Hughes and Thakor (1992) analyze the trade-off between expected litigation cost and current revenue loss from underpricing in a game theory model, while Hensler (1995) studies it in a single-period setting. Both models predict a positive relationship between expected litigation risk and IPO underpricing.

Tinic (1988) further supports the LRH by showing that average IPO underpricing has significantly increased following the enactment of the Securities Act of 1933, which is assumed to have increased firms' litigation risk. On the other hand, Prabhala and Puri (1999) find that the findings in Tinic (1988) can be explained by differences in IPO risk without recourse to possible differences in litigation risk. Drake and Vetsuypens (1993) find that IPO underpricing of sued firms is the same as that of non-sued firms. They conclude that underpricing does not deter lawsuits, which are typically triggered by unfavorable news in the aftermarket. In addition, Alexander (1993) opposes the lawsuit avoidance theory by arguing that the low frequency of IPO lawsuits and low settlement costs compared to the big loss from underpricing barely make litigation avoidance an important justification for IPO underpricing. In Finland, where IPO issuers have almost no legal liabilities, Keloharju (1993) nevertheless finds significant IPO underpricing. He thus concludes that IPO underpricing cannot be explained by the lawsuit avoidance

theory. Additionally, Ibbotson, Sindelar, and Ritter (1988) and Ritter (2003) point out that underpricing seems too costly to be used as insurance against lawsuits.

In a recent paper, Lowry and Shu (2002) argue that none of the previous research has taken care of the endogeneity of IPO underpricing and litigation risk. They examine the LRH from two angles. First, issuers expecting higher litigation risk might use greater IPO underpricing as insurance against future lawsuits, "the insurance effect". Second, more highly underpriced IPOs may deter more lawsuits, "the deterrence effect". Using a simultaneous equations system, they find both significant insurance and deterrence effects. Ljungqvist (2004), however, has concerns about the validity and strength of their choice of instrumental variable. With a stronger instrumental variable, this paper finds evidence against the LRH.

From a legal perspective, supporters argue the LRH is sound and logical. IPO-related class action lawsuits are mainly brought under Section 11 and 12 of the Securities Act of 1933 and Rule 10b-5 of the Securities Exchange Act of 1934. For all the Section 11 cases, plaintiffs' damages are calculated based on the difference between IPO offer price and the price on lawsuit filing day or sale price. Therefore, lowering the offer price is likely to decrease both the probability of being sued and potential damages. Alexander (1993), however, points out that this argument ignores the fact that "investors can also – and almost invariably do – bring claims under the 1934 Act along with claims under the 1933 Act". The availability of the 1934 Act makes the LRH practically ineffective because the damages under Rule 10b-5 are based on shareholders' purchase price, which can be either the offer price or the aftermarket price. As a result, regardless of how much issuers underprice their IPOs, they can be sued as long as the aftermarket price is high

enough to cover the plaintiffs' and lawyers' legal costs. It may be argued that lowering the offer price can at least reduce some damages in lawsuits; nevertheless, it is debatable whether these gains can compensate for the big proceeds typically lost in underpricing.

1.2.2 The Private Securities Litigation Reform Act of 1995

On December 22, 1995, Congress enacted the Private Securities Litigation Reform Act of 1995, which amended the Securities Act of 1933 and the Securities Exchange Act of 1934. This new law adopted a series of procedural obstacles to securities fraud class actions to discourage abusive lawsuits, thereby reducing firms' litigation risk. These obstacles include the following:

- The replacement of "joint and several liabilities" by "proportionate liability" reduces the plaintiffs' incentive of looking for "deep pockets";
- Plaintiffs' stay of discovery in a pending motion to dismiss reduces firms' defending costs;
- A new lead plaintiff appointment process and the prohibition of bonus payment to lead plaintiffs stop lawyers from hiring "professional plaintiffs";
- A heightened pleading standard increases the cost of filing lawsuits;
- A new 90-day bounce back rule stops cases from rushing into courts;
- The mandatory sanction of Rule 11 of the Federal Rules of Civil Procedure deters any party from making frivolous lawsuits;

- The comprehensive disclosure of the provisions of settlement and attorney fees and the limitation on attorney fees to a "reasonable percentage" of any damage award reduce attorneys' profits from lawsuits.[1]

Evidence of decreased litigation risk following the PSLRA exists in both court practices[2] and academic research. The debate on the effectiveness of the PSLRA mainly concentrates on two aspects: whether the PSLRA decreases firms' litigation risk and whether the PSLRA deters meritorious along with frivolous cases. This paper is more related to the first issue.[3] Opponents such as Grundfest and Perino (1997) think the PSLRA has no effect on firms' litigation risk since plaintiffs can simply shift lawsuits to state courts. They find that about 26% of class action claims moved to state courts, but they still find a 7% drop in total litigation volume. Bajaj, Mazumdar, and Sarin (2003) find there is an immediate drop in the number of federal cases, down from 191 in 1995 to 119 in 1996. Although the number of state cases increases from 65 to 80 during the same years, there is still an overall drop in total cases. They also find this shift tendency diminishes very quickly. The number of federal cases promptly rises in both 1997 and 1998 while the number of state cases continues to drop. Perino (2003) uses data from 1996 to 2001 and draws a similar conclusion.

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[1] Another important revision by the PSLRA is a "safe harbor" for forward-looking statements, which protects firms from lawsuits aimed at forward-looking statements. This hurdle, however, does not apply to IPO-related lawsuits.

[2] Courts appear to apply the PSLRA in their decisions. In *Steckman, et al.* v. *Hart Brewing, Inc., et al*, the court dismissal order states, "The Court also notes the impact of the...Reform Act of 1995 on this decision...Through this Act, Congress has encouraged the use of motions to dismiss in certain securities cases. One of the salient features of the 1995 Reform Act is...to protect against the abusive practice of filing lawsuits like this one 'with only faint hope that the discovery process might lead eventually to some plausible cause of action.'..." This case was dismissed with prejudice on December 24, 1996.

[3] The merits issue is discussed in Avery (1996), Spiess and Tkac (1997), Prichard (1999), Johnson, Kasznik, and Nelson (2000), Ali and Kallapur (2001), and Johnson, Nelson, and Pritchard (2000, 2002) etc.

So far, all studies listed above are univariate tests. Since the PSLRA is designed to reduce firms' litigation risk, it may change the characteristics of firms going public. Particularly, some small and risky companies who prefer staying private may go to the IPO market with reduced litigation risk. Without controlling for firms' characteristics, these univariate comparisons cannot tell much about litigation risk change. Although some of them have studied sued firms' characteristic changes after the PSLRA, none have used non-sued firms as a benchmark to control for firms' characteristic movement. To our knowledge, Beatty, Drake, and Hogan (2002) are the only ones who conduct both univariate and multivariate tests. They find a decreased litigation risk of IPO firms following the PSLRA. They, however, do not control for IPO underpricing in their regressions. In this paper, we test sued and non-sued firms' characteristic differences in both pre- and post-PSLRA periods. Furthermore, we offer a multivariate test on the effectiveness of the PSLRA on IPO firms' litigation risk after controlling for IPO underpricing.

1.3 Data

Data on U.S. common stock initial public offerings issued between 1990 and 1998[4] are collected from the Thomson Financial Securities Data (SDC) database. Closed-end funds, unit offerings, REITs, financial firms, reverse LBOs, ADRs, spin-offs, IPOs with an offer price below $5.00 per share, firms without exchange information in SDC and firms listed in the small capital market or the OTC market are excluded.

The list of federal class action lawsuits is obtained from the Security Class Action Alert newsletter (SCAA) between January 1990 and August 2002 as having been sued under the 1933 Act and/or the 1934 Act. We choose the SCAA because it is the only resource covering our entire sample period. Other case information has been collected by searching the Public Access to Court Electronic Records service (PACER) [http://pacer.psc.uscourts.gov], the Stanford Securities Class Action Clearinghouse [http://securities.stanford.edu], the Gilardi and Co. class action administration website [http://www.gilardi.com/allcases.html], company SEC filings, Lexis-Nexis newswire and Lexis-Nexis legal research.

Because of data availability limitations, our sample includes only cases filed in federal courts. Although this may slightly bias our results, we believe the bias is minor for several reasons. As introduced in the last section, the overall lawsuit rate still

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[4] Our sample does not include IPOs issued in the years 1999 and 2000 for the following reasons. Loughran and Ritter (2004) define these two years as the Internet bubble period, which has a 65% average IPO underpricing, more than 4 times the 15% in the 1990-1998 period. In addition, the stock market downturn in 2001 brought more than 300 "IPO allocation" lawsuits, which is more than double the total number of IPO lawsuits in our entire sample period. These extreme numbers and events may obscure the relationship between litigation risk and IPO underpricing as well as the effectiveness of the PSLRA. Beatty, Drake, and Hogan (2002) do not include any of the "IPO allocation" lawsuits because they argue that "IPO allocation lawsuits are claims alleging that underwriters engaged in undisclosed practices in connection with the distribution of IPO shares, rather than claims of fraud filed against the IPO firms." Hao (2004) studies the LRH with these "IPO allocation" lawsuits only. We offer more discussion on this issue in Section 1.5.

decreases significantly after the enactment of the PSLRA, although some cases shift to state courts. Furthermore, state security laws are characterized by a great diversity of language and interpretation and they apply only to transactions within states (Ratner (1998), p. 9). Damages that can be recovered from state courts are much smaller than those from federal courts, which naturally deters case shifts. In addition, the majority of IPO related cases are filed in federal courts because IPOs in our sample are typically offered and traded nationally or worldwide.[5]

An IPO firm is identified as sued if the class action lawsuits are related to its IPO, as shown in case documents. These cases are generally filed under Section 11 and 12 of the 1933 Act, Rule 10b-5 of the 1934 Act, or both. Lowry and Shu (2002) argue that the LRH is more applicable to Section 11 cases because damages under Section 11 are directly related to the offer price; however, we disagree on this point. Damages under Section 12 and Rule 10b-5 are related to investors' purchase prices, which in fact do cover the offer price.

First, in our sample, there is not a single case filed under Section 12 that is not also filed under Section 11. Therefore, excluding Section 12 cases is irrelevant in this paper, though we argue Section 12 does cover the offer price.[6] Second, Rule 10b-5 applies to any purchase or sale by any person of any security. According to Ratner

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[5] Beatty, Drake, and Hogan (2002) identify only 13 IPO-related state cases from 1991 to 1999. Given that their IPO sample size is much larger than ours is, we believe there will be no significant amount of state cases left after our stricter screening process.

[6] Section 12 applies to any person who "offers or sells" a security by means of a prospectus or oral communication which contains a material misstatement or omission. In an IPO-related case, underwriters are usually the defendants under Section 12 because "liability under Section 12 extends to any person who solicits the purchase" (Ratner (1998), p. 88-90). Consequently, Section 12 applies to those investors purchasing from underwriters in offering, and their purchase prices do include the offer price. Technically, Section 11 and 12 are almost inseparable for IPO-related cases since underwriters are also defendants under Section 11 as long as they sign the registration statement.

(1998), the "sale" includes the initial public offering and Rule 10b-5 does not exclude Section 11.[7] As a result, an IPO-related suit could be brought under Rule 10b-5 against the same defendants as Section 11 and 12 claims, including both issuers and underwriters (Alexander (1993)), and Rule 10b-5 does cover shares bought at the offer price.[8] In summary, we believe all three laws relate to the IPO offer price; therefore, our sample includes all IPO related class action lawsuits under any of these three laws.

Table 1.1 lists the number of IPOs, the number and percentage of IPO-related class action lawsuits, and the average months between offering month and lawsuit filing month by issue year. In our sample, there were 2,681 IPOs issued from 1990 to 1998, where 1,605 were issued before the PSLRA enactment and 1,076 after. Due to the 3-year statute of limitation, the lawsuits related to 1993-1995 IPOs could be filed before or after the PSLRA enactment. Consequently, they may or may not be affected by the PSLRA since this law only applies to the cases filed after December 22, 1995 (Lerach (1998)). To avoid this issue, we exclude 1994 and 1995 IPOs from our final sample. 1993 IPOs are still included because the latest 1993 IPO case was filed before the enactment.[9] The final sample includes 946 IPOs issued between 1990 and 1993, and 1,076 IPOs issued between 1996 and 1998. Among them, 6.8% of the 1990-1993 IPOs and 4.7% of the 1996-1998 IPOs were sued. Overall, the lawsuit rate dropped by 2.1% following the enactment.

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[7] "The court held that the issuance by a corporation of its own shares was a 'sale' under Rule 10b-5. [...]The court has also held that suit can be brought under Rule 10b-5 to recover damages resulting from misstatements in a 1933 Act registration statement, even though such misstatements give rise to a specific right of action under Section 11 of the 1933 Act." (Ratner (1998), p. 140-143)

[8] An example is *Zishka et al.* v. *American Pad & Paper Company et al.* Its court complaint states, "This is a suit on behalf of purchasers of American Pad & Paper Company...stock between 7/2/96 and 12/17/97 (the 'Class Period'), alleging violations of ...SEC Rule 10b-5." Here, 7/2/96 was the IPO offering date. One defendant of this case bought shares at offer price, while the other one bought at aftermarket price. This case was filed under Rule 10b-5, but not Section 11.

[9] Results are statistically indifferent from those reported in this paper when we exclude 1993 IPOs in our sample.

Furthermore, there was a significant decrease of 4.8% in the percentage of cases from 1993 to 1996. These results suggest that the PSLRA did deter many lawsuits, at least in our sample period, which is consistent with earlier research. In total, we find 114 cases (5.6%) in 1990-1998 (with 1994 and 1995 excluded).

1.3.1 IPO class action lawsuit decisions and the impact of the PSLRA

Table 1.2 lists case decisions and the average decision time length between lawsuit filing month and case decision month.[10] For settled cases, we further present the average settlement amount and settlement/proceed ratio.

Out of 64 cases filed prior to the PSLRA, 67.2% of these cases were settled, while 64% of the 50 cases filed following the PSLRA were settled. Compared to this small 3.2% decline in settlement rate from the pre- to the post-PSLRA period, there was a big 11% decrease in settlement rate from 1993 to 1996. Again, the PSLRA shows the most impact in the year 1996, which is similar to the findings of Bajaj, Mazumdar, and Sarin (2003). In contrast to the decreased settlement rate, the overall dismissal/termination rate increased 6.31% following the PSLRA. This result is opposite to Bajaj, Mazumdar, and Sarin (2003) but consistent with Foster et al. (2000). [11] Interestingly, the dismissal/termination rate of 1996 IPO cases was 14.5% more than that of 1993 IPO cases. For post-1996 IPO cases, the dismissal/termination rate dropped gradually again. Consistent with other research, our results show the PSLRA did reduce firms' litigation

[10] The case decision month is based on the date of District court final judgment with prejudice, the date of preliminary judgment, the date on the settlement document from the Gilardi and Co. class action administration web site, the date listed in firms' SEC filings, or the case close date from court dockets.

[11] The sample of Bajaj, Mazumdar, and Sarin (2003) includes all securities class action lawsuits in all court levels, which is different from our sample coverage. In addition, their sample ends in 1999 with many cases still pending during the research while there are only two cases pending in our sample.

risk for a while, but lawyers and plaintiffs eventually found a new way to make their cases successful.

The decision speed of cases was also changed by the PSLRA. The average decision time length of settled cases dropped by 1.3 months following the enactment. In contrast, it took longer for cases to be dismissed in the post-PSLRA period. The average decision time length of dismissed/terminated cases after the enactment was 1.6 months more than before. Foster et al. (2000) interpret this increase as reflecting the effect of staying discovery while a motion to dismiss is pending.[12] The average settlement amount increased $2.7 million following the enactment. The average settlement/proceed ratio increased 8.5%. These increases, however, were mostly from the settlement results of 1998 IPO cases. In fact, 1996 IPO cases had low settlement amounts and low settlement/proceed ratios. In summary, our results support earlier studies. The PSLRA did reduce firms' litigation risk, but it only did so for a few years, which also supports our sample period selection.

1.3.2 Descriptive statistics of sued and non-sued IPO firms in the pre-PSLRA period vs. post-PSLRA period

Descriptive statistics are shown in Table 1.3. Panel A compares IPO firms' characteristics in the pre-PSLRA period to those in the post-PSLRA period. Panel B compares the characteristics of sued and non-sued firms in both the pre-PSLRA period and the post-PSLRA period. IPO firms' characteristic data are from SDC and CRSP. Most of the results in Panel A and the pre-PSLRA period of Panel B are consistent with

[12] Under the PSLRA, a plaintiff cannot commence discovery during the pendency of any motion to dismiss unless the court finds that particular discovery is necessary to preserve evidence or prevent undue prejudice. 15 U.S.C. § 77Z-1(b)(3)

earlier findings; however, the results in the post-PSLRA period of Panel B show a somewhat different story.

Initial return is defined as the percentage change between the offer price (USPR) and the first closing price.[13] As Panel A shows, the average IPO initial return significantly increases by 5.2% following the enactment of the PSLRA. Panel B shows no significant difference between the initial returns of sued and non-sued firms in the pre-PSLRA period. The average initial return of sued firms, however, is 21.7% larger than that of non-sued firms in the post-PSLRA period. More underpricing seems not to deter but to trigger lawsuits in the post-PSLRA period. Still, because of the simultaneity issues, multivariate tests in section 1.5 give interpretations that are more appropriate.

Price update is defined as the percentage change between the midpoint of the filing price range (MFILE) and the offer price from SDC. As shown in Panel A, the price update level does not change much following the enactment. Panel B shows sued firms have a higher price update than non-sued firms have both prior to and following the enactment, but the test's significance nearly vanishes in the post-PSLRA period. In other words, firms pricing more aggressively are more likely to be sued, but this likelihood slightly decreases under the impact of the PSLRA.

Market capitalization is equal to the first closing price multiplied by the number of shares outstanding after offering in all markets (OUTPF) from SDC. Proceeds raised equal the offer price multiplied by the shares offered in all markets (TOTSHSMIL) from

[13] Following Lowry and Schwert (2004), to determine the first closing price of a particular issue, we use the first available closing price data from CRSP within 14 calendar days after the offering date. If CRSP data are not available, we try to obtain the closing price on the first trading day (PRSDAY) from SDC. If that is still not available, initial return is equal to the percentage change between offer price and closing price one day after offer (PCT1DAY) from SDC.

SDC.[14] Panel A shows that both size measures increase significantly following the enactment, which may be caused by stock market valuation uncertainty (Loughran and Ritter (2004)). Panel B shows sued firms have $19.6 million more median market capitalization and $3.9 million more median proceeds raised than non-sued firms have in the pre-PSLRA period (both are significant at the 1% level); however, the size differences become much smaller in the post-PSLRA period. Following the enactment, sued firms have only $4 million more median market capitalization and $1.1 million more median proceeds raised than non-sued firms have (neither is significant). As in Grundfest and Perino (1997)[15], our results suggest that plaintiffs' and lawyers' incentive looking for a "deep pocket" gets much weaker under the impact of proportionate liability[16] of the PSLRA.

The lead underwriter rank measure is the same as that used in Loughran and Ritter (2004).[17] Panel A shows that IPOs are underwritten by more prestigious investment banks following the enactment. Panel B shows that IPOs underwritten by more prestigious investment banks were sued more in the pre-PSLRA period. Following the enactment, however, the underwriter rank difference between sued and non-sued firms is

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[14] Both market capitalization and proceeds raised are measured in millions of 1983 dollars using the Consumer Price Index.

[15] Grundfest and Perino (1997) do not compare the difference between sued and non-sued firms, and their sample period only covers one year after the passage of the PSLRA.

[16] Before the PSLRA, liability of defendant was "joint and several", which means each defendant was liable for the entire amount of damages regardless of how much fault he or she was actually at. Therefore, plaintiffs could recover all of their damages simply against one single "deep pocket" defendant. The PSLRA adopted the proportionate liability, under which each defendant's liability corresponds to the percentage of his or her responsibility, measured as a percentage of the total fault of all persons who caused or contributed to the loss. As a result, plaintiffs' incentive for going after "deep pocket" is much weaker under the PSLRA.

[17] It is constructed in a way similar to Carter, Dark, and Singh (1998). The data is available on Dr. Ritter's web page [http://bear.cba.ufl.edu/ritter/ipodata.htm]. We take the average when an IPO has more than one lead underwriter.

only 0.47, nearly half of the 0.91 prior to the enactment. The test significance is also gone. Once again, the "deep pocket" effect fades under the impact of the PSLRA.

Stock volatility is measured as the standard deviation of daily returns from CRSP during the first 25 days starting with the offering date (day 0 to day 24). Panel A shows that IPO stock volatility significantly increases in the post-PSLRA period. This could reflect the higher uncertainty of the IPO market in the late 1990s. In addition, there could be more risky firms going public following the enactment due to the lower litigation risk. Panel B shows no significantly different stock volatility between sued and non-sued firms prior to the enactment.[18] Following it, however, the average standard deviation of sued firms is 1.6% higher than that of non-sued firms at the 1% significance level. Given that it is harder to bring a lawsuit under the new law, plaintiffs have to target those firms with a much steeper price drop, who thus could have done something more obviously wrong.

Age is defined as the difference between IPO offering year and the firm's founding year, following Loughran and Ritter (2004).[19] On average, IPO firms are 3.4 years younger following the enactment. This might suggest that underwriters are willing to take younger firms to the IPO market with lower litigation risk under the PSLRA. Panel B shows sued IPOs are younger than non-sued IPOs. The average age difference

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[18] We choose a 25-day interval because the shortest time length between offering date and lawsuit filing date is 25 days in our sample. This time length is different from Lowry and Shu (2002). They calculate stock volatility using daily returns over a one-year interval beginning one month after the offering date. As Table 1.1 shows, a large fraction of lawsuits are filed within one year after offering, so their volatility measure may exaggerate the stock's true volatility because lawsuits themselves will cause an increase in stock volatility. Hence, we believe our measure is better. The results in Panel B are contrary to their findings, which confirms that their measure is affected by lawsuits.

[19] The founding year data is available on Dr. Jay Ritter's web page [http://bear.cba.ufl.edu/ritter/ipodata.htm]. This age measure is different from Lowry and Shu (2002), who classifies an IPO being five or more years old if it has five or more years of earnings information on SDC. We think their classification will bring in noises, because nearly 60% of our sample misses earning information on SDC.

