The Impact of the 1995 Private Securities Litigation Reform Act on Litigation Risk and Auditor Compensation in the IPO Market

Randolph P. Beatty
Leventhal School of Accounting
Marshall School of Business
University of Southern California
Los Angeles, CA 90089-1421

Philip P. Drake
Thunderbird American Graduate School
of International Management
Glendale, AZ 85306-6000

Chris E. Hogan
Edwin L. Cox School of Business
Southern Methodist University
Dallas, TX 75275-0333

November, 2001

The authors would like to thank Yaw Mensah, David Williams, and Mike Wilkins for helpful comments and suggestions.

The Impact of the 1995 Private Securities Litigation Reform Act on Litigation Risk and Auditor Compensation in the IPO Market

ABSTRACT: We examine the impact of the Private Securities Litigation Reform Act of 1995 on litigation against IPO firms, and on auditor compensation. The 1995 Reform Act was intended to curb non-meritorious litigation. Using a sample of IPOs and data on lawsuits filed in Federal courts against IPO firms, we find both univariate and multivariate evidence consistent with a decline in litigation against IPO firms following the passage of the 1995 Reform Act. We estimate models of auditor compensation both in the pre- and post- 1995 Reform Act periods, using various proxies for litigation risk and controlling for other factors commonly found to be associated with auditor compensation, and find evidence consistent with either no change in the litigation risk premium or a significant decrease in the litigation risk premium subsequent to passage of the 1995 Reform Act, depending on the measure of litigation risk used. An additional interesting finding documented and explored further in this study is a significant increase in the Big 5 fee premium charged in the late 1990s relative to the early 1990s.

Keywords: Private Securities Litigation Reform Act of 1995; auditor compensation; litigation risk premium

Data Availability: All data are available from public sources

The Impact of the 1995 Private Securities Litigation Reform Act on Litigation Risk and Auditor Compensation in the IPO Market

I. INTRODUCTION

The goal of this study is to examine the impact of the Private Securities Litigation Reform Act of 1995 on litigation against IPO firms, and on auditor compensation. The Private Securities Litigation Reform Act of 1995 (hereafter the 1995 Reform Act) was the first major reform of the Securities Act of 1933 and the Securities Exchange Act of 1934. The 1995 Reform Act was the result of extensive lobbying by several groups, including the Big Six accounting firms. In a 1993 position paper, the Big Six firms claim that the incidence of litigation and its related costs threaten the profession's ability to service the financial marketplace (Arthur Andersen & Co. et al. 1993). The accounting firms asserted that most litigation was filed to secure multi-million dollar settlements and not to redress grievous instances of fraud (S. Hrg. 103-431, p. 670).

The 1995 Reform Act decreased auditor litigation exposure in some respects, but at the same time, increased the auditor's responsibility to detect and report fraud (King and Schwartz 1997; Goldwasser 1997). The 1995 Reform Act was intended to discourage abusive claims of investors' losses due to fraudulent misstatements or omissions by issuers of securities, provide more protection against securities fraud and increase the flow of forward-looking financial information (Andrews and Simonetti 1996). The major provisions that affect auditors include heightened pleading standards, a change from joint-and-several liability to proportionate liability in most allegations of

Rule 10b-5 violations, and the increased responsibility for auditors to detect and report illegal acts (Andrews and Simonetti 1996; Pincus 1996).[1]

We seek to determine whether the 1995 Reform Act impacted the litigation risk premium charged by auditors on IPO engagements. We focus specifically on the IPO market for two main reasons. First, the large accounting firms claim that they are practicing risk reduction by avoiding certain high-risk engagements, including IPOs (Arthur Andersen & Co. et al. 1992, p. 5). Thus, litigation reform should have a greater impact on litigation risk premiums on high-risk engagements. Secondly, auditor compensation data on IPO engagements is available in the offering prospectus.

Using a sample of IPOs and data on lawsuits filed against IPO firms, we find both univariate and multivariate evidence consistent with a reduction in IPO litigation subsequent to the 1995 Reform Act. We document a 1.7% decline in the unconditional probability of IPO lawsuits from 5.7% during the five-year period 1991-1995 to 4.0% during the period from 1996-1997. We control for changes in the IPO market by estimating a model of the probability of an IPO being involved in litigation. This model shows that the likelihood of being sued is increasing in offering size, estimated losses from a drop in stock price, and the standard deviation of post-offering returns, and firms in the high tech industry have a 2.5% greater chance of being sued. The conditional probability of being sued decreases by 3.5% following the 1995 Reform Act. Overall, these results suggest that litigation risk declined in the post-1995 Reform Act period.

[1] Claims against IPO firms can be, and often are, filed under both Section 11 of the Securities Act of 1933 and Section 10b-5 of the Securities Exchange Act of 1934. The class period often begins on the IPO date and extends beyond at least one other financial reporting date. The 1995 Reform Act modified mainly section 10b-5 of the Securities Exchange Act of 1934.

We estimate models of auditor compensation both in the pre- and post-Reform Act periods, using various proxies for litigation risk and controlling for other factors commonly found to be associated with auditor compensation. We find evidence mainly consistent with no change in the litigation risk premium component of auditor compensation, although some results are consistent with a decrease in the litigation risk premium. We find no evidence consistent with an increase in the risk premium following the 1995 Reform Act. Another interesting finding documented in this study is that the Big 5 fee premium increases significantly subsequent to passage of the 1995 Reform Act.

The remainder of the paper is organized as follows. In section 2, we discuss evidence on the impact of the 1995 Reform Act. In section 3, we discuss the sample of IPO firms used in the empirical analysis, and the data on IPO litigation. Sections 4 and 5 present empirical analyses of auditor compensation using various measures of litigation risk. In section 6, we summarize the results and offer concluding remarks.

II. IMPACT OF THE 1995 REFORM ACT

Johnson et al. (2001) and Ali and Kallapur (2001) examine the stock market reaction to the passage of the 1995 Reform Act. While Johnson et al. (2001) conclude that shareholders considered the 1995 Reform Act to be beneficial based upon the market reaction to the presidential veto of the bill on 12/19/95 and the subsequent congressional override of the veto on 12/20/95 (House) and 12/22/95 (Senate), Ali and Kallapur (2001) conclude the opposite. Ali and Kallapur's conclusions are based on a comprehensive examination of events occurring throughout the debate on the 1995 Reform Act, and also on the reaction to Proposition 211.[2]

[2] California's Proposition 211 would have reversed many of the 1995 Reform Act's key provisions; however, the bill was defeated on 11/5/96. See Ali and Kallapur (2001) for more details.

Other studies have addressed the impact to date of the 1995 Reform Act by comparing litigation activity prior to and following the law's enactment. Grundfest and Perino (1997) find that overall litigation rates remained relatively unchanged through 1996, and they find that accounting fraud is alleged more frequently in the post-1995 Reform Act period (67% of post-Reform Act complaints versus 34% of pre-Reform Act cases). They find a similar trend with allegations of insider trading, where 21% of pre-Reform Act complaints allege insider trading, compared to such allegations in 57% of post-Reform Act complaints. The observed increase in claims of accounting fraud and insider trading may be a result of the heightened pleading standards that require all claims to cite specific examples of a "strong inference" of the defendants' fraudulent intent (Andrews and Simonetti 1996). Consistent with the findings of Grundfest and Perino (1997), Fuerman (2000) finds that overall litigation rates are increasing in the post-1995 Reform Act period.

Another finding of the Grundfest and Perino (1997) study is that there is a significant shift in where the securities class action suits are being filed. They find a movement towards filing in state courts, which are not subject to the heightened pleading standards of the 1995 Reform Act.[3] This issue has been addressed in the recently passed Securities Litigation Uniform Standards Act of 1998 that requires essentially all class action securities complaints be filed in Federal courts.

These scant and conflicting results suggest that the incidence and outcomes of IPO litigation in the post-1995 Reform Act period is an open question. In the next

[3] A June 24, 1996 Business Week article states that "more than 20 securities fraud cases have been filed in California alone, a five-fold increase from previous years" (France 1996). Grundfest and Perino (1997) report that approximately 26% of litigation activity has moved from federal to state courts, purportedly to avoid the heightened pleading standards of the 1995 Reform Act.

section, we provide univariate evidence consistent with a decrease in litigation activity related to initial public stock offerings in the post-1995 Reform Act period. Based upon this evidence, we would expect the litigation component of auditor compensation to decrease subsequent to the 1995 Reform Act due to the reduction in litigation exposure.

