Corporate Litigation and Board Restructuring[1]

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Abstract

This paper examines restructuring of boards of directors following lawsuit filings against US publicly-listed companies. Litigation can stimulate increases in the proportion of outside directors, due to agency concerns (to strengthen board monitoring) or legitimacy concerns (to restore corporate reputations). Following lawsuit filings, empirical evidence indicates increased board independence and a lower rate of increase in board size, especially following securities and contractual lawsuits. Increased independence is significantly determined by economic magnitudes, but not legal merits, of lawsuits. Uniquely, this paper examines responses to a broad spectrum of lawsuits, providing new insights into the factors motivating changes to board composition.

Keywords litigation, board of directors restructuring, corporate governance, lawsuits.

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1   Introduction

Corporate litigation has long been recognized to impose significant impacts upon public companies, the announcement of litigation filings often causing significant negative stock market reactions, leading to immediate and considerable losses of shareholders' wealth (Ellert, 1976; Wier, 1983; Feroz, Park & Pastena, 1991; Bizjak & Coles, 1995; Bhagat, Bizjak & Coles, 1998; Koku, Qureshi & Akhigbe, 2001; Griffin, Grundfest & Perino, 2004; Koku, 2006; Koku & Qureshi, 2006; Bhattacharya, Galpin & Haslem, 2007; Gande & Lewis, 2009). This decline in market valuation is attributable to two factors: First, the significant legal costs associated with defending the lawsuits, and the risk of becoming liable to considerable claims for compensation, may adversely affect the economic valuation of the company, causing he capital markets to reassess not only the current valuation of the company, but also its future valuation in light of the ability of management. Second, when the litigation involves issues of social or political sensitivity, such as environmental lawsuits where the costs are externalized, or securities lawsuits where fraudulent conducts are alleged, the company's reputational capital may be jeopardized, posing a potential threat to its social legitimacy and thus adversely affecting its future economic success.

Given these significant consequences associated with corporate litigation, the boards of directors of the sued companies may have incentives to engage in internal changes, seeking to improve their monitoring effectiveness as a result of its encounter with lawsuits. If the filing of a lawsuit is considered to reflect poorly upon the prior decision-making process within the company, it may give rise to incentives for the board, which represents the shareholders' interests, to seek to enhance its monitoring functions to ensure that similar incidents do not occur in the future. If the allegations made in the lawsuits are such that they adversely affect

the reputation of the sued companies, the boards would have additional incentives to seek changes to indicate to the public that more stringent monitoring will be in place to check the decisions of management in the future.

Prior literature indicates that boards which are dominated by independent directors (Baysinger & Butler, 1985; Weisbach, 1988; Rosenstein & Wyatt, 1990; Byrd & Hickman, 1992; Brickley, Coles & Terry, 1994; Cotter, Shivdasani & Zenner, 1997) tend to be more effective in performing their monitoring roles. From an agency perspective, a board of directors may have incentives to engage in these changes following corporate litigation filings, by increasing the proportion of independent directors, in order to improve its future monitoring effectiveness to fulfill its duty to shareholders. Additionally, from a legitimacy perspective, the board may be motivated to increase the proportion of independent directors, in order to enhance the perceived independence or integrity of the board of directors.

The changes to the composition of the board of directors have been investigated in a post-litigation context, however, only in the wake of securities fraud litigation and other fraud allegations (Romano, 1991; Livingston, 1996; Strahan, 1998; Agrawal, Jaffe & Karpoff, 1999; Beneish, 1999; Niehaus & Roth, 1999; Arthaud-Day et al., 2006; Desai, Hogan & Wilkins, 2006; Persons, 2006; Agrawal & Cooper, 2007; Ferris et al., 2007; Fich & Shivdasani, 2007; Krishna-Moorthy, 2011; Correia & Klausner, 2012).

Distinguishable from prior research, this study is the first to examine a wide range of different types of corporate lawsuits, including environmental lawsuits, securities violations,

antitrust lawsuits, intellectual property infringements, and contractual disputes, [3] by employing a sample of all such lawsuits filed against the Standard & Poor's 1,500 companies in the US Federal Courts from 2000 through 2007. As each category of lawsuits potentially gives rise to vastly different agency and legitimacy incentives, the diverse spectrum of litigation allows an investigation into the factors and motivations underpinning the boards' decisions to seek changes in their composition, as evidenced by their differing responses when initiating corporate governance changes when confronted with allegations of different natures.

Results from the multivariate analysis [4] provide evidence in support of the hypothesized changes. After controlling for changes in firm size and performance, financial leverage, and time-specific variations, the filing of corporate litigation is significantly associated with an increase in the proportion of independent directors on the board, as predicted by the hypothesis, and is negatively associated with the subsequent change in board size. These results remain robust after employing the Heckman Selection Model to control for potential selection bias arising from the different likelihood of litigation faced by sample companies.

Furthermore, empirical results from a detailed breakdown of the sued companies' responses to different types of lawsuits provide intriguing insights into the attitudes of public

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[3] These lawsuits are chosen on the basis of their significant impacts upon the defendant companies. Securities lawsuits are selected for their explicit role as a corporate governance mechanism (Jones, 1980; Romano, 1991; Mohan, 2004; Talley & Johnsen, 2004; Reisberg, 2007) and due to the seriousness of the allegations which often impose reputational consequences for the sued companies (Feroz, Park & Pastena, 1991). Breaches of contract arise frequently in the context of business operation, and have potentially large financial impacts upon the sued companies. Similarly, antitrust litigation (Bhagat, Brickley & Coles, 1994) and intellectual property disputes (including patents and trademark infringements) are included, due to their significant economic consequences upon the operation and financial position of the sued corporations. Finally, environmental disputes are capable of inflicting extremely adverse effects on the company, both due to the significant quantity of potential compensation and the reputational damage (as demonstrated in the anecdotal example of the recent BP oil spill).

[4] In all OLS regressions employed in this study, the White heteroskedasticity-consistent standard errors are used to ensure the robustness of the results.

corporations towards allegations of different natures. First, consistent with expectation, securities litigation is followed by the most significant increase in the proportion of independent directors on the board, and is also negatively associated with the change in board size. Securities lawsuits represent a direct manifestation of the principal-agent conflict within a corporation; consequently, there are strong incentives to improve the independence of the board to provide better monitoring of managerial actions in the future. In addition, both environmental lawsuits and contractual lawsuits are also negatively associated with the change in board size, indicating that directors are more willing to depart or less willing to join the boards of those companies following allegations that may adversely affect the companies' reputations.

Furthermore, this study is the first to investigate the roles of the economic magnitudes and legal merits of the various types of litigation in determining the subsequent changes in board composition. These investigations seek to provide significant insights into corporate attitudes to assessing the severity of lawsuits. Empirical evidence indicates that, whilst the merits of the lawsuits, as proxied by their outcomes, are not statistically significant in predicting the changes in board composition, the amounts of the monetary demands for compensation are significant, as larger lawsuits tend to be followed by a greater increase in board independence. These results indicate that public companies, in acting to initiate changes in board composition, are motivated by legitimacy concerns, to signal the improved independence and integrity of the board to the general public.

Overall, this study produces evidence that the boards of public companies do react to corporate litigation, by undertaking changes to the composition of the boards, depending on their assessments of the nature and information value of different lawsuit filings. Board of

directors, acting on behalf of the shareholders, are most sensitive to securities lawsuits in which shareholders are the alleged victims.

2   Literature Review and Hypothesis Development

2.1   Literature Review

Prior studies have examined changes in the composition of the accused company's board of directors following allegations of fraud. Romano (1991), by using a sample of 535 randomly selected firms facing securities derivative litigation, documents that in 9 cases, lawsuit settlements led to changes in board composition by an increase in the proportion of independent directors, 'conceivably obtaining better monitors of management' (Romano, 1991, p. 63). On the other hand, Agrawal, Jaffe and Karpoff (1999), who examine different categories of fraud reported in the *Wall Street Journal* between 1981 and 1992, find no evidence of any increase in the turnover of independent directors following fraud events.

Farber (2005), using a sample of 87 firms which committed securities fraud during the 1982-2000 period, shows an increase in the proportion of outside directors during the subsequent three-year period. Similarly, Desai, Hogan, and Wilkins (2006) document that, following accounting restatements between 1997 and 1998, the boards of the accused companies did take actions to improve the governance of the companies, by increasing the proportion of independent directors over the following two year period. Furthermore, Ferris et al. (2007), investigating securities derivative lawsuits filed between 1982 and 1994, find that during the three years following the lawsuits, although board size does not change significantly, there is a significant increase in the proportion of outside directors.

Cheng et al. (2010) examine securities class actions brought against companies between 1997 and 2004, and find that the proportion of independent directors increases within the subsequent three-year period following the litigation, but only if the class action is led by an institutional, rather than individual, investor. Krishna-Moorthy (2011) finds an increase in the proportion of independent directors following allegations of fraud against shareholders, but not following fraud against the US Government (under the *False Claims Act*).

The overall evidence provided by prior literature indicates that the boards of directors of public companies tend to undergo significant changes in their composition, by an increase in the proportion of independent directors, following securities litigation, but not other types of fraud allegations. Securities lawsuits give rise to significant incentives for the boards of the sued companies to initiate restructuring in their board composition for obvious reasons: securities lawsuits constitute a manifestation of the direct manager-shareholder conflict arising from the corporations' agency relationships, and the boards, responsible for representing the shareholders' interests, are motivated to strengthen the effectiveness of their future independent monitoring of management, by appointing additional outsiders onto the boards.

However, the body of prior literature investigating post-litigation change in board composition is limited to the context of securities fraud (Romano, 1991; Farber, 2005; Desai, Hogan & Wilkins, 2006; Ferris et al., 2007; Cheng et al., 2010; Krishna-Moorthy, 2011) and other fraud allegations (Agrawal, Jaffe & Karpoff, 1999; Krishna-Moorthy, 2011). Distinguishable from prior research, this paper contributes to literature from three novel perspectives. First, it investigates the change in board composition following a broad range of

different types of corporate litigation, extending the literature beyond its traditional focus upon securities fraud and other fraud allegations, and into the realm of other corporate litigation. Second, the examination of the diverse range of corporate litigation produces evidence of the way in which corporations differentiate between allegations of different natures, shedding light on the incentives which motivate the boards of the sued companies to engage in corporate governance restructuring. Third, this paper is the first to examine the lawsuit-specific characteristics of a broad range of litigation, including the roles of their economic magnitudes and legal merits in predicting the subsequent change in board composition. The results from this investigation provide significant insights into the factors motivating the changes in board composition.

2.2   *Hypothesis Development*

Prior research has seldom investigated corporate governance restructuring following the filings of non-fraud corporate litigation. It is proposed that the examination of a broad range of corporate litigation is warranted, because non-fraud lawsuits may also give rise to significant motivations for the board to initiate corporate governance restructuring within the sued companies.

First, the board of directors of a public company serves to mitigate the agency problem arising from the manage-shareholder relationship (Jensen & Meckling, 1976; Fama & Jensen, 1983). Prior studies have abundantly documented the important role of the board of directors in corporate governance (Baysinger & Butler, 1985; Weisbach, 1988; Kaplan & Reishus, 1990; Rosenstein & Wyatt, 1990; Byrd & Hickman, 1992; Brickley, Coles & Terry, 1994; Cotter, Shivdasani & Zenner, 1997; Sharfman, Toll & Szydlowski, 2009). The board

constitutes an effective mechanism to monitor management behavior (Cheng et al., 2010). Coffee (1991) argues that strengthening the board's monitoring is an effective way of disciplining management and preventing future corporate misbehaviors. Furthermore, according to Cheng et al. (2010), changes in board composition may also occur as a result of the defendant firms' increased awareness of the importance of corporate governance, in light of the large financial consequences that could potentially arise from the litigation. Consequently, a corporate lawsuit filed against a company, which reflects prior managerial decision-making which has exposed the company to potential legal liabilities, may give rise to agency incentives to initiate changes in the composition of the board of directors, with the aim of improving its future effectiveness in providing independent monitoring of management.

Second, boards of directors can also be motivated by legitimacy concerns to instigate changes in their composition. A corporation operates in a society on the basis of an express or implied social contract (Shocker & Sethi, 1974; Patten, 1991, 1992; Brown & Deegan, 1998; Wilmshurst & Frost, 2000; Deegan, Rankin & Tobin, 2002). The terms of the social contract are captured, in part, in the laws regulating corporations (Preston & Post, 1975; Post, 1978), which are adapted through time to reflect public opinions in relation to the expected behaviors of corporations (Tinker & Neimark, 1987). Therefore, the filing of a lawsuit against a company, alleging the breach of a law, may also indicate the company's breach of the implied terms of the social contract, causing adverse publicity and reputational impacts which may threaten the company's social legitimacy.