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between sued and non-sued IPOs is significant at the 5% level prior to the enactment. With a lower uncertainty level, older firms seem subject to a lower litigation risk.

IPO firms are labeled as high-tech (HIGHTECHCODE), venture capitalist backed (VE), traded on the NYSE/AMEX (EXCHC), and with secondary offering in all markets (TOTSECSHROMIL) according to SDC classifications.

More high-tech firms go public in the post-PSLRA period. High-tech firms are subject to more uncertainties, which cause higher litigation risk. Consistent with this prediction, we find the high-tech proportion of sued firms is higher than that of non-sued firms in both pre- and post-PSLRA periods.[20] Slightly more IPO firms choose to be listed on the NYSE or AMEX following the enactment. Furthermore, there is a very small difference between sued and non-sued IPOs in terms of NYSE/AMEX listed proportion in both pre- and post-PSLRA periods. 14.1% less of IPOs are backed by venture capitalists following the enactment than those prior to it. In addition, 9.6% more of sued IPOs are backed by venture capitalists than non-sued IPOs in the pre-PSLRA period. In the post-PSLRA period, however, actually 2.5% fewer of sued IPOs are backed by venture capitalists than non-sued IPOs. This reversal again reflects the impact of the proportionate liabilities of the PSLRA.

We use secondary offering as a proxy for insider selling. Panel A shows that 8% less of IPOs have a secondary offering following the enactment. This is consistent with the prospect theory of Loughran and Ritter (2004) that issuers concentrate more on aftermarket profit than IPO proceeds in the late 1990s. The signaling hypothesis states that insiders retaining a great portion of firm shares can signal firms' good quality

[20] This is different from the results of Lowry and Shu (2002); they find no significant difference in the high-tech proportion between sued and non-sued firms.

(Leland and Pyle (1977) and Grinblatt and Hwang (1989), etc.). Consistent with this hypothesis, the proportion of sued IPOs having a secondary offering is higher than that of non-sued IPOs. Consistent with Foster et al. (2000), we find that there are more insider trading cases following the enactment.[21] 10.7% more of sued IPOs have a secondary offering than non-sued IPOs in the post-PSLRA period. In the pre-PSLRA period, however, only 8.4% more of sued IPOs have a secondary offering than non-sued IPOs.

In summary, the PSLRA of 1995 does reduce IPO firms' litigation risk in our sample period (1990 to 1998). We find less "deep pocket" digging, less "racing to the courthouse", and more insider trading related cases in the post-PSLRA period. Since the PSLRA has a strong impact on IPO firms, in fact, we can predict that its impact on most non-IPO firms would be stronger because the "safe harbor" does not apply to cases related to IPOs, tender offers, and penny stocks, etc.

[21] The PSLRA raises the scienter requirement, which requires defendants to "know or have reason to know that the information was non-public and had been obtained improperly by selective revelation or otherwise." Under the new law, plaintiffs more often search for a pattern of officers and directors liquidating their stocks during the class period to plead motive and opportunity. Therefore, we expect to see more insider trading related cases in the post-PSLRA period.

1.4 Methods

We apply the simultaneous equations system to test the LRH of IPO underpricing. Under this model set-up, the relationship between IPO underpricing and firms' litigation risk can be expressed as two simultaneously decided effects: the insurance effect and the deterrence effect. On one hand, IPO firms expecting higher litigation risk purchase more insurance, i.e., they underprice their IPOs by a greater amount. On the other hand, IPOs with higher underpricing should have lower probabilities of being sued after offering, i.e., they have a better chance to deter lawsuits. While initial return is observed directly, litigation risk is observed only as a dichotomous variable – lawsuit dummy. Hence, these two effects are captured by the following equations:

$$\text{Insurance effect: initial return} = \gamma_1 \text{ litigation risk}^* + \beta_1 X_1 + \mu_1 \tag{1.1}$$

$$\text{Deterrence effect: litigation risk}^* = \gamma_2 \text{ initial return} + \beta_2 X_2 + \mu_2 \tag{1.2}$$

$$lawsuit = \begin{cases} 1 & \text{if litigation risk}^* > 0 \\ 0 & \text{otherwise} \end{cases} \tag{1.3}$$

where

initial Return = the amount of underpricing for IPO firm i (primary variable of interest);

litigation Risk* = the unobservable probability of litigation for IPO firm i (primary variable of interest);

X_1 = a vector of exogenous control variables for equations (1.1);

X_2 = a vector of exogenous control variables for equations (1.2);

lawsuit = dummy variable equals to 1 if firm i is sued, and 0 otherwise;

μ_1 and μ_2 = unobservable i.i.d. bivariate normal error terms.

Equation (1.1) expresses the insurance effect of the LRH. We accept the hypothesis if γ_1 is significantly positive. Equation (1.2) expresses the deterrence effect of the LRH. We accept the hypothesis if γ_2 is significantly negative. The LRH of IPO underpricing is accepted only when both γ_1 and γ_2 are significant and have the right signs.

According to (Maddala (1983), p. 244), the reduced forms of this simultaneous equations system are:

$$\text{initial return} = \Pi_1 X + \nu_1 \tag{1.4}$$

$$\text{litigation risk}^{*} = \Pi_2 X + \nu_2 \tag{1.5}$$

where

X = a vector of all exogenous variables in the system including instrumental variables (the union of X_1 and X_2);

ν_1 and ν_2 = unobservable i.i.d. bivariate normal error terms.

Since litigation risk is observed only as a dichotomous variable – lawsuit dummy, we can only estimate Π_2 / σ_2, where $\sigma_2^2 = \text{var}(\nu_2)$. Therefore, equation (1.5) should be written as:

$$\text{litigation risk}^{**} = \frac{\text{litigation risk}^{*}}{\sigma_2} = \frac{\Pi_2}{\sigma_2} X + \frac{\nu_2}{\sigma_2} = \Pi_2^{*} X + \nu_2^{*} \tag{1.6}$$

The structural equations (1.1) and (1.2) are now written as:

$$\text{Insurance effect: initial return} = \gamma_1\sigma_2 \text{ litigation risk}^{**} + \beta_1 X_1 + \mu_1 \qquad (1.7)$$

$$\text{Deterrence effect: litigation risk}^{**} = \frac{\gamma_2}{\sigma_2}\text{initial return} + \frac{\beta_2}{\sigma_2} X_2 + \frac{\mu_2}{\sigma_2} \qquad (1.8)$$

1.4.1 Two-stage estimation method introduced by Maddala (1983)

We first estimate both effects (equation (1.7) and (1.8)) using the two-stage estimation procedure recommended by (Maddala (1983), p. 245). For the insurance effect, the first stage is estimating equation (1.6) by probit maximum likelihood (ML) to obtain index function $\hat{\Pi}_2^* X$. The second stage is estimating equation (1.7) by ordinary least squares (OLS) after substituting $\hat{\Pi}_2^* X$ for litigation risk**. Parameters $\gamma_1\sigma_2$ and β_1 are estimated here. For the deterrence effect, the first stage is estimating equation (1.4) by OLS to obtain linear projection function $\hat{\Pi}_1 X$. The second stage is estimating equation (1.8) by probit ML after substituting $\hat{\Pi}_1 X$ for initial return. Parameters γ_2/σ_2 and β_2/σ_2 are estimated here. The asymptotic covariance matrixes are given in (Maddala (1983), p. 245). We use the non-parametric bootstrap to obtain standard errors for coefficients.

There are two drawbacks to this method. First, coefficients γ_1, γ_2 and β_2 are not identifiable. We can only estimate scaled coefficients $\gamma_1\sigma_2$, γ_2/σ_2 and β_2/σ_2. Second, the computing procedure of asymptotic covariance matrixes can be very difficult. Regardless of these defects, the regression coefficients are still consistent. We are able to test

whether these coefficients are significantly different from zero and understand the statistical significance of both insurance and deterrence effects.

1.4.2 Generated instrument approach introduced by Wooldridge (2001)

We further use a more applicable method to estimate the insurance effect. Given that the endogenous variable (litigation risk*) in the insurance effect equation is observed as a dichotomous variable (lawsuit), equation (1.1) is called a dummy endogenous variable model (Heckman (1978)). We can estimate it using a generated instrument approach introduced by (Wooldridge (2001), p. 621).

The detailed procedure is as follows: (i) Estimate equation (1.6) by probit ML to obtain the fitted probabilities $F(\hat{\Pi}_2^* X)$, which is the predicted probability of lawsuit=1. (ii) Using $F(\hat{\Pi}_2^* X)$ as a generated instrumental variable for litigation risk*, estimate equation (1.1) by two-stage least squares (2SLS).[22] The 2SLS in step (ii) is equivalent to the following two steps: (a) Estimate the following equation (1.9) by OLS to obtain linear projection function $\hat{\delta} F(\hat{\Pi}_2^* X) + \hat{\theta} X_1$. (b) Estimate equation (1.1) by OLS after substituting $\hat{\delta} F(\hat{\Pi}_2^* X) + \hat{\theta} X_1$ for litigation risk*. Parameters γ_1 and β_1 are estimated here.

$$\text{litigation risk}^* = \delta F(\hat{\Pi}_2^* X) + \theta X_1 + \tau \qquad (1.9)$$

[22] This generated instrumental variable is uncorrelated with the error term, μ_1, and highly correlated with the endogenous variable, litigation risk*, so it meets both assumptions for instrumental variables.

where

τ = unobservable i.i.d. normal error term.

In short, this approach is estimating the dummy endogenous variable model (equation (1.1)) by 2SLS using a generated instrumental variable $F(\hat{\Pi}_2^* X)$. As discussed in (Wooldridge (2001), p. 622 and 623), there is no special consideration in estimating a dummy endogenous variable model by 2SLS, but this generated instrumental variable approach offers estimators that are more efficient.

There are two nice features of this approach compared to the two-stage estimation method of Maddala (1983). First, we can actually estimate γ_1 directly and avoid $\gamma_1\sigma_2$. Second, we can ignore whether the specification of equation (1.6) and the estimation of Π_2^* are correct or not. Therefore, the 2SLS standard errors and test statistics are asymptotically valid (Wooldridge (2001), p. 117 and 623).

1.4.3 Instrumental variables and control variables

In this subsection, we discuss instrumental variables and control variables. The descriptive statistics for most of these variables are listed in Table 1.3. Table 1.4 shows the descriptive statistics of instrumental variables and the comparison of alternative matched sample proxies. Panel A compares the characteristics of these variables in the pre-PSLRA period to that in the post-PSLRA period. Panel B compares sued and non-sued firms in the whole sample period.

In the insurance effect estimation, an exogenous instrumental variable is required for litigation risk. We first discuss the matched sample stock turnover used in Lowry and Shu (2002). IPO firms' stock turnover equals $[1-\Pi_{t=22}^{387}(1-\text{volume traded}_t/\text{total shares}_t)]$ with t = 0 as IPO offering date.[23] Panel A shows the average IPO stock turnover significantly increases by 1.9% following the enactment. Since shareholder damages are increasing in the number of shares traded at the allegedly misleading prices, stock turnover should be positively related to firms' litigation risk. Consistent with this conjecture, Panel B shows that the average stock turnover of sued IPOs is 10.5% higher than that of non-sued IPOs. Both tests are at the 1% significance level. Because the post-IPO stock turnover is not in managers' information set at the time of offering, the matched sample stock turnover (matched turnover) is further constructed.[24] Table 1.4 shows that matched turnover has characteristics similar to IPOs' own stock turnover;[25] therefore, we believe matched turnover is a good proxy for IPOs' own stock turnover.

They argue that the stock turnover of similar firms prior to IPO should not directly affect IPO initial return; therefore, matched turnover can be used as the instrumental variable for litigation risk. On the contrary, we believe matched turnover is

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[23] As Lowry and Shu (2002) point out, this turnover measure is a direct input in estimating damaged shares under the proportional trading model, which is widely accepted by courts as the appropriate way to calculate damages in class action lawsuits. For firms listing on NASDAQ, we divide the trading volume by a factor of two.

[24] Specifically, for each IPO firm, we select all firms with the same three-digit SIC code and market capitalization within 80% to 120% of the IPO firm as the matched sample. If there is no matched firm found, we select all firms with the same two-digit SIC code and market capitalization within 80% to 120% of the IPO firm. If still no matched firm is found, we select all firms with the same one-digit SIC code and market capitalization within 80% to 120% of the IPO firm. If still no matched firm is found, we select all firms that have market capitalization within 80% to 120% of the IPO firm. For each matched firm in a particular IPO firm's matched sample, stock turnover is calculated based on its daily returns over a one-year interval prior to this IPO's offering date. This IPO firm's matched turnover is calculated by averaging the stock turnovers of all matched firms in its matched sample.

[25] Matched turnover increases significantly after the enactment of the PSLRA. Sued firms have significantly higher matched turnover. The correlation coefficient between IPOs' own stock turnover and matched turnover is 0.15.

not exogenous enough to be a good instrumental variable. Reese (1998) finds that IPOs with greater "investor interest level" prior to offerings tend to have higher initial returns and higher initial trading volumes (scaled by shares issued), which cause more information production and brokerage market making services, then further cause more "investor interest" and higher long term trading volume. In short, the "investor interest level" prior to offering leads to a positive relationship between an IPO's initial return and its stock turnover. Busaba and Chang (2002) show that informed investors will bid low in the premarket if they are interested in the potential profit from aftermarket trading; therefore, IPO underpricing is positively related with investors' interest in aftermarket trading. Other than these two papers, there has been quite an amount of empirical evidence showing the positive relationship between IPO initial return and stock turnover/trading volume.[26] Based on these findings, we believe there exists an omitted variable "investor interest level" in the error term, μ_I, of equation (1.5). While representing the similar firms' "investor interest level," matched turnover should be strongly correlated with μ_I. Therefore, as pointed out by Ljungqvist (2004), matched turnover appears to fail the rank condition for instrument validity. In addition, matched turnover is partially correlated with litigation risk at only 10% significance level (Lowry and Shu (2002), p. 329). Due to these two reasons, we think matched turnover is a weak instrument for litigation risk.

[26] Miller and Reilly (1987) find that IPOs with a positive initial return have a higher trading volume (scaled by shares issued) for each of the first five days and the 21st day of trading. Schultz and Zaman (1994) find a higher trading volume (scaled by shares issued) for underpriced IPOs during the first day of trading. Ellis, Michaely, and O'Hara (2000) find the trading volume of the "hot" IPOs is more than double that of the other IPOs.

In this paper, we propose an exogenous policy change dummy (PSLRA) as the instrumental variable for litigation risk. PSLRA = 1 if an IPO is issued in the post-PSLRA period (year 1996 to 1998), and 0 if an IPO is issued in the pre-PSLRA period (year 1990 to 1993). We have shown that the passage of the PSLRA in 1995 decreases IPO firms' litigation risk. Furthermore, this legal policy change dummy is exogenous in estimating IPO underpricing because it just adopted the procedural hurdles to filing securities fraud class actions and never dealt with IPO pricing procedure. As showed in next section, it is also partially correlated with litigation risk at 1% significance level. Hence, we believe this instrumental variable is completely exogenous and stronger than matched turnover.

To estimate the deterrence effect, we follow Lowry and Shu (2002) using prior market return as the exogenous instrumental variable for IPO initial return. Prior market return is equal to the compounded value-weighted NYSE/AMEX/NASDAQ daily returns (including dividend) within 15 days prior to the IPO offering date. As earlier research has documented, prior market return is significantly correlated with IPO underpricing. In addition, we agree that it is exogenous in estimating IPO firms' litigation risk. Panel A of Table 1.4 shows that prior market return is significantly higher in the post-PSLRA period, which might reflect issuers' tendency to time their IPOs more or the booming market of the late 1990s. Panel B shows that sued firms have a slightly lower prior market return than non-sued firms. Both difference tests are at the 10% significance level.

Control variables are the common exogenous variables in both insurance and deterrence effects, i.e., they are related to both initial return and litigation risk. Most of

these variables have been introduced in the Data section; in this section, we summarize their relationship with IPO firms' litigation risk and IPO underpricing.

Ln(Market Cap) = the natural logarithm of market capitalization. This size measure should be positively related to litigation risk based on the "deep pocket" theory. The relationship between market capitalization and initial returns could be mixed. With less information asymmetry, larger firms should have lower initial returns. Underwriters, however, may underprice bigger issues by a larger amount because it is harder to sell bigger issues (Michaely and Shaw (1994)).

UW rank = IPO lead underwriter rank. VC backed = 1 if an IPO is venture capitalist backed and 0 otherwise. The "deep pocket" theory suggests that the IPOs underwritten by more prestigious investment banks and/or backed by venture capitalists are subject to higher litigation risk. Higher rank underwriters and venture capitalists may disclose more of IPO firms' information to protect their reputation; therefore, underwriter rank and VC backed dummy should be negatively related to IPO underpricing because of less information asymmetry (Ritter (1984), Carter and Manaster (1990), and Michaely and Shaw (1994)).

Ln(1+Age) = the natural logarithm of (1+Age). High-tech = 1 if an IPO firm is classified as a high-tech firm in SDC and 0 otherwise. NYSE-AMEX = 1 if an IPO firm is listed on the NYSE or AMEX and 0 otherwise. With size controlled in a multivariate regression, older firms and firms listed on NYSE or AMEX should have less litigation risk and less IPO underpricing due to their lower uncertainty levels and more publicly available information (Carter and Manaster (1990) and Megginson and Weiss (1991)).

High-tech firms should have higher litigation risk and higher IPO underpricing due to their higher uncertainty levels.

Insider selling = 1 if an IPO firm has a secondary offering in IPO and 0 otherwise. This dummy should be positively related to the IPO firm's litigation risk because insider selling makes it easier for plaintiffs to establish motive or scienter in lawsuits. It should be negatively related to IPO underpricing because insider selling signals poor quality of the issuing firm.

Price update should be positively correlated with litigation risk because issuers setting offer price more aggressively are more likely to be sued. According to Benveniste and Spindt (1989), underwriters only partially update the offer price from the midpoint of price filing range to compensate institutional investors through IPO underpricing. Earlier research also finds a strong positive relationship between price update and initial return. We predict the same positive relationship in our regression.

Stock volatility should be positively related to litigation risk because lawsuits are typically filed after a steep drop in stock price. It should also be positively related to underpricing because high volatility is associated with high information asymmetry. Similar to stock turnover, IPO firms' own stock volatility is not in managers' information set at the time of offering because it is based on post-IPO daily returns. Again, matched sample standard deviation (matched SD) is used following Lowry and Shu (2002).[27] Interestingly, Table 1.4 shows this matched SD is not a good proxy for IPO firms' own standard deviation. As shown in Panel A, the difference of average matched SDs between

[27] The matched sample is the same one used to construct matched turnover. For each matched firm in a particular IPO firm's matched sample, standard deviation is calculated based on its daily returns over a one-year interval prior to this IPO's offering date. An IPO's matched SD is the average standard deviation of all matched firms in its matched sample.

pre- and post-PSLRA periods is not as strong as that of IPO firms' own standard deviations. The t-test is insignificant. More important, Panel B shows that the average matched SD of non-sued firms is actually higher than that of sued firms, which reverses the relationship of sued and non-sued IPO firms' own standard deviations. We think taking the average of regular firms' stock volatilities cannot capture IPO firms' own volatility because IPOs usually have higher stock volatility than other publicly traded firms.

In this paper, we propose a new proxy (matched IPO SD), which focuses on IPO firms' own stock volatilities only. When issuers try to predict future stock volatility during the IPO process, it makes sense for them to refer to the post-offering stock volatility of IPOs issued one or two years earlier. Therefore, for each particular IPO, we construct its matched IPO sample by selecting all IPOs with the same 1-digit SIC code and issued between day -388 and day -753, with day 0 as the offering date of this particular IPO. Its matched IPO SD (one year) is equal to the average of standard deviations (one year) of firms in its matched IPO sample.[28] Table 1.4 shows matched IPO SD has very similar characteristics to IPO firms' own standard deviation (25 days). It is significantly higher following the enactment than prior to it. Sued firms have significantly higher matched IPO SD than non-sued firms do. Overall, in terms of both difference tests' sign and statistical significance, it is a much better proxy for IPO firms' own standard deviation (25 days) compared to matched SD.[29]

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[28] Standard deviation (one year) = the standard deviation of daily returns over a one-year interval beginning one-month after the offering date. Day -388 to -753 is selected as the time interval for matched IPOs because we want to make sure all matched IPOs' standard deviations (one year) coverage is within issuers' information set on the offering date.

[29] For comparison purposes, we construct a half-year measure as well. Standard deviation (half year) = the standard deviation of IPO firms' daily returns over a half-year interval beginning one month after the

In summary, variables used in regressions are as follows. X is a vector of all exogenous variables in the simultaneous equations system, which includes all control variables discussed above and instrumental variables for both litigation risk and initial return. X_1 includes all control variables discussed above plus prior market return, which is the instrumental variable for initial return. X_2 includes all control variables discussed above plus PSLRA or matched turnover, which are the instrumental variables for litigation risk. Therefore, X is in fact the union of X_1 and X_2.

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offering date. Matched IPO SD (half year) = the average of standard deviations (half year) of these matched firms in matched IPO sample, which includes all IPOs with the same 1-digit SIC code and issued between day -205 and day -387. We have also constructed matched samples by matching listed exchanges and size; however, the cross-sectional comparisons show that matched IPO SD (one year) and matched IPO SD (half year) are the two best choices. Between these two measures, the correlation coefficient between matched IPO SD (one year) and standard deviation (25 days) is 0.18, which is higher than the 0.14 of matched IPO SD (half year). Therefore, we present matched IPO SD (one year) in the main empirical test results. Matched IPO SD (half year) is discussed in the sensitivity analysis.

1.5 Empirical results

This section addresses the multivariate regression results of the LRH of IPO underpricing. Section 1.5.1.1 examines the insurance and deterrence effects in a simultaneous equations system with PSLRA and prior market return as instrumental variables. Section 1.5.1.2 conducts various sensitivity analyses.

1.5.1 Regression results using the simultaneous equations system

1.5.1.1 Insurance effect results

Table 1.5 shows the regression results of estimating equations (1.5) and (1.1) using the two-stage estimation method in Maddala (1983) and the generated instrument approach in Wooldridge (2001) with a policy change dummy (PSLRA) as the external instrumental variable for litigation risk. Column 1 shows the first-stage probit ML results of equation (1.4), which is shared by both methods. Columns 2 and 3 show the second-stage regression results of the insurance effect using the two-stage estimation method and the generated instrument approach.