III. IPO SAMPLE AND LITIGATION RATES

IPO Sample

We obtained data on all initial public offerings of common stock in the U.S. (excluding offerings of depository shares) for the period January 1, 1991 through December 31, 1999 from the Securities Data Corporation New Issues database. We begin our sample in 1991 as this is the first year that SDC reports auditor compensation. There were a total of 5,007 IPOs during this nine-year period.

Table 1 presents the IPO market share for each of the Big 5 accounting firms, and the non-Big 5 as a group.[4] Interestingly, the market share of the Big 5 firms has actually increased slightly in recent years despite the claim by the large accounting firms that they are practicing risk reduction by avoiding certain high-risk engagements, including IPOs (Arthur Andersen & Co. et al. 1993). The average share of the IPO market for the Big 5 firms in total was 84.2% during 1991-1995 as compared to 85.0% during 1996-1999.[5]

Simunic and Stein (1996) argue that changes in the litigation environment may result in changes in auditor cost functions, and ultimately, shifts in the level of audit

[4] For ease of presentation, we combine the individual data prior to the date of a merger for the firms that have merged over this time period (e.g. the number of IPOs audited by Price Waterhouse and Coopers & Lybrand have been added together prior to their merger). Throughout the remainder of the paper, we use Big 5 to refer to the Big 5, Big 6, or Big 8.

[5] SDC began reporting auditor data in 1985. We also computed average market shares including this earlier time period, although the data is not included in table 1. The average market share of the Big 5 during the period 1985-1995 was 80.8% as compared to the average market share of 85.0% during the period 1996-1999. This increase in average market share is significant based on a binomial test of differences (Z=-1.79, **"**=.08).

quality demanded. Thus, the increase in Big 5 market share may be an indication that expected litigation costs for these firms decreased following the 1995 Reform Act resulting in more affordable high quality audits. Alternatively, the increase in Big 5 market share may be a result of an increase in the average level of firm-specific risk in the latter time period, consistent with Datar, Feltham and Hughes' (1991) conjecture that the demand for a high quality auditor is increasing in firm-specific risk. Next, we examine differences in IPO characteristics across the two time periods to investigate these competing views.

Litigation Rates

An IPO lawsuit is a legal action filed in federal or state court which asserts that the issuing company violated security laws over a period of time encompassing the initial issuance of its securities to a national market. For this study, we identify the IPO lawsuits that were (1) filed in federal courts, (2) brought by IPO investors, and (3) pertaining to the initial issuances of common stock. To identify these IPO lawsuits, we searched: the legal databases LEXIS/NEXIS and WESTLAW; legal reporters including Securities Class Action Alert, Class Action Reports, and Securities Regulation and Law Report; annual reports and 10-Ks; and various business periodicals including the Wall Street Journal and New York Times. This search identified 236 lawsuits filed during the period 1991 through October, 2001 against initial public offerings made during 1991-1999.[6]

Table 2 presents the IPO and litigation activity by year of offering. Table 2 lists the number of IPO suits by offering year, not the year of the lawsuit filing. The

[6] We do not include any of the "IPO allocation" lawsuits filed during 2001. 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 firm.

percentages for 1998-1999 may be understated since the statute of limitations on IPO-related suits is three years (i.e. suits may still be filed in the last two months of 2001 or beyond related to these IPOs).[7] On average, 5.67% of initial public offerings during the 1991-1995 time-period were sued, whereas only 4.03% of the 1996-1997 offerings were sued on average. This decrease in litigation activity from the 1991-1995 period to the 1996-1997 period is significant based on a binomial test of differences (Z=2.27).[8] It appears that the Reform Act did reduce litigation risk relative to the early 1990s, at least in the filing of Federal class-action lawsuits.[9]

Sample Characteristics

Table 3 describes the sample of IPOs to be used in the empirical analyses of auditor litigation and compensation. There were 5,007 IPOs in the SDC database over the period 1/1/1991 through 12/31/1999. SDC did not report auditor compensation until approximately 1991, thus IPOs prior to this time period cannot be studied. We eliminate financial firms (SIC codes 6000-6999), as auditor compensation regressions are likely to be significantly different for these clients. Other data requirements reduce the final sample to 1,609 IPOs.

Table 4 presents descriptive statistics for the IPOs with complete information on all of the variables listed. Panel A presents the means, medians, standard deviations, and minimum and maximum values for the entire sample for comparison to data used in prior

[7] We test the sensitivity of our findings to excluding 1999 IPOs and find that results are qualitatively similar to those presented in tables 5-7.

[8] In calculations not reported here, we computed the average percentage of IPOs sued in earlier periods for comparison to the 1990s. The average percentage of IPOs sued over the six-year period 1980-1985 is 3.52%, and the average percentage sued over the five-year period 1986-1990 is 3.45%. The increase in the 1991-1995 litigation rate of 5.67 % relative to the 1986-1990 rate of 3.45% is significant based on a binomial test of differences (Z=-3.58).

[9] Our data does not include lawsuits filed in State courts, which according to Grundfest and Perino (1997) have become more frequent in the post-1995 Reform Act period.

studies. Panel B presents the means and standard deviations of variables both before and after the 1995 Reform Act, and Panel C compares the industry breakdown of the sample before and after the 1995 Reform Act. Prior to calculating the descriptive statistics presented in table 4, all dollar amounts were restated in terms of 1999 dollars.

Mean (median) auditor compensation, as shown in panel A, is $263,000 ($186,000). Average (median) assets prior to the IPO are approximately $161 ($27) million, and the average (median) offering proceeds are $61 ($35) million. Big 5 auditor firms audited approximately 89% of the IPOs. This is significantly higher than the 58% Big 8 market share reported in Beatty (1989) for the 1975-1984 period or the 58% Big 8 market share reported in Menon and Williams (1991) for a sample of 1985-1986 IPOs; however it is consistent with the trend identified in table 1 of increasing IPO market share for the large audit firms, and consistent with our sample of IPOs being larger on average.[10] Hogan (1997) reports an 85% Big 6 market share for a sample of 1990-1992 IPOs. Six percent of the IPO sample presented in panel A was subsequently sued.

Not surprisingly, the descriptive statistics presented in panel A suggest that our IPO firms are larger on average, in terms of assets and auditor compensation, than the average IPO in the 1980s (see Beatty (1993), and Simunic and Stein (1987)). Average assets for Beatty's (1993) sample were approximately $18.2 million (approximately $29.3 million in 1999 dollars), whereas average (median) assets in 1999 dollars for our sample are approximately $161 ($27) million.[11] Average auditor compensation in

[10] Both Beatty (1989) and Menon and Williams (1991) include "best efforts" offerings, which are smaller on average. Thus, it is not surprising that these studies find a lower percentage audited by Big 8 firms. Menon and Williams (1991) report that 76% of the firm commitment offerings were audited by the Big 8.

[11] The mean values reported in table 4 are skewed by a few large observations. The 5 largest IPOs, in terms of assets, are Lucent Technologies, Inc. (AT&T), Nabisco Holdings Corp., Netsmart Technologies Inc., Inhale Therapeutic Systems, and Hertz Corp. (Ford Motor).

Beatty's (1993) sample was $51 thousand (approximately $82 thousand in 1999 dollars), versus $263 thousand in 1999 dollars on average for our sample. The average log of total assets for our sample is 17.22 prior to restating in 1999 dollars, and the average log of offering proceeds is 17.31 prior to restating in 1999 dollars, which are nominally higher than Hogan's (1997) sample (average log of assets of 16.83 and average log of proceeds of 17.05).[12]

In Panel B of table 4, the sub-sample with complete data contains 737 IPOs prior to the 1995 Reform Act and 872 IPOs following. Average auditor compensation, restated in 1999 dollars, has significantly increased from $225,000 in the pre-1995 Reform Act period to $296,000 in the post-1995 Reform Act period. Firm size, as measured by assets, has not significantly increased ($169 million compared to $154 million); however, offering proceeds are significantly higher in the post-1995 Reform Act period ($55 million compared to $66 million). In this sub-sample of IPOs, the average litigation rates have significantly declined from 7% in the pre-1995 Reform Act period to 5% in the post-1995 Reform Act period. The post-1995 Reform Act IPOs have a lower ROA (0.03 in the pre-1995 Reform Act period compared to –0.26 in the post-1995 Reform Act period). Not surprisingly, the percentage of high-tech firms has increased from 27% in the pre-1995 Reform Act period to 41% in the post-1995 Reform Act period. Estimated losses as a result of a drop in market price have significantly increased (the natural log of estimated losses was 4.43 in the pre-Reform Act period compared to 4.88 in the post-Reform Act period), and the standard deviation of returns over the 36 months following the IPO has also increased from .17 to .25. Thus, it does appear that the average level of

[12] Our sample is not comparable to Willenborg's (1999) sample because he is studying the small-deal segment of the IPO market.

firm-specific risk has increased. This increase in the average level of firm-specific risk may explain the increase in the market share of the Big 5 auditors (Datar, Feltham and Hughes 1991).

