

THREE ESSAYS ON THE LEGAL ENVIRONMENT, CORPORATE POLICY  
AND GOVERNANCE

by

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## ABSTRACT

This dissertation consists of three essays on the legal environment, corporate policy and corporate governance. The dissertation research seeks to contribute to a new understanding of the relationship between the legal environment, corporate behavior and corporate governance.

In the first essay, we use a unique hand-collected dataset on corporate subsidiaries and lawsuits to examine the relationship between litigation risk and subsidiary usage by large U.S. corporations. We find that firms, in general, tend to have a large number of subsidiaries when exposed to high litigation risk. Dividing the sample into financially distressed and financially healthy sub-samples, we find that financially distressed firms tend to have a large number of subsidiaries when exposed to high litigation risk, while this tendency is less pronounced in financially healthy firms. High severity litigation risk matters more than low severity litigation risk. The results are consistent with the prediction of theoretical models. Taken together, they bring to light an efficient link between litigation risk and subsidiary usage.

The second essay empirically examines the relationship between litigation risk and key financial and investment policy choices. We use a unique hand-collected database on corporate lawsuits as a proxy to measure litigation risk. The key financial and investment policies we investigate include: the levels of financial leverage, cash holdings, and capital expenditures. After controlling for other determinants of corporate financial and investment policies, we find a negative relationship between litigation risk and financial leverage. We also find a positive

relationship between the level of cash holdings and securities and intellectual property litigation. In addition, we document a negative relationship between the level of cash holdings and high severity litigation risk in general, and government contracts, corporate governance, and employment and labor litigation, in particular. Furthermore, we find a positive relationship between litigation risk and the level of capital expenditures. Partitioning the sample into unified and parent-subsidary firms, we find that relative to high litigation risk firms with a unified corporate structure, high litigation risk firms with parent-subsidary structures have significantly higher levels of financial leverage and cash holdings, and lower level of capital expenditures. Thus, corporate organizational form appears to be a clear substitute for financial policy in responding to litigation risk. Taken together, these results highlight a link between litigation risk and corporate financial and investment policy choices.

In Essay three, we examine the effects of board structure on corporate litigation. Using a unique hand-collected dataset on corporate lawsuits and the 2002 NYSE/NASDAQ exchange listing requirements on board independence as an exogenous shock, with the difference-in-difference methodology, we empirically examine how an increase in the percentage of independent directors on boards affects a wide variety of corporate litigation. We find that an exogenous increase in the percentage of independent directors on a board is associated with a significant decrease in corporate litigation. In addition, the results are stronger in industries where the exposure to the various types of corporate litigation is greater. These findings provide evidence of the effective monitoring role of independent directors.

## DEDICATION

This dissertation is dedicated to my grandma, parents, siblings, nephews and nieces for their support and inspiration, to the current and future Malm generation, and to the love of my life, Serwaa Malm, and my beloved son, James Mawunyo Malm, for their endless love and inspiration. To God be the glory.

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## **CHAPTER 1: INTRODUCTION**

This dissertation consists of three essays on the legal environment, corporate policy and corporate governance. The dissertation research seeks to contribute to a new understanding of the relationship between the legal environment, corporate behavior and corporate governance. We use a unique hand-collected dataset on different categories of corporate lawsuits to explore how litigation risk is related to the use of subsidiaries (Essay 1), to financial and investment policy (Essay 2), and to corporate governance (Essay 3).

This research is intriguing to scholars studying the relationship between litigation risk and corporate behavior. Understanding the relationship between litigation risk and corporate policy choices is important to financial economists, management, and the investing public.

A number of law and finance academics have called attention to the role of the legal environment in guiding the actions of corporations. Nevertheless, only a few scholars have examined the issue in depth. To some extent this is because of the difficulty in finding reliable proxies for litigation risk. Most contemporary works on litigation risk tend to focus on securities litigation. Much of the research measures litigation risk using an industry-based proxy either alone or in conjunction with other variables. A common proxy used in the literature is based on membership in the biotechnology, computing, electronics and retail industries. While a number of the corporate lawsuits are violations of securities laws, the vast majority of them pertain to the violation of employment and labor laws, intellectual property laws, product liability, medical liability, environmental laws, antitrust laws, and other related issues.

We resolve the litigation risk proxy issue by hand-collecting a large sample of lawsuits filed against large U.S. publicly-traded companies. These lawsuits are classified into fourteen categories according to the type of lawsuit: (1) employment and labor, (2) intellectual property, (3) pension and retirements, (4) commercial, (5) securities, (6) government contracts, (7) environmental, (8) finance and banking, (9) antitrust, (10) product liability, (11) medical liability, (12) corporate governance, (13) general liability, and (14) other lawsuits that do not fall into any of the preceding categories. We use these lawsuits as a proxy to measure litigation risk. All three essays utilize this unique hand-collected dataset on different categories of lawsuits. In addition to the dataset on lawsuits, we have also hand-collected a unique dataset on subsidiaries of large corporations, which we make use of in the first two essays (Essays 1 and 2).

The first dissertation essay considers how the use of the parent-subsidary corporate structure by firms with significant exposure to litigation can add to shareholder value. The use of the parent-subsidary structure, which concentrates the risk of insolvency in the individual subsidiaries, can enhance the overall value of the firm. This is because the value of a legal claim is not sensitive to the organizational structure of the corporate entity. The empirical results, which make use of a unique-hand collected database on corporate lawsuits and subsidiaries, clearly provide evidence to demonstrate that firms with a higher degree of litigation risk do indeed on average have relatively more subsidiaries than firms with lower litigation risk. The results also indicate that this effect is more prominent in financially distressed firms and less prominent in financially healthy firms. The effect is stronger when the potential severity of the legal liability is greater.

The second dissertation essay studies the relationship between litigation risk and key financial and investment policy choices. The key financial and investment policy choices we

investigate include: the levels of financial leverage, cash holdings, and capital expenditures. First, the paper empirically examines the relationship between different categories of lawsuits and key financial and investment policy choices for large U.S. corporations. In a second line of inquiry, we study the relationship between litigation risk and corporate financial and investment policy choices for unified and parent-subsidary firms. The empirical results, which also use a unique hand collected dataset on lawsuits, show a negative relationship between litigation risk and financial leverage. We find a positive relationship between securities litigation and the level of cash holdings. We also document a negative relationship between the level of cash holdings and high severity litigation risk in general, and government contracts, corporate governance and employment and labor litigation, in particular. Furthermore, we find a positive relationship between litigation risk and the level of capital expenditures. Partitioning the sample into unified and parent-subsidary firms, we find that relative to high litigation risk firms with a unified corporate structure, high litigation risk firms with parent-subsidary structures have significantly higher levels of financial leverage and cash holdings, and lower level of capital expenditures.

Finally, in the third essay, we investigate the effects of board structure on corporate litigation. We use the 2002 NYSE/NASDAQ regulatory requirements on board independence as an exogenous shock to empirically examine how an increase in the percentage of independent directors on boards affects different types of corporate litigations. We use a difference-in-differences methodology that relies on the variations generated by an exogenous shock to the percentage of independent directors on board. We find that an exogenous increase in the percentage of independent directors on board is associated with a significant decrease in corporate litigation. The results also hold in industries where the exposure to the various categories of corporate litigation is greater. The rest of this dissertation is organized as follows:

In chapter 2, we present Essay 1. We follow Essay 2 in Chapter 3. Finally, we present Essay 3 in Chapter 4.

## **CHAPTER 2<sup>1</sup>: LITIGATION RISK, FINANCIAL DISTRESS, AND THE USE OF SUBSIDIARIES**

### **2.1. Introduction.**

Subsidiaries, where a corporation is owned by another (parent) corporation, have long been a part of corporate organizational structures. The question naturally arises, why is this so? Given that maintaining the subsidiary as a separate corporate entity necessarily involves some costs, and given that in most cases its business could be conducted as a division of a unified corporate structure, it must also bring some benefits. A number of possibilities have been suggested.

One possibility is that subsidiaries are maintained for branding purposes. Strong customer identification with a particular brand may be enhanced by maintaining an independent subsidiary to conduct that particular business. Identification of the brand with a larger, perhaps conglomerate, parent, might diminish customer loyalties. For example a number of recognizable product names including Benjamin Moore paints, Fruit of the Loom clothing, GEICO insurance, Helberg diamonds, Brown shoes, Lubrizol, Pampered Chef products, and See's candies are all products of Berkshire Hathaway subsidiaries. Another possibility is tax avoidance. For example, the April 28, 2012 edition of the New York Times reported that although Apple is headquartered in Cupertino, California, with a handful of employees at its subsidiary, Braeburn Capital, in Reno, Nevada, it has been able to avoid millions of dollars in taxes in the state of California and twenty other states. California's corporate tax was, at the time of the article, 8.84%, whereas

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<sup>1</sup> A working paper version of this chapter co-authored with Dr. James A. Ligon exists and is being circulated.

Nevada's rate was zero. Apple has also created subsidiaries in other low-tax places like Ireland, the Netherlands, Luxembourg and the British Virgin Islands. Another possible motivation is regulatory requirements. For example, in the insurance industry a parent company may have multiple subsidiaries in a given state in order to satisfy regulatory requirements. Firms active in mergers and acquisitions may maintain targets as separate subsidiaries either for branding purposes or to legally segregate the claims of target stakeholders such as creditors, employees, or others.

We consider another motivation for subsidiary usage. That is that the use of the parent-subsubsidiary structure by firms with significant exposure to litigation risk can add to stockholder value. Because the value of a legal claim is not sensitive to the organizational structure of the corporate entity, the use of the parent-subsubsidiary structure, which concentrates the risk of insolvency in the individual subsidiaries, can enhance the overall value of the firm. Although the possibility of subsidiaries providing legal protection is relatively well recognized (see, e.g. Myers, 2002), the circumstances in which this can prove most valuable and the extent to which major corporations make use of subsidiaries for this purpose is less well understood. We review theoretical results that show that the value from doing this is related to differences in risk across the potential subsidiaries.

Our empirical results, which use a unique hand-collected data set on litigation risk, clearly indicate that firms with a higher degree of litigation risk, do indeed on average have relatively more subsidiaries than firms with lower litigation risk. We find this effect is more pronounced in financially distressed firms and less pronounced in financially healthy firms. The effect is stronger when the potential severity of the legal liability is greater. The results suggest firms do in fact consider their exposure to litigation risk in deciding between using parent-

subsidiary structures versus a unified divisional corporate structure.

Although it has long been recognized that litigation risk can influence corporate behavior (see, e.g. Tinic, 1988), empirical evidence on precisely how it does so remains relatively sparse. In part this may be due to the fact that reliable proxies for litigation risk have been difficult to find (see, e.g. Kim and Skinner, 2012). Recent papers that explore elements of litigation risk and its effect on corporate behavior include Bradley and Chen (2011), Gormley and Matsa (2011), and Kwak, Ro, and Suk (2012).

In the next section, we discuss the theoretical background that leads to the prediction that litigation risk and subsidiary usage should be positively correlated. In section 2.3, we provide our formal hypotheses, describe our data, and describe our methodology. We present our empirical results in section 2.4. Section 2.5 concludes. In an appendix, we discuss literature related to the piercing of the corporate veil.

## **2.2. Litigation Risk and Subsidiary Usage.**

Merton (1974) assumes that the corporation has a single debt issue maturing at a single date and that the assumptions of the Black-Scholes option pricing model are applicable. Since equity can be thought of as a call option on the assets of the firm, its value at debt maturity is

$$\text{Max}[0, V_T - F]$$

where  $V_T$  is the value of the assets of the firm at the debt's maturity and  $F$  is the face value of the debt. The Black-Scholes model would then suggest that the current value of equity is

$$S = V_t N(d_1) - Fe^{-r(T-t)} N(d_2) \quad (1)$$

where  $V_t$  is the current value of assets at time  $t$ ,  $r$  is the risk free rate,  $T-t$  is time remaining until maturity, and  $N$  is the cumulative normal density evaluated at

$$d_1 = \frac{\ln\left[\frac{V}{F}\right] + \left[r + \frac{\sigma_V^2}{2}\right](T-t)}{\sigma_V \sqrt{T-t}}$$

$$d_2 = d_1 - \sigma_V \sqrt{T-t}$$

The value of debt can then be calculated by recognizing that

$$V_t = S + D$$

which implies that

$$D(V_t, t) = Fe^{-r(T-t)}N(d_2) + V_tN(-d_1) \quad (2)$$

Merton's approach allows one to decompose the value of a risky bond into three components, the value of equivalent risk free debt, the probability of default, and loss given default. Rewrite (2) as

$$\begin{aligned} D(V_t, t) &= Fe^{-r(T-t)} - Fe^{-r(T-t)} + Fe^{-r(T-t)}N(d_2) + V_tN(-d_1) \\ &= Fe^{-r(T-t)} - Fe^{-r(T-t)}N(-d_2) + V_t \frac{N(-d_2)}{N(-d_2)}N(-d_1) \\ &= Fe^{-r(T-t)} - \left[ Fe^{-r(T-t)} - V_t \frac{N(-d_1)}{N(-d_2)} \right] N(-d_2) \end{aligned} \quad (3)$$

The first term on the last line of equation (3) is the value of risk-free debt maturing at time T,  $N(-d_2)$  represents the risk-neutral probability of default, and the term in brackets represents the loss given default. The second term on the last line of (3)

$$\left[ Fe^{-r(T-t)} - V_t \frac{N(-d_1)}{N(-d_2)} \right] N(-d_2) \quad (4)$$

is often referred to as the insolvency put. Normally, efforts to increase the value of the equity call, equation (1), by increasing the risk of the firm, will be unsuccessful because the value of the

insolvency put will change by an equivalent amount. That is, bondholders will reduce what they are willing to pay for the debt. This reduction is the premium that stockholders "pay" to hold the insolvency put. Thus, changes in firm risk, normally create offsetting effects in the equity call and the insolvency put.

However, in situations where the value of debt is insensitive to firm risk, perhaps because its value is guaranteed by a third party at a non-risk based price, there is no offsetting change in the value of the insolvency put and increases in firm risk can increase the welfare of stockholders at the expense of the guaranty provider. Recognition of this has spawned a large literature related to the need to risk-adjust the price of bank deposit insurance (e.g. Ronn and Verma, 1986) and insurance guaranty funds (e.g. Cummins, 1988). Ligon and Thistle (2007) show that this same intuition provides incentives for particular organizational forms.

Ligon and Thistle (2007) seek to provide an explanation for the phenomenon of insurance "fleets". This is the phenomenon that property-liability insurance companies tend to organize themselves in an extensive parent-subsidary structure with separate companies for separate lines in separate states. They show that if the cost of the insolvency put,  $I(A, F)$ , is replaced by the cost of guaranty fund insurance that is sensitive only to the face value of debt,  $G(F)$ , value is added by forming separate subsidiaries rather than setting up a unified corporate structure. Let  $C(A, F)$  be the value of the equity call,  $V(A)$  be the value of the firm's assets, and  $V(F)$  be the value of the firm's liabilities discounted at the risk free rate (i.e. the first term on the left-hand side of equation (3)).

Suppose the firm serves two types of customers H and L. If the insurer serves both types in a unified corporate structure the value of the firm is

$$V(A_p) = V(F_p) - G(F_p) + C(A_p, F_p) \quad (5)$$

where  $p$  stands for a pooled (i.e. unified) structure. If the firm forms different corporations to serve each type, the value of the subsidiaries is

$$V(A_i) = V(F_i) - G(F_i) + C(A_i, F_i) \quad i = H, L. \quad (6)$$

The value of the shareholder's position in a pooled company is

$$C(A_p, F_p) - G(L_p). \quad (7)$$

The value of shareholders position from owning the two subsidiaries is

$$C(A_H, F_H) + C(A_L, F_L) - G(L_H) - G(L_L). \quad (8)$$

However, since a portfolio of options is worth at least as much as a simultaneously maturing option on a portfolio (see, e.g., Ingersoll, 1987, p. 302)

$$C(A_H, F_H) + C(A_L, F_L) \geq C(A_H + A_L, F_H + F_L) = C(A_p, F_p) \quad (9)$$

with equality holding only if the risk groups  $H$  and  $L$  are identical. For heterogeneous risks  $H$  and  $L$ , the inequality is strict. Then, since

$$G(L_H) + G(L_L) = G(L_H + L_L) \quad (10)$$

the use of the subsidiary structure adds value.

The value of the subsidiary structure is thus greater the greater the risk heterogeneity in the subsidiaries. Ligon and Thistle (2007) note that ordinary life, term life, and universal life insurance policies are generally underwritten by multiline life insurance companies. This is because the risks underlying these policies are not radically different. The grouping phenomenon, known as insurance fleets in the industry, is much more prominent in the property-liability industry where homeowners, automobile, general liability, and medical malpractice, for example, have significantly different risk characteristics.

Ligon and Thistle (2007) speculate that the logic would apply in any situation where the standard insolvency put is replaced by an obligation whose value is insensitive to firm risk or

where the cost of the insolvency put is not borne by shareholders. They specifically mention the case of litigation risk. In that case the value of a claimant's case is legally determined and the "price" the claimant "pays" to obtain the legal claim does not vary with the firm's insolvency risk. They note that so long as the claimants are not permitted to "pierce the corporate veil," the grouping phenomenon benefits the parent company's shareholders at the expense of the legal claimants since in the event claims exceed the assets of the subsidiary, it declares bankruptcy and the assets of the parent's other subsidiaries are unaffected.<sup>2</sup> Using similar logic, MacMinn and Brockett (1995) suggest that forming spin-off companies adds value.

Insurers often have little conventional debt. The question arises whether the logic of the Ligon and Thistle (2007) approach applies to a business that also has conventional leverage. Increasing firm risk could increase the insolvency put associated with the firm's conventional debt and potentially offset the benefits of the subsidiary structure associated with litigation risk. In this case the answer is that it depends on how the conventional debt is structured. If the conventional debt is concentrated in one subsidiary and the litigation risk is concentrated in another, the incentives for the subsidiary structure could be even stronger. In this case, the value of the combined firm would be

$$V(A_p) = V(D_p) + V(L_p) - I_p(A_p, D_p + L_p) + C(A_p, D_p + L_p) \quad (11)$$

where  $D$  is the face value of the conventional debt and  $L$  is the face value of the legal claim. If the conventional debt and the legal liability are segregated into safe and risky firms, the value of the safe firm is

$$V(A_s) = V(D_s) - I_s(A_s, D_s) + C(A_s, D_s) \quad (12)$$

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<sup>2</sup> In the appendix, we review recent literature on piercing the corporate veil. The bottom line is that in parent-subsidary cases, courts pierce relatively rarely (about 20% of the time) and much less often than in general "piercing" cases. Piercing occurs even more rarely unless the court finds fraud or "excessive" control/dominance by the parent (i.e. control that goes beyond the usual role of shareholders).

and the value of the risky firm is

$$V(A_r) = V(L_r) - I_r(A_r, L_r) + C(A_r, L_r) \quad (13)$$

In this situation the value increase is potentially greater than that noted by Ligon and Thistle (2007) because, not only does one get the increase in value resulting from the portfolio of options versus the option on a portfolio, but also the value of the insolvency put on the conventional debt may fall as well. The value and allocation of the insolvency put in (11), designated by  $I_p$ , is complicated and dependent upon the relative priority of conventional debt claimants and legal claimants in the event of bankruptcy. Its value will be partially borne by shareholders, to the extent conventional bondholders reduce what they will pay for the debt, and partially borne by the legal claimants, to the extent their actual award is less than their legally determined award. Also, the insolvency put in (13), designated by  $I_b$ , is not borne by the shareholders, but rather by the legal claimants. To the extent that the conventional bondholders have priority in bankruptcy over legal claimants, bankruptcy is costless, courts respect the priority structure, and the riskiness of the underlying assets is the same in the pooled and the safe firm, the value of the insolvency put borne by shareholders in (11) and value of the insolvency put borne by shareholders in (12) should be equivalent. However, to the extent bankruptcy is costly and/or there is some risk that the bondholders claims' will be diluted by legal claimants, the bondholders will incorporate this externality into what they will pay for the debt of the pooled firm and the cost of the insolvency put borne by shareholders in (11) will exceed the cost borne by shareholders in (12), providing an additional incentive for the subsidiary structure. It is straightforward that any such change in the value of the insolvency put would be greater the higher the absolute value of the existing delta of the put of the combined firm (i.e. the greater the moneyness of the put). This suggests that the value gain may be greater in financially

distressed firms. It also suggests that the relative gain to shareholders would be greater the relatively greater the importance of the legal claims relative to the conventional debt, since if the legal claims are primarily responsible for the moneyness of the put and debtholders internalize part of the costs imposed by the legal claims, the potential reduction in the value of the put attributable to the conventional debt (which would benefit shareholders) would be greater.

It is similar logic that leads Kahn and Winton (2004) to conclude that the formation of good bank/bad bank subsidiary structures adds value. In their case, they also consider the effect of the structure on moral hazard incentives. The separated structure lowers incentives for asset substitution behavior in the safer subsidiary, effectively lowering the value of the insolvency put there, and adding value.

Ligon and Thistle (2007) note that major tobacco companies have adopted the parent-subsubsidiary form of organization. They note that Philip Morris USA is a subsidiary, not a division, of Altria. Nondomestic tobacco operations and Altria's food and beverage operations were, before being spun-off, separate subsidiaries, not corporate divisions. Thus like most property-liability insurers, Altria has a fleet form of organization. Given the existing theoretical literature, one would, in general, expect to find the parent-subsubsidiary form of organization prevalent in firms with substantial litigation risk in a subset of the firm's business segments. On the other hand, divisional organizations under a single corporate entity would be common in firms where such risks are not present. It is that intuition that we now test.

### **2.3. Hypotheses, Data, and Methodology.**

#### *2.3.1. Hypotheses.*

The theoretical arguments in the preceding section lead immediately to our first testable hypothesis:

**Hypothesis 1: There is a positive relationship between litigation risk and subsidiary usage for firms in general.**

The arguments in the preceding section also suggest that any value gained from the use of the subsidiary structure could be greater if the firm is financially distressed. This is clearly an empirical question since it is a function of the relative priorities in bankruptcy of legal claims and conventional debt, the cost of bankruptcy, and the willingness of courts to respect any priority assigned to conventional debt. Our second hypothesis is:

**Hypothesis 2: The value and, hence, likelihood of using parent-subsidiary structures is positively correlated with the firm's risk of financial distress.**

Moral hazard may exacerbate the effect suggested in Hypothesis 2. Jensen and Meckling (1976) suggest that when a firm nears distress, equity holders have an incentive to substitute more risky assets for existing ones in an attempt to “gamble for resurrection,” even if the new projects have negative net present value. As noted, the results of Khan and Winton (2004) suggest that the use of the subsidiary structure may reduce this moral hazard problem and add value.

Finally, the arguments in the preceding section also suggest that the value of a parent-subsidiary structure will be positively related to the relative importance of the legal claims relative to the conventional debt with respect to the potential insolvency of the firm. Hence our third hypothesis is:

**Hypothesis 3: The value and, hence, likelihood of using parent-subsidiary structures is positively correlated with the severity of the legal claims against the firm.**

*2.3.2. Sample section and data.*

We obtain subsidiary data from the EDGAR database. Litigation data come from the SEC EDGAR and LexisNexis databases. Firm segment and accounting data for the sample come from the Compustat database. Firms in our sample belong to the S&P 1500, which consists of the

S&P 500, S&P Mid-cap 400 and S&P Small-cap 600. We obtain data that meet all our requirements over fiscal years 2005 to 2011.

To identify the existence (if any) of a company's subsidiaries, we hand-collected subsidiary data for the S&P 1500 companies from the U.S. Securities and Exchange Commission (SEC) EDGAR database. Publicly traded companies in the United States are required by the SEC to submit an annual Form 10-K containing a comprehensive detail of a company's performance. Item 601 of Regulation S-K, Exhibit 21 of the annual Form 10-K provides a list of all subsidiaries of the registrant.

This process yielded over 99,022 significant subsidiaries of 1,419 companies. Of these subsidiaries, 55% are incorporated in the United States (U.S.) while the remaining 45% are incorporated outside the United States. Table 2.1 reports the S&P 1500 firms' subsidiary distribution by geographical area and sector. Columns 2 and 3 of Panel A of this table present the distribution and rank of S&P 1500 subsidiaries by geographical area. About 59.5% of the subsidiaries are incorporated in North America, 22.13% in Europe, 8.52% in Asia, 2.69% in the Caribbean, 2.66% in South America, 2.36% in Australasia, and the remainder in Africa, and the Middle East. Panel B of Table 2.1 reveals that the financial sector has the highest percentage (34.53%) of total U.S. subsidiaries. This is not surprising given that regulation provides a variety of incentives for subsidiary use in the financial sector.

Table 2.2 shows the distribution of S&P 1500 subsidiaries by U.S. state of incorporation. As seen in Table 2.2, about 57% of the subsidiaries in the United States (U.S.) are incorporated in the state of Delaware, which is not surprising. Delaware's statutory provisions for incorporation and its large body of business case law provide a number of incentives for incorporating in Delaware, including helping companies to plan carefully to avoid lawsuits.

There is no Delaware corporate income tax for corporations that are formed in Delaware so long as they do not transact business in Delaware. About 4.5% of the U.S. subsidiaries are incorporated in the state of California, 3% in the state of Texas, 2.3% in Florida, and 2% in the state of New York.

As mentioned previously, the primary sources of lawsuit data are the SEC EDGAR and LexisNexis databases. We hand-collected lawsuit data for firms in the sample from the LexisNexis legal database and by reading the legal proceedings section of the firm's annual report (Form 10-K) from the U.S. Securities and Exchange Commission (SEC) EDGAR database. Publicly traded companies in the United States are required by the SEC to submit an annual Form 10-K. This form contains comprehensive detail regarding the company's performance. Item 3 of a firm's annual report requires the company to disclose any significant pending lawsuit or other legal proceedings. References to these proceedings could also be disclosed in the Risks section or other parts of the report.

Table 2.3, Panel A shows the number of cases by lawsuit type and year. We identify about 25,681 filings from 2005 to 2011, for an average of approximately 3,669 per year. These lawsuits are filed against publicly listed companies. The number of lawsuits each year does not seem to vary considerably even though we observe increases in post 2005 data. For instance, there were 1,090 employment and labor lawsuits in 2006, but only 856 in 2005. It is not clear what explains this variation.

Panel B of Table 2.3 reports the fraction of lawsuit types by year. It is clear that distribution of lawsuit type is close to identical across years. The distribution of the lawsuit types are as follows; employment and labor (31.7%), intellectual property (11.2%), pension benefit (6.8%), commercial (10.5%), and securities (4.4%). At the other end of the spectrum, the

legal cases pertaining to government contracts, environment, finance and banking, and corporate governance generally account for a small fraction of legal cases in the 1% to 5% range.

### *2.3.3. Research design and variable definitions.*

We describe the empirical proxies employed in the analysis in this subsection. We then continue to motivate the control variables and present the regression models.

#### *2.3.3.1 Dependent variable.*

The dependent variable is the number of U.S. subsidiaries, and it is measured as the natural logarithm of one plus the number of U.S. Subsidiaries ( $\text{Log}(\text{USsubs} + 1)$ ). We define the number of U.S. Subsidiaries as the total number of subsidiaries incorporated in the U.S. that is reported on Exhibit 21 of the company's Form 10-K.

#### *2.3.3.2 Independent Test Variable*

The main explanatory variable of interest is litigation risk (LRisk). Much of the research measures litigation risk using an industry-based proxy either alone or in conjunction with other variables. A common proxy is based on membership in the biotechnology (SIC code 2833-2836 and 8731-8734), computing (SIC codes 3570-3577 and 7370-7374), electronics (SIC codes 3600-3674) and retail (SIC codes 5200-5961) industries. This proxy originates from Francis, Philbrick and Schipper (1994).

We define litigation risk as the number of legal cases for which a firm is mentioned as a defendant. We use different lawsuit types to proxy for litigation risk. Specifically, we use data on the following lawsuit types: pension and benefits (*Pen&Ben L.R.*), product liability (*ProdLiability L.R.*), environmental (*Environmental L.R.*), general liability (insurance) (*GenLiability L.R.*), medical liability (*MedLiability L.R.*), employment and labor (*EmpLabor*

*L.R.*), intellectual property (*IntelProperty L.R.*), antitrust (*Antitrust L.R.*), banking and finance (*Fin&Bank L.R.*), securities (*Securities L.R.*), commercial (*Commercial L.R.*), corporate governance (*CorpGov L.R.*), government contracts (*GovContracts L.R.*) and other lawsuit types that do not fall into any of the above lawsuit categories (*Other L.R.*).

We define *Total L.R.* as the sum of all lawsuit types. The variable *High Severity L.R.* is the sum of pension and retirement benefits, product liability, environmental liability, general liability, and medical liability lawsuits. These are legal claims with the power to bankrupt a firm.<sup>3</sup> The variable *Low Severity L.R.* is the difference between *Total L.R.* and *High Severity L.R.*

### 2.3.3.3 Control Variables

We use numerous controls in the analyses to account for alternative determinants of subsidiary usage. These controls include firm size, disclosure requirements, mergers and acquisitions (M &A) activities, institutional regulatory requirements, advertising intensity, number of business segments, financial distress, leverage and cash holdings. The following is a brief description of the control variables.

*Size.* The size of the firm is likely to affect the number of subsidiaries a firm owns. Prior research finds evidence to support the fact that large firms are more likely to form subsidiaries (Brouthers, 2002). The complexities that are likely to appear in larger firms may create incentives for subsidiary usage. We define firm size (*Size*) as the natural logarithm of one plus market capitalization.

*Industry Regulatory Factors.* Regulation can affect the choice of subsidiary structure. For example, regulatory factors have influenced the formation of insurance fleets. Regulation

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<sup>3</sup> Intellectual property litigation risk might be classified as severe for a start-up company, particularly in industries such as software development. Our sample is the S&P 1500, however, and for such firms, it is unlikely that disputes over intellectual property could lead to bankruptcy.

appears to be a driving force in the creation of insurance company subsidiaries in Texas. Also, regulation regarding bank holding companies effectively requires separate subsidiaries for those firm's non-banking activities. We classify firms as Regulated Firms if they are in SIC codes 4900-4999 or 6000-6999. We define Regulated Industry (*RegInd*) as a dummy variable taking the value of one when the firm is a regulated firm and zero otherwise.

*Corporate Friendliness.* Subsidiary usage in many cases can be driven by tax and legal requirements of the jurisdiction that would house the subsidiary. Noe (1998) argues that multinational firms separately finance subsidiaries in different countries in order to take advantage of differences in legal regimes. The sample firms in this study, however, consist of domestic US subsidiaries. We define Corporate Friendliness (*CorpFrd*) as a dummy variable taking the value of one when the firm is incorporated in any of the following three states: Delaware, Nevada, or Wyoming and zero otherwise. These states feature favorable corporate regulatory environments and low corporate tax rates. Firms incorporated in these states may have less need to form subsidiaries.

*Mergers and Acquisitions (M &A) Activity.* Firms that are involved in mergers and acquisitions are likely to hold their target firms as subsidiaries. We define M &A Activity (M &A) as the ratio of acquisition expenditure to total assets for a given year. Any missing value of acquisitions in the Compustat database is replaced with zero.

*Brand Differentiation.* Marketing/brand differentiation advantages are likely to have an effect on subsidiary usage. We define marketing differentiation (*AdvExp*) as the ratio of advertising expenditure to sales. If a firm's advertising expenditure is missing in the Compustat database, we set it to zero. Firms with significant advertising expenditures might dilute the value of such expenditures by forming subsidiaries that would not be identified with the advertising.

*Number of Business Segments.* The number of business segments a firm has is likely to have an effect on subsidiary usage, since each segment might be placed in a separate subsidiary. We define number of business segments (*Nbseg*) as the Compustat count of different business segments.

*Financial Distress.* As suggested in section 2, financial distress can have an effect on subsidiary usage. There are several models for measuring a firm's level of financial distress and its probability of going bankrupt. These models are based on accounting data, stock market data, and bond ratings. They are mainly constructed using multiple discriminant analysis (e.g., Altman, 1968) or multiple choice analyses, such as logit (e.g., Ohlson, 1980) and probit (e.g., Zmijewski, 1984).

Following Altman (1968), a widely used model of bankruptcy prediction, we construct a financial distress variable (*FinDistr*). Financial distress (*FinDistr*) is the tercile ranking of the firm based on its Altman Z-score. This variable takes on the value of two when the firm is in the lowest tercile group (i.e. financially distressed group). *FinDistr* takes on the value of one if the firm is in the middle tercile group and zero otherwise.

*Leverage.* Leverage measures the total debt the company has taken on. A firm's leverage is likely to have an effect on subsidiary usage. As suggested in section 2, higher conventional leverage could increase the incentives for subsidiary usage. Kolasinski (2009) finds that firms are more likely to use subsidiary debt when their divisions vary more in risk. We define leverage (*Levg*) as the ratio of long-term debt plus short term debt to total assets.

*Cash Holdings.* We also control for cash holdings. Subrahmaniam, Tang, Yue, and Zhou (2011) find that diversified firms hold significantly less cash than their focused counterparts. They attribute this to complementary growth opportunities across different firm segments and the

existence of active internal capital markets. We define Cash holdings (*LogCash*) as the natural logarithm of one plus cash and marketable securities.

#### 2.3.4. Model and Methodology.

We test the hypotheses using regression equation (14) below. We estimate the model using Fama and MacBeth (1973) regressions. In the Fama-MacBeth approach, we first estimate yearly cross-sectional regressions to obtain the annual estimated coefficients for each year and then compute the average of the estimated coefficients. This method of assessing statistical significance deserves some explanation. In particular, one logical alternative would be a pooled setup with firm fixed effects and time-varying coefficients. We rejected this alternative mainly because there are few changes over time in litigation risk, and the inclusion of fixed effects would force identification of the *LRisk* coefficients from only these changes. Also the Fama-MacBeth methodology is a convenient and conservative way to account for potential cross-correlations in residuals. Fama and French (2002), report that the Fama-MacBeth standard errors potentially can be two to five times the Ordinary Least Squares (OLS) standard errors from pooled regressions that ignore residual cross-correlations.

Controlling for the fixed effects at the industry level, we estimate the following regression equation:

$$\begin{aligned} \text{Log}(US\ subs + 1) = & a_0 + a_1(LRisk) + a_2(RegInd) + a_3(Size) + a_4(M\&A) + a_5(CorpFrd) \\ & + a_6(AdvExp) + a_7(Nbseg) + a_8(FinDistr) + a_9(Levg) + a_{10}(Log\ Cash) + \varepsilon \end{aligned} \quad (14)$$

where *LRisk*, is the main independent variable. As suggested in section 2.3.3.2 above, we substitute different measures of litigation risk to rigorously test its relationship to subsidiary

usage. The control variables are defined in the preceding subsection. All variables are defined in Table 2.10 as well.