The first-stage regression is also a multivariate test of the impact of the Private Security Litigation Reform Act on IPO firms' litigation risk. Column 1 shows that the PSLRA does reduce IPO firms' litigation risk given that the PSLRA dummy is significantly negatively correlated with the lawsuit dummy. With other characteristics remaining the same, the probability of IPO firms being sued decreases by 4% after the passage of the PSLRA at the 1% significance level, which is consistent with the findings

in Beatty, Drake, and Hogan (2002). The Chi-square statistic of PSLRA is 12.21, which further suggests that it is a strong instrument for litigation risk.

The second-stage regression results of both methods suggest that IPO firms' expected litigation risk have no significant effect on IPO initial return. Although the signs are in the right direction, neither the coefficient of lawsuit index function in Column 2 nor the coefficient of lawsuit in Column 3 shows any statistical significance. Contrary to the earlier research, this finding is against the insurance effect of the LRH, i.e., IPO firms do not use expensive IPO underpricing as insurance against possible future class action lawsuits. In addition, the coefficient of lawsuit index function in Column 2 is 0.01, which is much smaller than the 0.28 of lawsuit in Column 3. This difference is reasonable because the two-stage estimation method identifies $\gamma_1\sigma_2$ while the generated instrument approach identifies γ_1 itself.

Other regression results of the two methods are very close in terms of sign, statistical, and economic significances because both methods identify β_1 directly. These results are similar to the findings in prior literature. The coefficient of our new stock volatility measure (matched IPO SD (one year)) is significantly positively related to initial return, which shows that volatile IPOs have high underpricing. Interestingly, the coefficient of matched SD is negative, which shows no economic rationale. This suggests that matched IPO SD (one year) is a better proxy for IPO firms' stock volatility.[30] Initial return and prior market return are significantly positively related. Supporting Michaely and Shaw (1994) that the underwriter might offer underpricing to institutional investors

[30] We also test the hypothesis using either matched SD or matched IPO SD (one year) as the only proxy for stock volatility. Results presented in Tables 1.5 and 1.6 are qualitatively unchanged.

for selling a large bulk of shares, initial return is significantly positively related to Ln(market cap). Consistent with the information asymmetry hypothesis, initial return is negatively related to UW rank, Ln(1+age) and VC backed, where the coefficients of UW rank and Ln(1+age) are significant. The uncertainty level makes the coefficient of NYSE-AMEX significantly negative and the coefficient of high-tech significantly positive. Consistent with the signaling hypothesis, the coefficient of insider selling is negative but not significant. Price update is significantly positively related to initial return, which suggests that underwriters only partially update the offer price to compensate institutional investors for their information revealing.

1.5.1.2 Deterrence effect results

Table 1.6 shows the regression results of estimating equation (1.6) using the two-stage estimation method in Maddala (1983) with prior market return as the external instrumental variable for initial return. The first two columns show the regression results of the full sample. The second two columns show the regression results after dropping dismissed/terminated cases.[31] The regression results of both samples are similar in terms of both economic and statistical significance as shown in Table 1.6. Columns 1 and 3 are the first-stage OLS regression results of equation (1.3). Columns 2 and 4 are the second-stage regression results of the deterrence effect.

Columns 1 and 3 show that IPOs issued following high market returns tend to have a high initial return. With other characteristics remaining the same, IPOs' initial

[31] Lowry and Shu (2002) argue that these dismissed/terminated cases should not be brought to court in the first place. They find a significant deterrence effect after dropping these cases.

return increases by 0.86% when their prior market return increases by 1%. The coefficient of prior market return is significant at the 1% level, which suggests that prior market return can be used as an instrumental variable for initial return.

The results of the second-stage regressions for both samples suggest that IPO underpricing has no significant effect on reducing a firm's future litigation risk. Although the signs are in the right direction, neither coefficient of predicted initial return in either Column 2 or Column 4 shows any statistical significance. Contrary to the earlier finding once again, our result is against the deterrence effect of the LRH, i.e., issuers underpricing their IPOs more have no advantage in deterring future class action lawsuits.

The second-stage regression of the deterrence effect is also a test for the impact of the PSLRA on IPO firms' litigation risk after controlling for the IPO underpricing level and other firm characteristics. The coefficient of the PSLRA dummy is negative and significant at the 1% level, constituting strong evidence that the PSLRA does reduce IPO firms' litigation risk. Stock volatility has a strong impact on IPO firms' litigation risk too. The coefficient of matched IPO SD (one year) is positive and significant at the 1% level. The other volatility measure matched SD shows no significance at all, which further supports that matched IPO SD (one year) works better as a proxy for IPO stock volatility than does matched SD. The evidence of the "deep pocket" theory seems mixed. Market capitalization and UW rank are positively related to litigation risk; however, the VC backed dummy is negatively related to litigation risk. The coefficients of both Ln(1+age) and NYSE-AMEX dummy are negative, and the coefficients of the high-tech dummy are positive, which shows that IPO firms with a higher uncertainty level tend to have a higher litigation risk after controlling for firm size. The coefficients of insider selling and price

update are positive, which is reasonable because both of them help plaintiffs and lawyers making scienter statements.

Our results provide strong evidence against the LRH of IPO underpricing. Neither the insurance effect nor the deterrence effect is significant. IPO firms do not use underpricing as insurance against class action lawsuits, nor do IPOs with high underpricing have any advantage in deterring lawsuits.

1.5.2 Sensitivity analysis

Our results are opposite to those of Lowry and Shu (2002), who find strong evidence supporting the LRH. To examine the robustness of our results, we try various sensitivity tests in this subsection.

Because their sample period only covers the pre-PSLRA period, we first compare the regression results between two separate sub-sample periods. Table 1.7 shows the regression results of the deterrence effect for both pre- and post-PSLRA periods using the same variables as theirs, because we would like to compare the regression results under their model set-up.[32] The first (second) two columns show regressions based on the pre- (post-) PSLRA sub-sample. Similar to the results in Table 1.6, prior market return is significantly positively related to IPO initial return; therefore, it serves as a good instrument for initial return. We further find the insignificant relationship between IPO initial return and litigation risk in both sub-sample periods. These testing results remain qualitatively unchanged after dropping dismissed/terminated cases. The deterrence effect

[32] Because PSLRA is dichotomous, we are not able to test the insurance effect for both pre- and post-PSLRA periods using PSLRA as the instrument. For matched turnover, we argue that it is not an appropriate instrument to be used. It will be further discussed in Table 1.8.

found in the earlier research does not show up in our sample regardless of the choice of sample period.

While PSLRA is never significantly related to initial return in Table 1.6, an interesting result we find in Columns 1 and 3 of Table 1.7 is that matched turnover turns out to be significantly related to IPO initial return, which certainly casts doubt on the exogeneity of matched turnover. As we have discussed in section 1.4, matched turnover might be correlated with the error term μ_1 of equation (1.5) because it could be a good proxy for the omitted variable "investor interest level". We cannot test this correlation statistically since μ_1 is unobservable; however, with the other instrument PSLRA available, we can at least compare their overall performance as either instruments or control variables.

The comparison results are shown in Table 1.8. We test the insurance effect in the whole sample period using two types of model set-ups. In the type (1) model, we treat matched turnover as a control variable and PSLRA as an instrument. In the type (2) model, we treat PSLRA as a control variable and matched turnover as an instrument. We test these two models under both the two-stage estimation method and the generated instrument approach.[33] Both model set-ups share the same first-stage probit ML regression, which is shown in Column 1. The coefficient of PSLRA is negatively related with litigation risk at the 1% level and matched turnover is positively related with litigation risk at the 10% level. The Chi-square statistics are 13.38 for PSLRA and 3.48 for matched turnover. This further shows that matched turnover is a weaker instrument than PSLRA is. Columns 2 and 4 show the second-stage results of the type (1) model

[33] We include matched IPO SD in regressions because earlier tests suggest it is a better proxy for stock volatility than matched SD is. The results remain qualitatively unchanged with matched IPO SD excluded.

under two methods using PSLRA as the instrument. Both columns show no significant relation between expected litigation risk and IPO initial return, which is consistent with the findings in Table 1.5. Opposite results are shown in Columns 3 and 5, which present the second-stage results of the type (2) model under two methods using matched turnover as the instrument. Both columns show that the relationship between expected litigation risk and IPO initial return is significant at the 1% level. In summary, the insurance effect becomes significant whenever we treat matched turnover as the instrument. The insurance effect shows no significance at all whenever we treat matched turnover as the control variable. From both empirical evidence and economic common sense, we believe our policy change dummy is a stronger instrumental variable than matched turnover is. Since weak instruments may worsen the effect of simultaneity bias, instead of solving it, our results raise the concern that the significant insurance effect found in the earlier research might be driven by the choice of a potentially inappropriate instrumental variable (matched turnover).

We further test the LRH under a different sample selection standard. First, we use cases filed under Section 11 of the 1933 Act only. We, however, are only able to test the deterrence effect in the post-PSLRA period due to limited data availability.[34] We then use IPO-related cases with class period starting from the offering date. Here, both insurance effect and deterrence effect are tested with PSLRA and prior market return used as instrumental variables. We also rerun tests using cases filed within 2 years, 1.5 years and 1 year after the IPO offering date.[35] No significantly different results are found.

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[34] We are able to collect Section 11 information for almost the entire sub-sample in the post-PSLRA period, but it is missing for half of the sub-sample in the pre-PSLRA period.

[35] Lowry and Shu (2002) used this practice because they think "a lawsuit that occurs long after an IPO is more likely prompted by random stock price fluctuations not in the managers' information set at the time of

We also test the LRH using some alternative control variables. Loughran and Ritter (2004) reveal that SDC does not capture all dual-class shares and CRSP only reports publicly traded shares. They also point out that SDC does not identify all the Internet firms. Their tech stock definition is also different from SDC's.[36] We construct our market capitalization and high-tech dummy following them[37] and rerun the tests using these two new variables along with the alternative stock volatility measure matched IPO SD (half year). Results remain qualitatively unchanged from those presented.

In 2001, there were more than 300 "IPO allocation" class action lawsuits filed in the Southern District Court of New York. These cases are targeted at underwriters' and certain institutional owners' "laddering" activities, which inflate IPO aftermarket price. Although issuers themselves may not directly be involved in these activities, they still become defendants along with the underwriters accused by omitting this "laddering" information from the IPO registration statement. Therefore, IPOs with higher underpricing would have higher chances to trigger these "IPO allocation" lawsuits.[38] This effect is exactly opposite to the LRH; therefore, including these cases in the sample may introduce noise and decrease testing power. Since our sample stops in the year 1998 and most of these "IPO allocation" cases are related to IPOs offered in the year 1999 and

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IPO, and this greater noise might mask the relation between underpricing and litigation risk". We actually believe this is exactly one of the reasons why the LRH is not true.

[36] They use the number of post-issue shares outstanding from CRSP for single-class IPOs. For dual-class IPOs, they use data from a variety of sources including Smart and Zutter (2002), SDC, CRSP, Dealogic, and the prospectus on EDGAR. They merge the Internet identifications from SDC, Dealogic, and IPOMonitor.com. Their tech stock includes the following SIC codes: 3571, 3572, 3575, 3577, 3578 (computer hardware), 3661, 3663, 3669 (communications equipment), 3671, 3672, 3674, 3675, 3677-3679 (electronics), 3812 (navigation equipment), 3823, 3825-3827, 3829 (measuring and controlling devices), 3841, 3845 (medical instruments), 4812, 4813 (telephone equipment), 4899 (communications services), and 7371-7375, 7378, 7379 (software).

[37] The dual-class number of shares and Internet stock identification are available on Dr. Jay Ritter's web page [http://bear.cba.ufl.edu/ritter/ipodata.htm].

[38] Hao (2004) finds that higher IPO underpricing increases litigation risk.

after, our results should not be affected significantly by them. Still, we do have eight "IPO allocation" cases related to IPOs issued in the year 1998; therefore, we rerun the tests after dropping the year 1998. Again, we get qualitatively unchanged results.

One concern of our instrumental variable policy change dummy (PSLRA) is that it may also be a proxy for time trend, which may be positively related to IPO initial return. Loughran and Ritter (2004), however, show that the IPO initial return did not increase monotonically over time in the 1990s, but experienced a sudden jump up in 1995.[39] We believe this jump was a result of changed IPO firms' characteristics. When the PSLRA decreased of firms' overall litigation risk, underwriters may agree to take public more risky firms that they may otherwise refuse without the new law; therefore, the increase of initial return should be caused by the characteristic change of IPO firms, not by time trend.[40] After controlling for firms' characteristics including litigation risk, we find initial return does not correlate with the PSLRA dummy. Therefore, we believe our policy change dummy is a strong instrumental variable. We further include GDP annual growth rate in the explanatory variables to control for economic condition. Again, results remain qualitatively unchanged.

[39] IPO initial return ranged from 10.2% to 12.8% between 1990 and 1993. It dropped to 9.8% in 1994. Then there was a big jump up to 21.5% in 1995, after which it ranged from 14% to 22.2% between 1996 and 1998.

[40] Although the PSLRA was enacted in Dec. 1995, it was introduced by House Republicans on January 4, 1995, and the passage of it was anticipated shortly after its first introduction (WSJ (1995)). Therefore, the stock market may start showing its impact in 1995.

1.6 Conclusion

The litigation risk hypothesis (LRH) of IPO underpricing predicts that IPO firms exposed to higher litigation risk should have higher IPO underpricing in equilibrium. Though the Private Securities Litigation Reform Act of 1995 was designed to reduce firms' litigation risk, IPO underpricing actually increased in 1995 and after. This discrepancy casts doubt on either the effectiveness of the PSLRA on IPO firms or the correctness of the LRH. This paper tests the impact of the PSLRA on IPO firms' litigation risk and investigates LRH using a simultaneous equations system.

We find the PSLRA of 1995 does reduce IPO firms' litigation risk in our sample period (1990 to 1998). We find less "deep pocket" digging and less "racing to the courthouse" in the post-PSLRA period. Our empirical results counter the LRH of IPO underpricing in both insurance and deterrence effects. On one hand, issuers expecting higher litigation risk do not underprice their IPOs more. On the other hand, issuers with higher IPO underpricing do not have an advantage in deterring lawsuits. We find no significant deterrence effect either prior to or following the enactment of the PSLRA.

It is important to note that the results of this paper specifically concern the litigation risk hypothesis of IPO underpricing, not the importance of litigation risk in general. We do believe litigation risk affects corporate decisions; however, both legal perspectives and empirical evidence suggest that litigation risk is likely not one of the main reasons explaining the IPO underpricing puzzle.

Chapter 2

A MICRO EXAMPLE OF LAW AND FINANCE: A STUDY OF THE PRIVATE SECURITIES LITIGATION REFORM ACT OF 1995 AND THE SARBANES-OXLEY ACT OF 2002

2.1 Introduction

Since Enron's implosion, a seemingly ever-growing list of corporate frauds and accounting scandals has staggered the securities markets. Global Crossing, WorldCom, Adelphia, and many others have been sinking in share price and triggering SEC and criminal investigations. Some legislators believe the Private Securities Litigation Reform Act of 1995 (PSLRA) should be blamed for these scandals (Labaton (2002), Avery (1996), and Prichard (1999) etc.). This law adopted a series of procedural obstacles to securities fraud class actions to discourage abusive lawsuits, thereby reducing firms' litigation risk. Instead of deterring frivolous lawsuits as it was intended to, opponents believe it made it too easy for firms to escape liability for securities fraud and thus created a climate in which frauds are more likely to occur. In the hope of restoring investor confidence and reinforcing corporate accountability and professional responsibility, Congress passed the Sarbanes-Oxley Act (SOA) in July of 2002. The SOA takes a series of "sweeping" reform provisions to improve the quality of corporate governance and the auditing profession. Many legislators believe the SOA could serve as an important counter to the PSLRA by providing tools to help plaintiffs meet the PSLRA's heightened pleading standard, reversing the firm-friendly legal atmosphere

under the PSLRA and restoring shareholders' ability to monitor firms through legal activities (Kaplan and Greene (2003), Brickey (2003) etc.).

The purpose of this study is to investigate shareholder reaction to a series of legislative events related to the passage of the PSLRA and the SOA. From the shareholders' point of view, we would like to answer two questions. First, do shareholders think the PSLRA will deter meritorious lawsuits and thus reduce their legal protection from corporate frauds? Second, do shareholders think the SOA will counter the effect of the PSLRA and restore their legal protection? We concentrate our analysis on high litigation risk firms, which are most likely to be affected by the passage of these two laws. We further divide our sample into sub-samples that are subject to meritorious lawsuits or frivolous lawsuits. Using three event study approaches, we find both statistically and economically significant negative abnormal returns during the passage of the PSLRA in the group of high litigation risk firms that are more likely to face meritorious lawsuits; there is negative but insignificant shareholder reaction to the passage of the PSLRA in the group of high litigation risk firms which are likely to face frivolous lawsuits. Furthermore, shareholders of both groups react negatively and significantly to the passage of the SOA. Our results suggest that shareholders believed the PSLRA would deter meritorious lawsuits instead of frivolous lawsuits as it was intended to. Furthermore, the PSLRA reduces the important legal monitoring achieved by meritorious lawsuits and increases the incidence of fraud. More disappointing, shareholders did not believe the recently passed SOA would counter the effect of the PSLRA and bring better protections for investors against corporate fraud.

This paper contributes to the existing literature in five ways. First, this is the first empirical paper that connects the PSLRA and the SOA and tests them together to see the interaction between these two laws. Second, by separating samples based on their litigation risk level and chances of facing meritorious lawsuits or frivolous lawsuits, we empirically show the adverse impact of the PSLRA on necessary legal protections for shareholders against corporate fraud. Third, for the passage of the SOA, we find results opposite to earlier empirical findings, which show that shareholders think the SOA is beneficial in general. Fourth, the results of this paper provide us with a better understanding of the effects of the legal environment on the corporate scandals in the late Nineties. Fifth, this paper provides a micro example of the interaction of law and finance and helps us better understand the impact of securities law on corporate decisions.

The rest of this chapter is organized as follows. Section 2.2 further discusses the literature related to the PSLRA and the SOA. Section 2.3 describes the empirical research design. Section 2.4 discusses three event study methods that are used and their empirical results. Section 2.5 draws the conclusion.

2.2 Related literature

2.2.1 The Private Securities Litigation Reform Act of 1995

On December 22, 1995, Congress enacted the Private Securities Litigation Reform Act of 1995, which amended the Securities Act of 1933 and the Securities Exchange Act of 1934. This law adopted a series of procedural obstacles to securities fraud class actions to discourage abusive lawsuits, thereby reducing firms' litigation risk. These obstacles include the following:

- The replacement of "joint and several liabilities" by "proportionate liability" reduces the plaintiffs' incentive of looking for "deep pockets";
- Plaintiffs' stay of discovery in a pending motion to dismiss reduces firms' defending costs;
- A new lead plaintiff appointment process and the prohibition of bonus payment to lead plaintiffs stop lawyers from hiring "professional plaintiffs";
- A heightened pleading standard increases the cost of filing lawsuits;
- A new 90-day bounce back rule stops cases from rushing into courts;
- The mandatory sanction of Rule 11 of the Federal Rules of Civil Procedure deters any party from making frivolous lawsuits;
- The comprehensive disclosure of the provisions of settlement and attorney fees and the limitation on attorney fees to a "reasonable percentage" of any damage award reduce attorneys' profits from lawsuits; and
- A "safe harbor" for forward-looking statements protects firms from lawsuits aiming at forward-looking statements.

There have been debates on the qualities of the PSLRA from the very beginning. Although it was hoped that the PSLRA would deter frivolous lawsuits, critics of the Act, including President Clinton, who initially vetoed the legislation, thought that the PSLRA would set too high a barrier for plaintiffs filing legitimate lawsuits. More importantly, it might make corporations immune from the legal monitor that had previously helped keep them honest. In view of scandals such as Enron and WorldCom, some legislators blamed the PSLRA, which created an atmosphere in which frauds became more likely to occur (Labaton (2002)). As Loomis (2002) reported: "John Coffee, a Columbia Law School professor, who testified before Congress that the diminished legal threat posed to auditors in the wake of the act, coupled with the rise in non-audit work done by accounting firms, makes a 'credible story' that auditors today 'are subject to a greater temptation to defer to management with regard to questionable accounting principles.'" Avery (1996) and Prichard (1999) also believe the PSLRA increases the incidence of fraud by effectively preventing meritorious claims from being heard in federal courts.

Defenders of the PSLRA argue that it does not deter meritorious cases. Johnson, Kasznik, and Nelson (2001) find that earnings and sales forecasts increased following the passage of the PSLRA and that the safe harbor had no adverse impact on the quality of forward-looking information. Pritchard (2003) thinks the combination of higher settlements and a higher dismissal rate suggests that the PSLRA is doing a cost-effective job of deterring corporate fraud. Johnson, Kasznik and Nelson (2000) find the PSLRA may deter some meritorious lawsuits, but its benefits dominate. Furthermore, Johnson, Nelson and Pritchard (2002) find both accounting and insider trading are significantly correlated with lawsuits in the post-PSLRA period and conclude that it discourages

frivolous securities lawsuits. However, they agree that their study design cannot measure the potential costs of the PSLRA in discouraging meritorious lawsuits.

In addition, some studies claim that the PSLRA did not work at all because it did little to prevent plaintiff's lawyers from filing lawsuits. Grundfest and Perino (1997) think the PSLRA has no effect since plaintiffs can simply shift lawsuits to state courts. Bajaj, Mazumdar, and Sarin (2003) find an immediate drop in the number of federal cases, but this shift tendency diminishes very quickly. The number of federal cases promptly rises in both 1997 and 1998 while the number of state cases continues to drop. Perino (2003) uses data from 1996 to 2001 and draws a similar conclusion. These univariate tests, however, cannot control the frequency of corporate fraud. The increased number of lawsuits may be a result of more fraud.