If the 1995 Reform Act reduced expected litigation costs, a greater number of high risk firms may be going public as a result of these decreased expected costs. However, this change in the composition of firms going public is consistent with Loughran and Ritter's (2001) finding that the riskiness of the firms going public increased on average during the "internet bubble" period of 1999-2000 relative to IPOs during the period 1990-1998, so at least a portion of the difference documented in panel B of table 4 is due to the internet bubble firms.

As can be seen in table 4 panel C, there has been an increase in the percentage of IPOs in the "business services" industries from 12% of IPOs coming from the two-digit SIC code 73 during the period 1991-1995 versus 34% of the sample coming from the two-digit SIC code 73 during 1996-1999. This is primarily a result of an increase in the number of IPOs related to computer and data processing: 73 offerings in the three-digit SIC code 737 during 1991-1995 compared to 229 offerings during 1996-1999.

Overall, the descriptive statistics presented in tables 1 - 4 suggest that (1) there has been an increase in the share of the IPO market audited by the Big 5 firms, (2) unconditional litigation rates have declined following the 1995 Reform Act, and (3) there has been an increase, on average, in the riskiness of IPOs brought to market following the 1995 Reform Act. In the next section, we examine litigation risk and other potential determinants of auditor compensation both before and after the 1995 Reform Act.

IV. AUDITOR COMPENSATION IN THE IPO MARKET

The auditors role in an initial public offering is to attest to financial statements contained in the offering prospectus, review other financial information contained in the prospectus for reasonableness, and provide a comfort letter to the underwriter. Thus, auditor compensation should be related to client size prior to the offering (a measure of effort), and client-specific risk (a measure of expected future losses due to litigation and/or reputation loss). This view is consistent with the audit cost model presented by O'Keefe, Simunic and Stein (1994) and Simunic and Stein (1996) where the cost of an audit is made up of two components: a production cost component and an expected loss component. We therefore include measures of client size prior to the offering, and measures of engagement risk, in the following auditor compensation regression.

$$\begin{aligned} \text{LnAudComp} = {} & c_0 + c_1\text{LnAssets} + c_2\text{Big5} + c_3\text{UndPrestige} + c_4\text{VCBacked} \\ & + c_5\text{Pred(OffValue)} + c_6\text{Est\_Loss} + c_7\,\text{StdDev} + c_8\text{OffValRisk} \end{aligned} \quad (1)$$

We estimate regression equation (1) separately for the pre-1995 Reform Act period and the post-1995 Reform Act period, and test for structural changes using a Chow test. We estimate two separate regressions, as opposed to including an indicator variable for pre- versus post-Reform Act, to determine whether some or all of the regression coefficients are different in the two time periods.

In equation (1), LnAudComp is the natural log of auditor compensation for the IPO engagement. We include the natural log of total assets (LnAssets) in the fiscal year prior to the IPO to proxy for audit effort (see, for example, Simunic 1980, Beatty 1993, and Willenborg 1999). Big5, which equals 1 if the IPO firm used a Big 5 auditor and 0 otherwise, is a measure of audit quality. Similarly, UndPrestige is the Carter-Manaster

ranking of underwriter prestige, ranging from 0 to 9 with 9 being the most prestigious (Carter and Manaster 1990; Carter, Dark and Singh 1998). VCBacked equals 1 if the IPO had venture capital backing according to the SDC database, and 0 otherwise. Offerings with higher underwriter prestige and venture capital backing should be lower-risk offerings; however, prestigious underwriters may require more effort on the auditor's part to satisfy their comfort letter requirements.

We include four proxies for engagement risk. Two of these proxies, Est_Loss and StdDev are ex post measures of risk. We include these measures assuming that the auditor, using their client- and industry-specific knowledge, can rationally assess market risk. In the next section, we also estimate the auditor compensation regression using a measure of the estimated probability of litigation rather than the ex post market measures.

Est_Loss is a measure of estimated losses as a result of a drop in price relative to the offering value. We calculate estimated losses as the natural log of the (offering price less the closing price three years after the IPO, or the last closing price available) times the number of shares offered, if there in fact has been a price decline over this period. If the closing price at the end of three years is greater than the offering price, then the estimated loss is zero. We also include StdDev, the standard deviation of monthly returns over the 36-month period following the IPO, or the number of months traded if less, as a measure of market risk. We expect auditor compensation to be positively associated with both of these litigation risk measures.

Willenborg (1999) argues that offering proceeds can be viewed as a measure of the "insurance coverage" that the auditor is providing, and finds that auditor

compensation increases as offering proceeds increase. We include two measures related to offering proceeds, Pred(OffValue) and OffValRisk, discussed below.

Pred(OffVal) is the offering value that is predicted based upon a firm's revenue and book value prior to the offering. We estimate a cross-sectional regression of expected offering value prior to the IPO (number of shares offered times the expected filing price, where expected filing price is the estimated high filing price plus the estimated low filing price divided by two) on revenues and book value.[13] This regression gives us a predicted value that can be viewed as the auditor's estimate of the offering value that is justified by current revenues and book value. The auditor should be "comfortable" with the predicted value of the firm based on the accounting data. Evidence of a fee premium related to the predicted offering value justified by revenues and book value is consistent with auditors charging a premium to act as insurance providers on larger offerings.

An auditor's comfort level may decrease as the gap between expected offering value and the predicted offering value based on accounting data widens. OffValRisk is calculated as the difference between expected offering value and Pred(OffVal). In essence, this gap is an estimate of the litigation risk from the auditor's point of view because they can justify the predicted offering value of the firm; however, any value above that justified by current revenues and book values opens the auditor up to potential litigation. We include both the predicted offering value and the gap between predicted and expected offering values (OffValRisk) as measures of "offering value risk."

[13] We use revenues as opposed to earnings due to the large percentage of firms (39%) with negative earnings. The adjusted R^2 on this model is .70.

Prior auditor compensation studies have also included the ratio of accounts receivable plus inventories to total assets as a measure of audit complexity, and also audit opinion type as a measure of audit effort (Willenborg 1999; Beatty 1993, Simunic 1980). We do not include these variables in the results presented in tables 5-7 as we lose approximately 30% of our observations in requiring this information from Compustat; however, we did re-estimate regression equation 2 including these two measures using the subset of observations for which this data is available. Neither variable is significant in any of the auditor compensation regressions, and other results are qualitatively similar to those presented in tables 5-7.

Results

Table 5 presents the results of estimating regression equation (1) separately for the pre- and post-1995 Reform Act periods. A Chow test rejects the null hypothesis of no difference between the two time periods ($F=6.15$, $p<0.01$). F-values, calculated using the dummy variable method of the Chow test, are reported for tests of differences in individual coefficients across the two time periods. As expected, the coefficient on LnAssets is positive and highly significant in both time periods. There is also evidence of a fee premium for Big 5 auditors, which significantly increases in the post-1995 Reform Act period. We discuss this finding further below. Auditor compensation was significantly higher for IPOs with higher prestige underwriters in both periods, consistent with an argument that prestigious underwriters require a greater level of comfort from the auditor. Menon and Williams (1991) posit that prestigious underwriters have a preference for prestigious auditors to reduce their own exposure to losses from litigation, and find an inverse relationship between auditor prestige and underwriter compensation.

Thus, firms may be paying higher auditor compensation but reduced underwriter compensation. Venture capital-backed IPOs had lower fees consistent with these firms being lower risk due to the monitoring and involvement of the venture capitalists; however, the coefficient is not significant in either time period.