## 2.4. Empirical Results

In this section, we present the summary statistics (section 4.1) and examine the relationship between litigation risk and the number of subsidiaries for the full sample (section 4.2), financially distressed and the gray zone sub-samples (section 4.3), and financially healthy sub-samples (section 4.4).

### 2.4.1. Summary Statistics

Panel A of Table 2.4 presents the descriptive statistics for the variables used in the analyses. The average number of U.S. subsidiaries is 38.55 with a maximum of 1,578. The mean of the variable *RegInd* is 0.23. M&A activities as a percentage of assets range from 0 to 0.74 with a mean of 0.03. The size (as measured by the natural logarithm of one plus market capitalization in millions of dollars) of firms in the sample ranges from 3.09 to 13.13 with an average of 7.77. The variable *CorpFrd* ranges from 0 to 1 with a mean of 0.6. The averages of the variables *AdvExp* and *Levg* are 0.01 and 0.17, respectively. The variable *Nbseg* ranges from 1 to 11 with a mean of 2.64. The variable *LogCash* ranges from 0 to 12.9 with a mean of 5.26. Panel B of Table 2.4 details correlations between the key variables used in this study.

Panels A, B and C of Table 2.5 detail the descriptive statistics for financially distressed, gray zone, and financially healthy firms respectively. From Table 2.5, we note that financially distressed firms are relatively larger, have a large number of domestic subsidiaries, take little advantage of favorable tax, disclosure and legal requirements as measured by the variable *CorpFrd*. They are also highly levered, operate in regulated industries, and hold more cash than their gray zone and financially healthy counterparts.

#### 2.4.2 Litigation risk and subsidiary usage

In this section, we examine how exposure to a high litigation environment affects subsidiary usage using the regression model in equation (14). The model is estimated using the Fama-MacBeth regression approach. Here, we first estimate yearly cross-sectional regressions to obtain annual estimated coefficients for each year and then compute the average of the estimated coefficients. We hypothesize that firms in a high litigation environment are more likely to use subsidiaries. A positive and significant *LRisk* coefficient would support Hypothesis 1. All the regression specifications include industry fixed effects. The results of these regressions are presented in Table 2.6.

The dependent variable in all the regression specifications is  $\text{Log}(USsubs)$ . In Panel A, we present results for *Total L.R.*, *Low Severity L.R.*, and *High Severity L.R.* In Panel B, we present results for the individual components of *High Severity L.R.*, which include *Pen&Ben L.R.*, *ProdLiab L.R.*, *Environmental L.R.*, *GeneralLiab L.R.*, and *MedicalLiab L.R.* In Panel C, we present results for the individual components of *Low Severity L.R.*, which include *IntelProp L.R.*, *Antitrust L.R.*, *Fin&Bank L.R.*, *Securities L.R.*, *Commercial L.R.*, *Emp&Labor L.R.*, *GovContracts L.R.*, *CorpGov L.R.*, and *Other L.R.*

The results in panel A show that *Total L.R.*, *Low Severity L.R.*, and *High Severity L.R.* are all statistically significantly positively related to the number of U.S. subsidiaries that a firm maintains. Thus, we find clear support for Hypothesis 1. Almost all of the control variables are also significant in the expected ways. Firms in regulated industries have more subsidiaries, firms active in mergers and acquisitions have more subsidiaries, larger firms have more subsidiaries, firms in corporate friendly states have fewer subsidiaries, firms with higher advertising expenditures have fewer subsidiaries, more leveraged firms have more subsidiaries, firms in financial distress have more subsidiaries, and firms with more business segments have more

subsidiaries. Only the cash holdings variable is insignificant. The positive significance of financial distress, which we explore in more detail in subsequent sections, is consistent with Hypothesis 2.

In panel B, we again find that each of the components of high severity litigation risk, *Pen&Ben L.R.*, *ProdLiab L.R.*, *Environmental L.R.*, *GeneralLiab L.R.*, and *MedicalLiab L.R.* is significantly positively related to the number of U.S. subsidiaries. Again, this is consistent with Hypothesis 1. The coefficients of each of the control variables continue to display the same sign and significance found in panel A. Again, the positive significant coefficient on financial distress is consistent with Hypothesis 2.

In panel C, we find that five of the components of *Low Severity L.R.*, including *Fin&Bank L.R.*, *Securities L.R.*, *Commercial L.R.*, *Emp&Labor L.R.*, and *CorpGov L.R.*, are positively significantly related to the number of U.S. subsidiaries a firm has. However the coefficients on, *Antitrust L.R.*, *GovContracts L.R.*, and *Other L.R.* are insignificant and the coefficient on *IntelProp L.R.* is actually significantly negative. While this continues to provide some evidence in favor of Hypothesis 1, and for Hypothesis 2, since financial distress continues to be positively significant in each regression, it also provides evidence in favor of Hypothesis 3. For the lower severity litigation risks, the positive relationship between litigation risk and the number of subsidiaries is weaker than it is for high severity litigation risks or total litigation risk. This is consistent with subsidiary structures being more valuable the more substantial the potential cost of litigation to the firm.

#### *2.4.3. Litigation risk and subsidiary usage for financially distressed firms*

This section examines how exposure to a high litigation environment affects subsidiary usage for financially distressed firms using the regression model in equation (14). A

firm is classified as financially distressed, if that firm's Altman Z-score tercile ranking falls in the lowest tercile group. The model is estimated using Fama-MacBeth regression, in which we first estimate yearly cross-sectional regressions to obtain annual estimated coefficients for each year and then compute the average of the estimated coefficients. We hypothesize that financially distressed firms in a high litigation environment are more likely to form subsidiaries. A positive and significant LRisk coefficient would support Hypothesis 2. The results of these regressions are presented in Table 2.7. Consistent with the prediction of theoretical models, litigation risk is positively related to subsidiary usage for financially distressed firms.

We again separate results for *Total L.R.*, *Low Severity L.R.*, and *High Severity L.R.*, which are reported in Panel A. While in Panel B, we present results for the individual components of *High Severity L.R.*, which include *Pen&Ben L.R.*, *ProdLiab L.R.*, *Environmental L.R.*, *GeneralLiab L.R.*, and *MedicalLiab L.R.* and in Panel C, we present results for the individual components of *Low Severity L.R.*, which include *IntelProp L.R.*, *Antitrust L.R.*, *Fin&Bank L.R.*, *Securities L.R.*, *Commercial L.R.*, *Emp&Labor L.R.*, *GovContracts L.R.*, *CorpGov L.R.*, and *Other L.R.*

Total litigation risk, high severity litigation risk, and low severity litigation risk are all positively significantly related to the number of U.S. subsidiaries. In addition, the coefficient values are all significantly greater in Table 2.7, than in Table 2.6. In Panel B, all of the components of high severity litigation risk are significantly positively related to the number of U.S. subsidiaries. Three of the five coefficient values in Table 2.7 are greater than those in Table 2.6. In Panel C, for the components of low severity litigation risk, seven of the nine measures are significantly positively related to the number of U.S. subsidiaries, while two are insignificant. Thus, we continue to see support for hypotheses 1, 2, and 3 in the financially distressed subsample. All of the control variables have the same sign pattern as in Table 2.6, but the

significant levels of many are muted. Only market capitalization, leverage, and the number of business segments are significantly related to the number of subsidiaries, all positively. Advertising expenses are significantly negatively related to the number of subsidiaries. Regulation, M&A activity, and the friendliness of the jurisdiction of incorporation are not related to the number of subsidiaries in this financially distress subsample.

For robustness, we repeat a similar analysis for firms with Altman Z-scores in the middle tercile group, the gray zone sub-sample. We present the results from the analysis in Table 2.8. In panel A, we find that only high severity litigation risk is positively related to the number of U.S. subsidiaries for gray zone firms. However, total litigation risk and low severity litigation risk are not. Also, in Panel B, only two of the five components of high severity litigation risk are significantly positively related to the number of U.S. subsidiaries, and in Panel C only two of the nine components of low severity litigation risk are significantly positively related to the number of U.S. subsidiaries, while one component is negatively significant. All of the control variables continue to display the same sign and significance pattern as in Table 2.6 with the exception that some significance levels drop and cash becomes negatively related to the number of U.S. subsidiaries. Comparing the results with those of financially distressed firms we continue to see support for Hypotheses 1, 2, and 3.

#### *2.4.4 Litigation risk and subsidiary usage for financially healthy firms*

In this section, we examine how exposure to a high litigation environment affects subsidiary usage of financially healthy firms using the regression model in equation (14). A firm is classified as financially healthy, if that firm's Altman Z-score tercile ranking falls in the highest tercile group. The model is estimated using Fama-MacBeth regression. We hypothesize that financially healthy firms in a high litigation environment have less incentive to form

subsidiaries than financially distressed firms. A statistically insignificant, positive or a non-positive *LRisk* coefficient would support Hypothesis 2 with respect to financially healthy firms. The results of these regressions are presented in Table 2.9. Consistent with the prediction of theoretical models, the results show little positive relationship between litigation risk and subsidiary usage for financially healthy firms. In panel A, only high severity litigation risk continues to display a significant positive relationship with the number of U.S. subsidiaries. Total and low severity litigation risk are actually negatively significant. In panel B, only one component of high severity litigation risk is positively significant. We find a positive relationship between product liability risk and subsidiary usage for financially healthy firms. None of the components of low severity litigation risk displays a significant positive relationship to the number of U.S. subsidiaries. For employment and labor, securities and corporate governance lawsuits, the relationship between litigation risk and the number of subsidiaries is positive but insignificant. For two measures, intellectual property and antitrust litigation risks, we find a negative relationship with the number of subsidiaries. The control variables sign and significance pattern is similar to that for the gray zone sample in Table 2.8. However, the cash holdings variable is positively significant in this case. Comparing the results in Table 2.7, 2.8, and 2.9 provides relatively strong support for hypothesis 2.

One might suspect that the high number of subsidiaries held by the financial firms and the financial crisis of 2008-2009 are driving our results. However, we omitted the financial firms from our sample and reran all our regression models and the results are substantially unchanged. The only significant difference in the total, high, and low severity risk coefficients across the full sample and the three default risk tercile subsamples is that low severity litigation risk is no longer significantly positive in the full sample.

Given that all the models involve censored dependent variables, for robustness, we reran all our regression models using the Tobit model and the results are qualitatively similar.<sup>4</sup>

## **2.5. Conclusion**

This paper provides empirical evidence of the relationship between litigation risk and the use of subsidiaries by large U.S. corporations. We find that firms with high litigation risk tend to have a large number of subsidiaries. Dividing the sample firms into financially distressed, gray zone, and financially healthy sub-samples, we find that financially distressed firms that are exposed to high litigation risk tend to have a large number of subsidiaries. The results suggest that there is a positive relationship between litigation risk and the number of subsidiaries for firms under financial distress. We also find that financially healthy firms have less incentive to form subsidiaries when exposed to high litigation risk. Finally, we find that high severity litigation risk is more strongly related to the number of subsidiaries than low severity litigation risk. These findings are consistent with the theoretical literature. Taken as a whole, these results bring to light an efficient link between litigation risk and subsidiary usage. The results indicate that litigation risk can provide a useful tool for research on corporate diversification by financial economists. We hope this study will provide a framework and a starting point for this line of research.

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<sup>4</sup> Tobit model is a censored regression methodology. This technique is designed to estimate linear relationships between variables when there is either left- or right-censoring in the dependent variable. The results continue to hold under this methodology. The relations are also qualitatively similar under the pooled OLS regression.

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## **APPENDIX: Piercing the Corporate Veil**

The theoretical arguments in section 2 are valid only if the corporate form of organization is respected and limited liability for shareholders is maintained. Piercing the corporate veil or lifting the corporate veil is a legal decision to treat the rights or duties of a corporation as the rights or liabilities of its shareholders. Usually a corporation is treated as a separate legal entity, which is solely responsible for the debts it incurs and the sole beneficiary of the credit it is owed. Common law countries usually uphold this principle of separate personhood, but in exceptional situations may “pierce” or “lift” the corporate veil.

According to Blumberg (2005), traditional piercing jurisprudence rests on the demonstration of three fundamental elements: the subsidiary’s lack of independent existence; the fraudulent, inequitable, or wrongful use of the corporate form; and a causal relationship to the plaintiff’s loss. Unless each of these three elements has been shown, courts have traditionally failed to lift the corporate veil. Piercing the corporate veil is a heavily studied topic in the legal literature. The first definitive empirical study of piercing was that of Thompson (1991). Hodge and Sachs (2008) and McPherson and Raja (2010) have performed updates of the Thompson study. For our purposes the most relevant empirical study is that of Matheson (2009), who examines the propensities of modern courts for piercing the corporate veil in the parent-subsidary situation.

Matheson (2009) finds that courts seldom pierce the subsidiary’s corporate veil and do so much less often than in the overall universe of piercing cases, including the classic case of a small business with one or a few individual owners. He finds the overall piercing rate in parent-subsidary cases to be about 20%. This overall rate is much lower than (about one-half) the average found by Thompson in overall piercing jurisprudence. Matheson finds the two most

important factors influencing the court's decision to pierce in parent-subsidary cases is the presence of parental control and domination and fraud or misrepresentation. In the absence of a finding of parental control and domination, courts pierce only 2.1% of the time in parent-subsidary cases. In the absence of a finding of fraud and misrepresentation, they pierce only 8.5% of the time in parent-subsidary cases. Matheson notes that parental control and domination mean something more than the traditional level of control by a shareholder with respect to the corporation. Thus, the mere actions of a shareholder in electing the board of directors to run the corporation and the right of the shareholder to remove these directors is not "parental control and domination" likely to trigger piercing. Thus, in the absence of parental domination or fraud, corporations would have some reason to believe that their organizational structure would be respected.

We do not regard our results as suggesting that a change in the current judicial interpretation of piercing cases is necessary and do not agree with the concept suggested by some scholars for enterprise liability, where all parent-subsidary structures are disregarded in assessing legal liability (see, e.g. Strasser, 2005). Consider the debt holders and employees of a parent firm that acquires a firm with a pre-existing potential legal liability and maintains it as a subsidiary. If courts were to apply an enterprise liability concept and allow the legal claimants of the subsidiary to pierce the veil, then the innocent debt holders and employees of the parent would be harmed, with the former losing security for their bonds and the latter losing funding for future pension and health benefits. The same logic would apply to the debt holders and employees of a target firm acquired by a parent with another subsidiary with a pre-existing potential legal liability. Enterprise liability has much potential for setting innocents against one another. Piercing the veil in such instances would likely lead to a significant increase in the cost

of corporate debt, as bondholders must anticipate all future corporate combinations that their current debtor might join, and chill the market for corporate control, whose role in replacing incompetent and/or nefarious management is well recognized (see, e.g. Jensen and Ruback, 1983).

It is really only the case of an *ex post* corporate reorganization that deliberately attempts to isolate the effects of potential legal liability from other stakeholders, including debt holders and employees who were aware of that liability at the time they contracted with the firm, that is problematic. In that case, the organizational form is being used to deliberately protect existing stakeholders, who currently face exposure to the risk, at the expense of the legal claimants. However, absent other legitimate business reasons for such a reorganization, that case smacks of fraud, and when the courts find fraud, Matheson (2009) finds they will pierce 92.3% of the time. It is the beauty and the power of the common law that the facts of the case matter.

**Table 2.1: S&P subsidiary distribution by geography and sector***Panel A: S&P 1500 Subsidiaries: distribution by geographic region*

Geographical Area	Percent (%)	Rank
North America	59.46	1
Europe	22.13	2
Asia	8.52	3
Caribbean	2.69	4
South America	2.66	5
Australasia	2.36	6
Africa	1.27	7
Middle East	0.90	8

*Panel B: S&P 1500 subsidiaries: distribution by sector*

Sector	USsubs	%USsubs	INTsubs	%INTsubs	World	% World
Materials	1,899	3.5	3,912	8.73	5,811	5.87
Consumer Discretionary	10,057	18.55	6,089	13.59	16,146	16.31
Healthcare	5,858	10.81	4,734	10.56	10,592	10.70
Industrials	6,619	12.21	10,464	23.36	17,083	17.25
Financial	18,721	34.53	4,779	10.67	23,500	23.73
Consumer Staples	2,100	3.87	3,009	6.72	5,109	5.16
Utilities	2,217	4.09	878	1.96	3,095	3.13
Services	169	0.31	224	0.50	393	0.40
Technology	4,497	8.30	8,282	18.48	12,779	12.91
Energy	2,075	3.83	2,439	5.44	4,514	4.56
<b>TOTAL</b>	<b>54,212</b>	<b>100</b>	<b>44,810</b>	<b>100</b>	<b>99,022</b>	<b>100</b>

**Table 2.2: S&P subsidiary distribution by U.S. state of incorporation**

STATE	Percentage	Rank	STATE	Percentage	Rank
Delaware	56.6	1	Oregon	0.4	29
California	4.5	2	South Carolina	0.4	30
Texas	3.0	3	Kentucky	0.4	31
Florida	2.3	4	Puerto Rico	0.3	32
New York	2.2	5	Hawaii	0.3	33
Maryland	2.1	6	Kansas	0.3	34
Nevada	1.9	7	Vermont	0.3	35
Ohio	1.8	8	Mississippi	0.3	36
Pennsylvania	1.7	9	Iowa	0.3	37
Illinois	1.6	10	Utah	0.3	38
Virginia	1.6	11	Arkansas	0.2	39
New Jersey	1.4	12	West Virginia	0.2	40
Georgia	1.3	13	Nebraska	0.2	41
Tennessee	1.2	14	New Hampshire	0.2	42
Michigan	1.1	15	Maine	0.1	43
Indiana	1.1	16	New Mexico	0.1	44
Colorado	1.0	17	Alaska	0.1	45
Massachusetts	1.0	18	Idaho	0.1	46
Minnesota	1.0	19	District of Columbia	0.1	47
North Carolina	0.9	20	Montana	0.1	48
Arizona	0.9	21	Rhode Island	0.1	49
Wisconsin	0.8	22	Virgin Islands	0.1	50
Washington	0.7	23	Wyoming	0.1	51
Connecticut	0.7	24	South Dakota	0.1	52
Louisiana	0.6	25	North Dakota	0.0	53
Missouri	0.6	26	Guam	0.0	54
Oklahoma	0.5	27	American Samoa	0.0	55
Alabama	0.5	28	Northern Marianas Islands	0.0	55

**Table 2.3: Distribution of lawsuit type by year**

This table shows the number of lawsuit types by year. The lawsuits in this table are lawsuits filed against publicly-held firms. The distribution of total lawsuits is also similar across years.

*Panel A: Number of lawsuits by type and year*

	2005	2006	2007	2008	2009	2010	2011	Total	Mean
Employment & Labor	856	1,090	1,191	1,134	1,324	1,304	1,243	8,142	1,163.14
Intellectual Property	272	364	401	447	440	443	499	2,866	409.43
Pension & Benefits	188	255	291	258	258	251	240	1,741	248.71
Commerical	278	352	391	386	438	414	435	2,694	384.86
Securities	171	142	182	115	186	178	152	1,126	160.86
Government Contracts	28	28	26	30	32	40	45	229	32.71
Environmental	93	91	109	95	103	84	93	668	95.43
Finance & Banking	55	58	73	78	98	119	116	597	85.29
Antitrust	119	136	154	156	253	217	199	1,234	176.29
Product Liability	222	255	248	267	248	201	247	1,688	241.14
Medical Liability	151	214	235	220	243	256	276	1,595	227.86
Corporate Governance	58	60	43	42	54	53	55	365	52.14
General Liability	155	200	207	199	261	242	254	1,518	216.86
Others	147	162	180	164	196	184	185	1,218	174.00
<b>Total</b>	<b>2,793</b>	<b>3,407</b>	<b>3,731</b>	<b>3,591</b>	<b>4,134</b>	<b>3,986</b>	<b>4,039</b>	<b>25,681</b>	

*Panel B: Percentage of type by year*

	2005	2006	2007	2008	2009	2010	2011
Employment & Labor	30.65	31.99	31.92	31.58	32.03	32.71	30.77
Intellectual Property	9.74	10.68	10.75	12.45	10.64	11.11	12.35
Pension & Benefits	6.73	7.48	7.80	7.18	6.24	6.30	5.94
Commerical	9.95	10.33	10.48	10.75	10.60	10.39	10.77
Securities	6.12	4.17	4.88	3.20	4.50	4.47	3.76
Government Contracts	1.00	0.82	0.70	0.84	0.77	1.00	1.11
Environmental	3.33	2.67	2.92	2.65	2.49	2.11	2.30
Finance & Banking	1.97	1.70	1.96	2.17	2.37	2.99	2.87
Antitrust	4.26	3.99	4.13	4.34	6.12	5.44	4.93
Product Liability	7.95	7.48	6.65	7.44	6.00	5.04	6.12
Medical Liability	5.41	6.28	6.30	6.13	5.88	6.42	6.83
Corporate Governance	2.08	1.76	1.15	1.17	1.31	1.33	1.36
General Liability	5.55	5.87	5.55	5.54	6.31	6.07	6.29
Others	5.26	4.75	4.82	4.57	4.74	4.62	4.58

**Table 2.4: Descriptive statistics and correlations for variables**

This table reports summary statistics and correlations for the sample. The sample consists of S&P 1500 firms during the period 2005-2011 with non-missing data. All variables are defined in section 2.3.3 and table 2.10.

*Panel A: Descriptive statistics (Full Sample)*

Variables	N	Mean	Std.Dev.	Min	P25	Median	P75	Max
U.S. Subsidiaries	9,675	38.55	99.6	0	5	12	31	1578
Log (US Subs)	9,675	2.68	1.31	0	1.79	2.56	3.47	7.36
Total Litigation Risk	9,675	2.55	7.73	0	0	0	2	171
Low Severity L.R.	9,675	1.85	5.64	0	0	0	2	125
High Severity L.R.	9,675	0.7	2.63	0	0	0	0	66
Pension & Ben. L.R.	9,675	0.17	0.68	0	0	0	0	11
Product Liability L.R.	9,675	0.16	1.09	0	0	0	0	40
Environmental L.R.	9,675	0.07	0.41	0	0	0	0	9
General Liability L.R.	9,675	0.15	0.78	0	0	0	0	21
Medical Liability L.R.	9,675	0.16	0.86	0	0	0	0	16
Intellectual Prop. L.R.	9,675	0.29	1.29	0	0	0	0	34
Antitrust Lit. Risk	9,675	0.12	0.54	0	0	0	0	9
Finance & Banking L.R.	9,675	0.06	0.47	0	0	0	0	22
Securities Lit. Risk	9,675	0.11	0.64	0	0	0	0	23
Commercial Lit. Risk	9,675	0.27	0.93	0	0	0	0	20
Employ. & Labor L.R.	9,675	0.82	3.4	0	0	0	1	88
Government Contract L.R.	9,675	0.02	0.21	0	0	0	0	7
Corporate Governance L.R.	9,675	0.04	0.28	0	0	0	0	12
Other Litigation Risk	9,675	0.12	0.59	0	0	0	0	18
Regulated Industry Dummy	9,675	0.23	0.42	0	0	0	0	1
Merger & Acquisition	9,209	0.03	0.06	0	0	0	0.02	0.74
Log(Market Cap)	9,503	7.77	1.5	3.09	6.67	7.59	8.71	13.13
Corp. Friendliness Dummy	9,675	0.6	0.49	0	0	1	1	1
Advertising Expenses	9,671	0.01	0.03	0	0	0	0.01	0.37
Leverage	9,675	0.17	0.16	0	0.02	0.14	0.27	0.9
Financial Distress Tercile	9,432	1	0.82	0	0	1	2	2
No. of Business Segments	7,645	2.64	1.71	1	1	3	4	11
Log(Cash)	9,673	5.27	1.9	0	4.07	5.22	6.41	12.9

*Panel B: Pearson Correlation Coefficients (Full Sample)*

	C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11	C12	C13	C14
C1: US Subsidiaries	1.00													
C2: Log (US Subs)	0.63	1.00												
C3: Total Litigation Risk	0.17	0.19	1.00											
C4: Low Severity L.R.	0.16	0.16	0.96	1.00										
C5: High Severity L.R.	0.13	0.20	0.81	0.62	1.00									
C6: Regulated Industry Dummy	0.16	0.22	-0.03	-0.03	-0.01	1.00								
C7 Mergers and Acquisitions	0.00	0.04	-0.03	-0.03	-0.01	-0.12	1.00							
C8: Log(Market Cap)	0.22	0.34	0.42	0.40	0.34	0.10	-0.03	1.00						
C9: Corporate Friendliness	-0.05	-0.07	-0.01	-0.01	0.00	-0.20	0.06	-0.01	1.00					
C10: Advertising Expenditures	-0.03	-0.09	0.00	0.01	-0.03	-0.11	-0.01	-0.01	0.07	1.00				
C11: Leverage	0.22	0.30	0.05	0.05	0.04	0.20	0.07	0.11	-0.11	-0.06	1.00			
C12: Financial Distress Tercile	0.22	0.31	0.07	0.06	0.06	0.45	0.01	0.10	-0.10	-0.12	0.58	1.00		
C13: No. of Business Segments	0.12	0.28	0.17	0.15	0.16	0.08	0.02	0.29	-0.04	-0.08	0.11	0.23	1.00	
C14: Log (Cash)	0.13	0.19	0.37	0.36	0.29	0.03	-0.07	0.70	0.14	0.03	-0.12	0.04	0.23	1.00

**Table 2.5: Descriptive statistics by financial position**

This table reports summary statistics for the sub-samples based on financial position. The subsample consists of S&P 1500 firms during the period 2005-2011 with non-missing data classified as financial distressed, gray zone, or financially healthy based on the firm's Altman Z score tercile. All variables are defined in section 2.3.3 and Table 2.10.

*Panel A: Descriptive Statistics: Financially Distressed Subsample*

Variable	N	Mean	Std.Dev.	Min	P25	Median	P75	Max
U.S. Subsidiaries	3,141	69.24	157.09	0.00	7.00	20.00	54.00	1,578.00
Log(US Subs)	3,141	3.11	1.45	0.00	2.08	3.04	4.01	7.36
Total Litigation Risk	3,141	2.64	7.81	0.00	0.00	0.00	2.00	121.00
Low Severity L.R.	3,141	1.86	5.49	0.00	0.00	0.00	2.00	87.00
High Severity L.R.	3,141	0.78	2.93	0.00	0.00	0.00	0.00	66.00
Pension & Benefits L.R.	3,141	0.22	0.83	0.00	0.00	0.00	0.00	11.00
Product Liability L.R.	3,141	0.14	1.29	0.00	0.00	0.00	0.00	40.00
Environmental L.R.	3,141	0.07	0.35	0.00	0.00	0.00	0.00	5.00
General Liability L.R.	3,141	0.23	1.13	0.00	0.00	0.00	0.00	21.00
Medical Liability L.R.	3,141	0.13	0.81	0.00	0.00	0.00	0.00	16.00
Intellectual Property L.R.	3,141	0.17	0.77	0.00	0.00	0.00	0.00	12.00
Antitrust L.R.	3,141	0.11	0.50	0.00	0.00	0.00	0.00	7.00
Finance & Banking L.R.	3,141	0.11	0.73	0.00	0.00	0.00	0.00	22.00
Securities L.R.	3,141	0.18	0.98	0.00	0.00	0.00	0.00	23.00
Commercial L.R.	3,141	0.27	0.95	0.00	0.00	0.00	0.00	17.00
Employment & Labor L.R.	3,141	0.80	3.23	0.00	0.00	0.00	0.00	83.00
Government Contracts L.R.	3,141	0.02	0.20	0.00	0.00	0.00	0.00	7.00
Corporate Governance L.R.	3,141	0.05	0.37	0.00	0.00	0.00	0.00	12.00
Other L.R.	3,141	0.14	0.57	0.00	0.00	0.00	0.00	9.00
Regulated Industry Dummy	3,141	0.59	0.49	0.00	0.00	1.00	1.00	1.00
Mergers & Acquisitions	3,018	0.02	0.07	0.00	0.00	0.00	0.01	0.68
Log (Market Cap)	3,136	7.93	1.45	3.09	6.90	7.80	8.87	12.85
Corp. Friendliness	3,141	0.50	0.50	0.00	0.00	1.00	1.00	1.00
Advertising Expenditures	3,141	0.01	0.02	0.00	0.00	0.00	0.01	0.23
Leverage	3,141	0.26	0.18	0.00	0.09	0.26	0.39	0.90
No. of Business Segments	2,133	2.99	1.81	1.00	1.00	3.00	4.00	10.00
Log (Cash)	3,141	5.57	2.12	0.00	4.22	5.53	6.83	12.9

*Panel B: Descriptive Statistics: Gray Zone Subsample*

Variable	N	Mean	Std.Dev.	Min	P25	Median	P75	Max
U.S. Subsidiaries	3,146	32.52	58.80	0.00	6.00	15.00	34.00	822.00
Log(US Subs)	3,146	2.79	1.17	0.00	1.95	2.77	3.56	6.71
Total Litigation Risk	3,146	3.10	8.60	0.00	0.00	0.00	3.00	157.00
Low Severity L.R.	3,146	2.22	6.21	0.00	0.00	0.00	2.00	114.00
High Severity L.R.	3,146	0.87	2.89	0.00	0.00	0.00	0.00	49.00
Pension & Benefits L.R.	3,146	0.21	0.74	0.00	0.00	0.00	0.00	8.00
Product Liability L.R.	3,146	0.21	1.13	0.00	0.00	0.00	0.00	32.00
Environmental L.R.	3,146	0.09	0.53	0.00	0.00	0.00	0.00	9.00
General Liability L.R.	3,146	0.14	0.60	0.00	0.00	0.00	0.00	10.00
Medical Liability L.R.	3,146	0.22	1.05	0.00	0.00	0.00	0.00	16.00
Intellectual Property L.R.	3,146	0.35	1.23	0.00	0.00	0.00	0.00	19.00
Antitrust L.R.	3,146	0.13	0.52	0.00	0.00	0.00	0.00	7.00
Finance & Banking L.R.	3,146	0.03	0.23	0.00	0.00	0.00	0.00	4.00
Securities L.R.	3,146	0.09	0.40	0.00	0.00	0.00	0.00	7.00
Commercial L.R.	3,146	0.32	0.99	0.00	0.00	0.00	0.00	15.00
Employment & Labor L.R.	3,146	1.08	4.08	0.00	0.00	0.00	1.00	88.00
Government Contracts L.R.	3,146	0.04	0.25	0.00	0.00	0.00	0.00	5.00
Corporate Governance L.R.	3,146	0.04	0.25	0.00	0.00	0.00	0.00	6.00
Other L.R.	3,146	0.15	0.64	0.00	0.00	0.00	0.00	12.00
Regulated Industry Dummy	3,146	0.05	0.22	0.00	0.00	0.00	0.00	1.00
Mergers & Acquisitions	2,963	0.04	0.07	0.00	0.00	0.00	0.04	0.67
Log (Market Cap)	3,145	7.77	1.50	4.00	6.70	7.62	8.65	12.81
Corp. Friendliness	3,146	0.64	0.48	0.00	0.00	1.00	1.00	1.00
Advertising Expenditures	3,146	0.01	0.02	0.00	0.00	0.00	0.01	0.30
Leverage	3,146	0.20	0.12	0.00	0.11	0.19	0.27	0.84
No. of Business Segments	2,664	2.95	1.69	1.00	1.00	3.00	4.00	11.00
Log (Cash)	3,144	5.17	1.8	0	3.96	5.2	6.3	10.71

*Panel C: Descriptive Statistics: Financially Healthy Subsample*

Variables	N	Mean	Std.Dev.	Min	P25	Median	P75	Max
U.S. Subsidiaries	3,145	15.27	26.58	0.00	3.00	8.00	17.00	299.00
Log(US Subs)	3,145	2.16	1.09	0.00	1.39	2.20	2.89	5.70
Total Litigation Risk	3,145	2.07	6.92	0.00	0.00	0.00	2.00	171.00
Low Severity L.R.	3,145	1.56	5.33	0.00	0.00	0.00	1.00	125.00
High Severity L.R.	3,145	0.51	2.05	0.00	0.00	0.00	0.00	46.00
Pension & Benefits L.R.	3,145	0.10	0.44	0.00	0.00	0.00	0.00	6.00
Product Liability L.R.	3,145	0.14	0.85	0.00	0.00	0.00	0.00	22.00
Environmental L.R.	3,145	0.04	0.31	0.00	0.00	0.00	0.00	9.00
General Liability L.R.	3,145	0.09	0.50	0.00	0.00	0.00	0.00	14.00
Medical Liability L.R.	3,145	0.14	0.71	0.00	0.00	0.00	0.00	13.00
Intellectual Property L.R.	3,145	0.36	1.72	0.00	0.00	0.00	0.00	34.00
Antitrust L.R.	3,145	0.13	0.61	0.00	0.00	0.00	0.00	9.00
Finance & Banking L.R.	3,145	0.03	0.25	0.00	0.00	0.00	0.00	8.00
Securities L.R.	3,145	0.07	0.34	0.00	0.00	0.00	0.00	6.00
Commercial L.R.	3,145	0.23	0.89	0.00	0.00	0.00	0.00	20.00
Employment & Labor L.R.	3,145	0.63	2.89	0.00	0.00	0.00	0.00	83.00
Government Contracts L.R.	3,145	0.01	0.17	0.00	0.00	0.00	0.00	7.00
Corporate Governance L.R.	3,145	0.02	0.20	0.00	0.00	0.00	0.00	5.00
Other L.R.	3,145	0.09	0.57	0.00	0.00	0.00	0.00	18.00
Regulated Industry Dummy	3,145	0.05	0.23	0.00	0.00	0.00	0.00	1.00
Mergers & Acquisitions	2,998	0.02	0.05	0.00	0.00	0.00	0.02	0.67
Log (Market Cap)	3,145	7.62	1.52	3.67	6.47	7.34	8.56	13.13
Corp. Friendliness	3,145	0.64	0.48	0.00	0.00	1.00	1.00	1.00
Advertising Expenditures	3,144	0.01	0.04	0.00	0.00	0.00	0.01	0.37
Leverage	3,145	0.06	0.09	0.00	0.00	0.00	0.10	0.71
No. of Business Segments	2,798	2.09	1.49	1.00	1.00	1.00	3.00	9.00
Log (Cash)	3,145	5.15	1.69	0.00	4.15	5.06	6.15	10.87

**Table 2.6: Litigation risk and subsidiary usage (full sample)**

This table shows estimates of the Fama-MacBeth regression of subsidiary formation (i.e. equation 14) on litigation risk. The sample consists of S&P 1500 firms with non-missing data during the period 2005-2011. Subsidiary formation is the natural logarithm of one plus the number of U.S. subsidiaries. All other variables are defined in Section 2.3.3 and Table 2.10. The dependent variable in all regressions is  $\text{Log}(US\ Subs)$ . In panel A are regressions where litigation risk are measured by *Total L.R.*, *Low Severity L.R.*, and *High Severity L.R.*. In panel B are regressions of the individual components of high severity litigation risk, *Pen&Ben L.R.*, *ProdLiab L.R.*, *Environmental L.R.*, *GeneralLiab L.R.*, and *MedicalLiab L.R.*. In panel C are regressions of the individual components of low severity litigation risk *Intellectual Property L.R.*, *Antitrust L.R.*, *Fin&Bank L.R.*, *Securities L.R.*, *Commercial L.R.*, *Empl&Labor L.R.*, *GovContracts L.R.*, and *Other L.R.* All models include fixed effects defined based on Fama-French 48 Industry classifications. The t-statistics are shown beneath the coefficients in parentheses. Statistical significance at the 1%, 5%, and 10% levels, respectively, is indicated by \*\*\*, \*\*, \*.