The legitimacy incentives are particularly potent in those cases where the legal allegations involve issues of social or politically sensitivity (for instance, environmental lawsuits where

the alleged detriment is imposed on society at large). The adverse reputation arising from the litigation may give rise to legitimacy incentives for the boards of the sued companies to undertake measures, by instigating changes within the board composition such as appointing more independent directors onto the board, to fortify the perception of strong independent monitoring of the company. Romano (1991) observes that sometimes the changes may be merely 'cosmetic', as an attempt to signal to the public better independent monitoring within the companies, rather than actually improving the monitoring effectiveness of the boards. Consequently, when a lawsuit gives rise to reputational damage, the company may consider board restructuring desirable, as it signals to the public the company's ability and commitment to change.

According to prior studies, board independence and size are emphasized as determinants of the effectiveness of the board as a corporate governance mechanism. Prior studies suggest that a greater proportion of outside representation on the board strengthens its corporate governance functions, by providing independent monitoring of management actions (Baysinger & Butler, 1985; Weisbach, 1988; Rosenstein & Wyatt, 1990; Byrd & Hickman, 1992; Brickley, Coles & Terry, 1994; Cotter, Shivdasani & Zenner, 1997; Agrawal & Chadha, 2005). The first hypothesis is specified accordingly:

H(1): Companies which have encountered litigation, on average, are more likely to experience an increase in the proportion of independent directors on the board, *ceteris paribus*.

Amongst prior researchers, it has been argued that boards with fewer directors tend to be more effective, due to the reduced level of bureaucracy (Yermack, 1996; Eisenberg,

Sundgren & Wells, 1998). In contrast, some researchers find evidence that the relationship between board size and governing effectiveness depends on firm size (Boone et al., 2007) and structure (Denis & Sarin, 1999; Raheja, 2005; Coles, Daniel & Naveen, 2008). An increase in the proportion of independent directors can be achieved either by the addition of new independent directors, or by the removal of existing inside directors. Therefore, an increase in the percentage of independent directors is not necessarily accompanied by an increase in board size. For instance, a board would experience an increase in independence but a reduction in the number of directors, if an executive director departs. Therefore, in this study, a non-directional hypothesis is specified in relation to the change in board size:

H(2): Companies which have encountered litigation, on average, are more likely to experience changes in the number of directors on the board, *ceteris paribus*.

Furthermore, this study investigates whether public companies respond differently to lawsuits of different natures in undergoing changes in board composition. No prior study has examined whether different lawsuits tend to lead to different board restructuring consequences within the sued companies. Although Krishna-Moorthy (2011) compares fraud committed against shareholders versus fraud against the US Government, the scope of his study is limited to these two types of fraud allegations, rather than a broad range of corporate lawsuits. This study addresses this gap in the literature by expanding the empirical investigation, through the examination of a wider variety of litigation, including environmental lawsuits, securities violations, antitrust disputes, infringements of intellectual property (patent and trademark lawsuits), and contractual lawsuits, each of which can lead to potential incentives for shareholders to engage in corporate governance restructuring.

By examining a broad range of corporate litigation, each type giving rise to different degrees of agency and legitimacy incentives on the part of the boards to initiate changes in board composition, this study seeks to provide evidence as to how boards of sued companies differentiate between allegations of different natures. These different responses can potentially provide evidence as to which incentives constitute the dominant motivation in the boards' decisions to initiate changes in their composition. Therefore, by examining whether and how public companies' responses to litigation differ across various types of allegations, this study provides important insights into corporate attitudes and perceptions of lawsuits of different natures.

Companies are expected to differentiate between various categories of allegations in determining whether subsequent corporate governance restructuring is justified. In determining which types of lawsuits are expected to trigger the most severe responses from within the sued companies, we draw on studies conducted by Bhagat, Bizjak and Coles (1998) and Koku, Qureshi and Akhigbe (2001), which show that capital market participants react more adversely to the announcement of lawsuits involving politically sensitive issues (such as environmental violations or breaches of securities laws), compared to more routine commercial litigation such as antitrust lawsuits or breach of contract.

Securities lawsuits constitute a direct manifestation of the manager-shareholder agency conflict, thus giving rise to considerable agency incentives on the part of the board, which represents the shareholders' interests, to seek to improve its future monitoring effectiveness by increasing the proportion of outside directors. In addition, when allegations of securities fraud give rise to negative reputational consequences for the sued companies which might threaten their social legitimacy, the boards have the additional legitimacy incentives to

initiate changes to their structure which are perceived as desirable (for instance, by increasing its independence), in order to restore public faith in the companies' corporate governance systems. Similarly, environmental lawsuits can also be associated with significant legitimacy incentives for the boards to initiate changes in their composition. Environmental allegations attract political scrutiny and may give rise to substantial negative publicity, posing a potential threat to the social legitimacy of the defendant companies. Therefore considerable legitimacy incentives are expected to arise from environmental lawsuits to motivate the boards to instigate changes to their composition. According to prior literature (Bhagat, Bizjak & Coles, 1998), in contrast with securities or environmental litigation, lawsuits which are relatively routine in business operations, such as antitrust lawsuits and intellectual property infringements, are not associated with significant reputational impact, as represented by adverse capital market reactions. The reputational impact associated with contractual lawsuits is slightly different. On the one hand, due to their routine commercial nature (Bhagat, Bizjak & Coles, 1998), contractual lawsuits rarely give rise to bad publicity from a social perspective. However, contractual disputes can result in disturbance to the sued companies' existing contractual relationships, thus creating adverse reputation, within the restricted circle of potential contractual partners (such as suppliers and customers). Based on these *a priori* expectations, the research hypothesis is specified as follows:

H(3A): The filings of lawsuits which give rise to the strongest agency incentives (securities, antitrust, and IP lawsuits) are associated with a higher likelihood of subsequent increase in board independence, *ceteris paribus*.

H(3B): The filings of lawsuits which give rise to the strongest legitimacy incentives (securities, environmental, and contractual lawsuits) are associated with a higher likelihood of subsequent increase in board independence, *ceteris paribus*.

3   Research Design

3.1   Sample Construction

The sample of corporate litigation filed against US public companies is collected from the Public Access to Court Electronic Records (PACER) database, which hold records of litigation filed in the United States Federal Courts. The data gathering procedures are similar to those adopted in the studies by Haslem (2005) and Bhattacharya, Galpin, Haslem (2007).[5]

In the first stage of data collection, we search within the PACER database for all lawsuits filed between 1 January 2000 and 31 December 2007, which fall into one of the following categories: environmental lawsuits, securities violations, antitrust lawsuits, intellectual property infringements, and contractual disputes. The sampling period from 2000 to 2007 is chosen for two reasons. First, the past decade was punctuated by two notable disruptions to stock markets worldwide: the burst of the dot-com bubble on 10 March 2000, when the technology-heavy NASDAQ Composite Index tumbled from its peak at 5,048.62; and the sweeping effects of the Global Financial Crisis, which caused the NASDAQ Composite to fall from its height at 2,861 on 31 October 2007 to below 2,300 on 6 February 2008. The eight-year sampling period from 2000 to 2007 is selected in order to minimize the impact of market shocks from the dot-com bubble and bust of 2001 and the Global Financial Crisis of 2008, allowing this study to examine the effects of corporate lawsuits during a period of

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[5] As identified by prior researchers (Haslem, 2005; Bhattacharya, Galpin & Haslem, 2007), a significant advantage of gathering corporate litigation data from the PACER database, rather than from newspaper sources such as the *Wall Street Journal*, is that PACER provides information on all lawsuits filed in the US federal courts. By obtaining lawsuit data directly from the court filings, this data collection method avoids media bias. The resultant litigation sample covers a much more comprehensive range of lawsuits, not necessarily those reported in a certain media outlet.

relative economic stability. Second, the sampling period for lawsuits ends on 31 December 2007, allowing for three years (from 2008 to 2010) in which to observe any subsequent in board composition. The initial searches for environmental, securities, antitrust, intellectual property (trademark and patent), and contractual lawsuits, yield a total of 214,094 lawsuit filings during this sampling period.

Data concerning boards of directors is collected from the RiskMetrics Directors Database ('RiskMetrics'), which provides data for the Standard & Poor's 1,500 companies. The parameter of the sample firms in this study, which consist of present and past S&P 1,500 companies, is defined by the availability of data in relation to directors provided by the RiskMetrics Database. Accounting data is collected from the Compustat Database. A total number of 1,671 current and former S&P 1,500 companies are included in the RiskMetrics Database, from which 18 companies are excluded due to missing accounting data from Compustat Database. The final sample consists of 1,653 companies.

In the second stage of the data collection process, from the initial pool of 214,094 lawsuits, we remove lawsuits which do not involve one of the 1,653 sample public companies as the first-named defendant. After eliminating the lawsuits which do not involve a public company with data available from Execucomp, the final sample of litigation comprises 20,934 lawsuits filed against the 1,653 unique companies during the period from 2000 through 2007.

In the third stage, we download from the PACER database individual court dockets for these remaining lawsuits, which contain procedural information regarding the litigation, including the filing date, the closing date, and the names of all the parties involved in the lawsuit. The litigation sample comprises firm-years in which a company experiences at least one lawsuit

filing against it during a given year, and those companies which do not experience any lawsuits during the same year form the control sample. Due to the large quantity of lawsuits (20,934) within the sample, a computer program is utilized and run for an extended period of time, to download all the court dockets via an automated process.

Fourth, from each individual court docket downloaded from PACER, we then manually extract more detailed litigation-specific information concerning the lawsuits. First, the court dockets provide the amount of pecuniary compensation demanded by the plaintiff(s) in each lawsuit. This data is used to compute explanatory variables which proxy the economic magnitudes of the lawsuits. Second, the PACER court dockets provide information regarding the manner of disposition of the lawsuits. On the basis of this information, explanatory variables are computed to represent the outcomes of the filed lawsuits, as a proxy for the legal merits of the plaintiffs' claims. The data collected from individual court dockets thus enables the examination of lawsuit-specific characteristics, namely their economic magnitudes and legal merits.

3.2   *Variable Description[6]*

Following prior studies (Farber, 2005; Ferris et al., 2007; Cheng et al., 2010), we examine the change in board composition during the three-year period following the filing of the lawsuit. The year in which the lawsuit is filed is defined as year 0, and subsequent years following the lawsuit filing are defined accordingly as year +1, year +2, and year +3.

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[6] A comprehensive list of the definitions of all variables is included in Appendix 1 (Variable Definitions).

The changes in board independence and size are observed initially over the period of (0, +3), from the year in which the lawsuit is filed to the third subsequent year. Using data obtained from RiskMetrics, change in board independence is computed as the proportion of 'outside' or 'unaffiliated' directors on the board (relative to the total number of directors) in year +3 minus that in year 0. Similarly, change in board size is computed as the number of directors on the board in year +3 minus the number of directors in year 0.

In addition, we extend the period of examination to include the year prior to the filing of the lawsuit (defined as year -1), as the company's management and board of directors may possess preemptive information about impending lawsuits, which might prompt them to act by engaging in corporate governance restructuring prior to the actual filing of the lawsuits. For example, Fahlenbrach, Low and Stulz (2010) produce evidence that some directors tend to depart before public announcements of adverse news to protect their reputation. Therefore, by including year -1 as part of the observation period, we aim to capture any preemptive changes in corporate governance undertaken by the companies in anticipation of imminent lawsuits.

The first key explanatory variable is the filing of corporate lawsuits against public companies. The test variable $LAWSUIT_{t=0}$ is expressed in two ways. First, a dummy variable is assigned a value of 1 if the company has experienced the filing of one or more lawsuits against it during year 0, and zero otherwise. Second, a continuous variable is employed to measure the number of corporate lawsuits filed against a company during year 0. Prior research documents that, if a company is sued more than once in a given period, the company's reputation would be much more severely damaged than if the company had only been sued once (Koku &

Qureshi, 2006). The second continuous variable is therefore employed to capture the role of multiple lawsuits filed within the same year.

In the regression estimations that predict the changes in board composition, we control for a number of factors that potentially influence the size and independence of the board of directors. First, we control for any change in firm size during the interval yr (-1,0) immediately preceding the lawsuit filing by including $\Delta LogTA_{t(-1,0)}$, which is calculated as the difference between the natural logarithm of total assets from the end of year -1 to the end of year 0. Prior literature indicates that firm size is a determinant of the number of directors on the board, thus any change in firm size is controlled for in predicting the change in board size. Similarly, we control for any change in firm performance by including $\Delta ROA_{t(-1,0)}$, which is the change in Return on Assets from year -1 to year 0. In addition, we employ LEV_{t-1}, the debt to equity ratio at the end of year -1, as a control for the financial leverage of the company. In all OLS regressions, period fixed effects are employed to control for unobserved time-specific variations influencing the change in board composition. The White heteroskedasticity-consistent standard errors are used to ensure the robustness of the regression results.

