Do fiduciary duties to creditors reduce debt-covenant avoidance?

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Abstract

Financial reports should provide useful information to shareholders and creditors. Directors, however, normally owe fiduciary duties to equity holders, not creditors. We examine whether this slant in fiduciary duties affects the likelihood that firms will use financial engineering to circumvent debt covenants. By avoiding debt covenants, firms prevent creditors from taking actions to reduce bankruptcy risk and recover their investment, and allow the firm to continue operating for the benefit of equity holders. We find that firms are more likely to circumvent covenant restrictions when directors owe fiduciary duties only to equity holders than when directors owe fiduciary duties to creditors as well. We also show board quality lowers the probability that firms will avoid covenants, only when directors owe a legal fiduciary duty to creditors. Collectively, our results suggest firms are more likely to structure transactions and circumvent debt covenants when corporate governance is designed to protect equity holders only, and not creditors.

Keywords: Debt Structuring; Director Fiduciary Duties; Board Independence

JEL Classifications: G32, G34, M41, K22

1. Introduction

Financial reports should provide useful information to creditors, and accounting regulators often revise financial standards to improve the faithful representation of debt.[1] Accounting standards, however, cannot completely curtail financial engineering by firms that wish, for example, to reduce reported debt. Firms can interpret standards or structure transactions to circumvent criteria that classify transactions into debt or equity, in a cat and mouse game in which accounting regulators cannot win (Dye et al. 2014). In this paper, we examine the corporate governance alternative. Corporate governance reduces managers' reporting opportunism, and can decrease the occurrence of fraud and misstatements in financial reports (Dechow et al. 1996; Abbott et al. 2004; Beasley et al. 2000; Agrawal and Chadha 2005). Nevertheless, governance may not prevent financial engineering that hurts creditors—at least so long as governance requires managers to maximize shareholders' value only. Such is the case when managers and directors owe fiduciary duties to shareholders, and not to debtholders. Managers who owe fiduciary duties only to shareholders may maximize equity value at the expense of debt value and hurt debtholders. These debt-equity value conflicts are mitigated when the law extends the protection of fiduciary duties to include debtholders (Becker and Stromberg 2012). We examine the effect of fiduciary duties on debt-equity reporting conflicts, or specifically on firms' propensity to use financial engineering for debt covenant avoidance.

Accounting-based covenants in debt contracts create a reporting debt-equity conflict. Debt covenants set limits on leverage and performance, and act as a trip wire allowing

[1] Statement of Financial Accounting Concepts No. 1, Objectives of Financial Reporting by Business Enterprises (1978) states, "Financial reporting should provide information to help present and potential investors and creditors and other users in assessing the amounts, timing, and uncertainty of prospective cash receipts from dividends or interest and the proceeds from the sale, redemption, or maturity of securities or loans." The revised FASB Conceptual Framework for Financial Reporting (Statement of Financial Accounting Concepts No. 8, 2010) makes a similar statement. For recent regulation that tries to limit financial engineering see, for example, SFAS No. 150, FIN 46R (FASB Interpretation No. 46, revised December 2003), and the recent joint project of the FASB and IASB to change lease accounting (Project Update, Leases—Joint Project of the FASB and the IASB" http://www.fasb.org/cs/ContentServer?c=FASBContent_C&pagename=FASB%2FFASBContent_C%2FProjectUpdatePage&cid=900000011123#objective)

creditors to take timely actions to reduce bankruptcy risk and costs. Evidence, however, suggests that managers bias financial reports to avoid violation of debt covenants (e.g., Dichev and Skinner 2002).[2] Managers that circumvent covenant violation may undermine creditors' interests, but allow the firm to continue operating and potentially gain positive equity value, and therefore act in line with their fiduciary duty to shareholders.[3] We examine whether extending the protection of fiduciary duties to include creditors lowers firms' use of financial engineering to circumvent accounting-based debt covenants.

We use two test approaches to investigate the effect of directors' fiduciary duties on firms' propensity to avoid covenant violation and undermine creditor interests. First, we examine the relation between an exogenous change in fiduciary duties and the likelihood of financial engineering, or structured debt issuance.[4] Second, we use the covenant slack distribution around zero to test the extent to which firms manipulated their reports to avoid debt-covenant violation.

