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## The Value of Shareholder Litigation Evaluated Through the Lens of Real Options

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# THE VALUE OF SHAREHOLDER LITIGATION EVALUATED THROUGH THE LENS OF REAL OPTIONS

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## ABSTRACT

Studies looking at the impact of the Private Securities Litigation Reform Act have found a mixed market reaction to the law at key events during its passage. We suggest that this is due to focusing on firms within a few industries and their quality of governance, rather than incorporating the real option aspect of securities litigation. When using a framework that is based on potential option payoffs instead, there was a very negative response to the passage of the law across all industries for firms with the highest potential payoffs, even after controlling for other factors such as governance and industry. Governance only becomes significant when the firm is overvalued, creating a positive potential payoff in litigation.

## INTRODUCTION

Securities class action litigation is a very costly event in the life of a publicly traded company. Although the news media often focus on the multi-million dollar settlements which commonly occur at the end of litigation, these damages are usually dwarfed in magnitude by the loss in market value suffered by the firm at the announcement of a securities lawsuit filing. These losses in market valuation have been estimated to range between -3.5 to -14.5% (Ferris and Pritchard, 2001; Gande and Lewis, 2009; Haslem, Hoffman and Hutton, 2013), depending on the sample and methodology used. Besides the obvious reaction of investors to such negative publicity, there may be substantial indirect costs as well due to litigation expense, loss of managerial focus and increased contracting costs as a result of reputational loss.

Cornell (1990) demonstrates that any plaintiff in litigation, regardless of the merits of the case, has a valuable real option because it imposes costs on the defendant. Even for a non-meritorious case, the defendant might have incentive to settle rather than to spend the money necessary to carry the case through to completion. Because there was a perception among the public that many shareholder suits were frivolous and an attempt to extract settlements out of firms, Congress passed the Private Securities Litigation Reform Act (PSLRA) in 1995. This act made several changes to securities litigation by reducing the potential costs to defendants. Among the changes, it reduced the amount of damages paid to plaintiffs in successful suits by specifying that firms could not be sued under the Racketeer Influenced and Corrupt Organization (RICO) Act for violations of securities law. This removed the potential of treble damages in lawsuits, while the act also made clear that only actual economic damages could be claimed. The act also changed the rules of discovery to prevent “fishing expeditions”, in which plaintiff attorneys would use the process to find the justification for their lawsuit rather

than the evidence needed to prove their case. It also changed the rules for how the lead plaintiff would be chosen in order to prevent races to the courthouse at every market downturn. Under PSLRA, preference is given to the shareholder with the most damages when selecting the lead plaintiff, rather than the shareholder who filed the first lawsuit.

Despite the beneficial impacts of these changes to potential defendant firms in securities litigation, it was not entirely clear how shareholders would react to these reforms. If you were a shareholder in a firm that was unlikely to be sued for fraud, then the prevention of spurious suits is a welcome development. Yet even for firms that were likely to be involved in a legitimate suit, it isn't clear how shareholders should rationally react to these changes. This is because securities litigation pits the interests of one subset of shareholders against the interests of the other shareholders in a firm. In the event a company issues misleading information into the market which causes their shares to be overvalued, only shareholders who purchase their shares based on that false information are eligible to sue in an attempt to recover damages. This lawsuit is directed against the firm itself, and thus it is the other shareholders in the firm who must bear the cost of any court-assessed penalties and a potentially large decline in share value.

So at the passage of the law, if you were a shareholder of a firm that might be sued, your reaction might depend on the subset of investors to which you belonged. If you believed yourself to be among the subset of shareholders who had the option to sue, then you would react negatively to the increased hurdles the reforms placed before you. However, if you were among the other shareholders who were required to bear the costs of the litigation, these reforms might be viewed positively in that they reduced these potential costs. Alternatively, the reforms might be viewed negatively by all shareholders if they felt that the reforms reduced the deterrence value of litigation and made it more likely for the management of the firm to commit a fraud in the future.