From a shareholder's point of view, Spiess and Tkac (1997) and Johnson, Kasznik and Nelson (2000) find the stock market reacts more positively to the enactment of the PSLRA for firms at higher litigation risk. "This positive effect, however, diminishes as the probability of being sued for committing fraud increases." Johnson, Nelson and Pritchard (2000) arrive at a similar conclusion by studying the stock market's reaction to the Ninth Circuit's decision, "In re Silicon Graphics Securities Litigation," which adopted the most stringent interpretation of the PSLRA's "strong inference" standard for pleading scienter in securities fraud cases. Ali and Kallapur (2001), however, overthrow earlier results by finding that shareholders in four high-litigation-risk industries react negatively on average to PSLRA's restrictions on their ability to bring securities-related lawsuits. Our results agree with Ali and Kallapur (2001); however, we further show that

firms subject to meritorious lawsuits dislike the PSLRA much more than firms subject to frivolous lawsuits do.

2.2.2 The Sarbanes-Oxley Act of 2002

Urged by the list of corporate scandals at the time, President Bush signed the Sarbanes-Oxley Act into law on July 30, 2002. The purpose of this law is "to protect investors by improving the accuracy and reliability of corporate disclosures." The main provisions include:

- Accounting changes, such as the establishment of an accounting oversight board, the requirement of independent audit committee members, the prohibition of accounting firms from performing certain non-audit services for an audit client, required rotation of audit partners every 5 years, and the enforced SEC review of firms' financial statement filings at least once every 3 years;
- Corporate responsibilities, such as CEO and CFO certification of financial statements;
- Enhanced Financial Disclosures, especially about the pro forma statements: any report filed with SEC or any public disclosure or press or other release shall not contain any untrue statement or omitted material facts;
- Solving analyst conflicts of interest, through such means as the separation of investment banking and securities advice functions of securities firms; and
- Strengthening corporate and criminal fraud accountability, through actions such as imposing criminal penalties for knowingly certifying financial reports that fail to comport with the requirements of the SOA, prohibiting persons involved in

fraud from serving as officers or directors, and the extension of the Statute of Limitation to 5 years for cases related to corporate fraud.

Although the SOA does not directly address the PSLRA, Kaplan and Greene (2003) and Brickey (2003) believe that the SOA may change private securities litigation in several noteworthy ways:

- It provides tools to help plaintiffs meet the PSLRA's heightened pleading standards. These tools include disclosures of internal corporate information, protections for current employees who cooperate with plaintiffs' counsel, and requirement of directors and officers to know more about firms' disclosures and disclosure problems;
- It may cause more shareholder derivative claims under a "corporate malpractice" theory of liability due to its requirements of CEO and CFO certification of financial statements;
- It reverses the culture under the PSLRA that there are many frivolous lawsuits and that companies are victims of these lawsuits. Under this new culture, people realize that securities fraud does exist and has been committed by respected business leaders and professional advisors. Therefore, private securities litigation is one of the effective ways to prevent fraud, monitor firms, and protect investors.

Critics, however, complain that the SOA provides little reformation, but rather adds extra costs to firms. Perino (2003) thinks the SOA is unlikely to have much of a deterrent effect on corporate fraud due to its disorganization and inadequate reformation. Cunningham (2003) sees the SOA as more sweep than reform. He thinks the law is needlessly redundant and "reenacts in a new federal guise more than a dozen existing

federal regulations, state laws, stock exchange and securities industry rules, accounting or auditing practices, and corporate governance norms." In addition, Ribstein (2002) thinks the SOA may increase agency costs by distorting executives' incentives to take on value-maximizing transactions, encouraging executives to move to less monitored firms and activities, increasing firms' costs of obtaining information about executives' fraudulent activities, and increasing friction in the firm as a result of reduced trust.

From a shareholder's point of view, Rezaee and Jain (2003) examine the market reaction to the passage of the SOA and find a positive (negative) abnormal return at the time of several legislative events that increased (decreased) the likelihood of the passage. They further find that the market reaction is more positive for firms with more effective corporate governance, reliable financial reporting, and credible audit functions. Li, Pincus and Rego (2004) also find significantly positive stock returns associated with events that resolved uncertainty about the Act's final provisions or were informative about its enforcement. Using several event study methods and different grouping standards, we find evidence opposite to their findings.

2.3 Research Design

To test shareholder reaction to the passage of PSLRA and SOA, we apply three event study methods: Cumulative Abnormal Return (CAR) approach, equal-weighted portfolio Ordinary Least Square (OLS) approach, and Generalized Least Square (GLS) approach.[41] Our sample consists of U.S. common stocks for which daily return data are available on the files of the Center for Research in Security Prices at the University of Chicago (CRSP). We further divide these firms into different groups based on their litigation risk level, earning management level, and shareholder rights level.

2.3.1 Measure of Litigation Risk Level

Since firms subject to different litigation risks are likely to be affected differently by the passage of PSLRA and SOA, we separate our sample into high and low litigation risk groups. Following Francis, Philbrick and Schipper (1994), Johnson, Kasznik and Nelson (2000), and Ali and Kallapur (2001), the high litigation risk group includes all firms in four industries: computer (SIC codes 3570 – 3577 and 7370 – 7374), electronics (SIC codes 3600 – 3674), pharmaceuticals/biotechnology (SIC codes 2833 – 2836 and 8731 – 8734), and retailing (SIC codes 5200 – 5961). Due to recent massive accounting scandals, we further include accounting firms (SIC codes 8720 and 8721) in the high litigation risk group. For data from the year 1995, there is no accounting firm in our sample. Firms that are not in these five industries are included in the low litigation risk group.

[41] We will discuss these three methods in detail in Section 2.4.

2.3.2 Measure of Earnings Management

In order to test whether the PSLRA deters shareholders from filing meritorious lawsuits and whether the SOA fixes this problem, we need to identify firms subject to meritorious or frivolous lawsuits. Firms exposed to meritorious lawsuits are those who committed fraud, while firms exposed to frivolous lawsuits are those who did not commit fraud. We use firms' earning management measure in 1994 (2001) to identify firms that tend or tend not to commit fraud before the passage of PSLRA (SOA). Following Kothari, Leone and Wasley (2005), we employ a modified-Jones model developed in Dechow, Sloan and Sweeny (1995) to construct two types of discretionary accrual: abnormal accruals and performance-matched abnormal accruals.

First, we calculate total accruals (TA) as defined in equation (2.1) using COMPUSTAT data items.

$$TA_{i,y} = (\Delta NCCA_{i,y} - \Delta CL_{i,y} - DA_{i,y}) / ASSET_{i,y-1} \qquad (2.1)$$

where:

$\Delta NCCA_{i,y-1}$ = Change in firm i's non-cash current assets from year y-1 to y ($\Delta Data4 - \Delta Data1$);

$\Delta CL_{i,y}$ = Change in firm i's current liabilities excluding the current portion of long-term debt from year y-1 to y ($\Delta Data5 - \Delta Data34$);

$DA_{i,y}$ = Firm i's depreciation and amortization in year y ($Data14$);

$ASSET_{i,y-1}$ = Firm i's total assets in year y-1 ($Data6$).

Second, we run OLS regression cross-sectionally on equation (2.2) to estimate $\phi_0, \phi_1, \phi_2, \phi_3$ and $\varepsilon_{i,y}$ using all firms with the same two-digit SIC code in year 1994 or 2001. If the number of firms with the same two-digit SIC code is less than 10, we drop this industrial group. To adjust for outliers of each variable, we make any number larger than the top 1% equal to the level at the top 1% and any number smaller than the bottom 1% equal to the level at the bottom 1%.

$$TA_{i,y} = \phi_0 + \phi_1 (1/ASSET_{i,y-1}) + \phi_2 (\Delta SALES_{i,y} - \Delta AR_{i,y})/ASSET_{i,y-1} + \phi_3 PPE_{i,y}/ASSET_{i,y-1} + \nu_{i,y} \quad (2.2)$$

where:

$\Delta SALES_{i,y}$ = Change in firm i's net sales from year y-1 to y ($\Delta Data12$);

$\Delta AR_{i,y}$ = Change in firm i's accounts receivable from year y-1 to y ($\Delta Data302$);

$PPE_{i,y}$ = Firm i's gross property, plant, and equipment in year y ($Data7$);

$\nu_{i,y}$ = i.i.d. normal distributed error term.

The abnormal accruals (AA) are the residuals from the OLS regression results of equation (2.2). The performance-matched abnormal accruals (PMAA) for firm i in year y is its AA in year y minus its matched firm's AA in year y, while its matched firm is defined as the firm with the closest return on assets in year y ($ROA_{i,y}$) and the same two-digit SIC code. Here, $ROA_{i,y}$ is defined as the following:

$ROA_{i,y}$ = Firm i's income before extraordinary items in year y ($Data18$)/$ASSET_{i,y-1}$

To separate earning managers from non-earning managers, we follow Li, Pincus, and Rego (2004) to sort firms based on their AA or PMAA in year 1994 or 2001, and place firms into positive, zero, or negative earnings management (EM) portfolios. The positive (negative) EM portfolio is composed of firms whose AA or PMAA is included in the top (bottom) one-third distribution and are therefore more likely to commit fraud. The zero EM portfolio is composed of firms whose AA or PMAA is included in the middle one-third distribution and are therefore less likely to commit fraud.

Table 2.1 shows the distribution of abnormal accruals and performance-matched abnormal accruals of different portfolios based on their litigation risk level and earning management level. By construction, firms within a positive or negative earning management group have both economically and statistically significant AA or PMAA. Firms within a zero earning management group have both economically and statistically insignificant PMAA and economically insignificant AA. Overall, high litigation risk firms have a slightly higher earning management than low litigation risk firms have. We consider high litigation risk firms with positive or negative EM as firms who are likely subject to meritorious lawsuits and high litigation risk firms with zero EM as firms who are likely subject to frivolous lawsuits.

2.3.3 Measure of Shareholder Rights

We further employ firm's "Shareholder Rights Index" in 1995 (2002) to identify firms who are subject to meritorious or frivolous lawsuits. Shareholders with strong rights monitor firms using those rights instead of legal actions since lawsuits are time

consuming and financially costly. Consequently, if they file lawsuits, those tend to be meritorious. Shareholders with weak rights do not have many rights other than legal actions to monitor firms. Consequently, if they file lawsuits, those tend to be frivolous.

Based on each firm's corporate-governance provisions in Corporate Takeover Defenses[42] from publications of the Investor Responsibility Research Center (IRRC),[43] Gompers, Ishii, and Metrick (2003) construct a "Shareholder Rights Index"[44] (G) for each firm, with a lower G representing stronger shareholder rights and a higher G representing weaker shareholder rights.[45] While they break up G into 10 groups, we only divide G into 3 groups to simplify the analysis. The low G group includes their groups #1, 2, and 3 ($G \leq 7$), who are the firms with strong shareholder rights and subject to meritorious cases. The high G group includes their groups #8, 9, and 10 ($G \geq 12$), who are the firms with weak shareholder rights and subject to frivolous cases. The mid G group includes their groups #4, 5, 6 and 7 ($8 \leq G \leq 11$), who are the firms with average shareholder rights.

Table 2.2 shows the distribution of "Shareholder Rights Index" of different portfolios based on their litigation risk level and G level. By construction, firms within

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[42] These provisions can be categorized into five thematic groups: tactics for delaying hostile bidders, voting rights, director/officer protection, other takeover defenses, and state laws.

[43] These data are derived from a variety of public sources including corporate by-laws and charters, proxy statements, annual reports, and 10-K and 10-Q documents filed with the SEC. The IRRC's universe is drawn from the Standard & Poor's (S&P) 500 as well as the annual lists of the largest corporations in the publications of Fortune, Forbes, and Businessweek. The IRRC's sample expanded by several hundred firms in 1998 through the addition of some smaller firms and firms with high institutional-ownership levels. Their analysis uses all firms in the IRRC universe except those with dual-class common stock (less than 10 percent of the total). The IRRC universe covers most of the value-weighted market: even in 1990 the IRRC tracked more than 93 percent of the total capitalization of the combined New York Stock Exchange (NYSE), American Stock Exchange (AMEX), and NASDAQ markets.

[44] It is also called "Governance Index" in their paper.

[45] Their index construction is straightforward: for every firm, they add one point for every provision that reduces shareholder rights.

the low G group have an average G around 5.8; firms within the mid G group have an average G around 9.5; and firms within the high G group have an average G around 13. There is no significant difference of G level between high litigation risk and low litigation risk firms. We consider high litigation risk firms with low G as firms who are likely subject to meritorious lawsuits and high litigation risk firms with high G as firms who are likely subject to frivolous lawsuits.

2.3.4 Legislative Event Dates

For conducting tests of shareholder reaction to the passage of PSLRA and SOA, we need to identify a series of legislative event dates for each law. We follow Ali and Kallapur (2001) to decide the legislative event dates for the passage of PSLRA. Table 2.3 Panel A refers to part of their Table 1, which lists these events and indicates whether they increased or decreased the likelihood of the passage of PSLRA. There are 22 event dates in total with four critical dates. On 12/5/05, the Senate approved the bill with a vote of 65-30. On 12/6/95, the House approved the bill with a vote of 320-102. 12/20/95 was the date that news of both President Clinton's veto and the House override of the veto reached the market. Since these two events have opposite impacts on the likelihood of PSLRA's passage, there is debate in the literature as to their effects. Ali and Kallapur (2001) believe the veto on the night of December 19 was more surprising than was the House override on December 20, while Spiess and Tkac (1997) and Johnson, Kasznik and Nelson (2000) argue the opposite. Thus, whether the stock price reaction of high-litigation-risk firms on December 20 should be attributable to the veto or to the House

vote is questionable. The last critical date is 12/22/95, when the Senate overrode President Clinton's veto with a vote of 68-30.

We refer to Rezaee and Jain (2003) and Li, Pincus, and Rego (2004) to decide the legislative event dates for the passage of SOA. Table 2.3 Panel B lists these events and indicates whether they increased or decreased the likelihood of the passage of SOA. There are 18 event dates in total with five critical dates. On 7/15/02, the Senate approved S. 2673, which was considered too harsh on financial firms and corporations. On 7/16/02, the House approved H.R. 5118, which was viewed as too weak to be effective. As Rezaee and Jain (2003) pointed out, "The extent of disagreements between these versions, coupled with the limited time to compromise these differences in the first part of July 2002, created significant doubt that any reform bill would pass before Congress departed Washington for the August recess (Geewax (2002) and Oppel (2002))." We follow their opinion that investors saw these differences as a signal of a decreasing likelihood of the passage of the SOA. On 7/24/02, the House-Senate Conference Committee reconciled the House and Senate bills and finally issued the Sarbanes-Oxley Act of 2002. On 7/25/02, Congress passed the SOA by a vote of 423-3 in the House and 99-0 in the Senate. On 7/30/02, President Bush signed the SOA into law. Following Rezaee and Jain (2003), we think that investors considered these three events as favorable to the passage of the SOA.

2.4 Event Study Methods and Empirical Results

To test shareholder's reaction to the passage of PSLRA and SOA, we divide our sample into several groups based on their litigation risk level, earning management level, and shareholder rights level. Then we apply three methods: CAR approach, equal-weighted portfolio OLS approach, and GLS approach.

2.4.1 Cumulative Abnormal Return Approach

We first examine the cumulative abnormal returns of each portfolio during the periods around the passage of PSLRA and SOA. The estimation window is [1/1/1994, 12/31/1994] for PSLRA (252 trading days) and [1/1/2001, 12/31/2001] for SOA (248 trading days). The event window is [12/4/1995, 12/26/95] for PSLRA (16 trading days) and [7/23/2002, 7/31/2002] for SOA (7 trading days).[46] Firms with less than 252/248 trading days data in the estimation window or 16/7 trading days data in the event window are excluded from the final sample. Since event dates are clustered for all securities in the sample, we use 'portfolio' abnormal returns to take into account cross-sectional dependence in the security-specific abnormal returns (Collins and Dent (1984), Brown and Warner (1985)).

We follow the methods used in Brown and Warner (1985) to calculate CARs. Define $A_{i,t}$ as the abnormal return for security i at day t. For every security i, $A_{i,t}$ is estimated using the OLS market model:

[46] We include one day before and after the final passage to take into account possible information leakage and lags.

$$A_{i,t} = R_{i,t} - \hat{\alpha}_i - \hat{\beta}_i R_{m,t} \tag{2.3}$$

where:

$R_{i,t}$ = Daily return for firm i at day t;

$R_{m,t}$ = Value-weighted index return for day t;

$\hat{\alpha}_i$ and $\hat{\beta}_i$ = OLS values from the estimation period.

For each event window $[T_1, T_2]$, the test statistic is the ratio of the cumulative portfolio abnormal return (CAR_p) to its estimated standard deviation. Portfolio abnormal return is the simple average of N_t securities' abnormal returns in each portfolio. The standard deviation is estimated from the time-series of portfolio abnormal returns in the estimation period $[T_3, T_4]$.

$$CAR_p \Big/ \sqrt{\sum_{t=T_1}^{T_2} \hat{S}^2 \left(A_{p,t}\right)} \tag{2.4}$$

where:

$$CAR_p = \sum_{t=T_1}^{T_2} A_{p,t} \tag{2.5}$$

$$A_{p,t} = \frac{1}{N_t} \sum_{i=1}^{N_t} A_{i,t} \tag{2.6}$$

$$\hat{S}(A_{p,t}) = \sqrt{\frac{1}{T_4 - T_3}\left[\sum_{t=T_3}^{t=T_4}\left(A_{p,t} - \overline{A_p}\right)^2\right]} \tag{2.7}$$

$$\overline{A_p} = \frac{1}{T_4 - T_3 + 1}\sum_{t=T_3}^{t=T_4} A_{p,t} \tag{2.8}$$

The test statistic is unit normal under the null hypothesis that CAR_p is equal to zero. During these event windows, the probability that PSLRA and SOA would pass increased from less than 1.0 to precisely 1.0. Positive (negative) CAR_p would indicate that shareholders viewed PSLRA and SOA as beneficial (not beneficial). Table 2.4 compares the CAR_p during the passage of PSLRA and SOA.

Panel A shows the results by dividing the sample into groups based on litigation risk level and abnormal accrual level. Panel B shows the results by dividing the sample into groups based on litigation risk level and performance-matched abnormal accrual level. Shareholders of high litigation risk firms dislike the passage of PSLRA, especially the shareholders of earning managers. The CAR_ps of high litigation risk portfolios are negative. Regardless of the two different choices of earning management measure, shareholders of earning managers and high litigation risk portfolios (firms subject to meritorious lawsuits) dislike the PSLRA the most. The CAR_p of both NEG EM and POS EM high litigation risk portfolios are economically and statistically significant. Shareholders of zero EM and high litigation risk portfolio (firms subject to frivolous lawsuits) also dislike the PSLRA, but the CAR_p is not statistically significant. This shows that shareholders do not believe the PSLRA will deter frivolous lawsuits as it was intended to, and they are actually afraid that the PSLRA will deter meritorious lawsuits.

Shareholders of earning managers and low litigation risk portfolios reacted insignificantly. The ZERO EM and low litigation risk portfolio actually has positive CAR_p during the passage of PSLRA.

Regardless of litigation risk level and earning management level, shareholders dislike the passage of SOA in general. Shareholders of earning managers and high litigation risk portfolios (subject to meritorious cases) dislike the SOA the most, then the shareholders of non-earning managers (subject to frivolous cases) and high litigation risk firms, then the low litigation risk firms. These results show that shareholders generally do not think the SOA will bring them more protection. This is especially true for shareholders of firms subject to lawsuits, who actually think SOA does not deter firms from committing fraud, but brings extra costs instead.

Panel C shows the results achieved by dividing the sample into groups based on litigation risk level and shareholder rights level. Shareholders of low G and high litigation risk portfolios (firms with the strongest shareholder rights and those subject to meritorious lawsuits) dislike the PSLRA the most. The CAR_ps are both economically and statistically significant. Shareholders of mid G and high litigation risk portfolio also dislike the PSLRA, but much less significantly. Shareholders of high G and high litigation risk portfolio (firms with the weakest shareholder rights and those subject to frivolous lawsuits) react negatively but insignificantly to the passage of PSLRA. Therefore, the significance of CAR_p increases as shareholder rights increase, i.e., as firms' likelihood of being exposed to meritorious lawsuits increases. This again shows that shareholders do think the PSLRA will deter their ability to monitor firms with meritorious lawsuits. Shareholders of low litigation risk portfolios reacted insignificantly.

Shareholders of high litigation risk firms also dislike the passage of SOA. The CAR_ps of high litigation risk portfolios are negative and significant. Shareholders of low G and high litigation risk portfolio (subject to meritorious lawsuits) dislike the SOA the most. The CAR_p is both economically and statistically significant. Shareholders of mid G and high litigation risk portfolio also dislike the PSLRA, but the CAR_p is economically less significant. Shareholders of high G and high litigation risk portfolio (subject to frivolous lawsuits) react the least significantly to the passage of SOA. This again shows that shareholders of high litigation risk firms do not think the SOA will bring them more protection, especially firms subject to meritorious lawsuits. The low litigation risk portfolios reacted less significantly. Excepting the low G group, the mid and high G portfolios do not react significantly to the passage of SOA. These results show that shareholders of high litigation risk and strong shareholder rights firms dislike the SOA the most.

2.4.2 Equal-Weighted Portfolio OLS Approach

The CAR approach cannot resolve two concerns with efficiency that are typically associated with policy event studies: (1) multiple announcement events for a given policy change make it difficult to identify when the market first anticipates the effects of the events; and (2) the estimation period variance used in the CAR approach may change in the event period. Therefore, we further apply the equal-weighted portfolio OLS approach for sensitivity analysis. This method is used in Ryngaert and Netter (1998), Karpoff and Malatesta (1989), and Ali and Kallipur (2001). The model is constructed as follows:

$$R_{p,t} = \alpha_p + \beta_p R_{m,t} + \sum_{j=1}^{J} \mu_j D_j + \tau_{p,t} \tag{2.9}$$

where:

$$R_{p,t} = \frac{1}{N_t} \sum_{i=1}^{N_t} R_{i,t} \tag{2.10}$$

D_j = A dummy variable that equals to 1 when the day corresponds to the event date j and 0 otherwise.