*Panel A: Fama-MacBeth regression results for Total, Low Severity, and High Severity Litigation Risk (full sample)*

	Model 1	Model 2	Model 3
Total Litigation Risk	0.010*** (5.69)		
Low Severity Lit. Risk		0.005* (2.17)	
High Severity Lit. Risk			0.049*** (17.17)
Regulated Industry	0.737** (3.01)	0.717** (2.94)	0.785** (2.99)
Mergers & Acquisitions	0.794*** (4.84)	0.782*** (4.78)	0.776*** (4.70)
Log(MarketCap)	0.245*** (11.31)	0.253*** (11.50)	0.239*** (11.25)
Corp. Friendliness	-0.078*** (-9.93)	-0.081*** (-10.02)	-0.077*** (-10.62)
Advertising Expenses	-3.333*** (-13.31)	-3.349*** (-13.54)	-3.283*** (-13.04)
Leverage	1.055*** (16.62)	1.060*** (16.42)	1.052*** (16.93)
Financial Distress	0.158*** (6.99)	0.160*** (7.06)	0.157*** (6.79)
No. of Business Segments	0.138*** (16.88)	0.139*** (17.20)	0.137*** (16.24)
Log(Cash)	-0.023 (-1.73)	-0.020 (-1.57)	-0.023 (-1.75)
Constant	-0.437*** (-4.37)	-0.483*** (-4.68)	-0.448*** (-5.22)
Industry Fixed Effects	Yes	Yes	Yes
No. of Observations	7,177	7,177	7,177
Overall R <sup>2</sup>	0.383	0.382	0.387

Panel B: Fama-MacBeth regression results for High Severity Litigation Risk Measures (full sample)

	Model 1	Model 2	Model 3	Model 4	Model 5
Pension & Benefits L.R.	0.117*** (5.77)				
Products Liability L.R.		0.065*** (5.38)			
Environmental L.R.			0.133*** (8.82)		
General Liability L.R.				0.113*** (7.76)	
Medical Liability L.R.					0.092*** (6.45)
Regulated Industry	0.778** (3.04)	0.724** (2.94)	0.782** (2.96)	0.688** (2.84)	0.725** (2.91)
Mergers & Acquisitions	0.772*** (4.62)	0.753*** (4.53)	0.771*** (4.63)	0.783*** (4.66)	0.779*** (4.67)
Log(MarketCap)	0.249*** (11.69)	0.251*** (11.89)	0.255*** (11.98)	0.253*** (12.08)	0.248*** (11.70)
Corp. Friendliness	-0.079*** (-9.82)	-0.081*** (-10.47)	-0.082*** (-9.77)	-0.083*** (-11.07)	-0.077*** (-9.40)
Advertising Expenses	-3.328*** (-13.42)	-3.310*** (-13.60)	-3.360*** (-14.19)	-3.288*** (-12.49)	-3.351*** (-13.50)
Leverage	1.069*** (17.56)	1.067*** (16.57)	1.065*** (16.50)	1.064*** (16.59)	1.038*** (16.57)
Financial Distress	0.157*** (7.09)	0.161*** (6.82)	0.161*** (6.99)	0.160*** (6.90)	0.162*** (7.13)
No. of Business Segments	0.138*** (16.40)	0.139*** (16.78)	0.138*** (17.04)	0.137*** (17.30)	0.140*** (16.74)
Log(Cash)	-0.023 (-1.78)	-0.019 (-1.44)	-0.019 (-1.43)	-0.022 (-1.72)	-0.019 (-1.40)
Constant	-0.502*** (-5.39)	-0.477*** (-5.22)	-0.591*** (-5.97)	-0.461*** (-4.84)	-0.463*** (-4.99)
Industry Fixed Effects	Yes	Yes	Yes	Yes	Yes
No. of Observations	7,177	7,177	7,177	7,177	7,177
Overall R <sup>2</sup>	0.384	0.383	0.383	0.384	0.384

Panel C: Fama-MacBeth regression results for Low Severity Litigation Risk measures (full sample)

Variable	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8	Model 9
Litigation Risk Measure	Intell.Prop	Antitrust	Fin&Bank	Securities	Commercial	Emp&Labor	Gov.Cont.	Corp.Gov.	Other
Litigation Risk	-0.045*** (-3.87)	0.015 (0.45)	0.191*** (4.86)	0.102*** (4.81)	0.064** (2.78)	0.009** (2.91)	-0.115 (-1.44)	0.252*** (5.25)	-0.029 (-1.22)
Regulated Industry	0.697** (2.74)	0.710** (2.88)	0.682** (2.64)	0.714** (2.93)	0.712** (2.88)	0.715** (2.93)	0.710** (2.89)	0.709** (2.91)	0.699** (2.89)
Mergers & Acquisitions	0.772*** (4.54)	0.767*** (4.62)	0.763*** (4.57)	0.768*** (4.58)	0.766*** (4.93)	0.778*** (4.66)	0.757*** (4.51)	0.760*** (4.60)	0.757*** (4.52)
Log(MarketCap)	0.269*** (12.50)	0.256*** (11.22)	0.258*** (12.36)	0.258*** (12.17)	0.250*** (10.85)	0.255*** (11.82)	0.260*** (12.49)	0.254*** (11.99)	0.260*** (12.39)
Corp. Friendliness	-0.086*** (-10.23)	-0.082*** (-10.63)	-0.085*** (-11.20)	-0.084*** (-9.63)	-0.079*** (-10.04)	-0.080*** (-9.66)	-0.083*** (-10.43)	-0.085*** (-11.50)	-0.082*** (-9.73)
Advertising Expenses	-3.246*** (-13.90)	-3.386*** (-13.52)	-3.264*** (-13.01)	-3.341*** (-13.47)	-3.345*** (-13.17)	-3.325*** (-13.30)	-3.364*** (-13.04)	-3.322*** (-13.18)	-3.346*** (-13.24)
Leverage	1.060*** (16.47)	1.064*** (16.26)	1.066*** (16.20)	1.086*** (17.22)	1.061*** (16.64)	1.055*** (16.49)	1.063*** (16.72)	1.065*** (16.34)	1.064*** (16.31)
Financial Distress	0.164*** (7.27)	0.162*** (7.14)	0.159*** (7.19)	0.155*** (6.74)	0.159*** (6.92)	0.162*** (7.01)	0.164*** (7.28)	0.160*** (7.36)	0.163*** (7.15)
No. of Business Segments	0.140*** (16.94)	0.140*** (17.38)	0.140*** (17.33)	0.139*** (17.45)	0.139*** (17.14)	0.140*** (17.06)	0.141*** (16.83)	0.139*** (17.48)	0.140*** (17.09)
Log(Cash)	-0.017 (-1.24)	-0.018 (-1.42)	-0.025* (-1.98)	-0.026* (-2.01)	-0.023 (-1.88)	-0.019 (-1.45)	-0.018 (-1.39)	-0.020 (-1.53)	-0.018 (-1.38)
Constant	-0.595*** (-7.12)	-0.506*** (-4.93)	-0.486*** (-4.92)	-0.482*** (-4.96)	-0.449*** (-3.91)	-0.499*** (-5.10)	-0.538*** (-5.65)	-0.475*** (-4.82)	-0.529*** (-5.64)
Industry Fixed Effects	Yes								
No. of Observations	7,177	7,177	7,177	7,177	7,177	7,177	7,177	7,177	7,177
Overall R <sup>2</sup>	0.383	0.382	0.384	0.383	0.383	0.382	0.382	0.383	0.382

**Table 2.7: Litigation risk and subsidiary usage (financially distressed subsample)**

This table shows estimates of the Fama-MacBeth regression of subsidiary formation (i.e. equation 14) on litigation risk. The sample consists of S&P 1500 firms with non-missing data during the period 2005-2011. Subsidiary formation is the natural logarithm of one plus the number of U.S. subsidiaries. All other variables are defined in Section 2.3.3 and Table 2.10. The dependent variable in all regressions is  $\text{Log}(US\ Subs)$ . In panel A are regressions where litigation risk are measured by *Total L.R.*, *Low Severity L.R.*, and *High Severity L.R.*. In panel B are regressions of the individual components of high severity litigation risk, *Pen&Ben L.R.*, *ProdLiab L.R.*, *Environmental L.R.*, *GeneralLiab L.R.*, and *MedicalLiab L.R.*. In panel C are regressions of the individual components of low severity litigation risk *Intellectual Property L.R.*, *Antitrust L.R.*, *Fin&Bank L.R.*, *Securities L.R.*, *Commercial L.R.*, *Empl&Labor L.R.*, *GovContracts L.R.*, and *Other L.R.* All models include fixed effects defined based on Fama-French 48 Industry classifications. T-statistics are shown beneath the coefficients in parentheses. Statistical significance at the 1%, 5%, and 10% levels, respectively, is indicated by \*\*\*, \*\*, \*.

*Panel A: Fama-MacBeth regression results for Total, Low Severity, and High Severity Litigation Risk (financially distressed subsample)*

Variable	Model 1	Model 2	Model 3
Total Litigation Risk	0.025*** (5.59)		
Low Severity Lit. Risk		0.027*** (4.15)	
High Severity Lit. Risk			0.102*** (12.70)
Regulated Industry	-0.145 (-0.32)	-0.015 (-0.03)	-0.219 (-0.46)
Mergers & Acquisitions	0.468 (0.89)	0.499 (0.95)	0.224 (0.37)
Log(MarketCap)	0.302*** (9.50)	0.311*** (9.62)	0.290*** (9.55)
Corp. Friendliness	0.011 (0.28)	0.009 (0.22)	0.013 (0.30)
Advertising Expenses	-5.857** (-3.15)	-5.853** (-3.05)	-6.079** (-3.62)
Leverage	1.295*** (10.89)	1.314*** (10.65)	1.249*** (11.03)
No. of Business Segments	0.074*** (4.92)	0.075*** (4.98)	0.070*** (4.78)
Log(Cash)	-0.039* (-2.20)	-0.036* (-2.04)	-0.036* (-1.97)
Constant	-0.278 (-0.65)	-0.488 (-1.27)	-0.089 (-0.19)
Industry Fixed Effects	Yes	Yes	Yes
No. of Observations	2,032	2,032	2,032
Overall R <sup>2</sup>	0.448	0.445	0.453

*Panel B: Fama-MacBeth regression results for High Severity Litigation Risk Measures (financially distressed subsample)*

Variable	Model 1	Model 2	Model 3	Model 4	Model 5
Pension & Benefits L.R.	0.224*** (4.73)				
Products Liability L.R.		0.308*** (7.04)			
Environmental L.R.			0.345*** (7.72)		
General Liability L.R.				0.152*** (6.34)	
Medical Liability L.R.					0.112* (2.29)
Regulated Industry	-0.242 (-0.49)	0.231 (0.54)	-0.022 (-0.05)	-0.181 (-0.41)	-0.112 (-0.25)
Mergers & Acquisitions	0.330 (0.61)	0.144 (0.21)	0.341 (0.60)	0.464 (0.86)	0.326 (0.61)
Log(MarketCap)	0.308*** (9.57)	0.316*** (9.58)	0.320*** (9.90)	0.324*** (10.85)	0.326*** (10.34)
Corp. Friendliness	0.019 (0.52)	-0.009 (-0.23)	0.002 (0.05)	-0.016 (-0.35)	0.003 (0.06)
Advertising Expenses	-6.114** (-3.36)	-6.351** (-3.46)	-6.300** (-3.35)	-6.389** (-3.41)	-6.037** (-3.27)
Leverage	1.323*** (10.85)	1.293*** (10.46)	1.330*** (10.65)	1.301*** (10.62)	1.286*** (9.91)
No. of Business Segments	0.071*** (4.91)	0.078*** (4.92)	0.072*** (4.83)	0.071*** (5.14)	0.076*** (4.81)
Log(Cash)	-0.034* (-1.96)	-0.030 (-1.44)	-0.024 (-1.22)	-0.031 (-1.90)	-0.024 (-1.23)
Constant	-0.302 (-0.67)	-0.738 (-1.75)	-0.557 (-1.21)	-0.356 (-1.00)	-0.495 (-1.18)
Industry Fixed Effects	Yes	Yes	Yes	Yes	Yes
No. of Observations	2,032	2,032	2,032	2,032	2,032
Overall R <sup>2</sup>	0.447	0.448	0.443	0.444	0.439

Panel C: Fama-MacBeth regression results for Low Severity Litigation Risk measures (financially distressed subsample)

Variable	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8	Model 9
Litigation Risk Measure	Intell.Prop	Antitrust	Fin&Bank	Securities	Commercial	Emp&Labor	Gov.Cont.	Corp.Gov.	Other
Litigation Risk	0.156*** (3.73)	0.207** (2.47)	0.205*** (7.07)	0.140** (2.80)	0.210*** (8.22)	0.028 (1.71)	-0.015 (-0.05)	0.338** (3.69)	0.160* (2.30)
Regulated Industry	-0.030 (-0.07)	-0.149 (-0.33)	-0.243 (-0.51)	-0.076 (-0.17)	-0.059 (-0.14)	0.404 (0.60)	-0.132 (-0.29)	0.101 (0.14)	-0.049 (-0.12)
Mergers & Acquisitions	0.435 (0.96)	0.432 (0.97)	0.420 (0.78)	0.454 (0.85)	0.366 (0.68)	0.457 (0.84)	0.280 (0.53)	0.489 (0.90)	0.365 (0.67)
Log(MarketCap)	0.323*** (10.10)	0.320*** (10.51)	0.331*** (10.32)	0.332*** (9.98)	0.308*** (10.01)	0.323*** (9.97)	0.335*** (9.87)	0.327*** (10.11)	0.327*** (9.55)
Corp. Friendliness	-0.003 (-0.09)	-0.000 (-0.01)	-0.021 (-0.50)	-0.004 (-0.09)	-0.006 (-0.15)	0.011 (0.28)	-0.002 (-0.04)	-0.019 (-0.43)	-0.013 (-0.29)
Advertising Expenses	-6.634** (-3.18)	-6.441** (-3.40)	-5.884** (-3.00)	-5.984** (-3.17)	-6.222** (-3.33)	-5.922** (-3.12)	-5.994** (-3.14)	-6.075** (-3.11)	-6.029** (-3.04)
Leverage	1.340*** (10.85)	1.332*** (11.13)	1.321*** (10.44)	1.362*** (10.57)	1.292*** (11.35)	1.317*** (10.35)	1.304*** (10.47)	1.338*** (10.30)	1.295*** (11.03)
No. of Business Segments	0.077*** (5.27)	0.077*** (5.18)	0.078*** (5.13)	0.076*** (5.16)	0.078*** (5.11)	0.075*** (4.93)	0.076*** (5.02)	0.075*** (5.07)	0.076*** (4.81)
Log(Cash)	-0.026 (-1.36)	-0.025 (-1.25)	-0.037* (-2.06)	-0.042* (-2.31)	-0.042** (-2.59)	-0.027 (-1.40)	-0.022 (-1.15)	-0.027 (-1.32)	-0.027 (-1.49)
Constant	-0.554 (-1.59)	-0.441 (-1.09)	-0.467 (-1.14)	-0.585 (-1.59)	-0.351 (-0.94)	-1.001* (-1.99)	-0.574 (-1.35)	-0.742 (-1.41)	-0.551 (-1.40)
Industry Fixed Effects	Yes								
No. of Observations	2,032	2,032	2,032	2,032	2,032	2,032	2,032	2,032	2,032
Overall R <sup>2</sup>	0.442	0.444	0.442	0.442	0.448	0.441	0.439	0.442	0.442

**Table 2.8: Litigation risk and subsidiary usage (gray zone subsample)**

This table shows estimates of the Fama-MacBeth regression of subsidiary formation (i.e. equation 14) on litigation risk. The sample consists of S&P 1500 firms with non-missing data during the period 2005-2011. Subsidiary formation is the natural logarithm of one plus the number of U.S. subsidiaries. All other variables are defined in Section 2.3.3 and Table 2.10. The dependent variable in all regressions is  $\text{Log}(US\ Subs)$ . In panel A are regressions where litigation risk are measured by *Total L.R.*, *Low Severity L.R.*, and *High Severity L.R.*. In panel B are regressions of the individual components of high severity litigation risk, *Pen&Ben L.R.*, *ProdLiab L.R.*, *Environmental L.R.*, *GeneralLiab L.R.*, and *MedicalLiab L.R.*. In panel C are regressions of the individual components of low severity litigation risk *Intellectual Property L.R.*, *Antitrust L.R.*, *Fin&Bank L.R.*, *Securities L.R.*, *Commercial L.R.*, *Empl&Labor L.R.*, *GovContracts L.R.*, and *Other L.R.* All models include fixed effects defined based on Fama-French 48 Industry classifications. T-statistics are shown beneath the coefficients in parentheses. Statistical significance at the 1%, 5%, and 10% levels, respectively, is indicated by \*\*\*, \*\*, \*.

*Panel A: Fama-MacBeth regression results for Total, Low Severity, and High Severity Litigation Risk (gray zone subsample)*

Variable	Model 1	Model 2	Model 3
Total Litigation Risk	0.005 (1.45)		
Low Severity Lit. Risk		0.0004 (0.10)	
High Severity Lit. Risk			0.023** (3.39)
Regulated Industry	0.831** (2.58)	0.817** (2.49)	0.832** (2.62)
Mergers & Acquisitions	1.048*** (3.96)	1.034*** (3.91)	1.052*** (3.95)
Log(MarketCap)	0.229*** (6.80)	0.237*** (6.74)	0.225*** (6.61)
Corp. Friendliness	-0.063* (-2.25)	-0.062* (-2.24)	-0.064* (-2.33)
Advertising Expenses	-2.285** (-2.52)	-2.313** (-2.57)	-2.248** (-2.50)
Leverage	0.422 (1.81)	0.418 (1.78)	0.442 (1.91)
No. of Business Segments	0.150*** (13.21)	0.151*** (13.45)	0.149*** (13.20)
Log(Cash)	-0.045 (-1.94)	-0.044 (-1.92)	-0.045* (-1.96)
Constant	0.169 (1.00)	0.108 (0.60)	0.203 (1.21)
Industry Fixed Effects	Yes	Yes	Yes
No. of Observations	2,491	2,491	2,491
Overall R <sup>2</sup>	0.356	0.356	0.358

Panel B: Fama-MacBeth regression results for High Severity Litigation Risk Measures (gray zone subsample)

Variable	Model 1	Model 2	Model 3	Model 4	Model 5
Pension & Benefits L.R.	0.057 (1.75)				
Products Liability L.R.		-0.019 (-0.50)			
Environmental L.R.			0.104*** (4.06)		
General Liability L.R.				0.119 (1.82)	
Medical Liability L.R.					0.108** (3.42)
Regulated Industry	0.861** (2.77)	0.819** (2.52)	0.801** (2.47)	0.833** (2.60)	0.848** (2.65)
Mergers & Acquisitions	1.039*** (3.82)	1.023*** (3.83)	1.061*** (4.06)	1.070** (3.66)	1.069*** (3.97)
Log(MarketCap)	0.229*** (6.69)	0.239*** (7.33)	0.235*** (6.60)	0.231*** (6.80)	0.222*** (6.65)
Corp. Friendliness	-0.060* (-2.32)	-0.060* (-2.27)	-0.062* (-2.25)	-0.058* (-2.18)	-0.061* (-2.13)
Advertising Expenses	-2.280** (-2.58)	-2.404** (-2.62)	-2.255** (-2.47)	-2.137* (-2.32)	-2.421** (-2.54)
Leverage	0.445* (1.99)	0.428 (1.85)	0.429 (1.82)	0.418 (1.77)	0.441 (1.92)
No. of Business Segments	0.150*** (12.99)	0.150*** (13.31)	0.149*** (13.53)	0.151*** (13.48)	0.150*** (13.86)
Log(Cash)	-0.045* (-2.03)	-0.044* (-1.95)	-0.046* (-1.97)	-0.045* (-2.03)	-0.041 (-1.82)
Constant	0.148 (0.87)	0.097 (0.55)	0.133 (0.71)	0.162 (1.00)	0.199 (1.20)
Industry Fixed Effects	Yes	Yes	Yes	Yes	Yes
No. of Observations	2,491	2,491	2,491	2,491	2,491
Overall R <sup>2</sup>	0.357	0.358	0.357	0.36	0.361

Panel C: Fama-MacBeth regression results for Low Severity Litigation Risk measures (gray zone subsample)

Variable	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8	Model 9
Litigation Risk Measure	Intell.Prop	Antitrust	Fin&Bank	Securities	Commercial	Emp&Labor	Gov.Cont.	Corp.Gov.	Other
Litigation Risk	0.00002 (0.00)	0.145 (1.93)	0.112 (1.02)	0.097* (2.32)	0.041 (0.94)	-0.001 (-0.13)	-0.143 (-1.20)	0.318** (2.69)	-0.158** (-2.63)
Regulated Industry	0.806** (2.58)	0.815** (2.50)	0.776* (2.26)	0.829** (2.52)	0.833* (2.40)	0.822** (2.52)	0.816** (2.48)	0.815* (2.45)	0.810** (2.45)
Mergers & Acquisitions	1.019*** (3.87)	1.041*** (3.99)	1.009*** (4.03)	1.051*** (3.99)	1.056*** (4.04)	1.029*** (3.76)	1.028*** (3.82)	1.039*** (3.92)	0.974** (3.53)
Log(MarketCap)	0.237*** (6.35)	0.227*** (5.89)	0.236*** (6.67)	0.232*** (6.91)	0.232*** (5.67)	0.238*** (7.15)	0.241*** (7.08)	0.232*** (6.86)	0.254*** (7.86)
Corp. Friendliness	-0.060* (-2.17)	-0.065* (-2.29)	-0.062* (-2.36)	-0.060* (-2.07)	-0.055 (-1.92)	-0.061* (-2.23)	-0.059* (-2.19)	-0.064** (-2.45)	-0.060* (-2.16)
Advertising Expenses	-2.358** (-2.67)	-2.439** (-2.74)	-2.267** (-2.61)	-2.305** (-2.59)	-2.297** (-2.59)	-2.317** (-2.54)	-2.319** (-2.53)	-2.252** (-2.48)	-2.243** (-2.46)
Leverage	0.421 (1.80)	0.425 (1.81)	0.413 (1.74)	0.429 (1.88)	0.429 (1.85)	0.425 (1.80)	0.412 (1.80)	0.445 (1.94)	0.409 (1.75)
No. of Business Segments	0.150*** (14.00)	0.149*** (13.52)	0.152*** (14.48)	0.151*** (14.11)	0.149*** (13.38)	0.152*** (13.41)	0.153*** (13.09)	0.153*** (14.36)	0.150*** (13.75)
Log(Cash)	-0.044* (-1.95)	-0.043 (-1.91)	-0.043 (-1.92)	-0.045 (-1.94)	-0.045* (-2.07)	-0.043 (-1.88)	-0.043 (-1.84)	-0.046* (-1.99)	-0.043 (-1.86)
Constant	0.129 (0.64)	0.207 (1.03)	0.114 (0.61)	0.139 (0.78)	0.159 (0.79)	0.098 (0.59)	0.067 (0.36)	0.151 (0.86)	-0.020 (-0.11)
Industry Fixed Effects	Yes								
No. of Observations	2,491	2,491	2,491	2,491	2,491	2,491	2,491	2,491	2,491
Overall R <sup>2</sup>	0.357	0.36	0.357	0.357	0.359	0.357	0.359	0.359	0.365

**Table 2.9: Litigation risk and subsidiary usage (financially healthy subsample)**

This table shows estimates of the Fama-MacBeth regression of subsidiary formation (i.e. equation 14) on litigation risk. The sample consists of S&P 1500 firms with non-missing data during the period 2005-2011. Subsidiary formation is the natural logarithm of one plus the number of U.S. subsidiaries. All other variables are defined in Section 2.3.3 and Table 2.10. The dependent variable in all regressions is  $\text{Log}(US\ Subs)$ . In panel A are regressions where litigation risk are measured by *Total L.R.*, *Low Severity L.R.*, and *High Severity L.R.*. In panel B are regressions of the individual components of high severity litigation risk, *Pen&Ben L.R.*, *ProdLiab L.R.*, *Environmental L.R.*, *GeneralLiab L.R.*, and *MedicalLiab L.R.*. In panel C are regressions of the individual components of low severity litigation risk *Intellectual Property L.R.*, *Antitrust L.R.*, *Fin&Bank L.R.*, *Securities L.R.*, *Commercial L.R.*, *Empl&Labor L.R.*, *GovContracts L.R.*, and *Other L.R.* All models include fixed effects defined based on Fama-French 48 Industry classifications. T-statistics are shown beneath the coefficients in parentheses. Statistical significance at the 1%, 5%, and 10% levels, respectively, is indicated by \*\*\*, \*\*, \*.

*Panel A: Fama-MacBeth regression results for Total, Low Severity, and High Severity Litigation Risk (financially healthy subsample)*

Variable	Model 1	Model 2	Model 3
Total Litigation Risk	-0.013*** (-5.53)		
Low Severity Lit. Risk		-0.031*** (-8.56)	
High Severity Lit. Risk			0.049** (3.58)
Regulated Industry	0.271 (1.24)	0.267 (1.20)	0.476 (1.64)
Mergers & Acquisitions	1.496*** (6.44)	1.493*** (6.31)	1.527*** (6.71)
Log(MarketCap)	0.173*** (5.79)	0.184*** (6.07)	0.149*** (5.26)
Corp. Friendliness	-0.045* (-2.19)	-0.054** (-2.65)	-0.021 (-1.11)
Advertising Expenses	-3.012*** (-11.89)	-2.965*** (-11.03)	-2.865*** (-10.22)
Leverage	0.837** (3.37)	0.848** (3.46)	0.733** (2.72)
No. of Business Segments	0.179*** (19.93)	0.180*** (20.88)	0.173*** (18.89)
Log(Cash)	0.047* (2.38)	0.051** (2.58)	0.039* (1.97)
Constant	0.359 (1.16)	0.255 (0.78)	0.303 (0.78)
Industry Fixed Effects	Yes	Yes	Yes
No. of Observations	2,654	2,654	2,654
Overall R <sup>2</sup>	0.351	0.355	0.354

*Panel B: Fama-MacBeth regression results for High Severity Litigation Risk Measures (financially healthy subsample)*

Variable	Model 1	Model 2	Model 3	Model 4	Model 5
Pension & Benefits L.R.	0.010 (0.11)				
Products Liability L.R.		0.140*** (5.36)			
Environmental L.R.			0.153 (0.98)		
General Liability L.R.				-0.004 (-0.05)	
Medical Liability L.R.					0.058 (0.82)
Regulated Industry	0.358 (1.34)	0.344 (1.42)	0.389 (1.24)	0.372* (2.04)	0.359 (1.51)
Mergers & Acquisitions	1.535*** (6.68)	1.480*** (6.76)	1.504*** (6.81)	1.515*** (6.43)	1.506*** (6.39)
Log(MarketCap)	0.159*** (5.40)	0.148*** (5.46)	0.158*** (5.63)	0.159*** (5.01)	0.155*** (5.46)
Corp. Friendliness	-0.031 (-1.59)	-0.017 (-0.84)	-0.034 (-1.78)	-0.029 (-1.65)	-0.026 (-1.40)
Advertising Expenses	-2.999*** (-11.21)	-2.940*** (-11.38)	-2.985*** (-11.35)	-3.015*** (-12.64)	-2.931*** (-11.09)
Leverage	0.802** (3.09)	0.746** (2.88)	0.802** (3.11)	0.794** (3.18)	0.801** (3.18)
No. of Business Segments	0.178*** (19.44)	0.174*** (19.90)	0.176*** (19.62)	0.174*** (19.89)	0.176*** (18.99)
Log(Cash)	0.043* (2.22)	0.041* (2.13)	0.045* (2.43)	0.044* (2.04)	0.040* (2.01)
Constant	0.435 (1.22)	0.466 (1.45)	0.341 (0.79)	0.363 (1.17)	0.414 (1.29)
Industry Fixed Effects	Yes	Yes	Yes	Yes	Yes
No. of Observations	2,654	2,654	2,654	2,654	2,654
Overall R <sup>2</sup>	0.353	0.355	0.353	0.352	0.355

Panel C: Fama-MacBeth regression results for Low Severity Litigation Risk measures (financially healthy subsample)

Variable	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8	Model 9
Litigation Risk Measure	Intell.Prop	Antitrust	Fin&Bank	Securities	Commercial	Emp&Labor	Gov.Cont.	Corp.Gov.	Other
Litigation Risk	-0.107*** (-11.58)	-0.215*** (-8.38)	-0.153 (-0.57)	0.056 (1.06)	-0.076 (-1.90)	0.012 (0.73)	-0.252 (-1.30)	0.171 (0.96)	-0.014 (-0.20)
Regulated Industry	0.288 (1.29)	0.269 (1.25)	0.307 (1.34)	0.321 (1.40)	0.270 (1.26)	0.327 (1.41)	0.216 (1.03)	0.349 (1.50)	0.253 (1.02)
Mergers & Acquisitions	1.495*** (5.54)	1.521*** (6.45)	1.510*** (6.35)	1.515*** (6.56)	1.618*** (8.05)	1.532*** (6.69)	1.522*** (6.65)	1.533*** (6.40)	1.487*** (6.71)
Log(MarketCap)	0.190*** (6.23)	0.184*** (6.20)	0.160*** (5.73)	0.160*** (5.52)	0.169*** (5.54)	0.157*** (5.12)	0.161*** (5.56)	0.159*** (5.41)	0.163*** (6.04)
Corp. Friendliness	-0.062** (-3.54)	-0.048* (-2.28)	-0.034 (-1.68)	-0.035 (-1.82)	-0.040* (-1.96)	-0.033 (-1.67)	-0.034 (-1.70)	-0.038 (-1.89)	-0.032 (-1.64)
Advertising Expenses	-2.699*** (-10.28)	-2.787*** (-10.76)	-3.002*** (-12.26)	-2.995*** (-11.84)	-2.984*** (-11.63)	-2.951*** (-12.46)	-2.986*** (-12.09)	-2.991*** (-11.74)	-2.962*** (-11.06)
Leverage	0.745** (2.78)	0.750** (2.92)	0.757** (3.07)	0.799** (3.29)	0.813** (3.31)	0.760** (2.98)	0.794** (3.15)	0.806** (3.49)	0.779** (3.20)
No. of Business Segments	0.180*** (21.52)	0.180*** (21.45)	0.177*** (18.81)	0.176*** (19.24)	0.178*** (19.21)	0.176*** (21.05)	0.176*** (19.07)	0.176*** (17.34)	0.176*** (19.09)
Log(Cash)	0.055** (2.67)	0.048* (2.37)	0.043* (2.31)	0.041* (2.06)	0.045* (2.26)	0.041* (2.09)	0.043* (2.18)	0.043* (2.14)	0.042* (2.11)
Constant	0.118 (0.34)	0.234 (0.76)	0.412 (1.25)	0.420 (1.30)	0.374 (1.14)	0.434 (1.37)	0.499 (1.60)	0.411 (1.27)	0.457 (1.33)
Industry Fixed Effects	Yes								
No. of Observations	2,654	2,654	2,654	2,654	2,654	2,654	2,654	2,654	2,654
Overall R <sup>2</sup>	0.366	0.358	0.353	0.35	0.352	0.351	0.35	0.352	0.352

**Table 2.10: Variable definitions**

Variable	Definition	Source
Log(US Sub + 1)	Natural logarithm of one plus the number of US subsidiaries	EDGAR
Total Litigation Risk	Total number of legal cases for which a firm is a defendant	EDGAR & LexisNexis
Low Severity Litigation Risk	Number of low severity legal cases for which a firm is a defendant	EDGAR & LexisNexis
High Severity Litigation Risk	Number of high severity legal cases for which a firm is a defendant	EDGAR & LexisNexis
Pension & Benefits Litigation Risk	Number of pension and benefits legal cases for which a firm is a defendant	EDGAR & LexisNexis
Products Liability Litigation Risk	Number of products liability legal cases for which a firm is a defendant	EDGAR & LexisNexis
Environmental Litigation Risk	Number of environmental legal cases for which a firm is a defendant	EDGAR & LexisNexis
General Liability Litigation Risk	Number of insurance (general liability) legal cases for which a firm is a defendant	EDGAR & LexisNexis
Medical Liability Litigation Risk	Number of medical liability legal cases for which a firm is a defendant	EDGAR & LexisNexis
Employment & Labor Litigation Risk	Number of employment and labor legal cases for which a firm is a defendant	EDGAR & LexisNexis
Intellectual Property Litigation Risk	Number of intellectual property legal cases for which a firm is a defendant	EDGAR & LexisNexis
Antitrust Litigation Risk	Number of antitrust legal cases for which a firm is mentioned as a defendant	EDGAR & LexisNexis
Finance & Banking Litigation Risk	Number of finance & banking related legal cases for which a firm is a defendant	EDGAR & LexisNexis
Securities Litigation Risk	Number of securities related legal cases for which a firm is a defendant	EDGAR & LexisNexis
Commercial Litigation Risk	Number of commercial legal cases for which a firm is a defendant	EDGAR & LexisNexis
Government Contracts Litigation Risk	No. of legal cases related to government contracts for which a firm is a defendant	EDGAR & LexisNexis
Other Litigation Risk	No. of legal cases that do not fit other classifications where a firm is a defendant	EDGAR & LexisNexis
Size	Natural logarithm of one plus market capitalization in \$millions	Compustat
Regulated Industry Dummy	Dummy that equals one if the firm is in a regulated industry, otherwise zero	Compustat
Corporate Friendliness Dummy	Dummy that equals one if the firm is incorporated in DE, NV, or WY and zero otherwise	Compustat
M&A Activity	Ratio of acquisition expenditures in a year to total assets	Compustat
Advertising Expense	Ratio of advertising expenditures to sales	Compustat
Number of business segments	Count of different business segments firm is involved in	Compustat
Financial Distress	Tercile ranking based on Altman Z Score, 2= distressed, 1=middle tercile, 0=financially healthy	Compustat
Leverage	Ratio of long-term debt plus short-term debt to total assets	Compustat
Log (Cash)	Natural logarithm of one plus cash and marketable securities	Compustat

## **CHAPTER 3: LITIGATION RISK AND CORPORATE FINANCIAL AND INVESTMENT POLICY**

### **3.1. Introduction**

The extent to which firms strategically use financial and investment policy choices is still not well understood by financial economists. One might expect to see evidence of this behavior when firms face the risk of litigation. The consequences of increased litigation risk are of great significance to a firm's management. When a firm becomes a defendant in a lawsuit, the cost of contracts rises. Firms may spend millions of dollars in legal fees, settlements, and/or judgments, when exposed to major civil litigation. These lawsuits are also important from a corporate governance perspective. Lawsuits that are highly publicized can damage the reputation of the defendant firm and can have a negative impact on the firm's relationship with its customers, suppliers, and other stakeholders.

