The Financial Impacts of Securities Class Action Litigation

Chris Malone
Department of Finance, Banking and Property
Massey University
Private Bag 11-222
Palmerston North
c.b.malone@massey.ac.nz

This paper is part of my dissertation work for a doctoral degree at the University of Connecticut. My supervisor Shantaram Hegde has provided much input into the development of this paper. The work is also partly commissioned by PriceWaterhouseCoopers NewYork.

Securities class action lawsuits are among the most controversial of all lawsuits and ongoing public debate continues as to the most effective regulatory regime to control corporate fraud and to foster equitable and efficient stock markets. The purpose of this paper is to contribute to the discussion by examining the financial impacts of the most common type of federal securities class action suit, described as "10b-5" or "fraud on the market" suits.[1] Shareholders and law-makers want to know the costs and benefits of this type of litigation if they are to intelligently consider the alternative governance remedies.

Class action lawsuits occur when publicly listed companies are sued for mis-statements that have allegedly distorted the market price of the corporation's securities.[2] Not a lot is known about the impacts of these lawsuits. We know from past research that, generally, fraud and litigation are costly events for firms (Kellogg (1984), Bhagat, Bizjak and Coles (1998)) and that ultimately these costs are borne by shareholders (Congress, 1995, Jensen and Meckling, 1977). But the literature has not documented adequately the financial effects of the securities class action suit itself.[3] This is the objective of this paper—to measure the economic impacts of class action litigation on firms in terms of wealth and risk impacts. The study will also comment on some of the impacts of the Reform Act of 1995.[4]

Class action lawsuits are not single day events, but rather, they involve a series of developments as the fraud/litigation process progresses from its initiation to its conclusion. The first stage of the process is the fraud disclosure, then comes the first class action suit filing. After this may come more suit filings and other developments such as the certification of the case, abandonment, settlement, court awards, or defensive company announcements relating to the case. The focus of this study is the economic

[1] Corporations are also sued under section 11 of the 1933 Securities Act but because most actions are filed under rule 10b-5, for convenience, we refer to all cases as 10b-5 cases.

[2] I do not address in this paper fraud in the primary market for securities as these cases raise a series of issues not found in secondary market fraud, the most important one being the need to compensate defrauded investors.

[3] Griffin, Grundfest and Perino (2000) have recently conducted the first scholarly investigation into the wealth effects of the class action suit.

content of the first publicly announced class action suit filing. To do this, however, it is important to measure the impacts of the initial fraud announcement for these effects are so pronounced, and so inter-related with the class action filing, that a joint modeling of this event is necessary in order to carry out a meaningful analysis of the class action filing event itself. Thus the aim of the study is to document the incremental effects of the class action suit beyond that of the fraud announcement.

The results of the study show that the class action suit event has a substantial impact on both the wealth and risk of the firms involved. There is an incremental wealth loss of at least 3.75 percent, on average, relating to the class action filing (C) announcement. The class action suit period, C(-1,1) actually produces an 8.04 percent loss but some of this effect relates to the fraud event effect which may occur at the same time as a class action suit. The Fraud event itself (F) produces a -29.9 percent wealth. The period F(-1) through C(+1) produces a –41.61 percent reaction. A further price drift of –13.8 percent occurs over the 200 trading days after the litigation's filing (C(+2,+200). All told, the normalized stock prices of the firms are, on average, only one third what they were before the fraud disclosure was made.

The study also reveals that measures of risk for the firms are significantly affected by the fraud/litigation event. Trading volume spike up in response to both the Fraud and Class action suit events. Risk measures also climb in the post litigation period. Bid-ask spread increases by half. Stock price volatility and unsystematic risk almost doubles after the litigation. The exception is that betas drop by about a quarter after the litigation event compared to the pre fraud period. However, systematic risk explains only a minute proportion of return volatility in the post suit sample. Generally, a litigation event increases the riskiness of the firms involved markedly.[5]

[4] Private Securities Litigation Reform Act of 1995, Pub. L. No. 104-67, 109 Stat. 737 (1995).
[5] An explanation for the negative post event drift.

The study also investigated some of the logistics of the class action filing process and the influence of the Reform Act. It was found that filing speed is linked to the size of the initial market reactions to the fraud announcement. The bigger price reaction cases get filed faster. This result is found in both the pre and post Reform Act periods. It appears law firms will file an action faster if the potential damages (law firm rewards) are higher.

In terms of the influence of the Reform Act, it is found that the fraud effect that precedes a class action filing is larger, on average, after the Reform Act. This result supports the proposition that the costs of conducting a suit are higher, for lawyers, after the Reform Act and thus law firms are more selective in the cases they take on. That is, the Reform Act has been effective in providing some protection to firms besieged by class action lawsuits, at the margin.

An additional finding is that the size of the class action announcement effect is larger after the Reform Act. This supports the Griffen et al (2000) hypothesis that the Reform Act's disclosure requirements improved the informational efficiency of the market, however the data does not support Griffen et al's point that post event drift is less important in the post Reform Act era.

Overall, we may conclude that, on average, being named in "10b-5" class action litigation suit is associated with an immediate negative wealth effect and a substantial change in the ownership register of the firm. Longer term the stock prices of the firms continue to decline to levels only 1/3rd of what they were before the fraud disclosure was made. Moreover, risk measures balloon. Clearly, Rule 10b-5 infractions are serious and costly events in the life of a corporation and every effort should be made by shareholders, directors and regulators to provide suitable governance over the area. This is not only to protect the investors directly affected but also for the protection of investor confidence in stock markets in general.

Section I of this paper provides background details on the law and litigation process. Section II examines the literature and the results from empirical studies. Section III

outlines the theory and motivation behind the paper. Section IV describes the sample and data. Section V presents the hypothesis and results. Section VI presents concluding comments and the potential for further research.

I. Background - Details on the Law and Litigation Process

Securities class action suits are primarily regulated under the Securities Exchange Act 1934[6], and the Private Securities Litigation Reform Act of 1995 (PSLRA 1995)[7], hereafter called the Reform Act or Act. Section 10(b) of the Securities Exchange Act 1934, and in particular, Rule 10b-5,[8] acts as the all purpose fraud remedy for securities litigation against firms.[9] The Act makes it unlawful for corporations, in their public announcements, to make an "untrue statement of a material fact or to omit to state a material fact". When fraudulent statements, or fraud disclosures, are made, that class of investors who relied on the false information, transacted in the stock, and suffered losses as a result may file a 10b-5 lawsuit to seek compensation. More than 250 federal cases are filed each year.

In practice, law firms initiate the class action filings and, ironically, the shareholders in the affected class are often unaware that a suit has been filed on their behalf.[10] In the typical case the law firm screens the stock markets for sudden stock price declines[11] and then examines the cases for evidence of 'scienter', that is, an intent to deceive, manipulate or defraud [12.] If sufficient facts are gathered, the law firm files to sue the company, and perhaps its directors, and other involved parties, on behalf of the class. The law firm usually will argue that some "bad news" about the firm has been deliberately

[6] 17 C.F.R. § 240.10b-5.
[7] Private Securities Litigation Reform Act of 1995, Pub. L. No. 104-67, 109 Stat. 737 (1995) (codified at 15 U.S.C. §§ 77a et seq.).
[8] Hence the name "10b-5" cases.
[9] Corporations are also sued under section 11 of the 1933 Securities Act but these are not "fraud on the

[10] They are only notified directly if a settlement or judgment is made in their favor.
[11] Note that sudden stock price declines, in themselves, are insufficient justification for a filing and, in fact, only a very small proportion of sudden and large stock price declines turn into 10b-5 cases. Jones (1998)
[12] Scienter is not necessary in Ch.11 cases. In 10b-5 cases recklessness has been taken as evidence of scienter.

withheld. The bad news typically consists of one or more of the following problems: production difficulties, earnings and sales shortfalls, restatement of earnings, an adverse news article(s) about the firm, a resignation or dismissal of top officer(s), an excessive volume of insider selling or a Securities Exchange Commission or Department of Justice investigation. To successfully make a case, a plaintiff firm must establish enough factual evidence of outright deceit or deliberate recklessness by the corporation's officers to meet the court's pleading standard.

One consistent criticism of the provisions in the Securities Exchange Act 1934 has been that law firms are encouraged to file merit less cases against vulnerable firms as the cost of defending these actions are so high. For instance, high-tech firms argued that prior to the passage of the Reform Act of 1995 opportunist plaintiff law firms had particularly targeted them. Weiss (2000) states that he is convinced that plaintiff lawyers regularly used the litigation process as a device for extracting undeserved settlements.

In response, Congress enacted the Private Securities Litigation Reform Act (PSLRA) of 1995. The Reform Act attempted to improve the efficiency of the litigation process and limit the number of merit-less cases brought against corporations. It did this in a number of ways. The Act raised the pleading standard required for a case to proceed by requiring law firms to present factual evidence of wrong-doing upon the filing of a case rather than at some later time. Additionally, the Reform Act allows corporations a stay of discovery while a motion to dismiss a case is pending--thus preventing plaintiffs snooping for additional evidence as they had done in the past. Further, the Act created a Safe Harbor provision that protects firms from liability for voluntary disclosures of financial projections and other forward looking information, as long as certain procedures were followed. Also, a cap was placed on the award of damages and the liabilities of accountants and underwriters was reduced. Among the most visible impacts of the Reform Act has been the speed with which disclosures about lawsuits are now made public. The Act requires that plaintiffs provide "adequate public notice" of the filing of a

suit.[13] Since the Act's passage the average number of days between the filing of a suit and its public announcement has dropped from 4.81 to 1.39 days.

The Reform Act shifted the bias of the law in the favor of the corporation. The danger in shifting the bias this way is the risk that more frauds will go unremedied and investor confidence in markets undermined.[14] The hope was that merited cases would still be litigated. An unresolved question is whether undeserved settlements are still being extracted. In one sense, because the number of filings is once again at the levels before the Reform Act we can question whether the frivolous lawsuit has been dealt with.[15] In fact, Weiss (2000) suggests the Reform Act may simply see plaintiff lawyers become more sophisticated in their filing of frivolous cases.