Our main research setting is a 1991 Delaware court ruling that changed directors' fiduciary duties. On December 30, 1991, in the Credit Lyonnais v. Pathe Communications case, the Court of Chancery of Delaware issued a ruling that effectively increased directors' fiduciary duties to creditors. Historically, the position of US courts was that fiduciary duties are owed strictly to equity holders and not to creditors in solvent firms. The Delaware court, however, ruled in 1991 that when a firm is close to insolvency, directors are not merely the agent of the shareholders, but should consider the interests of creditors as well. The ruling was widely viewed as having created a new obligation for directors of Delaware firms, and

[2] Managers wish to circumvent the violation of debt covenants, for example, to avoid turnover (Ozelge and Saunders 2012), or prevent an increase in the cost of debt (Beneish and Press 1993).

[3] Covenant violations can trigger bankruptcy and erase equity. By avoiding such covenant violations, managers are generally viewed as benefiting equity holders. However, one could argue that actions imposed by creditors following a covenant violation may actually benefit equity holders because they may force the firm to react and potentially reduce the likelihood of bankruptcy. Put differently, avoiding covenant violation can conceivably result in greater bankruptcy risk because it eliminates the need for timely actions that would turn the firm around.

[4] Prior to SFAS 150, structured debt did not affect reported leverage and was used to avoid covenant violations.

evidence suggests that following this ruling, debt-equity conflicts decreased in Delaware firms (Becker and Stromberg 2012) and accounting conservatism increased (Aier et al. 2014; Tan and Wongsunwai 2014; Bens and Huang 2014), especially for firms that were close to insolvency.

In our first test, we examine the impact of the change in fiduciary duties on the extent and likelihood of issuances of mandatory redeemable preferred shares—preferred shares with a debt-like maturity feature that requires issuers to redeem the invested amount by a specific future date. Prior to SFAF 150 (issued in 2003), these structured debt securities were not reported as a liability, and firms used them to lower their reported leverage and circumvent debt covenants put in place by creditors (e.g., Engel et al. 1999; Moser et al. 2011; Levi and Segal 2014).[5]

Using a difference-in-differences analysis around the 1991 ruling, we find that Delaware firms that were close to insolvency reduced structured debt issuances after 1991. Delaware firms that were not close to insolvency, as well as firms not domiciled in Delaware, did not experience any change in structured debt issuance around 1991. The results suggest that when managers and directors owe legal fiduciary duty to creditors, they are less likely to use structured debt transactions that lower reported leverage and circumvent debt covenants.[6] These results are consistent with our conjecture that unless required by law to protect creditors' interests, directors may take actions that harm creditors' interests.

We next examine whether board quality moderates the relation between fiduciary duties and creditors' protection. Following the extant literature, we use board independence as a proxy for board quality. Board independence is associated with better audit quality

[5] As discussed below, legitimate economic reasons exist for issuing structured debt, for which we control in our tests. Structured debt, for example, may in some circumstances lower firms' tax payments relative to plain debt. We also conduct extensive construct validity analyses to validate our conjecture that the issuance of mandatory redeemable preferred shares is indeed associated with attempts to avoid covenant violation. See discussion in Section 3.

[6] Directors need to approve the issuances of new securities, and this form of reporting bias therefore requires their consent. See, for example, Del. Code Ann. tit. 8, § 161 (2010).

(Abbott et al. 2003; Carcello et al. 2002), higher accruals quality (Klein 2002; Jenkins 2002), and fewer financial reporting frauds and misstatements (Dechow et al. 1996; Abbott et al. 2004; Beasley et al. 2000; Agrawal and Chadha 2005). Hence, the findings in the literature suggest board independence is positively associated with monitoring quality and consequently is associated with better protection of shareholders' interests. Prior literature also documents that the quality of governance is negatively related to the cost of debt and positively related to firms' credit ratings (e.g., Bhojraj and Sengupta 2003; Ashbaugh-Skaife et al. 2006). However, these findings can be attributed to the overall impact of board quality on firm value. Better governance results in higher firm value, and higher firm value indirectly also benefits creditors (Ashbaugh-Skaife et al. 2006). Our setting allows us to examine whether a direct relation exists between board quality and creditors' protection.