The positive and significant coefficient on Est_Loss in the pre-1995 Reform Act period suggests that auditors were charging a fee premium for clients identified as having an increased probability of being involved in litigation due to a drop in price. Although the coefficient on Est_Loss is still positive in the post-1995 Reform Act period, it is no longer significant, suggesting that auditors did not charge a significantly higher fee for the clients identified as high risk in this period. The coefficients on Est_Loss are not significantly different across the two time periods ($p=0.23$). The coefficient on StdDev is positive, although not significant in either time period.

The coefficient on OffValRisk is positive and highly significant in both periods suggesting that auditors do increase fees when there is a gap between the offering value supported by the financial statements and the value at which the IPO is expected to be offered. The coefficient on Pred(OffVal) is positive, although only significant in the Post-1995 Reform Act period. This positive coefficient provides evidence of a fee premium related to the insurance provided by the auditor, consistent with Willenborg (1999).

The lack of a significant difference in the coefficients on Est_Loss, StdDev, OffValRisk, and Pred(OffVal) across the pre- versus post-Reform Act periods suggests that the Reform Act did not increase the risk premium charged by auditors on IPO engagements. The only evidence consistent with a decrease in the risk premium is the

fact that the coefficient on Est_Loss is positive and significant in the pre-Reform Act period, but insignificant following the 1995 Reform Act.

Interestingly, as noted above, we find that the level of the Big 5 audit fee premium is significantly higher in the post-1995 Reform Act period (0.44 versus 0.15, p=0.01), after controlling for client firm size and risk. We posit that this increase in compensation is related to the increasing market share of the Big 5 firms in the IPO market as seen in table 1. The decreasing lack of competition in the IPO market may allow the large firms to extract greater economic rents. Although the evidence suggests economic rent-seeking activities, the difference in audit fees is modest: a .29 increase in the fee premium translates into an increase of $39,000 for a client paying a $100,000 audit fee while raising millions of dollars in offering proceeds.

One possible explanation for the increase in the Big 5 premium is that audit firms are merely capitalizing on an IPO market characterized by firms willing to leave substantial amounts of money on the table in terms of underpricing, or pay higher fees, in order to increase their own wealth. Loughran and Ritter (2001) posit that the increase in underpricing observed during the "internet bubble" period is mainly a result of agency problems between managers and underwriters brought about by increasing firm valuations that have caused issuers to be more complacent about leaving money on the table. Their "agency" hypothesis predicts that when valuations are high, an issuing firm is willing to leave more money on the table because the entrepreneur is complacent as a result of their increase in wealth. If we include the ratio of offering value-to-sales, a measure of willingness to leave money on the table identified by Loughran and Ritter, in the auditor compensation regressions, this measure is not significant, nor does it

significantly change any other results presented in table 5. This suggests that the increase in fee premium is not related to the "willingness to leave money on the table" attitude of the internet bubble period. In addition, the increase in fee premium is still significant even if we exclude the 1999 IPOs from the analysis in table 5.

In the next section, we re-estimate the auditor compensation regression using an ex ante model to predict probability of litigation as opposed to ex post estimated losses from a price drop and standard deviation as measures of litigation risk. We first estimate a model of the probability of litigation, and then use the predicted probabilities as the measure of risk in regression equation (1).[14]

V. AUDITOR COMPENSATION REGRESSIONS USING PROBABILITY OF LITIGATION AS A MEASURE OF LITIGATION RISK

Several studies have examined factors associated with securities class action litigation.[15] The evidence is consistent with lawsuits being filed for meritorious reasons; however, there also appears to be some evidence consistent with non-meritorious litigation filed against deep-pocketed defendants (Alexander 1991). Activities that may give rise to litigation include aggressive financial reporting and/or insider trading.

---

[14] An alternative measure of risk and loss on an IPO engagement for which an auditor may seek compensation is the probability that the client firm will delist. The expected loss to an auditor if a firm delists includes reputation loss and possibly the loss of a future stream of quasi-rents (DeAngelo 1981). Foster-Johnson, Lewis and Seward (2000), in a sample of IPOs, find that firms that were delisted for reasons other than a merger or acquisition tended to be underwritten by less prestigious underwriters, smaller in terms of revenues, and have a less active market. In unreported regressions, we estimate a probit model of the probability of delisting as a function of revenues, ROA, underwriter prestige, and the percentage change from the midpoint of the estimated offering price range to the final offer price. The delisting model suggests that smaller IPOs, in terms of revenues, and IPOs with lower-quality underwriters are more likely to delist, consistent with the findings of Foster-Johnson, Lewis and Seward (2000). In addition, firms with higher ROA are less likely to delist and firms that had a greater increase from the midpoint of the estimated offering price range to the actual offering price were less likely to delist. However, when we include the predicted probability of delisting in the auditor compensation regressions, the variable is not significant in any of the models presented in tables 5-7.

[15] See Johnson et al. (2000); Fuerman (2000); DuCharme et al. (1999); Bunsis and Drake (1995); Francis et al. (1994); Jones and Weingram (1996); Skinner (1996); Stice (1991); Palmrose (1987); and St. Pierre and Anderson (1984).

Management's incentives to aggressively report may be related to CEO power, poor management oversight (a measure of monitoring), demand for external financing, and leverage (Johnson et al. 2000, Dechow et al. 1996). The first two factors also relate to a firm's *ability* to aggressively report. In the case of non-meritorious litigation, ability to pay and potential damages seem to be the most important factors. Market factors, such as large and sudden stock price declines, poor cumulative returns, and/or share turnover can be either related to merit-based triggers, or may merely be the catalyst which triggers the filing of a lawsuit in the hopes of finding incriminating information during the search process.

DuCharme et al. (1999) find that the probability of litigation for a sample of initial public offerings is positively related to the offer size, but not significantly related to accruals, auditor type, underwriter type, or the fraction of the offering that is secondary. Bunsis and Drake (1995) also find that larger IPOs are sued more often.

Given that we are trying to isolate a litigation risk premium in auditor compensation, and auditor compensation is determined prior to the actual issue date, we identify ex ante measures of the probability that the IPO firm will be sued. Ex ante measures identified in the prior literature include revenues, offering size, leverage, profitability and shareholders' equity prior to the IPO, and auditor type. We include an indicator variable for firms in high tech industries to capture the effects of risk associated with this growing industry, as seen in panel C of table 4.[16] We also include Est_Loss and StdDev as proxies for the auditor's ex ante assessment of market risk.[17]

[16] Kasznik and Lev (1995) note that high tech firms appear to be exposed to a larger-than-average risk of shareholder lawsuits (see also O'Brien and Hodges (1991)). Consistent with Kasznik and Lev (1995) and Raghunandan and Rama (1999), we classify firms in the following industries (SIC codes) as high tech:

Model of Probability of Litigation

To derive an estimate of the probability that an IPO firm will be sued, we estimate the following equation.

$$\text{Litig (0,1)} = a_0 + a_1\text{Equity} + a_2\text{Revenues} + a_3\text{ROA} + a_4\text{Leverage} + a_5\text{LnE(Proceeds)} + a_6\text{Big5} + a_7\text{HighTech} + a_8\text{Est\_Loss} + a_9\,\text{StdDev} + a_{10}\text{Post-1995Act} \quad (2)$$

where:

Litig (0,1)	= 1 if the IPO was subsequently sued, 0 otherwise
Equity	= total shareholders equity prior to the IPO
Revenues	= total revenues in the fiscal year prior to the IPO
ROA	= return on assets in the fiscal year prior to the IPO
Leverage	= total long-term debt divided by total assets in the fiscal year prior to the IPO
LnE(Proceeds)	= the natural log of the number of shares offered times the mid-filing price
Big5	= 1 if the firm used a Big 5 auditor, 0 otherwise
HighTech	= 1 if the firm is considered to be in a high tech industry, 0 otherwise
Est_Loss	= 0 if price at the end of 3 years > offering price, otherwise equals the natural log of ((offering price – price at end of 3 years) times number of shares offered)
StdDev	=the standard deviation of monthly returns over the 36 months following the IPO
Post-1995Act	= 1 if the IPO was subsequent to the 1995 Reform Act, 0 otherwise

Results

The results of estimating probit model (2) are presented in panel A of table 6. The significant explanatory variables in the litigation model are expected proceeds, the high tech indicator variable, estimated losses from a price drop, the standard deviation of returns, and the post-1995 Reform Act indicator variable. The results suggest that the larger offerings have a greater likelihood of being sued, where the marginal effect of a

---

drugs (2833-2836), computers (3570-3577), electronics (3600-3674), programming (7371-7379), and R&D services (8731-8734).