Reform efforts continue, for instance, the Securities Litigation Uniform Standards Act of 1998 closes off the filing of securities class action suits in State courts.[16] Other scholars call for continued law reform. Pritchard (1999) suggests that the current remedies will inevitably drive investors from the market as the system is not deterring fraud nor is it compensating defrauded investors. He argues there is little to deter corporate managers from fraud when almost all of the costs are paid for by the corporation and few cases reach the courtroom (which may reveal the truth about the fraud). In terms of investor compensation, he argues that the system is not working as defrauded shareholders usually get back very little of what they lost.[17] Congress observed "investors always are the ultimate losers when extortionate 'settlements' are extracted from issuers."[18] Pritchard

[13] Notification is typically made as a press release over the internet. In addition Local Rule 23-2 was adopted by the United States District Court for the Northern District of California. This rule requires that plaintiff and defense council promptly post electronic copies of federal class action filings with Internet sites that make data freely available to the public.

[14] See *Hearing on Sec. Litig. Reform Proposals, Subcomm. on Sec., Senate Comm. on Banking, Housing, and Urban Affairs*, 104th Cong., 1st Sess. 193 (1995) (statement of David J. Guin, testifying on behalf of the National Association of Securities and Commercial Law Attorneys) (arguing that strengthened securities laws are necessary to maintain investor confidence).

[15] But, we must be careful in just examining raw numbers of cases filed as there may be some seasonality in the number of filings. Whether this is so is an unexplored question, certainly the number of filings will be conditional on market conditions.

[16] Securities Litigation Uniform Standards Act of 1998, Pub.L.No.105-353, 112 Stat. 3227 (1998). .

[17] Alexander (1991) shows they get an average of about $0.11 in each dollar claimed. (check this)

[18] H.R. CONF. REP. No. 104-369, at 32 (1995).

advocates that the task of controlling fraud be placed in the hands of stock exchanges as they have a direct working relationship with both the companies listed on their exchanges and with the investing public.

Linsmeier (2000) also argues the class action suit remedy against fraud is not working. He suggests that firm management bears little of the responsibility for engaging in fraud when the costs of directors' insurance[19], settlements and/or damages are all paid by the firm.[20] Directors and officers, in fact, pay less than 1 percent of the final costs of litigation (Alexander (1991)). The size of damages or settlements are by no means trivial, settlements can amount to many multiples of annual profits.[21]

On the other hand, Strahan's (1998) research indicates the class action suit remedy is working, at least in part. Strahan points out that fraud is a classic "agency cost" in the Jensen and Meckling sense, and that a lawsuit acts as a remedy against incurring more of these costs. He proposes two key findings support this view. First, he shows that firms that are more likely to face agency problems are also more likely to be cited in class action suits. Second, he shows that the probability of CEO turnover increases dramatically after class action filings, and thus, the lawsuits are resulting in the removal of the person ultimately responsible for the agency problem, the CEO.[22]

II. Empirical Literature

II(A) Fraud Day Wealth Effects

In studies of the impact of the fraud event, which preceded class action suits, the studies all document a substantial negative wealth effects upon the announcement of an alleged

[19] The Economist (March 24, 2001) reports the cost of this insurance has increased between 40 percent and 200 percent this year.
[20] Also, there are other costs: adverse selection, uncertainty, management attention …
[21] For instance, the Cendant Corporation settlement was $3.19 billion of which Ernst and Young agreed to pay $335 million. Wise (2000).
[22] Even if Strahan is right, that these suits do resolve agency costs, there may be better remedies.

fraud. Kellogg (1984) investigated 56 "fraud on the market" lawsuits over the period 1967-1979. The paper documents an average –42.7 percent negative price reaction upon the announcement of the fraud disclosure as well as a negative price action in the months preceding the statement. There is no examination of the impact of the class action filing announcement. Karpoff and Lott (1993) and Francis et al (1994) in similar studies also document large wealth losses at the announcement of the fraud details.[23]

Janet Alexander (1991) points out that some of the stock price decline following a fraud disclosure may be based on an anticipation of a class action suit follow. She goes on to argue this effect may be quite small. We are now in a position to comment on the size of this litigation factor.

II(B) Case Merits Studies

In studies of the links between 10b-5 case merits and settlements there are mixed findings. Alexander (1991) finds no links between settlements and case merits. Her study was used to support the Reform Act's passage. Stephens and Beasley's (1998) findings are parallel with those of Alexander. However, Marino and Marino (1994) examined just those10b-5 cases where auditing firms were named as defendants and found that flagrant fraud had twice the settlement values as non-flagrant fraud--so merits can matter. They also found the threat of bankruptcy has only a small effect on settlement values. Carleton, Weisbach and Weiss (1996) found that settlements are larger in cases where accounting fraud was alleged.

In a study of the links between settlement amounts and estimated damages, Laura Simmons (1997) showed that in a sample of 125 10b-5 settlements over the period 1991-94 the average suit settlement was 7 percent of estimated damages. She also noted variation in settlement by industry and court circuit. There is ongoing debate on the measurement of damages. In a study of damages estimation, Beaver (1998) suggests the

[23] Francis et al (1994) report an average –17.2 percent effect upon the fraud announcement.

model frequently used in courts, the one trader model, overestimates damages by 80 percent.

II(C) Litigation Day Wealth Effects

The class action filing announcement is a relatively unexplored area. Griffin, Grundfest and Perino (2000) examined the wealth effects of 283 federal class action suits over the period July 1994 to April 1997. The study produced somewhat inconclusive results that shows the litigation announcement produces a negative wealth reaction of -6 percent but the authors acknowledge some of this result could relate to the fraud announcement effect. By way of control of the influence of the fraud effect, Griffin et al sub-sample 138 firms that had delayed filings of 10 days or more past the class period named in the suit. Here, the –1 to +1 window produced a cumulative -2.3 percent return but this statistic was not significant. The Griffen study has not unambiguously established a statistically significant class action effect. The study has important methodological weaknesses as the adjustment for the fraud effect is relatively crude, there is no adjustment for risk and the NASDAQ index is used as their market proxy and this may be too narrow.

The Griffin et al study also shows small firms and firms with less analyst coverage are more severely affected by the announcement of a filing. They also point out a previously overlooked aspect of the Reform Act. The Act's requirement for immediate public disclosure of a suit has sped up the information dissemination process and the result has been a speedier stock price reaction to the announcement of a suit. The authors propose that post announcement drift before the Reform Act was linked to the slowness in getting the disclosure to the public.

II(D) Post Announcement Drift Studies

In studies of the stock price reaction in the post event period following the fraud/class action announcement the findings are somewhat inconclusive. Lev and de Villers (1994), in a study that influenced the drafting of the Reform Act, suggested a positive stock price

"bounce back" could occur after fraud announcements. Dickey and Mayer (1996) tested 196 fraud on the market cases over the period 1991-1994 and report an average short-term bounce-back of just 1.7 percent of the price drop associated with the fraud announcement. The median response was a –2.5 percent short-term drop in price. Griffin et al (2000) examine post event drift after class action cases for up to 50 days past the class action suit. They found the cumulative return over the period day 2 to day 15 was -4.4 percent and significant. However, the cumulative return over the window (2,50) was –1 percent and was not significant.

III. Hypotheses

The purpose of this paper is to examine the financial impacts of the most common type of federal securities class action suit, described as "10b-5" or "fraud on the market" suits. Not a lot is known about the security market impacts of these lawsuits. Previous studies have studied the stock price effects of both fraud and class action 10b-5 litigation but separately. This leads to an incomplete measure of the price effects (wealth effects) of either event since the two are highly correlated. This essay studies the two events jointly and thus presents a more complete measure of the wealth effects. In addition, the study examines the market liquidity effects of the lawsuits and the impact of the suits on the systematic risk of the stocks involved. The study will also comment on some of the impacts of the Reform Act of 1995 and on the class action suit filing process.

The following primary hypotheses are examined:

Hypothesis 1: *there will be a negative price reaction to the announcement of the class action lawsuit.* Class action lawsuit represents a major threat to shareholders as the lawsuits usually seek considerable sums in financial damages from the firm--usually a substantial multiple of its annual earnings—and they consume management's time and focus.[24] The lawsuits are also a tangible signal that the firm's management is not

[24] See footnote 8, the Cendant settlement was $3.19 billion.

motivated to maximize shareholder wealth. Hence, there should be a significant shareholder reaction to the announcement of a suit. Testing this hypothesis involves examining the immediate impacts of a lawsuit on the stock price of the named firms. Care must be taken to remove the confounding effect of the fraud announcement's impacts. To identify the incremental impact of the class action suit itself we jointly model the fraud announcement and the class action announcement. Conjoint with this test is an examination of the fraud event.

Hypothesis 2: *Is there evidence of a post event price drift after the class action announcement?* Post event stock price drift may persist for a number of reasons including: a) inefficiency in the initial response to the suit (Griffin et al (2000); b) slow shifts in the shareholder clientele of the firms following the event; c) initial under reaction due to behavioral factors (Khanemann and Lavallo, 1993); or, d) slow realization that the lawsuits are a tangible signal that the firm's present management represents a significant threat to the maximization of shareholder wealth (Jensen and Meckling, 1976).

Hypothesis 3: *Since the class action filing is "bad news" for shareholders, there will be an initial increase in trading volume in the security at the time of the event but a fall off in volume after the event as shareholders leave the share register.* This hypothesis posits that uncertainty created by "fraud / lawsuit events" will generate heavier trading volume initially as investors re-weight their portfolios to accommodate the information. In the longer term trading volume may become thinner if fears of persisting agency problems, investor uncertainty and the threat of further financial distress continue.