This essay empirically investigates the relationship between different categories of lawsuits and key corporate financial and investment policy choices for large U.S. publicly-held corporations. First, I document the relationship between different categories of lawsuits and corporate financial and investment policies for firms in general. In my second line of inquiry, I study the relationship between litigation risk and corporate financial and investment policy choices for unified and parent-subsidary firms.

Previous studies in the law and finance literature have related litigation risk to managerial turnover, to firm disclosure behavior, to IPO underpricing, and to stock market

reactions. For example, Romano (1991) shows that managerial turnover is common for firms involved in litigation. Niehaus and Roth (1999) document that lawsuits that end with large settlements have higher likelihood to result in CEO turnover. Fich and Shivdasani (2007) provide evidence to show that outside directors do not face abnormal turnover in firms in a high litigation environment. However, they tend to lose a significant number of board seats held in other firms. Skinner (1994) provides evidence to show that litigation risk affects firms' disclosure behavior. Other empirical studies also show that auditors are more likely to avoid corporate clients at risk of litigation (see, for example, Krishnan and Krishnan (1997) and Shu (2000) for a review). Lowry and Shu (2002) examine the relationship between litigation risk and IPO underpricing and find that firms at high risk of litigation underprice their IPOs by substantial amounts. However, little work has been done to link different categories of litigation risk and corporate policy choices.

The purpose of this study is to examine the empirical association between different types of legal risk and key financial and investment policy choices for firms. Motivated by recent theoretical and empirical evidence about the relationship between litigation risk and organizational form, I also investigate the relationship between litigation risk and corporate financial and investment policy choices for unified and parent-subsidiary firms. I use a unique hand-collected dataset on corporate lawsuits as a proxy to measure litigation risk. Understanding the relationship between litigation risk and corporate policy choices is important to financial economists, management, and the investing public.

The empirical literature on the relationship between litigation risk and corporate policies finds mixed results. Existing empirical studies test the relationship between litigation risk and corporate policy by using securities class action lawsuits or an industry dummy as a proxy to

measure litigation risk. Nevertheless, firms are exposed to other types of legal risks such as: antitrust, commercial, corporate governance, finance and banking, employment and labor, environmental, government contracts, medical liability, general liability, pension and benefits, and product liability lawsuits.

This study complements the recent work by Arena and Julio (2011) and Crane (2011), who study the relationship between litigation risk and corporate financial policy. Arena and Julio (2011) empirically examine how litigation risk affects cash holdings using securities class action lawsuits from the Securities Class Action Clearinghouse website (<http://securities.stanford.edu>) for a sample of firms from 1996 to 2006. The authors find a positive relationship between industry securities class action lawsuits and cash holdings. Controlling for other determinants of cash holdings, Arena and Julio (2011) show that firms with greater exposure to securities litigation hold significantly more cash in anticipation of future settlement costs. They also find that corporate investments are affected by litigation risk, as firms cut back on capital expenditures in response to litigation risk.

Crane (2011) examines whether management strategically uses financial policy when facing litigation risk. Using the number of product liability litigation events within a firm's industry over time as a measure of litigation risk, the author finds that greater litigation exposure leads firms to choose higher leverage. The study also shows that the increase in leverage is a result of an active decision to repurchase shares. The author further argues that the repurchases appear to be financed with a combination of excess cash and short term debt as they coincide with a significant decrease in cash holdings and an increase in short term liabilities.

The works of Arena and Julio (2011) and Crane (2011) suggest a conflicting relationship between litigation risk and financial policy (cash holdings in this case). Using lawsuit information on large U.S. corporations, I examine two previously unexplored research questions. First, this paper examines the relationship between different types of legal risks and corporate financial and investment policies. Along this line of inquiry, this study seeks to clarify the relationship between litigation risk and key corporate financial policies. Second, I also aim to investigate a number of important and, as of yet, unanswered questions regarding the association between litigation risk and key financial and investment policy choices for low-subsidary and high-subsidary firms. Specifically, I study the relationship between different lawsuit categories and key financial and investment policy choices for unified and parent-subsidary firms. A firm is a unified firm if the number of subsidiaries of that firm is less than or equal to the median number of subsidiaries in that firm's industry. A firm is a parent-subsidary firm if the number of subsidiaries of that firm is greater than the median number of subsidiaries in that firm's industry. The financial and investment policy choices I investigate include: the levels of financial leverage, cash holdings, and capital expenditures.

This paper contributes to several strands of literature. First, I contribute to the existing literature on corporate financial and investment policies. I provide basic information on the lawsuit types of S&P 1500 companies. I also add to an emerging body of research on the effects of litigation risk on corporate policy. To the best of my knowledge, this is the first study to empirically investigate the relationship between different categories of legal risk and corporate policy choices. This is also the first study to empirically examine the relationship between litigation risk and corporate policy for unified and parent-subsidary firms. This paper extends

the literature on corporate organizational structure by examining the implications of lawsuits for corporate policies.

I take advantage of a novel hand-collected database on different categories of legal risk to study the relationship between litigation risk and key corporate financial and investment policy choices. I use lawsuits documented in the LexisNexis and SEC EDGAR databases as a proxy to measure litigation risk. First, I test the hypothesis that there is a negative relationship between litigation risk and the level of financial leverage. Using the Fama-MacBeth methodology, I estimate a regression model and find a negative relationship between litigation risk and financial leverage. I also study the relationship between litigation risk and financial leverage for unified and parent-subsidary firms. I find that relative to high litigation unified firms, high litigation parent-subsidary firms are more likely to hold higher levels of debt.

Second, I test the hypothesis that there is a relationship between litigation risk and the level of cash holdings. Consistent with the findings of Arena and Julio (2011), I find a positive relationship between securities litigation and cash holdings. The level of cash holdings is also positively related to intellectual property litigation. I also document a negative relationship between the level of cash holdings and high severity litigation risk in general, and government contracts, corporate governance and employment and labor litigation, in particular. I also examine the relationship between litigation risk and the level of cash holdings for unified and parent-subsidary firms. I find that relative to high litigation unified firms, high litigation parent-subsidary firms are more likely to hold higher levels of cash holdings.

The accumulation or spending of cash might have an association with a firm's real investment decisions. Motivated by the relationship between litigation risk and cash holdings, I

conjecture that there is a relationship between litigation risk and capital expenditures. Finally, I study the relationship between litigation risk and capital expenditures. Using Fama-MacBeth methodology, I estimate a regression model and find a positive relationship between litigation risk and the level of capital expenditures for firms in general. I also study the relationship between litigation risk and the level of capital expenditures for unified and parent-subsidary firms. I find that relative to high litigation unified firms, high litigation parent-subsidary firms have lower levels of capital expenditures.

Overall, my findings indicate that firms in high litigation environments have lower levels of debt, and high levels of capital expenditures. Contrary to Arena and Julio (2011), I find no consistent relationship between litigation risk and cash holdings. I also find that these relationships appear to differ between high litigation unified firms and high litigation parent-subsidary firms.

The remainder of the paper is organized as follows: Section 2 reviews the relevant literature and develops the main testable hypotheses. In Section 3, I provide a description of the sample, data, and methodology employed in the analysis. Section 4 presents and discusses the results of my empirical tests on the levels of financial leverage, cash holdings, and capital expenditures. Section 5 concludes the paper.

### **3.2. Related Literature and Hypothesis**

In the last decade, several lawsuits have been filed against publicly traded companies alleging illegal behavior. A growing number of studies in the finance and accounting literature have established that the filing of lawsuits can adversely affect the defendant firms. For instance, Bizjak and Coles (1995) and Bhagat, Bizjak, and Coles (1998) show that the filing of lawsuits

against corporations often leads to significant negative market reactions. More recently, studies on litigation risk and shareholder wealth have also documented that corporate litigation leads to a negative stock market reactions (see, for example, Bhattacharya, Galpin, and Haslem (2007) and Gande and Lewis (2009) for a review). The negative stock market reaction then contributes to a decrease in market value of the affected companies, leading to losses in shareholder wealth. Not only do firms in a high litigation environment experience large losses in market value, but they also experience large losses in stock liquidity and analyst coverage. In addition, the filing of lawsuits against firms can hurt the reputation of the defendant firms. As a result, these firms are likely to face increased cost of capital (see, for example, Feroz et al. (1991), Deshow et al. (1996), Karpoff et al. (2008), and Murphy et al. (2009) for a review). Another line of research also documents that corporate misconduct, such as violations of securities laws, can lead to managerial and director turnover (see Niehaus and Roth (1999) and Karpoff et al. (2008) for a summary). There is also the possibility that the defendant firm would be held liable for substantial claims in order to compensate the plaintiffs. This may affect not only the current valuation of the company, but also the future valuation. This risk may have a negative impact on the economic value of the company. As a result, the capital markets would reassess not only the current valuation of the company, but the future valuation as well. As Bhagat et al. (1998), Karpoff and Lott (1999), Haslem (2005), and Bessen and Meurer (2008) correctly point out, such losses apply not only to violations of securities laws but also hold for other categories of legal risks such as employment and labor, intellectual property, environmental, antitrust, product liability, contracts and employment and labor law. Based on the preceding discussion on the consequences associated with litigation risk, a firm in a high litigation environment may find it more difficult to raise capital.

As a result, the firm at a higher risk of litigation will have to pay a higher cost of capital. Given that litigation risk increases firm risk and increases a firm's cost of capital, we might expect it to influence leverage levels as well. As Ligon and Malm (2013) suggest, the increase in firm risk that litigation risk represents would be expected to increase the solvency put associated with a firm's conventional debt. They suggest that separating litigation risk and conventional debt in separate subsidiaries can mitigate this effect. This interaction between litigation risk and the value of the insolvency put on conventional debt suggests that litigation risk may decrease incentives for the use of leverage, at least in unified firms (i.e. firms that do not separate divisions into separate subsidiaries). This suggests the following hypothesis.

**Hypothesis 1: There is a negative relationship between litigation risk and the level of financial leverage, at least in firms with a unified organizational structure.**

While litigation risk may be associated with financial leverage, another corporate policy that may also be related to litigation risk is the decision to accumulate cash in the form of liquid assets. The advantage of holding cash is that it enables firms to finance investment when the firms have difficulty raising external capital. Firms can hold cash as a buffer to hedge against adverse cash flow shocks, since cash has the potential to lessen the costs of financial distress. On the other hand, holding cash also has direct costs including taxes and liquidity premium. Large cash balances can lead to agency problems. This is because it increases managerial discretion and could lead to suboptimal investments. Opler, et al. (1999) provide evidence that firms with larger growth prospects and higher measures of risk tend to hold more cash. One could argue that due to the high cost associated with external capital, firms in a high litigation environment would have an incentive to accumulate more cash. On the other hand, firms may decrease their cash holding either through investment in capital expenditures or increased payout in an effort to

reduce the amount of liquid assets available to potential litigants. Thus my second testable hypothesis follows:

**Hypothesis 2: There is a relationship between litigation risk and the level of cash holdings.**

Litigation risk may also be associated with investment policy. An important component of a firm's investment is capital expenditure. In Gormley and Matsa (2011), the authors note that firms in a high litigation environment can attempt to reduce the likelihood of future financial distress resulting from litigation risk. These firms can achieve this goal by building or acquiring businesses with the potential of producing high cash flows. These prospective high cash flow businesses can provide the firms with huge financial resources from which to pay future liability costs. While it is true that extensive financial wealth or resources may possibly increase the total potential damage claims, they also have the potential to reduce the likelihood of financial distress. It may be in the interest of shareholders to grow or even diversify to avoid incurring substantial legal cost should the firm end up being legally responsible for damages.

Alternatively, firms can choose not to invest in capital expenditure. In this case, rather than investing in capital expenditures, firms in high litigation environment possibly will choose to increase their payouts to shareholders. If the litigation risk has the potential to decrease the expected returns on new investments, shareholders would prefer that the firm decrease investments and increase payout. This is likely to be the case if the expected excess corporate liquidity increases expected damage awards. By reducing the level of capital expenditure and paying out capital, investors can redistribute these funds more profitably to other firms.

From the preceding discussion, litigation risk might have an association with a firm's real investment decisions. Thus my third testable hypothesis follows:

**Hypothesis 3: There is a relationship between litigation risk and the level of capital expenditures.**

### **3.3. Sample Selection, Data Description and Methodology**

#### *3.3.1. Sample selection and data description*

I obtained a large sample of lawsuit data from the SEC EDGAR and LexisNexis databases. Subsidiary information comes from the annual form 10-K Schedule 21. Stock and accounting data for my sample come from firm-years that are common in the following databases: Center for Research in Securities Prices (CRSP) and Compustat, respectively. Firms in my sample belong to the S&P 1500, which consists of the SP 500, S&P Mid-cap 400 and S&P Small-cap 600. I further restrict the sample to exclude financial and utility firms (SIC codes between 4900-4999 and 6000-6999). I obtain data that meet my requirements over the fiscal years 2005 to 2011.

I classify the lawsuits into fourteen categories according to the type of lawsuit: (1) employment and labor, (2) intellectual property, (3) pension and retirements, (4) commercial, (5) securities, (6) government contracts, (7) environmental, (8) finance and banking, (9) antitrust, (10) product liability, (11) medical liability, (12) corporate governance, (13) general liability, and (14) other lawsuits that do not fall into any of the preceding categories.

Employment and labor litigation deals with employee rights, and includes lawsuits related to intimidating acts or discrimination based on disability, ethnicity, gender, national origin, religious beliefs, sexual orientation or race. Intellectual property litigation include violations pertaining to patents, copyrights, and trademark infringements, false advertising, false marketing, licensing, and trade secret matters. Pension and retirement litigation includes lawsuits related to union, worker compensation and retirement benefits disputes. Securities litigation includes lawsuits arising from any activities that relate to influencing securities prices or

otherwise benefiting from insider information about securities prices. These activities include earnings manipulation, opportunistic mergers and acquisition activities, security issuances, insider trading, and other related activities. Environmental litigation pertains to disputes arising from air, land, and water supply pollution. Antitrust laws are designed to prevent the development of monopolies and encourage market competition. Commercial litigation pertains to violations of the law that apply to the rights, relations, and conduct of persons and businesses engaged in commerce, merchandising, trade and sales. Finance and banking lawsuits include violations surrounding financial products and services. Medical liability is the area of health law in which manufacturers, distributors, suppliers, retailers and others who make health products available to the public are held responsible for the injuries these products may cause. Product liability is the area of law in which manufacturers, distributors, suppliers, retailers and others who make products available to the public are held responsible for the injuries these products may cause. Lawsuits surrounding general liability (i.e. non-product and non-medical liability), including insurance policies and claims, constitute general liability litigation. Corporate governance litigation includes lawsuits brought against directors of a firm. Lawsuits brought against the suppliers of goods and services to the government constitute government contracts.

Table 3.1, Panel A reports the number of corporate litigation filings by lawsuit type from 2005 to 2011. From the LexisNexis searches, we identify about 20,248 filings from 2005 to 2011, with an average of approximately 2,893 per year. These lawsuits are filed against publicly-listed companies. The number of lawsuits each year does not seem to vary considerably. Nevertheless, I observe increase in post 2005 data. For instance, there were 720 employment and labor lawsuits in 2005, but this rose to 1,096 in 2009.

Panel B of Table 3.1 reports the fraction of lawsuit types by year. It is clear that the distribution of lawsuit type is relatively constant across the years. The distribution of the lawsuit types is as follows: employment and labor litigation, the most common lawsuit type (33.3%), intellectual property litigation (13.1%), commercial litigation (10.1%), product liability litigation (7.3%), medical liability litigation (6.7%), pension and retirements litigation (5.8%), antitrust litigation (4.9%), general liability litigation (4.6%), other litigations (4.6%), securities litigation (3.4%), environmental litigation (2.8%), corporate governance litigation (1.3%), finance and banking litigation (1.1%), and government contract litigation (1.0%).

### 3.3.2. *Research design and variable definitions*

I describe the empirical proxies employed in the analysis in this subsection. I then continue to motivate the control variables and present the regression models.

#### 3.3.2.1. *Dependent variable*

All the financial and investment policy variables of the firms in my sample are constructed using accounting information from the Compustat database. The following is a description of the dependent variables used in this study.

#### **Financial Policy**

Cash holdings (*Cash Hold*) is constructed as the sum of cash and marketable securities scaled by total assets. The proxy for a firm's debt level (*Leverage*) is constructed by dividing total debt by total assets.

#### **Investment Policy**

I use capital expenditures (*Capex*) to proxy for firms' investment policy. *Capex* is defined as capital expenditure scaled by total assets. An alternative measure used in the literature is Research and Development Intensity (*R&D*). Research and Development Intensity (*R&D*) is

defined research and development expenditure scaled by total assets, with missing values for *R&D* set to zero.

### 3.3.2.2. *Independent Test Variables*

An empirical study of the relationship between litigation risk and key financial and investment policy choices requires proxies for litigation risk, my main explanatory variable of interest. It is not easy to observe or quantify litigation risk. Much of the research measures litigation risk using an industry-based proxy either alone or in conjunction with other variables. A common proxy is based on membership in the biotechnology (SIC code 2833-2836 and 8731-8734), computing (SIC codes 3570-3577 and 7370-7374), electronics (SIC codes 3600-3674) and retail (SIC codes 5200-5961) industries. This proxy originates from Francis, Philbrick and Schipper (1994).

I resolve the litigation risk proxy issue by hand-collecting a large sample of lawsuits filed against large U.S. publicly-traded companies. I use these lawsuits as a proxy to measure litigation risk. I define litigation risk as the number of legal cases for which a firm is mentioned as a defendant. I use different categories of lawsuits to proxy for litigation risk. Specifically, I use data on the following lawsuit types: pension and benefits (*Pension & Benefits L.R.*), product liability (*Product Liability L.R.*), environmental (*Environmental L.R.*), general liability (insurance) (*General Liability L.R.*), medical liability (*Medical Liability L.R.*), employment and labor (*EmpLabor L.R.*), intellectual property (*IntelProperty L.R.*), antitrust (*Antitrust L.R.*), banking and finance (*Fin&Bank L.R.*), securities (*Securities L.R.*), commercial (*Commercial L.R.*), corporate governance (*CorpGov L.R.*), government contracts (*GovContracts L.R.*) and other lawsuit types that do not fall into any of the above lawsuit categories (*Other L.R.*).

I define *Total L.R.* as the sum of all lawsuit types. The variable *High Severity L.R.* is the

sum of pension and retirement benefits, product liability, environmental liability, general liability, and medical liability lawsuits. These are legal claims with the power to bankrupt a firm.<sup>5</sup> The variable *Low Severity L.R.* is the difference between *Total L.R.* and *High Severity L.R.*

### 3.3.2.3. Control Variables

I use numerous control variables in my analysis to account for alternative determinants of financial and investment policy choices. I also include Fama French 48 Industry dummies. The following is a brief description of the control variables in my dataset.

Firm size is measured as the natural logarithm of total assets measured in millions of dollars. I also use the natural logarithm of sales in millions of dollars as a proxy to measure firm size. The market-to-book ratio is computed as total assets less book equity, less deferred tax, plus the liquidation value of preferred stock, plus the product of the year-end common share price and the year-end number of shares outstanding divided by total assets. In computing the market-to-book ratio, I substitute the redemption value of preferred stock when the liquidation value of preferred stock is missing. To measure profitability, I use the ratio of operating income to total assets. As a proxy for asset tangibility, I use the ratio of fixed assets to total assets. As a proxy for cash volatility, I use the standard deviation of cash flow scaled by total assets over 5 years data. Dividend dummy is a binary variable which equals one if the firm paid a common dividend in that year, and zero otherwise. The median industry leverage is computed for each year for each Fama and French 48 Industry. Cash flow is measured as the ratio of cash flow to total assets. Net Working Capital is computed as working capital, net of cash holdings scaled by total assets. Sales growth is the average of yearly sales growth of the past 5 years. Acquisition is

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<sup>5</sup>Intellectual property litigation risk might be classified as severe for a start-up company, particularly in industries such as software development. Our sample is the S&P 1500, however, and for such firms, it is unlikely that disputes over intellectual property could lead to bankruptcy.

measured as the value of acquisition expenditures scaled by total assets. Net debt issuance is computed as total debt issuance less debt retirement, over total assets. Net equity issuance is measured as equity sales less equity purchases, divided by total assets. As a proxy for stock returns, I use the stock returns during the fiscal year.

### **3.4. Empirical Results**

In this section, I present the summary statistics (Section 3.4.1) and examine the relationship between litigation risk and financial leverage (Section 3.4.2), cash holdings (Section 3.4.3), and capital expenditures (Section 3.4.4).

#### *3.4.1. Summary Statistics*

Panel A of Table 3.2 presents the descriptive statistics for the variables used in the analyses. The average cash holdings are 17.19%, with a median of 11.35%. The mean of the variable *Book Leverage* is 18.49%. The average *Market Leverage* is 16.23%. About half of the firms in the sample pay dividends. The variable *Dividend Payer* ranges from 0 to 1 with a mean of 0.50. The average of the variables *Capex*, and *R&D* are about 5.14%, and 3.02%, respectively.

The size of a typical firm in the sample is generally large. The median size (as measured by the natural logarithm of one plus total assets in millions of dollars) of firms in the sample is 7.39 with an average of 7.53. *Firm Age* (as measured using their earlier Compustat listing date) has a mean of over 30 years with a median of 24 years. The average of the variable *ROA* is 5.94%. The 25<sup>th</sup> percentile of the variable *Tangibility* is 0.09, with a mean of 0.25. The 25<sup>th</sup> percentile of the variable *Log(Sales)* is 6.37, with a mean of 7.45. The firms have an average annual stock return of 14.49%. The averages of the variables *Median Industry Leverage*, *Market-to-Book*, and *Cash Flow* are 16.01%, 1.72, and 0.11, respectively. Panel A of Table 3.2 provides the descriptive statistics for the remaining variables. I also document the descriptive statistics for

firms with unified and parent-subsidary corporate structures in Panels B and C of Table 3.2, respectively.

### 3.4.2. Litigation Risk and Financial Leverage

This section examines the relationship between litigation risk and financial leverage using the regression model in equation (1) below:

$$\begin{aligned}
 \text{Leverage} = & a_0 + a_1(LRisk) + a_2 \text{Log}(\text{Sales}) + a_3(\text{Market} - \text{to} - \text{Book}) + a_4(\text{ROA}) \\
 & + a_5(\text{Tangibility}) + a_6(\text{Cash Flow Volatility}) + a_7(\text{Dividend Dummy}) \\
 & + a_8(\text{Median Industry Leverage}) + \varepsilon
 \end{aligned} \tag{1}$$

where *LRisk* is the main independent variable of interest. I define *LRisk* as the number of legal cases for which a firm is mentioned as a defendant. The other variables are defined in Section 3.2. The regression model controls for other potential determinants of financial leverage in the finance literature such as: firm size, market-to-book ratio, return on assets (ROA), tangibility, cash flow volatility, dividend paying status, and industry median book leverage.

Rajan and Zingales (1995), Hovakimian (2004), Parsons and Titman (2009), and Lemmon, et al. (2008) provide a detailed discussion of the significance of these variables to financial leverage. My selection of the control variables is also motivated by Frank and Goyal (2009), who find that the most reliable factors influencing leverage decisions among publicly-traded U.S. corporations are median industry leverage, market-to-book ratio, asset tangibility, profitability, firm size, and expected inflation.

Panels A through C of Table 3.3 show Fama-Macbeth regressions of financial leverage on litigation risk and other explanatory variables. In the analysis presented, I also include industry fixed effects, defined based on the Fama-French 48 Industry classifications. The coefficient preceding the *LRisk* variable,  $a_1$ , identifies the relationship between financial

leverage and litigation risk. I hypothesize that an increase in litigation risk is associated with a reduction in financial leverage. A negative and significant coefficient on the term (*LRisk*) would support Hypothesis 1. I document the relationship between litigation risk and financial leverage in Table 3.3.

The dependent variable in all the regression specifications is *Leverage*. I estimate variants of regression equation (1) to examine the relationship between litigation risk and financial leverage. In Panel A, I present separate regression results of equation (1) where litigation risk is measured by *Total Litigation* (Model 1), *Low Severity Litigation* (Model 2), and *High Severity Litigation* (Model 3). The results in Panel A of Table 3.3 show that the coefficient on the *LRisk* variable is negative and statistically significant at the 5% level for the *Low Severity Litigation* risk measure. The coefficient estimate on the *LRisk* variable is negative but not statistically significant for the *Total* and *High Severity Litigation* risk measures. The results in Model 2 indicate a weak negative relationship between litigation risk and financial leverage. The results on the other explanatory variables are as follows. Firm size (measured as the natural logarithm of sales) is positively associated with the level of financial leverage. Firms with lower market-to-book ratio, lower return on assets, higher tangibility, higher cash flow volatility, and higher median industry leverage have higher levels of financial leverage.

In Panel B, I present results for the individual components of *High Severity Lit. Risk*, which include *Pension & Benefits Litigation*, *Product Liability Litigation*, *Environmental Litigation*, *General Liability Litigation*, and *Medical Liability Litigation*. In Model 1 of Table 3.3 Panel B, the dependent variable is *Pension & Benefits Litigation*. The main independent variable is *Product Liability Litigation* in Model 2. In Models 3 to 5, the independent variables are *Environmental Litigation*, *General Liability Litigation*, and *Medical Liability Litigation*,

respectively. I find a negative and statistically significant coefficient on the *LRisk* variable for pension and benefits, and environmental litigation. However, I obtain a negative but statistically insignificant coefficient on the *LRisk* term for product liability and general liability litigation. The relationship is positive and statistically significant for medical liability litigation.

In Panel C, I present results for the individual components of *Low Severity Litigation*, which include *Intellectual Property Litigation*, *Antitrust Litigation*, *Finance & Banking Litigation*, *Securities Litigation*, *Commercial Litigation*, *Employment & Labor Litigation*, *Government Contracts Litigation*, *Corporate Governance Litigation*, and *Other Litigation*. In Models 1 through 9, the independent variables in the order listed above are the individual components of low severity litigation. With the exception of finance and banking which has a significant positive relationship with financial leverage, I find that the coefficient estimate for the *LRisk* term is negative and statistically significant at less than the 5% level for intellectual property, antitrust, and other litigation. However, it is negative but statistically insignificant for the other components of low severity litigation. The estimates of the various control variables in all the models continue to display similar sign and significance pattern. Thus, I find some support for Hypothesis 1. Taken together, however, the results of Panels B and C indicate that the relationship between litigation risk and leverage is specific to the form of the lawsuit.

Having established a negative relationship between litigation risk and financial leverage, I further examine whether this relationship varies with the organizational structure of the firm. This empirical investigation is motivated by recent studies on litigation risk and organizational form (see for example, Ligon and Thistle (2007) and Ligon and Malm (2013) for a review). The former develops a theoretical model and the latter provides empirical evidence suggesting that there is a positive relationship between litigation risk and subsidiary usage.

Next I estimate regression equation (1) separately for firms with unified and parent-subsubsidiary corporate structures. Table 3.4 document results of Fama-MacBeth regressions of financial leverage on litigation risk and other covariates for unified and parent-subsubsidiary firms, respectively. In the regressions, I find a more negative relationship between litigation risk and financial leverage for unified firms. The results suggest that relative to high litigation unified firms, high litigation parent-subsubsidiary firms have significantly higher levels of financial leverage and that organizational form may be a substitute for financial policy in dealing with litigation risk. The results on the other covariates are as follows. For both high litigation unified and parent-subsubsidiary firms, firm size (as measured by the natural logarithm of sales) is positively related to financial leverage. Unified firms with lower market-to-book ratio, lower return on assets, higher tangibility, higher cash flow volatility, and higher median industry debt level have higher levels of financial leverage. The same is true for parent-subsubsidiary firms. Overall the results suggest that relative to unified firms, parent-subsubsidiary firms in a high litigation environment have higher levels of debt.

### 3.4.3. Litigation risk and the level of cash holdings

In this section, I examine how exposure to high litigation environment relates to the level of cash holdings using the regression model in equation (2) below:

$$\begin{aligned}
 \text{Cash Hold} = & a_0 + a_1 (LRisk) + a_2 (Size) + a_3 (Leverage) + a_4 (MarkettoBook) \\
 & + a_5 (Cash Flow) + a_6 (Net Working Capital) + a_7 (R\&D) \\
 & + a_8 (Sales Growth) + a_9 (Cash Flow Volatility) + a_{10} (Acquisitions) \\
 & + a_{11} (Capex) + a_{12} (Net Debt Issuance) + a_{13} (Net Equity Issuance) \\
 & + a_{14} (Dividend Dummy) + \varepsilon
 \end{aligned} \tag{2}$$

where *LRisk* is the main independent variable of interest. I define *LRisk* as the number of legal cases for which a firm is mentioned as a defendant. The other variables are defined in Section 3.2. In studying the empirical relationship between litigation risk and cash holdings, I follow previous literature by drawing from the works of Opler, et al. (1999), Hartford, et al., (2008), and Bates, et al. (2009) among others to identify the control variables for cash holdings. Cash holdings measure the internal capital available to a firm and provide a cushion against bankruptcy risk. I control for other potential determinants of cash holdings such as: cash flow, leverage, dividend paying status, net working capital net of cash, firm size, R&D, sales growth, market-to-book ratio, capital expenditures, acquisition expenditures, net debt and net equity issuance, and cash flow volatility.

I use cash flow, leverage, a dividend paying status indicator variable, and net working capital net of cash to control for a firm's liquidity and bankruptcy risk. I use firm size to control for a firm's ability to access capital markets. I use the natural logarithm of one plus the total assets in millions of dollars as a proxy for firm size. Firms with stronger growth opportunities and limited access to capital markets are more likely to carry higher cash holdings. I use R&D expenditure and sales growth to control for growth opportunities. Firms with higher levels of capital expenditures and acquisition activity tend to have lower levels of cash holdings. I use capital expenditures and acquisition expenditures to control for these variables. Bates, et al. (2009) argue that a firm has more cash immediately after raising capital. The firm reduces this cash as it pays back debt or repurchases stock. As a result, I control for a firm's net equity and net debt issuance. Firms with greater precautionary needs require higher levels of cash holdings. I use cash flow volatility, measured as the standard deviation of cash flows over the previous five

years. The regressions also include industry fixed effects, defined based on the Fama-French 48 Industry classifications.

The dependent variable in all the regression specifications is *Cash Hold*. I estimate variants of regression equation (2) to examine the relationship between litigation risk and cash holdings in Table 3.5. A positive and statistically significant *LRisk* coefficient will support Hypothesis 2. In Panel A, I present separate regression results of equation (2) where litigation risk is measured by Total Litigation (Model 1), Low Severity Litigation (Model 2), and High Severity Litigation (Model 3). The results in Panel A of Table 3.5 show that the coefficient on the *LRisk* variable is negative and statistically significant at the 10% level for the High Severity Litigation risk measures. The coefficient estimate on the *LRisk* variable is negative but not statistically significant for the Total and Low Severity Litigation risk measures. The results in Model 3 show a negative relationship between high severity litigation risk and the level of cash holdings.

The results on the other explanatory variables are as follows. Firm size (measured as the natural logarithm of total assets) is negatively correlated with the level of cash holdings. Firms with lower levels of cash holdings tend to be larger, have higher leverage, make more investments via capital expenditures and acquisitions, and pay dividends. Firms with higher levels of cash holdings have a higher market-to-book ratio, higher net working capital, higher growth opportunities (via R&D expenditures), higher cash flow volatility, higher net debt issuance, and higher equity issuance.

In Panel B, I present results for the individual components of *High Severity Litigation*, which include *Pension & Benefits Litigation*, *Product Liability Litigation*, *Environmental Litigation*, *General Liability Litigation*, and *Medical Liability Litigation*. In Model 1 of Table

3.5 Panel B, the dependent variable is *Pension & Benefits Litigation*. The main independent variable is *Product Liability Litigation* in Model 2. In Models 3 to 5, the independent variables are *Environmental Litigation*, *General Liability Litigation*, and *Medical Liability Litigation*, respectively. I find a negative and statistically insignificant coefficient on the *LRisk* variable for pension and benefits, product liability, general liability, and medical liability litigation. The relationship is positive but statistically insignificant for environmental litigation.

In Panel C, I present results for the individual components of *Low Severity Litigation*, which include *Intellectual Property Litigation*, *Antitrust Litigation*, *Finance & Banking Litigation*, *Securities Litigation*, *Commercial Litigation*, *Employment & Labor Litigation*, *Government Contracts Litigation*, *Corporate Governance Litigation*, and *Other Litigation*. In Models 1 through 9, the independent variables in the order listed above are the individual components of low severity litigation. Only two of the nine components of low severity litigation risk are positively significantly related to the level of cash holdings. In particular, I find a statistically significant positive relationship between securities litigation risk and the level of cash holdings. This result is consistent with the findings of Arena and Julio (2011). Intellectual property litigation is also positively related to the level of cash holdings. The relationship is also positive but statistically insignificant for antitrust and commercial litigation. For employment and labor, government contracts and corporate governance litigation, the coefficient estimate for the *LRisk* term is negative and statistically significant at less than the 10% level. The relationship is negative but statistically insignificant for finance and banking and other litigation. Thus, the relationship between litigation risk and the level of cash holdings depends on the type of litigation. Overall, I find no consistent relationship between litigation risk and cash holdings.

Next I estimate regression equation (2) for firms with unified and parent-subsiary

corporate structures. Table 3.6 shows results of Fama-MacBeth regressions of the level of cash holdings on litigation risk and other covariates for unified and parent-subsidary firms, respectively. In the regressions, I find a consistent negative relationship between litigation risk and the level of cash holdings for unified firms, but no significant relationship for parent-subsidary firms. The results suggest that relative to high litigation unified firms, high litigation parent-subsidary firms have significantly higher levels of cash holdings. The results on the other covariates are as follows. For both high litigation unified and parent-subsidary firms, firm size (as measured by the natural logarithm of total assets) is negatively related to the level of cash holdings. Unified firms with lower levels of cash holdings tend to be larger, have higher leverage, have higher average sales growth, make more investments via capital expenditures and acquisitions, and pay dividends. On the other hand, unified firms with higher levels of cash holdings have a higher market-to-book ratio, higher net working capital, higher growth opportunities (via R&D expenditures), higher cash flow volatility, higher net debt issuance, and higher equity issuance. The same is true for parent-subsidary firms. Furthermore, there is a positive relationship between cash flow and the level of cash holdings for parent-subsidary firms.