The event dates have been introduced in Section 2.3.4. There are 22 event dates (J=22) for the passage of PSLRA and 18 event dates (J=18) for the passage of SOA. We estimate equation (2.9) by OLS using 1995 daily stock return data for PSLRA and 2002 data for SOA. The coefficient μ_j represents the average abnormal return of different portfolios on event date j. Each portfolio consists of firms with 252 trading days in either 1995 or 2002. Table 2.4 shows that the shareholders of high litigation risk firms react much more strongly to the passage of laws than do the shareholders of low litigation risk firms. Therefore, we concentrate on high litigation risk firms from now on. We further divide high litigation risk firms into three groups based on their earning management level and shareholder rights level.

Table 2.5 reports OLS estimates of equation (2.8) for shareholders of different earning management portfolios. Using two types of EM measure, we concentrate on positive, zero and negative earning managers. Panel A reports results for the reaction to the passage of PSLRA. Shareholders of high litigation risk firms dislike the passage of PSLRA. The abnormal return on 12/5/95 (Senate approves the conference committee bill)

is negative and statistically significant. From both earning management measures, shareholders of negative earning management firms (firms subject to meritorious lawsuits) dislike the PSLRA the most. The abnormal returns of NEG EM portfolio on 12/5/95 (Senate approval) and 12/6/95 (House approves the conference committee bill) are both economically and statistically significant. Shareholders of zero earning management firms (firms subject to frivolous lawsuits) also dislike the PSLRA, but the reaction is much less significant. For each group, the abnormal return on 12/20/95 (President vetoes bill and House overrides veto) is positive. The interpretation of this date is inconclusive because of the two confounding events, but Ali and Kallapur (2001) think of it as decreasing the probability of the passage. The F test of $\sum_{j=16}^{j=22} \mu_j = 0$ shows the significance of the cumulative abnormal returns on these critical dates. The CARs of both NEG EM and POS EM high litigation risk portfolios (subject to meritorious lawsuits) are both economically and statistically significant. Shareholders of zero EM and high litigation risk portfolio (subject to frivolous lawsuits) also dislike the PSLRA, but much less significantly. This again shows that shareholders do think the PSLRA will deter the meritorious lawsuits and make firms immune from legal monitoring.

Panel B reports results for the reaction to the passage of SOA. Shareholders of high litigation risk firms also dislike the passage of SOA. The abnormal return on 7/16/02 (unfavorable to the passage of SOA) is positive and statistically significant. The abnormal returns on 7/24/02 and 7/25/02 (favorable to the passage of SOA) are negative and statistically significant. There is no clear difference across the three earning management groups based on a AA measure. From a PMAA measure, however,

shareholders of earning managers (subject to meritorious lawsuits) dislike the SOA more than shareholders of non-earning managers (subject to frivolous lawsuits) do. The F test of $\sum_{j=16}^{j=18} \mu_j = 0$ shows the significance of the CARs on the last three critical dates. The CARs of high litigation risk firms are both economically and statistically significant regardless of their earning management level. Nevertheless, from a PMAA measure, shareholders of earning managers (subject to meritorious lawsuits) dislike the SOA more than the shareholders of non-earning managers (subject to frivolous lawsuits) do. These results again show that shareholders of firms subject to lawsuits generally do not think the SOA will bring them more protection, especially the shareholders of firms subject to meritorious cases, who actually think the SOA does not monitor firms from fraud, but brings extra costs instead.

Table 2.6 reports OLS estimates of equation (2.8) for shareholders of different shareholder rights portfolios. We concentrate on the low G, mid G, and high G groups. Panel A reports results for the reaction to the passage of PSLRA. Shareholders of low G firms (firms with the strongest shareholder rights and those subject to meritorious lawsuits) dislike the PSLRA the most. The abnormal return of low G portfolio on 12/5/95 (Senate approves) is negative and the abnormal return on 12/6/95 (House approves) is negative and statistically significant. Shareholders of mid G firms (firms with average shareholder rights) also dislike the PSLRA but much less significantly. Shareholders of high G firms (firms with the weakest shareholder rights and those subject to frivolous lawsuit) have the least reaction to the passage of PSLRA. The F test of $\sum_{j=16}^{j=22} \mu_j = 0$ shows

the significance of the cumulative abnormal returns on these critical dates. Low G firms (subject to meritorious lawsuits) have negative CAR with the biggest absolute value. Mid G firms have a relatively weaker but still negative response to the passage of PSLRA. High G firms (subject to frivolous lawsuits) actually have positive CAR, but it is not statistically significant. This shows PSLRA may help deter some frivolous lawsuits, but more importantly, it deters the meritorious lawsuits and reduces shareholders' power to monitor firms.

Panel B reports results for the reaction to the passage of SOA. Shareholders of high litigation risk firms dislike the passage of SOA. The abnormal return on 7/16/02 (unfavorable to the passage of the law) is positive and significant. The abnormal returns on 7/24/02 and 7/25/02 (favorable to the passage of the law) are negative and significant. The F test of $\sum_{j=16}^{j=18} \mu_j = 0$ tells a similar story. Shareholders of low G firms (subject to meritorious lawsuits) dislike the SOA the most, then the shareholders of mid G firms (firms with average shareholder rights). Shareholders of high G firms (subject to frivolous lawsuits) react insignificantly to the passage of SOA. These results again show that shareholders of firms with high litigation risk generally do not think the SOA will bring them more protection, especially shareholders of firms subject to meritorious lawsuits, who actually think SOA will bring additional costs to the companies.

2.4.3 Generalized Least Square Approach

While the previous two methods concentrate on portfolio returns, we also employ the third approach of generalized least squares estimation, which uses individual security

return data and a full covariance matrix of residuals estimated from the first step OLS regressions. This method was first introduced into event studies by Schipper and Thompson (1983). Compared to the equal-weighted portfolio OLS approach, this method has two advantages: (1) it allows each firm to have their own beta coefficient $\hat{\beta}_i$; and (2) using a full covariance matrix allows us to account for both heteroscedasticity and cross-sectional correlation in security return residuals, which is serious in regulatory event studies since each announcement event occurs on the same calendar date for all affected firms, and affected firms usually have industry or other factors in common (Schipper and Thompson (1983)). In this section, we still concentrate on high-litigation risk firms. The model is constructed as follows:

$$R = X\Gamma + E \tag{2.11}$$

where:

$$R = \begin{bmatrix} R_1 \\ \vdots \\ R_i \\ \vdots \\ R_J \end{bmatrix}$$

R_i = $T \times 1$ time-series vector of daily returns to firm i

$$X = \begin{bmatrix} \overline{X} & & 0 & \delta_J \\ & \overline{X} & & \vdots \\ 0 & & \overline{X} & \delta_J \end{bmatrix}$$

$$\overline{X} = \begin{bmatrix} 1 & R_m \end{bmatrix}$$

R_m = $T \times 1$ time-series vector of value-weighted index return

δ_J = $T \times J$ matrix of event date variables, with one column for each event date considered. With uniform treatment of announcements, each column contains ones and zeroes to identify days on which events were not announced (zeroes) and days on which events were announced (ones).

$$\Gamma = \begin{bmatrix} \alpha_1 \\ \beta_1 \\ \vdots \\ \alpha_I \\ \beta_I \\ \mu_J \end{bmatrix}$$

$$E = \begin{bmatrix} \varepsilon_1 \\ \vdots \\ \varepsilon_i \\ \vdots \\ \varepsilon_I \end{bmatrix}$$

ε_i = $T \times I$ vector of error terms assumed to be serially independent, independent of the index return and the event date variables, and identically distributed normally.

Within this system, the error terms are assumed to be serially independent with a stationary cross-sectional covariance structure represented by the contemporaneous residual covariance matrix $\Sigma_{I \times I}$. Thus, E has a covariance matrix of $\Sigma \otimes I$. The parameters in Γ are estimated with joint GLS exploiting an estimate of $\Sigma_{I \times I}$, which is the full covariance matrix of residuals from the first step OLS regressions of (2.11). One assumption we make is that all firms have identical underlying event date parameters. Therefore, only one event date coefficient μ_j is estimated for each event. Since we estimate each portfolio within the similar industry and earning management or shareholder rights level, this assumption is reasonable and technically more feasible.

Schipper and Thompson (1983) pointed out that the number of time-series observations should be greater than twice one plus the number of firms ($T<=2*(I+1)$) for results to be reasonable. Therefore, we further divide the earning management measure into ten deciles and use the original G index constructed by Gompers, Ishii, and Metrick (2003).

We test two hypotheses concerning the μ_j parameters. The first is that for a particular event date, all of the individual μ_j parameters across the sample of firms are equal to zero.

$$\mu_j = 0 \,\forall\, j. \tag{2.12}$$

The second hypothesis we test is that the sum of critical event parameters for a particular law is equal to zero.

$$\sum_{j=J_1}^{J_2} \mu_j = 0 \ . \tag{2.13}$$

where J_1 is 16 for both PSLRA and SOA; and J_2 is 22 for PSLRA and 18 for SOA.

Table 2.7 presents the GLS results of shareholders of high litigation risk and different earning management portfolios. We concentrate on 10 different earning management levels based on either abnormal accrual or performance-matched abnormal accrual. We first rank each firm's AA/PMAA from high to low, and then divide them into 10 deciles. Positive earning managers have lower group numbers; negative earning managers have higher group numbers; and non-earning managers have middle group numbers. Panel A reports estimation results of AA groups for the passage of PSLRA. Panel B reports estimation results of PMAA groups for the passage of PSLRA. In order

to save space, we only show the regression results of the last seven event dates, which are critical to the passage of the PSLRA. Shareholders of high litigation risk firms dislike the passage of PSLRA. From both individual event date results and CAR results, shareholders of earning managers (firms subject to meritorious lawsuits) dislike the PSLRA more than the shareholders of non-earning managers (firms subject to frivolous lawsuits) do. When the group number reaches to both ends (higher or lower), CARs are both economically and statistically significant. When the group number reaches to the middle, CARs are insignificant and even become positive. This shows that shareholders do think the PSLRA will deter meritorious lawsuits.

Panel C reports the estimation results of AA groups for the passage of SOA. Panel D reports the estimation results of PMAA groups for the passage of SOA. Shareholders of high litigation risk firms generally dislike the passage of SOA regardless of their earning management level. The abnormal return on 7/16/02 (unfavorable to the passage of the law) is positive and significant. The abnormal returns on 7/24/02 and 7/25/02 (favorable to the passage of the law) are negative and significant. There is no clear difference across the ten earning management groups. The F test of $\sum_{j=16}^{j=18} \mu_j = 0$ shows the significance of the cumulative abnormal returns on the last three critical dates. The CARs of high litigation risk firms are both economically and statistically significant regardless of their earning management level. These results again show that shareholders of firms subject to lawsuits generally do not think the SOA will bring them more protection; this is especially true for shareholders of firms that manage their earnings, who actually believe SOA does not monitor corporate fraud but brings extra costs instead.

Table 2.8 presents the GLS results of shareholders of high litigation risk and different shareholder rights portfolios. We concentrate on 10 groups based on their "shareholder rights index" (G) level as introduced in Gompers, Ishii, and Metrick (2003). Panel A reports the estimation results of G groups for the passage of PSLRA. The regression results are not very significant. One interesting result is that the F test of $\sum_{j=16}^{j=22} \mu_j = 0$ shows that shareholders of high G firms (firms with the weakest shareholder rights and those subject to frivolous lawsuits) have a significantly positive reaction to the passage of PSLRA.

Panel B reports the estimation results of G groups for the passage of SOA. Shareholders of high litigation risk firms dislike the passage of SOA. The abnormal return on 7/16/02 (unfavorable to the passage of the law) is positive and significant. The abnormal returns on 7/24/02 and 7/25/02 (favorable to the passage of the law) are negative and significant. The F test of $\sum_{j=16}^{j=18} \mu_j = 0$ tells a similar story. Shareholders of lower G firms (firms with the strongest shareholder rights and those subject to meritorious lawsuits) dislike the SOA more than the shareholders of mid G firms (firms with average shareholder rights) do. Shareholders of high G firms (firms with the weakest shareholder rights and those subject to frivolous lawsuits) react insignificantly to the passage of SOA. These results again show that shareholders of firms subject to lawsuits generally do not think the SOA will bring them more protection, especially shareholders of firms subject to meritorious lawsuits, who actually think the SOA will bring extra costs to the companies.

2.5 Conclusion

While the Private Securities Litigation Reform Act of 1995 was blamed for the massive corporate and accounting scandals that occurred in the late Nineties, legislators hope the Sarbanes-Oxley Act of 2002 could serve to counter the PSLRA. Using event study approaches, we try to find out whether the PSLRA diminished the legal protection for shareholders against corporate fraud and whether the SOA fixed this problem. While we find evidence showing that the PSLRA did deter meritorious lawsuits from being filed and created a friendly legal atmosphere for firms, we cannot find any evidence showing that the SOA can reverse this damage. Instead, we find that shareholders generally dislike the passage of SOA and think it will bring extra costs to firms. Our results support the view that the PSLRA serves an important role in causing massive corporate scandals; however, the SOA is not effective in fixing this problem. These findings help us better understand the cause of recent corporate scandals and further suggest that legislators should figure out a more effective law to restore legal protection for investors.

APPENDIX 1

TABLES OF CHAPTER 1

Table 1.1

Distribution of Sample Firms Across Years

The sample consists of initial public offerings (IPOs) issued between 1990 and 1998 that are available in the Thomson Financial Securities Data database. Closed-end funds, unit offerings, REITs, financial firms, reverse LBOs, ADRs, spin-offs, IPOs with an offer price below $5.00 per share, firms without exchange information and firms listed in the small capital market or the OTC market are excluded. An IPO firm is identified as sued if the federal class action lawsuits related to its IPO are listed in the Security Class Action Alert newsletter between January 1990 and August 2002. Average months between IPO and filing of lawsuits is calculated as the average of months between IPO offering month and lawsuit filing month.

IPO issue year	# IPOs	# IPOs sued	% IPOs sued	Average months between IPO and filing of lawsuits
1990	79	4	5.06%	14.25
1991	219	14	6.39%	11.21
1992	283	18	6.36%	14.83
1993	365	28	7.67%	13.07
Sub Total	**946**	**64**	**6.77%**	**13.23**
1994	308	10	3.25%	13.50
1995	351	18	5.13%	11.89
Sub Total	**659**	**28**	**4.25%**	**12.46**
1996	527	15	2.85%	13.07
1997	348	15	4.31%	12.40
1998	201	20	9.95%	20.70
Sub Total	**1076**	**50**	**4.65%**	**15.92**
Total	**2681**	**142**	**5.30%**	**14.03**
Total w/o 1994 & 1995	**2022**	**114**	**5.64%**	**14.41**

Table 1.2

Lawsuit Status and Resolution Characteristics

An IPO firm is identified as sued if the federal class action lawsuits related to its IPO are listed in the Security Class Action Alert newsletter between January 1990 and August 2002. Corresponding case decision information is collected by searching the Public Access to Court Electronic Records (PACER) service [http://pacer.psc.uscourts.gov], the Stanford Securities Class Action Clearinghouse [http://securities.stanford.edu], the Gilardi and Co. class action administration web site [http://www.gilardi.com/allcases.html], company SEC filings, Lexis-Nexis newswire and Lexis-Nexis legal research. Cases are categorized by IPO issue year from 1990 to 1998 (with 1994 and 1995 excluded). Average decision time length is the average of months between lawsuit filing month and case decision month. Average settlement amount is calculated as the average of total settlement fund amount. Average settlement/proceed ratio is calculated as the average of settlement amount to IPO proceeds raised ratio.

		Settled cases				Dismissed or Terminated		Pending cases
Issue year	# IPO sued	# Cases settled	Average decision time length	Average settlement amount ($millions	Average settlement/proceed ratio	# Cases D/T	Average decision time length	# Cases pending
1990	4	2	40.00	6.70	30.24%	2	12.00	0
1991	14	12	28.08	4.43	13.30%	2	7.50	0
1992	18	11	24.09	5.19	19.53%	6	18.33	1
1993	28	18	27.89	3.16	17.20%	9	16.67	1
Sub Total	**64**	**43**	**27.53**	**4.19**	**17.47%**	**19**	**15.74**	**2**
1996	15	8	24.75	3.70	12.22%	7	16.14	0
1997	15	10	30.70	3.93	19.43%	5	21.50	0
1998	20	14	20.83	15.20	51.84%	6	16.11	0
Sub Total	**50**	**32**	**26.25**	**6.92**	**25.97%**	**18**	**17.32**	**0**
Total	**114**	**75**	**27.07**	**5.17**	**20.53%**	**37**	**16.45**	**2**

Table 1.3

Descriptive Statistics of Sued vs. Non-sued IPOs before and after the Enactment of the Private Security Litigation Reform Act of 1995

The final sample consists of 946 IPOs from 1990 to 1993 and 1,076 IPOs from 1996 to 1998 that are available in the Thomson Financial Securities Data (SDC) database. Closed-end funds, unit offerings, REITs, financial firms, reverse LBOs, ADRs, spin-offs, IPOs with an offer price below $5.00 per share, firms without exchange information and firms listed in the small capital market or the OTC market are excluded. An IPO firm is identified as sued if the federal class action lawsuits related to its IPO are listed in the Security Class Action Alert newsletter between January 1990 and August 2002. There are 64 sued IPOs from 1990 to 1993 and 50 sued IPOs from 1996 to 1998. Some variables are based on fewer observations due to missing data. Initial return is the percentage change between the offer price and the first closing price. Price update is the percentage change between the midpoint of filing price range in prospectus and the offer price. Market capitalization is equal to the first closing price multiplied by the number of shares outstanding after offering in all markets. Proceeds raised are equal to the offer price multiplied by the shares offered in all markets. Both market capitalization and proceeds raised are measured in millions of 1983 dollars using the Consumer Price Index. Underwriter rank is equal to the lead underwriter rank measure used in Loughran and Ritter (2004), with higher ranks representing higher quality underwriters. Standard deviation (25 days) equals the standard deviation of daily returns during the first 25 days starting with the offering date (day 0 to day 24). Age is equal to the difference between firm's IPO offering year and founding year. IPO firms are labeled as high-tech, venture capitalist backed, traded on the NYSE/AMEX and with secondary offering in all markets according to the SDC classifications. Panel A compares IPO firms' characteristics in the pre-PSLRA period to that in the post-PSLRA period. Panel B compares sued and non-sued firms in the pre-PSLRA period vs. post-PSLRA period. The pre-PSLRA period represents the years 1990 to 1993. The post-PSLRA period represents the years 1996 to 1998.

Panel A: Pre-PSLRA Period vs. Post-PSLRA Period

	Pre-PSLRA Period	Post-PSLRA Period	
	Median	**Median**	**Wilcoxon test**
	Mean	Mean	T-test
	(S.E.)	(S.E.)	
Initial Return	**0.0625**	**0.1000**	**-4.5510** ***
	0.1215	0.1736	-4.4524 ***
	(0.0060)	(0.0096)	
Price Update	**0.0000**	**0.0000**	**0.8460**
	-0.0018	-0.0024	0.0657
	(0.0062)	(0.0064)	
Market Capitalization	**46.50**	**59.20**	**-5.5310** ***
	159.00	179.00	-0.3878
	(41.80)	(31.60)	
Proceeds Raised	**18.50**	**22.40**	**-5.7330** ***
	33.90	40.20	-1.5755
	(2.02)	(3.35)	
Underwriter Rank	**8.0000**	**8.0000**	**-3.2220** ***
	7.0735	7.3138	-2.5971 ***
	(0.0693)	(0.0618)	
Standard Deviation (25 days)	**0.0347**	**0.0368**	**-3.3910** ***
	0.0365	0.0408	-5.1939 ***
	(0.0005)	(0.0007)	
Age	**9.0000**	**7.0000**	**5.9970** ***
	16.9420	13.4990	3.8367 ***
	(0.6742)	(0.5972)	
% high-tech IPOs	43.66%	52.60%	
% IPOs on NYSE/AMEX	16.28%	17.10%	
% venture capitalist backed IPOs	50.48%	36.37%	
% IPOs with secondary offering	43.76%	35.78%	

Panel B: Non-sued IPO Firms vs. Sued IPO Firms in the Pre-PSLRA Period vs. Post-PSLRA Period

	Pre-PSLRA Period			Post-PSLRA Period		
	Non-sued IPOs	Sued IPOs		Non-sued IPOs	Sued IPOs	
	Median	**Median**	**Wilcoxon test**	**Median**	**Median**	**Wilcoxon test**
	Mean (S.E.)	Mean (S.E.)	T-test	Mean (S.E.)	Mean (S.E.)	T-test
Initial Return	**0.0625**	**0.0682**	**-0.4780**	**0.0957**	**0.1379**	**-1.6450 ***
	0.1209	0.1304	-0.4013	0.1635	0.3805	-4.7943 ***
	(0.0062)	(0.0225)		(0.0077)	(0.1322)	
Price Update	**0.0000**	**0.0690**	**-2.7910 *** **	**0.0000**	**0.0667**	**-1.8650 ***
	-0.0056	0.0508	-2.3081 **	-0.0045	0.0421	-1.5114
	(0.0064)	(0.0217)		(0.0066)	(0.0273)	
Market	**42.40**	**62.00**	**-3.1380 *** **	**74.70**	**78.70**	**-1.0510**
Capitalization	185.00	152.00	0.1468	261.00	192.00	0.2867
	(60.10)	(41.30)		(52.10)	(44.70)	
Proceeds	**17.90**	**21.80**	**-3.5360 *** **	**22.40**	**23.50**	**-1.2810**
Raised	33.10	44.10	-1.3639	40.20	40.70	-0.0301
	(2.07)	(8.79)		(3.50)	(6.64)	
Underwriter	**8.0000**	**8.0000**	**-2.9370 *** **	**8.0000**	**8.0000**	**-1.6580 ***
Rank	7.0119	7.9219	-3.3145 ***	7.2916	7.7700	-1.6315
	(0.0732)	(0.1449)		(0.0638)	(0.2246)	
Standard	**0.0345**	**0.0371**	**-1.2530**	**0.0366**	**0.0403**	**-2.5460 ** **
Deviation	0.0364	0.0379	-0.8154	0.0401	0.0556	-4.9204 ***
(25 days)	(0.0005)	(0.0015)		(0.0006)	(0.0054)	
Age	**9.0000**	**7.0000**	**2.0610 ** **	**7.0000**	**7.0000**	**0.5050**
	17.3341	11.7344	2.1236 **	13.5912	11.6531	0.6906
	(0.7127)	(1.6388)		(0.6161)	(2.3453)	
% high-tech IPOs	43.20%	50.00%		52.24%	60.00%	
% IPOs on NYSE/AMEX	16.21%	17.19%		17.06%	18.00%	
% venture capitalist backed IPOs	49.83%	59.38%		36.49%	34.00%	
% IPOs with secondary offering	43.20%	51.56%		35.28%	46.00%	

*, **, *** indicate significance at the 10%, 5%, 1% levels, respectively.
Using two-tailed t-test and Wilcoxon test.