Hypotheses 4: *Are measures of firm risk affected by fraud and litigation?* We investigate Shleifer's (1984) liquidity hypothesis that posits as a stock becomes illiquid, its bid-ask spread will rise and its risk will rise. We frame the following hypotheses:

Hypothesis 4a: *Total risk (variance) will increase as a result of the litigation.*

Hypothesis 4b: *Systematic risk (beta) will increase as a result of the litigation.*

Hypothesis 4c: *Unsystematic risk will increase as a result of the litigation.*

Hypothesis 4d: *The bid-ask spread widens after the litigation event.*

Hypothesis 5a: *Reform Act - Is there less post event drift in the post Reform Act era as the market is now more efficiently informed about suit filings?* This hypothesis examines the efficiency hypothesis above--that the market, in the post Reform Act era, is now more efficient as the class action filing announcement is now better publicized.[25]

Hypothesis 5b: *Reform Act - What is the effect of the Reform Act's raising of pleading standards? The average price drop, and/or the potential damages, upon the fraud disclosure are larger after the Reform Act.*

This test looks at the impact of the Reform Act's requirement for public disclosure of a class action suit filing. The test is to see whether the Reform Act's public disclosure requirement has made the class action effect more efficient. The Reform Act required that firms immediately disclose that they are subject to class action litigation. Before the Act the public release of this information by firms was not required and public announcement were often delayed or not made at all. The firms that did announce a suit usually only did so to dismiss the merits of an action.

Hypothesis 5c: *Reform Act - Is the public disclosure of lawsuits faster since the Reform Act?*

Hypothesis 5d: *Reform Act - What is the effect of the Reform Act's requirement for public disclosure of a class action suit filing? The average price drop, and/or the potential damages, upon the class filing disclosure is larger after the Reform Act.*

[25] The shareholder clientele effect could be tested if the composition of shareholders before and after the event could be determined. The agency cost hypothesis would also be supported if the share register

Hypothesis 6 - *Does the size of damages influence the speed in which cases are filed?*
The bigger the drop in price upon the fraud disclosure, the faster the class action filing will be made.

The study finishes by examining hypotheses concerning the class action suit filing process, such as filing speed.

IV. Sample and Data

The sample consists of 486 cases where firms have had federal Rule 10b-5 class action law-suits filed against them over the period from January 1994 to March 1999. The sample was drawn from the PwC corporate litigation database which contains details on over 2000 cases of corporate class action litigation.[33] The following filters were applied. The company had to be available on the Center for Research into Security Prices (CRSP) tapes. A news announcement had to be identifiable about the suit on Bloomberg or Dow Jones Newswire. This filter cut out about ½ of the sample, especially pre Reform Act. For cases where repeated class action filings are made--only the first filing was counted. There were 20 firms in the sample with either 2 or 3 filings over the 6-year window in the study. Also excluded were companies that had insufficient market trade data to estimate the estimation model coefficients and those firms that did not trade during the class action suit event window (a number of firms were delisted before they got to the class action filing day). Trading volume and market capitalization data were collected from the CRSP tapes.

V. Hypotheses and Results

V(A) Results in the pre -estimation period

changed as a result of the class action suit. This hypothesis would need to be tested in conjunction with an analysis of whether management has been changed as a result of the suits.

The pre-estimation period consisted of the period –300 to –40 days before the fraud announcement event day. The pre-fraud period, rather than the pre-class action period, was collected to avoid having the powerful fraud event influence in the pre-estimation period parameters. **Table 0 A** summarizes the regression results from the pre-estimation data. The average value for beta was either 1.198 using standard Market Model OLS specification or 1.282 under the Scholes-Williams adjustment.[26] These values indicate the total sample has a substantially higher systematic risk than that of the broad market. It appears that class action cases tend to be brought against the higher end of the systematic risk spectrum, which may be evidence that law firms are targeting volatility as well as fraud. An inspection of the breakdown by quintile shows the samples beta's range over a broad spectrum. The mean and median return information shows that the sample had experienced high average returns in the pre-fraud period, with mean and median returns of 27.5 percent and 20 percent per annum respectively. The residual standard deviations in this study are typical for such studies and correspond to the values reported by Patell (1976).

Table 0 B provides the event study pre-estimation statistics. It shows the F(-300,-40) period statistics behave as expected with no significant departures from normal returns. The Table also shows the importance in using the F(-300,-40) estimation period as the C(-300,-40) period statistics do depart significantly from normal returns. The influence of the Fraud event is impacting on C(-300,-40) data. The Table also reports statistics for the whole event study period, F(-300,+200) and C(-300,+200), These are for information only but they reveal the dismal performance of the firms involved in class action suits over the long term. The firms lose, on average, about 70% of their value over the whole horizon.

Table 0 A, Table 0 B

[33] Not all of which are "10b-5" cases.
[26] As mentioned on page 21, this is evidence of thin trading effects in the estimation of betas.

Section V(B) Results in the Event Period

Hypothesis 1: Return - *there will be a negative price reaction to the announcement of the class action suit, even after adjustment for the Fraud Effect*.

The results shown in **Table 1 A** confirm hypothesis 1. There is a *cumulative average abnormal residual* of –8.04 percent over the 3 event days of the class action announcement, C(-1,+1). In a separate test where the Fraud announcement preceded the Class announcement by at least 5 trading days the C(-1,+1) effect is –3.75% and significant under parametric and non-parametric testing regimes. **Table 1 B** documents a cumulative –29.91 percent 3 day reaction to the fraud event, F(-1,+1), and a –41.61 percent reaction over the complete Fraud to Class action period, F(-1) to C(+1). **Table 1 C** summarizes the results for the five periods that occur in the Fraud/Class action suit period, namely: preF(-300,-40), F=F(-1,+1); FC = period from F(+2) through C(-2); C=C(-1,+1), postC=C(+2,+200). Table I C shows the mean return in each sub-period. Additional to the above information we see the FC period experiences a –10.9% return and the post C(+2,+200) period experiences a –13.8% return. Univariate t-tests of the differences in means when compared to the preF(-300,-40) mean show that all the results are significant. An observation of the medians confirm the findings.

Table 1 D reports the results of multivariate tests of the regression $R_{it} = a_i + b_i R_{mt} + \lambda_i F_{it} + \delta_i C_{it} + \gamma_i C_{it}F_{it} + \eta CAP_{it} + \phi LIQ_{it} + \varepsilon_{it}$. Where R_{it} is the return at time t for firm i (i = 1,..., 486). a_i and b_i are the standard market model estimates from the pre-estimation period. a_i and b_i are estimated with either OLS or with the Scholes-Williams Adjustment. R_{mt} is the market's daily lognormal return. F_{it} is the fraud announcement dummy, C_{it} is the class announcement dummy, $C_{it}F_{it}$ is the interation term between the class filing dummy variable and the fraud announcement dummy variable. CAP_{it} is the log of (1+Capitalisation) and LIQ_{it} is the log of (1+trading volume) for firm i at time t. The model includes additional explanatory variables and an interaction term which occurs

when both F and C events are happening simultaneously. The table shows that all of the variables in the model contribute a significant incremental influence on stock returns.

Table 1 A, 1 B, 1 C, 1 D

Overall, the principal objective of this study is confirmed, the class action announcement effect over the C(–1,+1) event window is significant and is found after controlling for the interaction between the fraud and class announcements and after controlling for liquidity and size risks. The influence of the litigation announcement is at least 3.75 percent and at least some of the –13.4 percent interaction effects (F*C) will be related to the litigation.

Hypothesis 2: Drift - *Is there evidence of a post event price drift?*

From a theoretical viewpoint, the fraud and class action events may lead to biases, which result in systematic under-reaction and in turn a post event drift. Systematic under-reaction is commonly associated with "surprise" news based events such as fraud and class action announcements[27]. Under-reaction may develop when investors only update partially to new information about a fraud. Investors are said to at least initially "anchor" in their beliefs of the past (Kahneman and Tversky (1984)). In a sense anchoring is understandable, when an alleged fraud is brought to light, investors are plunged into a complex decision-making environment and there are clearly difficulties in assessing the new "fair value" for the stock concerned. Kahneman and Lavallo (1993) demonstrated that decision makers tend to be over confident in predicting potential outcomes in complex situations, resulting in high error rates. If under-reaction occurs at the time of a negative announcement we should see post-event price drift in the after market period as investors update their beliefs.[28] To examine this issue we investigate post event returns for 200 trading days after the class action filing event, C(+2,+200).

[27] For example, there is an initial under-reaction to dividend omissions, Michaely, Thaler and Womack (1995)

[28] The process has been described as a form of Baysian updating.

The results are surprising. **Table 2 A** shows there is clear evidence of significant negative post event price drift for the after-market period C(+2,+200).[29] The period C(+2,+30) days following the class action lawsuit witnesses a cumulative abnormal return of –5.45 percent under the market model methodology. The period C(+31,+200) witnesses a cumulative abnormal return of –9.41 percent. The period C(+2,+200) produces a –13.8 percent abnormal return.

We next examine the possible explanation for post event drift. One explanation is the evidence supports the under-reaction hypothesis. **Table 2 B** reports the results of a multivariate test of the post event drift where postC CAR is regressed against a range of possible explanatory variables. The table shows the post event drift is significantly influenced by the F(-1) to C(+1) period, called $BCAR_I$ in the regression. If the $BCAR_i$ period had very dismal returns the postC period did as well. The size of firm effect is ambiguous as it reverses sign in the C(+2,20) estimation. There is probably multicollinearity between the capitalisation and dollar volume variable. PreF return performance reverse in the postC period--the high fliers get taken down. Interestingly, insider trading during the preC period was associated with better postC performance. Also of interest was that if purchase method accounting was an issue (mergers) then the postC performance was worse.