Because of this ambiguity in the predicted market response, several studies examined the market's response to the passage of PSLRA to see how shareholders would react to the reforms. In each of these studies, the authors chose to focus their analysis on the four industries with the highest incidence of securities litigation, as it seemed the most likely place to find a reaction to the reforms. Spiess and Tkac (1997) was the first paper to examine share price movements on key dates relating to the law's passage, and they document an overall positive market reaction to the reforms. Specifically, there was a positive market response when the law was passed legislatively, followed by a negative market reaction on the date President Clinton vetoed the bill, and then a positive reaction when his veto was overridden. Johnson, Kasznik and Nelson (2000) also documented a positive overall reaction for firms in these industries, particularly for those firms most likely to be sued. But they also found that for firms most likely to be targets of a meritorious suit, the market reaction was significantly negative. Both of these papers were contested by Ali and Kallapur (2001), who suggested that confounding information events around the law's passage led to a misinterpretation of the market's reaction, which was actually negative for firms in those four key industries.

Given such conflicting results, we suggest that by viewing securities litigation as effectively representing a real option, we can gain further insight as to how the market

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viewed the passage of the PSLRA. Like any option, the choice to litigate will only be exercised if the potential net payoff is likely to be positive. While industry, corporate governance, and other factors may increase the likelihood of fraud, there will be no lawsuit unless an overvaluation should result. Prior studies have failed to take this into account, and merely focusing on industries with the highest incidence of litigation demonstrates the prevalence of the viewpoint that it is industry and governance factors which are most important in explaining the market's response to the reforms. But results of these prior studies may be muted to the extent that many, if not most, firms may not truly be at risk of having plaintiffs exercise their option to sue.

Just as a financial option becomes more valuable as the underlying asset price moves deeper into the money, the value of the option to litigate will be directly related to the extent that share prices also increase. We therefore expect and document a strong relationship between the relative valuation of the firm, and how the market responded to these reforms. Shareholders of firms trading at abnormally high valuations had much more option value at risk at the time of these changes, and would thus be expected to react the most negatively to the reforms. On the other hand, the market may have already attached a low share price to firms with bad governance or other characteristics which have been found to be predictors of shareholder litigation, and thus the firm would have a very low risk of a meritorious lawsuit. In this case, you might expect a positive response to the reforms as they limit the chance of a frivolous filing, even though the firm fits the profile of a likely candidate for litigation.

We also expect that the relationship between firm valuation and the reaction to PSLRA will not be limited to only those industries with the highest incidence of securities litigation. As investors push the price of a stock to increasingly high levels based on uncertain information, the option to litigate and recover damages in the event the information proves to be fraudulent also increases in value. Rather than focusing on industries with high litigation risk, we expect that the response to the passage of PSLRA will be related to those factors that affect payoffs in litigation across all publicly traded firms.

### **SHAREHOLDER LITIGATION BACKGROUND AND REFORM**

In a securities class action lawsuit, a shareholder who purchased shares based on fraudulent information can sue to recover any losses that occur due to the share price mis-valuation caused by that false information. Of course many of the shares will have been purchased before the fraudulent information entered the market or after the truth was revealed, so those would not be eligible to sue for damages. Only a subset of investors will therefore be able to recover damages in this type of shareholder lawsuit. And unlike in the derivative lawsuit, the lawsuit is filed against the company itself, and can be filed by someone who is no longer an investor in the firm. Thus, you have another subset of investors (many of whom are no longer shareholders) suing to recover damages from both the firm and the existing shareholders without bearing any of the costs themselves.

As a response to the common perception that nuisance litigation was imposing significant costs on business, Congress introduced the PSLRA on January 4, 1995 with broad, bipartisan support for the bill, including that of President Clinton. The bill easily passed both houses of Congress with wide majorities before President Clinton surprised everyone by vetoing the bill after meeting with representatives of plaintiff attorney groups. The veto was quickly overridden, and the PSLRA was passed into law. The law includes four major changes that significantly affect the ability and incentives of shareholders to sue the firm. The first change creates a “safe harbor” for forward looking statements as long as these statements include adequate cautionary statements. These statements inform investors as to management’s opinion on the future prospects of the firm. Prior to the PSLRA, investors often claimed that they took all information literally, and relied upon it in making their decision to buy the company’s stock. This change encourages managers to release more information to investors, while making it more difficult for shareholders to use managerial announcements as the cause for a shareholder lawsuit.

Second, PSLRA delays the discovery process until after the defendant firm’s motion for dismissal. This clause prevents so called “fishing expeditions”, where investor-plaintiffs used the discovery process in order to find cause for their lawsuits. This decreases the probability that a suit will be heard, effectively decreasing the likelihood of shareholders recovering damages from the firm.