Table 1.4

Descriptive Statistics of Instrumental Variables and Matched Sample Proxies

The final sample consists of 946 IPOs from 1990 to 1993 and 1,076 IPOs from 1996 to 1998 that are available in the Thomson Financial Securities Data (SDC) database. Closed-end funds, unit offerings, REITs, financial firms, reverse LBOs, ADRs, spin-offs, IPOs with an offer price below $5.00 per share, firms without exchange information and firms listed in the small capital market or the OTC market are excluded. An IPO firm is identified as sued if the federal class action lawsuits related to its IPO are listed in the Security Class Action Alert newsletter between January 1990 and August 2002. There are 64 sued IPOs from 1990 to 1993 and 50 sued IPOs from 1996 to 1998. Some variables are based on fewer observations due to missing data. Turnover is equal to $[1- \Pi_{t=22}^{387}(1-\text{volume traded}_t/\text{total shares}_t]$ with the IPO offering date as t = 0. Matched sample consists of firms in the same three-digit, two-digit, one-digit or zero-digit SIC code with market capitalization within 80–120% of IPO firm's market capitalization at the close of the first trading day. Matched turnover is the average of matched firms' turnovers, which are based on daily returns over a one-year interval prior to the IPO offering date. Prior market return is equal to the compounded value-weighted NYSE/AMEX/NASDAQ daily returns (including dividend) within 15 days prior to the IPO offering date. Matched SD is the average of matched firms' standard deviations, which are based on daily returns over a one-year prior interval to the IPO offering date. Matched IPO SD (one year) is the average standard deviation (one year) of all matched IPOs in the matched IPO sample, which includes all IPOs with the same 1-digit SIC code and issued between day -388 and day -753. Matched IPO SD (half year) is the average standard deviation (half year) of all matched IPOs in the matched IPO sample, which includes all IPOs with the same 1-digit SIC code and issued between day -205 and day -387. All other variables are defined in Table 1.3. Panel A compares the IPO firms' characteristics in the pre-PSLRA period to that in the post-PSLRA period. Panel B compares sued and non-sued firms in the whole sample period. The pre-PSLRA period represents the years 1990 to 1993. The post-PSLRA period represents the years 1996 to 1998.

Panel A: Pre-PSLRA Period vs. Post-PSLRA Period

	Pre-PSLRA Period	Post-PSLRA Period	
	Median	**Median**	**Wilcoxon test**
	Mean	Mean	T-test
	(S.E.)	(S.E.)	
Turnover	**0.6399**	**0.6484**	**-1.7860 ***
	0.6303	0.6496	-2.1097 **
	(0.0066)	(0.0063)	
Matched Turnover	**0.4937**	**0.5722**	**-10.3210 *****
	0.4838	0.5566	-9.7172 ***
	(0.0058)	(0.0049)	
Prior Market Return	**0.0065**	**0.0215**	**-9.7260 *****
	0.0069	0.0166	-7.7586 ***
	(0.0007)	(0.0010)	
Standard Deviation (25 days)	**0.0347**	**0.0368**	**-3.3910 *****
	0.0365	0.0408	-5.1939 ***
	(0.0005)	(0.0007)	
Matched SD	**0.0447**	**0.0474**	**-3.3640 *****
	0.0466	0.0475	-1.2481
	(0.0006)	(0.0004)	
Matched IPO SD (one year)	**0.0457**	**0.0471**	**-12.1360 *****
	0.0450	0.0476	-13.3214 ***
	(0.0001)	(0.0001)	
Matched IPO SD (half year)	**0.0417**	**0.0465**	**-14.8840 *****
	0.0418	0.0458	-16.7905 ***
	(0.0002)	(0.0001)	

Panel B: Non-sued IPO Firms vs. Sued IPO Firms

	Non-sued IPO Firms	Sued IPO Firms	
	Median	**Median**	**Wilcoxon test**
	Mean	Mean	T-test
	(S.E.)	(S.E.)	
Turnover	**0.6376**	**0.7550**	**-5.2850** ***
	0.6347	0.7392	-5.3066 ***
	(0.0047)	(0.0180)	
Matched Turnover	**0.5338**	**0.5876**	**-3.3450** ***
	0.5198	0.5684	-2.9396 ***
	(0.0040)	(0.0141)	
Prior Market Return	**0.0116**	**0.0066**	**1.8500** *
	0.0124	0.0072	1.8502 *
	(0.0007)	(0.0029)	
Standard Deviation (25 days)	**0.0358**	**0.0383**	**-2.3930** **
	0.0384	0.0456	-4.0200 ***
	(0.0004)	(0.0027)	
Matched SD	**0.0462**	**0.0458**	**0.7820**
	0.0472	0.0449	1.4947
	(0.0004)	(0.0013)	
Matched IPO SD (one year)	**0.0464**	**0.0492**	**-3.7150** ***
	0.0463	0.0478	-3.4522 ***
	(0.0001)	(0.0004)	
Matched IPO SD (half year)	**0.0448**	**0.0459**	**-2.0350** **
	0.0439	0.0452	-2.3679 **
	(0.0001)	(0.0006)	

*, **, *** indicate significance at the 10%, 5%, 1% levels, respectively.
Using two-tailed t-test and Wilcoxon test.

Table 1.5

Insurance Effect Regression Results

These regressions test the insurance effect of the litigation risk hypothesis using both the two-stage estimation method and the generated instrument approach, where litigation risk is treated as the endogenous variable. The final sample size consists of 1,929 IPOs issued between the years 1990 and 1998 (with 1994 and 1995 excluded). Column 1 is the first-stage probit ML regression. Column 2 is the second-stage OLS under the two-stage estimation method. Column 3 is the second-stage 2SLS under the generated instrument approach. Lawsuit = 1 if an IPO is sued under the Securities Acts of 1933 and/or the Securities Exchange Act of 1934 between January 1990 and August 2002, and 0 otherwise. Lawsuit Index = predicted index function from the first-stage probit ML regression. PSLRA = 1 if an IPO is issued in the post-PSLRA period (years 1996 to 1998), and 0 if an IPO is issued in the pre-PSLRA period (years 1990 to 1993). Ln(Market Cap) = the natural logarithm of market capitalization. UW rank = IPO lead underwriter rank. VC backed = 1 if an IPO is venture capitalist backed and 0 otherwise. Ln(1+Age) = the natural logarithm of (1+ Age). High-tech = 1 if an IPO firm is in the high-tech industry and 0 otherwise. NYSE-AMEX = 1 if an IPO firm is listed on the NYSE or AMEX and 0 otherwise. Insider selling = 1 if an IPO firm has a secondary offering in the IPO process and 0 otherwise. All other variables are defined in earlier tables. The standard errors of the two-stage estimation method are calculated using the non-parametric bootstrap. All standard errors are reported in parentheses.

Variable	First-stage (Dep.=Lawsuit)	Second-stage (Dep.=Initial Return)	
		Two-stage Estimation	Generated IV approach
Lawsuit Index		**0.0140**	
		(0.0300)	
Lawsuit			**0.2828**
			(0.2104)
PSLRA	**-0.3843** ***		
	(0.1100)		
Prior Market Return	-2.3124	0.8909 ***	0.9465 ***
	(1.6812)	(0.2741)	(0.2034)
Ln(Market Cap)	0.0308	0.0413 ***	0.0415 ***
	(0.0507)	(0.0096)	(0.0058)
UW rank	0.0794 **	-0.0102 **	-0.0112 ***
	(0.0348)	(0.0049)	(0.0037)
VC backed	-0.0494	-0.0187	-0.0193
	(0.1090)	(0.0118)	(0.0121)
Ln(1+Age)	-0.1117 **	-0.0246 ***	-0.0231 ***
	(0.0527)	(0.0037)	(0.0061)
High-tech	0.0528	0.0244 ***	0.0238 *
	(0.1100)	(0.0088)	(0.0123)
NYSE-AMEX	0.0343	-0.0713 ***	-0.0718 ***
	(0.1410)	(0.0146)	(0.0160)
Insider Selling	0.1139	-0.0080	-0.0100
	(0.0992)	(0.0106)	(0.0118)
Price Update	0.4342 *	0.4600 ***	0.4494 ***
	(0.2547)	(0.0550)	(0.0325)
Match SD	1.4835	-0.4904 **	-0.4741
	(3.9089)	(0.2478)	(0.4257)
Matched IPO SD (one year)	43.2009 ***	3.7577 ***	3.2513 **
	(12.3117)	(1.3065)	(1.4370)
Intercept	-4.4336 ***	-0.5873 ***	-0.6040 ***
	(1.0792)	(0.1574)	(0.1170)
Pseudo R^2 (Adj R^2)	0.0537	0.2414	0.2069

*, **, *** indicate significance at the 10%, 5%, 1% levels, repectively.
Using two-tailed tests.

Table 1.6

Deterrence Effect Regression Results

These regressions test the deterrence effect of the litigation risk hypothesis using the two-stage estimation method, where initial return is treated as the endogenous variable. The first two columns show the regression results under full sample, which consists of 1,929 IPOs issued between the years 1990 and 1998 (with 1994 and 1995 excluded). The second two columns show the regression results under the subsample after dropping dismissed/terminated (D/T) cases, which consists of 1,892 observations. Columns 1 and 3 show the first-stage OLS regression results. Columns 2 and 4 show the second-stage probit ML regression results. Predicted initial return = predicted value from first-stage OLS regression. All other variables are defined in earlier tables. The standard errors of the two-stage estimation method are calculated using the non-parametric bootstrap. All standard errors are reported in parentheses.

Variable	Full sample		Drop D/T cases	
	First-stage (Dep.=Initial Return)	Second-stage (Dep.=Lawsuit)	First-stage (Dep.=Initial Return)	Second-stage (Dep.=Lawsuit)
Predicted Initial Return		**-2.6937**		**-2.6404**
		(1.7502)		**(2.2786)**
Prior Market Return	**0.8584** ***		**0.8665** ***	
	(0.1871)		**(0.1897)**	
PSLRA	-0.0054	-0.3989 ***	-0.0067	-0.4042 ***
	(0.0119)	(0.1008)	(0.0121)	(0.1282)
Ln(Market Cap)	0.0417 ***	0.1432	0.0429 ***	0.0973
	(0.0058)	(0.0879)	(0.0059)	(0.1074)
UW rank	-0.0091 ***	0.0548	-0.0093 ***	0.0633 *
	(0.0033)	(0.0347)	(0.0034)	(0.0372)
VC backed	-0.0194	-0.1017	-0.0197	-0.2577 **
	(0.0120)	(0.1038)	(0.0122)	(0.1286)
Ln(1+Age)	-0.0261 ***	-0.1821 **	-0.0267 ***	-0.1753 **
	(0.0056)	(0.0720)	(0.0057)	(0.0852)
High-tech	0.0251 **	0.1205	0.0261 **	0.0741
	(0.0120)	(0.1192)	(0.0122)	(0.1322)
NYSE-AMEX	-0.0708 ***	-0.1565	-0.0720 ***	-0.2467
	(0.0157)	(0.1854)	(0.0159)	(0.2425)
Insider Selling	-0.0064	0.0967	-0.0049	0.0727
	(0.0112)	(0.0902)	(0.0114)	(0.1117)
Price Update	0.4661 ***	1.6897 *	0.4650 ***	1.6277
	(0.0291)	(0.8668)	(0.0294)	(1.0987)
Match SD	-0.4696	0.2185	-0.4843	3.4519
	(0.4182)	(3.5265)	(0.4222)	(3.8011)
Matched IPO SD	4.3634 ***	54.9547 ***	4.5206 ***	55.5730 ***
(one year)	(1.2532)	(15.2009)	(1.2696)	(21.5055)
Intercept	-0.6495 ***	-6.1833 ***	-0.6731 ***	-5.6795 ***
	(0.1173)	(1.5233)	(0.1192)	(2.0393)
Pseudo R^2 (Adj R^2)	0.2414	0.0537	0.2433	0.0503

*, **, *** indicate significance at the 10%, 5%, 1% levels, repectively.
Using two-tailed tests.

Table 1.7

Regression Results of the Deterrence Effect in the pre- and post-PSLRA Periods

These regressions test the deterrence effect of the litigation risk hypothesis for both the pre- and post-PSLRA periods. Initial return is the endogenous variable with prior market return as the instrument for it. The regressions in the first two columns are based on the pre-PSLRA period sub-sample, which consists of 907 IPOs issued between the years 1990 and 1993. The regressions in the second two columns are based on the post-PSLRA period sub-sample, which consists of 1,022 IPOs issued between the years 1996 and 1998. Columns 1 and 3 are the first-stage OLS regression. Columns 2 and 4 are the second-stage probit ML under the two-stage estimation method. All variables are defined in earlier tables. The standard errors of the two-stage estimation method are calculated using the non-parametric bootstrap. All standard errors are reported in parentheses.

Variable	Pre-PSLRA Period		Post-PSLRA Period	
	First-stage (Dep.=Initial Return)	Second-stage (Dep.=Lawsuit)	First-stage (Dep.=Initial Return)	Second-stage (Dep.=Lawsuit)
Predicted Initial Return		**-2.3811**		**-3.6285**
		(2.5266)		**(2.7106)**
Prior Market Return	**1.0740** ***		**0.7003** ***	
	(0.2345)		**(0.2688)**	
Matched Turnover	0.0898 ***	0.5034	0.1117 *	1.5091 ***
	(0.0330)	(0.4843)	(0.0640)	(0.4843)
Ln(Market Cap)	0.0144 **	0.0925	0.0629 ***	0.1922
	(0.0057)	(0.0718)	(0.0110)	(0.1951)
UW rank	-0.0137 ***	0.0739	-0.0060	0.0297
	(0.0033)	(0.0532)	(0.0056)	(0.0536)
VC backed	-0.0069	0.0160	-0.0396 **	-0.3302
	(0.0122)	(0.1740)	(0.0199)	(0.2149)
Ln(1+Age)	-0.0301 ***	-0.2446 **	-0.0242 ***	-0.1594
	(0.0060)	(0.0952)	(0.0090)	(0.1019)
High-tech	0.0085	0.0328	0.0200	0.1385
	(0.0123)	(0.1646)	(0.0202)	(0.1395)
NYSE-AMEX	-0.0218	-0.0363	-0.1127 ***	-0.3015
	(0.0153)	(0.2009)	(0.0266)	(0.3585)
Insider Selling	0.0156	0.1115	-0.0195	0.0926
	(0.0111)	(0.1487)	(0.0186)	(0.1578)
Price Update	0.4054 ***	1.5067	0.4694 ***	2.1614
	(0.0307)	(1.1669)	(0.0469)	(1.3362)
Match SD	-1.0662 ***	-4.8507	0.4654	11.0817 *
	(0.3479)	(5.8115)	(0.8981)	(6.2036)
Intercept	0.0378	-2.9187 **	-0.9423 ***	-5.7905 *
	(0.0981)	(1.1462)	(0.2068)	(3.0495)
Pseudo R^2 (Adj R^2)	0.2858	0.0571	0.2325	0.0420

*, **, *** indicate significance at the 10%, 5%, 1% levels, repectively.
Using two-tailed tests.

Table 1.8

Performance Comparison of PSLRA and Matched Turnover

These regressions compare the performance of PSLRA and matched turnover by testing the insurance effect using two types of model set-ups, where litigation risk is the endogenous variable. In the type (1) model, matched turnover is a control variable and PSLRA is an instrument. In type (2) model, PSLRA is a control variable and matched turnover is an instrument. We run tests under both two-stage estimation method and generated instrument approach. The final sample size consists of 1,929 IPOs issued between the years 1990 and 1998 (with 1994 and 1995 excluded). Column 1 is the first-stage probit ML regression. Columns 2 and 3 are the second-stage OLS under the two-stage estimation method. Columns 4 and 5 are the second-stage 2SLS under the generated instrument approach. All variables are defined in earlier tables. The standard errors of the two-stage estimation method are calculated using the non-parametric bootstrap. All standard errors are reported in parentheses.

Variable	First-stage (Dep.=Lawsuit)	Second-stage (Dep.=Initial Return) Two-stage Estimation (1)	Two-stage Estimation (2)	Generated IV approach (1)	Generated IV approach (2)
Lawsuit Index		**0.0208**	**0.1543** ***		
		(0.0291)	**(0.0437)**		
Lawsuit				**0.3449**	**0.8281** ***
				(0.2103)	**(0.3229)**
PSLRA	**-0.4069** ***		**0.0543** ***		**0.0281**
	(0.1112)		**(0.0169)**		**(0.0199)**
Matched Turnover	**0.6271** *	**0.0837** ***		**0.0763** **	
	(0.3363)	**(0.0261)**		**(0.0384)**	
Prior Market Return	-2.4070	0.9021 ***	1.2233 ***	0.9577 ***	1.0730 ***
	(1.6888)	(0.2750)	(0.2857)	(0.2066)	(0.2502)
Ln(Market Cap)	0.0055	0.0374 ***	0.0366 ***	0.0380 ***	0.0390 ***
	(0.0524)	(0.0096)	(0.0096)	(0.0062)	(0.0074)
UW rank	0.0711 **	-0.0115 **	-0.0210 ***	-0.0123 ***	-0.0152 ***
	(0.0350)	(0.0047)	(0.0052)	(0.0037)	(0.0048)
VC backed	-0.0538	-0.0197 *	-0.0125	-0.0202	-0.0159
	(0.1091)	(0.0119)	(0.0120)	(0.0123)	(0.0152)
Ln(1+Age)	-0.1088 **	-0.0235 ***	-0.0090 *	-0.0221 ***	-0.0160 **
	(0.0527)	(0.0037)	(0.0054)	(0.0061)	(0.0081)
High-tech	0.0117	0.0190 **	0.0174 *	0.0187	0.0202
	(0.1119)	(0.0089)	(0.0090)	(0.0126)	(0.0152)
NYSE-AMEX	0.0342	-0.0704 ***	-0.0750 ***	-0.0710 ***	-0.0725 ***
	(0.1418)	(0.0146)	(0.0145)	(0.0163)	(0.0197)
Insider Selling	0.1078	-0.0093	-0.0237 **	-0.0113	-0.0162
	(0.0996)	(0.0105)	(0.0106)	(0.0119)	(0.0146)
Price Update	0.3883	0.4505 ***	0.3987 ***	0.4401 ***	0.4213 ***
	(0.2571)	(0.0554)	(0.0596)	(0.0326)	(0.0406)
Match SD	0.6369	-0.6156 **	-0.7005 ***	-0.5840	-0.5426
	(4.0572)	(0.2390)	(0.2392)	(0.4358)	(0.5277)
Matched IPO SD	42.5245 ***	3.2538 **	-2.4212	2.7981 *	0.6483
(one year)	(12.3586)	(1.2835)	(2.0693)	(1.4398)	(2.1431)
Intercept	-4.1526 ***	-0.5099 ***	0.0443	-0.5485 ***	-0.4659 ***
	(1.0929)	(0.1522)	(0.2171)	(0.1198)	(0.1643)
F		48.8300	48.8300	45.4400	30.8000
Prob > F		0.0000	0.0000	0.0000	0.0000
Pseudo R^2 (Adj R^2)	0.0578	0.2439	0.2439	0.1843	.

*Significant at the 10% level, **Significant at the 5% level, ***Significant at the 1% level.
Using two-tailed tests.

APPENDIX 2

TABLES OF CHAPTER 2

Table 2.1

Distribution of Earning Management Level

The sample consists of U.S. common stocks for which daily return data are available on the files of the Center for Research in Security Prices at the University of Chicago. This table shows the distribution of modified-Jones model abnormal accruals (AA) and performance-matched abnormal accruals (PMAA) of different portfolios based on their litigation risk level and earning management level. The positive earning management portfolio (POS EM) is composed of firms with AA or PMAA included in the top one-third distribution; the zero earning management portfolio (ZERO EM) is composed of firms with AA or PMAA included in the middle one -third distribution; the negative earning management portfolio (NEG EM) is composed of firms with AA or PMAA included in the bottom one-third distribution. The high litigation risk group includes all firms in five industries: computer (SIC codes 3570 – 3577 and 7370 – 7374), electronics (SIC codes 3600 – 3674), pharmaceuticals/biotechnology (SIC codes 2833 – 2836 and 8731 – 8734), retailing (SIC codes 5200 – 5961), and accounting (SIC codes 8720 and 8721). Firms that are not in these five industries are included in the low litigation risk group. Panel A presents the distribution of modified-Jones model abnormal accruals. Panel B presents the distribution of performance-matched modified-Jones model abnormal accruals. All standard errors (S.E.) are reported in parentheses.