#### *3.4.4. Litigation risk and the level of capital expenditures*

The results in the preceding section show an inconsistent relationship between litigation risk and the level of cash holdings. A natural question that arises is whether there is an association with real investment. Specifically, I examine whether high litigation firms have different levels of investment. In this section, I use Fama-MacBeth regression to examine how exposure to high litigation environment relates to a firm's capital expenditures. The model is estimated using the regression model in equation (3) below:

$$\begin{aligned}
\text{Investment Policy} = & a_0 + a_1(\text{LRisk}) + a_2(\text{Market-to-Book}) + a_3 \text{Log}(\text{Sales}) + a_4(\text{Cash Flow}) \\
& + a_5(\text{ROA}) + a_6(\text{Stock Returns}) + a_7(\text{Leverage}) + a_8(\text{Cash Holdings}) + \varepsilon
\end{aligned}
\tag{3}$$

where *LRisk* is the independent variable of interest. I define *LRisk* as the number of legal cases for which a firm is mentioned as a defendant. The other variables are defined in Section 3.2. The regression model in equation (3) above controls for other potential determinants of capital expenditures. In particular, I include standard controls used in the literature such as: market-to-book, firm size, cash flow, cash holdings, firm profitability, stock returns, and leverage. According to Fazzari et al. (1988) and Hubbard (1998), a firm incurs capital and R&D expenditures in order to exploit its future growth opportunities but is constrained by its funding limitations. Consequently, to examine the relationship between litigation risk and a firm's investment policy choices, I need to control for its growth opportunities as well as its financial and liquidity constraints. I use lagged market-to-book to control for a firm's growth opportunities. I also control for a firm's profitability using lagged ROA and lagged stock returns. I include Fama and French 48 industry dummies. The model is estimated using Fama-MacBeth regressions, in which I first estimate yearly cross-sectional regressions to obtain annual estimated coefficients for each year and then compute the average of estimated coefficients. I again separate results for *Total Litigation*, *Low Severity Litigation*, and *High Severity Litigation*, which are reported in Panel A of Table 3.7. In Panel B, I present results for the individual components of *High Severity Litigation*, which include pension and benefit, product liability, environmental, general liability and medical liability litigation and in Panel C, I present results for the individual components of *Low Severity Litigation*, which include intellectual property, antitrust, finance and banking, securities, commercial, employment and labor, government contracts, corporate

governance and other litigation.

Total litigation risk, low severity litigation risk and high severity litigation risk are all positively significantly related to the level of capital expenditures. However, medical liability litigation is the only component of high severity litigation risk that is significantly positively related to the level of capital expenditures. For the components of low severity litigation risk four of the nine measures are significantly positively related to the level of capital expenditures, while five are insignificant. Thus, I find a general positive relationship between litigation risk and the level of capital expenditures for the firms in my sample, although the results again vary across types of litigation risk. The results on the other covariates are as follows. Firm size (measured as the natural logarithm of sales) is negatively associated with the level of capital expenditures. Firms with higher market-to-book, higher cash flow, lower debt level, and lower cash holdings have higher levels of capital expenditures.

Next I estimate regression equation (3) for unified and parent-subsidary firms. Table 3.8 shows results of Fama-MacBeth regressions of capital expenditures on litigation risk for unified and parent-subsidary firms. In the regressions, I find the positive relationship between litigation risk and the levels of capital expenditures is driven by unified firms. High litigation parent-subsidary firms show no relationship between litigation risk capital expenditures. The results on the other covariates are as follows. For both high litigation unified and parent-subsidary firms, firm size is negatively related to the level of capital expenditures. Unified firms with higher market-to-book, higher cash flow, lower return on assets, and lower cash holdings have higher levels of capital expenditures. The same is true for parent-subsidary firms. In addition, parent-subsidary firms with high debt levels have lower levels of capital expenditures.

I test the robustness of the results in this study by re-estimating all the regression models

using alternative econometric techniques. Given that all the models involve censored dependent variables, for robustness, I reran all the regression models using the Tobit model. The results are qualitatively similar.<sup>6</sup>

### **3.5. Conclusion**

This paper sheds new light on the relationship between different categories of litigation risk and key financial and investment policy choices. I find a general negative relationship between litigation risk and financial leverage. However, consistent with the findings of Arena and Julio (2011), I find a positive relationship between securities litigation and the level of cash holdings. I also find a positive relationship between intellectual property litigation and the level of cash holdings. I document a negative relationship between the level of cash holdings and high severity litigation risk in general, and government contracts, corporate governance, and employment and labor litigation, in particular. Thus the relationship between litigation risk and cash holdings varies across litigation type. I also find a positive relationship between litigation risk and the level of capital expenditures.

Partitioning the sample into unified and parent-subsidary firms, I perform the first systematic empirical investigation of the relationship between litigation risk and key corporate financial and investment policy choices for unified and parent-subsidary firms. Using the Fama-MacBeth methodology, I find that relative to high litigation firms with a unified corporate structure, high litigation risk firms with parent-subsidary structures have significantly higher levels of financial leverage and cash holdings and lower levels of capital expenditures. Thus, corporate organizational form appears to be a clear substitute for financial policy in responding

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<sup>6</sup> Tobit model is a censored regression methodology. This technique is designed to estimate linear relationships between variables when there is either left- or right-censoring in the dependent variable. The results continue to hold under this methodology. The relations are also qualitatively similar under the pooled OLS regression.

to litigation risk. Taken together, these pieces of evidence highlight the link between litigation risk and corporate financial and investment policy choices.

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**Table 3.1: Distribution of lawsuit type by year**

This table shows the number of lawsuit types by year. The lawsuits in this table are lawsuits filed against publicly-held firms. Financial and utility firms are excluded from the sample. The Table shows that the lawsuit types do not vary considerably across years. The distribution of lawsuits is similar across years.

*Panel A: Number of lawsuits by type and year*

	2005	2006	2007	2008	2009	2010	2011	Total	Mean	StDev
Employment & Labor	720	891	1,008	932	1,096	1,073	1,021	6,741	963	120
Intellectual Property	251	329	372	407	409	422	478	2,668	381	68
Pension & Benefits	128	165	224	172	170	166	153	1,178	168	27
Commerical	220	257	297	292	339	322	327	2,054	293	39
Securities	102	78	121	74	119	103	78	675	96	18
Government Contracts	26	24	20	29	29	37	38	203	29	6
Environmental	75	72	95	85	85	66	78	556	79	9
Finance & Banking	26	24	31	32	41	46	31	231	33	7
Antitrust	97	117	125	132	199	175	161	1,006	144	33
Product Liability	211	178	234	218	195	172	241	1,449	207	25
Medical Liability	131	187	201	184	203	227	239	1,372	196	32
Corporate Governance	36	44	28	31	39	37	40	255	36	5
General Liability	101	121	119	125	169	130	161	926	132	22
Others	117	121	144	125	150	138	139	934	133	12
Total	2,241	2,608	3,019	2,838	3,243	3,114	3,185	20,248		

*Panel B: Percentage of lawsuits by type and year*

	2005	2006	2007	2008	2009	2010	2011
Employment & Labor	32.13	34.16	33.39	32.84	33.80	34.46	32.06
Intellectual Property	11.20	12.62	12.32	14.34	12.61	13.55	15.01
Pension & Benefits	5.71	6.33	7.42	6.06	5.24	5.33	4.80
Commerical	9.82	9.85	9.84	10.29	10.45	10.34	10.27
Securities	4.55	2.99	4.01	2.61	3.67	3.31	2.45
Government Contracts	1.16	0.92	0.66	1.02	0.89	1.19	1.19
Environmental	3.35	2.76	3.15	3.00	2.62	2.12	2.45
Finance & Banking	1.16	0.92	1.03	1.13	1.26	1.48	0.97
Antitrust	4.33	4.49	4.14	4.65	6.14	5.62	5.05
Product Liability	9.42	6.83	7.75	7.68	6.01	5.52	7.57
Medical Liability	5.85	7.17	6.66	6.48	6.26	7.29	7.50
Corporate Governance	1.61	1.69	0.93	1.09	1.20	1.19	1.26
General Liability	4.51	4.64	3.94	4.40	5.21	4.17	5.05
Others	5.22	4.64	4.77	4.40	4.63	4.43	4.36

**Table 3.2: Descriptive statistics for variables**

The table reports summary statistics for the full sample in Panel A. The sample consist of S&P 1500 firms that have available data on stock prices, accounting numbers, and lawsuit information over the sample period 2005-2011 with non-missing data. All variables are defined in Section 3.2. Panels B and C of Table 2 documents the descriptive statistics for firms with unified and parent-subsiary corporate structures, respectively.

*Panel A: Descriptive Statistics for the full sample*

Variables	N	Mean	StdDev	P25	Median	P75
Cash Holdings (%)	7,393	17.19	16.95	4.18	11.35	25.15
Book Leverage (%)	7,393	18.49	16.28	2.15	16.83	28.75
Market Leverage (%)	7,257	16.23	16.81	1.23	12.1	24.96
Dividend Payer	7,393	0.5	0.5	0	1	1
Capex (%)	7,384	5.14	5.49	1.84	3.33	6.2
R&D (%)	7,393	3.02	5.11	0	0.25	4.11
Total Litigation Risk	7,393	2.74	8.04	0	0	2
Low Severity L.R.	7,393	2	5.88	0	0	2
High Severity L.R.	7,393	0.74	2.73	0	0	0
Pension & Ben. L.R.	7,393	0.16	0.65	0	0	0
Product Liability L.R.	7,393	0.2	1.23	0	0	0
Environmental L.R.	7,393	0.08	0.46	0	0	0
General Liability L.R.	7,393	0.13	0.58	0	0	0
Medical Liability L.R.	7,393	0.19	0.97	0	0	0
Intellectual Prop. L.R.	7,393	0.36	1.45	0	0	0
Antitrust Lit. Risk	7,393	0.14	0.61	0	0	0
Finance & Banking L.R.	7,393	0.03	0.25	0	0	0
Securities Lit. Risk	7,393	0.09	0.44	0	0	0
Commercial Lit. Risk	7,393	0.28	0.94	0	0	0
Employ. & Labor L.R.	7,393	0.91	3.73	0	0	1
Government Contract L.R.	7,393	0.03	0.24	0	0	0
Corporate Governance L.R.	7,393	0.03	0.26	0	0	0
Other Litigation Risk	7,393	0.13	0.62	0	0	0
Log(Assets in \$millions)	7,393	7.53	1.59	6.4	7.39	8.54
Firm Age	7,388	30.52	17.09	18	24	45
ROA (%)	7,393	5.94	9.06	3.07	6.3	9.97
Tangibility	7,383	0.25	0.21	0.09	0.18	0.34
Log(Sales in \$millions)	7,393	7.45	1.6	6.37	7.35	8.48
Stock Returns (%)	7,084	14.49	62.93	-14.55	8.09	33.26
Median Industry Leverage (%)	7,393	16.01	8.56	9.51	15.8	22.3
Market-to-Book	7,257	1.72	1.19	0.96	1.36	2.05
Cash Flow	7,384	0.11	0.15	0.06	0.1	0.17
Net Working Capital	7,163	0.32	0.18	0.19	0.3	0.44
Sales Growth	7,393	-0.03	0.55	-0.26	0	0.19
Cash Flow Volatility	7,393	0.09	0.16	0.02	0.04	0.09
Acquisitions	7,393	0.03	0.06	0	0	0.02
Net Debt Issuance	7,004	1	7.23	-1.17	0	1.66
Net Equity Issuance	6,865	-2.14	7.99	-3.81	-0.05	0.42

*Panel B: Descriptive Statistics for firms with a Unified Corporate Structure*

Variables	N	Mean	StdDev	P25	Median	P75
Cash Holdings (%)	3,883	20.63	19.3	4.7	14.27	32.32
Book Leverage (%)	3,883	16.23	16.5	0.07	13.21	26.24
Market Leverage (%)	3,795	13.42	15.97	0.02	8.17	21.03
Dividend Payer	3,883	0.43	0.49	0	0	1
Capex(%)	3,879	5.64	6.16	1.9	3.56	6.91
R&D (%)	3,883	3.59	5.66	0	0.52	5.54
Total Litigation Risk	3,883	2.02	7.87	0	0	1
Low Severity L.R.	3,883	1.58	6.17	0	0	1
High Severity L.R.	3,883	0.44	2.01	0	0	0
Pension & Ben. L.R.	3,883	0.11	0.54	0	0	0
Product Liability L.R.	3,883	0.1	0.74	0	0	0
Environmental L.R.	3,883	0.04	0.28	0	0	0
General Liability L.R.	3,883	0.08	0.51	0	0	0
Medical Liability L.R.	3,883	0.11	0.7	0	0	0
Intellectual Prop. L.R.	3,883	0.31	1.52	0	0	0
Antitrust Lit. Risk	3,883	0.1	0.56	0	0	0
Finance & Banking L.R.	3,883	0.02	0.2	0	0	0
Securities Lit. Risk	3,883	0.07	0.4	0	0	0
Commercial Lit. Risk	3,883	0.19	0.76	0	0	0
Employ. & Labor L.R.	3,883	0.74	4.09	0	0	0
Government Contract L.R.	3,883	0.02	0.2	0	0	0
Corporate Governance L.R.	3,883	0.02	0.17	0	0	0
Other Litigation Risk	3,883	0.11	0.67	0	0	0
Log(Assets in \$millions)	3,883	6.97	1.52	5.9	6.73	7.73
Firm Age	3,881	26.66	15.05	16	21	33
ROA (%)	3,883	6.32	9.93	3.16	6.66	10.85
Tangibility	3,883	0.25	0.23	0.08	0.18	0.35
Log(Sales in \$millions)	3,883	6.9	1.56	5.85	6.72	7.71
Stock Returns (%)	3,757	16.76	72.87	-15.18	8.63	36.36
Median Industry Leverage (%)	3,883	16.05	8.57	9.51	15.8	22.3
Market-to-Book	3,795	1.93	1.37	1.03	1.5	2.35
Cash Flow	3,881	0.11	0.17	0.06	0.11	0.18
Net Working Capital	3,793	0.34	0.18	0.21	0.33	0.46
Sales Growth	3,883	-0.11	0.56	-0.36	0	0.12
Cash Flow Volatility	3,883	0.1	0.19	0.02	0.05	0.1
Acquisitions	3,883	0.03	0.06	0	0	0.02
Net Debt Issuance	3,694	0.9	7.36	-0.86	0	0.56
Net Equity Issuance	3,600	-1.89	9.13	-3.59	0	0.59

*Panel C: Descriptive Statistics for firms with a Parent-Subsidiary Corporate Structure*

Variables	N	Mean	Stdev	P25	Median	P75
Cash Holdings (%)	3,510	13.38	12.85	3.75	9.12	18.92
Book Leverage (%)	3,510	20.99	15.65	8.59	19.91	30.85
Market Leverage (%)	3,462	19.3	17.16	5.56	15.86	28.92
Dividend Payer	3,510	0.59	0.49	0	1	1
Capex (%)	3,505	4.58	4.57	1.79	3.14	5.56
R&D (%)	3,510	2.39	4.33	0	0.05	2.78
Total Litigation Risk	3,510	3.53	8.16	0	1	4
Low Severity L.R.	3,510	2.46	5.52	0	0	3
High Severity L.R.	3,510	1.07	3.32	0	0	1
Pension & Ben. L.R.	3,510	0.22	0.74	0	0	0
Product Liability L.R.	3,510	0.3	1.6	0	0	0
Environmental L.R.	3,510	0.11	0.59	0	0	0
General Liability L.R.	3,510	0.18	0.65	0	0	0
Medical Liability L.R.	3,510	0.27	1.19	0	0	0
Intellectual Prop. L.R.	3,510	0.42	1.36	0	0	0
Antitrust Lit. Risk	3,510	0.17	0.66	0	0	0
Finance & Banking L.R.	3,510	0.04	0.29	0	0	0
Securities Lit. Risk	3,510	0.11	0.48	0	0	0
Commercial Lit. Risk	3,510	0.37	1.1	0	0	0
Employ. & Labor L.R.	3,510	1.1	3.27	0	0	1
Government Contract L.R.	3,510	0.03	0.27	0	0	0
Corporate Governance L.R.	3,510	0.05	0.32	0	0	0
Other Litigation Risk	3,510	0.15	0.57	0	0	0
Log(Assets in \$millions)	3,510	8.14	1.44	7.11	8.06	9.03
Firm Age	3,507	34.8	18.16	19	29	52
ROA (%)	3,510	5.52	7.96	3.02	5.93	9.32
Tangibility	3,500	0.24	0.2	0.09	0.18	0.33
Log(Sales in \$millions)	3,510	8.07	1.41	7.09	7.94	8.92
Stock Returns (%)	3,327	11.94	49.23	-13.89	7.88	29.93
Median Industry Leverage (%)	3,510	15.96	8.54	9.51	15.69	22.3
Market-to-Book	3,462	1.49	0.91	0.92	1.24	1.77
Cash Flow	3,503	0.11	0.13	0.06	0.1	0.16
Net Working Capital	3,370	0.29	0.17	0.17	0.28	0.4
Sales Growth	3,510	0.07	0.52	-0.12	0.01	0.3
Cash Flow Volatility	3,510	0.07	0.11	0.02	0.04	0.09
Acquisitions	3,510	0.03	0.06	0	0	0.03
Net Debt Issuance	3,310	1.1	7.08	-1.56	0	2.49
Net Equity Issuance	3,265	-2.41	6.49	-4.03	-0.42	0.26

**Table 3.3: Leverage and litigation risk**

The table shows estimates of Fama-MacBeth regression of financial leverage on litigation risk. The sample consists of all publicly traded firms over the period 2005-2011 with non-missing data on stock prices, accounting information, and lawsuits information. Finance and utility firms are excluded from the sample. The dependent variable in all the regression specifications is financial leverage. Financial leverage is defined as total debt scaled by total assets. All other variables are defined Section 3.2. In panel A are regressions where *LRisk* are measured by *Total Litigation Risk*, *Low Severity Lit. Risk*, and *High Severity Lit. Risk*. In panel B are regressions of the individual components of high severity litigation, *Pension & Benefits L.R.*, *Product Liability L.R.*, *Environmental L.R.*, *General Liability L.R.*, and *Medical Liability L.R.* In panel C are regressions of the individual components of low severity litigation *Intellectual Property Litigation*, *Antitrust Litigation*, *Fin&Bank Litigation*, *Securities Litigation*, *Commercial Litigation*, *Empl&Labor Litigation*, *GovContracts Litigation*, and *Other Litigation*. All models include fixed effects defined based on Fama-French 48 Industry classifications. The t-statistics are shown beneath the coefficients in parentheses. Statistical significance at the 1%, 5%, and 10% levels, respectively, is indicated by \*\*\*, \*\*, \*. Number of observations and average R-squared are also included.

*Panel A: Financial Leverage on Total, Low Severity, and High Severity Litigation*

	Model 1	Model 2	Model 3
Total Litigation Risk	-0.033 (-1.68)		
Low Severity Lit. Risk		-0.057** (-2.53)	
High Severity Lit. Risk			-0.032 (-0.44)
Log(Sales)	2.276*** (14.02)	2.301*** (13.87)	2.209*** (14.94)
Market-to-Book	-1.566*** (-7.57)	-1.559*** (-7.53)	-1.578*** (-7.47)
ROA	-0.391*** (-9.21)	-0.391*** (-9.21)	-0.390*** (-9.19)
Tangibility	14.244*** (16.90)	14.312*** (16.70)	14.094*** (17.04)
Cash Flow Volatility	2.466* (2.30)	2.493* (2.31)	2.405* (2.25)
Dividend Payer	-0.175 (-0.72)	-0.187 (-0.77)	-0.168 (-0.69)
Median Industry Leverage	0.705*** (8.21)	0.708*** (8.11)	0.704*** (8.59)
Constant	-7.881* (-2.18)	-8.204* (-2.27)	-7.230* (-2.12)
Industry Fixed Effects	Yes	Yes	Yes
No. of Observations	7,159	7,159	7,159
Overall R <sup>2</sup>	0.277	0.278	0.278

*Panel B: Financial Leverage on High Severity Litigation Measures*

	Model 1	Model 2	Model 3	Model 4	Model 5
Pension & Benefits L.R.	-0.610** (-2.78)				
Products Liability L.R.		-0.078 (-0.36)			
Environmental L.R.			-0.475* (-2.20)		
General Liability L.R.				-0.190 (-0.79)	
Medical Liability L.R.					0.216* (2.27)
Log(Sales)	2.279*** (16.03)	2.200*** (14.26)	2.218*** (14.63)	2.212*** (14.04)	2.158*** (16.15)
Market-to-Book	-1.576*** (-7.58)	-1.580*** (-7.46)	-1.580*** (-7.53)	-1.578*** (-7.57)	-1.572*** (-7.42)
ROA	-0.391*** (-9.20)	-0.390*** (-9.16)	-0.391*** (-9.18)	-0.391*** (-9.22)	-0.391*** (-9.18)
Tangibility	14.109*** (17.22)	14.070*** (16.56)	14.057*** (17.41)	14.050*** (16.72)	13.909*** (17.59)
Cash Flow Volatility	2.469* (2.29)	2.383* (2.24)	2.423* (2.26)	2.414* (2.25)	2.406* (2.26)
Dividend Payer	-0.161 (-0.66)	-0.169 (-0.69)	-0.162 (-0.66)	-0.172 (-0.70)	-0.178 (-0.73)
Median Industry Leverage	0.694*** (8.02)	0.711*** (8.16)	0.697*** (8.75)	0.708*** (8.04)	0.713*** (8.25)
Constant	-7.177* (-2.13)	-7.544* (-2.09)	-6.795* (-2.17)	-7.501* (-2.09)	-7.241* (-2.13)
Industry Fixed Effects	Yes	Yes	Yes	Yes	Yes
No. of Observations	7,159	7,159	7,159	7,159	7,159
Overall R <sup>2</sup>	0.278	0.278	0.277	0.277	0.277

Panel C: Financial Leverage on Low Severity Litigation Measures

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8	Model 9
	Intell.Prop	Antitrust	Fin&Bank	Securities	Emp&Labor	Commercial	Gov. Cont	Corp. Gov.	Other
Litigation Risk Measure	Litigation	Litigation	Litigation	Litigation	Litigation	Litigation	Litigation	Litigation	Litigation
Litigation Risk	-0.574*** (-12.27)	-0.993*** (-4.22)	2.206*** (3.91)	-0.474 (-0.90)	0.014 (0.66)	-0.352 (-1.57)	-0.877 (-1.09)	0.356 (0.85)	-0.624** (-3.03)
Log(Sales)	2.400*** (14.30)	2.335*** (16.06)	2.147*** (13.92)	2.215*** (15.00)	2.185*** (14.58)	2.291*** (13.93)	2.213*** (15.19)	2.186*** (14.94)	2.254*** (15.18)
Market-to-Book	-1.522*** (-7.37)	-1.533*** (-7.76)	-1.584*** (-7.48)	-1.583*** (-7.43)	-1.580*** (-7.52)	-1.560*** (-7.67)	-1.577*** (-7.47)	-1.580*** (-7.54)	-1.569*** (-7.47)
ROA	-0.390*** (-9.11)	-0.391*** (-9.20)	-0.390*** (-9.14)	-0.391*** (-9.14)	-0.391*** (-9.21)	-0.391*** (-9.24)	-0.390*** (-9.17)	-0.390*** (-9.24)	-0.391*** (-9.17)
Tangibility	14.071*** (17.63)	14.186*** (17.75)	13.976*** (16.49)	14.002*** (16.72)	14.025*** (16.61)	14.123*** (16.99)	14.088*** (17.12)	14.041*** (16.71)	14.183*** (16.97)
Cash Flow Volatility	2.558* (2.34)	2.493* (2.32)	2.330* (2.19)	2.403* (2.26)	2.394* (2.22)	2.494* (2.35)	2.387* (2.24)	2.397* (2.25)	2.463* (2.30)
Dividend Payer	-0.296 (-1.33)	-0.219 (-0.93)	-0.196 (-0.75)	-0.200 (-0.82)	-0.176 (-0.72)	-0.158 (-0.65)	-0.168 (-0.67)	-0.196 (-0.79)	-0.170 (-0.69)
Median Industry Leverage	0.714*** (8.03)	0.717*** (7.95)	0.710*** (8.15)	0.709*** (8.10)	0.711*** (8.12)	0.709*** (8.10)	0.719*** (8.15)	0.713*** (8.00)	0.701*** (7.82)
Constant	-8.819* (-2.38)	-8.555** (-2.48)	-7.056* (-2.01)	-7.496* (-2.18)	-7.397* (-2.14)	-8.183* (-2.19)	-8.001* (-2.27)	-7.489* (-2.17)	-7.589* (-2.11)
Industry Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
No. of Observations	7,159	7,159	7,159	7,159	7,159	7,159	7,159	7,159	7,159
Overall R <sup>2</sup>	0.279	0.278	0.279	0.278	0.277	0.278	0.278	0.277	0.278

**Table 3.4: Leverage and litigation risk (unified and parent-subsidiary firms)**

The table shows estimates of Fama-MacBeth regression of financial leverage on litigation risk for unified and parent-subsidiary firms. The sample consists of all publicly traded firms over the period 2005-2011 with non-missing data on stock prices, accounting information, and lawsuits information. Finance and utility firms are excluded from the sample. The dependent variable in all the regression specifications is financial leverage. Financial leverage is defined as total debt scaled by total assets. All other variables are defined Section 3.2. In panel A are regressions where *LRisk* are measured by *Total Litigation*, *Low Severity Litigation*, and *High Severity Litigation*. All models include fixed effects defined based on Fama-French 48 Industry classifications. The t-statistics are shown beneath the coefficients in parentheses. Statistical significance at the 1%, 5%, and 10% levels, respectively, is indicated by \*\*\*, \*\*, \*. Number of observations and average R-squared are also included.

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
	Unified Firms	Unified Firms	Unified Firms	Parent-Subsidiary Firms	Parent-Subsidiary Firms	Parent-Subsidiary Firms
Total Litigation Risk	-0.034* (-1.98)			0.006 (0.25)		
Low Severity Lit. Risk		-0.040 (-1.77)			-0.006 (-0.22)	
High Severity Lit. Risk			-0.120* (-2.40)			0.030 (0.38)
Log(Sales)	2.514*** (15.51)	2.511*** (15.16)	2.488*** (17.65)	1.233*** (8.65)	1.270*** (8.84)	1.214*** (8.91)
Market-to-Book	-1.273*** (-6.41)	-1.272*** (-6.38)	-1.284*** (-6.46)	-1.517** (-3.35)	-1.520** (-3.35)	-1.508** (-3.30)
ROA	-0.292*** (-7.02)	-0.292*** (-7.02)	-0.291*** (-7.00)	-0.585*** (-7.49)	-0.585*** (-7.48)	-0.586*** (-7.50)
Tangibility	16.896*** (10.17)	16.890*** (10.10)	16.774*** (10.54)	10.845*** (17.95)	10.887*** (18.51)	10.811*** (17.52)
Cash Flow Volatility	2.915** (3.15)	2.912** (3.14)	2.897** (3.13)	10.337** (3.40)	10.370** (3.43)	10.237** (3.35)
Dividend Payer	0.517 (1.15)	0.511 (1.14)	0.532 (1.17)	-0.447 (-1.31)	-0.452 (-1.35)	-0.453 (-1.33)
Median Industry Leverage	0.974*** (5.12)	0.978*** (5.13)	0.966*** (5.10)	0.566 (1.73)	0.566 (1.72)	0.569 (1.74)
Constant	-26.446*** (-4.23)	-26.587*** (-4.25)	-25.827*** (-4.12)	11.473 (1.35)	11.199 (1.33)	11.668 (1.38)
Industry Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
No. of Observations	3,742	3,742	3,742	3,417	3,417	3,417
Overall R <sup>2</sup>	0.322	0.322	0.322	0.283	0.283	0.284

**Table 3.5: Cash holdings and litigation risk**

The table shows estimates of Fama-MacBeth regression of cash holdings on litigation risk. The sample consists of all publicly traded firms over the period 2005-2011 with non-missing data on stock prices, accounting information, and lawsuits information. Finance and utility firms are excluded from the sample. The dependent variable in all the regression specifications is cash holdings. Cash holdings are the sum of cash and marketable securities scaled by total assets. All other variables are defined Section 3.2. In panel A are regressions where *LRisk* are measured by *Total Litigation*, *Low Severity Litigation*, and *High Severity Litigation*. In panel B are regressions of the individual components of high severity litigation, *Pen&Ben Litigation*, *ProdLiab Litigation*, *Environmental Litigation*, *GeneralLiab Litigation*, and *MedicalLiab Litigation*. In panel C are regressions of the individual components of low severity litigation *Intellectual Property Litigation*, *Antitrust Litigation*, *Fin&Bank Litigation*, *Securities Litigation*, *Commercial Litigation*, *Empl&Labor Litigation*, *GovContracts Litigation*, and *Other Litigation*. All models include fixed effects defined based on Fama-French 48 Industry classifications. The t-statistics are shown beneath the coefficients in parentheses. Statistical significance at the 1%, 5%, and 10% levels, respectively, is indicated by \*\*\*, \*\*, \*. Number of observations and average R-squared are also included.

*Panel A: Cash Holdings on Total, Low Severity, and High Severity Litigation*

	Model 1	Model 2	Model 3
Total Litigation Risk	-0.009 (-0.85)		
Low Severity L.R.		-0.005 (-0.39)	
High Severity L.R.			-0.060* (-1.98)
Log(Assets)	-0.960*** (-13.84)	-0.973*** (-14.56)	-0.944*** (-12.46)
Book Leverage	-0.226*** (-24.68)	-0.226*** (-24.72)	-0.226*** (-24.61)
Market-to-Book	3.274*** (16.33)	3.272*** (16.30)	3.273*** (16.36)
Cash Flow	6.060 (1.90)	6.080 (1.90)	6.058 (1.90)
Net Working Capital	7.679*** (4.02)	7.665*** (4.01)	7.716*** (4.03)
R&D	0.773*** (28.44)	0.773*** (28.31)	0.772*** (28.48)
Sales Growth	-1.026 (-1.73)	-1.019 (-1.70)	-1.026 (-1.76)
Cash Flow Volatility	9.490*** (5.82)	9.482*** (5.82)	9.503*** (5.83)
Acquisitions	-50.365*** (-13.17)	-50.379*** (-13.18)	-50.287*** (-13.20)
Capex	-0.621*** (-14.61)	-0.622*** (-14.58)	-0.620*** (-14.59)
Net Debt Issuance	0.370*** (6.51)	0.371*** (6.51)	0.370*** (6.51)
Net Equity Issuance	0.117** (3.03)	0.117** (3.03)	0.117** (3.02)
Dividend Payer	-3.417*** (-15.99)	-3.419*** (-16.05)	-3.407*** (-15.80)
Constant	20.941*** (24.93)	21.033*** (24.80)	20.862*** (24.94)
Industry Fixed Effects	Yes	Yes	Yes
No. of Observations	6,139	6,139	6,139
Overall R <sup>2</sup>	0.582	0.582	0.582

*Panel B: Cash holdings on High Severity Litigation Measures*

	Model 1	Model 2	Model 3	Model 4	Model 5
Pension & Benefits L.R.	-0.197 (-1.32)				
Products Liability L.R.		-0.093 (-0.93)			
Environmental L.R.			0.164 (0.52)		
General Liability L.R.				-0.412 (-1.84)	
Medical Liability L.R.					-0.133 (-1.22)
Log(Assets)	-0.952*** (-11.69)	-0.964*** (-11.70)	-0.987*** (-15.17)	-0.940*** (-12.53)	-0.961*** (-14.67)
Book Leverage	-0.226*** (-24.31)	-0.226*** (-24.60)	-0.226*** (-24.63)	-0.226*** (-24.45)	-0.225*** (-24.42)
Market-to-Book	3.272*** (16.36)	3.274*** (16.34)	3.274*** (16.42)	3.277*** (16.26)	3.269*** (16.30)
Cash Flow	6.077 (1.90)	6.141 (1.91)	6.098 (1.94)	5.948 (1.89)	6.084 (1.90)
Net Working Capital	7.721*** (4.04)	7.703*** (4.02)	7.694*** (4.04)	7.686*** (4.03)	7.683*** (4.03)
R&D	0.773*** (28.66)	0.773*** (28.23)	0.772*** (28.28)	0.772*** (28.51)	0.772*** (28.52)
Sales Growth	-1.011 (-1.68)	-0.996 (-1.61)	-1.035 (-1.72)	-1.007 (-1.71)	-1.023 (-1.72)
Cash Flow Volatility	9.488*** (5.83)	9.526*** (5.86)	9.541*** (5.79)	9.515*** (5.87)	9.471*** (5.85)
Acquisitions	-50.306*** (-13.25)	-50.382*** (-13.23)	-50.319*** (-13.19)	-50.309*** (-13.35)	-50.386*** (-13.17)
Capex	-0.620*** (-14.68)	-0.621*** (-14.52)	-0.622*** (-14.39)	-0.619*** (-14.71)	-0.621*** (-14.72)
Net Debt Issuance	0.369*** (6.55)	0.370*** (6.52)	0.370*** (6.52)	0.370*** (6.54)	0.370*** (6.50)
Net Equity Issuance	0.117** (3.03)	0.117** (3.03)	0.116** (3.00)	0.117** (3.04)	0.117** (3.03)
Dividend Payer	-3.402*** (-15.75)	-3.413*** (-16.23)	-3.437*** (-15.98)	-3.400*** (-15.67)	-3.420*** (-16.28)
Constant	20.992*** (25.87)	20.919*** (22.24)	20.656*** (27.09)	20.827*** (27.07)	20.945*** (24.36)
Industry Fixed Effects	Yes	Yes	Yes	Yes	Yes
No. of Observations	6,139	6,139	6,139	6,139	6,139
Overall R <sup>2</sup>	0.582	0.582	0.582	0.582	0.582

Panel C: Cash holdings on Low Severity Litigation Measures

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8	Model 9
	Intell.Prop	Antitrust	Fin&Bank	Securities	Empl & Labor	Commercial	Gov. Cont	Corp. Gov.	Other
Litigation Risk Measure	Litigation								
Litigation Risk	0.281** (3.32)	0.333 (1.51)	-0.160 (-0.72)	0.651** (2.85)	-0.057*** (-6.23)	0.015 (0.08)	-0.695* (-1.99)	-0.981* (-2.23)	-0.295 (-1.34)
Log(Assets)	-1.100*** (-17.76)	-1.034*** (-18.33)	-0.980*** (-13.43)	-1.023*** (-12.25)	-0.937*** (-13.38)	-0.992*** (-13.58)	-0.968*** (-13.92)	-0.952*** (-13.20)	-0.954*** (-12.60)
Book Leverage	-0.224*** (-25.51)	-0.225*** (-25.14)	-0.225*** (-24.04)	-0.225*** (-24.12)	-0.225*** (-24.67)	-0.225*** (-24.99)	-0.225*** (-24.69)	-0.226*** (-24.69)	-0.226*** (-24.11)
Market-to-Book	3.257*** (16.44)	3.262*** (16.56)	3.271*** (16.35)	3.269*** (16.21)	3.279*** (16.34)	3.272*** (16.52)	3.271*** (16.24)	3.273*** (16.32)	3.273*** (16.32)
Cash Flow	6.069 (1.90)	6.067 (1.89)	6.095 (1.89)	6.167 (1.92)	5.983 (1.87)	6.058 (1.93)	6.094 (1.89)	6.065 (1.89)	6.046 (1.91)
Net Working Capital	7.409*** (3.86)	7.566*** (4.01)	7.689*** (4.04)	7.673*** (4.02)	7.673*** (4.02)	7.630*** (3.99)	7.676*** (4.00)	7.705*** (4.03)	7.659*** (4.00)
R&D	0.766*** (26.85)	0.771*** (27.76)	0.772*** (28.57)	0.774*** (28.14)	0.772*** (28.38)	0.773*** (28.38)	0.772*** (28.35)	0.772*** (28.30)	0.773*** (28.48)
Sales Growth	-0.989 (-1.62)	-1.008 (-1.67)	-1.009 (-1.66)	-0.967 (-1.50)	-0.999 (-1.67)	-1.044 (-1.74)	-1.015 (-1.67)	-1.042 (-1.69)	-0.993 (-1.63)
Cash Flow Volatility	9.460*** (5.79)	9.475*** (5.82)	9.480*** (5.83)	9.426*** (5.81)	9.466*** (5.82)	9.494*** (5.79)	9.452*** (5.81)	9.514*** (5.87)	9.511*** (5.87)
Acquisitions	-50.650*** (-13.13)	-50.401*** (-13.13)	-50.332*** (-13.22)	-50.324*** (-13.22)	-50.442*** (-13.22)	-50.436*** (-13.19)	-50.276*** (-13.27)	-50.319*** (-13.18)	-50.389*** (-13.20)
Capex	-0.629*** (-14.56)	-0.623*** (-14.57)	-0.621*** (-14.56)	-0.621*** (-14.46)	-0.619*** (-14.60)	-0.623*** (-14.47)	-0.621*** (-14.49)	-0.623*** (-14.88)	-0.620*** (-14.74)
Net Debt Issuance	0.372*** (6.52)	0.371*** (6.50)	0.370*** (6.50)	0.372*** (6.59)	0.370*** (6.50)	0.371*** (6.53)	0.370*** (6.51)	0.371*** (6.44)	0.370*** (6.52)
Net Equity Issuance	0.118** (3.04)	0.117** (3.03)	0.117** (3.03)	0.117** (3.06)	0.117** (3.04)	0.116** (3.01)	0.117** (3.02)	0.117** (3.03)	0.117** (3.04)
Dividend Payer	-3.383*** (-15.80)	-3.415*** (-16.00)	-3.412*** (-16.15)	-3.398*** (-16.04)	-3.405*** (-15.95)	-3.427*** (-15.85)	-3.417*** (-16.10)	-3.409*** (-15.95)	-3.412*** (-15.92)
Constant	22.015*** (21.27)	21.487*** (24.15)	21.063*** (25.29)	21.385*** (26.57)	20.794*** (25.86)	21.181*** (20.31)	21.184*** (24.58)	20.857*** (26.39)	20.911*** (25.38)
Industry Fixed Effects	Yes								
No. of Observations	6,139	6,139	6,139	6,139	6,139	6,139	6,139	6,139	6,139
Overall R <sup>2</sup>	0.583	0.582	0.582	0.582	0.582	0.582	0.582	0.582	0.582

**Table 3.6: Cash holdings and litigation risk for unified and parent-subsidiary firms**

The table shows estimates of Fama-MacBeth regression of cash holdings on litigation risk for unified and parent-subsidiary firms. The sample consists of all publicly traded firms over the period 2005-2011 with non-missing data on stock prices, accounting information, and lawsuits information. Finance and utility firms are excluded from the sample. The dependent variable in all the regression specifications is cash holdings. Cash holdings is defined as the sum of cash and marketable securities scaled by total assets. All other variables are defined Section 3.2. In panel A are regressions where *LRisk* are measured by *Total Litigation*, *Low Severity Litigation*, and *High Severity Litigation*. All models include fixed effects defined based on Fama-French 48 Industry classifications. The t-statistics are shown beneath the coefficients in parentheses. Statistical significance at the 1%, 5%, and 10% levels, respectively, is indicated by \*\*\*, \*\*, \*. Number of observations and average R-squared are also included.