Table 2 A, 2 B

Hypothesis 3: Volume - *since the class action filing is "bad news" for shareholders, there will be an initial increase in trading volume in the security at the time of the event but a fall off in volume after the event.*

This hypothesis posits that uncertainty created by "fraud / lawsuit events" will generate greater dispersion in investors beliefs and result in heavier trading volume as investors re-weight their portfolios to accommodate the information. A lawsuit could seriously erode

[29] On the other hand, there is no evidence to support the price rebound hypothesis, which the drafters of the Reform Act had suggested may occur. A price rebound is where an over-reaction to the news occurs

investor confidence in a firm and there may be a "liquidity story" to tell. Univariate and multivariate tests are employed. **Table 3 A** reports the results of univariate tests of Trading Volume, Adjusted Volume, and Bid-Ask Spread. The table reveals that trading volume spikes up 6.8 fold in reaction to the F(-1,+1) event when compared to the estimation period. The C(-1,+1) event sees volume jump 2.74 fold. Volume returns to normal levels in the post C period. T-tests confirm the F(-1,+1), F(+2) to C(-2), and C(-1,+1) trading volumes are significant higher than the pre-estimation period. Bid-Ask spreads increase in all of the postF subperiods, including the PostC period, C(+2,+200).

A simultaneous equation multivariate test of Trading Volume and Bid-Ask spread is then conducted. The results are reported in **Table 3 B.** The bid-ask test results show the coefficients for F, F-C, C and D variables are all higher than the intercept term value in the PreF period. That confirms the bid-ask spread increased after the F event. The results for trading volume show a sharp spike up in trading volume in the F period but the coefficients were lower than the preF number in the F-C, F, and post C periods.

Table 3 A, 3 B

Hypothesis 4: Risk - *Are measures of firm risk affected by fraud and litigation?*

Shleifer (1984) framed a liquidity hypothesis that suggests that as a stock becomes illiquid, its bid-ask spread will rise and its risk will rise. We produce evidence that notable shifts take place in the sample firms' bid-ask spreads and systematic risk following the litigation event.

Hypothesis 4a: *Total risk (variance) will increase as a result of the litigation.*

Hypothesis 4b: *Systematic risk (beta) will increase as a result of the litigation.*

Hypothesis 4c: *Unsystematic risk will increase as a result of the litigation.*

Hypothesis 4d: *The bid-ask spread widens after the litigation event.*

---

initially but then a recovery in prices subsequently develops.

Table 4 A presents the univariate test results for the C and F events in two panels. The risk measures are:

total risk (Var) measured with variance of firm; daily stock returns;

beta, measured with period beta; [30]

unsystematic risk (unsys) measured with total risk minus systematic risk,

Varmkt is measured by way of control.

Table 4 A shows that variance in the postC period, C(+2,+200) almost doubles after the C & F events. Systematic risk decreased in the after market period in both F and C tests – the average beta moved from 1.14 to .95 (C event) and 1.23 to .92 (F event).[31] Systematic risk, on average, however accounted for only 5.88% (pre C) and 3.13% (post C) of total risk.[32] Unique firm risk (unsystematic risk) also almost doubled after the events. Average "unsys" variance increased from .0032 to .0062 (C) and .0028 to .0057 (F).
T-tests confirm the above differences are significant.

The beta result is opposite to that expected but the result is put in perspective in that systematic risk is almost completely overwhelmed by the increase in unsystematic risk in the sample.

Table 4 A

Table 4 B reports the results of performing an estimation of the cross sectional betas in each of the five event periods in the event study. The table confirms that betas drop significantly in the postC period compared to the preF period. Of interest is that the betas spike up significantly for the C(-1,+1) period.

Table 4 B

[30] Systematic risk is measured over a 199-day pre-event period (-200,-2) and a 199-day post event period (+2,+200).
[31] Scholes-Williams betas were estimated in the pre and post C and F periods. Systematic risk, as measured with this method, decreased from 1.304 to .925 after the C event (1.404 to 0.975 after the F event).
[32] Divide systematic risk by total risk gives the proportion of systematic risk.

Table 3 A reported the results for spread and showed as previously mentioned that spreads increased significantly in all of the postF periods—F, F-C, C, postC.

REFORM ACT TESTS

Hypothesis 5a: Reform Act - *Is there less post event drift in the post Reform Act era as the market is now more efficiently responding to suit filings?*

If the class action filing is now better publicized and its wealth effects more immediate, it follows that the post event drift effect, established in hypothesis 2, must be reduced in the post Reform Act era.

Table 2 B performed a multivariate examination of postC drift. To test the hypothesis that the Reform Act had an influence on this a Reform Act dummy was modeled. Post C CAR over the C(+2,+20) period had no power but over the C(+2,+200) period the Reform Act dummy was significantly negative. This means the reform Act era has witnessed even greater post event negative drift than the pre-Reform Act era.
The results do not support Griffen et al's statement that the Reform Act has made the market more informationally efficient in the post Reform Act Era. Negative drift is not reduced in the post Act period.

Hypothesis 5b: Reform Act - What is the effect of the Reform Act's raising of pleading standards? *The average price drop, and/or the potential damages, upon the fraud disclosure are larger after the Reform Act.*

Since the costs in bringing a successful case were raised by the Reform Act, we may see that plaintiffs choose stronger cases to file after the Act. Stronger cases will be those where the potential gains are greater and these will be directly related to the size of the

fraud effect.[33] **Table 5 A Panel A** reports that the average case after the Reform Act came off a 30.8 percent abnormal price drop over the 3-day F(-1,1) window compared with an average of –24.2 percent before the Act.[34]

Table 5 A Panel B reports the multivariate test results of the regression of A_{ij} on the explanatory variables including the variable fraud*reform-act. The coefficient on this variable is significantly negative which indicates the post Reform Act Fraud Effect is greater after the Act (more negative).

Table 5 A

Hypothesis 5c: Reform Act - Is the public disclosure of lawsuits faster since the Reform Act?

The Reform Act Era requires prompt disclosure of law-suits. We tested the effect of this in this regard by examining the period of time between the suit court filing date and its first public disclosure. The results, presented in **Table 5 B**, show that the filing lead time before the public announcement of a suit dropped significantly from 4.81 days to 1.39 days.

Table 5 B

Hypothesis 5d: Reform Act - What is the effect of the Reform Act's requirement for public disclosure of a class action suit filing? *The average price drop, and/or the potential damages, upon the class filing disclosure is larger after the Reform Act.*

This test looks at whether the Reform Act has helped accentuate the class action effect by bringing the news of the action to the public in a timely manner. The Reform Act Era requires that firms disclose that they are subject to class action litigation. Before the Act the public release of this information by firms was not required and often a public

[33] And, the length of the class period.
[34] Market model abnormal returns are used for the test. The difference is significant at the 1 percent level.

announcement was delayed or not made at all. The few firms that did announce a suit usually only did so to dismiss the merits of an action.

Griffin et al (2000) were the first to point out this feature of the Act in the literature. They find a more noticeable class action effect after the Reform Act and argue this supports the view that the disclosure provision has facilitated efficiency in the market in that bringing the suits to investor's attention has reduced information asymmetry costs.

Tests reported in **Table 5 C** support Griffin et al's view. A *t*-test of the 3-day class action effect before and after the Act reveals that, on average, there was an –8.77 percent class action effect after the Act and a -3.75 percent effect before the Act. The difference was significant using a t-test based on means and medians. Note that this effect may be merely the result of the greater fraud effect present in cases after the Reform Act (see hypothesis 4a). In order to examine this question, a multivariate test is conducted which includes an interaction term, C*ReformAct. **Table 5 C** reports that the interaction term is significant and negative. This is interpreted that the post Reform Act era now sees bigger class action effects—the C effect is much larger after the Act.[35] In fact the C effect itself drops out which shows the effect is almost a post Act effect.

Table 5 C

Hypothesis 6 - *Does the size of damages influence the speed in which cases are filed?* *The bigger the drop in price upon the fraud disclosure, the faster the class action filing will be made.*

[35] This result occurs after controlling for the fraud effect in the class effect.

The intuition here is that more severe "fraud announcements"[36] are more likely to result in lawsuits—due to these cases having higher damages[37] and more chance that important information has been with-held from the market by the firm. As law firms compete for the better cases we should see prompter filing for these severe fraud effect cases. We expect the hypothesis will be supported for, in a sense, this hypothesis just tests whether law firms are rational. But an alternate way to look at filing speed is that law firms are "shooting first and asking questions later". To examine this question a straightforward univariate *t*-test of means is conducted as well as a regression analysis. For the univariate test the sample is divided at the median Fraud effect (F(-1,+1).[38]

The results in **Table 6 Panel A** show the larger F(-1,+1) events get filed in under half the time as the smaller Fraud events—12 days compared to 33 days.[39] [40] In **Table 6 Panel B** the influence of the Reform Act shows that the average time to filing increased from 16 to 24 days after the Act.[41] This may be to do with heightened pleading standards. The regression output in **Panel C** shows the test of fraud lead time on the size of the F effect (1 for small F effect, 0 for large F effect) and the Reform Act dummy (0 for pre reform act and 1 for post reform act) and a controlling size of firm variable. The results show that the time to the filing is inversely and significantly related to the F reaction and reform act dummy variables. That is, large F events take less time to be filed, and the post reform act period is associated with longer filing times. Larger firms tend to have their suits filed faster. The general conclusion is that meritorious cases get filed faster.

Table 6

[36] Recall that we use the term "fraud announcement" but really a better description is "alleged fraud announcement". That is, some of the cases may be meritless.
[37] The potential rewards to law firms and the "class" are better with a larger fraud effect. Note though that the size of the firm will be a factor here too. Smaller firms with large fraud effects may still be relatively unattractive to law firms.
[38] The median F(-1,1) is -.2039 (MM), -.2039 (SW), -.2037 (MA).
[39] The Fraulead is truncated at 50 days to avoid the influence of outliers and 5 unspecified fraud lead cases are omitted. (The effect of this truncation does not affect the nature or the significance of the results provided below, just the mean levels.)
[40] The TTEST Procedure using SW and MA confirm the findings.
[41] With medians of 7 and 17 days for the fraud to class suit lead time.