Finally, in the analysis investigating the roles of the lawsuit specific characteristics in predicting the corporate governance changes of the sued companies, we examine two aspects of the litigation encountered by public companies: the magnitude of the demand for compensation made by the plaintiffs, and the outcome of the lawsuits as a proxy for their merits. First, in order to investigate the association between the magnitude of monetary compensation sought against the company, and the likelihood of post-litigation corporate governance changes within the company, we compile the demand variables by calculating the

cumulative monetary demands made by the plaintiffs from all lawsuits filed against the company in a given year, scaled as a percentage of the total assets of the company at the beginning of that year, in order to capture the relative magnitude of the lawsuits in the context of the company size. Second, in the regressions which examine the role of the outcome of the lawsuits, the outcome of the lawsuits is represented by three test variables, each denoting the proportion of lawsuits filed within a firm-year which subsequently ended in dismissal, settlement, or judgment. In addition, apart from computing the demand variables over all lawsuits, we stratify the litigation dataset into individual categories; within each a separate set of demand variable is computed, using only the claims for monetary compensation filed in that type of lawsuits. This allows the predictive power of the economic magnitudes of different types of litigation to be disaggregated.

4   Empirical Results

4.1   Litigation Descriptive Statistics

Table 1 reports the breakdown of corporate lawsuits by filing year and by lawsuit category. Over the eight-year sampling period, whilst no significant linear trend is observable in the total number of lawsuits filed against the sample companies, the number of lawsuits peaked in 2002, mainly driven by the increase in the volume of securities and contractual lawsuits, before gradually declining over the following 5 years. This phenomenon is attributable to the flood of litigation following the burst of the dot-com bubble in 2000, consistent with observations from prior research (Choi & Thompson, 2006; Gande & Lewis, 2009). The number of environmental and antitrust lawsuits filed per year does not appear to exhibit any notable trend over the 2000-2007 period. On the other hand, the number of intellectual property lawsuits filed appears to undergo a general increase over time, commencing with 393 lawsuits filed in 2000 and ending with 590 filed in 2007. This trend confirms the observations made by Raghu et al (2008), of a tremendous increase in intellectual property litigation over time. This increase is attributed to the higher number of patents issued in recent years (Choi, 2010), and the developments in IP enforcements of the US government (Raghu et al., 2008).

Amongst the five types of lawsuits in the sample, it is observed that the number of contractual disputes is significantly higher than those of other types of lawsuits, constituting 49.85% of the total number of lawsuits filed during the sampling period. Contractual litigation is followed by securities and intellectual property lawsuits, which constitute 19.27% and 18.10%, respectively, of all lawsuits in the sample. Antitrust lawsuits take up 10.33% of

the litigation sample. Environmental litigation is of the least frequent occurrence by far, totaling 515 lawsuit filings within the sampling period, constituting 2.46% of the sample of lawsuits. Contractual litigation is the most common. This is consistent with prior literature, which documents that contractual disputes involving corporations constituted the largest single category of federal civil suits in the US (Dunworth & Pace, 1990; Bhagat, Bizjak & Coles, 1998). Its high frequency can be attributed to the routine commercial nature of contractual litigation, which occurs in the course of business operations. Additionally, prior researchers observe that intellectual property lawsuits have become increasingly prevalent (Raghu et al., 2008; Choi, 2010). The substantial rise in the number of patents granted accounts for the large number of IP lawsuits observed in the sample (3,789 over the 2000-2007 period). Moreover, the number of securities lawsuit filings has been persistently high (Ali & Kallapur, 2001; Perino, 2003; Gande & Lewis, 2009). Following the enactment of the Private Securities Litigation Reform Act (PSLRA), substantial debates exist over whether the number of securities lawsuits has reduced over time (Perino, 2003; Choi & Thompson, 2006; Choi, 2007; Rose, 2008). Prior researchers observe that the number of securities class action filings reached a ten-year low in 2006, but in 2007 rose back to the level of 2005 (Cornerstone Research, 2007; Rose, 2008). This trend is confirmed here by the number of securities lawsuits in the litigation sample.

[Insert Table 1]

Table 2 reports the lawsuit breakdown by industry, using the two-digit Standard Industrial Classification codes. Companies operating in different industries may face different levels of inherent litigation risks, as certain industries are by nature more susceptible to lawsuit filings than others. For instance, according to Panel A, nondepository institutions appear to experience the highest aggregated number of litigation filings per firm during the sampling

period, followed by security and commodity brokers, and building materials and gardening suppliers. For the two most litigious industries, namely nondepository institutions and security/commodity brokers, the number of lawsuits filed each year, which varies slightly across time, ascends to a common peak in 2002, consistent with the overall temporal trend observed from the total number of lawsuits filed across all industries. Panel B of Table 2 reports the results from the Chi-square test of equality of the median, which tests the null hypothesis that no significant difference exists in the number of lawsuits filed against companies across different industries. As reported in Panel B, the test produces a p-value smaller than 0.0005 (significant at the 1% level). It rejects the null hypothesis, and indicates that firms operating in different industries do face significantly different susceptibility to being sued. These results are consistent with prior research, which provides evidence of differing litigation risks inherently associated with industries (Field, Lowry & Shu, 2005; Dai, Zhang & Jin, 2008). This can potentially introduce selectivity into the observation of post-litigation change in board composition. The empirical results here provide the basis for employing the two-stage Heckman Selection Model, in order to address the potential selection bias arising from, amongst other factors, the varying degrees of litigiousness across different industries.

[Insert Table 2]

4.2   *Univariate Analysis*

Table 3 reports the firm characteristics of the lawsuit sample versus the control sample, including results from the ANOVA test of difference in the mean, and the chi-square test of difference in the median. First, even though the lawsuit sample has larger mean and median firm size than the control sample, the change (increase) in firm size during the (-1,0) period is significantly lower in the lawsuit sample compared to the control sample. This difference is statistically significant at the 1% level in both mean and median. Second, the average change in firm performance during the (-1,0) period is negative for the lawsuit sample, and positive for the control sample. This is consistent with the expectation that sued companies tend to suffer a decline in firm performance. The difference in the mean is significant at the 10% level, but the difference in the median is not statistically significant. Third, the financial leverage is significantly higher for the lawsuit sample, compared to the control sample, in both mean and median at the 1% level.

[Insert Table 3]

As reported in Table 4, results from the univariate analysis indicate that, within the lawsuit sample, the average increase in the proportion of independent directors is 6.1% during the (0,+3) period, and 7.2% during the (-1,+3) period, both of which are higher than their control sample counterparts. These differences in the mean between the lawsuit and control samples are statistically significant, at the 10% and 5% levels, respectively. These results provide preliminary support of hypothesis H(1), which expects lawsuit filings to be associated with a higher subsequent proportion of independent directors.

In addition, univariate analysis results indicate that the change in board size during the (0,+3) and (-1,+3) periods also differs significantly between the lawsuit and control samples. For both the lawsuit sand control samples, the average number of directors experiences an increase between year 0 and year +3, as well as between year -1 and year +3. However, this increase in board size is smaller for the lawsuit sample compared to that of the control sample (the difference in the mean being statistically significant at the 1% level for the (0,+3) period and at the 5% level for the (-1,+3) period).

Overall, results from the univariate analysis lend support to hypothesis H(1), by providing preliminary evidence that, following the filling of lawsuits, changes occur within the corporate governance structure of the defendant companies, in the form of a higher increase in the proportion of independent directors on the board. In addition, following lawsuit filings, companies appear to experience a lower rate of increase in the number of directors on the board.

[Insert Table 4]

4.3   Multivariate Analysis

4.3.1   Overall Litigation

In order to examine the predictive power of corporate litigation over the change in the board independence, the following Ordinary Least Square (OLS) regressions are estimated. In all OLS regressions, the White heteroskedasticity-consistent standard errors are used.

$$\Delta\%INDEPEND_{t(0,+3),t(-1,+3)} = \alpha + \beta_1 LAWSUIT_{t=0} + \beta_2\Delta LogTA_{t(-1,0)} + \beta_3\Delta ROA_{t(-1,0)} +$$
$$\beta_4 LEV_{t-1} + \varepsilon \qquad (1)$$

Following prior studies (Farber, 2005; Ferris et al., 2007; Cheng et al., 2010), we examine the change in board composition during the three-year period (0,+3) following the filing of the lawsuit. Using data obtained from RiskMetrics, change in board independence is computed as the proportion of 'outside' or 'unaffiliated' directors on the board (relative to the total number of directors) in year +3 minus that in year 0. Additionally, $\Delta\%INDEPEND_{t(-1,+3)}$ is also calculated over the alternative observation period of (-1,+3) to capture any preemptive change in board independence immediately preceding the lawsuit filing.

Hypothesis H(1) predicts a positive association between lawsuit filings and an increase in the proportion of independent directors on the board. In Equation (1), the test variable $LAWSUIT_{t=0}$ is expressed in two alternatives: first as dummy variable indicating whether any lawsuit is filed against a company during year 0, second, as a continuous variable to represent the number of lawsuits filed, in order to examine the predictive power of multiple lawsuit filings during the same year. Apart from litigation filings, Equation (1) also control for other

factors, including the changes in firm size and performance, the financial leverage of the firm, and unobserved time-specific factors, as captured by the period fixed effects, which might influence the change in the proportion of independent directors on the board. In addition, the regression employing a continuous litigation variable is first run over the entire dataset including both lawsuit and control firm-years, and subsequently re-run over a restricted sample of lawsuit firm-years only, in order to confirm the robustness of the first set of results after removing the presence of the zero values in the *LAWSUIT$_{t=0}$* variable.

[Insert Table 5]

As reported in Model (1) of Table 5, results from the OLS regressions show that, when the change in board independence is measured over the (0,+3) period, the estimated coefficient for the test dummy variable *LAWSUIT$_{t=0}$* is positive and significant at the 5% level, consistent with the expectation that an increase in board independence follows the filing of litigation against the company. The estimated coefficient of *LAWSUIT$_{t=0}$* of 0.007 indicates that, all else being equal, the percentage of independent directors tends to increase by 0.7% during the (0,+3) period, if the company has experienced one or more lawsuits during year 0. When the measurement period for the dependent variable is extended over the (-1,+3) period in Model (2), the estimated coefficient of the dummy variable *LAWSUIT$_{t=0}$* remains unchanged in magnitude and statistically significant at the 5% level. When corporate litigation is measured by the number of lawsuit filings, the continuous variable *LAWSUIT$_{t=0}$* remains positive and significant in explaining the change in board independence over both the (0,+3) and (-1,+3) periods, at the 5% and 1% levels, respectively (in Models (3) and (4)). After restricting the dataset to only the lawsuit sample, the estimated coefficient of the continuous variable *LAWSUIT$_{t=0}$* remains positive and significant at the 1% level in explaining the change in

board independence over the (-1,+3) period. The magnitudes of R-squared observed from these regressions are largely consistent with prior literature (Agrawal, Jaffe & Karpoff, 1999; Krishna-Moorthy, 2011).

Amongst the control variables, the financial leverage of the company (LEV_{t-1}) alone appears to have a negative association with the change in board independence. The estimated coefficient of LEV_{t-1} is -0.002, and significant at the 1% level across all model specifications,[7] indicating that firms with higher debt-to-equity ratios are less likely to experience an increase in board independence. This observation may be attributable to the fact that the incentives of debtholders differ significantly from those of shareholders (Smith & Warner, 1979; Shieifer & Summers, 1988; Ofek, 1993; Branch, 2000; Klock, Mansi & Maxwell, 2005; Adams & Mansi, 2009). An increase in board independence, which seeks to mitigate the shareholder-manager agency problems, may not be deemed as relevant in dealing with the agency issues arising from the debtholder-manager relationship.[8] On the other hand, changes in neither firm size nor accounting performance appear to have any significant explanatory power over the subsequent change in board independence.