[17] We also estimate the litigation prediction model using only the ex ante variables (i.e. excluding Est_Loss and StdDev). The results of including the predicted probability of litigation from this entirely ex ante prediction model as a measure of litigation risk in the auditor compensation regression are qualitatively similar to the results presented in panel B of table 6.

unit increase in the natural log of expected proceeds is an increase in the likelihood of being sued of 1.8 percent.[18] This positive association between offering size and the likelihood of being sued is consistent with the findings of DuCharme et al. (1999) and Bunsis and Drake (1995). Firms in the high tech industry have a 2.5% greater likelihood of being sued consistent with O'Brien and Hodges (1993). Firms with higher estimated losses as a result of a price drop have a greater likelihood of being sued (marginal effect of 1% for each unit increase in the natural log of the estimated losses), as do firms with a higher standard deviation of returns (marginal effect of 6.6%). The negative coefficient on Post-1995 Act indicates that the probability of litigation has declined following the 1995 Reform Act (marginal effect of 3.5%), consistent with the intent of the law.[19] None of the financial variables are useful in predicting litigation.

The results of re-estimating regression equation (1) using the predicted probabilities of litigation from the probit model presented in panel A as a measure of risk are shown in panel B of table 6. An overall Chow test rejects the null hypothesis of no difference across the two time periods ($F=9.17$, $p<0.01$). The results on LnAssets, Big5, OffValRisk, Pred(OffVal), UndPrestige and VCBacked are largely consistent with those presented in table 5. The coefficient on ProbLitig (the predicted probability of litigation from the probit model) is positive and significant in both the pre- and post-1995 Reform

[18] The marginal effects are calculated as $\mathbf{N}(\mathbf{aNX})\mathbf{a}$ for continuous variables, where $\mathbf{N}(t)$ is the standard normal density, **a** is the vector of coefficients reported in panel A of table 6, and **X** is the vector of mean values as reported in table 4 (except that revenues and equity are in millions, not in thousands) for the independent variables. For discrete (0/1) variables, the marginal effect is calculated as the difference between the value of the cumulative distribution function when the variable equals 1 less the value of the cumulative distribution function when the variable equals 0, again using the coefficients in table 6 and mean values for all other independent variables from table 4. See Greene (1990).

[19] It is possible that the 1995 Reform Act resulted in structural changes in the litigation environment that would cause some or all of the coefficients in probit equation (2) to differ across the two time periods. We test for structural changes in probit equation (2) by interacting each independent variable with the Post-1995Act indicator variable. None of the interaction terms are significant at conventional levels.

Act periods. While the magnitude of the coefficient is greater in the post-1995 Reform Act period (0.93 versus 0.73 in the pre-Reform Act period), the coefficients are not significantly different across the two periods (p=0.72). These results are consistent with no significant change in the litigation risk premium charged by auditors as a result of the 1995 Reform Act.

Sensitivity of results to measures of litigation risk

It is possible that neither the ex post measures of risk, Est_Loss and StdDev, nor the predicted probabilities of litigation from our probit model are appropriate proxies for the litigation risk that auditors are identifying ex ante and using to price their IPO engagements. To address this issue, we re-estimate regression equation (1) including Litig, an indicator variable which equals one if the IPO was in fact subsequently sued, as opposed to including the market measures or the probability of litigation variable. These results are reported in table 7. Again, an overall Chow test rejects the null hypothesis of no difference between the two time periods ($F=8.71$, $p<0.01$). We find that the coefficient on Litig is positive and significant (0.16, p=0.09) in the pre-1995 Reform Act period, while the coefficient on Litig is negative but not significant (-0.10, p=0.33) in the post-1995 Reform Act period. The dummy variable method of the Chow test shows a significant difference in these coefficients across the two time periods ($F=3.49$, $p=0.06$). If we assume that the audit firms can identify the IPOs that will subsequently be sued, these results suggest that a significantly positive litigation risk premium was charged prior to the 1995 Reform Act; however, the premium is not significantly different from zero following the Reform Act.

Alternative measures of client-specific risk

As discussed earlier, the descriptive statistics presented in table 4 suggest that the average profile of IPO firms has significantly changed in the post-Reform Act period. To the extent that we are not sufficiently capturing these changes in client-specific risk in our regressions, it is possible that our results are being driven by omitted risk factors. We test the sensitivity of our results to including additional risk factors identified by Loughran and Ritter (2001). When we include an indicator for high-tech firms or the natural log of the ratio of offering value to sales, these variables are not significant in either time period, and all other results are qualitatively similar to those presented in tables 5-7. If we include underpricing (i.e., first-day returns) as a measure of risk, this variable is positive and significant in the post-Reform Act period, and all other results are qualitatively similar to those presented in tables 5-7. We conclude that our results are robust to including additional measures of client-specific risk.

Summary of results

Overall, the three regression models presented in tables 5, 6 and 7 suggest that the risk premium component of auditor compensation did not increase as a result of the 1995 Reform Act. Table 5 and table 6 results suggest no significant change in pricing of litigation risk before and after the 1995 Reform Act. The results of using Litig as a measure of risk in table 7 suggest that the litigation risk premium component of auditor compensation decreased following the 1995 Reform Act. Since auditors will rationally use information beyond what is publicly available to estimate and price litigation risk, it seems likely that the results using actual litigation data provide a more powerful test of any change in the litigation risk premium pre-to post-1995 Reform Act.

VI. CONCLUSION

We examine the effect of the Private Securities Litigation Reform Act of 1995 on litigation rates and auditor compensation using a sample of firms that went public during the 1990s. Univariate analysis suggests, and a probit model of the probability of litigation confirms, that IPOs are less likely to be sued in Federal courts subsequent to the 1995 Reform Act. Assuming there were frivolous lawsuits in the pre-Reform Act period, the reduction in the incidence of litigation following the 1995 Reform Act is consistent with the intent of the law.

The evidence of a decline in litigation rates following the 1995 Reform Act suggests that we would observe a decline in the litigation risk premium component of auditor compensation subsequent to the enactment of the law. The results of various auditor compensation regressions are consistent with either no change, or a decrease in the litigation risk component. If we use the predicted probability of being sued from a litigation prediction model as a measure of risk, we find evidence of a positive and significant litigation risk premium in both the pre- and post-Reform Act periods; however, the risk premium is not significantly different across the two periods. If we use the estimated losses from a price drop as a measure of risk, or if we identify high risk clients in the auditor compensation regression as those that were actually subsequently sued, we find evidence consistent with a positive and significant litigation risk premium prior to the 1995 Reform Act, but no significant litigation risk premium following the Act. The difference in litigation risk premium is only significantly different across the two time periods when actual litigation rates are used as a measure of risk. Despite evidence presented that the litigation rates have declined following passage of the 1995

Reform Act, we only find evidence consistent with a decline in the litigation risk premium component of auditor compensation when we use actual litigation rates as a measure of litigation risk.

One interesting finding documented in this study is that the Big 5 fee premium increased in the late 1990s relative to the early 1990s. The increase in the Big 5 fee premium does not appear to be attributable to the "internet bubble" firms, or to IPOs with higher offering value-to-sales ratio, a measure of willingness to leave money on the table identified by Loughran and Ritter (2001). We hypothesize that the fee premium is related to the increase in market power experienced by these Big 5 firms.

Two important caveats are in order. First, we do not have data on litigation filed in state courts only, which may understate the incidence of litigation during the 1996-1998 time period. Secondly, to the extent that there are omitted variables which are also correlated with either the time period (pre- versus post-1995 Reform Act) or our measures of expected litigation costs, it is possible that our results are being driven by these factors and not a change in the litigation environment. We have controlled for factors affecting auditor compensation as identified in prior research; however, correlated, omitted variables remain an issue in all cross-sectional, time series studies.

References

Alexander, J.C. 1991. Do the Merits Matter? A Study of Settlements in Securities Class Actions. *Standford Law Review* 43 (February): 497-598.

Ali, A., and S. Kallapur. 2001. Securities Price Consequences of the Private Securities Litigation Reform Act of 1995 and Related Events. *The Accounting Review* 76 (July), forthcoming.

Andrews, A.R. and G. Simonetti. 1996. Tort Reform Revolution. *Journal of Accountancy*. September: 53-55.