VI. Conclusion and Further Study

The results of this study show that class action litigation events have a material economic impact on the firms named in the lawsuits. The sample reveals the initial fraud disclosure event has a –29.9 percent impact, the following class action suit announcement has a further incremental effect of –3.75 percent as well as an interaction effect of –13.41 percent. The period from F(-1) through C(+1) witnesses a 41.6 percent wealth loss. The post class action lawsuit event period (+1 days to +200 days) witnesses a further –13.8 percent post event price drift. The data also shows the Reform Act does not appear to have reduced the tendency for post event negative price drift. All told, 2/3rds of value is lost.

Other measures of economic impact are equally illustrative. In terms of trading volume in the firm's stock, the initial fraud disclosure provokes abnormally high volumes, but the class action suit announcement creates an even bigger surge in trading volumes. Interestingly, trading volume, on average, drops off notably following the suits compared to the levels experienced before the fraud disclosure event took place. In terms of bid-ask spread, the average spread increased by half percent following the lawsuits and remains higher throughout the 200-day period covered in this study. Stock risk almost doubles when measured with variance or unsystematic risk. Beta risk, however, drops by a 1/4 after a lawsuit announcement.

The study also examines some of the logistics of the class action lawsuit and the effects of the Reform Act. Our tests show that filing speed is determined in part by the size of estimated damages. The best cases get filed faster. This effect is only present in the period after the Reform Act. Further, the average price drop upon the fraud disclosure is larger after the Reform Act. This suggests the Reform Act has had an effect in protecting firms from litigation—only the bigger frauds are being pursued. Lastly, lawsuits are being disclosed more promptly since the Reform Act's passage.

Overall, we may conclude that, on average, being named in "10b-5" class action litigation suit is associated with at least an immediate –3.75 percent wealth effect and a substantial

increase in trading volume as the incumbent stockholders exit the firm. Longer term, in the period after the suit, the stock prices of the firms continue to decline and risk measures stay higher than the levels prior to the fraud event. Clearly, fraud on the market is a serious and costly event in the life of a corporation and every effort should be made by regulators and shareholders to address this area of law and corporate governance. Financial markets need effective fraud remedies if they are to continue to develop in efficiency. In fact it is probably not an exaggeration to claim that a failure to effectively address the concerns in this area could ultimately lead to a serious erosion of credibility in securities markets.

In terms of further enquiry, there are two potential extensions. First an investigation of contagion of class action suit filings may be made. The Pennzoil/Texacosuit was shown to have industry effects. It may be worth investigating industry influences in class action litigation. For one thing, lawyers may be targeting firms whose only "crime" is that they are experiencing an industry recession.

Secondly, a study of informational efficiency can be made. Particularly before the Reform Act, the filing day of a class action suit often precedes its public disclosure by a number of days, or even weeks. When this delay occurs there may be a delay in the full price reaction to the news as many market participants are uninformed about a suit. We may check how these delays were worked through in terms of the price impacts by looking at when the reaction took place--on the filing date, or on the announcement date or both. This will be an interesting examination of market information efficiency and the effect of regulation on market efficiency.

References

Affleck-Graves, John, Hegde, Shantaram, and Robert E. Miller, 1996, Conditional price trends in the aftermarket for initial public offerings. *Financial Management*, 25(4) Winter, 25-40.

Alexander, Janet C., 1991, Do the merits matter? A study of settlements in securities class actions, *Stanford Law Review* 43, 497-598.

Beck, James D., and Sanjai Bhagat, 1996, Share price drops and shareholder litigation, Working paper, University of Colorado at Boulder.

Black, Bernard S., 2000, The Legal and Institutional Preconditions for Strong Securities Markets, *UCLA Law Review* 48, 4, April, 781-855.

Bhagat, Sanjai, John Bizjak and Jeffrey L. Coles, 1998, The shareholder wealth implications of corporate lawsuits, *Financial Management* 27, 4, 5-27.

Bohn, James and Stephen Choi, 1996, Fraud in the new issue market: empirical evidence on securities class actions, *University of Pennsylvania Law Review* 144, 903-982.

Bonner, Sarah E., Zoe-Vonna Palmrose and Susan M Young, 1998, Fraud type and auditor litigation: an analysis of SEC accounting and auditing enforcement actions, Working paper, University of Southern California.

Campbell, J. Y., A. W. Lo, and A. G. MacKinlay, 1997, The econometrics of financial markets, *Princeton University Press*, Princeton, NJ.

Carleton, Willard T., Michael S. Weisbach and Elliot J. Weiss, 1996, Securities class action lawsuits: a descriptive study, *Arizona Law Review* 38, 491-511.

Cloninger, Dale, 1982, Moral and systematic risk: a rationale for unfair business practice, *Journal of Behavioral Economics* 7, 33.

Cowan, Arnold R., 1997, Eventus software for event studies and CRSP file access, user's guide, Version 6.3, March.

Dechow, Sloan and Sweeney, 1995, Detecting earnings management, *The Accounting Review* 70, 193-226.

Dickey, J.C., and M.K. Mayer, 1996, Limitations of liability and damages under the private securities litigation reform act: a legal and empirical analysis, Research Report, Practising Law Institute, San Francisco, California.

Eth, Jordan and Michael Dicke, 1994, Insider stock sales in rule 10b-5 corporate disclosure cases: separating the innocent from the suspicious, *Stanford Journal of Law, Business and Finance* 1, 97-132.

Feroz, Ehsan H, Park, Kyungjoo, and Pastena, Victor S., 1991, The financial and market effects of the SEC's accounting and auditing enforcement releases: discussion, *Journal of Accounting Research* 29, Supplement, 107-49.

Francis, Jennifer, Donna Philbrick and Katherine Schipper, 1994, Shareholder litigation and corporate disclosures, *Journal of Accounting Research* 32, 137-164.

Francis, Jennifer, Donna Philbrick and Katherine Schipper, 1994, Determinants and outcomes in class action securities litigation, Working paper, University of Chicago and Portland State University.

Gilbertson, David L., 1996, Eamings management by corporate targets of securities litigation, Working paper, Loyola Marymount University.

Griffin, P.A., J.A. Grundfest and M.A. Perino, 2000, Stock price response to news of securities fraud litigation: market efficiency and the slow diffusion of costly information, SSRN Electronic Library, Stanford Law School.

Hansen, R.S., 1988, The demise of the rights issue, *Review of Financial Studies* 1, Fall, : 289-309.

Jarrell G., 1985, The wealth effects of litigation by targets: do interests diverge in a merger?" *Journal of Law and Economics*, April, 151-177

Jones, Christopher L., 1998, The association of earnings management with current returns, current market values, future returns, executive compensation and the likelihood of being a target of 10b-5 litigation, Dissertation, Stanford University.

Judge, G., W. Griffiths, R. Hill, H. Lutkepohl, and T. Lee, 1985, *Introduction to the Theory and Practice of Econometrics* (John Wiley and Sons, New York).

Karpoff, J., 1987, The relation between price changes and trading volume: a survey, *Journal of Financial and Quantitative Analysis* 22, March, 109-126

Karpoff, J. M. and J. R. Lott, 1993, The reputation penalty firms bear from committing criminal fraud, *Journal of Law and Economics*, October, 757-802.

Kellogg,, 1984, Accounting activities, securities prices, and class action lawsuits, *Journal of Accounting and Economics*, 6.

Kahnemann, D.J. and D. Lavallo, 1993, Timid choices and bold forecasts: a cognitive perspective on risk taking, *Management Science* 39, 1, January, 17-31.

Kahneman, D.J. and A. Tversky, 1984, Choices, values, and frames, *American Psychologist* 39, 4, April, 341-50.

Kinney, William R. and Linda S. McDaniel, 1989, Characteristics of firms correcting previously reported quarterly earnings, *Journal of Accounting and Economics* 11, 71-93.

Lev, Baruch and de Villers, 1994, Stock price crashes and 10b-5 damages: a legal, economic and policy analysis, *Stanford Law Review* 47, 7-37

Lev, Baruch, 1995, Disclosure and litigation, *California Management Review* 37, 8-28.

Linsmeier, Thomas J., Daniel B. Thornton, Mohan Venkatachalam, and Michael Welker,, 2000, Do SEC disclosures reduce investors' disagreements about firms' exposures to market risk? A trading volume analysis, SSRN Electronic Library.

Marino, Stephen P. and Renee D. Marino, 1994, An empirical study of recent securities class action settlements involving accountants, *Securities Regulation Law Journal* 22, 115-74.

Michaely, Roni, Richard H. Thaler and Kent L. Womack, 1995, Price reactions to dividend initiations and omissions: overreaction or drift?" *Journal of Finance* 50, 573-608.

Muelbroek, Lisa K., 1992, An empirical analysis of illegal insider trading, *Journal of Finance* 47, 5, 1661-1699.

Patell, James M., 1976, Corporate forecasts of earnings per share and stock price behavior: empirical tests, *Journal of Accounting Research* 14, 2, 246-274.

Pritchard, A.C., 1999, Markets as monitors: a proposal to replace class actions with exchanges as securities fraud enforcers, *Virginia Law Review*, September 1999.

Scholes, Myron and Joseph T. Williams, 1977, Estimating beta's from nonsynchronous data, *Journal of Financial Economics* 5, 3, 309-27.

Stephens, S. S. and Scott Beasley, 1998, Implications of corporate litigation outcomes on shareholder wealth, Working paper, University of South Florida.

Strahan, P.E., 1998, Securities class actions, corporate governance and managerial agency problems, Working paper, Federal Reserve Bank Of New York, July.

The Economist, March 24, 2001, The People v America Inc, 63-64.

Wise, Daniel, 2000, $3.1 billion pact sets record for securities fraud, *New York Law Journal*, August 22, 1.

Table 0 A
Estimation Period Statistics

This table breaks the estimation period data into quintiles to facilitate examination of the structure of the pre estimation data. The estimation period was taken as –300 to –40 days before the fraud event (not the class event). This method was used to avoid the contamination of the fraud event in the data. Both OLS results and Scholes-Williams statistics are shown.