Panel A: Distribution of Modified-Jones Model Abnormal Accruals

		1994 before PSLRA		
EM Group	Variables	Full sample	High Litigation	Low Litigation risk
POS EM	Mean AA	0.112 ***	0.127 ***	0.107 ***
	(S.E.)	(0.004)	(0.009)	(0.005)
	Median AA	0.076	0.090	0.074
	N	704	156	548
ZERO EM	Mean AA	-0.001 **	-0.002 **	-0.001
	(S.E.)	(0.001)	(0.001)	(0.001)
	Median AA	-0.001	-0.002	-0.001
	N	660	156	504
NEG EM	Mean AA	-0.111 ***	-0.122 ***	-0.106 ***
	(S.E.)	(0.004)	(0.008)	(0.005)
	Median AA	-0.077	-0.090	-0.074
	N	630	187	443

		2001 before SOA		
EM Group	Variables	Full sample	High Litigation	Low Litigation risk
POS EM	Mean AA	0.105 ***	0.106 ***	0.105 ***
	(S.E.)	(0.003)	(0.004)	(0.003)
	Median AA	0.078	0.082	0.075
	N	1255	421	834
ZERO EM	Mean AA	0.009 ***	0.007 ***	0.009 ***
	(S.E.)	(0.000)	(0.001)	(0.001)
	Median AA	0.010	0.007	0.011
	N	1388	399	989
NEG EM	Mean AA	-0.111 ***	-0.123 ***	-0.104 ***
	(S.E.)	(0.003)	(0.006)	(0.004)
	Median AA	-0.075	-0.079	-0.073
	N	1182	465	717

Panel B: Distribution of Performance-Matched Modified-Jones Model Abnormal Accruals

		1994 before PSLRA		
EM Group	Variables	Full sample	High Litigation	Low Litigation risk
POS EM	Mean PMAA	0.105 ***	0.108 ***	0.104 ***
	(S.E.)	(0.004)	(0.007)	(0.005)
	Median PMAA	0.070	0.080	0.067
	N	683	163	520
ZERO EM	Mean PMAA	0.000	0.001	0.000
	(S.E.)	(0.001)	(0.001)	(0.001)
	Median PMAA	0.000	0.001	0.000
	N	651	153	498
NEG EM	Mean PMAA	-0.101 ***	-0.109 ***	-0.098 ***
	(S.E.)	(0.004)	(0.008)	(0.004)
	Median PMAA	-0.070	-0.079	-0.067
	N	660	183	477

		2001 before SOA		
EM Group	Variables	Full sample	High Litigation	Low Litigation risk
POS EM	Mean PMAA	0.097 ***	0.101 ***	0.095 ***
	(S.E.)	(0.003)	(0.004)	(0.003)
	Median PMAA	0.068	0.074	0.065
	N	1236	431	805
ZERO EM	Mean PMAA	-0.001	0.000	-0.001
	(S.E.)	(0.000)	(0.001)	(0.000)
	Median PMAA	0.000	0.001	-0.001
	N	1333	401	932
NEG EM	Mean PMAA	-0.102 ***	-0.115 ***	-0.094 ***
	(S.E.)	(0.003)	(0.006)	(0.003)
	Median PMAA	-0.070	-0.077	-0.067
	N	1256	453	803

*, **, *** indicate significance at the 10%, 5%, 1% levels, respectively.
Two-tailed tests are used.

Table 2.2

Distribution of Shareholder Rights Level

This table shows the distribution of Gompers, Ishii, and Metrick (2003)'s "Shareholder Rights Index" of different portfolios based on their litigation risk level and G level. The low G group includes their groups #1, 2, and 3 ($G \leq 7$), who are the firms with strong shareholder rights. The mid G group includes their groups #4, 5, 6 and 7 ($8 \leq G \leq 11$), who are the firms with average shareholder rights. The high G group includes their groups #8, 9, and 10 ($G \geq 12$), who are the firms with low shareholder rights. Litigation risk level has been defined in Table 2.1. All standard deviations (S.D.) are reported in parentheses.

		1995		
G Group	Variables	Full sample	High Litigation	Low Litigation risk
Low G	Mean G	5.793	5.796	5.792
	(S.D.)	(1.205)	(1.194)	(1.211)
	Median G	6.000	6.000	6.000
	N	386	93	293
Mid G	Mean G	9.509	9.449	9.522
	(S.D.)	(1.101)	(1.118)	(1.097)
	Median G	10.000	9.000	10.000
	N	690	127	563
High G	Mean G	12.970	13.000	12.965
	(S.D.)	(1.089)	(1.054)	(1.097)
	Median G	13.000	13.000	13.000
	N	338	55	283

		2002		
G Group	Variables	Full sample	High Litigation	Low Litigation risk
Low G	Mean G	5.947	6.059	5.893
	(S.D.)	(1.139)	(1.111)	(1.150)
	Median G	6.000	6.000	6.000
	N	514	169	345
Mid G	Mean G	9.413	9.064	9.548
	(S.D.)	(1.100)	(1.052)	(1.089)
	Median G	9.000	9.000	10.000
	N	953	265	688
High G	Mean G	13.083	13.000	13.100
	(S.D.)	(1.178)	(1.160)	(1.184)
	Median G	13.000	13.000	13.000
	N	312	53	259

Table 2.3

Legislative Event Dates

This table lists the legislative event dates for the passage of the Private Securities Litigation Reform Act of 1995 (PSLRA) and the Sarbanes-Oxley Act of 2002 (SOA). Panel A refers to part of Ali and Kallapur (2001)'s Table 1 and lists events, event numbers, event dates, and predictions of whether they increased (I) or decreased (D) the likelihood of the passage of PSLRA. Panel B refers to both Rezaee and Jain (2003) and Li, Pincus, and Rego (2004) and lists events, event numbers, event dates, and predictions of whether they increased (I) or decreased (D) the likelihood of the passage of SOA.

Panel A: Legislative Event Dates Leading to the Passage of the Private Securities Litigation Reform Act of 1995

Event #	Date	Prediction	Event
1	19950104		Common Sense Legal Reform Act introduced in the House.
2	19950118		Private Securities Litigation Reform Act of 1995 introduced in the Senate.
3	19950125		SEC Chief warns legislators that changes envisaged by Republicans would impair the nation's securities regulation system.
4	19950209		Legislators modify bill to meet some of SEC's
5	19950214		Finance Subcommittee passes the bill, 16-10.
6	19950215		SEC rejects revised bill.
7	19950216		House Commerce Committee passes the bill, 32-10.
8	19950308		House passes its bill, 325-99.
9	19950519		SEC asks Senator D'Amato, Chairman, Senate Banking Committee, to amend the safe harbor provision in the House bill, which would have given sweeping protection to companies.
10	19950524		Senator D'Amato complies.
11	19950525		Senate Banking Committee approves the bill, 11-4.
12	19950628		Senate passes its bill, 70-29.
13	19951024		House and Senate staffers hammer out a compromise.
14	19951116		SEC approves safe harbor provisions, making a presidential veto less likely.
15	19951128		Conference Committee finalizes the bill.
16	**19951205**	**I**	**Senate approves the bill, 65-30.**
17	**19951206**	**I**	**House approves the bill, 320-102.**
18	19951211		President indicates willingness to sign the bill.
19	19951218		Clinton is officially undecided. Rumors are that he will veto the bill.
20	**19951220**	**?**	**President vetoes bill (on 12/19/1995 after market close), and House overrides veto, 319-100.**
21	19951221		Senate poised to override the veto.
22	**19951222**	**I**	**Senate overrides veto, 68-30.**

Panel B: Legislative Event Events Leading to the Passage of the Sarbanes-Oxley Act of 2002

Event #	Date	Prediction	Event
1	20020117		S.E.C. Chairman Harvey Pitt proposes oversight board.
2	20020212		Legislation to be introduced in the House.
3	20020214		The House of Representatives (Oxley, the Committee on Financial Services) introduced H.R. 3763 to protect investors by improving the accuracy and reliability of corporate disclosures.
4	20020308		Introduction of S. 2004 in the Senate.
5	20020424		House considers and passes H.R. 3763.
6	20020425		Senate Judiciary approves legislation.
7	20020618		The Senate Banking Committee approves (17-4) a bill to tighten regulation of the accounting profession, corporate executives, and financial analysts.
8	20020620		The SEC proposed the creation of a nine-member Public Accountability Board to oversee the accounting profession.
9	20020625		Senator Sarbanes introduced S.2673 to (1) improve the quality and transparency in financial reporting; (2) designate an independent Public Accounting Board; (3) enhance the standard setting process for accounting practices; and (4) improve SEC resources and oversight.
10	20020703		Committee Report on S. 2673.
11	20020708		Senate considers S. 2673.
12	20020709		Bush's Wall Street speech.
13	**20020715**	**D**	**The Senate passed S. 2673.**
14	**20020716**	**D**	**The House passed H.R. 5118.**
15	20020719		There were some uncertainties regarding the form, content, and the possibility of passage of the Act.
16	**20020724**	**I**	**The Congressional Conference Committee reached an agreement on comprehensive reform legislation (the Sarbanes-Oxley Act of 2002).**
17	**20020725**	**I**	**Congress passed the Sarbanes-Oxley Act of 2002 by a vote of 423-3 in the House and 99-0 in Senate.**
18	**20020730**	**I**	**President Bush signed into law the Sarbanes-Oxley Act of 2002.**

Table 2.4

Comparisons of Portfolio CARs around PSLRA and SOA Event Dates

This table compares the Cumulative Portfolio Abnormal Returns (CARp) during the passage of PSLRA and SOA. CARp are calculated based on methods developed in Brown and Warner (1985). For every security, abnormal return is estimated using the OLS market model. The estimation window is [1/1/1994, 12/31/1994] for PSLRA (252 trading days) and [1/1/2001, 12/31/2001] for SOA (248 trading days). The event window is [12/4/1995, 12/26/95] for PSLRA (16 trading days) and [7/23/2002, 7/31/2002] for SOA (7 trading days) . Firms with less than 252/248 trading days data in the estimation window or 16/7 trading days data in the event window are excluded from the final sample. Panel A shows the results by dividing the sample into portfolios based on litigation risk level and abnormal accrual level. Panel B shows the results by dividing the sample into portfolios based on litigation risk level and performance-matched abnormal accrual level. Panel C shows the results by dividing the sample into portfolios based on litigation risk level and shareholder rights level. All standard errors (S.E.) are reported in parentheses.

Panel A: CARp of Portfolios Based on Litigation Risk Level and Abnormal Accrual Level

		PSLRA		SOA	
AA EM group	Variables	High Litigation Risk	Low Litigation Risk	High Litigation Risk	Low Litigation Risk
POS EM	CARp	-5.629 **	-0.763	-10.488 ***	-3.790 ***
	(S.E.)	(2.285)	(1.437)	(2.470)	(1.444)
	N	137	477	383	754
ZERO EM	CARp	-2.603	1.022	-9.873 ***	-3.119 **
	(S.E.)	(1.856)	(1.317)	(2.266)	(1.296)
	N	152	476	382	935
NEG EM	CARp	-5.633 ***	-0.231	-14.064 ***	-5.119 ***
	(S.E.)	(2.087)	(1.553)	(3.027)	(1.686)
	N	166	384	404	629

Panel B: CARp of Portfolios Based on Litigation Risk Level and Performance Matched Abnormal Accrual Level

		PSLRA		SOA	
PMAA EM group	Variables	High Litigation Risk	Low Litigation Risk	High Litigation Risk	Low Litigation Risk
POS EM	CARp	-5.333 ***	-0.355	-12.443 ***	-4.326 ***
	(S.E.)	(2.037)	(1.500)	(2.755)	(1.525)
	N	145	450	391	712
ZERO EM	CARp	-2.202	0.701	-9.778 ***	-2.639 **
	(S.E.)	(1.958)	(1.217)	(2.357)	(1.306)
	N	147	464	369	876
NEG EM	CARp	-6.165 ***	-0.315	-12.221 ***	-4.934 ***
	(S.E.)	(2.095)	(1.431)	(2.669)	(1.543)
	N	163	423	409	730

Panel C: CARp of Portfolios Based on Litigation Risk Level and Shareholder Rights Level

		PSLRA		SOA	
G group	Variables	High Litigation Risk	Low Litigation Risk	High Litigation Risk	Low Litigation Risk
Low G	CARp	-5.506 ***	-0.264	-18.852 ***	-4.643 ***
	(S.E.)	(1.934)	(0.836)	(3.751)	(1.429)
	N	94	299	165	343
Mid G	CARp	-3.948 **	-0.004	-13.457 ***	-1.047
	(S.E.)	(1.615)	(0.695)	(2.674)	(1.271)
	N	122	558	261	666
High G	CARp	-1.988	0.212	-5.906 ***	0.580
	(S.E.)	(1.399)	(0.703)	(1.973)	(1.325)
	N	52	277	56	251

*, **, *** indicate significance at the 10%, 5%, 1% levels, respectively.
Two-tailed tests are used.

Table 2.5

Results of Equal-Weighted Portfolio OLS Approach for Different EM and High Litigation Risk Groups

This table presents the equal-weighted portfolio OLS estimate results for shareholders of high litigation risk and different earning management portfolios. There are 22 event dates for the passage of PSLRA and 18 event dates for the passage of SOA. 1995 daily stock return data is used for PSLRA and 2002 data is used for SOA. Each portfolio consists of firms with 252 trading days in either 1995 or 2002. High litigation risk portfolios are further divided into three groups based on their abnormal accruals (AA) or performance-matched abnormal accruals (PMAA) level. A dummy variable is used that equals to 1 when the day corresponds to the event date as defined in Table 2.3 and 0 otherwise. Panel A reports the estimation results for the passage of PSLRA. Panel B reports the estimation results for the passage of SOA. All standard errors (S.E.) are reported in parentheses.

Panel A: Equal-Weighted Portfolio OLS Estimation Results for the Passage of PSLRA

Dummy	Date	AA Portfolios			PMAA Portfolios		
		POS EM	ZERO EM	NEG EM	POS EM	ZERO EM	NEG EM
D1	19950104	0.220	0.201	-0.371	-0.240	0.101	0.117
		(0.522)	(0.471)	(0.605)	(0.525)	(0.527)	(0.572)
D2	19950118	0.191	0.445	0.333	0.017	-0.002	0.879
		(0.522)	(0.471)	(0.605)	(0.525)	(0.527)	(0.572)
D3	19950125	-0.504	-0.575	-1.198 **	-0.396	-0.852	-1.063 *
		(0.522)	(0.471)	(0.605)	(0.524)	(0.527)	(0.571)
D4	19950209	0.197	0.799 *	0.620	0.366	0.537	0.714
		(0.522)	(0.471)	(0.605)	(0.524)	(0.527)	(0.572)
D5	19950214	-0.159	0.124	0.318	0.125	-0.473	0.589
		(0.522)	(0.471)	(0.605)	(0.524)	(0.527)	(0.571)
D6	19950215	-0.075	-0.360	0.065	-0.208	0.158	-0.269
		(0.523)	(0.471)	(0.605)	(0.525)	(0.528)	(0.572)
D7	19950216	-0.065	0.349	0.092	0.181	-0.136	0.302
		(0.522)	(0.471)	(0.605)	(0.524)	(0.527)	(0.572)
D8	19950308	0.406	0.097	0.047	0.432	0.631	-0.444
		(0.522)	(0.471)	(0.605)	(0.524)	(0.527)	(0.571)
D9	19950519	0.183	-0.036	0.574	0.193	0.294	0.280
		(0.522)	(0.471)	(0.605)	(0.524)	(0.527)	(0.572)
D10	19950524	-0.158	-0.031	-0.780	-0.254	-0.167	-0.578
		(0.522)	(0.471)	(0.605)	(0.524)	(0.527)	(0.571)
D11	19950525	-0.408	-0.037	-0.169	-0.431	-0.174	-0.020
		(0.522)	(0.471)	(0.605)	(0.524)	(0.527)	(0.571)
D12	19950628	-0.535	-0.603	-0.637	-0.761	-0.725	-0.335
		(0.522)	(0.471)	(0.605)	(0.524)	(0.527)	(0.572)
D13	19951024	-0.674	-0.028	-0.004	-0.344	-0.280	-0.058
		(0.522)	(0.471)	(0.605)	(0.524)	(0.527)	(0.571)
D14	19951116	-0.370	-0.758	-0.194	-0.228	-0.496	-0.555
		(0.523)	(0.472)	(0.606)	(0.525)	(0.528)	(0.573)
D15	19951128	0.038	0.042	0.283	0.386	-0.233	0.212
		(0.524)	(0.472)	(0.607)	(0.527)	(0.529)	(0.574)
D16	**19951205**	**-0.627**	**-0.855 ***	**-1.145 ***	**-0.486**	**-0.795**	**-1.330 ****
		(0.523)	**(0.471)**	**(0.605)**	**(0.525)**	**(0.528)**	**(0.572)**
D17	**19951206**	**-0.408**	**0.029**	**-1.044 ***	**-0.435**	**0.458**	**-1.378 ****
		(0.522)	**(0.471)**	**(0.605)**	**(0.524)**	**(0.527)**	**(0.571)**
D18	19951211	-1.046 **	-0.640	-0.440	-0.704	-0.724	-0.654
		(0.522)	(0.471)	(0.605)	(0.524)	(0.527)	(0.571)
D19	19951218	-0.778	-0.098	-0.987	-1.194 **	0.036	-0.715
		(0.540)	(0.486)	(0.625)	(0.542)	(0.545)	(0.590)
D20	**19951220**	**0.511**	**0.723**	**1.331 ****	**0.576**	**0.886 ***	**1.144 ****
		(0.524)	**(0.472)**	**(0.607)**	**(0.526)**	**(0.529)**	**(0.573)**
D21	19951221	-0.639	0.179	-0.166	-0.762	0.065	0.066
		(0.524)	(0.472)	(0.607)	(0.526)	(0.529)	(0.573)
D22	**19951222**	**-0.470**	**-0.216**	**-0.278**	**-0.301**	**-0.206**	**-0.427**
		(0.522)	**(0.471)**	**(0.605)**	**(0.525)**	**(0.527)**	**(0.572)**
N		148	154	175	154	149	174
$\sum_{j=16}^{j=22} D_j$		-3.458 **	-0.877	-2.729 *	-3.306 **	-0.282	-3.295 **

Panel B: Equal-Weighted Portfolio OLS Estimation Results for the Passage of SOA

Dummy	Date	AA Portfolios			PMAA Portfolios		
		POS EM	ZERO EM	NEG EM	POS EM	ZERO EM	NEG EM
D1	20020117	0.056	0.302	0.448	0.097	0.187	0.516
		(0.776)	(0.731)	(0.928)	(0.870)	(0.755)	(0.827)
D2	20020212	0.059	0.204	0.040	0.094	-0.173	0.353
		(0.775)	(0.731)	(0.927)	(0.869)	(0.754)	(0.827)
D3	20020214	-0.727	-0.666	-0.882	-0.374	-0.797	-1.094
		(0.775)	(0.731)	(0.927)	(0.869)	(0.754)	(0.827)
D4	20020308	1.002	1.203	1.686 *	1.022	1.228	1.644 **
		(0.776)	(0.731)	(0.927)	(0.870)	(0.754)	(0.827)
D5	20020424	0.233	-0.230	-0.295	-0.061	0.177	-0.394
		(0.776)	(0.731)	(0.927)	(0.870)	(0.754)	(0.827)
D6	20020425	-0.543	-0.260	-0.313	-0.190	-0.331	-0.576
		(0.775)	(0.731)	(0.927)	(0.869)	(0.754)	(0.827)
D7	20020618	-0.754	-0.453	-0.433	-0.531	-0.615	-0.492
		(0.775)	(0.731)	(0.927)	(0.869)	(0.754)	(0.827)
D8	20020620	0.205	-0.328	0.018	0.300	-0.026	-0.361
		(0.776)	(0.732)	(0.928)	(0.871)	(0.755)	(0.828)
D9	20020625	-0.521	-0.100	0.149	-0.135	-0.339	0.006
		(0.777)	(0.732)	(0.928)	(0.871)	(0.755)	(0.828)
D10	20020703	-0.394	-0.539	-1.658 *	-0.634	-0.798	-1.184
		(0.776)	(0.731)	(0.927)	(0.870)	(0.754)	(0.827)
D11	20020708	-0.561	-1.073	-0.656	-0.924	-0.518	-0.831
		(0.776)	(0.731)	(0.928)	(0.870)	(0.755)	(0.827)
D12	20020709	0.646	0.549	0.972	0.807	0.870	0.522
		(0.779)	(0.734)	(0.930)	(0.873)	(0.757)	(0.830)
D13	**20020715**	**-0.251**	**-0.403**	**-0.031**	**-0.324**	**-0.218**	**-0.138**
		(0.776)	**(0.731)**	**(0.927)**	**(0.870)**	**(0.754)**	**(0.827)**
D14	**20020716**	**1.538 ** **	**1.780 ** **	**1.682 * **	**2.269 *** **	**0.951**	**1.747 ** **
		(0.777)	**(0.732)**	**(0.928)**	**(0.871)**	**(0.755)**	**(0.828)**
D15	20020719	0.547	0.723	1.111	0.799	0.837	0.768
		(0.783)	(0.738)	(0.935)	(0.878)	(0.761)	(0.834)
D16	**20020724**	**-2.446 *** **	**-2.097 *** **	**-3.457 *** **	**-3.103 *** **	**-1.858 ** **	**-3.026 *** **
		(0.795)	**(0.749)**	**(0.950)**	**(0.891)**	**(0.773)**	**(0.847)**
D17	**20020725**	**-1.215**	**-1.257 * **	**-1.860 ** **	**-1.433**	**-1.329 * **	**-1.581 * **
		(0.776)	**(0.731)**	**(0.927)**	**(0.870)**	**(0.754)**	**(0.827)**
D18	20020730	0.300	-0.055	-0.008	-0.215	0.291	0.158
		(0.776)	(0.731)	(0.927)	(0.870)	(0.754)	(0.827)
N		372	378	396	381	364	401
$\sum_{j=16}^{j=18} D_j$		-3.362 **	-3.409 ***	-5.326 ***	-4.751 ***	-2.896 **	-4.449 ***

*, **, *** indicate significance at the 10%, 5%, 1% levels, respectively. Two-tailed tests are used.

Table 2.6

Results of Equal-Weighted Portfolio OLS Approach for Different Shareholder Rights and High Litigation Risk Groups

This table presents the equal portfolio OLS estimate results for shareholders of high litigation risk and different shareholder rights portfolios. There are 22 event dates for the passage of PSLRA and 18 event dates for the passage of SOA. 1995 daily stock return data is used for PSLRA and 2002 data is used for SOA. Each portfolio consists of firms with 252 trading days in either 1995 or 2002. High litigation risk portfolios are further divided into three groups based on their shareholder rights (G) level. A dummy variable is used that equals to 1 when the day corresponds to the event date as defined in Table 2.3 and 0 otherwise. Panel A reports estimation results for the passage of PSLRA. Panel B reports estimation results for the passage of SOA. All standard errors (S.E.) are reported in parentheses.