Furthermore, we estimate the following OLS regressions to examine the predictive power of corporate litigation over the change in the number of directors, in which the test litigation variable is again expressed in two alternatives: as a dummy variable and as a continuous variable:

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[7] With the exception of Model (5), in which the estimated coefficient of LEV_{t-1} is significant at the 5% level.
[8] For instance, Adams and Mansi (2009) find that involuntary CEO turnovers from 1973 to 2000 are associated with higher shareholder values, but lower debtholder values. Klock, Mansi and Maxwell (2005) find that firms with corporate governance provisions, which favor shareholder interests over management interests, are perceived to be unfavorable by debtholders.

$$\Delta BSIZE_{t(0,+3),t(-1,+3)} = \alpha + \beta_1 LAWSUIT_{t=0} + \beta_2 \Delta LogTA_{t(-1,0)} + \beta_3 \Delta ROA_{t(-1,0)} +$$
$$\beta_4 LEV_{t-1} + \varepsilon \qquad (2)$$

The dependent variable $\Delta BSIZE_{t(0,+3)}$ is calculated as the change in board size from year 0 through to the end of year +3. An alternative dependent variable $\Delta BSIZE_{t(-1,+3)}$ is calculated as the change in board size from year -1 through to the end of year +3.[9]

[Insert Table 6]

As reported in Table 6, consistent with expectation, the results from Model (1) indicate that a company's encounter with corporate litigation is negatively and significantly associated with the change in its board size over the (0,+3) period; the estimated coefficient of the dummy variable $LAWSUIT_{t=0}$ is -0.097 and significant at the 5% level. When the change in board size is measured over the interval (-1,+3) rather than (0,+3), the estimated coefficient of $LAWSUIT_{t=0}$ is negative (-0.053) but is insignificant, providing no evidence of any preemptive change in board size which occurs during year -1.[10] When litigation filings are represented by a continuous variable rather than a dummy variable, the estimated coefficient of $LAWSUIT_{t=0}$ remains negative and significant in predicting the change in board size. In the regressions utilizing all firm-years in the dataset, the estimated coefficient of $LAWSUIT_{t=0}$ is -0.012 when predicting $\Delta BSIZE_{t(0,+3)}$ and -0.009 when predicting $\Delta BSIZE_{t(-1,+3)}$, both significant at the 5% level. Similar results are produced when the regressions are re-run over the restricted sample of lawsuit firm-years only, with an estimated coefficient of the continuous variable

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[9] As the sample firms experience an average increase, rather than decrease, in board size (as indicated by the results from the Univariate Analysis), it is rendered moot to account for the reason of any decrease in board size by excluding those decreases caused by the death or illness of a director.

[10] This observation potentially suggests that, despite the superior information possessed by board members regarding an imminent lawsuit before its actual filing, board members generally do not act out of concerns for their own reputation to depart immediately before the lawsuit is filed.

LAWSUIT$_{t=0}$ of -0.013 and -0.009 in predicting $\Delta BSIZE_{t(0,+3)}$ and $\Delta BSIZE_{t(-1,+3)}$, respectively, both significant at the 5% level.

The empirical evidence indicates a negative association between the filing of lawsuits and the subsequent change in board size within the sued companies. This negative association may evidence either a decrease in the number of directors, or a reduced rate of increase compared to the control sample. When viewed in conjunction with the results from the univariate analysis, which indicate an average increase in the number of directors on the board regardless of whether any lawsuit is filed against the company, these regression results give rise to the following interpretation. Despite the general average increase in board size experienced by companies following the filing of lawsuits, this increase is of a significantly lower rate compared to the control sample. Furthermore, empirical results from Table 5 provide evidence of an increase in the proportion of independent directors following litigation. This increase in board independence might be achieved through either an addition of independent directors, or a reduction of existing executive directors, or a combination thereof. The results here suggest that the increase in board independence is attributable to a reduction in the number of executive directors on the board[11] (in addition to the appointments of independent directors), thus contributing to a lower rate of increase in the overall board size.

Amongst the control variables, the change in firm size, $\Delta LogTA_{t(-1,0)}$, has significant positive predictive power over the change in board size; the positive estimated coefficients of $\Delta LogTA_{t(-1,0)}$ are significant at the 1% level in the regressions reported in Table 6. This

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[11] This conclusion is further supported by the negative mean change in the number of insider directors over the (0,+3) and (-1,+3) period for the lawsuit sample (-0.578 and -0.656, respectively), which is significantly different at the 1% level from the control sample (-0.449 and -0.511, respectively), indicating a greater average decrease in the number of inside directors following litigation filings.

observation indicates that, consistent with expectation, as public companies expand in size, they tend to experience a corresponding increase in the number of directors on their boards. Change in performance ($\Delta ROA_{t(-1,0)}$), however, does not exhibit any significant association with the observed change in board size. The financial leverage of the company (LEV_{t-1}) is shown to be significantly negatively associated with the change in board size, indicating that firms with higher financial leverage tend to experience a more negative change in the number of directors.

Overall, the empirical results provide evidence in support of hypothesis H(1), which predicts an increase in board independence following lawsuit filings, by demonstrating a positive and significant association between the filing of lawsuits, and the subsequent change in the proportion of independent directors on the board of the sued companies during the (0,+3) and (-1,+3) periods surrounding the filing of lawsuits. The empirical results also indicate that the encounter with corporate litigation is negatively associated with the change in board size of the sued companies, indicating that the rate of the increase is significantly smaller for the lawsuit sample compared to the control sample.

4.3.2 Breakdown by Lawsuit Categories

In order to investigate the predictive powers of different types of lawsuits over the change in board composition, we estimate the following OLS regressions, which employ five litigation variables, each measuring the filing of an individual category of lawsuits, in lieu of the one single variable measuring all lawsuit filings. These five litigation variables are again expressed in two alternative measures: as dummy variables and continuous variables in turn.

$$\Delta\%INDEPEND_{t(0,+3),t(-1,+3)} = \alpha + \beta_1 ENV_{t=0} + \beta_2 SEC_{t=0} + \beta_3 ANT_{t=0} + \beta_4 IP_{t=0} + \beta_5 CON_{t=0} + \beta_6 \Delta LogTA_{t(-1,0)} + \beta_7 \Delta ROA_{t(-1,0)} + \beta_8 LEV_{t-1} + \varepsilon \qquad (3)$$

As reported in Table 7, securities lawsuits ($SEC_{t=0}$) appear most significant in predicting the subsequent increases in board independence. In Models (1) and (2), the estimated coefficient of the dummy variable $SEC_{t=0}$ is 0.014 and 0.017, respectively, in predicting the change in board independence over observation periods (0,+3) and (-1,+3), significant at the 5% and 1% levels. The predictive power of $SEC_{t=0}$ remains significant across all regressions reported in Table 7, regardless of whether the filings of securities lawsuits are measured as a dummy variable or as a continuous variable. These results are consistent with prior literature, which documents increases in board independence following allegations of securities fraud (Romano, 1991; Agrawal, Jaffe & Karpoff, 1999; Farber, 2005; Desai, Hogan & Wilkins, 2006; Ferris et al., 2007; Cheng et al., 2010; Krishna-Moorthy, 2011).

Securities lawsuits constitute a direct manifestation of the manager-shareholder agency conflict, thus giving rise to considerable agency incentives on the part of the board, who represent the shareholders' interests, to seek to improve the monitoring effectiveness of the

board by increasing the proportion of outside directors. In addition, when allegations of securities fraud give rise to negative reputational consequences for the sued companies which might threaten their social legitimacy, the boards have the additional legitimacy incentives to increase board independence, in order to restore public faith in the companies' corporate governance systems.

On the other hand, the filings of environmental, antitrust, and intellectual property lawsuits are not significantly associated with any increase in the proportion of independent directors. Contractual lawsuit filings, when represented by a dummy variable $CON_{t=0}$, appear significant at the 5% level in predicting an increase in board independence over the (0,+3) period. However, this significant explanatory power does not persist when predicting the change in board independence over the alternative (-1,+3) period, nor when the filing of contractual lawsuits is measured by a continuous variable. This prevents strong inferences from being drawn from these results. The estimated coefficients and the statistical significance of the control variables are similar to those discussed in Section 4.3.1.

[Insert Table 7]

In order to distinguish the roles of different types of lawsuits in determining the change in board size within sued public companies, we estimate the following OLS regressions, in which the filing of corporate litigation is measured by five separate variables (expressed as dummies and continuous variables in turn), each denoting the filing of one type of lawsuits against the sample companies:

$$\Delta BSIZE_{t(0,+3),t(-1,+3)} = \alpha + \beta_1 ENV_{t=0} + \beta_2 SEC_{t=0} + \beta_3 ANT_{t=0} + \beta_4 IP_{t=0} + \beta_5 CON_{t=0} +$$
$$\beta_6 \Delta LogTA_{t(-1,0)} + \beta_7 \Delta ROA_{t(-1,0)} + \beta_8 LEV_{t-1} + \varepsilon \tag{4}$$

Results from these OLS regressions are reported in Table 8. When litigation filings are measured by dummy variables under Model (1), securities litigation ($SEC_{t=0}$) exhibits the most significant predictive power over the change in board size during the (0,+3) period, with an estimated coefficient of -0.281 significant at the 1% level. Securities lawsuits are followed by contractual lawsuits ($CON_{t=0}$), with an estimated coefficient of the dummy variable $CON_{t=0}$ of -0.142, which is significant at the 1% level. However, when year -1 is included in the observation period for the change in board size, environmental and contractual lawsuits become the two significant predictors of the change in board size over the (-1,+3) period, both with negative estimated coefficients significant at the 5% level.

When litigation filings are represented by continuous variables, first, environmental litigation ($ENV_{t=0}$) exhibits a consistently negative and significant association with the change in board size over both (0,+3) and (-1,+3) periods (at the 1% and 5% levels, respectively). Second, the estimated coefficient of contractual lawsuits (as represented by the continuous variable $CON_{t=0}$) remains negative and significant at the 5% level in predicting $\Delta BSIZE_{t(0,+3)}$. Third, the number of securities lawsuits filed also exhibits a negative and significant (at the 10% level) predictive power over the change in board size during the (0,+3) period. Finally, the filing of intellectual property lawsuits ($IP_{t=0}$), whilst negative but insignificant when represented by a dummy variable, now becomes significant at the 10% level in predicting the change in board size over the (-1,+3) period. When the regressions employing the continuous litigation variables are re-run over the restricted dataset comprising lawsuit firm-years only, the

estimated coefficients and statistical significance of the test variables remain consistent with the results produced from running the regressions over the entire dataset.

[Insert Table 8]

Consistent with the expectation, securities, environmental, and contractual lawsuits all exhibit significant associations with a negative change in the number of directors on the board. The results from the univariate analysis indicate that the average board size tends to increase during both the (0,+3) and (-1,+3) periods surrounding litigation filings. Therefore, the observed significant and negative predictive power of securities, environmental, and contractual lawsuits constitutes evidence of a significantly lower rate of increase in board size following litigation, compared to the control sample. This gives rise to the potential interpretation that, following lawsuits which are associated with adverse reputational impacts on the companies, directors may be more willing to depart from, or less willing to join, the boards of the sued companies, out of concerns for their own reputation (Fahlenbrach, Low & Stulz, 2010).

Section Summary

In summary, empirical results provide evidence of an increase in the proportion of independent directors on the board following the filing of lawsuits against the companies, in support of hypothesis H(1). In relation to hypothesis H(2), empirical evidence indicates that the number of directors on the board tends to undergo an average increase, but at a significantly lower rate for the lawsuit sample compared to the control sample. The lower rate of increase in board size is potentially attributable to a reduction in the number of executive

directors (to counteract any increase in the number of outside directors), which accounts for the observed increase in board independence.[12]

A detailed breakdown by the lawsuit categories indicate that securities lawsuits, and to a lesser extent contractual lawsuits, are followed by a significant increase in board independence. The statistical significance is consistent with the expectation that when shareholders' interests are directly infringed by alleged securities violations committed by management, securities lawsuits give rise to stronger incentives to improve the effectiveness of the board of directors as a monitoring mechanism.

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[12] See Footnote 11.

4.4 Robustness Check: Heckman Selection Model

The litigation risk faced by public companies may vary substantially, depending on the industries in which they operate and their organizational structures. These differences, whilst determining the companies' likelihood of being sued, can also significantly affect the composition of their boards of directors. The sampling procedure involves dividing companies into the litigation and control samples, based on whether they have encountered lawsuits. A company's encounter with lawsuits and its change in board composition may be endogenously determined. Consequently, the sampling procedure may give rise to potential selection bias. The two-stage econometric model developed by Heckman (1979), as specified below in Equations (5) and (6), respectively, is utilized to re-examine the two research hypotheses whilst controlling for this potential selection bias.