----------Market Model, Method=OLS, Index Weight=Value ----------

Quintile	Alpha	Beta	Mean daily return	Market model residual	Residual standard deviation	Obs.
1st	-0.0033	0.2866	-0.0024	0.4159	0.0219	98.0
2nd	-0.0012	0.7900	-0.0003	0.4547	0.0323	98.0
3rd	-0.0002	1.1169	0.0008	0.4721	0.0389	98.0
4th	0.0010	1.5131	0.0020	0.4871	0.0466	98.0
5th	0.0044	2.3194	0.0055	0.5225	0.0699	95.0
Mean	0.0001	1.1983	0.0011	0.4701	0.0417	97.4
Median	-0.0002	1.1300	0.0008	0.4703	0.0392	

----------Market Model, Method=Scholes-Williams, Index Weight=Value ----------

Quintile	Alpha	Beta	Mean daily return	Market model residual	Residual standard deviation	Obs.
1st	-0.0040	0.1393	-0.0024	0.4229	0.0208	98.0
2nd	-0.0014	0.8581	-0.0003	0.4581	0.0308	98.0
3rd	-0.0004	1.2445	0.0008	0.4756	0.0375	98.0
4th	0.0008	1.6769	0.0020	0.4918	0.0451	98.0
5th	0.0041	2.5308	0.0055	0.5307	0.0687	95.0
Mean	-0.0002	1.2823	0.0011	0.4755	0.0404	97.4
Median	-0.00042	1.2260	0.0008	0.4777	0.0374	

Table 0 B
Fraud and Class Action Law-suit Announcements: Summary Estimation and Event Period Statistics

MM = market model estimation method. SW = Scholes Williams estimation method. MA = market adjusted estimation method. Value weighted index. A_{it} is the return at time *t1 to t2* for firm *i* (*i* = 1,…, 486). MM beta's are estimated with OLS, SW beta's are estimated with the Scholes-Williams Adjustment. F_{it} is the fraud announcement dummy, C_{it} is the class announcement dummy, $C_{it}F_{it}$ is the interation term between the class filing dummy variable and the fraud announcement dummy variable.

	Period	mean aij	Z(t1,t2)	TSAR	Days in Window	positive	N	Z GeneralizedHegde sign test	Z -McDermott test
MM	F(-300,-40) ESTIMATION PERIOD	-0.0153	-0.97	-343.3	261	287	481	0.00	-4.24
SW	F(-300,-40) ESTIMATION PERIOD	-0.0169	-0.82	-346.7	261	292	481	0.00	-4.70
MA	F(-300,-40) ESTIMATION PERIOD	-0.0178	-0.63	-224.1	261	239	481	0.00	-0.14
MM	C(-300,200)	-0.7744	-22.49	-10256.5	501	92	487	-18.34	-13.73
SW	C(-300,200)	-0.6797	-20.37	-9288.3	501	115	487	-16.76	-11.65
MA	C(-300,200)	-0.6348	-22.06	-10060.1	501	96	487	-13.23	-13.37
MM	F(-300,200)	-0.6892	-20.32	-9244.1	501	95	487	-18.07	-13.46
SW	F(-300,200)	-0.6057	-18.44	-8387.8	501	113	487	-16.95	-11.83
MA	F(-300,200)	-0.5574	-20.14	-9162.0	501	113	487	-11.69	-11.83
MM	C(-300,-40)	-0.2460	-8.67	-3097.7	261	161	486	-11.93	-7.44
SW	C(-300,-40)	-0.2010	-7.42	-2649.0	261	183	486	-10.41	-5.44
MA	C(-300,-40)	-0.1801	-8.82	-3150.8	261	172	486	-6.30	-6.44

Table Hypoth 1 A
Class Action Law-suit Announcements: Event study results

MM = market model estimation method. SW = Scholes Williams estimation method. MA = market adjusted estimation method. Value weighted index. a_{it} is the return at time *t1 to t2* for firm *i* (*i* = 1,..., 486). MM beta's are estimated with OLS, SW beta's are estimated with the Scholes-Williams Adjustment. F_{it} is the fraud announcement dummy, C_{it} is the class announcement dummy, $C_{it}F_{it}$ is the interation term between the class filing dummy variable and the fraud announcement dummy variable.

	Period	mean aij	Z(t1,t2)	TSAR	Days in Window	positive	N	Z Generalized sign test	Z Hegde-McDermott test
MM	C(-1,1)	-0.0804	-30.62	-1173.8	3	139	487	-14.00	-9.47
SW	C(-1,1)	-0.0796	-30.41	-1165.6	3	138	487	-14.63	-9.56
MA	C(-1,1)	-0.0800	-26.55	-1175.2	3	135	487	-9.70	-9.83
MM	C(-1,1) where F(-1,1) > 5 days away	-0.0375	-10.71	-345.4	3	107	487	-16.96	-12.37
SW	C(-1,1) where F(-1,1) > 5 days away	-0.0370	-10.61	-342.2	3	108	487	-17.41	-12.28
MA	C(-1,1) where F(-1,1) > 5 days away	-0.0373	-10.83	-349.3	3	103	487	-12.60	-12.73

Table 1 B
Fraud Announcements: Event study results

MM = market model estimation method. SW = Scholes Williams estimation method. MA = market adjusted estimation method. Value weighted index. A_{it} is the return at time *t1 to t2* for firm *i* (*i* = 1,…, 486). MM beta's are estimated with OLS, SW beta's are estimated with the Scholes-Williams Adjustment. F_{it} is the fraud announcement dummy, C_{it} is the class announcement dummy, $C_{it}F_{it}$ is the interation term between the class filing dummy variable and the fraud announcement dummy variable.

	Period	mean aij	Z(t1,t2)	TSAR	Days in Window	positive	N	Z Generalized sign test	Z Hegde-McDermott test
MM	F(-1,1)	-0.2991	-108.85	-4172.3	3	34	486	-23.67	-18.96
SW	F(-1,1)	-0.2988	-108.73	-4168.0	3	33	486	-24.34	-19.05
MA	F(-1,1)	-0.2984	-108.72	-4167.3	3	35	486	-18.73	-18.87
MM	F(-1) to C(1)	-0.4161	-14.66	-5675.3	306	46	487	-22.59	-17.90
SW	F(-1) to C(1)	-0.3975	-14.17	-5484.1	306	49	487	-22.88	-17.63
MA	F(-1) to C(1)	-0.3948	-14.35	-5554.1	306	42	487	-18.12	-18.26

Table 1 C
Class Action Law-suit Announcements: Summary Statistics

Pre f = pre fraud period F(-300,-40), F=F(-1,+1); FC = period from F(+2) through C(-2); C=C(-1,+1), postC=C(+2,+200); post C50=C(+50,+200). Aij = Ri-(Rm*beta+alpha) where beta and alpha are estimated in the pre F period with the Market Model approach

Period Statistics for Aij

Variable	N	Mean	Std Dev	Std Err	Median
aijpreF	479	-0.015	0.2316	0.0106	-0.00548
aijF	485	-0.297	0.2229	0.0101	-0.28538
aijFC	374	-0.109	0.4178	0.0216	-0.03980
aijC	486	-0.080	0.1921	0.0087	-0.04563
aijpostC	485	-0.138	0.8448	0.0384	-0.13660
aijpostC50	469	-0.096	0.7076	0.0327	-0.10016

TTest of Difference	N	Mean	Std Err	t Value	Pr > |t|
aijpreF - aijF	477	0.2821	0.0147	19.24	<.0001
aijpreF - aijFC	367	0.0824	0.0248	3.32	0.0010
aijpreF - aijC	478	0.0686	0.0139	4.94	<.0001
aijpreF - aijpostC	477	0.1276	0.0395	3.23	0.0013
aijpreF - aijpostC50	461	0.0845	0.0336	2.51	0.0123

Daily Statistics for Aij

Variable	N	Mean	Std Dev	Std Err	Median
aijpreF	479	-0.00027	0.0029	0.0001	-0.00004
aijF	485	-0.09941	0.0748	0.0034	-0.09513
aijFC	374	-0.00161	0.0278	0.0014	-0.00189
aijC	486	-0.02697	0.0644	0.0029	-0.01521
aijpostC	485	-0.00077	0.0084	0.0004	-0.00079
aijpostC50	469	-0.00080	0.0091	0.0004	-0.00071

TTest of Difference	N	Mean	Std Err	t Value	Pr > |t|
aijpreF - aijF	477	0.0982	0.0034	28.56	<.0001
aijpreF - aijFC	367	0.0012	0.0015	0.84	0.4014
aijpreF - aijC	478	0.0268	0.0030	9.03	<.0001
aijpreF - aijpostC	477	0.0005	0.0004	1.29	0.1967
aijpreF - aijpostC50	461	0.0005	0.0004	1.22	0.2248

Table 1 D
Class Action Law-suit Announcements: Regression Results

Regression results for the model $R_{it} = a_i + b_i R_{mt} + \lambda_i F_{it} + \delta_i C_{it} + \gamma_i C_{it}F_{it} + \eta CAP_{it} + \phi LIQ_{it} + \varepsilon_{it}$. Where R_{it} is the return at time t for firm i (i = 1,..., 486). a_i and b_i are the standard market model estimates from the pre-estimation period. a_i and b_i are estimated with either OLS or with the Scholes-Williams Adjustment. R_{mt} is the market's daily lognormal return. F_{it} is the fraud announcement dummy, C_{it} is the class announcement dummy, C_iF_i is the interation term between the class filing dummy variable and the fraud announcement dummy variable. CAP_{it} is the log of (1+Capitalisation) and LIQ_{it} is the log of (1+trading volume) for firm i at time t