Arthur Andersen & Co., Coopers & Lybrand, Deloitte & Touche, Ernst & Young, KPMG Peat Marwick, and Price Waterhouse. 1992. *The Liability Crisis in the United States: Impact on the Accounting Profession*.

Beatty, R. 1989. Auditor Reputation and the Pricing of Initial Public Offerings. *The Accounting Review* 64 (October): 693-709.

_____. 1993. The Economic Determinants of Auditor Compensation in the Initial Public Offerings Market. *Journal of Accounting Research* 31 (Autumn): 294-302.

Bunsis, H.J., and P.D. Drake. 1995. The Decline of Accountants as Defendants in Initial Public Offering Lawuits: An Empirical Analysis. Working Paper. Southern Methodist University.

Carter, R., and S. Manaster. 1990. Public Offerings and Underwriter Reputation. *Journal of Finance* 45 (September): 1045-1067.

_____, F.H. Dark and A.K. Singh. 1998. Underwriter Reputation, Initial Returns, and the Long-Run Performance of IPO Stocks. *The Journal of Finance* 53 (February): 285-311.

Datar, S.M., G.A. Feltham, and J.S. Hughes. 1991. The Role of Audits and Audit Quality in Valuing New Issues. *Journal of Accounting and Economics* 14 (March): 3-49.

DeAngelo, L. 1981. Auditor Size and Audit Quality. *Journal of Accounting and Economics* 3 (December): 183-199.

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

DuCharme, L.L., P.H. Malatesta, and S.E. Sefcik. 1999. Earnings Management , Stock Issues, and Shareholder Lawsuits. Working Paper, University of Washington.

Ellis, K., R. Michaely and M. O'Ohara. 2000. When the Underwriter is the Market Maker: An Examination of Trading in the IPO Aftermarket. *Journal of Finance* (June).

Foster-Johnson, L., C. Lewis, and J. Seward. 2000. Busted IPOs and Windows of Misopportunity. Working Paper, Vanderbilt University.

France, M. 1996. Bye, Fraud Suits. Hello, Fraud Suits. *Business Week* (June 24): 127-130.

Francis, J., D. Philbrick, and K. Schipper. 1994. Determinants and Outcomes in Class Action Securities Litigation. Working Paper, University of Chicago.

Fuerman, R.D. 2000. The Role of Auditors in Post-Reform Act Private Securities Class Actions. *Research in Accounting Regulation* 14.

Goldwasser, D. 1997. The Private Securities Litigation Reform Act of 1995: Impact on Accountants. *The CPA Journal* (January): 72-75.

Greene, W.H. 1990. *Econometric Analysis*. Second Edition. Englewood Cliffs, NJ. Prentice Hall: 639-641.

Grundfest, J.A., and M.A. Perino. 1997. Securities Litigation Reform: The First Year's Experience. Working Paper, Stanford Law School.

Hogan, C.E. 1997. Costs and Benefits of Audit Quality in the IPO Market: A Self-Selection Analysis. *The Accounting Review* 72 (January): 67-86.

Johnson, M.F., R. Kasznik, and K.K. Nelson. 2001. Shareholder Wealth Effects of the Private Securities Litigation Reform Act of 1995. *Review of Accounting Studies*.

Jones, C., and S. Weingram. 1996. The Determinants of 10b-5 Litigation Risk. Working Paper, Stanford University.

Kasznik, R., and B. Lev. 1995. To Warn or Not to Warn: Management Disclosures in the Face of an Earnings Surprise. *The Accounting Review* 70 (January): 113-134.

King, R., and R. Schwartz. 1997. The Private Securities Litigation Reform Act of 1995: A Discussion of Three Provisions. *Accounting Horizons* 11 (March): 92-106.

Logue, D., R. Rogalski, J. Seward, and L. Foster-Johnson. 2000. What's Special About the Role of Underwriter Reputation and Market Activities in IPOs? *Journal of Business*.

Loughran, T. and J. Ritter. 2001. Why Has IPO Underpricing Increased Over Time? Working Paper, University of Florida.

Menon, K., and D. Williams. 1991. Auditor Credibility and Initial Public Offerings. *The Accounting Review* 66 (April): 313-332.

O'Brien V.E. and R.W. Hodges. 1993. *A Study of Class Action Securities Fraud Cases*. Emeryville, CA: Law and Economics Consulting Group Inc.; and Sausalito, CA: Optimal Economics.

O'Keefe, T.B., D.A. Simunic, and M.T. Stein. 1994. The Production of Audit Services: Evidence from a Major Public Accounting Firm. *Journal of Accounting Research* 32 (Autumn): 241-261.

Palmrose, Z-V. 1987. Litigation and Independent Auditors: The Role of Business Failures and Management Fraud. *Auditing: A Journal of Practice and Theory* (Spring): 90-103.

Pincus, A. J. 1996. The Reform Act: What CPAs Should Know. *Journal of Accountancy*. September: 55-58.

Raghunandan, K., and D.V. Rama. 1999. Auditor Resignations and the Market for Audit Services. *Auditing: A Journal of Practice and Theory* 18 (Spring): 124-134.

S. Hrg. 103-431. 1993. *Private Litigation under the Federal Securities Laws*. Hearings before the Subcommittee on Securities of the Committee on Banking, Housing, and Urban Affairs, United States Senate (June 17 and July 21). U.S. Government Printing Office, Washington.

Simunic, D.A. 1980. The Pricing of Audit Services: Theory and Evidence. *Journal of Accounting Research* 18 (Spring): 161-190.

_____, and M.T. Stein. 1987. Product Differentiation in Auditing: Auditor Choice in the Market for Unseasoned New Issues. The Canadian Certified General Accountants' Research Foundation Research Monograph Number 13. British Columbia, Canada: The Canadian Certified General Accountants' Research Foundation.

_____. 1996. The Impact of Litigation Risk on Audit Pricing: A Review of the Economics and the Evidence. Auditing: A Journal of Practice and Theory 15 (Supplement): 119-134.

Skinner, D. 1996. Why is Stockholder Litigation Tied to Accounting and Disclosure Problems? Unpublished Manuscript, University of Michigan.

St. Pierre, K. and J.A. Anderson. 1984. An Analysis of the Factors Associated with Lawsuits Against Accountants. *The Accounting Review* 59 (April): 242-263.

Stice, J.D. 1991. Using Financial and Market Information to Identify Pre-Engagement Factors Associated with Lawsuits Against Auditors. *The Accounting Review* 66 (July): 516-533.

Willenborg, M. 1999. Empirical Analysis of the Economic Demand for Auditing in the Initial Public Offerings Market. *Journal of Accounting Research* 37 (Spring):225-238.

TABLE 1
ANNUAL IPO MARKET SHARE BY AUDIT FIRM

Year	AA	DT	EY	KPMG	PWC	Total Big5	Non-Big5	Not Listed	Total
1991	50	64	98	56	67	335	42	10	387
	(13%)	(17%)	(25%)	(14%)	(17%)	(87%)	(11%)	(3%)	
1992	76	82	132	82	120	492	63	10	565
	(13%)	(15%)	(23%)	(15%)	(21%)	(87%)	(11%)	(2%)	
1993	102	98	159	83	191	633	95	20	748
	(14%)	(13%)	(21%)	(11%)	(26%)	(85%)	(13%)	(3%)	
1994	60	41	79	55	105	340	71	12	423
	(14%)	(10%)	(19%)	(13%)	(25%)	(80%)	(17%)	(3%)	
1995	91	48	105	74	139	457	83	17	557
	(16%)	(9%)	(19%)	(13%)	(25%)	(82%)	(17%)	(3%)	
1996	148	81	169	115	187	700	122	4	826
	(18%)	(10%)	(20%)	(14%)	(23%)	(85%)	(15%)	(0%)	
1997	114	62	116	76	114	482	93	14	589
	(19%)	(11%)	(20%)	(13%)	(19%)	(82%)	(16%)	(2%)	
1998	57	50	71	63	70	311	63	6	380
	(15%)	(13%)	(19%)	(17%)	(18%)	(82%)	(17%)	(2%)	
1999	90	69	115	72	140	486	32	14	532
	(17%)	(13%)	(22%)	(14%)	(26%)	(91%)	(6%)	(3%)	
Avg '91-'95	75.8	66.6	114.6	70.0	124.4	451.4	70.8	13.8	
	(14.0%)	(12.8%)	(21.4%)	(13.2%)	(22.8%)	(84.2%)	(13.8%)	(2.8%)	
Avg '96-99	102.3	65.5	117.8	81.5	127.8	494.8	77.5	9.5	
	(17.3%)	(11.6%)	(20.1%)	(14.2%)	(21.7%)	(85.0%)	(13.3%)	(1.8%)	