Third, PSLRA limits the amount of liability of corporations. Prior to PSLRA, firms were potentially liable up to three times the damages when sued under the RICO Act. The passage of PSLRA prevents the application of RICO statutes to securities violations, and also limits the liability of a firm to only the actual monetary damages of the investor.

Fourth, under PSLRA, the plaintiff who has the largest stake in the proceedings is given preference to become the lead plaintiff in a class action, and extra compensation to lead plaintiffs beyond their costs is prohibited. By taking preference away from the first plaintiff (and their law firm) who files, this clause was meant to eliminate the races to the courthouse following a decrease in a firm’s stock price. Collectively, the passage of PSLRA decreased both the probability of winning the litigation and the potential payoff, therefore lowering the ex-ante value of the litigation option.

### **DETERMINING THE PAYOFF OF THE OPTION TO LITIGATE**

Damages in securities litigation depend on two key elements. First is the level of overvaluation in the stock price during the time the false information was active in the market. Plaintiffs must identify when the fraud began, and when the true information was revealed to the market. The time in between these two points is called the class period, and a shareholder must have purchased their shares between these two dates to be eligible to sue for damages. However, the number of shareholders who have been damaged is unknown at the lawsuit’s filing, as is the magnitude of their actual losses. To estimate damages, it is common to estimate the level of overvaluation by taking the trading price on each day during the class period, and subtracting the average share

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price measured over a period following the revelation of true information. The daily difference is then multiplied by the volume of trade on that day, and then aggregated over all days in the class period. Thus damages would necessarily increase directly with the degree of overvaluation, and would be nonexistent if no overvaluation occurred as a result of the false information.

This initial aggregation is then adjusted to account for “in and out” trades; which are shares purchased during the class period, but sold before the revelation of the truth reduces the current value estimate of the firm. Because these shares were both bought and sold at an inflated value, these trades would not have suffered the same losses as shares that were purchased during the class period and held until the truth was revealed. While there are several papers (Bassin, 2000; Beaver and Malernee, 1990; Finnerty and Pushner, 2003; Furbush and Smith, 1994) suggesting improvements to a basic model of estimating damaged shares, most methods use an estimate of a share’s propensity to trade based on the ratio of daily volume divided by the number of the firm’s shares available for trade on that day. The basic model assumes that all tradable stocks have the same propensity for trading, so on the second day of the fraud, some of the shares purchased will come from traders who purchased the shares the day before as well as newly damaged shares.

As an example, suppose that a firm has 100,000 shares available for trade on a given day, and that 10% of those shares will trade daily. So after the first day in the class period 10,000 shares would have been purchased based on false information and be eligible to recover damages. On the second day, an additional 10,000 shares would be purchased. However, the proportional trading model would suggest that 10% of these shares would have come from the shares purchased the day before, while the remainder would have come from the pool of undamaged shares. So after two days, you would have 19,000 damaged shares: 10,000 purchased on day two, as well as the 9,000 purchased on day one still being held by the purchasers. Thus volume has a major impact on the damage estimates in shareholder litigation. Since greater trade volume would increase the estimated losses on any given day, a higher percentage of the firm’s shares trading also increases the percentage of shares that are assumed to be in and out trades, making the damage estimates from days earlier in the period much less significant compared to the level of overvaluation towards the end of the class period.

### **MEASURING THE MARKET RESPONSE TO PSLRA**

Obviously, there are many factors that make litigation more likely and it may be expected that firms with the highest likelihood of lawsuits would be the most likely to react to the changes brought about by the PSLRA. We have seen above that all of these changes appear to tilt the playing field in favor of management and decreased the likelihood of lawsuits. To the extent that shareholders incorporate the option to sue into their valuation of shares, then it is likely they would have reacted negatively to the passage of the law as it decreased the value of their option. In the past the standard set of factors that have been used to predict the likelihood of lawsuits include the industry in which the firm operates, corporate governance characteristics, market capitalization, and the skewness and variance of returns leading up to the beginning of the class period.

Prior research examining the market reaction to the passage of PSLRA focused on the four industries with the greatest litigation risk, and used probit models to estimate the likelihood of litigation for firms within those industries based on these risk factors. These likelihoods are typically then used as an explanatory variable in explaining the market response to the law. Using this approach, it was found that the average price response across all firms in these high litigation risk industries was significantly positive, although there was a decline in stock price for the subset of firms with the highest likelihood of being the target of a meritorious lawsuit.