Market Model method = OLS

Variable	Parameter Estimate	Standard Error	T for H0:	Prob>|T|	TypeIII SS	F Value	Pr > F
a_i	0.2581	0.0213	12.1000	0.0001	0.4194	194.76	0.0001
b_i *MM* R_{mt}	0.8590	0.0077	110.9350	0.0001	26.5163	12312.48	0.0001
$\lambda_i F_{it}$	-0.0938	0.0013	-72.3650	0.0001	6.5496	3041.20	0.0001
$\delta_i C_{it}$	-0.0128	0.0013	-9.9370	0.0001	0.6010	279.09	0.0001
$\gamma_i C_{it}F_{it}$	-0.0448	0.0042	-10.6170	0.0001	0.0031	1.44	0.2304
ηCAP_{it}	-0.0005	0.0000	-11.8330	0.0001	0.4433	205.85	0.0001
ϕLIQ_{it}	0.0005	0.0000	12.5710	0.0001	0.2476	114.99	0.0001

Number of observations in data set = 422941, R-Square 0.044430

Market Model method = Scholes Williams Adjustment

Variable	Parameter Estimate	Standard Error	T for H0:	Prob>|T|	TypeIII SS	F Value	Pr > F
ai	0.2840	0.0214	13.2990	0.0001	0.4948	229.18	0.0001
b_i *SW* R_{mt}	0.7286	0.0069	106.0560	0.0001	24.296	11254.20	0.0001
$\lambda_i F_{it}$	-0.0939	0.0013	-72.4140	0.0001	6.5667	3041.76	0.0001
$\delta_i C_{it}$	-0.0129	0.0013	-9.9490	0.0001	0.6012	278.49	0.0001
$\gamma_i C_{it}F_{it}$	-0.0447	0.0042	-10.5910	0.0001	0.0039	1.79	0.1811
ηCAP_{it}	-0.0005	0.0000	-12.0360	0.0001	0.4670	216.31	0.0001
ϕLIQ_{it}	0.0005	0.0000	12.9330	0.0001	0.2471	114.45	0.0001

Number of observations in data set = 422941, R-Square 0.042101

Table Hypo 2 A
Price Drift Before and After The Fraud and Class Events

MM = market model estimation method. SW = Scholes Williams estimation method. MA = market adjusted estimation method. Value weighted index. A_{it} is the return at time *t1 to t2* for firm *i* (i = 1,…, 486). MM beta's are estimated with OLS, SW beta's are estimated with the Scholes-Williams Adjustment. F_{it} is the fraud announcement dummy, C_{it} is the class announcement dummy, C_iF_{it} is the interation term between the class filing dummy variable and the fraud announcement dummy variable.

	Period	mean aij	Z(t1,t2)	TSAR	Days in Window	positive	N	Z Generalized sign test	Z Hegde-McDermott test
MM	C(-20,-2)	-0.2045	-29.57	-2852.5	19	117	487	-16.03	-11.46
SW	C(-20,-2)	-0.2002	-29.11	-2807.9	19	117	487	-16.57	-11.46
MA	C(-20,-2)	-0.1974	-29.23	-2820.0	19	118	487	-11.24	-11.37
MM	C(2,30)	-0.0545	-4.77	-560.0	29	204	486	-7.95	-3.54
SW	C(2,30)	-0.0494	-4.19	-492.3	29	207	486	-8.18	-3.27
MA	C(2,30)	-0.0451	-4.53	-531.9	29	206	486	-3.22	-3.36
MM	C(31,200)	-0.0941	-5.44	-1386.0	170	208	475	-7.05	-2.71
SW	C(31,200)	-0.0606	-4.12	-1049.1	170	225	475	-5.95	-1.15
MA	C(31,200)	-0.0430	-4.70	-1198.9	170	205	475	-2.85	-2.98

Table 2 LT price impacts –
Post Event Period Multivariate Test of Post Event Drift

Model and Period

Dep var: Post CAR

	Market Model			
	(+2,+200)		**(+2,+20)**	
	Parameter		Parameter	
Variable	Estimate	t Value	Estimate	t Value
Intercept	0.0992	2.10 *	-0.0768	-5.26 ***
$BCAR_i$	0.4458	8.25 ***	0.0373	2.22 **
Capitalisation	-0.0186	-5.72 ***	0.0060	6.00 ***
Prior performance (to F)	-0.2308	-30.66 ***	-0.1228	-52.63 ***
Insider trading occurred	0.0666	5.73 ***	0.0457	12.66 ***
GAAP violation	0.0426	4.08 ***	0.0049	1.51
Purchase method accounting	-0.5155	-15.15 ***	-0.1468	-13.82 ***
Acquisition	-0.2640	-17.51 ***	-0.1304	-28.35 ***
Fraud relates to false prospects	0.0904	6.61 ***	0.0030	0.70
SEO	0.0772	5.36 ***	-0.0528	-11.99 ***
Dollar volume	0.0147	17.65 ***	-0.0039	-15.21 ***
RD (Reform Act dummy)	-0.0788	-3.19 ***	0.0021	0.27
RD*BCAR	0.0332	0.61	0.0247	1.45
R-Square	0.189		0.176	
Adj R-Sq	0.189		0.175	

Table 3 A
Trading Volumes In The Post Suit Period – Univariate Test.

Tv=trading volume=adjusted volume per day / adjusted shares outstanding. Mean TVs are reported. Paired T-tests are used. Five periods are measured. Pre F = pre Fraud event = F(-300,-40), F=F(-1,1), FC=F(+2) through C(-2), C=C(-1,1), postC=C(+2,+200), postC50=C(+50,+200). BAS=ask-bid/ask (if ask=0 then delete)

A Statistics for Trading volume (TV)

Variable	N	Mean	Std Dev	Std Err	Median	Proportion of firms with a rise in TV
tvpref	479	0.0132	0.0131	0.0006	0.010107	
tvf	486	0.0906	0.1060	0.0048	0.060303	442 (92.2%)
tvfc	374	0.0212	0.0248	0.0013	0.013527	235 (62.8%)
tvc	487	0.0362	0.0656	0.0030	0.013835	292 (60.9%)
tvpostc	486	0.0132	0.0361	0.0016	0.008800	214 (44.6%)
tvpostc50	470	0.0130	0.0491	0.0023	0.007872	189 (40.3%)

Difference	Difference	DF	t Value	Pr > |t|
tvpref - tvf	-0.077	477	-16.56	<.0001
tvpref - tvfc	-0.008	366	-6.45	<.0001
tvpref - tvc	-0.024	478	-8.06	<.0001
tvpref - tvpostc	-0.0002	477	-0.09	0.9267
tvpref - tvpostc50	0.0002	461	0.12	0.9080

B Statistics for Adjusted volume

Variable	N	Mean	Std Dev	Std Err	Median	Proportion of firms with a rise in adjvol
adjvolpref	479	623,066	2,510,000	114,476	188,552	
adjvolf	486	3,450,000	8,030,000	364,456	1,228,359	410 (85.6%)
adjvolfc	374	1,120,000	3,140,000	162,234	252,119	200 (53.4%)
adjvolc	487	1,630,000	4,010,000	181,643	309,226	298 (62.2%)
adjvolpostc	486	675,441	1,850,000	83,800	194,206	245 (51.1%)
adjvolpostc50	470	655,873	1,790,000	82,369	192,780	234 (49.7%)

Difference	Difference	DF	t Value	Pr > |t|
adjvolpref - adjvolf	-286E4	477	-9.33	<.0001
adjvolpref - adjvolfc	-465E3	366	-5.19	<.000
adjvolpref - adjvolc	-104E4	478	-6.64	<.0001
adjvolpref - adjvolpostc	-61627	477	-1.19	0.2359
adjvolpref - adjvolpostc50	-24166	461	-0.42	0.6783

C Statistics for bid ask spread (BAS)

Variable	N	Mean	Std Dev	Std Err	Median	Proportion of firms with a rise in BAS
baspref	355	0.0229	0.0205	0.0011	0.01789	
basf	351	0.0287	0.0383	0.0020	0.01722	179 (51.0%)
basfc	276	0.0336	0.035	0.0021	0.02376	159 (57.6%)
basc	350	0.0337	0.0444	0.0024	0.02164	195 (55.7%)
baspostc	351	0.0392	0.0513	0.0027	0.02577	212 (60.4%)
baspostc50	337	0.0360	0.0451	0.0025	0.02437	198 (58.7%)

Difference	Difference	DF	t Value	Pr > |t|
baspref - basf	-0.005	342	-3.30	0.0011
baspref - basfc	-0.009	268	-4.96	<.0001
baspref - basc	-0.010	341	-5.52	<.0001
baspref - baspostc	-0.016	342	-6.78	<.0001
baspref - baspostc50	-0.014	328	-6.58	<.0001

Table Hypo 3 B - Multivariate simultaneous equation tests of Trading Volume and Bid-Ask Spread

A simultaneous equation estimation is used using the PROC SYSLIN Procedure, using Ordinary Least Squares estimation. The values in this table are based on average daily amounts. BAS = (Ask-Bid)/Ask; TV = Shares Traded / Shares Outstanding.