In the two-stage regression estimating the change in board composition, we first estimate a binary probit model predicting the likelihood of the firm encountering a litigation filing during a given year, by employing the two instrumental variables, organizational complexity (SEG_{t-1}) (Cohen & Lou, 2011) and litigious industry ($RISKINDQ_{t-1}$) (Field, Lowry & Shu, 2005; Dai, Zhang & Jin, 2008). In the second stage, we estimate an OLS model predicting the change in board composition (independence or size), which includes the inverse Mills ratio (lambda) to correct for the predicted likelihood of litigation:

Stage 1 :

$$LAWSUIT_{t=0} = \alpha + \beta_1 SEG_{t-1} + \beta_2 RISKINDQ_{t-1} + \beta_3 \Delta LogTA_{t(-1,0)} + \beta_4 \Delta ROA_{t(-1,0)} +$$
$$\beta_5 LEV_{t-1} + \varepsilon$$

$$(5)$$

Stage 2 :

$$\Delta\% INDEPEND_{t(0,+3),t(-1,+3)} = \alpha + \beta_1 LAWSUIT_{t=0} + \beta_2 \Delta LogTA_{t(-1,0)} + \beta_3 \Delta ROA_{t(-1,0)} +$$
$$\beta_4 LEV_{t-1} + \beta_5 \text{lambda}_{t=0} + \varepsilon$$

Stage 1 :

$$LAWSUIT_{t=0} = \alpha + \beta_1 SEG_{t-1} + \beta_2 RISKINDQ_{t-1} + \beta_3 \Delta LogTA_{t(-1,0)} + \beta_4 \Delta ROA_{t(-1,0)} +$$
$$\beta_5 LEV_{t-1} + \varepsilon$$

$$(6)$$

Stage 2 :

$$\Delta BSIZE_{t(0,+3),t(-1,+3)} = \alpha + \beta_1 LAWSUIT_{t=0} + \beta_2 \Delta LogTA_{t(-1,0)} + \beta_3 \Delta ROA_{t(-1,0)} +$$
$$\beta_4 LEV_{t-1} + \beta_5 \text{lambda}_{t=0} + \varepsilon$$

The first IV, SEG_{t-1}, is a measure of the organizational complexity of the company, as proxied by the number of business segments of the company as at the beginning of year 0 (Cohen & Lou, 2011), as reported in the Compustat Segment Database. Organizational complexity constitutes a suitable predictor of the litigation risk faced by the company, because firms with more complex structures, which extend their business into a wider variety of operations, tend to face an increased risk of being sued. On the other hand, there is no evidence to suggest that more complex companies tend to experience greater changes in their board composition. Therefore, the organizational complexity of the firm, as measured by SEG_{t-1}, is suitable as the first IV. The second IV, $RISKINDQ_{t-1}$, is a dummy variable measuring of the level of litigation risk inherently associated with the industry in which the company operates (Field, Lowry & Shu, 2005; Dai, Zhang & Jin, 2008). $RISKINDQ_{t-1}$ takes on a value of 1, if the two-digit Standard Industry Classification (SIC) code of the company falls into one of the top quartile of the most litigious industries during the sampling period, and 0 otherwise. Prior

literature suggests that some industries face higher litigation risks than others (Field, Lowry & Shu, 2005; Dai, Zhang & Jin, 2008), but there is no empirical evidence to suggest that these industries also experience greater changes in board composition, thus making *RISKINDQ$_{t-1}$* an appropriate IV in the two-stage regression model to estimate the change in board composition.

Results from the second-stage regression of the two-stage Heckman Model in Equation (5), estimating the change in board independence, are reported in Table 9. The inverse Mills ratio (lambda) is positive in the regressions predicting both *Δ%INDEPEND$_{t(0,+3)}$* and *Δ%INDEPEND$_{t(-1,+3)}$* (and significant at the 10% and 1% levels, respectively), suggesting the existence of potential selection bias in the original OLS model. The positive estimated coefficients of lambda indicate that there exist unobserved factors which are positively associated with an increase in board independence during both (0,+3) and (-1,+3) periods. As hypothesis H(1) predicts a positive relation between lawsuit filings and the subsequent increase in board independence, the existence of such unobserved factors may have biased the regression results in favor of the hypothesized outcome in the original OLS regressions.

[Insert Table 9]

However, after controlling for selectivity (as reported in Table 9), the predictive power of litigation filings remains positive and significant over the change in board independence. The estimated coefficient of the test variable *LAWSUIT$_{t=0}$* remains positive (0.0004) and significant at the 10% level in predicting *Δ%INDEPEND$_{t(0,+3)}$*. This estimated coefficient is of unchanged magnitude from the original OLS regression results (as reported in Table 5 and discussed in Section 4.3.1). Additionally, in predicting *Δ%INDEPEND$_{t(-1,+3)}$*, the positive

estimated coefficient of *LAWSUIT*$_{t=0}$ is 0.001, which also remains unchanged from the original OLS regression as reported in Table 5, with a p-value significant at the 1% level. These results indicate that, after correcting for the potential selection bias using the Heckman two-stage model, the regression results remain robust. These results provide statistical evidence to further confirm the observations from the original OLS models previously discussed, that the encounter with corporate litigation is, on average, accompanied by a significant subsequent increase in the proportion of independent directors during both the (0,+3) and (-1,+3) periods surrounding the lawsuit filings.

[Insert Table 10]

Results from the two-stage Heckman Model estimating the change in board size are reported in Table 10. The inverse Mills ratio (lambda) is again positive and significant at the 1% level in both regressions predicting $\Delta BSIZE_{t(0,+3)}$ and $\Delta BSIZE_{t(-1,+3)}$. The positive estimated coefficients of lambda indicate that, in the original OLS regressions, there may have existed factors uncaptured by the regression specification, which are significantly associated with an increase in board size during the observation periods, thus potentially biasing the regression results against the predicted negative association between lawsuit filings and change in board size.

Nonetheless, after correcting this potential selection bias (as reported in Table 10), the test variable *LAWSUIT*$_{t=0}$ remains consistent in both its magnitude and statistical significance, compared to the results from the original OLS regression reported in Table 6 and discussed in Section 4.3.1. In the second-stage regression predicting the change in board size over the (0, +3) period ($\Delta BSIZE_{t(0,+3)}$), the estimated coefficient of *LAWSUIT*$_{t=0}$ is -0.011, indicating that

the encounter with a lawsuit, on average, is negatively associated with the change in the number of directors on the board. This estimated coefficient is very similar to that from the original OLS model (-0.012), the p-value of which remains significant at the 5% level. Similarly, when the year -1 is included in the observation period for the change in board size ($\Delta BSIZE_{t(-1,+3)}$), the regression results remain consistent with the previous results. The estimated coefficient of the variable $LAWSUIT_{t=0}$ is -0.010 in predicting $\Delta BSIZE_{t(-1,+3)}$, significant at the 5% level.

Section Summary

Overall, results from the robustness analysis employing the two-stage Heckman Selection Model confirm the results from the original regression models. Consistent with the results from the original OLS regressions, the encounter with corporate litigation is associated with an increase in the proportion of independent directors. Moreover, the significant and negative association between corporate litigation and the subsequent change in board size remains robust.

4.5   Litigation Magnitudes and Merits

In addition, further analysis is conducted in this study, in order to examine the role of two lawsuit-specific characteristics on the corporate governance restructuring outcomes following litigation. First, the magnitude of the monetary demands for compensation made by the plaintiffs and, second, the legal merits of the lawsuits, as proxied by their eventual outcomes. In this section, the regression analyses employ a sub-sample of firm-years during which at least one lawsuit has been filed against the companies.

4.5.1   Litigation Magnitudes and Change in Board Independence

First, the amounts of the monetary demands for compensation claimed by the plaintiffs in corporate lawsuits constitute a direct proxy for the scale of the litigation. Lawsuits of greater economic magnitudes are more likely to attract attention from the media or the general public, and hence give rise to greater legitimacy incentives for the boards of directors to instigate changes in board composition. Consequently, lawsuits with higher demands for compensation are expected to be followed by a higher likelihood of the expected changes in the composition of the board of directors.

In order to examine the role of the economic magnitudes of litigation in predicting the change in board composition, we re-estimate Equations (1) and (2) from Section 4.3.1 above, in which the previous key independent variable ($LAWSUIT_{t=0}$) is replaced by a new test variable, $DEMAND_{ALL-t=0}$, to measure the economic scale of the filed litigation. $DEMAND_{ALL-t=0}$ represents the cumulative sum of all demands for compensation filed against the public company during year 0, scaled by the company's total assets at the beginning of that year, in

order to capture the relative magnitude of the litigation in relation to firm size. In addition, the monetary demands from the individual category of contractual lawsuits (*DEMAND$_{CON-t=0}$*) are employed as an alternative test variable.[13] The results from these regressions are reported in Table 11.

[Insert Table 11]

As reported Models (1) and (2) of Table 11, the estimated coefficient of *DEMAND$_{ALL-t=0}$* is positive and significant in predicting the change in board independence during both the (0,+3) and (-1,+3) periods, at the 1% and 10% levels, respectively. This statistically significant relation provides evidence in support of the expectation that larger lawsuits are more likely to be followed by greater increases in the proportion of independent directors. The control variables remain consistent with the results estimated under Equation (1) (as discussed in Section 4.3.1 above).

Additionally, as reported in Models (3) to (4) of Table 11, results from the regressions examining the economic scale of contractual lawsuits, *DEMAND$_{CON-t=0}$*, indicate that contractual litigation of larger magnitude is also associated with a greater increase in board independence, as evidenced by the positive estimated coefficients of *DEMAND$_{CON-t=0}$*, significant at the 5% and 1% levels in predicting Δ*%INDEPEND$_{t(0,+3)}$* and Δ*%INDEPEND$_{t(-1,+3)}$*, respectively.

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[13] Originally, a series of alternative test variables, *DEMAND$_{(ENV/SEC/ANT/IP/CON)-t=0}$*, are employed in turn in the regression running, each calculated as the sum of the demands filed *within* environmental, securities, antitrust, IP, and contract lawsuits, respectively, in order to disaggregate the monetary demands filed under each individual lawsuit category. However, due to the low sample size, the regressions employing the demands from environmental, securities, antitrust, and IP litigation categories are statistically insignificant (as evidenced by their F-statistics). Their results are therefore not reported.

Results from the empirical analysis indicate a positive and significant association between the amounts of compensation sought by the plaintiffs, particularly in contractual lawsuits, and a subsequent increase in the proportion of independent directors in the sued companies. Since plaintiffs in frivolous lawsuits can nevertheless file large claims of compensation, the greater economic magnitude of a lawsuit does not necessarily indicate that the management has exposed the company to legal liabilities. Therefore, in interpreting the significant positive association between lawsuit magnitudes and the subsequent increase in board independence, a more probable explanation is that lawsuits of greater economic magnitudes give rise to more significant reputational impacts, which consequently leads to stronger incentives to motivate changes in board composition, in order to improve the companies' reputations.

4.5.2 *Litigation Magnitudes and Change in Board Size*

Here, we re-estimate Equation (2) from Section 4.3.1 to predict the change in board size. In the re-estimated regressions, the previous key independent variable, $LAWSUIT_{t=0}$, is replaced by the $DEMAND_{ALL-t=0}$ variable to measure the economic scale of all filed litigation.[14] The regression results are reported in Table 12.

[Insert Table 12]

The results in Model (1) indicate a positive relationship between the economic magnitudes of the lawsuits filed, and a subsequent increase in the defendant company's board size. The estimated coefficient of $DEMAND_{ALL-t=0}$ is positive and significant at the 10% level in predicting an increase in board size during the (0,+3) period. The empirical results indicate

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[14] Regressions employing a series of alternative test variables, $DEMAND_{(ENV/SEC/ANT/IP/CON)-t=0}$, have also been run, but due to the limited sample size, these regressions exhibit statistically insignificant F-statistics and are not reported.

that larger demands for compensation filed against the companies are, on average, more likely to be followed by an increase in board size.

When viewed in conjunction with the results from the preceding Section, these results appear consistent with, and in corroboration of, the observations in relation to the change in board independence. Whilst results from the preceding Section indicate that litigation of larger economic magnitude tends to be followed by a greater increase in the proportion of independent directors on the boards, the results from this Section provide some evidence that this increase in board independence is accompanied by a corresponding increase in board size. This indicates that boards of public companies, when confronted with lawsuits of larger magnitudes, tend to respond by appointing additional outside directors to the boards, thus resulting in an increase in both the number of directors, and the proportion of outsiders on the boards.

4.5.3   Litigation Merits and Change in Board Independence

Apart from the role of the economic magnitudes of the lawsuits filed against public companies, which are examined in the preceding Sections, the second part of the analysis into the role of the lawsuit-specific characteristics examines the legal merits of the filed litigation, as proxied by the eventual manners of resolution of the lawsuits.

Data on the outcomes of the litigation is collected from Public Access to Court Electronic Records (PACER) database, and consists of a total of 33 unique dispositions.[15] In the study conducted by Baum, Bohn, and Chakraborty (2007), the authors distinguished dismissed lawsuits from settled lawsuits as a proxy for merits, in the examination of board turnover following securities litigation. This study builds upon and refines the approach adopted by Baum, Bohn, and Chakraborty, by further differentiating between lawsuits which are settled, and those which end in court judgments.