TABLE 2
LITIGATION ACTIVITY BY YEAR OF OFFERING

Year	# of IPOs	IPO Suits	% of IPOs Sued
1991	387	27	6.98%
1992	565	34	6.02%
1993	748	43	5.75%
1994	423	24	5.67%
1995	557	24	4.31%
1996	826	33	4.00%
1997	589	24	4.07%
1998	380	16	4.21%
1999	532	11	2.07%
Totals	5,007	236	-
Total '91-'95	2,680	152	5.67%
Total '96-'97	1,415	57	4.03%

TABLE 3
DETERMINATION OF IPO SAMPLE

IPOs during 1/1/1991-12/31/1999 listed on SDC database (after eliminating ADRs)	5,007
Eliminate financial IPOs (SIC codes >=6000 and <7000)	-870
Eliminate firms with missing auditor compensation data	-386
Eliminate firms missing other financial and offering data	-1,581
Eliminate firms missing CRSP (returns) data	-561
=IPO sample with complete data	1,609

TABLE 4
DESCRIPTIVE STATISTICS

Panel A presents means, medians, standard deviations, minimum and maximum values for all IPOs meeting the data requirements. Panel B presents means and standard deviations for IPOs issued prior to the 1995 Reform Act versus those issued subsequent to the 1995 Reform Act. Panel C presents an industry breakdown. AudComp=auditor compensation, in thousands, restated in 1999 dollars; Assets=total assets at the end of the fiscal year prior to the IPO, in thousands, restated in 1999 dollars; Big5=1 if the firm used a Big 5 auditor, 0 otherwise; UndPrestige=the Carter and Manaster ranking of underwriter prestige, ranging from 0 to 9 with 9 being the most prestigious; VCBacked=1 if the IPO had venture capital backing, 0 otherwise; Est_Loss = 0 if price at end of 3 years > offering price, otherwise equals the natural log of ((offering price – price at end of 3 years) times number of shares offered); StdDev = the standard deviation of monthly returns over the 36 months following the offering; OffValRisk=E(Proceeds)-Pred(OffValue); Pred(OffValue)=the predicted value from a regression of E(Proceeds) on revenues and book value prior to the offering; Litig=1 if the IPO firm was subsequently sued, 0 otherwise; Equity=total equity at the end of the fiscal year prior to the IPO, in thousands, restated in 1999 dollars; Revenues=total revenues for the fiscal year prior to the IPO, in thousands, restated in 1999 dollars; ROA=return on assets in the fiscal year prior to the IPO; Leverage=total long-term debt divided by assets; E(Proceeds) =the number of shares offered times the original estimated mid-price, in thousands, restated in 1999 dollars; Proceeds=total offering proceeds, in thousands, restated in 1999 dollars; HighTech=1 if the firm is considered to be in a high-tech industry, 0 otherwise. ***, **, and * indicate significant differences based upon a t-test for difference in means at the 1%, 5%, and 10% level, respectively.

Panel A: All IPOs meeting data requirements (n=1,609)

Variable	Mean	Median	Std. Dev.	Min	Max.
AudComp	263	186	328	11	6,000
Assets	161,413	27,422	816,430	238	20,986,558
Big5	0.89	1.00	0.31	0.00	1.00
UndPrestige	6.69	8.75	3.29	0.00	9.00
VCBacked	0.42	0.00	0.49	0.00	1.00
Est_Loss	4.68	6.02	4.71	0.00	12.68
StdDev	0.22	0.19	0.13	0.01	2.19
OffValRisk	0.00	-11,579	64,063	-437,216	766,476
Pred(OffValue)	58,091	42,122	96,937	-125,219	2,729,159
Litig	0.06	0.00	0.23	0.00	1.00
Equity	21,296	4,647	193,789	-1,575,543	5,128,900
Revenues	156,139	33,489	721,025	100	22,785,983
ROA	-0.12	0.03	1.89	-26.58	67.60
Leverage	0.35	0.19	0.51	0.00	4.00
E(Proceeds)	58,091	34,079	116,192	1,763	2,775,755
Proceeds	61,134	34,981	129,757	1,763	3,218,960
HighTech	0.34	0.00	0.47	0.00	1.00

TABLE 4 Continued

Panel A presents means, medians, standard deviations, minimum and maximum values for all IPOs meeting the data requirements. Panel B presents means and standard deviations for IPOs issued prior to the 1995 Reform Act versus those issued subsequent to the 1995 Reform Act. Panel C presents an industry breakdown. AudComp=auditor compensation, in thousands, restated in 1999 dollars; Assets=total assets at the end of the fiscal year prior to the IPO, in thousands, restated in 1999 dollars; Big5=1 if the firm used a Big 5 auditor, 0 otherwise; UndPrestige=the Carter and Manaster ranking of underwriter prestige, ranging from 0 to 9 with 9 being the most prestigious; VCBacked=1 if the IPO had venture capital backing, 0 otherwise; Est_Loss = 0 if price at end of 3 years > offering price, otherwise equals the natural log of ((offering price – price at end of 3 years) times number of shares offered); StdDev = the standard deviation of monthly returns over the 36 months following the offering; OffValRisk=E(Proceeds)-Pred(OffValue); Pred(OffValue)=the predicted value from a regression of E(Proceeds) on revenues and book value prior to the offering; Litig=1 if the IPO firm was subsequently sued, 0 otherwise; Equity=total equity at the end of the fiscal year prior to the IPO, in thousands, restated in 1999 dollars; Revenues=total revenues for the fiscal year prior to the IPO, in thousands, restated in 1999 dollars; ROA=return on assets in the fiscal year prior to the IPO; Leverage=total long-term debt divided by assets; E(Proceeds) =the number of shares offered times the original estimated mid-price, in thousands, restated in 1999 dollars; Proceeds=total offering proceeds, in thousands, restated in 1999 dollars; HighTech=1 if the firm is considered to be in a high-tech industry, 0 otherwise. ***, **, and * indicate significant differences based upon a t-test for difference in means at the 1%, 5%, and 10% level, respectively.

Panel B: All IPOs Pre-1995 Reform Act compared to Post-1995 Reform Act

	Pre-1995 Reform Act (n=737)		Post-1995 Reform Act (n=872)	
Variable	Mean	Std. Dev.	Mean	Std. Dev.
AudComp***	225	237	296	385
Assets	169,327	714,460	154,724	893,943
Big5	0.89	0.32	0.90	0.30
UndPrestige*	6.54	3.32	6.82	3.26
VCBacked	0.40	0.49	0.43	0.50
Est_Loss*	4.43	4.60	4.88	4.79
StdDev***	0.17	0.07	0.25	0.16
OffValRisk***	-6,864	69,650	5,807	58,343
Pred(OffValue)	59,723	78,223	56,705	110,333
Litig**	0.07	0.26	0.05	0.21
Equity	21,002	184,852	21,545	201,140
Revenues	172,425	530,129	142,377	849,636
ROA***	0.03	2.70	-0.26	.67
Leverage**	0.32	0.50	0.37	0.52
E(Proceeds)*	52,859	99,270	62,513	128,665
Proceeds*	55,310	110,337	66,057	144,024
HighTech***	0.27	0.44	0.41	0.49

Table 4 Continued

Panel A presents means, medians, standard deviations, minimum and maximum values for all IPOs meeting the data requirements. Panel B presents means and standard deviations for IPOs issued prior to the 1995 Reform Act versus those issued subsequent to the 1995 Reform Act. Panel C presents an industry breakdown.