In our opinion, such an approach is putting the cart before the horse. The option to sue will not be exercised in the absence of a positive payoff, regardless of industry, quality of corporate governance, or volatility of the stock. Far more important than these characteristics is whether the firm was trading at abnormally high levels at the time of the law's introduction. As the price of a share is pushed well above its historical valuation ratios, shareholders might have a much higher expectation of potential damages from litigation if the information on which that high valuation is predicated turns out to be false. And if the firm is trading at levels below their long-term averages, even if the company has bad governance in a high-risk industry, the option is out of the money and will not be exercised.

Therefore, we examine the market's response to the law's passage from a different perspective, one that is not based on only those firms in the highest risk industries. Instead, we measure the level of overvaluation by calculating the market-to-book ratio on the date of the law's introduction for every firm that has historical returns reported by the Center for Research in Securities Prices, and divide it by that firm's average market-to-book ratio over the five years prior to 1995. We then divide firms into quartiles based on each firm's scaled market-to-book ratio. The reason we use all firms, and not just those likely to be defendants in securities litigation, is because we want to show that the option to sue is priced into the shares of all stocks generally. Investors continuously rely on information released by management. This information cannot be known to be accurate with certainty, but as the price of the stock increases, the investor may be more willing to push values higher based on their ability to recover their losses in the event the information is not. And for many firms, the option to sue may be worthless if they are out of the money or even have a negative value if potential plaintiffs force a settlement in order to avoid a frivolous suit. But this option to sue applies to all firms. In fact, nearly every industry is represented in our sample's highest scaled valuation quartile. We are not suggesting that firms with higher relative valuations are more likely to be dishonest. What we do suggest is that investors, given the same information, are more willing to push prices to a higher level when they have the ability to recover damages than they are when that option is curtailed.

Table 1 shows the composition of firms within each quartile. Prior studies have used the market value of a firm's equity and the amount of total assets as indicators of litigation risk based on a hypothesis that these firms have deeper pockets. It might be thought that there is a significant amount of overlap between these two values and which scaled quartile firms are in. However, there is actually less correlation than one

might expect, with a coefficient of only 0.161 when measuring the correlation between the

**Table 1: Composition of Quartiles Sorted by Scaled Market to Book Ratio**

Quartile:	Lowest	Second	Third	Highest
Average Scaled M/B Ratio	0.563	0.847	1.018	1.406
Market Capitalization	621.1	1141.0	1764.2	1311.0
Assets	154.8	319.1	603.0	463.8
Turnover Percentage	0.59 %	0.45 %	0.47 %	0.54 %
Skewness	-0.128	1.077	1.294	0.609
GIM Factor	8.75	9.25	9.30	9.48
Number of Analysts	5.83	6.37	7.37	6.86
Option as a Percent of Salary	38.5 %	35.6 %	38.3 %	43.4 %
Firms in High Risk Industries	314	266	256	298
Firms in Low Risk Industries	581	628	640	597
Total Firms in Quartile	895	894	896	895

market to book ratios of firms in the sample, and that same ratio scaled by its historical average. Furthermore, if you were to sort the firms into quartiles based on their market capitalization, only 30.3% of the firms would be in the same quartile as they are when sorted based on their scaled market to book ratio. It is actually the second highest overvaluation quartile which has the largest firms as measured by total assets or market capitalization. This isn't necessarily surprising, as these firms typically trade at a higher valuations over time and it is not likely that their prices are temporarily inflated due to false information. Yet we see the most negative market reaction in the quartile which has the highest scaled valuations, rather than the quartile with the highest market capitalizations or total assets. Of the other risk factors we use in our regressions, only average skewness of returns is significantly different between the quartiles. We also sort the quartiles based on whether the firms operated in the industries with the highest risk of securities litigation. Based on these numbers, we find that while the highest overvaluation quartile has more high risk firms in it than the second or third quartiles, it is the quartile with more firms trading well below their historical average that contains the most firms from those industries. Because these firms do not have a positive expected payoff in litigation, our hypothesis would suggest that it is unlikely that they would be negatively impacted by changes in the law.