We find that board independence reduces the likelihood of structured debt issuance, that is, it improves the quality of reporting from the creditors' perspective, only when directors owe fiduciary duties to creditors. Specifically, we find that board independence is associated with lower structured debt issuances only in Delaware firms that are close to insolvency. We do not find a relation between board independence and structured debt issuances in non-Delaware firms or in Delaware firms with low leverage. These results imply that board quality is associated with better protection of creditors only when directors have explicit fiduciary duties to protect creditors.

In the second research setting, we examine the distribution of covenant slack around zero to test the extent to which Delaware firms manage their reporting to avoid violation of debt covenants after 1991. Managers who wish to avoid debt-covenant violation can issue structured debt or use their business and reporting discretion in other ways to achieve this goal. To gauge if firms avoid debt-covenant violations in general, we use a result-driven test, similar to Dichev and Skinner (2002) and Burgstahler and Dichev (1997), and examine the

distribution of covenant slack. Covenant slack is the difference between the limit set by the debt covenant and the firm's actual financial ratio. If managers are trying to avoid debt-covenant violations, we expect to find unusually few observations just below zero slack and unusually many observations just above zero.

To increase the power of the test, we focus on high-leverage firms. These firms have greater incentives to avoid covenant violation, and more importantly, they are the firms that may owe fiduciary duties to creditors following the 1991 Delaware court ruling. We find a discontinuity around zero in the covenant slack distribution for non-Delaware firms with high leverage, evidence that suggests these firms act to avoid covenant violation. However, we find no such discontinuity for Delaware firms. These findings support our hypothesis that when directors owe fiduciary duties to creditors, they are less likely to engage in manipulations to avoid covenant violation.

This study makes three contributions to the literature. First, we show that managers' fiduciary duties affect debt-equity reporting conflicts. We find that firms are more likely to circumvent debt covenants when directors owe fiduciary duties only to shareholders than when they owe them to creditors as well. By avoiding debt covenants, managers prevent creditors from taking actions to reduce bankruptcy risk and recover their investment, and allow the firm to continue operating for the benefit of equity holders. The literature shows that fiduciary duties to creditors increase accounting conservatism (Aier et al. 2014; Tan and Wongsunwai 2014; Bens and Huang 2014). We examine the effect of lack of fiduciary duties to creditors on debt covenants avoidance. Manipulations to avoid covenant violations undermine creditors' interests, while allowing the firm to continue operating and potentially gain equity value. We show that imposing fiduciary duties to creditors reduces these manipulations that favor equity holders' over creditors' interests.

Second, the evidence in the extant literature suggests board quality improves the quality of financial reporting unconditionally. Our evidence suggests board quality improves financial-reporting quality for the stakeholder to whom directors owe fiduciary duties. Firms with high board quality that do not owe fiduciary duties to creditors are as likely to take actions to circumvent covenant breach as firms with low board quality. However, when firms owe fiduciary duties to creditors, governance quality is negatively associated with the likelihood that the firms take such actions. Our results point to a direct relation between governance and creditor protection. Although the evidence in the literature suggests better governance is associated with reduced cost of debt and higher rating, these relations are indirect in the sense that they may arise from the overall positive impact of governance on firm value.

Finally, we show that firms are less likely to use structured transactions to lower reported debt when corporate governance is designed to protect creditors' interests, rather than only shareholders' interests. Prior work demonstrates that firms structure transactions to lower their reported debt (e.g., Imhoff and Thomas 1988; Engel et al. 1999; Dechow and Shakespeare 2009; Moser et al. 2011; Levi and Segal 2014). As a result, accounting regulation tries to limit such structured transactions.[7] However, accounting standards usually cannot completely curtail financial engineering (Dye et al. 2014). Our findings suggest that imposing fiduciary duties on directors to creditors can be an effective alternative way to reduce manipulative use of structured debt.[8]

[7] See, for example, Statement of Financial Accounting Standards no. 150, FIN 46R (FASB Interpretation No. 46, revised December 2003), and the recent joint project of the FASB and IASB to change lease accounting, "Project Update, Leases—Joint Project of the FASB and the IASB" on the FASB's website.