Panel C: Industries having >= 35 initial public offerings between 1991 and 1999

Two-Digit SIC Code	Pre-1995 Reform Act (n=737)		Post-1995 Reform Act (n=872)	
	Number	Percent	Number	Percent
28	37	5.01	41	4.70
35	45	6.10	31	3.56
36	76	10.3	68	7.80
37	27	3.66	14	1.61
38	39	5.28	44	5.05
48	36	4.88	56	6.42
50	22	2.98	15	1.72
51	16	2.17	20	2.29
59	24	3.25	23	2.64
73	90	12.20	297	34.06
80	53	7.18	24	2.75
87	20	2.71	36	4.13
Total	485	65.72	669	76.73
All Other Industries	252	34.28	203	23.27
Total Sample	737	100.00	872	100.00

TABLE 5
AUDITOR COMPENSATION REGRESSIONS

Regressions where the dependent variable equals the natural log of auditor compensation restated in 1999 dollars; LnAssets=the natural log of total assets at the end of the fiscal year prior to the IPO, restated in 1999 dollars; Big5=1 if the firm used a Big 5 auditor, 0 otherwise; UndPrestige=the Carter and Manaster ranking of underwriter prestige, ranging from 0 to 9 with 9 being the most prestigious; VCBacked=1 if the IPO had venture capital backing, 0 otherwise; Est_Loss=0 if closing price at end of year 3 is greater than offering price, or the natural log of ((offering price – closing price at end of year 3)*shares offered) if the offering price is greater than the closing price; StdDev = the standard deviation of monthly returns over the 36 months following the IPO; OffValRisk is expected offering value less Pred(OffVal), where expected offering value is the number of shares offered times the mid price; Pred(OffVal) is the predicted value from a cross-sectional regression of expected offering value on revenues and book value. ***, **, and * indicate significance at the 1%, 5% and 10% level, respectively. The F-values and associated p-values for tests of differences across time periods are calculated using the dummy variable method of the Chow test.

Variable	*IPOs prior to 1995 Reform Act (n=737)*	*IPOs subsequent to 1995 Reform Act (n=872)*	*Test of differences F-Value (Pr > F)*
Intercept	3.44	3.45	0.00
	(13.93)***	(19.30)***	(0.99)
LnAssets	0.10	0.12	0.17
	(4.41)***	(6.62)***	(0.68)
Big5	0.15	0.44	6.03
	(1.69)*	(5.47)***	(0.01)
UndPrestige	0.06	0.04	2.25
	(5.86)***	(4.83)***	(0.13)
VCBacked	-0.07	-0.06	0.02
	(-1.22)	(-1.21)	(0.88)
Est_Loss	0.01	0.01	1.56
	(2.23)**	(0.81)	(0.21)
StdDev	0.14	0.16	0.00
	(0.36)	(1.16)	(0.97)
OffValRisk	0.22	0.16	1.17
(x 10^{-5})	(5.66)***	(4.22)***	(0.28)
Pred(OffVal)	0.44	0.49	0.02
(x 10^{-6})	(1.18)	(2.38)**	(0.90)
Adj. R^2	0.27	0.28	

TABLE 6
AUDITOR COMPENSATION REGRESSIONS

Panel A presents the probit model of the probability of litigation where litig=1 if the firm was sued following the IPO (94 firms), 0 otherwise (1,515 firms); Equity=total equity at the end of the fiscal year prior to the IPO; Revenues=revenues in the fiscal year prior to the IPO; ROA=return on assets in the fiscal year prior to the IPO; Leverage=total long-term debt divided by assets; LnE(Proceeds)=the natural log of expected proceeds, calculated as the number of shares offered times the original estimated mid-price; Big5=1 if the firm used a Big 5 auditor, 0 otherwise; Est_Loss = 0 if price at end of 3 years > offering price, otherwise equals the natural log of ((offering price – price at end of 3 years) times number of shares offered); StdDev = the standard deviation of monthly returns over the 36 months following the offering; Post-1995 Act=1 if the IPO was offered following the 1995 Reform Act, 0 otherwise. Amounts presented are coefficients ($\mathbf{P}^2$ values in parentheses). ***, **, and * indicate significance at the 1%, 5% and 10% level, respectively.

Panel A: Probit model of the probability of litigation

Variable	*Dep. Var. = Litig*
Intercept	-4.67
	(39.49)***
Equity	-0.38
(x 10^{-3})	(0.71)
Revenues	0.18
(x 10^{-4})	(0.02)
ROA	0.42
(x 10^{-3})	(0.00)
Leverage	-0.08
	(0.38)
LnE(Proceeds)	0.22
	(8.66)***
Big5	0.21
	(0.79)
HighTech	0.30
	(6.40)***
Est_Loss	0.10
	(58.31)***
StdDev	0.80
	(4.02)**
Post-1995 Act	-0.42
	(12.92)***
Log Likelihood	-311.72

TABLE 6 Continued

Panel B presents regressions where the dependent variable equals the natural log of auditor compensation; LnAssets=the natural log of total assets at the end of the fiscal year prior to the IPO; Big5=1 if the firm used a Big 5 auditor, 0 otherwise; UndPrestige=the Carter and Manaster ranking of underwriter prestige, ranging from 0 to 9 with 9 being the most prestigious; VCBacked=1 if the IPO had venture capital backing, 0 otherwise; ProbLitig is the probability of litigation from the probit model in table 5; OffValRisk is expected offering value less Pred(OffVal), where expected offering value is the number of shares offered times the mid price; Pred(OffVal) is the predicted value from a cross-sectional regression of expected offering value on revenues and book value. ***, **, and * indicate significance at the 1%, 5% and 10% level, respectively. The F-values and associated p-values for tests of differences across time periods are calculated using the dummy variable method of the Chow test.

Panel B: Auditor Compensation Regression

Variable	*IPOs prior to 1995 Reform Act (n=737)*	*IPOs subsequent to 1995 Reform Act (n=872)*	*Test of differences F-Value (Pr > F)*
Intercept	3.58	3.53	0.04
	(17.73)***	(22.38)***	(0.85)
LnAssets	0.10	0.11	0.24
	(4.33)***	(6.55)***	(0.62)
Big5	0.13	0.42	5.89
	(1.45)	(5.18)***	(0.02)
UndPrestige	0.05	0.04	1.85
	(5.52)***	(4.75)***	(0.17)
VCBacked	-0.08	-0.05	0.14
	(-1.43)	(-1.14)	(0.71)
ProbLitig	0.73	0.93	0.13
	(1.92)*	(2.14)**	(0.72)
OffValRisk	0.21	0.15	1.22
(x 10^{-5})	(5.35)***	(3.85)***	(0.27)
Pred(OffVal)	0.43	0.50	0.03
(x 10^{-6})	(1.15)	(2.44)***	(0.86)
Adj. R^2	0.27	0.29	

TABLE 7
AUDITOR COMPENSATION REGRESSIONS
USING ACTUAL LITIGATION ACTIVITY

Regressions where the dependent variable equals the natural log of auditor compensation; LnAssets=the natural log of total assets at the end of the fiscal year prior to the IPO; Big5=1 if the firm used a Big 5 auditor, 0 otherwise; UndPrestige=the Carter and Manaster ranking of underwriter prestige, ranging from 0 to 9 with 9 being the most prestigious; VCBacked=1 if the IPO had venture capital backing, 0 otherwise; Litig equals 1 if the IPO firm was subsequently involved in litigation, 0 otherwise; ProbDelist is the probability of delisting from the probit model in table 5; OffValRisk is expected offering value less Pred(OffVal), where expected offering value is the number of shares offered times the mid price; Pred(OffVal) is the predicted value from a cross-sectional regression of expected offering value on revenues and book value. ***, **, and * indicate significance at the 1%, 5% and 10% level, respectively. . The F-values and associated p-values for tests of differences across time periods are calculated using the dummy variable method of the Chow test.

Variable	*IPOs prior to 1995 Reform Act (n=737)*	*IPOs subsequent to 1995 Reform Act (n=872)*	*Test of differences F-Value (Pr > F)*
Intercept	3.62	3.56	0.06
	(18.04)***	(22.58)***	(0.80)
LnAssets	0.09	0.11	0.37
	(4.21)***	(6.54)***	(0.54)
Big5	0.14	0.43	5.94
	(1.61)	(5.36)***	(0.01)
UndPrestige	0.06	0.04	2.10
	(5.78)***	(4.86)***	(0.15)
VCBacked	-0.07	-0.05	0.06
	(-1.25)	(-1.12)	(0.81)
Litig	0.16	-0.10	3.49
	(1.69)*	(-0.96)	(0.06)
OffValRisk	0.22	0.16	1.10
(x 10^{-5})	(5.65)***	(4.27)***	(0.29)
Pred(OffVal)	0.42	0.49	0.03
(x 10^{-6})	(1.13)	(2.37)**	(0.87)
Adj. R^2	0.27	0.28	