The unique dispositions of lawsuits obtained from the PACER court dockets are grouped into four broad categories: the first category, 'DISMISSAL', consists of all cases which are recorded to have been dismissed by the court, with the exception of those which are dismissed voluntarily due to out of court settlement.[16] The dismissal of a lawsuit implies that the plaintiff's claims are of weak legal merits (Baum, Bohn & Chakraborty, 2007). Therefore,

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[15] PACER disposition records consist of 33 unique dispositions: (1) Consolidated, (2) Consolidated - Unknown, (3) Dismissed, (4) Dismissed - Lack of Jurisdiction, (5) Dismissed - Other, (6) Dismissed - Settled, (7) Dismissed - Voluntarily, (8) Dismissed - Want of Prosecution, (9) District Court Affirmed Decision in its Entirety, (10) District Court Reversed Decision in Whole or Part, (11) Judgment - Award of Arbitrator, (12) Judgment - Court Trial, (13) Judgment - Directed Verdict, (14) Judgment - Judgment on Consent, (15) Judgment - Judgment on Default, (16) Judgment - Jury Verdict, (17) Judgment - Motion Before Trial, (18) Judgment - Motion/Petition Before Trial, (19) Judgment - Non-Jury Trial, (20) Judgment - Other, (21) Non-reportable closing, (22) Ongoing, (23) Settled, (24) Statistical Closing, (25) Statistical/Administrative Closing, (26) Stayed Pending Bankruptcy, (27) Transfer/Remand, (28) Transfer/Remand - MDL Transfer, (29) Transfer/Remand - Remanded to State Court, (30) Transfer/Remand - Remanded to U.S. Agency, (31) Transfer/Remand - Transfer to Another District, (32) Transfer/Remand - Transfer to Another Federal Court, and (33) Unknown.

[16] Those lawsuits are marked as 'Dismissed – Settled' in the PACER disposition records.

dismissed lawsuits are expected to be followed by the least likelihood of board restructuring within the sued companies.

Second, the 'SETTLE' category consists of cases which are terminated by agreements reached between the plaintiffs and defendants (whether in court or out of court).[17] Lawsuit settlements indicate that the filed claims are of stronger merits than those which are dismissed (Baum, Bohn & Chakraborty, 2007). The third category, 'JUDGMENT', consists of those cases which are recorded to end by court judgments, with the exception of consent judgements which are deemed to have been settled. Given the significant legal costs associated with litigation (primarily consisting of attorneys' fees and court charges) (Coffee, 1986; Romano, 1991; Haslem, 2005), which increase exponentially as the case further advances towards a court trial, it is unlikely for the parties to proceed to trial without reaching a settlement, unless they both hold the firm belief that their legal claims are sufficiently strong to outweigh the additional legal costs as well as the risk of losing the trial. Therefore, lawsuits which end in court judgements indicate that the claims filed by the plaintiffs are of the strongest legal merits of the filed lawsuits, and are expected to be followed by the highest likelihood of changes in board composition. Finally, the four category, 'OTHER', consists of all other outcomes, such as cases which are 'consolidated' or 'transferred/remanded' to another jurisdiction, and is the omitted category in the regression analysis.

In the following re-estimation of Equation (1) from 4.3.1, we examine the roles of the outcomes of corporate litigation in predicting the change in board composition, by employing the following test variables in lieu of the litigation variable ($LAWSUIT_{t=0}$). The three test variables $DISMISSAL_{t=0}$, $SETTLE_{t=0}$, and $JUDGMENT_{t=0}$, denote the proportion of lawsuits

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[17] These include lawsuits which have the following dispositions recorded on the PACER court dockets: 'Dismissed – Settled', 'Judgment – Judgment on Consent', 'Judgment – Award of Arbitrator', and 'Settlement', all of which indicate that the plaintiff(s) and the defendant(s) have reached an agreement over the claims.

filed against a defendant company in a year which eventually resolve in each respective manner of disposition.[18]

[Insert Table 13]

As reported in Table 13, in Models (1) and (2), the three key test variables denoting the different outcomes of litigation, *DISMISSAL$_{ALL-t=0}$*, *SETTLE$_{ALL-t=0}$*, and *JUDGMENT$_{ALL-t=0}$*, are all statistically insignificant in predicting *Δ%INDEPEND$_{t(0,+3),t(-1,+3)}$*. The estimated coefficients and the statistical significance of the control variables are consistent with the results from Equation (1) as discussed in Section 4.3.1. These results indicate that the merits of lawsuits filed against the companies, as proxied by their outcomes, do not appear to have significant explanatory power over the change in board independence subsequent to the lawsuit filings.

4.5.4   Litigation Merits and Change in Board Size

The predictive power of litigation merits over the change in board size within the sued companies is examined by employing the following re-estimations of OLS regressions specified in Equation (2) in Section 4.3.1, which employ the litigation outcome variables *DISMISSAL$_{ALL-t=0}$*, *SETTLE$_{ALL-t=0}$*, and *JUDGMENT$_{ALL-t=0}$*.[19]

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[18] Detailed variable definitions are provided in Appendix 1 (Variable Definitions).

[19] Their counterparts in each individual lawsuit category (namely *DISMISSAL$_{(ENV/SEC/ANT/IP/CON)-t=0}$*, *SETTLE$_{(ENV/SEC/ANT/IP/CON)-t=0}$*, and *JUDGMENT$_{(ENV/SEC/ANT/IP/CON)-t=0}$*) are also employed in the re-estimation of the OLS regressions. However, due to the low sample size within the individual lawsuit categories, these regressions are statistically insignificant (as evidenced by their F-statistics) and are not reported.

The results from Models (1) and (2) of Table 14 show that the estimated coefficients of all three test variables, *DISMISSAL*$_{ALL-t=0}$, *SETTLE*$_{ALL-t=0}$, and *JUDGMENT*$_{ALL-t=0}$, are uniformly statistically insignificant in predicting the change in board size.

[Insert Table 14]

Amongst the control variables, change in the size of the company, as measured by $\Delta LogTA_{t(-1,0)}$, has significant predictive power over the change in board size during the (-1,+3) period relative to the lawsuit filing year (year 0), with an estimated coefficient of 0.674 significant at the 1% level. This observation is consistent with prior literature which suggests that board size is determined by firm size, thus increases in firm size tend to be associated with increases in the number of directors on the board. Change in performance (as proxied by $\Delta ROA_{t(-1,0)}$), however, usually does not have any significant association with the observed change in board size. Finally, the financial leverage of the company as at the beginning of year 0 (LEV_{t-1}) is shown to be significantly and negatively associated with the change in board size (at the 5% level), indicating that firms with higher financial leverage tend to experience a greater reduction in the number of directors. These results are consistent with those previously discussed in Section 4.3.1 in relation to Equation (2).

Overall, the results from the board size regressions do not provide strong statistical support for the prediction based on agency theory, that the change in board size within the sued firms is associated with the outcome of the lawsuits. The results indicate that none of the dismissal, settlement, or final court adjudication of filed lawsuits has significant explanatory power over the predicted decrease in the number of directors within the sued companies.

5   Conclusion

This study examines the changes in corporate governance which occur within sued US public companies following the filings of corporate lawsuits against them. The restructuring of the composition of the board of directors is expected to result in an increased proportion of independent directors on the board. Results from the empirical analysis indicate that, following corporate lawsuit filings, the sued companies, on average, experience an increase in board independence. This increase in board independence is accompanied by a diminished rate of increase in the number of directors on the board. These empirical results are robust after controlling for potential selection bias.

A detailed breakdown of different types of lawsuits shows that both securities and, to a lesser extent, contractual lawsuits, are associated with a significant increase in board independence following the lawsuits. Despite the general increase in board size, those firms which have encountered securities, contractual, and environmental lawsuits, tend to experience the increase at a significantly lower rate compared to the control sample. Securities violations give rise to both agency and reputational incentives to tighten board monitoring, and are therefore most significant in predicting a subsequent increase in board independence.

Apart from confirming the findings of prior literature with respect to securities litigation, this study provides empirical evidence which offers fresh insights into the factors motivating the observed changes in board composition. Results indicate that post-litigation corporate governance restructuring is significantly determined by the economic scale of the litigation, but the merits of the litigation do not exhibit any consistent predictive power over the subsequent change in board composition. Sued companies are more likely to increase board

independence when confronted with larger lawsuits, by bringing additional independent directors onto the boards. Lawsuits of greater economic magnitudes are expected to have a higher public profile. However, larger lawsuits do not necessarily indicate greater legal liabilities on the part of the sue companies (in the absence of proven merits). Hence, they do not necessarily give rise to greater agency incentives to tighten board monitoring. Therefore, given the lack of statistical significance of lawsuit merits, the boards' responses to lawsuits of larger scales can only be attributed to an attempt to signal enhanced vigilance and integrity of the boards, as a means of improving the companies' reputations. The results from this study contributes to literature, by providing support for the view that the post-litigation changes in board composition are motivated, at least in part, by reputational concerns.

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7 Tables

Table 1 Filing of Corporate Litigation by Year and by Category

YEAR	TOTAL		ENV		SEC		ANT		IP		CON	
	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
2000	2229	10.65%	47	2.11%	387	17.36%	262	11.75%	393	17.63%	1140	51.14%
2001	2470	11.80%	58	2.35%	543	21.98%	330	13.36%	392	15.87%	1147	46.44%
2002	3182	15.20%	36	1.13%	968	30.42%	313	9.84%	463	14.55%	1402	44.06%
2003	2734	13.06%	51	1.87%	618	22.60%	265	9.69%	455	16.64%	1345	49.20%
2004	2668	12.74%	41	1.54%	603	22.60%	219	8.21%	502	18.82%	1303	48.84%
2005	2680	12.80%	54	2.01%	332	12.39%	341	12.72%	463	17.28%	1490	55.60%
2006	2510	11.99%	181	7.21%	265	10.56%	207	8.25%	531	21.16%	1326	52.83%
2007	2461	11.76%	47	1.91%	317	12.88%	225	9.14%	590	23.97%	1282	52.09%
Total	**20934**	100.00%	**515**	**2.46%**	**4033**	**19.27%**	**2162**	**10.33%**	**3789**	**18.10%**	**10435**	**49.85%**

ENV: denotes environmental lawsuits (PACER lawsuit code 893)

SEC: denotes securities lawsuits (PACER lawsuit codes 160 & 850)

ANT: denotes antitrust lawsuits (PACER lawsuit code 410)

IP: denotes intellectual property lawsuits, including patent and trademark litigation (PACER lawsuit codes 830 & 840)

CON: denotes contractual lawsuits (PACER lawsuit codes 140, 150, 190, 195, 196)

Table 2 Industry Composition

Panel A: Distribution of Lawsuit Numbers

SIC2	Industry Description	Law-suits Per Firm	Total No. of Firms	Litig ation Firms*	Non-Litig ation Firms**	Total No. of Lawsuits	2000	2001	2002	2003	2004	2005	2006	2007
61	Nondepository Institutions	57	14	13	1	792	29	43	116	110	93	262	57	82
62	Security & Commodity Brokers	35	32	28	4	1113	55	160	190	184	182	94	99	149
52	Building Materials & Gardening Supplies	34	6	6	0	206	20	9	22	18	28	32	41	36
37	Transportation Equipment	33	36	33	3	1203	114	125	155	216	159	171	120	143
29	Petroleum & Coal Products	31	14	14	0	440	38	37	30	45	49	41	164	36
53	General Merchandise Stores	31	16	16	0	492	47	63	49	70	62	66	65	70
40	Railroad Transportation	30	5	5	0	151	35	17	18	23	17	13	17	11
48	Communications	27	36	30	6	978	113	119	203	84	119	82	173	85
51	Wholesale Trade- Nondurable Goods	25	18	16	2	457	61	47	63	54	85	51	47	49
70	Hotels & Other Lodging Places	22	2	2	0	43	7	3	7	4	6	6	6	4
64	Insurance Agents, Brokers, & Service	21	11	10	1	233	16	8	19	28	65	46	32	19
42	Trucking & Warehousing	20	11	10	1	224	25	23	16	30	26	25	19	60
28	Chemical & Allied Products	18	109	99	10	1980	176	399	390	226	218	222	159	190
57	Furniture & Home Furnishings Stores	17	7	6	1	120	10	14	14	25	14	12	16	15
60	Depository Institutions	16	114	86	28	1788	99	159	212	246	228	301	265	278
72	Personal Services	15	6	5	1	88	7	10	11	11	7	23	16	3
63	Insurance Carriers	15	69	60	9	1010	102	141	117	133	120	151	133	113
26	Paper & Allied Products	14	21	19	2	289	24	25	30	52	68	33	25	32
45	Transportation by Air	13	11	10	1	147	8	7	12	19	19	40	16	26
47	Transportation Services	13	8	7	1	106	16	14	12	10	22	10	14	8
15	General Building Contractors	12	13	11	2	156	5	10	15	12	26	25	29	34
59	Miscellaneous Retail	12	27	23	4	317	30	58	32	40	24	28	49	56
30	Rubber & Miscellaneous Plastics Products	12	11	10	1	127	10	16	14	30	16	11	11	19
54	Food Stores	11	7	6	1	78	10	12	21	9	10	4	4	8
36	Electronic & Other Electric Equipment	11	114	103	11	1253	119	141	198	152	80	203	174	186
35	Industrial Machinery & Equipment	11	90	76	14	977	132	151	113	106	125	124	117	109
	Other	7	845	690	155	6166	921	659	1103	797	800	604	642	640
	Total		**1653**	**1394**	**259**	**20934**	**2229**	**2470**	**3182**	**2734**	**2668**	**2680**	**2510**	**2461**

*Litigation Firms: the S&P 1,500 companies with at least 1 lawsuit filed against them during the 2000-07 sampling period.
**Non-Litigation Firms: the S&P 1,500 companies with no lawsuits filed against them during the 2000-07 sampling period.