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
	Unified Firms	Unified Firms	Unified Firms	Parent-Subsidiary Firms	Parent-Subsidiary Firms	Parent-Subsidiary Firms
Total Litigation Risk	-0.026** (-3.19)			-0.003 (-0.13)		
Low Severity L.R.		-0.026* (-2.43)			-0.008 (-0.21)	
High Severity L.R.			-0.210 (-1.62)			0.003 (0.06)
Log(Assets)	-0.737*** (-7.63)	-0.751*** (-8.23)	-0.706*** (-5.90)	-0.665*** (-11.99)	-0.662*** (-11.77)	-0.670*** (-15.79)
Book Leverage	-0.211*** (-27.61)	-0.211*** (-27.77)	-0.212*** (-26.86)	-0.228*** (-16.84)	-0.229*** (-17.06)	-0.228*** (-16.42)
Market-to-Book	3.221*** (11.19)	3.221*** (11.17)	3.220*** (11.22)	2.812*** (12.04)	2.813*** (12.03)	2.812*** (12.08)
Cash Flow	7.467 (1.26)	7.495 (1.26)	7.393 (1.24)	6.396* (2.17)	6.364* (2.18)	6.479* (2.18)
Net Working Capital	8.957** (3.69)	8.959** (3.69)	8.886** (3.66)	6.280*** (3.94)	6.264*** (3.93)	6.336*** (3.98)
R&D	0.752*** (20.85)	0.752*** (20.82)	0.751*** (20.91)	0.767*** (13.27)	0.768*** (13.22)	0.766*** (13.33)
Sales Growth	-1.396*** (-4.45)	-1.401*** (-4.43)	-1.364*** (-4.37)	-1.138* (-2.36)	-1.116* (-2.27)	-1.133* (-2.36)
Cash Flow Volatility	9.697*** (5.48)	9.696*** (5.47)	9.738*** (5.52)	7.156*** (4.48)	7.121*** (4.46)	7.171*** (4.52)
Acquisitions	-58.663*** (-11.75)	-58.657*** (-11.77)	-58.795*** (-11.61)	-38.362*** (-7.18)	-38.367*** (-7.22)	-38.195*** (-7.13)
Capex	-0.696*** (-14.06)	-0.697*** (-13.99)	-0.694*** (-14.23)	-0.524*** (-8.85)	-0.524*** (-8.89)	-0.524*** (-8.75)
Net Debt Issuance	0.406*** (5.78)	0.406*** (5.78)	0.406*** (5.78)	0.312*** (5.34)	0.313*** (5.34)	0.311*** (5.31)
Net Equity Issuance	0.081* (2.08)	0.081* (2.08)	0.082* (2.09)	0.114** (2.72)	0.114** (2.74)	0.113** (2.71)
Dividend Payer	-5.540*** (-22.20)	-5.543*** (-22.25)	-5.520*** (-21.70)	-1.372*** (-4.32)	-1.368*** (-4.35)	-1.374*** (-4.36)
Constant	14.719*** (12.04)	14.765*** (12.08)	14.920*** (12.08)	23.311*** (14.36)	23.374*** (14.30)	23.235*** (14.98)
Industry Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
No. of Observations	3,242	3,242	3,242	2,897	2,897	2,897
Overall R <sup>2</sup>	0.608	0.608	0.609	0.564	0.564	0.563

**Table 3.7: Capex and litigation risk**

The table shows estimates of Fama-MacBeth regression of cash holdings on litigation risk. The sample consists of all publicly traded firms over the period 2005-2011 with non-missing data on stock prices, accounting information, and lawsuits information. Finance and utility firms are excluded from the sample. The dependent variable in all the regression specifications is capital expenditures. Capital expenditures is capital expenditure scaled by total assets. All other variables are defined Section 3.2. In panel A are regressions where *LRisk* are measured by *Total Litigation*, *Low Severity Litigation*, and *High Severity Litigation*. In panel B are regressions of the individual components of high severity litigation, *Pen&Ben Litigation*, *ProdLiab Litigation*, *Environmental Litigation*, *GeneralLiab Litigation*, and *MedicalLiab Litigation*. In panel C are regressions of the individual components of low severity litigation *Intellectual Property Litigation*, *Antitrust Litigation*, *Fin&Bank Litigation*, *Securities Litigation*, *Commercial Litigation*, *Empl&Labor Litigation*, *GovContracts Litigation*, and *Other Litigation*. All models include fixed effects defined based on Fama-French 48 Industry classifications. The t-statistics are shown beneath the coefficients in parentheses. Statistical significance at the 1%, 5%, and 10% levels, respectively, is indicated by \*\*\*, \*\*, \*. Number of observations and average R-squared are also included.

*Panel A: Capital expenditures on Total, Low Severity, and High Severity Litigation*

	Model 1	Model 2	Model 3
Total Litigation Risk	0.025*** (4.86)		
Low Severity L.R.		0.039*** (5.01)	
High Severity L.R.			0.034* (2.06)
Market-to-Book <sub>t-1</sub>	0.553*** (9.45)	0.549*** (9.43)	0.559*** (9.63)
Log(Sales)	-0.486*** (-9.24)	-0.494*** (-9.00)	-0.446*** (-9.75)
Cash Flow	4.504** (3.38)	4.504** (3.38)	4.501** (3.37)
ROA <sub>t-1</sub>	-0.013 (-1.44)	-0.013 (-1.40)	-0.014 (-1.50)
Stock Returns <sub>t-1</sub>	-0.010 (-0.05)	-0.006 (-0.03)	-0.020 (-0.11)
Book Leverage	-0.010** (-2.58)	-0.010** (-2.58)	-0.010** (-2.59)
Cash Holdings	-0.050*** (-7.13)	-0.050*** (-7.12)	-0.050*** (-7.09)
Constant	7.197*** (10.22)	7.296*** (10.12)	6.917*** (10.17)
Industry Fixed Effects	Yes	Yes	Yes
No. of Observations	5,918	5,918	5,918
Overall R <sup>2</sup>	0.510	0.510	0.509

Panel B: Capital expenditures on High Severity Litigation Measures

	Model 1	Model 2	Model 3	Model 4	Model 5
Pension & Benefits L.R.	0.105 (1.69)				
Products Liability L.R.		-0.012 (-0.36)			
Environmental L.R.			-0.202 (-1.67)		
General Liability L.R.				0.142 (1.46)	
Medical Liability L.R.					0.174** (3.33)
Market-to-Book <sub>t-1</sub>	0.559*** (9.58)	0.558*** (9.51)	0.557*** (9.49)	0.556*** (9.39)	0.560*** (9.68)
Log(Sales)	-0.440*** (-10.66)	-0.421*** (-10.05)	-0.412*** (-8.91)	-0.438*** (-10.30)	-0.450*** (-8.90)
Cash Flow	4.507** (3.36)	4.494** (3.37)	4.494** (3.37)	4.524** (3.37)	4.462** (3.32)
ROA <sub>t-1</sub>	-0.014 (-1.48)	-0.014 (-1.49)	-0.014 (-1.48)	-0.014 (-1.48)	-0.014 (-1.53)
Stock Returns <sub>t-1</sub>	-0.025 (-0.13)	-0.021 (-0.11)	-0.017 (-0.09)	-0.019 (-0.10)	-0.016 (-0.08)
Book Leverage	-0.010* (-2.56)	-0.010** (-2.63)	-0.010** (-2.60)	-0.010** (-2.61)	-0.010** (-2.69)
Cash Holdings	-0.050*** (-7.12)	-0.050*** (-7.09)	-0.050*** (-7.09)	-0.050*** (-7.06)	-0.050*** (-7.08)
Constant	6.840*** (9.94)	6.842*** (10.56)	6.835*** (10.01)	6.941*** (10.53)	7.006*** (10.06)
Industry Fixed Effects	Yes	Yes	Yes	Yes	Yes
No. of Observations	5,918	5,918	5,918	5,918	5,918
Overall R <sup>2</sup>	0.509	0.509	.509	0.509	0.509

Panel C: Capital expenditures on Low Severity Litigation Measures

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8	Model 9
	Intell Prop	Antitrust	Fin&Bank	Securities	Emp& Labor	Commercial	Gov. Cont	Corp. Gov.	Other
Litigation Risk Measure	Litigation								
Litigation Risk	0.160** (3.96)	0.414** (2.69)	0.217 (1.75)	-0.084 (-0.89)	0.048*** (5.21)	0.117** (2.73)	0.220 (0.97)	-0.263 (-0.98)	0.025 (0.38)
Market-to-Book <sub>t-1</sub>	0.545*** (9.29)	0.543*** (8.88)	0.558*** (9.55)	0.557*** (9.73)	0.553*** (9.45)	0.556*** (9.50)	0.559*** (9.59)	0.560*** (9.81)	0.558*** (9.58)
Log(Sales)	-0.482*** (-8.81)	-0.481*** (-8.23)	-0.427*** (-9.27)	-0.419*** (-9.95)	-0.461*** (-9.23)	-0.455*** (-8.81)	-0.427*** (-9.18)	-0.416*** (-9.48)	-0.425*** (-9.72)
Cash Flow	4.453** (3.35)	4.433** (3.31)	4.499** (3.37)	4.504** (3.37)	4.526** (3.38)	4.519** (3.38)	4.503** (3.37)	4.457** (3.28)	4.510** (3.36)
ROA <sub>t-1</sub>	-0.013 (-1.42)	-0.013 (-1.39)	-0.014 (-1.49)	-0.014 (-1.53)	-0.014 (-1.44)	-0.014 (-1.47)	-0.014 (-1.49)	-0.014 (-1.48)	-0.014 (-1.51)
Stock Returns <sub>t-1</sub>	0.003 (0.02)	-0.004 (-0.02)	-0.020 (-0.10)	-0.027 (-0.14)	-0.017 (-0.09)	-0.015 (-0.08)	-0.024 (-0.13)	-0.019 (-0.10)	-0.017 (-0.09)
Book Leverage	-0.009* (-2.46)	-0.009* (-2.41)	-0.010** (-2.62)	-0.010** (-2.61)	-0.010** (-2.65)	-0.010* (-2.57)	-0.010* (-2.56)	-0.010** (-2.65)	-0.010** (-2.63)
Cash Holdings	-0.051*** (-7.14)	-0.051*** (-7.25)	-0.050*** (-7.08)	-0.050*** (-7.06)	-0.050*** (-7.07)	-0.050*** (-7.12)	-0.050*** (-7.11)	-0.050*** (-7.15)	-0.050*** (-7.09)
Constant	7.245*** (10.08)	7.176*** (10.13)	6.878*** (10.40)	6.785*** (10.43)	7.082*** (10.14)	7.052*** (10.18)	6.895*** (10.36)	6.795*** (10.36)	6.856*** (10.67)
Industry Fixed Effects	Yes								
No. of Observations	5,918	5,918	5,918	5,918	5,918	5,918	5,918	5,918	5,918
Overall R <sup>2</sup>	0.510	0.511	0.509	0.509	0.509	0.509	0.509	0.510	0.509

**Table 3.8: Capex and litigation risk (unified and parent-subsidiary firms)**

The table shows estimates of Fama-MacBeth regression of capital expenditures on litigation risk for unified and parent-subsidiary firms. The sample consists of all publicly traded firms over the period 2005-2011 with non-missing data on stock prices, accounting information, and lawsuits information. Finance and utility firms are excluded from the sample. The dependent variable in all the regression specifications is capital expenditures. Capital expenditures is capital expenditure scaled by total assets. All other variables are defined Section 3.2. In panel A are regressions where *LRisk* are measured by *Total Litigation*, *Low Severity Litigation*, and *High Severity Litigation*. All models include fixed effects defined based on Fama-French 48 Industry classifications. The t-statistics are shown beneath the coefficients in parentheses. Statistical significance at the 1%, 5%, and 10% levels, respectively, is indicated by \*\*\*, \*\*, \*. Number of observations and average R-squared are also included.

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
	Unified Firms	Unified Firms	Unified Firms	Parent-SubsidiaryFirms	Parent-SubsidiaryFirms	Parent-SubsidiaryFirms
Total Litigation Risk	0.033*** (8.07)			0.006 (0.65)		
Low Severity L.R.		0.047*** (6.88)			0.015 (1.26)	
High Severity L.R.			0.069*** (6.04)			-0.010 (-0.48)
Market-to-Book <sub>t-1</sub>	0.574*** (7.03)	0.571*** (6.98)	0.581*** (7.11)	0.455** (3.43)	0.452** (3.40)	0.455** (3.43)
Log(Sales)	-0.518*** (-9.38)	-0.527*** (-9.17)	-0.473*** (-9.95)	-0.162* (-2.11)	-0.175* (-2.30)	-0.139* (-2.08)
Cash Flow	3.677** (2.82)	3.670** (2.82)	3.680** (2.81)	5.614** (3.64)	5.618** (3.64)	5.615** (3.62)
ROA <sub>t-1</sub>	-0.025** (-3.12)	-0.024** (-3.12)	-0.025** (-3.19)	0.007 (0.31)	0.007 (0.31)	0.007 (0.32)
Stock Returns <sub>t-1</sub>	0.080 (0.24)	0.085 (0.26)	0.071 (0.21)	-0.094 (-0.46)	-0.088 (-0.43)	-0.101 (-0.48)
Book Leverage	-0.002 (-0.55)	-0.002 (-0.57)	-0.002 (-0.50)	-0.021** (-3.48)	-0.021** (-3.46)	-0.021** (-3.49)
Cash Holdings	-0.051*** (-6.55)	-0.051*** (-6.57)	-0.051*** (-6.48)	-0.052*** (-6.08)	-0.052*** (-6.09)	-0.052*** (-6.06)
Constant	7.662*** (7.29)	7.771*** (7.27)	7.311*** (7.11)	4.736*** (6.48)	4.849*** (6.50)	4.599*** (7.10)
Industry Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
No. of Observations	3,127	3,127	3,127	2,791	2,791	2,791
Overall R <sup>2</sup>	0.593	0.593	0.591	0.479	0.479	0.479

## CHAPTER 4<sup>7</sup>: INDEPENDENT DIRECTORS AND CORPORATE LITIGATION

### 4.1. Introduction

Corporate governance issues have come under intense investigation following the notorious business scandals of the early part of the 21<sup>st</sup> Century. A number of solutions have been recommended including increasing the independence of the board of directors. But are independent directors capable monitors? Does the presence of independent directors actually reduce managerial maleficence and protect shareholders? While stronger monitoring should lead to better firm performance and shareholder wealth, due to the endogenous relation between firm board structure and measures of performance the empirical evidence is mixed (see, for example Baghat and Black (1999); Hermalin and Weisbach (1991) and Hermalin and Weisbach (2003) for a review). However, as Hermalin and Weisbach (2003) note, relations between board composition and specific firm actions or outcomes are less prone to endogeneity concerns. Thus, studies of specific events or board decisions like CEO turnover, acquisition decisions, executive compensation, etc. have revealed stronger evidence of monitoring effectiveness of independent directors. One particularly important firm outcome examined in this literature is the likelihood of securities class action lawsuits (i.e. Karpoff, Lee and Martin (2005), Fich and Shivdasani (2007), Fahlenbrach, Low and Stulz (2014), Masulis and Mobbs (2013)).

Lawsuits represent an important external governance mechanism that punishes managers for any maleficence. However, it is also an indicator that internal governance

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<sup>7</sup> A working paper version of this chapter co-authored with Dr. Shawn Mobbs exists and is being circulated.

mechanisms are not functioning adequately since the internal monitoring mechanism did not prevent the managerial actions that led to the lawsuit. Conversely, if the board of directors is comprised of stronger more capable monitors, who are able to prevent adverse managerial behavior or actions, this would reduce the litigation faced by the firm. In this paper, we test this conjecture by utilizing an exogenous regulatory shock to board independence.

While prior research on director reputation and board decisions that consider litigation concentrates on securities class action lawsuits (e.g. Fich and Shivdasani (2007) and Masulis and Mobbs (2013)), these types of lawsuits represent only a small fraction of the types of lawsuits firms can face. For example, a total of 3,944 lawsuits were filed against S&P 1500 firms in 2010. Of this number only 4.7% pertained to the violation of securities law. The remaining 95.3% of the lawsuits pertain to violation of employment and labor laws, intellectual property laws, product liability, medical liability, environmental laws, antitrust laws, and other related issues. Thus, to more completely evaluate independent directors' ability to mitigate corporate litigation, it is important to consider all possible types of litigation risk.

In the last decade, a wide variety of lawsuits have been filed against publicly traded companies alleging illegal behavior. These corporate lawsuits have resulted in significant monetary and reputational costs to not only the affected firms, but also shareholders, auditors, analysts, and regulators. Corporate litigation can be costly to the defendant firm as it leads to losses in market value, procedural costs, potential court penalties or settlement costs, reputational losses, and management time and costs associated with follow-up litigation. For instance, the largest accidental marine oil spill in the history of the petroleum industry, the Deepwater Horizon oil spill (also known as the BP oil spill) claimed eleven lives and had a significant impact on marine species. Furthermore, in the aftermath of the spill the size of BP's potential

legal liability spread as the spill lead to devastating economic impacts on the states around the Gulf Coast. As of July 31 2013, the cost estimate for the BP oil spill was estimated at \$42.4 billion for clean-up cost, fines and compensation burdens. In a similar environmental incident, the class action lawsuit related to the Exxon Valdez oil spill that affected thousands of people and more than 1,300 miles of coastline resulted in an initial judgment of \$5 billion in 2001. Though after additional litigation, the amount was reduced to \$500 million. Other examples include the Breast Implant litigation involving the major Breast Implant Manufacturers that was settled for \$3.4 billion in 1994 as well as the Master Tobacco Litigation that was settled for \$206 billion over a period of 25 years. Thus, various non-securities related lawsuits can be quite costly and time-consuming for firms.

Prior literature measures litigation risk through membership in certain industries where certain types of lawsuits may be more likely, we directly address the varied litigation risks by hand-collecting a large sample of lawsuits filed against large U.S. publicly-traded companies. These lawsuits are classified into fourteen categories according to the type of lawsuit: employment and labor, intellectual property, pension and retirements, commercial, securities, government contracts, environmental, finance and banking, antitrust, product liability, medical liability, corporate governance, general liability, and other lawsuits that do not fall into any of the preceding categories. We use these lawsuits to more thoroughly examine corporate litigation.

In 2002, the NYSE and the NASDAQ initiated new exchange listing requirements (ELR) mandating that all listed firms have a board with a majority of independent directors. Contemporaneously, Congress, in response to a number of major corporate and accounting scandals including those affecting Enron, Tyco International, Adelphia, Peregrine Systems, and WorldCom, enacted the Sarbanes-Oxley Act (SOX), which imposed stronger monitoring

responsibilities upon independent directors. In addition to requiring firms to have a majority of independent directors on their board, SOX and the ELR imposed among other things, a stricter definition of board independence, mandated board sessions without insiders, and required an existence of independent audit, nomination, and compensation committees.

We use the exogenous regulatory shocks of 2002 and a difference-in-differences methodology to investigate the relation between board independence and corporate litigation. Several prior studies have utilized this shock to examine the relation between board independence and other governance mechanisms (e.g. Linck, Netter, and Yang (2009); Chhaochharia and Grinstein, (2009); Guthrie, Sokolowsky, and Wan (2012); Guo and Masulis (2013); and Guo, Lach and Mobbs (2013)). Since the difference-in-differences technique enables us to mitigate the potential endogeneity concern regarding board composition, we use this methodology to empirically investigate the impact of independent directors on corporate litigation.

We find that relative to the compliant firms (firms with more than 50% of independent directors), the non-compliant firms (firms without a majority of independent directors), are associated with a significant reduction in corporate litigation in the post-regulation period. We further perform the same analysis for a sub-sample of industries and find that the results are stronger in industries where the exposure to the various types of corporate litigation is greater. Our results withstand a battery of robustness checks, including restricting the control firms to a sample of size-matched compliant firms, an alternative definition of compliance, different time periods, and controlling for firm fixed effects.

We make two significant extensions of the prior research on board monitoring and corporate litigation. First, we utilize exogenous shocks to better identify the relation between

board independence and litigation. Talley (2009) empirically examines how a firm's structural corporate governance choices predict its later susceptibility to securities class action litigation and finds a qualitatively mixed relationship between litigation risk and corporate governance. In contrast, our study explores an empirical setting where the shift in board monitoring is relatively exogenous and thus, permits a cleaner identification of the effects of increases in board monitoring on corporate litigation.

Second, our findings contribute significantly to the literature on board composition and litigation by greatly expanding the types of litigation analyzed. Prior literature focused primarily on securities class action lawsuits. We expand this line of research to include an additional thirteen types of lawsuits and find that greater board monitoring by independent directors can significantly reduce the likelihood of several different types of lawsuits, which reflects a much broader aspect to their monitoring abilities than previously documented.

Finally, this analysis contributes to our understanding of the merits of corporate governance reform initiatives. There has been a heated debate about the costs and benefits of the 2002 corporate governance reform initiatives (see, for example, Romano (2005), Clark (2005), Bainbridge (2006), and Prentice and Spence (2007) for a summary). This paper also complements existing studies on the economic impact of corporate governance regulations by studying the changes in different types of corporate litigation around the announcement of these new governance rules. The evidence we find suggests that the new exchange listing rules and the SOX legislation effectively improved monitoring on corporate boards as is evidenced by the significantly lower likelihood of numerous types of corporate litigation.

The remainder of the paper is organized as follows: In Section 2, we review the relevant literature and develop the main testable hypothesis. We follow with a description of the sample,

data and methodology employed in Section 3. Section 4 presents and discusses the results of our main empirical tests on the independent directors and corporate litigation. We conduct a series of robustness checks in Section 5, and Section 6 concludes the paper.

#### **4.2. Related Literature and Hypothesis**

Why are certain firms more likely to be involved in corporate litigation than others? Can good corporate governance reduce the incidence of corporate litigation? A large literature in accounting and finance has highlighted the important role of auditors, corporate governance, executive compensation and the legal system in reducing corporate litigation. However, this literature has primarily focused on securities class action lawsuits. In practice, litigation can come in many forms, all of which can be very costly for firms and their shareholders.

Prior literature finds that boards dominated by independent directors are more effective in executing their monitoring roles (see, for example, Baysinger and Butler (1985), Weisbach (1988), Rosenstein and Wyatt (1990), Byrd and Hickman (1992), Brickley, Coles and Terry (1994), Cotter, Shivdasani and Zenner (1997)). According to Fama (1980) and Fama and Jensen (1983), independent directors have the incentives to monitor more carefully because this provides them with the incentives to develop their reputations as decision control experts. From an agency standpoint, firms have incentives to increase the proportion of independent directors on their board to improve monitoring effectiveness (Cheng, et. al, (2010)). Benefits of greater monitoring of management can have many forms, however, SOX focused on the prevention of managerial fraud or other illegal activity. Coffee (1991) argues that strengthening the board's monitoring is an effective way of disciplining management and avoiding future corporate litigation.

Corporate litigation imposes significant wealth losses upon shareholders. Bizjak and Coles (1995, Bhagat, Bizjak, and Coles (1998), Bhattacharya, Galpin, & Haslem (2007), and Gande & Lewis (2009) all find the filing of lawsuits against corporations often lead to significantly negative market reactions. Aharony, Lin, and Yawson (2013) argue that the decrease in market value is, in part, a result of the significant legal costs associated with defending the lawsuits. In addition, the defendant firms can potentially be liable for substantial claims awarded to the plaintiffs. Thus the risk of litigation can negatively impact the economic value of the company. Furthermore, being associated with any variety of lawsuits can jeopardize a firm's reputation, which can adversely affect future economic success.

Adverse reputation consequence also affects the firm's directors. Fich and Shivdasani (2007) find that independent directors suffer significant reputation damage if they are associated with a securities class action lawsuit. Relatedly, Masulis and Mobbs (2014) find that firms whose independent directors have strong reputation incentives are less likely to be the target of a class action lawsuit. Thus, the strong incentives of independent directors to be strong monitors and to avoid the negative consequences of facing litigation can serve to reduce the likelihood of a firm being the target of a lawsuit. Thus, our primary hypothesis is based on the greater monitoring incentives of independent directors intent on preventing managerial maleficence.

**Hypothesis: An increase in the fraction of independent directors on a corporate board is associated with a decrease in corporate litigation.**

### **4.3. Sample Selection, Data Description and Methodology**

#### *4.3.1. Sample selection and data description*

We hand-collected a large sample of lawsuits involving publicly traded companies from the LexisNexis legal database. Data for our sample come from firm-years that are common

in the following databases: Center for Research in Securities Prices (CRSP), Compustat, ExecuComp, and RiskMetrics. Stock and accounting data for our sample come from CRSP and Compustat, respectively. We collect data on management share ownership from the ExecuComp database. Data on boards of directors come from the RiskMetrics database. Firms in our sample belong to the S&P 1500, which consists of the SP 500, S&P Mid-cap 400 and S&P Small-cap 600. We obtain data that meet our requirements over the fiscal years 1996 to 2011.

We classify the lawsuits into fourteen categories according to the type of lawsuit--(1) employment and labor, (2) intellectual property, (3) pension and retirements, (4) commercial, (5) securities, (6) government contracts, (7) environmental, (8) finance and banking, (9) antitrust, (10) product liability, (11) medical liability, (12) corporate governance, (13) general liability, and (14) other lawsuits that do not fall into any of the preceding categories. Employment and labor litigation deals with employee rights, and includes lawsuits related to intimidating acts or discrimination based on disability, ethnicity, gender, national origin, religious beliefs, sexual orientation or race. Intellectual property litigation include violations pertaining to patents, copyrights, and trademark infringements, false advertising, false marketing, licensing, and trade secret matters. Pension and retirement litigation includes lawsuits related to union, worker compensation and retirement benefits disputes. Securities litigation includes lawsuits arising from any activities that relate to influencing securities prices, or otherwise benefiting from insider information about securities prices. These activities include earnings manipulation, opportunistic merger and acquisition activities, security issuances, insider trading, and other related activities. Environmental litigation pertains to disputes arising from air, land, and water supply pollution. Antitrust laws are designed to prevent the development of monopolies and encourage market competition. Commercial litigation pertains to violations of the law that apply

to the rights, relations, and conduct of persons and businesses engaged in commerce, merchandising, trade and sales. Finance and banking lawsuits include violations surrounding financial products and services. Medical liability is the area of health law in which manufacturers, distributors, suppliers, retailers and others who make health products available to the public are held responsible for the injuries these products may cause. Product liability is the area of law in which manufacturers, distributors, suppliers, retailers and others who make products available to the public are held responsible for the injuries these products may cause. Lawsuits surrounding general liability (i.e. non-product and non-medical liability), including insurance policies and claims, constitute general liability litigation. Corporate governance litigation includes lawsuits brought against directors of a firm. Lawsuits brought against the suppliers of goods and services to the government constitute government contracts.

Table 4.1, Panel A, reports the number of corporate litigation filings by lawsuit type from 1996 to 2011. We identify about 33,268 lawsuits filings from 1996 to 2011, with an average of approximately 2,376 per year. These lawsuits are filed against publicly listed companies. Prior to the year 2000, the number of lawsuits each year does not seem to vary considerably. Nevertheless, we observe increase in post 2000 and post 2004 data. For instance, there were 206 employment and labor lawsuits in 1996, but this rose to 330 in 2001, 750 in 2005 and 933 in 2008.

Panel B of Table 4.1 reports the fraction of lawsuit types by year. The distribution of lawsuit type is relatively constant across the years. Employment and labor litigation is the most common lawsuit type in all years in our sample. This is followed by commercial litigation (10.7%), intellectual property litigation (10.5%), product liability litigation (8.1%), medical liability litigation (6.6%), pension and retirements litigation (6.2%), general liability litigation

(6.1%), other litigations (5.5%), antitrust litigation (4.7%), securities litigation (3.9%), environmental litigation (2.6%), finance and banking litigation (2.2%), corporate governance litigation (1.5%), and government contract litigation (0.8%).

Panel C of Table 4.1 presents a breakdown of corporate litigation across the twelve Fama-French (FF-12) industry groups. As would be expected, we observe a high percentage of employment and labor litigation in the Wholesale, Retail, and Some Services and Manufacturing FF-12 industry groups. Intellectual property litigation is more prevalent in the Business Equipment and Healthcare, Medical Equipment, and Drugs FF-12 industry groups. Pension and retirements litigation is common in the Manufacturing and Finance industry groups. Commercial litigation is prevalent among the Business Equipment and Wholesale, Retail, and Some Services industry groups. Securities litigation is common in the Business Equipment and Finance FF-12 industry groups. Government contract litigation is common in the manufacturing industry. Environmental litigation is prevalent in manufacturing, chemicals and allied products, and oil, gas, and coal extraction and products industry groups. The industry distribution of the other lawsuit types is shown in Panel C of Table 4.1.

#### *4.3.2. Research design and variable definitions*

We describe the empirical proxies and the control variables employed in the analysis in this subsection.

##### *4.3.2.1. Dependent variable.*

The dependent variable is corporate litigation. We define corporate litigation as the number of legal cases for which a firm is mentioned as a defendant. We use different categories of lawsuit to proxy for corporate litigation. Specifically, we use data on the following lawsuit types: pension and benefits (*Pen&Ben Litigation*), product liability (*ProdLiability Litigation*),

environmental (*Environmental Litigation*), general liability (insurance) (*GenLiability Litigation*), medical liability (*MedLiability Litigation*), employment and labor (*Emp&Labor Litigation*), intellectual property (*IntelProperty Litigation*), antitrust (*Antitrust Litigation*), banking and finance (*Fin&Bank Litigation*), securities (*Securities Litigation*), commercial (*Commercial Litigation*), corporate governance (*CorpGov Litigation*), government contracts (*GovContracts Litigation*) and other lawsuit types that do not fall into any of the above lawsuit categories (*Other Litigation*).