Dependent Variable: **Bid - Ask spread**

Period	PRE F		F		FC		C		POST C	
Var	Parameter Estimate	t-Value	Parameter Estimate	t-Value	Parameter Estimate	t-Value	Parameter Estimate	t-Value	Parameter Estimate	t-Value
Intercept	0.02922	25.32***								
TV	-0.4134	-81.01***	-0.07509	-7.73***	-0.60410	-32.73***	-0.11310	-5.66***	0.1239	19.35***
Price	-0.0001	-42.73***	-0.00055	-6.41***	-0.00098	-39.58***	-0.00074	-6.85***	-0.0006	-64.69***
Std Dev	1.0900	158.17***	0.262371	2.15**	0.26849	6.76***	0.447580	2.93***	0.1917	10.69***
F	0		0.043482	21.81***	0		0		0	
F-C	0		0		0.02537	122.11***	0		0	
C	0		0.007964	1.92**	0		0.045621	21.36***	0	
D	0		0		0		0		0.03773	179.94***
Dtv	0		0		0		0		NA	
Adj R-Sq	0.34645		0.12376		0.20094		0.09602		0.07995	

Dependent Variable: **Trading Volume**

Period	PRE F		F		FC		C		POST C	
Var	Parameter Estimate	t-Value	Parameter Estimate	t-Value	Parameter Estimate	t-Value	Parameter Estimate	t-Value	Parameter Estimate	t-Value
Intercept	0.02105	99.17								
BAS	-0.24646	-78.37***	-0.87710	-7.54***	-0.13450	-39.37***	-0.2776	-5.08***	0.05813	20.19***
marketvolume	-76E-14	-4.58***	2.83E-11	2.60***	2.82E-12	10.46***	3.2E-11	5.27***	3.9E-12	17.09***
CAP	-296E-12	-11.73***	-3.42E-9	0.70	-14E-11	-2.71***	-1.12E-9	-0.70	5.1E-10	11.93***
Std Dev	0.446792	73.85***	0.2800	0.81	0.07545	4.32***	0.1728	0.69	0.06278	5.21***
F	0		0.1024	7.03***	0		0		0	
F-C	0		0		0.00800	42.15***	0		0	
C	0		0.0459	3.24*	0		0.01260	1.54*	0	
D	0		0		0		0		0.00658	18.89***
Dbas	0		0		0		0		NA	
Adj R-Sq	0.1189		0.0922		0.11622		0.0642		0.0133	

*** = 1% level,
** = 5% level,
* = 10% level

Table 4 A – Univariate tests of Three risk measures

These are univariate test results for the C event and the F event. Three measures of risk are made for the pre-event F(-200, -1) and the post-event C(1,200) or F(1,200) periods. These risk measures are: total risk (VarC - measured with variance of firm$_i$ daily stock returns); beta – measured with period beta; systematic risk (syst - measured with beta squared* var mkt – see Shanta's note); unsystematic risk (unsys - measured: total risk minussystematic risk). Varmkt is measured by way of control.

The TTEST Procedure **Class ACTION** - Statistics

Variable	period	N	Mean	Std Dev	Minimum	Maximum
VarC	pre C event period	486	0.0034	0.0085	0.0001	0.1805
VarC	post C event period	486	0.0064	0.021956E-7		0.3925
VarC	Diff (1-2)		-0.0030	0.0166		
beta	pre C event period	486	1.1471	0.7664	-1.685	4.7357
beta	post C event period	486	0.9578	1.7489	-5.235	32.573
beta	Diff (1-2)		0.1893	1.3502		
syst	pre C event period	486	0.0002	0.000238E-10		0.0019
syst	post C event period	486	0.0002	0.002027E-9		0.0421
syst	Diff (1-2)		-97E-6	0.0014		
unsys	pre event period	486	0.0032	0.0085	0.0001	0.1805
unsys	post event period	486	0.0062	0.020242E-7		0.3505
unsys	Diff (1-2)		-0.0030	0.0155		
VARmkt	pre C event period	486	0.0001	571E-7	187E-7	0.0002
VARmkt	post C event period	486	0.0001	539E-7	136E-7	0.0003
VARmkt	Diff (1-2)		-13E-6	555E-7		

The TTEST Procedure **FRAUD EVENT**

Variable	dummy	N	Mean	Std Dev	Std Err	Minimum	Maximum
varperm	pre event period	485	0.0029	0.008	0.0004	0.0001	0.1333
varperm	post event period	485	0.0058	0.015	0.0007	0.0002	0.2558
	Diff (1-2)		-0.003	0.012			
beta	pre event period	485	1.2351	0.8755	0.0397	-3.164	5.6546
beta	post event period	485	0.9222	1.1385	0.0516	-7.61	17.598
	Diff (1-2)		0.3129	1.0156			
varmkt	pre event period	485	0.0001	444E-7	202E-8	141E-7	0.0002
varmkt	post event period	485	0.0001	522E-7	237E-8	166E-7	0.0003
	Diff (1-2)		-29E-6	484E-7			
systraw	pre event period	485	0.0001	0.0002	955E-8	0	0.0024
systraw	post event period	485	0.0002	0.0012	533E-7	87E-10	0.0244
	Diff (1-2)		-47E-6	0.0008			
unsysraw	pre event period	485	0.0028	0.008	0.0004	0	0.1333
unsysraw	post event period	485	0.0057	0.0141	0.0006	0.0002	0.2314
	Diff (1-2)		-0.0030	0.0114			

Table 4 B - Cross Sectional Betas

Cross sectional betas are estimated for each day t in the event period with the cross sectional regression $r_{it} = a_i + b_i(R_{mt}) + e_{it}$, i = 1,2,…., 486. r_{it} and R_{mt} are defined above and ε_{it} is the zero mean disturbance term. The parameter b_i provides an estimate of the portfolio beta on the t[th] day in the event period. Estimates of beta are obtained for each day over the period (-305, +200) (i.e., 505 days). Estimates of beta over periods longer than one day are obtained by averaging the individual daily cross-sectional estimates over the period, i.e., $\hat{b}_{a,b} = \sum_{t-a}^{b} \hat{b}_t / (b-a+1)$. C is the period (-1,+1) in relation to the class action suit filing. F is the period (-1,+1) in relation to the Fraud event. $C_{\text{but not F}}$ is the period (-1,+1) in relation to the class action suit filing but cases where the fraud event occurs simultaneously are omitted. PreF is the period (-300,-2) in relation to the Fraud event. Between F&C is the period, if any, between the fraud event (-1,+1) and the class action event (-1,+1). Post C is the period (+2,+200) in relation to the class action suit filing.

	Beta	se	t-score[1]
C	1.51328	0.12344	4.23***
$C_{\text{but not F}}$	1.07857	0.08339	-0.62
F	0.99742	0.16623	-1.53$
PreF period	1.13463	0.04682	0.00
Between F&C	0.98381	0.05134	-1.69*
PostC period	0.88698	0.06533	-2.77**

*** significant at .001
** significant at .01
* significant at .05
$ significant at .10

[1] compared with preF period using ave se (se is the estimate of standard deviation)

Table 5 A - Reform Act Effects - Pleading Standards

The effect of raising the pleading standard on the selection of cases

Panel A Univariate Test TTEST PROCEDURE Fraud Effect

Variable: AIJMM

H4a	N	Mean	Median	Std Dev	Std Error
Before Reform Act	88	-0.2420	-.2407	0.1593	0.0170
After Reform Act	398	-0.3080	-.2980	0.2331	0.0117

Panel B Multivariate test of pleading standard:

Parameter	Estimate	Standard Error	t Value	Pr > |t|
Intercept	-.0102529482	0.00095254	-10.76	<.0001
mkt	0.9920923789	0.01286374	77.12	<.0001
class	-.0125877444	0.00163889	-7.68	<.0001
fraud	-.0782870084	0.00377505	-20.74	<.0001
inter	-.0456098916	0.00536193	-8.51	<.0001
vol1	0.0008401644	0.00008236	10.20	<.0001
cap1	-.0000248126	0.00008990	-0.28	0.7826
prior	-.0000000514	0.00000009	-0.60	0.5463
fraud*reformact	**-.0218881105**	**0.00411807**	**-5.32**	**<.0001**

R-Square	0.0446
Adj R-Sq	0.0446
Number of observations	225482

Table 5 B – The Effect Of The Reform Act On The Time To Make The First Public Disclosure

TTEST PROCEDURE Variable: FILING LEAD

	N	Mean	Std Dev	Std Error	Minimum	Maximum
Pre Reform Act	81	-4.81481	3.8604	0.42893	-20.0000	0
Post Reform Act	353	-1.39376	4.6807	0.24913	-51.0000	0

Table 5 C - The Effect of the Reform Act's requirement for public disclosure of a Class Action Suit Filing

Univariate test: **TTEST PROCEDURE class effect**

Variable: $A_{ij}MM$

H4b	N	Mean	Median	Std Dev	Std Error	Minimum	Maximum
Before Act	88	-0.03773	-0.0504	0.116413	0.007145	-0.55629	0.18957
After Act	398	-0.08775	-0.1146	0.199496	0.005830	-0.94836	0.91040

Multivariate test: dependent variable - $A_{ij}MM$

Parameter	Estimate	Standard Error	t Value	Pr > |t|
Intercept	-.0102306991	0.00095254	-10.74	<.0001
mkt	0.9922088340	0.01286406	77.13	<.0001
class	0.0005756131	0.00367674	0.16	0.8756
fraud	-.0962921234	0.00166678	-57.77	<.0001
inter	-.0456185928	0.00536231	-8.51	<.0001
vol1	0.0008399247	0.00008237	10.20	<.0001
cap1	-.0000264130	0.00008990	-0.29	0.7689
prior	-.0000000528	0.00000009	-0.62	0.5353
class*reformact	**-.0160978390**	**0.00402469**	**-4.00**	**<.0001**

Table 6 - Test of Lawyers Actions - Filing speed

Panel A TEST of F event and filing time

The TTEST Procedure Statistics

Variable	mmfile	N	Mean	Std Dev	Std Err	Median
FRAULEAD	Large F	243	-12.48	13.627	0.8724	-7
FRAULEAD	Small F	243	-33.55	20.085	1.2911	-53*
FRAULEAD	Diff (1-2)		21.078	17.15	1.5559	

* No truncation of the fraudlead time is used in this non parametric test.

Panel B The TTEST Procedure of filing time differences pre and post the Reform Act

Variable	reformact	N	Mean	Std Dev	Std Err	Median
FRAULEAD	pre	88	-16.48	17.289	1.843	-7
FRAULEAD	post	398	-24.37	20.421	1.022	-17
FRAULEAD	Diff (1-2)		7.89	19.896	2.343	

Panel C The REG Procedure: Dep var = Fraud lead

Variable	Label	DF	Parameter Estimate	Standard Error	t Value	Pr > |t|
Intercept		1	-30.55233	5.46252	-5.59	<.0001
F effect		1	-21.38764	1.50973	-14.17	<.0001
Reform act effect		1	-8.24949	1.97104	-4.19	<.0001
avesize		1	2.01090	0.43228	4.65	<.0001

Total Obs	486
R-Square	0.3239
Adj R-Sq	0.3196