[8] Note that we examine a different financing decision than Becker and Stromberg (2012) who find that firms were more likely to issue equity relative to debt after the reduction in debt-equity conflicts following the Credit Lyonnais ruling. We focus on non-equity financing and examine the decision to issue preferred shares with features of debt (debt structured as equity or DSE, discussed later in the paper) relative to debt. We find that after the ruling, firms were less likely to issue DSE and more likely to issue debt.

The remainder of the paper is organized as follows. Section 2 discusses the hypothesis development and prior literature. Section 3 describes construct validity analyses on the relation between structured debt issuance and covenant avoidance. Section 4 describes the results concerning the relation between fiduciary duties and structured debt issuance, and Section 5 presents the results related to the moderating impact of board quality. Section 6 examines the discontinuity around zero in the distribution of debt covenant slacks, and section 7 concludes.

2. Hypothesis Development

An efficient governance mechanism requires that one stakeholder monitors management (Jensen 2001; Tirole 2001). Because shareholders are the residual claimants to the firm's assets, they represent the weakest stakeholder and should therefore have their interests protected by directors. Other stakeholders, such as debt holders and employees, can presumably protect themselves through contracts and other legal means. Indeed, the position of US courts is that for solvent firms, directors and managers owe fiduciary duties to shareholders only. These duties require directors to protect and take actions that are in the interest of shareholders, and if directors or managers fail to do so, shareholders can sue them. This mechanism provides management and directors with an incentive to act in shareholders' interest.[9]

The 1991 Credit Lyonnais v. Pathe Communications ruling changed the fiduciary duties of directors in Delaware. The case followed the leveraged buyout of MGM Corporation in November 1990. Subsequent to the buyout, MGM filed for bankruptcy. It emerged from bankruptcy in part by securing a credit line from Credit Lyonnais, a French

[9] Becker and Stromberg (2012) discuss limitations of fiduciary duties as an efficient governance mechanism. In particular, managers' behavior can be affected by other and potentially more effective mechanisms, such as financial incentives and career concerns. In addition, shareholders have difficulty winning lawsuits against managers, because of the "business judgment rule," and if they do win, the mangers are typically covered by insurance.

bank, which then used its agreed contractual right under the credit agreement to replace the directors and the CEO of MGM. Pathe Communication, the controlling shareholder of MGM, felt the newly appointed CEO and directors favored the creditors of the firm, and sued Credit Lyonnais, claiming breach of fiduciary duty by the CEO. The court ruled that when a firm is close to insolvency, directors owe duties not only to shareholders, but also to the enterprise as a whole; that is, the board should consider the interests of creditors as well.

Consistent with the change in duties to creditors, Becker and Stromberg (2012) show that debt-equity conflicts decreased in Delaware firms following this ruling. Specifically, they provide evidence that firms that were close to insolvency were more likely to issue equity and increase investments, and to reduce operating risk. The increase in equity issuance and investments suggests a reduction in the debt-overhang problem.[10]

Several studies examine changes in reporting behavior following the 1991 ruling. Aier et al. (2014) and Tan and Wongsunwai (2014) show that the ruling resulted in greater overall conservatism, especially for Delaware firms that are close to insolvency. The results of these two studies confirm a causal link between debtholders' demand for conservatism and actual conservatism. Bens and Huang (2014) also investigate whether the ruling resulted in greater conservative reporting. They examine a series of accounting choices made by firms, such as the likelihood of negative accruals and special items. Their results suggest Delaware firms make accounting choices that indicate closer alignment between shareholders and bondholders after the ruling. Huang et al. (2014) find that following the ruling, managers focus less on myopic short-term-earnings targets and put greater emphasis on long-term-oriented investments.

We take a different approach to examine the impact of change in directors' fiduciary duties on financial-reporting choices, and examine whether the change in ruling affected the

[10] Briefly, when the firm is close to insolvency, earnings from new investments go to existing debt holders, thereby leaving little incentive for the entity to improve its position.