We define *Total Litigation* as the sum of all lawsuit types. The variable *High Severity Litigation* is the sum of pension and retirement benefits, product liability, environmental liability, general liability, and medical liability lawsuits. Based on anecdotal evidence, these are legal claims with the power to bankrupt a firm.<sup>8</sup> The variable *Low Severity Litigation* is the difference between *Total Litigation* and *High Severity Litigation*.

#### 4.3.2.2. Independent Variable (DiD Estimate)

The independent variables include a non-compliant dummy, a post-regulations dummy, and an interaction of the non-compliant dummy and the post-regulation dummy. The non-compliant dummy is an indicator taking the value of one for membership in the treatment group defined as firms not in compliance with the new NYSE/NASDAQ rule requiring firms to have a majority of independent directors on board as of 2000, and zero otherwise. Post-regulation is an indicator variable taking the value of one if it is 2001 or greater (i.e., after the NYSE/NASDAQ regulations on board independence are implemented), and zero otherwise. Our main independent

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<sup>8</sup> Intellectual property litigation risk might be classified as severe for a start-up company, particularly in industries such as software development. However, our sample is the S&P 1500, and for such firms, it is unlikely that disputes over intellectual property could lead to bankruptcy.

variable of interest is the interaction term, which captures the differential effect of the treatment on corporate litigation for treatment firms.

#### *4.3.2.3. Control Variables*

We use numerous control variables in our analysis to account for alternative determinants of corporate litigation. We create control variables measuring other characteristics of boards, CEOs, and firms. These variables include firm size, return on assets (ROA), leverage, market value per share to book value per share, and CEO equity ownership. We also include Fama French 48 Industry dummies. The following is a brief description of the control variables in our dataset. These variables are defined in the Appendix.

Firm size is measured as the natural logarithm of sales measured in millions of dollars. For robustness, we also use the natural logarithm of total assets measured in millions of dollars as a proxy for firm size. To measure profitability, we use the ratio of net income to total assets. Leverage is defined as the ratio of total book debt to total book assets. Market-to-book ratio is computed as total assets less book equity, less deferred tax, plus the liquidation value of preferred stock, plus the product of the year-end common share price and the year-end number of shares outstanding divided by total assets. In computing the market-to-book ratio, we substitute the redemption value of preferred stock, when the liquidation value of preferred stock is missing. CEO equity ownership is the percentage of outstanding shares owned by the CEO. As a proxy for stock returns, we use the stock return during the fiscal year.

## **4.4. Empirical Results**

In this section, we present the summary statistics in Section 4.1 and examine the relationship between independent board of directors and corporate litigation in Section 4.2.

Finally, in Section 4.3, we examine the relationship between independent directors and corporate litigation for a sub-sample of industries.

#### *4.4.1. Summary Statistics*

Univariate statistics for the key variables used in this study are shown in Table 4.2. We report the summary statistics for the full sample firms, as well as the control and treatment subsamples. Panel A of Table 4.2 presents the descriptive statistics for the full sample. From Panel A of Table 4.2, we note that a firm has on average over two lawsuits in a year. The average firm has 7.88 in market capitalization, and 7.96 in assets. The firms have an average of 7.6 in sales. The firms have an average ROA of 5.0%, average book leverage of 21.0%, an average Market-to-Book ratio of 1.61, and average annual stock returns of 14.2%. An average board has over nine directors, with 71.7% independent directors. An average CEO has about 2.1% equity stake in the firm. On average, the top five executives in the management team have a total of about 3.39% equity ownership in the firm. The data is similar to a contemporary study conducted by Kim and Lu (2012) and Pan and Zhang (2013).

In 2002, the SOX, which required the audit committee of publicly traded companies to be entirely represented by independent directors, was signed into law. In addition, the NYSE and the NASDAQ required listed firms to have a majority of independent directors on their boards. Further, in 1999, the NYSE and the NASDAQ required listed firms to have entirely independent audit committee members. We consider a firm to be non-compliant if the firm has fifty percent or less independent board of directors in the year 2000 (before the enactment of SOX). The firm is considered as a compliant firm if that firm has over fifty percent independent directors on the board in the year 2000. It is important to note that the new exchange rule on audit committee independence was not the first listing requirement for NYSE/NASDAQ firms. In December

1999, NYSE/NASDAQ issued their first listing requirement regarding audit independence in response to the SEC calls for improvement in the effectiveness of corporate audit committees. According to that listing requirement, all listed firms are mandated to maintain audit committees with at least three directors. All of these directors must have no economic or family ties to the company that may interfere with the exercise of their independence from management and the company (see NYSE Listed Company Manual 303.01[B][2][a]). This requirement also increased the percentage of independent directors on board. Consequently, from within the group of compliant firms in the year 2000, we take note of the firms that did not have an entirely independent audit committee requirement in 1998 (we refer to these firms as non-compliant 1998 firms). We then add the non-compliant 1998 firms to the non-compliant 2000 firms. Together, these firms constitute our treatment firms. The post-regulation indicator is set to one for 2001 and later years for compliant and non-compliant 2000 firms and zero otherwise. The indicator is also set to one for 1999 and later years for compliant and non-compliant 1998 firms and zero otherwise.

We use the above definition for our treatment (non-compliant) firms because the NYSE/NASDAQ regulations on board independence are a response to a series of corporate frauds, including Enron and WorldCom. Enron filed an earnings restatement with the SEC on November 8, 2001, and later filed for bankruptcy on December 2, 2001. There is the possibility that some firms could have expected the implementation of the regulations and changed their board structure right after the Enron scandals. In other words, it is possible that the board structure at the end of 2001 already reflected the impact of the NYSE/NASDAQ regulations.

In Panel B of Table 4.2, we report the descriptive statistics and test results of the difference in means of the treatment and control firms. In addition to the differences in the

percentages of independent directors, the table shows several differences between the treatment and control firms. Treatment firms have an average of 59.45% independent directors across the full sample, including the years following SOX. On the other hand, control firms have an average of 75.67% independent directors on board. Based on total assets, treatment firms are significantly smaller than control firms. Compared to the control firms, the treatment firms have a significantly greater ROA, lower leverage, higher market-to-book ratio, smaller board size, higher CEO equity ownership, and greater management equity ownership. We present our multivariate analysis in order to account for multiple factors affecting corporate litigation in the next section.

#### *4.4.2. Independent Directors and Corporate Litigation*

In this section, we examine the relationship between independent directors and corporate litigation using the difference-in-differences (DiD) methodology. The DiD methodology mitigates endogeneity concerns. This technique deserves some explanation. The method isolates the change in the level of corporate litigation due to the exogenous shock to board independence (the non-compliant firms) by differencing the changes in the level of corporate litigation in the non-compliant firm and the compliant firm. We hypothesize that the increase in the fraction of independent board of directors will result in a reduction of corporate litigation.

We employ the model in equation (1) below to investigate the effect of independent directors on corporate litigation:

$$\begin{aligned}
\text{Corp Litigation} = & a_0 + a_1 (\text{Non-Compliant}) + a_2 (\text{Post Regulations}) + a_3 (\text{Non-Compliance*Post} \\
& \text{Regulations}) + a_4 (\text{Firm Size}) + a_5 (\text{ROA}) + a_6 (\text{Leverage}) + a_7 (\text{Market-to-Book}) + a_8 (\text{Stock Returns}) + \\
& a_9 (\text{CEO Equity Owner}) + \varepsilon
\end{aligned}
\tag{1}$$

where *Corp Litigation* is our dependent variable. We define *Corp Litigation* as the number of legal cases for which a firm is mentioned as a defendant. *Non-Compliant* takes the value of one if a firm has a majority of dependent directors on board in 2000 (i.e. the board does not comply with the NYSE/NASDAQ regulatory requirements on board independence) and zero otherwise. *Post Regulations* is a dummy variable taking on the value of one after year 2001 and zero otherwise.

Prior studies provide evidence to show that firms that are subject to securities litigation are generally larger (eg. Gande and Lewis (2009), Dechow, Ge, Larson and Sloan (2011) and Hutton, Jiang, and Kumar (2012)). Firms that are in position to pay larger settlement/penalty amounts are more likely to be sued. More generally, firms with deep pockets are more likely to be sued. Thus, we use the natural logarithm of sales as a proxy to measure firm size.

Crutchley, Jensen, and Marshall (2007), and Dechow, Ge, Larson, and Sloan (2011) provide evidence to show that firms that manipulate financials typically have strong financial performance prior to manipulation. Their results indicate that financial manipulation could be used to mask mean reversion in financial performance. However, strong operating performance can be interpreted as managerial effectiveness and can discourage litigation. As a result, we also control for operating performance using return on assets, defined as the ratio of net income to total assets.

Potential violation of debt covenants can create incentives for earnings management. A number of studies have examined whether firms that are close to violating debt covenants

manage earnings. A common measure used in the accounting literature to proxy for potential violation of debt covenants is leverage (see Dechow, Sloan, and Sweeney (1996); Richardson, Tuna, and Wu (2002)). In addition, Beneish (1997) provides evidence to show that firms with high leverage are more likely to have accounting irregularities. We define leverage as the ratio of total book debt to total book assets and include it as an additional control variable.

We also use the market-to-book ratio to control for growth opportunities. Market-to-book ratio is computed as total assets less book equity, less deferred tax, plus the liquidation value of preferred stock, plus the product of the year-end common share price and the year-end number of shares outstanding divided by total assets. According to Strahan (1998), the high value of the market-to-book ratio may indicate strong performance, making the firm less prone to litigation. On the other hand, a high value of market-to-book ratio may indicate overvaluation and put pressure on management to manipulate share prices.

Furthermore, Jones and Weingram (1996) demonstrate that stock returns may predict litigation. Firms that experience large negative returns are likely to be sued by shareholders over their investment loss. Furthermore, poor stock market performance could lead to managerial actions like layoffs or excessive cost reduction that may later result in other types of litigation, such as employment and labor or environmental lawsuits. We measure the stock returns of a firm over the past one-year period.

Finally, we include a control for CEO equity ownership. We use the total percentage of CEO equity ownership as a proxy for equity incentives, which may provide personal economic incentives for unlawful activity. This variable may also capture the means to behave unethically. Detailed descriptions of the variables can be found in the Appendix.

In addition to the firm-level variables, we also control for industry fixed effects, defined based on the Fama-French 48 Industry classifications and standard errors are clustered at the firm level as suggested by Petersen (2009). The coefficient preceding the interaction variable,  $a_3$ , identifies the effect of independent directors on corporate litigation in the DiD framework.

The model is estimated using the pooled OLS regression approach. We hypothesize that an increase in the percentage of independent directors on a corporate board is associated with a reduction in corporate litigation. A negative and significant coefficient on the interaction term (*Non-Compliance\*Post Regulations*) would support our hypothesis. We present the effects of the independent variables in Table 4.3.

The dependent variable in all the regression specifications is *Corp Litigation*. We estimate variants of regression equation (1) to examine the effects of the SOX and the ELR on corporate litigation. In Panel A, we present separate regression results of equation (1) where corporate litigation is measured by *Total Litigation* (Model 1), *Low Severity Litigation* (Model 2), and *High Severity Litigation* (Model 3). The results in Panel A of Table 4.3 show that the coefficient on the Post-Regulations dummy is positive and statistically significant at the 1% level. For our test we are more interested in the coefficient estimate for the interaction term, the DiD estimate. This estimate is of most interest to us because it captures the differential effect of the treatment on corporate litigation for treatment firms. The coefficient estimate on the interaction term is negative and statistically significant at the 5% percent level in both Models 1 and 2. This estimate is also negative and statistically significant at the 10% level in Model 3. The results in Models 1 through 3 indicate that relative to the control firms, the SOX and ELR regulations on board independence decreased corporate litigation in the treatment firms. Thus, we find clear support for our hypothesis.

In Panel B, we present results for the individual components of *High Severity Litigation*, which include *Pension & Benefits Litigation*, *Product Liability Litigation*, *Environmental Litigation*, *General Liability Litigation*, and *Medical Liability Litigation*. In Model 1 of Table 4.3 Panel B, the dependent variable is *Pension & Benefits Litigation*. The dependent variable is *Product Liability Litigation* in Model 2. In Models 3 to 5, the dependent variables are *Environmental Litigation*, *General Liability Litigation*, and *Medical Liability Litigation*, respectively. We find a negative and statistically significant coefficient on the interaction variable for pension and benefits, environmental, general liability, and medical liability litigation. However, we obtain a negative but statistically insignificant coefficient on the interaction term for product liability litigation.

In Panel C, we present results for the individual components of *Low Severity Litigation*, which include *Intellectual Property Litigation*, *Antitrust Litigation*, *Finance & Banking Litigation*, *Securities Litigation*, *Commercial Litigation*, *Employment & Labor Litigation*, *Government Contracts Litigation*, *Corporate Governance Litigation*, and *Other Litigation*. In Models 1 through 9, the dependent variables in the order listed above, are the individual components of low severity litigation. We find that the coefficient estimate for the interaction term is negative and statistically significant at less than the 10% level for employment and labor and government contract litigation. However, it is negative but statistically insignificant for the other components of low severity litigation. The estimates of the various control variables in all our models are consistent with prior evidence in the litigation literature (see, for example, Karpoff, Lee, and Martin (2008), Dechow, Ge, Larson and Sloan (2011), and Hutton, Jiang, and Kumar (2012)).

#### 4.4.3. *Independent Directors and Corporate Litigation for a Sub-Sample of Industries*

In the previous subsection, we find that an exogenous increase in the percentage of independent directors on the board leads to a reduction in corporate litigation for the non-compliant firms, relative to the compliant firms. Certain industries are by nature more vulnerable to litigation than others. As a result, companies operating in different industries may face different degrees of inherent litigation risk. For example, from Panel C of Table 4.1, we observe that environmental litigation is prevalent in manufacturing; chemicals and allied products; and oil, gas, and coal extraction and products industry groups. Employment and labor lawsuits are also prevalent among manufacturing, and wholesale and retail services. Intellectual property lawsuits are common in the biotech and technology industries.

In this section, we perform a sub-sample analysis to understand the effect of an increase in the fraction of independent directors on corporate litigation for a sub-sample of industries. We use the same regression specification in equation (1) to perform the sub-sample analysis. We present the results of our industry sub-sample analysis in Table 4.4. In Panel A, we present results for the following components of High Severity Litigation: *Pension & Benefits Litigation* (Model 1), *Environmental Litigation* (Model 2), and *Medical Liability Litigation* (Model 3). In Model 1, we run our regression model for the following Fama-French 12 industry groups: Manufacturing; Business Equipments; Wholesale, Retail, and Some Services; and Finance. In Model 2, we run our regression model for the following Fama-French 12 industry groups: Manufacturing; Oil, Gas, and Coal Extraction and Products; Chemicals and Allied Products; Wholesale, Retail, and Some Services; and Others. In Model 3, we run our regression model for the following Fama-French 12 industry groups: Healthcare, Medical Equipment, and Drugs; Wholesale, Retail, and Some Services; Finance; and Others. In all three models, we continue to

find a negative and statistically significant coefficient on the interaction for pension and benefits, environmental and medical liability litigations. We find that the results are stronger in industries where the exposure to the various types of corporate litigation is greater.

In Panel B of Table 4.4, we report results for the following components of Low Severity Litigation: *Finance & Banking Litigation* (Model 1), *Securities Litigation* (Model 2), and *Employment and Labor Litigation* (Model 3). In Model 1, the regression model is estimated for the following Fama-French 12 industry groups: Wholesale, Retail, and Some Services; Finance; and Others. In Model 2, we run our regression model for the following Fama-French 12 industry groups: Manufacturing, Business Equipments, and Finance. In Model 3, we run our regression model for the following Fama-French 12 industry groups: Manufacturing; Business Equipments; Wholesale, Retail, and Some Services; Finance; and Others. We find a negative and statistically significant coefficient on the interaction for finance and banking, securities, and employment and labor litigation. Together these results support our hypothesis. We perform additional tests in the next section to further ensure the robustness of our main findings.

#### **4.5. Robustness Checks**

We conduct a series of robustness checks of our main results in this section. We restrict the control firms to a sample of size-matched compliant firms, over an alternative time period, and control for firm fixed effects. We also rerun the models using an alternative regression approach.

##### *4.5.1. Size Matching*

We use a sample of matched firms to examine the corporate litigation of similar firms that differ in board independence prior to the SOX and the ELR. Our matched sample is constructed by matching on firm size. We identify 371 non-compliant firms in the fiscal year

2000. Our control sample of matched compliant firms is obtained from the remaining firms in fiscal year 2000, by finding the firm that is closest to each sample firm in total assets. As correctly pointed out by Guo, et al., (2012), this approach helps alleviate concerns that the findings are driven by firm size since SOX affected smaller firms to a larger extent.

Panels A through C of Table 4.5 shows regression our regression estimates. In Panel A of Table 4.5, we find that the treatment firms are associated with a reduction in the total litigation, low severity litigation and high severity litigation. In Panel B, we find that the interaction variable is significantly negatively associated with three of the five components of high severity litigation including pension litigation, environmental litigation and medical liability litigation. In Panel C of Table 4.5, we find that five components of low severity litigation, including finance and banking, securities, commercial, government contract and other litigation, are significantly negatively related to our interaction variable. Overall, our results continue to show that the treatment firms are associated with a reduction in corporate litigation.

#### *4.5.2. Different sample period*

One might suspect that the financial crisis of 2008-2009 may be driving our results. To address this concern, we omitted post-2006 data from our sample in the above analyses. In addition, we excluded years 2002-2003. The reason for omitting the data for years 2002 and 2003 is to exclude the transition years of the new requirements. We rerun our analysis and our results are substantially unchanged. Our results continue to show that the treatment firms are associated with a reduction in corporate litigation. We report estimate of our regressions in Table 4.6.

#### *4.5.3. Controlling for firm fixed effects*

In order to alleviate the potential concern of unobserved firm characteristics, we also control for firm fixed effects and present the regression estimates in Table 4.7. It is important to point out that the non-compliant dummy, which does not vary over time, is dropped in the firm-fixed effects model specifications. This is because there is no variation of this variable within a firm. Again, the results continue to show that the non-compliant firms are associated with a reduction in total litigation and high severity litigation. Because the key variables change slowly over time, the firm-fixed effects estimate prevents us from finding significant effects of independent board of directors on low severity litigation.

#### *4.5.4. Alternative regression approach*

We test the robustness of the results in this study by re-estimating the regression models using other econometric techniques. Given that all the models involve count dependent variables, for robustness, we reran all the regression models using the Poisson regression model and the results are qualitatively similar.<sup>9</sup>

### **4.6. Conclusion**

This paper examines the impact of independent directors on multiple types of corporate litigation. Although, theoretically directors more independent of the firm's managers should be stronger monitors, empirical research has been inconclusive. Nonetheless, Congress, acting on the presumption that more independent boards make better monitors, enacted strong legislation in 2002 to emphasize the necessity of having more independent boards.

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<sup>9</sup> Poisson model is a regression methodology used to model count data. This technique is designed to estimate a model in which there is a count dependent variable. The results continue to hold under this methodology.

In this paper, we shed new light on this relationship. We examine how corporate governance reform initiatives, specifically the Sarbanes-Oxley Act of 2002 and the NYSE and NASDAQ exchange listing requirements of 2002, affect the likelihood of corporate litigation. We use these regulatory shocks as a source of exogenous variation to board independence to provide convincing statistical evidence on a causal relationship between board independence and corporate litigation.

In particular, we find that firms forced to increase their board to a majority of independent directors after SOX, experience a reduction in total corporate litigation. Dividing corporate litigation into high severity and low severity litigation, we find that firms without a majority of independent directors on the board prior to SOX (non-compliant firms) experience a significant decrease in low and high severity corporate litigation. We further divide high severity litigation into its components: pension and benefits, product liability, environmental, general liability, and medical liability litigation. We find that the increase in the fraction of independent directors on board significantly reduced pension and benefits, environmental, and medical liability litigation.

Partitioning low severity litigation into its components - intellectual property, antitrust, finance and banking, securities, employment and labor, government contracts, corporate governance, and other litigation, we find that increasing the fraction of independent directors on the board significantly decreases employment and labor, and government contracts litigation. We further perform the same analysis for a sub-sample of industries. We find that the results are stronger in industries where the exposure to the various types of corporate litigation is greater. Our results are robust to restricting the control firms to a sample of size-matched compliant firms, different time periods, and controlling for firm fixed effects.

Overall, the evidence highlights the benefits of monitoring by independent directors on corporate boards and consequently, has important implications for regulators, investors, and other stakeholders. Together the main findings of this paper reveal that greater board independence equates to stronger corporate governance that can mitigate corporate litigation.

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## Appendix: Definition of variables

Variables	Definition
<b>Dependent Variables</b>	
Total Litigation	Total number of legal cases for which a firm is mentioned as a defendant.
Low Severity Litigation	Number of low severity legal cases for which a firm is mentioned as a defendant.
High Severity Litigation	Number of high severity legal cases for which a firm is mentioned as a defendant.
Pension & Benefits Litigation	Number of pension and benefits legal cases for which a firm is mentioned as a defendant.
Products Liability Litigation	Number of products liability legal cases for which a firm is mentioned as a defendant.
Environmental Litigation	Number of environmental legal cases for which a firm is mentioned as a defendant.
General Liability Litigation	Number of general liability legal cases for which a firm is mentioned as a defendant.
Medical Liability Litigation	Number of medical liability legal cases for which a firm is mentioned as a defendant.
Intellectual Property Litigation	Number of intellectual property legal cases for which a firm is mentioned as a defendant.
Antitrust Litigation Risk	Number of antitrust legal cases for which a firm is mentioned as a defendant.
Finance & Banking Litigation	Number of finance & banking related legal cases for which a firm is mentioned as a defendant.
Securities Litigation	Number of securities related legal cases for which a firm is mentioned as a defendant.
Commercial Litigation	Number of commercial legal cases for which a firm is mentioned as a defendant.
Employment & Labor Litigation	Number of employment and labor legal cases for which a firm is mentioned as a defendant.
Government Contracts Litigation	No. of legal cases related to government contracts for which a firm is mentioned as a defendant.
Other Litigation	No. of legal cases that do not fit other classifications where a firm is mentioned as a defendant.
<b>Firm Characteristics</b>	
Log of market capitalization	Natural logarithm of one plus market capitalization measured in millions of dollars.
Log of total assets	Natural logarithm of one plus book value of total assets measured in millions of dollars.
Log of Sales	Natural logarithm of one plus annual sales measured in millions of dollars.
ROA	Ratio of net income to book value of assets.
Market-to-Book	Ratio of market value of assets to book value of assets.
Leverage	Ratio of long-term debt plus short-term debt to total assets.
<b>Firm Performance</b>	
Stock Returns	Stock returns during the fiscal year in percentage.

## Appendix: Definition of the variables

<b>Variables</b>	<b>Definition</b>
<b>Board &amp; Ownership Characteristics</b>	
Board Size	Number of members of the board of directors for each firm.
Independent Directors	Number of director who do not have any economic or family ties with the firm.
Percentage of Independent Directors	Total number of independent directors divided by total number of directors.
CEO Equity Ownership	Percentage of total shares held by the CEO.
Management Equity Ownership	Percentage of total shares held by the top management.
<b>D-i-D Variables</b>	
Non-Compliant	An indicator variable taking the value of one for membership in the treatment group defined by the new NYSE/NASDAQ rule requiring firms to have majority of independent directors on board and zero otherwise.
Post Regulations	An indicator variable taking the value of one if it is after 2001, i.e., after the NYSE/NASDAQ regulations on board independence are implemented, and zero otherwise.

**Table 4.1: Distribution of lawsuit type by year**

This table shows the number of lawsuit types by year. The lawsuits in this table are lawsuits filed against publicly-held firms

*Panel A: Number of lawsuits by type and year*

	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	Total
Employment & Labor	206	248	245	297	256	330	368	457	503	750	911	753	933	1,259	1,298	1,269	10,083
Intellectual Property	79	111	113	72	106	96	117	165	169	238	304	272	343	402	414	483	3,484
Pension & Benefits	43	39	46	46	39	47	84	100	106	177	217	179	204	254	252	244	2,077
Commercial	118	95	108	108	114	132	140	178	198	240	282	241	317	432	405	441	3,549
Securities	16	23	18	15	25	35	51	81	79	130	113	107	90	191	184	159	1,317
Government Contracts	8	8	9	16	9	9	13	16	12	27	26	14	28	29	40	45	309
Environmental	17	14	15	19	26	44	52	47	39	81	79	75	82	106	83	98	877
Finance & Banking	8	5	12	12	10	11	20	31	32	42	48	39	67	109	149	159	754
Antitrust	41	39	40	38	56	51	69	77	85	102	118	108	124	245	199	184	1,576
Product Liability	120	157	135	162	96	132	174	169	143	217	180	150	198	233	179	246	2,691
Medical Liability	73	48	72	61	83	76	104	95	122	144	185	152	177	242	278	283	2,195
Corporate Governance	23	13	15	17	11	20	24	27	27	49	51	29	25	52	51	57	491
General Liability	43	56	60	78	66	88	105	111	109	139	166	129	155	254	236	253	2,048
Others	60	60	58	82	58	75	122	119	135	121	121	123	142	177	176	188	1,817
<b>Total</b>	<b>855</b>	<b>916</b>	<b>946</b>	<b>1,023</b>	<b>955</b>	<b>1,146</b>	<b>1,443</b>	<b>1,673</b>	<b>1,759</b>	<b>2,457</b>	<b>2,801</b>	<b>2,371</b>	<b>2,885</b>	<b>3,985</b>	<b>3,944</b>	<b>4,109</b>	<b>33,268</b>

*Panel B: Percentage of lawsuits by type and year*

	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Employment & Labor	24.09	27.07	25.90	29.03	26.81	28.80	25.50	27.32	28.60	30.53	32.52	31.76	32.34	31.59	32.91	30.88
Intellectual Property	9.24	12.12	11.95	7.04	11.10	8.38	8.11	9.86	9.61	9.69	10.85	11.47	11.89	10.09	10.50	11.75
Pension & Benefits	5.03	4.26	4.86	4.50	4.08	4.10	5.82	5.98	6.03	7.20	7.75	7.55	7.07	6.37	6.39	5.94
Commercial	13.80	10.37	11.42	10.56	11.94	11.52	9.70	10.64	11.26	9.77	10.07	10.16	10.99	10.84	10.27	10.73
Securities	1.87	2.51	1.90	1.47	2.62	3.05	3.53	4.84	4.49	5.29	4.03	4.51	3.12	4.79	4.67	3.87
Government Contracts	0.94	0.87	0.95	1.56	0.94	0.79	0.90	0.96	0.68	1.10	0.93	0.59	0.97	0.73	1.01	1.10
Environmental	1.99	1.53	1.59	1.86	2.72	3.84	3.60	2.81	2.22	3.30	2.82	3.16	2.84	2.66	2.10	2.39
Finance & Banking	0.94	0.55	1.27	1.17	1.05	0.96	1.39	1.85	1.82	1.71	1.71	1.64	2.32	2.74	3.78	3.87
Antitrust	4.80	4.26	4.23	3.71	5.86	4.45	4.78	4.60	4.83	4.15	4.21	4.56	4.30	6.15	5.05	4.48
Product Liability	14.04	17.14	14.27	15.84	10.05	11.52	12.06	10.10	8.13	8.83	6.43	6.33	6.86	5.85	4.54	5.99
Medical Liability	8.54	5.24	7.61	5.96	8.69	6.63	7.21	5.68	6.94	5.86	6.60	6.41	6.14	6.07	7.05	6.89
Corporate Governance	2.69	1.42	1.59	1.66	1.15	1.75	1.66	1.61	1.53	1.99	1.82	1.22	0.87	1.30	1.29	1.39
General Liability	5.03	6.11	6.34	7.62	6.91	7.68	7.28	6.63	6.20	5.66	5.93	5.44	5.37	6.37	5.98	6.16
Others	7.02	6.55	6.13	8.02	6.07	6.54	8.45	7.11	7.67	4.92	4.32	5.19	4.92	4.44	4.46	4.58

*Panel C: Percentage of lawsuits by Industry*

Fama French 12 Industry	Emp& Labor	Intell. Prop.	Pen& Benefit	Comm-ercial	Secu-rities	Gov. Cont.	Enviro-mental	Fin& Bank	Anti-Trust	Prod. Liab.	Med. Liab.	Corp. Gov.	Gen. Liab.	Other
Consumer NonDurables	5.55	4.59	5.10	4.11	2.58	2.59	8.32	3.32	7.49	3.64	3.74	4.28	3.22	3.14
Consumer Durables	3.46	3.44	2.79	6.93	1.14	5.50	4.56	1.72	5.14	13.82	2.69	5.09	5.76	3.30
Manufacturing	14.39	12.69	14.44	12.93	8.81	33.01	14.37	2.92	9.26	14.42	7.84	11.81	13.09	11.72
Oil, Gas, and Coal Extraction and Products	2.95	0.98	2.36	4.62	2.35	3.24	12.66	1.19	1.97	4.38	1.46	3.87	2.64	7.43
Chemicals and Allied Products	3.55	2.38	3.47	3.66	1.90	3.56	13.68	1.06	2.73	8.06	3.14	2.24	5.03	4.24
Business Equipment -- Computers, Software, and Electronic Equipment	9.18	37.69	12.76	15.36	18.75	17.15	5.70	6.23	26.59	4.01	4.10	8.96	5.18	8.48
Telephone and Television Transmission	2.98	4.39	4.24	2.62	4.18	1.62	1.82	1.72	4.51	1.00	1.14	7.13	2.00	1.82
Utilities	3.16	1.15	4.57	2.85	3.95	2.91	6.27	0.66	2.16	2.97	1.78	4.28	1.95	5.34
Wholesale, Retail, and Some Services (Laundries, Repair Shops)	22.29	10.10	11.22	13.21	6.68	4.21	13.68	7.96	11.48	19.99	17.54	11.00	16.41	19.87
Healthcare, Medical Equipment, and Drugs	6.50	14.58	9.00	10.43	9.34	6.15	3.31	1.33	12.82	20.40	39.50	11.41	4.69	4.90
Finance	10.49	4.08	22.87	13.44	34.02	4.85	5.02	60.61	9.77	2.04	9.20	20.57	29.10	12.77
Other -- Mines, Constr, BldMt, Trans, Hotels, Business Services, Entertainment	15.50	3.93	7.17	9.83	6.30	15.21	10.60	11.27	6.09	5.24	7.88	9.37	10.94	17.01

**Table 4.2: Descriptive statistics for variables**

The table reports summary statistics for the sample. The sample consists of S&P 1500 firms that have available data on stock prices, accounting numbers, board characteristics, and lawsuit information over the sample period 1996-2011 with non-missing data. All variables are defined in figure 1.

*Panel A: Descriptive Statistics for the full sample*

	N	Mean	Std. Dev.	P25	Median	P75
<i>Total Lit</i>	13,260	2.51	8.13	0	0	2
<i>Low Severity Lit</i>	13,260	1.76	5.52	0	0	1
<i>High Severity Lit</i>	13,260	0.75	3.19	0	0	0
<i>Pension Lit</i>	13,260	0.16	0.67	0	0	0
<i>Product Liability Lit</i>	13,260	0.20	1.55	0	0	0
<i>Environmental Lit</i>	13,260	0.07	0.43	0	0	0
<i>General Liability Lit</i>	13,260	0.15	0.81	0	0	0
<i>Medical Liability Lit</i>	13,260	0.17	0.89	0	0	0
<i>Intellectual Property Lit</i>	13,260	0.26	1.17	0	0	0
<i>Antitrust Lit</i>	13,260	0.12	0.60	0	0	0
<i>Finance and Banking Lit</i>	13,260	0.06	0.65	0	0	0
<i>Securities Lit</i>	13,260	0.10	0.61	0	0	0
<i>Commercial Lit</i>	13,260	0.27	0.97	0	0	0
<i>Employment and Labor Lit</i>	13,260	0.76	3.11	0	0	1
<i>Government Contracts Lit</i>	13,260	0.02	0.21	0	0	0
<i>Corporate Governance Lit</i>	13,260	0.04	0.27	0	0	0
<i>Other Lit</i>	13,260	0.14	0.67	0	0	0
<i>Log(Market Cap)</i>	13,252	7.88	1.50	6.78	7.72	8.86
<i>Log(Asset in \$millions)</i>	13,260	7.96	1.65	6.73	7.80	9.01
<i>Log(Sales in \$millions)</i>	13,260	7.60	1.52	6.53	7.46	8.59
<i>ROA</i>	13,260	0.05	0.12	0.02	0.05	0.09
<i>Leverage</i>	13,260	0.21	0.17	0.06	0.20	0.32
<i>Market-to-Book</i>	13,252	1.61	1.56	0.83	1.21	1.89
<i>Stock Returns (%)</i>	11,909	14.20	52.92	-12.22	9.59	32.74
<i>Percent Independent Director</i>	13,260	71.67	15.74	62.5	75	83.33
<i>Board Size</i>	13,260	9.58	2.73	8	9	11
<i>CEO Equity Ownership (%)</i>	12,720	2.10	5.66	0.10	0.31	1.15
<i>Management Equity Ownership (%)</i>	12,858	3.39	7.91	0.26	0.76	2.42

Panel B: Comparing compliant firms and non-complaint firms

	Compliant Firms		Non-Compliant Firm		Difference in Mean
	N	Mean	N	Mean	t-Stat
<i>Total Lit</i>	9,994	2.41	3,266	2.81	-1.97**
<i>Low Severity Lit</i>	9,994	1.70	3,266	1.96	-2.03**
<i>High Severity Lit</i>	9,994	0.71	3,266	0.85	-1.57
<i>Pension Lit</i>	9,994	0.17	3,266	0.11	4.72***
<i>Product Liability Lit</i>	9,994	0.18	3,266	0.29	-2.55***
<i>Environmental Lit</i>	9,994	0.06	3,266	0.08	-2.33**
<i>General Liability Lit</i>	9,994	0.14	3,266	0.2	-3.20***
<i>Medical Liability Lit</i>	9,994	0.17	3,266	0.16	0.43
<i>Intellectual Property Lit</i>	9,994	0.24	3,266	0.32	-2.91***
<i>Antitrust Lit</i>	9,994	0.11	3,266	0.13	-1.50
<i>Finance and Banking Lit</i>	9,994	0.06	3,266	0.04	3.20***
<i>Securities Lit</i>	9,994	0.1	3,266	0.09	1.65
<i>Commercial Lit</i>	9,994	0.26	3,266	0.3	-1.49
<i>Employment and Labor Lit</i>	9,994	0.73	3,266	0.86	-1.63
<i>Government Contracts</i>	9,994	0.02	3,266	0.02	1.3
<i>Corporate Governance</i>	9,994	0.04	3,266	0.04	-1.28
<i>Others</i>	9,994	0.13	3,266	0.17	-2.79***
<i>Log(Market Cap)</i>	9,986	7.86	3,266	7.95	-2.83***
<i>Log(Asset in \$millions)</i>	9,994	8	3,266	7.84	5.08***
<i>Log(Sales in \$millions)</i>	9,994	7.58	3,266	7.64	-2.02**
<i>ROA</i>	9,994	0.05	3,266	0.06	-3.35***
<i>Leverage</i>	9,994	0.22	3,266	0.19	8.33***
<i>Market-to-Book</i>	9,986	1.54	3,266	1.79	-6.49***
<i>Stock Returns(%)</i>	9,041	13.57	2,868	16.16	-2.28**
<i>Percent Independent Director</i>	9,994	75.67	3,266	59.45	47.27***
<i>Board Size</i>	9,994	9.68	3,266	9.25	8.05***
<i>CEO Equity Ownership (%)</i>	9,626	1.49	3,094	4.01	-15.80***
<i>Management Equity Ownership (%)</i>	9,719	2.47	3,139	6.25	-17.83***

**Table 4.3: Independent Directors and Corporate Litigation**

The table shows estimates of the pooled regression of the effect of the SOX regulations of board independence on corporate litigation. The sample consists of all publicly traded firms over the period 1996-2011 with non-missing data on stock prices, accounting information, board characteristics, and lawsuits. All other variables are defined in the Appendix. The dependent variable in all the regression specifications is Corporate Litigation. In panel A are regressions where *Corporate Litigation* are measured by *Total Litigation*, *Low Severity Litigation*, and *High Severity Litigation*. In panel B are regressions of the individual components of high severity litigation, *Pen&Ben Litigation*, *ProdLiab Litigation*, *Environmental Litigation*, *GeneralLiab Litigation*, and *MedicalLiab Litigation*. In panel C are regressions of the individual components of low severity litigation *Intellectual Property Litigation*, *Antitrust Litigation*, *Fin&Bank Litigation*, *Securities Litigation*, *Commercial Litigation*, *Empl&Labor Litigation*, *GovContracts Litigation*, and *Other Litigation*. All models include fixed effects defined based on Fama-French 48 Industry classifications and standard errors are clustered by firm. The t-statistics are shown beneath the coefficients in parentheses. Statistical significance at the 1%, 5%, and 10% levels, respectively, is indicated by \*\*\*, \*\*, \*.