Panel A: Equal-Weighted Portfolio OLS Estimation Results for the Passage of PSLRA

Dummy	Date	Low G	Mid G	High G
D1	19950104	0.146	0.210	0.029
		(0.560)	(0.428)	(0.423)
D2	19950118	0.133	0.404	0.012
		(0.560)	(0.428)	(0.423)
D3	19950125	-0.855	-1.246 ***	0.163
		(0.559)	(0.428)	(0.422)
D4	19950209	1.050 *	0.866 **	0.260
		(0.560)	(0.428)	(0.423)
D5	19950214	-0.021	-0.181	0.113
		(0.559)	(0.428)	(0.422)
D6	19950215	-0.113	-0.335	0.119
		(0.560)	(0.429)	(0.423)
D7	19950216	0.001	-0.196	-0.379
		(0.560)	(0.428)	(0.422)
D8	19950308	-0.039	0.198	0.060
		(0.559)	(0.428)	(0.422)
D9	19950519	-0.371	0.367	-0.126
		(0.560)	(0.428)	(0.423)
D10	19950524	-0.451	-1.202 ***	-0.062
		(0.559)	(0.428)	(0.422)
D11	19950525	0.100	0.062	-0.085
		(0.559)	(0.428)	(0.422)
D12	19950628	-0.566	-0.213	-0.047
		(0.560)	(0.428)	(0.423)
D13	19951024	-0.629	-0.259	-0.359
		(0.559)	(0.428)	(0.422)
D14	19951116	-0.779	0.104	0.231
		(0.561)	(0.429)	(0.423)
D15	19951128	1.177 **	1.181 ***	-0.247
		(0.562)	(0.430)	(0.424)
D16	**19951205**	**-0.910**	**-0.535**	**-0.030**
		(0.560)	**(0.429)**	**(0.423)**
D17	**19951206**	**-0.970 ***	**-0.526**	**-0.050**
		(0.559)	**(0.428)**	**(0.422)**
D18	19951211	-0.354	-0.818 *	-0.615
		(0.559)	(0.428)	(0.422)
D19	19951218	0.034	-0.172	-0.508
		(0.578)	(0.443)	(0.437)
D20	**19951220**	**0.308**	**0.238**	**1.107 ***
		(0.561)	**(0.430)**	**(0.424)**
D21	19951221	0.160	0.673	0.822 *
		(0.561)	(0.430)	(0.424)
D22	**19951222**	**0.556**	**0.381**	**0.038**
		(0.560)	**(0.428)**	**(0.423)**
N		94	123	51
$\sum_{j=16}^{j=22} D_j$		-1.177	-0.760	0.764

Panel B: Equal-Weighted Portfolio OLS Estimation Results for the Passage of SOA

Dummy	Date	Low G	Mid G	High G
D1	20020117	0.582	0.699	0.589
		(1.242)	(0.939)	(0.703)
D2	20020212	0.176	0.253	0.236
		(1.240)	(0.938)	(0.702)
D3	20020214	-0.804	-0.877	-0.438
		(1.240)	(0.938)	(0.702)
D4	20020308	1.845	1.230	0.238
		(1.241)	(0.938)	(0.702)
D5	20020424	-0.286	-0.075	-0.505
		(1.241)	(0.938)	(0.702)
D6	20020425	0.586	0.066	0.858
		(1.240)	(0.938)	(0.702)
D7	20020618	-1.290	-1.110	0.013
		(1.240)	(0.938)	(0.702)
D8	20020620	-0.836	-0.571	-0.283
		(1.242)	(0.939)	(0.703)
D9	20020625	-0.837	-0.613	-0.629
		(1.243)	(0.940)	(0.703)
D10	20020703	0.748	-0.354	-0.324
		(1.241)	(0.938)	(0.702)
D11	20020708	-1.824	-1.638 *	-0.129
		(1.242)	(0.939)	(0.703)
D12	20020709	0.458	0.668	0.853
		(1.245)	(0.942)	(0.705)
D13	**20020715**	**1.160**	**0.448**	**-1.185 ***
		(1.241)	**(0.938)**	**(0.702)**
D14	**20020716**	**2.624 ******	**2.066 ******	**0.218**
		(1.242)	**(0.939)**	**(0.703)**
D15	20020719	2.538 **	1.510	1.275 *
		(1.252)	(0.947)	(0.709)
D16	**20020724**	**-3.399 *****	**-2.524 *****	**-0.566**
		(1.271)	**(0.961)**	**(0.720)**
D17	**20020725**	**-3.602 *****	**-2.857 *****	**-0.976**
		(1.241)	**(0.938)**	**(0.702)**
D18	20020730	0.158	0.345	-0.198
		(1.241)	(0.938)	(0.702)
N		160	259	54
$\sum_{j=16}^{j=18} D_j$		-6.843 ***	-5.036 ***	-1.741

*, **, *** indicate significance at the 10%, 5%, 1% levels, respectively. Two-tailed tests are used.

Table 2.7

GLS Results of Different Earning Management and High Litigation Risk Groups

This table presents the GLS results of shareholders of high litigation risk and different earning management portfolios. 1995 daily stock return data is used for PSLRA and 2002 data is used for SOA. Each portfolio consists of firms with 252 trading days in either 1995 or 2002. High litigation risk portfolios are further divided into ten groups based on their abnormal accruals (AA) or performance-matched abnormal accruals (PMAA) level. Positive earning managers have lower group numbers; negative earning managers have higher group numbers; and non-earning managers have middle group numbers. A dummy variable is used that equals to 1 when the day corresponds to the event date as defined in Table 2.3 and 0 otherwise. There are 22 event dates for the passage of PSLRA and 18 event dates for the passage of SOA. We only show the regression results of the last seven critical event dates for PSLRA and the last six critical event dates for SOA. Panel A reports the estimation results of AA groups for the passage of PSLRA. Panel B reports the estimation results of PMAA groups for the passage of PSLRA. Panel C reports the estimation results of AA groups for the passage of SOA. Panel D reports the estimation results of PMAA groups for the passage of SOA. All standard errors (S.E.) are reported in parentheses.

Panel A: GLS Results of AA Groups for the Passage of PSLRA

		Abnormal Accrual Portfolios									
Dummy	**Date**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
D16	**19951205**	**-0.336**	**1.109** **	**-0.354**	**-0.651** *	**-0.871** **	**-0.232**	**0.540** *	**-0.368**	**-0.181**	**-0.979** *
		(0.494)	**(0.459)**	**(0.397)**	**(0.396)**	**(0.421)**	**(0.353)**	**(0.311)**	**(0.413)**	**(0.474)**	**(0.534)**
D17	**19951206**	**-0.554**	**-1.316** ***	**0.065**	**-0.335**	**0.351**	**0.495**	**0.048**	**-0.378**	**-0.688**	**-1.139** **
		(0.494)	**(0.458)**	**(0.397)**	**(0.396)**	**(0.420)**	**(0.353)**	**(0.310)**	**(0.413)**	**(0.474)**	**(0.533)** *
D18	19951211	-0.970 **	-0.738	-0.784 **	-0.825 **	-0.441	-0.340	-0.087	-0.696 *	-0.355	-0.156
		(0.494)	(0.458)	(0.397)	(0.396)	(0.420)	(0.353)	(0.310)	(0.413)	(0.474)	(0.533)
D19	19951218	-1.394 ***	-0.671	-0.295	-0.716 *	0.888 **	0.802 **	-0.507	-1.175 ***	-0.339	-1.530 ***
		(0.510)	(0.474)	(0.410)	(0.409)	(0.434)	(0.365)	(0.321)	(0.427)	(0.489)	(0.551)
D20	**19951220**	**0.932** *	**-0.213**	**0.416**	**0.228**	**-0.136**	**0.245**	**0.776** **	**0.590**	**1.072** **	**2.245** ***
		(0.495)	**(0.460)**	**(0.398)**	**(0.397)**	**(0.422)**	**(0.354)**	**(0.311)**	**(0.414)**	**(0.475)**	**(0.535)**
D21	19951221	-0.333	-0.816 *	0.021	0.542	0.506	-0.206	0.153	-0.725 *	-0.043	0.602
		(0.495)	(0.460)	(0.398)	(0.397)	(0.422)	(0.354)	(0.311)	(0.414)	(0.475)	(0.535)
D22	**19951222**	**0.460**	**-0.763** *	**0.250**	**0.040**	**0.031**	**0.126**	**0.131**	**0.237**	**-0.369**	**0.006**
		(0.494)	**(0.459)**	**(0.397)**	**(0.396)**	**(0.420)**	**(0.353)**	**(0.310)**	**(0.413)**	**(0.474)**	**(0.533)**
N		49	50	36	41	39	45	51	52	58	56
$\sum_{j=16}^{22} D_j$		-2.195 *	-3.408 ***	-0.680	-1.718	0.328	0.891	1.053	-2.514 **	-0.904	-0.951

Panel B: GLS Results of PMAA Groups for the Passage of PSLRA

		Performance-Matched Abnormal Accrual Portfolios									
Dummy	**Date**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
D16	**19951205**	**-0.098**	**-0.852** *	**-0.448**	**0.009**	**-0.425**	**0.810** *	**-0.031**	**0.050**	**-0.699** *	**-1.297** **
		(0.511)	**(0.441)**	**(0.432)**	**(0.356)**	**(0.355)**	**(0.430)**	**(0.356)**	**(0.377)**	**(0.380)**	**(0.627)**
D17	**19951206**	**-1.522** ***	**-0.235**	**-0.605**	**0.677** *	**0.790** **	**-0.116**	**0.138**	**-0.215**	**-0.410**	**-0.725**
		(0.511)	**(0.440)**	**(0.432)**	**(0.355)**	**(0.355)**	**(0.430)**	**(0.355)**	**(0.377)**	**(0.380)**	**(0.627)**
D18	19951211	-1.426 ***	-1.111 **	-0.307	-0.536	-0.216	-0.676	-0.124	-0.599	-0.120	-0.557
		(0.511)	(0.440)	(0.432)	(0.355)	(0.355)	(0.430)	(0.355)	(0.377)	(0.380)	(0.627)
D19	19951218	-0.871 *	-0.288	-1.059 **	-0.413	0.069	0.260	-0.681 *	0.205	-0.576	-1.441 **
		(0.528)	(0.455)	(0.446)	(0.367)	(0.367)	(0.444)	(0.367)	(0.390)	(0.392)	(0.648)
D20	**19951220**	**0.737**	**0.315**	**0.433**	**0.367**	**0.308**	**0.001**	**0.388**	**0.364**	**1.261** ***	**1.409** **
		(0.513)	**(0.442)**	**(0.433)**	**(0.356)**	**(0.356)**	**(0.431)**	**(0.357)**	**(0.378)**	**(0.381)**	**(0.629)**
D21	19951221	-0.436	-0.857 *	-0.605	-0.030	0.137	-0.116	0.226	0.718 *	-0.289	-1.241 **
		(0.513)	(0.442)	(0.433)	(0.356)	(0.356)	(0.431)	(0.357)	(0.378)	(0.381)	(0.629)
D22	**19951222**	**0.304**	**0.422**	**-0.408**	**0.306**	**-0.752** **	**-0.141**	**-0.101**	**0.144**	**-0.320**	**0.284**
		(0.511)	**(0.440)**	**(0.432)**	**(0.355)**	**(0.355)**	**(0.430)**	**(0.356)**	**(0.377)**	**(0.380)**	**(0.627)**
N		42	52	45	51	41	38	47	54	56	51
$\sum_{j=16}^{22} D_j$		-3.313 **	-2.606 **	-3.000 ***	0.380	-0.088	0.022	-0.184	0.667	-1.155	-3.567 **

Panel C: GLS Results of AA Groups for the Passage of SOA

		Abnormal Accrual Portfolios									
Dummy	**Date**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
D13	**20020715**	**-0.257**	**0.157**	**-0.353**	**-0.817** **	**0.056**	**-0.277**	**-0.304**	**-0.777** **	**-0.354**	**0.539**
		(0.488)	**(0.371)**	**(0.326)**	**(0.330)**	**(0.307)**	**(0.330)**	**(0.285)**	**(0.322)**	**(0.416)**	**(0.597)**
D14	**20020716**	**0.409**	**1.252** ***	**1.017** ***	**1.654** ***	**1.160** ***	**0.975** ***	**0.859** ***	**1.764** ***	**1.596** ***	**1.111** *
		(0.489)	**(0.371)**	**(0.326)**	**(0.330)**	**(0.308)**	**(0.330)**	**(0.285)**	**(0.322)**	**(0.416)**	**(0.598)**
D15	20020719	-0.096	0.908 **	0.827 **	-0.430	1.281 ***	0.617 *	-0.381	0.707 **	0.956 **	1.087 *
		(0.493)	(0.374)	(0.329)	(0.333)	(0.310)	(0.333)	(0.287)	(0.325)	(0.420)	(0.602)
D16	20020724	-2.575 ***	-1.921 ***	-1.967 ***	-1.226 ***	-2.387 ***	-2.385 ***	0.265	-2.585 ***	-3.012 ***	-3.349 ***
		(0.500)	(0.380)	(0.334)	(0.338)	(0.315)	(0.338)	(0.292)	(0.330)	(0.426)	(0.612)
D17	**20020725**	**-1.785** ***	**-0.772** **	**-0.951** ***	**0.047**	**-0.496**	**-0.871** ***	**-1.284** ***	**-0.678** **	**-2.225** ***	**-0.839**
		(0.488)	**(0.371)**	**(0.326)**	**(0.330)**	**(0.307)**	**(0.330)**	**(0.285)**	**(0.322)**	**(0.416)**	**(0.597)**
D18	20020730	-0.225	0.784 **	-0.112	0.216	-0.170	-0.314	0.316	-0.072	-0.971 **	0.201
		(0.488)	(0.371)	(0.326)	(0.330)	(0.307)	(0.330)	(0.285)	(0.322)	(0.416)	(0.597)
N		80	131	115	111	117	110	127	133	136	86
$\sum_{j=16}^{18} D_j$		-4.585 ***	-1.909 ***	-3.030 ***	-0.963 *	-3.052 ***	-3.570 ***	-0.704	-3.336 ***	-6.207 ***	-3.987 ***

Panel D: GLS Results of PMAA Groups for the Passage of SOA

		Performance-Matched Abnormal Accrual Portfolios									
Dummy	**Date**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
D13	**20020715**	**-0.920**	**0.161**	**-0.399**	**0.594**	**-0.753** **	**-0.087**	**0.280**	**-0.716** *	**-0.094**	**-1.209** ***
		(0.678)	**(0.368)**	**(0.353)**	**(0.391)**	**(0.313)**	**(0.365)**	**(0.320)**	**(0.373)**	**(0.287)**	**(0.452)**
D14	**20020716**	**1.755** ***	**1.710** ***	**1.495** ***	**1.132** ***	**0.645** **	**0.207**	**0.981** ***	**1.595** ***	**0.971** ***	**0.054**
		(0.679)	**(0.368)**	**(0.354)**	**(0.392)**	**(0.314)**	**(0.366)**	**(0.321)**	**(0.374)**	**(0.288)**	**(0.453)**
D15	20020719	-0.222	1.122 ***	0.599 *	0.218	1.008 ***	0.502	0.802 **	-0.097	1.382 ***	0.317
		(0.684)	(0.371)	(0.356)	(0.395)	(0.316)	(0.369)	(0.323)	(0.377)	(0.290)	(0.457)
D16	20020724	-3.303 ***	-2.057 ***	-1.739 ***	-2.310 ***	-0.491	-1.647 ***	-1.939 ***	-2.338 ***	-2.067 ***	-2.673 ***
		(0.694)	(0.377)	(0.362)	(0.401)	(0.321)	(0.374)	(0.328)	(0.383)	(0.294)	(0.464)
D17	**20020725**	**-0.889**	**-1.656** ***	**-0.478**	**-2.158** ***	**-0.176**	**-1.627** ***	**-0.735** **	**-0.960** ***	**-1.109** ***	**-0.709**
		(0.678)	**(0.368)**	**(0.353)**	**(0.391)**	**(0.313)**	**(0.365)**	**(0.320)**	**(0.373)**	**(0.287)**	**(0.452)**
D18	20020730	-0.052	-0.040	-0.062	-0.701 *	-0.329	-0.213	0.496	-0.207	0.012	0.041
		(0.678)	(0.368)	(0.353)	(0.391)	(0.313)	(0.365)	(0.320)	(0.373)	(0.287)	(0.452)
N		82	125	130	112	116	95	120	119	144	103
$\sum_{j=16}^{18} D_j$		-4.244 ***	-3.753 ***	-2.279 ***	-5.169 ***	-0.995 *	-3.488 ***	-2.178 ***	-3.506 ***	-3.164 ***	-3.340 ***

*, **, *** indicate significance at the 10%, 5%, 1% levels, respectively. Two-tailed tests are used.

Table 2.8

GLS Results of Different Earning Management and High Litigation Risk Groups

This table presents the GLS results of shareholders of high litigation risk and different shareholder rights portfolios. 1995 daily stock return data is used for PSLRA and 2002 data is used for SOA. Each portfolio consists of firms with 252 trading days in either 1995 or 2002. High litigation risk portfolios are further divided into ten groups based on their shareholders rights level. Firms with lower G representing stronger shareholder rights and higher G representing weaker shareholder rights. A dummy variable that equals to 1 when the day corresponds to the event date as defined in Table 2.3 and 0 otherwise. There are 22 event dates for the passage of PSLRA and 18 event dates for the passage of SOA. We only show the regression results of last seven critical event dates for PSLRA and last six critical event dates for SOA. Panel A reports estimation results of ten G groups for the passage of PSLRA. Panel B reports estimation results of ten G groups for the passage of SOA. All standard errors (S.E.) are reported in parentheses.

Panel A: GLS Results of G Groups for the Passage of PSLRA

		G Portfolios									
Dummy	**Date**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
D16	**19951205**	**-0.695**	**0.001**	**-0.510**	**-0.432**	**-0.834** **	**0.264**	**-0.018**	**-0.220**	**0.497**	**0.653**
		(0.506)	**(0.331)**	**(0.340)**	**(0.434)**	**(0.413)**	**(0.397)**	**(0.337)**	**(0.404)**	**(0.466)**	**(0.427)**
D17	**19951206**	**-0.022**	**0.247**	**-0.467**	**0.210**	**-0.826** **	**-0.141**	**0.194**	**0.037**	**0.482**	**0.586**
		(0.505)	**(0.331)**	**(0.339)**	**(0.434)**	**(0.413)**	**(0.397)**	**(0.337)**	**(0.404)**	**(0.465)**	**(0.427)**
D18	19951211	-0.001	-0.466	-0.339	-0.572	-0.451	-0.423	-0.878 ***	-1.598 ***	0.145	0.091
		(0.505)	(0.331)	(0.339)	(0.434)	(0.413)	(0.397)	(0.337)	(0.404)	(0.466)	(0.427)
D19	19951218	-0.319	-0.331	0.545	0.190	-0.285	-0.060	0.132	-0.624	-0.391	0.116
		(0.522)	(0.342)	(0.351)	(0.448)	(0.427)	(0.410)	(0.348)	(0.418)	(0.481)	(0.441)
D20	**19951220**	**-0.053**	**-0.284**	**-0.017**	**0.653**	**0.172**	**0.768** *	**0.005**	**1.758** ***	**-0.702**	**-0.184**
		(0.507)	**(0.332)**	**(0.340)**	**(0.435)**	**(0.414)**	**(0.398)**	**(0.338)**	**(0.405)**	**(0.467)**	**(0.428)**
D21	19951221	0.409	0.683 **	-0.385	0.999 **	0.662	0.888 **	0.594 *	0.298	0.572	0.362
		(0.507)	(0.332)	(0.340)	(0.435)	(0.414)	(0.398)	(0.338)	(0.405)	(0.467)	(0.428)
D22	**19951222**	**0.118**	**0.440**	**0.111**	**-0.428**	**0.829** **	**-0.261**	**0.386**	**-0.608**	**0.530**	**0.587**
		(0.505)	**(0.331)**	**(0.339)**	**(0.434)**	**(0.413)**	**(0.397)**	**(0.337)**	**(0.404)**	**(0.466)**	**(0.427)**
N		26	37	31	33	32	29	29	21	15	15
$\sum_{j=16}^{22} D_j$		-0.563	0.290	-1.061	0.620	-0.732	1.035	0.415	-0.958	1.133	2.212 *

Panel B: GLS Results of G Groups for the Passage of SOA

		G Portfolios									
Dummy	**Date**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
D13	**20020715**	**0.142**	**0.432**	**0.377**	**0.245**	**0.083**	**-1.002 ***	**0.265**	**-1.069 ***	**-1.799 *****	**0.329**
		(0.696)	**(0.648)**	**(0.499)**	**(0.384)**	**(0.487)**	**(0.601)**	**(0.527)**	**(0.603)**	**(0.558)**	**(0.764)**
D14	**20020716**	**1.995 *****	**1.045**	**1.066 ******	**0.878 ******	**2.247 *****	**1.374 ******	**0.533**	**0.914**	**0.460**	**-1.166**
		(0.697)	**(0.649)**	**(0.500)**	**(0.385)**	**(0.488)**	**(0.602)**	**(0.528)**	**(0.604)**	**(0.559)**	**(0.766)**
D15	20020719	1.760 **	0.824	1.337 ***	0.986 **	0.823 *	1.142 *	0.494	0.791	0.524	1.542 **
		(0.703)	(0.654)	(0.503)	(0.387)	(0.491)	(0.606)	(0.532)	(0.608)	(0.563)	(0.772)
D16	20020724	-2.075 ***	-1.163 *	-1.443 ***	-1.068 ***	-2.380 ***	-0.904	-0.708	-0.989	-0.219	-0,159
		(0.714)	(0.664)	(0.511)	(0.393)	(0.499)	(0.616)	(0.540)	(0.618)	(0.572)	(0.783)
D17	**20020725**	**-3.193 *****	**-0.953**	**-2.509 *****	**-2.020 *****	**-2.199 *****	**-0.987**	**-0.929 ***	**-1.422 ******	**0.762**	**-0.807**
		(0.696)	**(0.648)**	**(0.499)**	**(0.384)**	**(0.487)**	**(0.601)**	**(0.527)**	**(0.603)**	**(0.558)**	**(0.764)**
D18	20020730	-0.576	-0.616	-0.110	0.657 *	-0.389	1.095 *	0.000	-0.732	-0.082	0.322
		(0.696)	(0.648)	(0.499)	(0.384)	(0.487)	(0.601)	(0.527)	(0.603)	(0.558)	(0.764)
N		40	47	73	97	81	45	36	24	16	14
$\sum_{j=16}^{18} D_j$		-5.843 ***	-2.732 **	-4.062 ***	-2.431 ***	-4.968 ***	-0.796	-1.637 *	-3.143 ***	0.461	-0.643

*, **, *** indicate significance at the 10%, 5%, 1% levels, respectively. Two-tailed tests are used.

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