Panel B: Difference in Litigation Frequency across Industries

Number of Industries	65
Number of Lawsuits per Industry (Mean)	322
Number of Lawsuits per Industry (Median)	132
Standard Deviation	452
Chi-Square Test of Equality of Median (p-value)	13088 (0.000)

Table 3 Descriptive Statistics (Mean and Median) for Lawsuit vs. Control Samples

	Lawsuit* (Mean)	Control** (Mean)	Difference in Mean[1]	(P-value)	Difference in Median[2]	(P-value)
log(TA)	8.118	6.868	1.250	(0.000)***	1.190	(0.000)***
ROA	0.047	0.043	0.004	(0.037)**	0.001	(0.559)
Δlog(TA)	0.102	0.144	-0.042	(0.000)***	-0.025	(0.000)***
ΔROA	-0.001	0.005	-0.006	(0.085)*	-0.000	(0.185)
LEV	2.823	2.221	0.602	(0.000)***	0.268	(0.000)***

* Those firm-years in which at least one lawsuit is filed against the company.
** Those firm-years in which no lawsuit is filed against the company.

[1] ANOVA F-test of the Difference in Mean
[2] Chi-square Test of the Difference in Median

Detailed definitions of all variables are listed in Appendix 1 (Variable Definitions).

Table 4 Univariate Analysis: Changes in Board Composition

	Lawsuit* (Mean)	Control** (Mean)	Difference in Mean[1]	(P-value)	Difference in Median[2]	(P-value)
Δ%INDEPEND(0,+3)	0.061	0.056	0.005	(0.083)*	0.005	(0.205)
Δ%INDEPEND(-1,+3)	0.072	0.064	0.008	(0.019)**	0.010	(0.025)**
ΔBSIZE(0,+3)	0.063	0.184	-0.121	(0.002)***	0.000	(0.545)
ΔBSIZE(-1,+3)	0.121	0.211	-0.090	(0.029)**	0.000	(0.839)

* Those firm-years in which at least one lawsuit is filed against the company.
** Those firm-years in which no lawsuit is filed against the company.

[1] ANOVA F-test of the Difference in Mean
[2] Chi-square Test of the Difference in Median

Detailed definitions of all variables are listed in Appendix 1 (Variable Definitions).

Table 5 Changes in Board Independence Regression Results (Overall Lawsuit Variable) – Equation (1)

Dependent Variable	LAWSUIT (dummy) Δ%INDEPEND (0,+3)	Δ%INDEPEND (-1,+3)	LAWSUIT (continuous) Δ%INDEPEND (0,+3)	Δ%INDEPEND (-1,+3)	LAWSUIT (continuous) Restricted Sample Δ%INDEPEND (0,+3)	Δ%INDEPEND (-1,+3)
Model	(1)	(2)	(3)	(4)	(5)	(6)
constant	0.059***	0.069***	0.062***	0.071***	0.063***	0.074***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
LAWSUIT (dummy)	0.007**	0.007**				
	(0.024)	(0.025)				
LAWSUIT (continuous)			0.0004**	0.001***	0.0003	0.001***
			(0.017)	(0.000)	(0.156)	(0.006)
Δlog(TA)	0.006	0.009	0.006	0.009	-0.000	0.006
	(0.442)	(0.321)	(0.457)	(0.315)	(0.981)	(0.594)
ΔROA	-0.001	0.003	-0.001	0.003	0.022	0.011
	(0.915)	(0.820)	(0.935)	(0.794)	(0.121)	(0.496)
LEV	-0.002***	-0.002***	-0.002***	-0.002***	-0.001**	-0.002***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.033)	(0.001)
YEARLY DUMMIES	YES	YES	YES	YES	YES	YES
n	6803	7940	6803	7940	3375	3946
Adj. R2	0.012	0.036	0.012	0.037	0.009	0.034
F-Stat	9.31	28.25	9.15	28.60	3.91	13.62
(p-value)	0.000	0.000	0.000	0.000	0.000	0.000

Note — Δ%INDEPEND(0,+3) and Δ%INDEPEND(-1,+3) denote the change in the proportion of independent directors over the (0,+3) period and (-1,+3) period, respectively. LAWSUIT (dummy) equals the value of 1 if one or more lawsuit(s) is/are filed against the company during year 0. LAWSUIT (continuous) denotes the number of lawsuits filed against the company during year 0. Δlog(TA) equals the change in the natural log of total assets from year -1 to year 0 reported in Compustat. ΔROA equals the change in the returns on total assets reported from year -1 to year 0 in Compustat. LEV denotes the debt-to-equity ratio reported in Compustat.

The sample consists of the Standard & Poor's 1,500 firms, divided into the litigation and control samples on the basis of whether any lawsuit is filed against the firm in year 0. The numbers in parentheses below the coefficient estimates are p-values.

* Significant at the 10% level, in a two-tailed test.
** Significant at the 5% level, in a two-tailed test.
*** Significant at the 1% level, in a two-tailed test.

Table 6 Changes in Board Size Regression Results (Overall Lawsuit Variable) – Equation (2)

Dependent Variable	LAWSUIT (dummy)		LAWSUIT (continuous)		LAWSUIT (continuous) Restricted Sample	
	ΔBSIZE (0,+3)	ΔBSIZE (-1,+3)	ΔBSIZE (0,+3)	ΔBSIZE (-1,+3)	ΔBSIZE (0,+3)	ΔBSIZE (-1,+3)
Model	(1)	(2)	(3)	(4)	(5)	(6)
constant	0.220***	0.239***	0.192***	0.227***	0.144***	0.199***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
LAWSUIT (dummy)	-0.097**	-0.053				
	(0.015)	(0.191)				
LAWSUIT (continuous)			-0.012***	-0.009**	-0.013***	-0.009**
			(0.003)	(0.031)	(0.004)	(0.034)
Δlog(TA)	0.359***	0.777***	0.355***	0.773***	0.113	0.684***
	(0.001)	(0.000)	(0.001)	(0.000)	(0.506)	(0.000)
ΔROA	0.043	0.136	0.033	0.130	0.035	0.015
	(0.731)	(0.444)	(0.785)	(0.464)	(0.835)	(0.956)
LEV	-0.036***	-0.052***	-0.033***	-0.050***	-0.015*	-0.039***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.099)	(0.000)
YEARLY DUMMIES	YES	YES	YES	YES	YES	YES
n	6803	7940	6803	7940	3375	3946
Adj. R2	0.010	0.018	0.012	0.018	0.007	0.014
F-Stat	8.05	13.97	9.19	14.55	3.32	6.05
(p-value)	0.000	0.000	0.000	0.000	0.000	0.000

Note — ΔBSIZE(0,+3) and ΔBSIZE(-1,+3) denote the change in the number of directors on the board over the (0,+3) period and (-1,+3) period, respectively.

* Significant at the 10% level, in a two-tailed test.
** Significant at the 5% level, in a two-tailed test.
*** Significant at the 1% level, in a two-tailed test.

Table 7 Changes in Board Independence Regression Results (Lawsuit Categories) – Equation (3)

Dependent Variable	LAWSUIT (dummy)		LAWSUIT (continuous)		LAWSUIT (continuous) Restricted Sample	
	Δ%INDEPEND (0,+3)	Δ%INDEPEND (-1,+3)	Δ%INDEPEND (0,+3)	Δ%INDEPEND (-1,+3)	Δ%INDEPEND (0,+3)	Δ%INDEPEND (-1,+3)
Model	(1)	(2)	(3)	(4)	(5)	(6)
constant	0.060***	0.070***	0.062***	0.072***	0.066***	0.076***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
ENV (dummy)	0.009	0.003				
	(0.287)	(0.699)				
ENV (continuous)			0.0001	0.0001	0.00004	0.00003
			(0.503)	(0.546)	(0.802)	(0.843)
SEC (dummy)	0.014**	0.017***				
	(0.027)	(0.006)				
SEC (continuous)			0.001**	0.002***	0.001**	0.002***
			(0.032)	(0.000)	(0.049)	(0.000)
ANT (dummy)	0.004	0.002				
	(0.568)	(0.797)				
ANT (continuous)			-0.000	0.000	-0.000	0.000
			(0.889)	(0.952)	(0.891)	(0.959)
IP (dummy)	-0.004	-0.000				
	(0.357)	(0.941)				
IP (continuous)			-0.000	0.000	-0.001	-0.000
			(0.976)	(0.747)	(0.551)	(0.779)
CON (dummy)	0.008**	0.004				
	(0.022)	(0.200)				
CON (continuous)			0.000	0.000	0.000	0.000
			(0.226)	(0.287)	(0.506)	(0.562)
Δlog(TA)	0.006	0.007	0.005	0.007	-0.001	0.003
	(0.455)	(0.465)	(0.533)	(0.460)	(0.955)	(0.820)
ΔROA	0.000	-0.003	0.000	-0.004	0.024*	-0.005
	(0.989)	(0.818)	(0.982)	(0.798)	(0.098)	(0.825)
LEV	-0.002***	-0.002***	-0.002***	-0.002***	-0.002***	-0.002***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.001)	(0.000)
YEARLY DUMMIES	YES	YES	YES	YES	YES	YES
n	6802	7941	6802	7941	3375	3947
Adj. R2	0.014	0.037	0.012	0.038	0.010	0.036
F-Stat	7.66	21.29	7.08	21.76	3.38	10.95
(p-value)	0.000	0.000	0.000	0.000	0.000	0.000

Note — ENV, SEC, ANT, IP, CON (dummy) equal 1 if any environmental, securities, antitrust, intellectual property, and contractual lawsuits, respectively, are filed against the company during year 0. ENV, SEC, ANT, IP, CON (continuous) denote the number of environmental, securities, antitrust, intellectual property, and contractual lawsuits, respectively, filed against the company during year 0.

* Significant at the 10% level, in a two-tailed test.
** Significant at the 5% level, in a two-tailed test.
*** Significant at the 1% level, in a two-tailed test.

Table 8 Changes in Board Size Regression Results (Lawsuit Categories) – Equation (4)

Dependent Variable	LAWSUIT (dummy) ΔBSIZE (0,+3)	LAWSUIT (dummy) ΔBSIZE (-1,+3)	LAWSUIT (continuous) ΔBSIZE (0,+3)	LAWSUIT (continuous) ΔBSIZE (-1,+3)	LAWSUIT (continuous) Restricted Sample ΔBSIZE (0,+3)	LAWSUIT (continuous) Restricted Sample ΔBSIZE (-1,+3)
Model	(1)	(2)	(3)	(4)	(5)	(6)
constant	0.225***	0.263***	0.190***	0.242***	0.142***	0.229***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.001)	(0.000)
ENV (dummy)	-0.053	-0.290**				
	(0.734)	(0.048)				
ENV (continuous)			-0.016***	-0.015**	-0.015***	-0.016**
			(0.000)	(0.037)	(0.000)	(0.030)
SEC (dummy)	-0.281***	-0.140				
	(0.004)	(0.154)				
SEC (continuous)			-0.014*	-0.009	-0.015*	-0.010
			(0.093)	(0.365)	(0.066)	(0.329)
ANT (dummy)	-0.095	-0.091				
	(0.385)	(0.394)				
ANT (continuous)			-0.003	-0.000	-0.003	0.001
			(0.789)	(0.998)	(0.818)	(0.957)
IP (dummy)	0.067	0.060				
	(0.202)	(0.267)				
IP (continuous)			-0.014	-0.036*	-0.001	-0.035*
			(0.522)	(0.056)	(0.955)	(0.078)
CON (dummy)	-0.142***	-0.112**				
	(0.001)	(0.013)				
CON (continuous)			-0.016**	-0.008	-0.018***	-0.010
			(0.018)	(0.269)	(0.008)	(0.191)
Δlog(TA)	0.329***	0.723***	0.344***	0.734***	0.100	0.637***
	(0.003)	(0.000)	(0.002)	(0.000)	(0.557)	(0.001)
ΔROA	0.046	0.109	0.046	0.106	0.040	-0.055
	(0.704)	(0.542)	(0.705)	(0.556)	(0.810)	(0.838)
LEV	-0.028***	-0.049***	-0.030***	-0.051***	-0.012	-0.042***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.175)	(0.000)
YEARLY DUMMIES	YES	YES	YES	YES	YES	YES
n	6802	7941	6802	7941	3375	3947
Adj. R2	0.013	0.019	0.011	0.018	0.007	0.014
F-Stat	7.28	11.50	6.46	10.84	2.61	4.70
(p-value)	0.000	0.000	0.000	0.000	0.001	0.000

* Significant at the 10% level, in a two-tailed test.
** Significant at the 5% level, in a two-tailed test.
*** Significant at the 1% level, in a two-tailed test.