**Table 2: Abnormal Returns at Introduction of PSLRA**

Quartile:	Lowest	Second	Third	Highest
All Firms	1.76 %	0.04 %	-0.44 %	-0.62 %
(p-value)	0.000	0.860	0.008	0.000
Firms in High Risk Industries	2.08%	-0.29%	-0.50%	-0.95%
Firms in Low Risk Industries	1.59%	0.18%	-0.42%	-0.46%

This is confirmed in results displayed in Table 2. We use the four factor model of Fama and French (1993) and Carhart (1997) to estimate abnormal returns on January 4, 1995, which was the date the reforms were introduced in Congress. We focus on this



date since the reforms had strong bipartisan support and it was widely predicted that the law would be enacted. Also, this is the date that has been found to be most significant in prior studies. While not reported, we also used raw unadjusted returns as well as abnormal returns using the standard market model in our tests; the results were robust to how returns were measured, and to other key dates during the law's passage. Overall, we can observe that there was a monotonic decrease in the market's response to the introduction of PSLRA based on the level of overvaluation at that time. Firms with low expected payoffs reacted positively to the introduction of the law, while firms in the most overvalued quartile reacted the most negatively. It also is clear that this pattern spans across all industries, and is not limited to firms in industries with the highest litigation risk, although the effect was stronger in those industries. There is a difference of 2.05% between the low and high valuation quartiles made up of firms in low risk industries, while the difference is 3.03% for those same quartiles in the high risk industries. This difference in returns between the quartiles is significantly different at the one-percent level.

These results make clear the influence relative valuation had on how shareholders reacted to these reforms. Even for firms in low risk industries, changing the rules regarding how shareholders can recover damages from firms in the event of fraud had a significant impact on how willing they were to push prices above their long-term pricing ratios. This relationship raises important questions concerning the extent to which shareholder litigation encourages investors to speculate in financial markets. However, this is only a univariate sort and it does not control for other variables that have been used as predictors for shareholder litigation. As has been done in prior papers, we examine this relationship by regressing each firm's abnormal return at the introduction of the PSLRA on several factors that have been used to predict litigation in prior studies (Johnson, Kasznik and Nelson, 2000; Jones and Weingram, 1996; Kim and Skinner, 2012; McTier and Wald, 2011). These variables include (1) turnover percent, which is a measure of the stock's propensity to trade and is a key factor in estimating damages in shareholder litigation, (2) skewness, which is the skewness of returns in the year prior to the law's introduction and has been found to be a predictor of litigation risk, (3) GIM, which is the governance quality metric developed by Gompers, Ishii and Metrick (2003), with higher values being linked to weaker corporate governance, (4) analyst estimates, which is the number of outside analysts that offer earnings forecasts on the firm and has been shown in the prior literature to be an effective mechanism in restraining managerial abuse, and (5) options as a percent of salary, a factor that has been linked to higher incidence of fraud (Johnson, Ryan and Tian, 2009). We also include dummy variables that equal one when the firm operates in a high litigation risk industry.

Table 3 displays the results of regressing each firm's abnormal returns at the introduction of PSLRA on these firm-specific explanatory variables. Model one includes all firms in our sample, and it is clear that the two dominant factors in explaining the market's response to these changes were both related to the expected payoff in litigation at that point in time. Neither industry membership in one of the four high risk industries, nor quality of governance was a significant factor in predicting how investors would react to the reforms. This suggests that there is little reason to focus on high-risk

litigation industries when analyzing the impact of reforms, as it is the fact that the firm is overvalued that makes the option to litigate valuable and this is true across all industries.

**Table 3:**  
**Multivariate Analysis of Abnormal Returns at the Introduction of PSLRA**

	Model 1	Scaled Market to Book Quartiles			
		Lowest	Second	Third	Highest
Scaled M/B	<b>-0.012</b> (0.014)				
Turnover Percent	<b>+1.811</b> (0.000)	+2.443 (0.098)	+0.537 (0.601)	+1.105 (0.105)	<b>+2.251</b> (0.006)
Skewness	+0.000 (0.282)	-0.001 (0.365)	+0.000 (0.416)	+0.000 (0.874)	+0.000 (0.985)
GIM	-0.001 (0.263)	+0.000 (0.997)	+0.000 (0.715)	+0.000 (0.679)	<b>-0.003</b> (0.011)
No. Analyst Estimates	+0.000 (0.150)	+0.000 (0.707)	+0.000 (0.391)	+0.000 (0.961)	<b>+0.001</b> (0.006)
Options as % of Salary	+0.005 (0.509)	+0.010 (0.662)	+0.009 (0.454)	+0.012 (0.319)	-0.008 (0.500)
Retail	-0.006 (0.313)	+0.001 (0.978)	+0.000 (0.975)	-0.008 (0.417)	-0.018 (0.255)
Business Services	+0.004 (0.499)	+0.023 (0.340)	-0.011 (0.412)	+0.000 (0.836)	+0.001 (0.894)
Electronics	+0.008 (0.174)	+0.045 (0.151)	+0.006 (0.642)	+0.015 (0.129)	+0.001 (0.916)
Healthcare	+0.006 (0.326)	+0.013 (0.485)	+0.012 (0.297)	-0.004 (0.714)	+0.007 (0.620)
R-Squared	0.071	0.117	0.047	0.055	0.149