*Panel A: Effects of SOX regulations on board independence on Total, Low Severity, and High Severity Litigation*

	Model 1	Model 2	Model 3
Dependent Variable	Total Litigation	Low Severity Litigation	High Severity Litigation
Non-Compliant	1.129 (0.93)	0.463 (0.77)	0.666 (1.06)
Post Regulations	1.124*** (4.68)	0.787*** (4.60)	0.337*** (4.13)
Non-Compliant x Post Regulations	-1.379** (-2.22)	-0.628** (-2.22)	-0.751* (-1.83)
Log(Sales)	2.419*** (6.05)	1.666*** (6.66)	0.752*** (4.75)
ROA	-1.092* (-1.73)	-0.762* (-1.80)	-0.329 (-1.40)
Leverage	0.813 (0.61)	0.450 (0.55)	0.363 (0.66)
Market-to-Book	0.052 (0.58)	0.048 (0.78)	0.004 (0.11)
Stock Returns	-0.129* (-1.72)	-0.102* (-1.67)	-0.027 (-1.04)
CEO Equity Ownership	0.538 (0.35)	0.620 (0.62)	-0.082 (-0.12)
Constant	-14.025*** (-3.56)	-10.442*** (-4.24)	-3.584** (-2.16)
Industry Fixed Effects	Yes	Yes	Yes
No. of Obs.	11,319	11,319	11,319
R-sqr	0.199	0.204	0.141

Panel B: Effects of SOX regulations on board independence on High Severity Litigation Measures

	Model 1	Model 2	Model 3	Model 4	Model 5
Dependent Variable	Pension & Benefits Litigation	Product Liability Litigation	Environmental Litigation	General Liability Litigation	Medical Liability Litigation
Non-Compliant	0.040 (0.95)	0.348 (0.96)	0.082* (1.85)	0.086 (0.85)	0.110 (1.05)
Post Regulations	0.106*** (5.00)	0.042 (1.23)	0.059*** (4.81)	0.063*** (2.77)	0.066** (2.52)
Non-Compliant x Post Regulations	-0.135*** (-4.51)	-0.342 (-1.20)	-0.063*** (-2.71)	-0.090* (-1.68)	-0.121* (-1.65)
Log(Sales)	0.158*** (7.63)	0.240*** (3.25)	0.061*** (4.26)	0.140*** (4.44)	0.152*** (4.79)
ROA	-0.090* (-1.86)	-0.087 (-0.88)	-0.048* (-1.73)	-0.128** (-2.19)	0.024 (0.39)
Leverage	-0.066 (-0.92)	0.313 (0.92)	-0.011 (-0.26)	-0.010 (-0.10)	0.137 (1.26)
Market-to-Book	-0.007 (-1.23)	0.013 (0.82)	-0.001 (-0.22)	-0.002 (-0.22)	0.001 (0.07)
Stock Returns	-0.002 (-0.31)	-0.007 (-0.46)	-0.003 (-0.60)	-0.003 (-0.31)	-0.011 (-1.23)
CEO Equity Ownership	0.008 (0.07)	-0.083 (-0.25)	0.129 (0.86)	-0.096 (-0.73)	-0.040 (-0.29)
Constant	-0.263 (-0.42)	-1.635** (-2.47)	0.320 (0.46)	-1.001*** (-3.64)	-1.004*** (-3.70)
Industry Fixed Effects	Yes	Yes	Yes	Yes	Yes
N	11,319	11,319	11,319	11,319	11,319
R-sqr	0.141	0.081	0.077	0.106	0.120

Panel C: Effects of SOX regulations on board independence on Low Severity Litigation Measures

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8	Model 9
Dependent Variable:	Intellectual Property Litigation	Antitrust Litigation	Finance & Banking Litigation	Securities Litigation	Employment & Labor Litigation	Commercial Litigation	Government Contracts Litigation	Corporate Governance Litigation	Other Litigation
Non-Compliant	0.044 (0.65)	-0.003 (-0.06)	0.006 (0.48)	0.022 (1.31)	0.231 (0.79)	0.036 (0.34)	-0.001 (-0.20)	0.010 (0.50)	0.118 (1.04)
Post Regulations	0.083*** (2.73)	0.048** (2.53)	0.037** (2.56)	0.067*** (3.39)	0.407*** (4.31)	0.081** (2.44)	0.011* (1.95)	0.007 (0.80)	0.046** (2.24)
Non-Compliant x Post Regulations	-0.044 (-0.59)	-0.022 (-0.76)	-0.033 (-1.38)	-0.038 (-1.19)	-0.272** (-1.97)	-0.087 (-1.32)	-0.015* (-1.92)	-0.012 (-0.73)	-0.106 (-1.52)
Log(Sales)	0.241*** (5.99)	0.126*** (6.10)	0.053*** (3.04)	0.085*** (3.92)	0.720*** (4.78)	0.258*** (7.25)	0.020*** (6.11)	0.034*** (5.83)	0.129*** (4.22)
ROA	-0.043 (-0.47)	-0.043 (-0.95)	-0.035 (-1.21)	-0.167*** (-3.06)	-0.255 (-1.25)	-0.093 (-1.28)	-0.004 (-0.41)	-0.040* (-1.65)	-0.083* (-1.74)
Leverage	-0.280* (-1.87)	-0.055 (-0.61)	0.137** (2.34)	0.014 (0.22)	0.399 (0.95)	0.156 (0.79)	-0.022 (-1.11)	0.045 (1.44)	0.056 (0.67)
Market-to-Book	0.027 (1.26)	0.017 (1.07)	0.002 (0.77)	-0.005 (-1.17)	-0.001 (-0.03)	0.002 (0.23)	-0.002 (-1.64)	0.002 (1.06)	0.007 (1.11)
Stock Returns	-0.037 (-1.55)	0.006 (0.38)	-0.006 (-1.42)	0.008 (1.25)	-0.052 (-1.61)	-0.008 (-0.76)	-0.002 (-0.94)	-0.002 (-0.54)	-0.010 (-1.51)
CEO Equity Ownership	0.176 (0.65)	0.207* (1.70)	0.109 (1.58)	0.102 (1.08)	-0.347 (-0.65)	0.203 (1.11)	-0.004 (-0.11)	0.050 (1.25)	0.124 (0.83)
Constant	-0.817 (-1.11)	-0.681** (-2.57)	-0.493*** (-3.07)	-0.576*** (-2.80)	-4.814*** (-3.75)	-1.912*** (-6.21)	-0.018 (-0.19)	-0.290*** (-5.10)	-0.841*** (-3.09)
Industry Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	11,319	11,319	11,319	11,319	11,319	11,319	11,319	11,319	11,319
R-sqr	0.123	0.099	0.047	0.057	0.135	0.162	0.045	0.045	0.094

**Table 4.4: Independent Directors and Corporate Litigation (Industry level)**

The table shows estimates of the pooled regression of the effect of the SOX regulations of board independence on corporate litigation. The sample consists of all publicly traded firms over the period 1996-2011 with non-missing data on stock prices, accounting information, board characteristics, and lawsuits. All other variables are defined in the Appendix. The dependent variable in all the regression specifications is Corporate Litigation. In panel A are regressions where *Corporate Litigation* are measured by the following components of high severity litigation, *Pen&Ben Litigation*, *Environmental Litigation*, and *MedicalLiab Litigation*. In panel B are regressions of the following components of low severity litigation *Fin&Bank Litigation*, *Securities Litigation*, and *Empl&Labor Litigation*. All models include fixed effects defined based on Fama-French 12 Industry classifications and standard errors are robust to heteroskedasticity. The t-statistics are shown beneath the coefficients in parentheses. Statistical significance at the 1%, 5%, and 10% levels, respectively, is indicated by \*\*\*, \*\*, \*.

*Panel A: Effects of SOX regulations on board independence on High Severity Litigation Measures*

	Model 1	Model 2	Model 3
	Pension Litigation	Environmental Litigation	Medical Liability Litigation
Non-Compliant	0.072* (1.94)	0.126*** (2.94)	0.285*** (2.75)
Post Regulations	0.139*** (6.25)	0.073*** (5.52)	0.212*** (5.99)
Non-Compliant x Post Regulations	-0.201*** (-4.50)	-0.103** (-2.11)	-0.288** (-2.42)
Log(Sales)	0.182*** (15.79)	0.099*** (9.16)	0.231*** (12.13)
ROA	-0.046 (-1.53)	-0.194** (-2.34)	0.132 (0.71)
Leverage	-0.019 (-0.38)	-0.073** (-2.11)	0.213*** (2.93)
Market-to-Book	-0.008* (-1.77)	0.016* (1.67)	0.036** (2.33)
Stock Returns	-0.001 (-0.07)	-0.008 (-0.57)	-0.044 (-1.51)
CEO Equity Ownership	0.102 (1.20)	0.103 (1.52)	-0.054 (-0.44)
Constant	-1.301*** (-13.46)	-0.749*** (-8.16)	-1.929*** (-11.70)
Industry Fixed Effects	Yes	Yes	Yes
N	6,442	5,164	5,226
R-sqr	0.141	0.081	0.127

Panel B: Effects of SOX regulations on board independence on Low Severity Litigation Measures

Dependent Variable	Model 1	Model 2	Model 3
	Finance & Banking Litigation	Securities Litigation	Employment & Labor Litigation
Non-Compliant	0.024 (1.34)	0.048** (2.20)	0.465*** (2.80)
Post Regulations	0.123*** (4.91)	0.131*** (5.32)	0.631*** (8.35)
Non-Compliant x Post Regulations	-0.120*** (-3.28)	-0.101*** (-2.70)	-0.549*** (-2.69)
Log(Sales)	0.103*** (5.67)	0.120*** (7.21)	0.771*** (12.77)
ROA	-0.110 (-1.35)	-0.122** (-2.21)	0.072 (0.66)
Leverage	0.339*** (3.37)	0.258*** (2.81)	0.617*** (3.68)
Market-to-Book	0.021*** (3.08)	-0.002 (-0.62)	0.055** (2.35)
Stock Returns	-0.042 (-1.34)	-0.005 (-0.39)	-0.087** (-2.23)
CEO Equity Ownership	0.225** (2.57)	0.159* (1.68)	0.072 (0.29)
Constant	-0.981*** (-5.29)	-0.992*** (-6.36)	-5.859*** (-11.14)
Industry Fixed Effects	Yes	Yes	Yes
N	4,449	5,103	7,856
R-sqr	0.049	0.058	0.111

**Table 4.5: Matched Control Firms**

The table reports the effect of the SOX regulations of board independence on corporate litigation using the non-compliant firms and their propensity-score matched compliant firms for the period: 1996-2011. All other variables are defined in the Appendix. The dependent variable in all the regression specifications is Corporate Litigation. In panel A are regressions where *Corporate Litigation* are measured by *Total Litigation*, *Low Severity Litigation*, and *High Severity Litigation*. In panel B are regressions of the individual components of high severity litigation, *Pen&Ben Litigation*, *ProdLiab Litigation*, *Environmental Litigation*, *GeneralLiab Litigation*, and *MedicalLiab Litigation*. In panel C are regressions of the individual components of low severity litigation *Intellectual Property Litigation*, *Antitrust Litigation*, *Fin&Bank Litigation*, *Securities Litigation*, *Commercial Litigation*, *Empl&Labor Litigation*, *GovContracts Litigation*, and *Other Litigation*. All models include fixed effects defined based on Fama-French 48 Industry classifications and standard errors are clustered by firm. The t-statistics are shown beneath the coefficients in parentheses. Statistical significance at the 1%, 5%, and 10% levels, respectively, is indicated by \*\*\*, \*\*, \*.

*Panel A: Effects of SOX regulations on board independence on Total, Low Severity, and High Severity Litigation*

	Model 1	Model 2	Model 3
	Total Litigation	Low Severity Litigation	High Severity Litigation
Non-Compliant	1.830 (1.11)	0.823 (0.99)	1.007 (1.21)
Post Regulations	1.222*** (4.28)	0.861*** (4.21)	0.361*** (3.69)
Non-Compliant x Post Regulations	-1.691*** (-2.68)	-0.844*** (-2.69)	-0.847* (-1.91)
Log(Sales)	2.879*** (5.16)	1.956*** (5.66)	0.923*** (4.14)
ROA	-2.074 (-1.04)	-1.294 (-0.99)	-0.779 (-0.95)
Leverage	1.966 (0.85)	1.096 (0.80)	0.870 (0.88)
Market-to-Book	0.002 (0.01)	0.017 (0.12)	-0.015 (-0.17)
Stock Returns	-0.098 (-0.68)	-0.131 (-1.12)	0.033 (0.62)
CEO Equity Ownership	1.843 (0.76)	1.664 (1.08)	0.178 (0.17)
Constant	-22.619*** (-4.25)	-15.358*** (-4.68)	-7.261*** (-3.38)
Industry FE	Yes	Yes	Yes
N	7,321	7,321	7,321
R-sqr	0.219	0.227	0.157

*Panel B: Effects of SOX regulations on board independence on High Severity Litigation Measures*

	Model 1	Model 2	Model 3	Model 4	Model 5
	Pension Litigation	Product Liability Litigation	Environmental Litigation	General Liability Litigation	Medical Liability Litigation
Non-Compliant	0.070 (1.18)	0.494 (1.06)	0.130** (2.09)	0.130 (0.94)	0.183 (1.31)
Post Regulations	0.119*** (4.74)	0.047 (1.10)	0.060*** (4.07)	0.061** (2.25)	0.074** (2.28)
Non-Compliant x Post Regulations	- 0.155*** (-4.28)	-0.397 (-1.22)	-0.070*** (-2.68)	-0.086 (-1.50)	-0.138* (-1.68)
Log(Sales)	0.182*** (6.56)	0.319*** (3.01)	0.078*** (3.83)	0.165*** (3.72)	0.180*** (4.22)
ROA	-0.066 (-0.53)	-0.305 (-0.79)	-0.204** (-2.12)	-0.282* (-1.75)	0.078 (0.38)
Leverage	0.037 (0.33)	0.641 (1.03)	-0.040 (-0.55)	0.123 (0.73)	0.109 (0.66)
Market-to-Book	-0.021* (-1.75)	0.018 (0.49)	-0.004 (-0.39)	0.002 (0.13)	-0.010 (-0.35)
Stock Returns	0.008 (0.50)	0.017 (0.41)	-0.003 (-0.28)	0.006 (0.34)	0.006 (0.29)
CEO Equity Ownership	0.100 (0.59)	0.201 (0.37)	-0.048 (-0.40)	-0.072 (-0.35)	-0.002 (-0.01)
Constant	- 1.418*** (-5.38)	-2.658*** (-2.59)	-0.507** (-2.42)	-1.291*** (-3.04)	-1.388*** (-3.49)
Industry Fixed Effects	Yes	Yes	Yes	Yes	Yes
N	7,321	7,321	7,321	7,321	7,321
R-sqr	0.149	0.096	0.094	0.106	0.157

Panel C: Effects of SOX regulations on board independence on Low Severity Litigation Measures

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8	Model 9
	Intellectual Property Litigation	Antitrust Litigation	Fin&Bank Litigation	Securities Litigation	Empl & Labor Litigation	Commercial Litigation	Government Contracts Litigation	Corporate Governance Litigation	Other Litigation
Non-Compliant	0.066 (0.83)	0.019 (0.36)	0.016 (0.78)	0.033 (1.35)	0.435 (1.00)	0.075 (0.56)	-0.003 (-0.42)	0.018 (0.73)	0.164 (1.08)
Post Regulations	0.079*** (2.69)	0.069*** (2.94)	0.044** (2.40)	0.075*** (3.09)	0.423*** (3.64)	0.090** (2.20)	0.011* (1.77)	0.010 (0.94)	0.059** (2.41)
Non-Compliant x Post Regulations	-0.056 (-0.56)	-0.042 (-1.28)	-0.057* (-1.84)	-0.071* (-1.87)	-0.288 (-1.56)	-0.138* (-1.90)	-0.016* (-1.85)	-0.026 (-1.31)	-0.151** (-2.07)
Log(Sales)	0.256*** (5.62)	0.140*** (5.64)	0.064*** (2.65)	0.095*** (3.25)	0.869*** (4.14)	0.306*** (6.14)	0.024*** (5.68)	0.042*** (5.23)	0.159*** (3.71)
ROA	0.197 (0.72)	0.040 (0.24)	-0.095 (-1.02)	-0.259** (-2.07)	-0.700 (-1.20)	-0.110 (-0.40)	0.011 (0.41)	-0.111 (-1.25)	-0.267* (-1.78)
Leverage	-0.167 (-0.82)	0.054 (0.37)	0.242* (1.92)	0.099 (0.78)	0.423 (0.76)	0.332 (0.94)	-0.025 (-0.83)	0.059 (1.08)	0.079 (0.54)
Market-to-Book	0.031 (0.76)	0.026 (0.67)	0.001 (0.14)	-0.014 (-1.35)	-0.018 (-0.27)	-0.018 (-0.85)	-0.005** (-2.16)	0.002 (0.62)	0.013 (0.95)
Stock Returns	-0.079* (-1.82)	-0.013 (-0.40)	-0.010 (-1.47)	0.021* (1.76)	-0.035 (-0.58)	0.008 (0.35)	-0.002 (-0.46)	-0.002 (-0.30)	-0.019 (-1.41)
CEO Equity Ownership	0.365 (0.92)	0.281* (1.69)	0.125 (1.08)	0.216 (1.40)	0.015 (0.02)	0.390 (1.25)	-0.008 (-0.16)	0.080 (1.39)	0.200 (0.91)
Constant	-2.064*** (-4.89)	-1.125*** (-4.34)	-0.565** (-2.55)	-0.795*** (-2.85)	-6.501*** (-3.25)	-2.447*** (-5.20)	-0.185*** (-5.44)	-0.357*** (-4.50)	-1.319*** (-3.28)
Industry Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	7,321	7,321	7,321	7,321	7,321	7,321	7,321	7,321	7,321
R-sqr	0.141	0.109	0.058	0.069	0.17	0.177	0.059	0.053	0.107

**Table 4.6: Robustness Check: Different Sample Period**

The table shows estimates for different sample period: 1996-2006 with years 2002-2003 excluded in order to exclude the transition years and potential effect of the financial crisis. We report the effect of the SOX regulations of board independence on corporate litigation. All other variables are defined in the Appendix. The dependent variable in all the regression specifications is Corporate Litigation. In panel A are regressions where *Corporate Litigation* are measured by *Total Litigation*, *Low Severity Litigation*, and *High Severity Litigation*. In panel B are regressions of the individual components of high severity litigation, *Pen&Ben Litigation*, *ProdLiab Litigation*, *Environmental Litigation*, *GeneralLiab Litigation*, and *MedicalLiab Litigation*. In panel C are regressions of the individual components of low severity litigation *Intellectual Property Litigation*, *Antitrust Litigation*, *Fin&Bank Litigation*, *Securities Litigation*, *Commercial Litigation*, *Empl&Labor Litigation*, *GovContracts Litigation*, and *Other Litigation*. All models include fixed effects defined based on Fama-French 48 Industry classifications and standard errors are clustered by firm. The t-statistics are shown beneath the coefficients in parentheses. Statistical significance at the 1%, 5%, and 10% levels, respectively, is indicated by \*\*\*, \*\*, \*.

*Panel A: Effects of SOX regulations on board independence on Total, Low Severity, and High Severity Litigation*

	Model 1	Model 2	Model 3
	Total Litigation	Low Severity Litigation	High Severity Litigation
Non-Compliant	1.169 (0.89)	0.462 (0.72)	0.707 (1.03)
Post Regulations	0.885*** (4.29)	0.578*** (4.07)	0.307*** (3.88)
Non-Compliant x Post Regulations	-1.342** (-2.12)	-0.583** (-2.14)	-0.759* (-1.87)
Log(Sales)	2.264*** (4.49)	1.476*** (5.21)	0.787*** (3.45)
ROA	-0.827 (-1.30)	-0.518 (-1.28)	-0.309 (-1.23)
Leverage	1.255 (0.63)	0.636 (0.53)	0.619 (0.78)
Market-to-Book	0.050 (0.70)	0.033 (0.68)	0.017 (0.59)
Stock Returns	-0.084 (-1.05)	-0.068 (-1.10)	-0.016 (-0.42)
CEO Equity Ownership	-0.276 (-0.13)	0.182 (0.14)	-0.458 (-0.45)
Constant	-13.149*** (-2.74)	-7.382** (-2.35)	-5.767*** (-2.96)
Industry FE	Yes	Yes	Yes
N	4,755	4,755	4,755
R-sqr	0.185	0.206	0.127

Panel B: Effects of SOX regulations on board independence on High Severity Litigation Measures

	Model 1	Model 2	Model 3	Model 4	Model 5
	Pension Litigation	Product Liability Litigation	Environmental Litigation	General Liability Litigation	Medical Liability Litigation
Non-Compliant	0.040 (0.87)	0.379 (0.97)	0.086* (1.81)	0.093 (0.85)	0.109 (0.96)
Post Regulations	0.094*** (4.09)	0.060* (1.79)	0.058*** (4.36)	0.053** (2.58)	0.043 (1.62)
Non-Compliant x Post Regulations	-0.109*** (-3.20)	-0.368 (-1.30)	-0.070*** (-3.29)	-0.097* (-1.77)	-0.115* (-1.66)
Log(Sales)	0.136*** (5.94)	0.307*** (2.58)	0.057*** (3.40)	0.137*** (3.32)	0.150*** (3.75)
ROA	-0.052 (-1.37)	-0.112 (-0.93)	-0.020 (-1.12)	-0.078 (-1.53)	-0.048 (-0.88)
Leverage	-0.022 (-0.26)	0.553 (1.09)	-0.012 (-0.26)	0.087 (0.54)	0.013 (0.13)
Market-to-Book	-0.009 (-1.64)	0.017 (1.21)	-0.000 (-0.13)	-0.002 (-0.33)	0.011 (1.34)
Stock Returns	0.001 (0.13)	0.007 (0.20)	-0.001 (-0.17)	-0.001 (-0.15)	-0.022** (-2.24)
CEO Equity Ownership	-0.040 (-0.34)	-0.226 (-0.43)	0.016 (0.21)	-0.076 (-0.37)	-0.131 (-0.71)
Constant	-0.280 (-0.54)	-2.646** (-2.52)	-0.496*** (-3.39)	-1.126*** (-3.11)	-1.219*** (-3.53)
Industry Fixed Effects	Yes	Yes	Yes	Yes	Yes
N	4,755	4,755	4,755	4,755	4,755
R-sqr	0.128	0.083	0.085	0.112	0.114

Panel C: Effects of SOX regulations on board independence on Low Severity Litigation Measures

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8	Model 9
	Intellectual Property Litigation	Antitrust Litigation	Fin&Bank Litigation	Securities Litigation	Empl& Labor Litigation	Commercial Litigation	Government Contracts Litigation	Corporate Governance Litigation	Other Litigation
Non-Compliant	0.061 (0.93)	-0.010 (-0.19)	-0.001 (-0.11)	0.010 (0.61)	0.255 (0.80)	0.017 (0.16)	-0.002 (-0.33)	0.009 (0.46)	0.122 (1.01)
Post Regulations	0.036 (1.34)	0.026 (1.44)	0.019** (2.16)	0.079*** (3.62)	0.303*** (3.91)	0.053* (1.95)	0.005 (0.78)	0.013 (1.26)	0.044** (2.32)
Non-Compliant x Post Regulations	-0.057 (-0.90)	-0.021 (-0.62)	-0.008 (-0.57)	-0.040 (-1.22)	-0.218* (-1.85)	-0.093 (-1.34)	-0.003 (-0.36)	-0.012 (-0.61)	-0.132* (-1.77)
Log(Sales)	0.196*** (6.13)	0.103*** (4.22)	0.026*** (4.54)	0.074*** (4.41)	0.652*** (4.05)	0.237*** (4.91)	0.019*** (5.08)	0.036*** (4.71)	0.135*** (3.41)
ROA	-0.044 (-0.66)	-0.033 (-0.72)	0.011 (0.56)	-0.068 (-1.63)	-0.280 (-1.42)	-0.054 (-0.86)	-0.007 (-0.61)	-0.006 (-0.60)	-0.037 (-0.88)
Leverage	-0.244 (-1.58)	0.010 (0.07)	0.131** (2.49)	0.077 (1.20)	0.186 (0.39)	0.292 (0.88)	-0.009 (-0.39)	0.082* (1.83)	0.111 (0.85)
Market-to-Book	0.022 (1.31)	0.017 (1.05)	0.001 (0.57)	-0.006 (-1.53)	-0.004 (-0.19)	0.004 (0.52)	-0.002 (-1.61)	0.001 (0.42)	0.002 (0.38)
Stock Returns	-0.021 (-0.83)	0.010 (0.53)	-0.000 (-0.02)	0.001 (0.17)	-0.037 (-1.33)	-0.016* (-1.70)	-0.001 (-0.93)	-0.002 (-0.62)	-0.002 (-0.26)
CEO Equity Ownership	-0.130 (-0.58)	0.218 (1.38)	0.064 (1.51)	0.079 (0.91)	-0.322 (-0.50)	0.159 (0.64)	0.034 (0.92)	0.027 (0.50)	0.053 (0.30)
Constant	1.822 (0.82)	-0.373 (-1.02)	-0.261*** (-4.89)	-0.655*** (-4.03)	-4.353*** (-3.21)	-1.983*** (-4.18)	-0.140*** (-4.36)	-0.317*** (-4.44)	-1.121*** (-3.25)
Industry Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	4,755	4,755	4,755	4,755	4,755	4,755	4,755	4,755	4,755
R-sqr	0.148	0.098	0.055	0.059	0.153	0.169	0.051	0.046	0.109

**Table 4.7: Robustness Check: Firm Fixed Effects**

The table shows estimates with firm fixed effects instead of industry fixed effects. We report the effect of the SOX regulations of board independence on corporate litigation. All other variables are defined in the Appendix. The dependent variable in all the regression specifications is Corporate Litigation. In panel A are regressions where *Corporate Litigation* are measured by *Total Litigation*, *Low Severity Litigation*, and *High Severity Litigation*. In panel B are regressions of the individual components of high severity litigation, *Pen&Ben Litigation*, *ProdLiab Litigation*, *Environmental Litigation*, *GeneralLiab Litigation*, and *MedicalLiab Litigation*. In panel C are regressions of the individual components of low severity litigation *Intellectual Property Litigation*, *Antitrust Litigation*, *Fin&Bank Litigation*, *Securities Litigation*, *Commercial Litigation*, *Empl&Labor Litigation*, *GovContracts Litigation*, and *Other Litigation*. All models include year and firm fixed effects and standard errors are clustered by firm. The t-statistics are shown beneath the coefficients in parentheses. Statistical significance at the 1%, 5%, and 10% levels, respectively, is indicated by \*\*\*, \*\*, \*.

*Panel A: Effects of SOX regulations on board independence on Total, Low Severity, and High Severity Litigation*

	Model 1	Model 2	Model 3
	Total Litigation	Low Severity Litigation	High Severity Litigation
Post Regulations	0.710* (1.91)	0.265 (0.90)	0.445*** (3.79)
Non-Compliant x Post Regulations	-0.632* (-1.78)	-0.139 (-0.45)	-0.493** (-2.06)
Log(Sales)	0.427** (2.14)	0.302** (2.31)	0.125 (1.32)
ROA	-0.029 (-0.09)	-0.027 (-0.12)	-0.002 (-0.02)
Leverage	0.072 (0.09)	0.210 (0.43)	-0.138 (-0.36)
Market-to-Book	-0.232** (-2.07)	-0.196** (-2.23)	-0.036 (-1.09)
Stock Returns	-0.011 (-0.18)	-0.037 (-0.74)	0.025 (1.15)
CEO Equity Ownership	0.240 (0.18)	0.013 (0.01)	0.227 (0.49)
Constant	-2.184 (-1.50)	-1.546 (-1.59)	-0.637 (-0.95)
Year & Firm Fixed Effects	Yes	Yes	Yes
N	11,399	11,399	11,399
Adj./Pseudo R-sqr	0.075	0.076	0.025

Panel B: Effects of SOX regulations on board independence on High Severity Litigation Measures

	Model 1	Model 2	Model 3	Model 4	Model 5
	Pension	Product Liability	Environmental	General Liability	Medical Liability
Dependent Variable:	Litigation	Litigation	Litigation	Litigation	Litigation
Post Regulations	0.114*** (3.36)	0.221** (2.40)	0.001 (0.02)	0.037 (1.01)	0.072* (1.70)
Non-Compliant x Post Regulations	-0.108*** (-2.76)	-0.235 (-1.15)	-0.046** (-2.15)	-0.013 (-0.31)	-0.091 (-1.57)
Log(Sales)	0.006 (0.26)	0.032 (0.84)	-0.000 (-0.00)	-0.018 (-0.78)	0.105** (2.19)
ROA	0.051 (0.87)	-0.022 (-0.54)	0.003 (0.20)	0.014 (0.64)	-0.048 (-1.43)
Leverage	-0.063 (-0.93)	-0.054 (-0.36)	-0.080* (-1.80)	-0.032 (-0.53)	0.091 (0.40)
Market-to-Book	-0.015* (-1.73)	-0.013 (-1.19)	0.002 (0.78)	0.007 (1.34)	-0.017 (-1.02)
Stock Returns	-0.002 (-0.19)	0.029* (1.65)	-0.001 (-0.26)	-0.007 (-0.77)	0.006 (0.66)
CEO Equity Ownership	0.095 (1.12)	-0.107 (-0.42)	0.320 (1.37)	-0.088 (-0.75)	0.007 (0.06)
Constant	-0.024 (-0.15)	-0.090 (-0.34)	-0.004 (-0.04)	0.092 (0.62)	-0.612* (-1.68)
Year & Firm Fixed Effects	Yes	Yes	Yes	Yes	Yes
N	11,399	11,399	11,399	11,399	11,399
Adj./Pseudo R-sqr	0.028	0.004	0.010	0.014	0.015

Panel C: Effects of SOX regulations on board independence on Low Severity Litigation Measures

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8	Model 9
	Intellectual Property Litigation	Antitrust Litigation	Fin&Bank Litigation	Securities Litigation	Empl & Labor Litigation	Commercial Litigation	Government Contracts Litigation	Corporate Governance Litigation	Other Litigation
Post Regulations	0.004 (0.06)	-0.037 (-1.00)	0.069** (2.15)	0.044 (1.20)	0.116 (0.75)	0.011 (0.16)	0.012* (1.66)	0.007 (0.41)	0.039 (0.89)
Non-Compliant x Post Regulations	0.020 (0.24)	-0.008 (-0.27)	-0.047* (-1.65)	-0.061 (-1.49)	0.081 (0.32)	-0.061 (-1.28)	-0.008 (-1.02)	-0.008 (-0.46)	-0.046 (-1.25)
Log(Sales)	0.137*** (3.48)	0.037* (1.68)	-0.010 (-0.61)	0.019 (0.87)	0.082 (1.28)	0.045 (1.64)	-0.001 (-0.15)	-0.005 (-0.46)	-0.004 (-0.15)
ROA	-0.020 (-0.39)	-0.025 (-0.66)	-0.003 (-0.26)	0.034 (0.40)	0.039 (0.41)	0.006 (0.12)	-0.005 (-0.65)	-0.027 (-1.30)	-0.028 (-1.61)
Leverage	0.132 (1.04)	0.030 (0.47)	-0.052 (-0.78)	0.046 (0.57)	0.158 (0.63)	-0.063 (-0.65)	-0.019 (-0.95)	0.065 (1.28)	-0.087 (-1.39)
Market-to-Book	-0.086** (-2.23)	-0.019** (-2.01)	0.000 (0.05)	-0.016** (-2.00)	-0.042 (-1.53)	-0.026** (-2.03)	-0.001 (-0.67)	-0.006 (-1.08)	0.001 (0.32)
Stock Returns	0.005 (0.32)	0.013 (1.00)	-0.014* (-1.69)	-0.012 (-1.24)	-0.016 (-0.66)	-0.004 (-0.42)	-0.001 (-0.66)	-0.001 (-0.38)	-0.005 (-0.91)
CEO Equity Ownership	-0.617 (-1.03)	0.069 (0.32)	0.006 (0.11)	-0.145 (-1.02)	0.459 (0.72)	0.071 (0.46)	0.037 (0.72)	0.055 (0.75)	0.080 (0.54)
Constant	-0.758*** (-2.59)	-0.227 (-1.43)	0.035 (0.35)	-0.149 (-0.89)	-0.492 (-0.99)	-0.151 (-0.77)	0.008 (0.26)	0.070 (0.99)	0.117 (0.70)
Year & Firm Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	11,399	11,399	11,399	11,399	11,399	11,399	11,399	11,399	11,399
R-sqr	0.035	0.018	0.009	0.014	0.056	0.027	0.003	0.005	0.006