Table 9 Changes in Board Independence Regression Results (Heckman Selection Model) – Equation (5)

Dependent Variable Model	Δ% INDEPEND(0,+3) (1)	Δ% INDEPEND(-1,+3) (2)
constant	0.032*	0.023
	(0.066)	(0.187)
LAWSUIT	0.0004*	0.001***
	(0.061)	(0.002)
Δlog(TA)	-0.006	-0.007
	(0.630)	(0.610)
ΔROA	0.021	-0.008
	(0.141)	(0.723)
LEV	0.000	0.001
	(0.760)	(0.452)
lambda	0.034*	0.055***
	(0.073)	(0.004)
n	3188	3724
Adj. R2	0.008	0.035
F-Stat	3.19	12.28
(p-value)	0.000	0.000

Note — lambda equals the inverse Mills ratio calculated from the first-stage regression of the Heckman Selection Model.

* Significant at the 10% level, in a two-tailed test.
** Significant at the 5% level, in a two-tailed test.
*** Significant at the 1% level, in a two-tailed test.

Table 10 Changes in Board Size Regression Results (Heckman Selection Model) – Equation (6)

Dependent Variable Model	ΔBSIZE(0,+3) (1)	ΔBSIZE(-1,+3) (2)
constant	-0.597***	-0.586**
	(0.008)	(0.015)
LAWSUIT	-0.011**	-0.010**
	(0.011)	(0.024)
Δlog(TA)	0.014	0.478**
	(0.937)	(0.015)
ΔROA	0.020	-0.083
	(0.907)	(0.757)
LEV	0.026**	0.010
	(0.031)	(0.461)
lambda	0.776***	0.841***
	(0.001)	(0.001)
n	3188	3724
Adj. R2	0.010	0.012
F-Stat	3.82	4.64
(p-value)	0.000	0.000

Note — lambda equals the inverse Mills ratio calculated from the first-stage regression of the Heckman Selection Model.

* Significant at the 10% level, in a two-tailed test.
** Significant at the 5% level, in a two-tailed test.
*** Significant at the 1% level, in a two-tailed test.

Table 11 Litigation Magnitudes and Change in Board Independence

Dependent Variable	Overall Lawsuits		Contractual	
	Δ%INDEPEND (0,+3)	Δ%INDEPEND (-1,+3)	Δ%INDEPEND (0,+3)	Δ%INDEPEND (-1,+3)
Model	(1)	(2)	(3)	(4)
constant	0.063***	0.080***	0.064***	0.079***
	(0.000)	(0.000)	(0.000)	(0.000)
DEMAND$_{ALL}$	0.0003***	0.0003*		
	(0.009)	(0.091)		
DEMAND$_{CON}$			0.001**	0.002***
			(0.024)	(0.001)
Δlog(TA)	0.002	0.012	0.007	0.003
	(0.883)	(0.460)	(0.686)	(0.864)
ΔROA	0.021	0.016	0.025	0.025
	(0.193)	(0.386)	(0.441)	(0.252)
LEV	-0.001**	-0.002**	-0.002***	-0.002***
	(0.041)	(0.012)	(0.008)	(0.007)
YEARLY DUMMIES	YES	YES	YES	YES
n	2462	2681	1844	2016
Adj. R2	0.011	0.017	0.011	0.022
F-Stat	3.67	5.31	3.08	5.10
(p-value)	0.000	0.000	0.001	0.000

Note — DEMAND$_{ALL}$ equals the sum of all demands for pecuniary compensation filed against the company during year 0 scaled by firm size (total assets) at the end of year -1. DEMAND$_{CON}$ equals the sum of demands for pecuniary compensation filed under contractual lawsuits during year 0, scaled by firm size (total assets) at the end of year -1.

* Significant at the 10% level, in a two-tailed test.
** Significant at the 5% level, in a two-tailed test.
*** Significant at the 1% level, in a two-tailed test.

Table 12 Litigation Magnitudes and Change in Board Size

Dependent Variable	Overall Lawsuits	
	ΔBSIZE (0,+3)	ΔBSIZE (-1,+3)
Model	(1)	(2)
constant	0.129***	0.183***
	(0.006)	(0.000)
DEMAND$_{ALL}$	0.003*	0.004
	(0.088)	(0.136)
Δlog(TA)	0.090	0.511**
	(0.668)	(0.020)
ΔROA	0.071	-0.109
	(0.729)	(0.748)
LEV	-0.023**	-0.045***
	(0.020)	(0.000)
YEARLY DUMMIES	YES	YES
n	2462	2681
Adj. R2	0.004	0.010
F-Stat	2.06	3.49
(p-value)	0.025	0.000

* Significant at the 10% level, in a two-tailed test.
** Significant at the 5% level, in a two-tailed test.
*** Significant at the 1% level, in a two-tailed test.

Table 13 Litigation Merits and Change in Board Independence

Dependent Variable	Overall Lawsuits	
	Δ%INDEPEND (0,+3)	Δ%INDEPEND (-1,+3)
Model	(1)	(2)
constant	0.058***	0.082***
	(0.000)	(0.000)
DISMISSAL	0.004	-0.005
	(0.711)	(0.633)
SETTLE	0.006	-0.010
	(0.557)	(0.307)
JUDGMENT	0.008	-0.005
	(0.515)	(0.669)
Δlog(TA)	0.003	0.007
	(0.834)	(0.578)
ΔROA	0.026*	0.011
	(0.079)	(0.468)
LEV	-0.001*	-0.002***
	(0.051)	(0.004)
YEARLY DUMMIES	YES	YES
n	3166	3690
Adj. R2	0.008	0.032
F-Stat	3.19	10.36
(p-value)	0.000	0.000

Note —DISMISSAL denotes the proportion of all lawsuits filed against the company during year 0 the outcomes of which are known, which were dismissed by the court. SETTLE denotes the proportion of all lawsuits filed against the company during year 0 the outcomes of which are known, which were settled. JUDGMENT denotes the proportion of all lawsuits filed against the company during year 0 the outcomes of which are known, which ended in court judgments.

* Significant at the 10% level, in a two-tailed test.
** Significant at the 5% level, in a two-tailed test.
*** Significant at the 1% level, in a two-tailed test.

Table 14 Litigation Merits and Change in Board Size

Dependent Variable	Overall Lawsuits	
	ΔBSIZE (0,+3)	ΔBSIZE (-1,+3)
Model	(1)	(2)
constant	0.252**	0.324***
	(0.031)	(0.007)
DISMISSAL	-0.116	-0.145
	(0.378)	(0.299)
SETTLE	-0.176	-0.200
	(0.164)	(0.125)
JUDGMENT	-0.237	-0.154
	(0.112)	(0.310)
Δlog(TA)	0.131	0.674***
	(0.466)	(0.001)
ΔROA	0.073	0.005
	(0.681)	(0.986)
LEV	-0.020**	-0.044***
	(0.028)	(0.000)
YEARLY DUMMIES	YES	YES
n	3166	3690
Adj. R2	0.003	0.012
F-Stat	1.93	4.52
(p-value)	0.027	0.000

* Significant at the 10% level, in a two-tailed test.
** Significant at the 5% level, in a two-tailed test.
*** Significant at the 1% level, in a two-tailed test.

8 Appendix 1 (Variable Definitions)

Variable Name	Variable Definitions
$\Delta\%INDEPEND_{t(0,+3)}$	The change in the proportion of independent directors on the board during the interval yr (0,+3), from the year of lawsuit filing to the third year subsequent to the filing.
$\Delta\%INDEPEND_{t(-1,+3)}$	The change in the proportion of independent directors on the board during the interval yr (-1,+3), from the year immediately preceding the lawsuit filing to the third year subsequent to the filing.
$\Delta BSIZE_{t(0,+3)}$	The change in the number of directors on the board during the interval yr (0,+3), from the year of lawsuit filing to the third year subsequent to the filing.
$\Delta BSIZE_{t(-1,+3)}$	The change in the number of directors on the board during the interval yr (-1,+3), from the year immediately preceding the lawsuit filing to the third year subsequent to the filing.
$LAWSUIT_{t=0}$	Litigation as represented by two alternative measures: first, a dummy variable which is assigned a value of 1 if there has been one or more lawsuits filed against the company during year t (defined as year 0), and 0 otherwise; second, a continuous variable measuring the number of lawsuits filed against the company during year 0.
$ENV_{t=0}$	Environmental litigation as represented by two alternative measures: first, a dummy variable which is assigned a value of 1 if there has been one or more environmental lawsuits filed against the company during year t (defined as year 0), and 0 otherwise; second, a continuous variable measuring the number of environmental lawsuits filed against the company during year 0.
$SEC_{t=0}$	Securities litigation as represented by two alternative measures: first, a dummy variable which is assigned a value of 1 if there has been one or more securities lawsuits filed against the company during year t (defined as year 0), and 0 otherwise; second, a continuous variable measuring the number of securities lawsuits filed against the company during year 0.
$ANT_{t=0}$	Antitrust litigation as represented by two alternative measures: first, a dummy variable which is assigned a value of 1 if there has been one or more antitrust lawsuits filed against the company during year t (defined as year 0), and 0 otherwise; second, a continuous variable measuring the number of antitrust lawsuits filed against the company during year 0.
$IP_{t=0}$	Intellectual property litigation as represented by two alternative measures: first, a dummy variable which is assigned a value of 1 if there has been one or more intellectual property lawsuits filed against the company during year t (defined as year 0), and 0 otherwise; second, a continuous variable measuring the number of intellectual property lawsuits filed against the company during year 0.
$CON_{t=0}$	Contractual litigation as represented by two alternative measures: first, a dummy variable which is assigned a value of 1 if there has been one or more contractual lawsuits filed against the company during year t (defined as year 0), and 0 otherwise; second, a continuous variable measuring the number of contractual lawsuits filed against the company during year 0.

Variable Name	Variable Definitions
$\Delta LogTA_{t(-1,0)}$	Change in firm size from year -1 (the year immediately preceding the lawsuit filing) to year 0 (the year of the lawsuit filing), calculated as the difference between the natural logarithm of total assets as at the end of year -1 and that as at the end of year 0.
$\Delta ROA_{t(-1,0)}$	Change in accounting performance of the company from year -1 (the year immediately preceding the lawsuit filing) to year 0 (the year of the lawsuit filing), calculated as the difference between the return on assets for year -1 and that for year 0.
LEV_{t-1}	Debt to equity ratio for the company as at the end of year -1 as a control for the financial leverage of the company.
SEG_{t-1}	The number of business segments of the company as at the end of year -1 as reported in the Compustat Segment Database, as a control for the organizational complexity.
$RISKINDQ_{t-1}$	Dummy variable which takes on a value of 1, if the two-digit Standard Industry Classification (SIC) code of the company falls into one of the top quartile of the most litigious industries as observed during the sampling period 2000-2007, and 0 otherwise.
$DEMAND_{ALL-t=0}$	The cumulative sum of all demands for compensation filed against the public company during year 0, scaled by the total assets of the company at the beginning of that year, as a measure of the economic magnitude of the litigation encountered.
$DEMAND_{CON-t=0}$	The cumulative sum of the demands for compensation of all contractual lawsuits filed against the company during year 0, scaled by the total assets of the company at the beginning of that year.
$DISMISSAL_{ALL-t=0}$	The proportion of lawsuits, of all lawsuits filed against the company in year 0 of which the disposition is known, which eventually end in dismissal.
$SETTLE_{ALL-t=0}$	The proportion of lawsuits, of all lawsuits filed against the company in year 0 of which the disposition is known, which eventually end in settlement.
$JUDGMENT_{ALL-t=0}$	The proportion of lawsuits, of all lawsuits filed against the company in year 0 of which the disposition is known, which eventually end in judgment.
$OTHER_{ALL-t=0}$	The proportion of lawsuits, of all lawsuits filed against the company in year 0 of which the disposition is known, which eventually end in manners other than dismissal, settlement or judgment.