Next, we divide the sample into quartiles and run a similar regression model for all firms within each quartile. Because we are splitting the overall sample into quartiles based on the Scaled M/B ratio, we drop it as an explanatory variable from our model. Overall, we find that measures of corporate governance are only significant in the quartile with the highest overvaluation. In this quartile, firms that had a higher G-index score (worse governance) reacted significantly more negatively to the introduction of the law. On the other hand, firms that had more external analyst coverage, which would make it more difficult to commit a fraud, reacted significantly more positively to the reforms. Once more industry membership had no significant impact on how the market reacted to the change in rules. This again suggests the secondary nature of governance quality and industry membership when analyzing the impact of reforms to shareholder litigation. While these factors might create a fertile environment in which fraud may occur, a lawsuit will only be filed if overvaluation exists to create a positive payoff for the plaintiff. Thus, if we view litigation as a real option, it is not surprising that governance only affects the market reaction in the quartile of firms with the highest overvaluation where the option is more likely to have a positive payoff.

## CONCLUSIONS

Based on these results, we suggest that viewing class action securities lawsuits as a real option can provide further insight into how the market responded to reforms of this type of litigation. While our results are consistent with prior research documenting a positive market response, we also find that it depended on the individual characteristics of the firm. While prior papers logically used samples made up of firms in the industries with the highest incidence of litigation as the most likely place to find a response to these reforms, this isn't necessary. Instead, changing the rules of shareholder litigation affected all firms, and the firm's industry or governance quality cannot explain the cross-sectional variation of these reactions. This shouldn't be surprising, because even if it is clear that a firm committed fraud, shareholders will not sue unless there was an overvaluation creating a positive payoff to that option. Thus, it is relative valuation which is the best indicator of a firm's response to changes in shareholder litigation rules, as overvaluation is a necessary condition for a lawsuit to occur.

Viewing litigation as a real option whose value is impounded into the share price would suggest that the option becomes more valuable as the stock begins to trade at valuations higher than its long-term level. As investors begin to push the valuation to higher levels, the typical investor will have more incentive to question the validity of the information that valuation was based upon, as well as the credibility of the information's source, leading to the fact that governance and the quality of a firm's information become marginally more relevant. This is consistent with our findings, which found the change in individual firm's prices at the introduction of PSLRA to be negatively related to the relative overvaluation of each firm. And it was only in the quartile with the most extreme overvaluation that we found other risk factors, such as governance quality or analyst coverage, to be significant in explaining how the market responded to these reforms. This result is consistent with a recent paper by Walker, Turtle, Pukthuanthong, and Thiengtham (2014) who find that the decision to enter into shareholder litigation following an IPO is more related to the potential damages involved than it is to other factors previously hypothesized to be good predictors, such as underpricing and corporate governance. Overall, our results suggest that a 0.10 increase in your scaled market to book ratio is associated with an additional twelve basis point loss in market value at the introduction of the Private Securities Litigation Reform Act.

Viewing the market reaction through a real options perspective changes how we view the market response to these reforms. If prices were efficient at the time and reflected the relative litigation risk of each firm in those industries, prior research would suggest that a negative market response to the reforms arose from the investors viewing the right to sue as a valuable deterrent to managerial fraud which was being weakened by the reforms, with higher future anticipated costs as the result. Conversely, a positive response would indicate that investors viewed the reduction in potential costs from frivolous litigation to be worth more than the reduction in deterrence value.

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In contrast, by showing that there was a market reaction across all publicly traded firms, and that it was significantly related to their valuations relative to historical levels, our results suggest that investors rely on litigation when they begin to push stock values beyond their long-term levels, in which case there will arise a greater potential for speculative bubbles in markets. If true, then these reforms not only reduced the cost of frivolous litigation, but it also had the secondary benefit of reducing speculation in the equity market and bringing prices back toward their long-term norm.

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