propensity of firms to avoid debt covenants. The debt-covenants hypothesis predicts that managers have an incentive to manipulate financial reports to avoid debt-covenant violation. Extant literature documents that managers lose a significant part of their compensation (e.g., Eckbo et al. 2015) and experience forced turnover following covenant violation (Ozelge and Saunders 2012). Altman and Hotchkiss (2005) summarize research showing that by the time firms exit Chapter 11, management turnover ranges from 70% to 91%, depending on the sample studied. Shareholders also experience direct and indirect costs when firms violate covenants. These costs may include an increase in interest rates by banks following the covenant breach (Beneish and Press 1993), and restrictions on capital expenditures and ability to raise additional debt (e.g., Chava and Roberts 2008; Roberts and Sufi 2009; Sufi 2009). Consistent with the debt-covenant hypothesis, the literature shows that managers engage in reporting activities that reduce the likelihood of covenants violation. For example, Sweeney (1994) finds that managers respond with income-increasing accounting methods when their firms face technical default. DeFond and Jiambalvo (1994) document income-increasing abnormal accruals one year prior to debt-covenant violations and also to some extent in the year of violation. Dichev and Skinner (2002) provide distributional evidence that managers take actions to avoid debt-covenant violation. Hence, theory and empirical evidence suggest that shareholders and managers have an incentive to avoid covenant breach. However, by avoiding covenant breach, managers hurt creditors' interest, especially when the firm approaches insolvency. Covenant violation acts as a trip wire allowing creditors to take timely actions to reduce bankruptcy risk, avoid bankruptcy costs, and recover more from the borrowing firm. Because the Credit Lyonnais ruling requires directors to protect creditors when firms approach insolvency, we expect that the ruling affected the propensity to avoid debt-covenant violation primarily for Delaware firms approaching insolvency. To test our

conjecture, we examine whether the ruling affected the propensity of firms to issue debt structured as equity and to generally manipulate reporting to avoid debt-covenant violation.

We first examine firms' propensity to issue debt structured as equity. In particular, we examine whether the change in director duties following the court ruling affected the propensity of Delaware firms to issue mandatorily redeemable preferred shares—debt securities structured as equity (DSE). DSE are preferred shares with a debt-like maturity clause in which the issuer commits to redeem the amount invested by security holders at a specific future date. Although DSE economically represent a form of debt, prior to 2003, they were reported outside of the liabilities section, in the "mezzanine" section between liabilities and shareholders' equity, and their dividends were not reported as financing expense on the Income Statement. SFAS 150, which came into effect in 2003, requires US firms to include DSEs in the liabilities section of the balance sheet, and consistent with the new balance-sheet classification, dividends on DSE are accounted for as interest payments on the income and cash flow statements.

The evidence in the literature suggests firms used the discrepancy between the economic substance and the accounting treatment of DSE prior to SFAS 150 to undermine creditors' interests and transfer wealth from creditors to shareholders. Consistent with the contract-based argument (e.g., Holthausen and Watts 2001; Watts 2003; Ball et al. 2008), Moser et al. (2011) find lenders primarily contract under GAAP, and following SFAS 150 firms redeemed their DSE to avoid breaching their debt covenants. Their findings suggest the classification of DSE in the mezzanine section before SFAS 150 helped levered firms avoid debt-contract limits. Similarly, De Jong et al. (2006) show that following the adoption of IAS 32 (which also requires classifying DSE as debt), Dutch firms either bought back their preference shares or changed the shares' characteristics in such a way that the classification as equity could be maintained on the balance sheet. Whereas Moser et al. (2011) and De Jong

et al. (2006) focus on firms holding DSE and their choice to redeem it in reaction to SFAS 150 and IAS 32, respectively, Levi and Segal (2014) examine firms' ex-ante issuance choice between DSE and debt, and demonstrate that firms issued DSE to reduce their reported leverage. Engel et al. (1999) identify firms that issued DSE and used the proceeds to redeem debt, indicating firms used DSE to lower reported debt. Taken together, the evidence suggests firms used DSE to lower reported debt and circumvent debt covenants.

In construct-validity tests reported below, we further show that the likelihood of bankruptcy of DSE issuers is higher than that of firms issuing debt, and that the likelihood of DSE issuance is negatively associated with debt-covenant slack. These findings further suggest that firms approaching insolvency issued DSE strategically, that is, to avoid covenant breach due to an increase in debt. However, one can argue that DSE issuance actually benefits creditors, because the firm is getting cash infusion that potentially reduces bankruptcy concerns. In this case then, we should not observe a decrease in DSE issuance following the 1991 ruling.

Hence, we predict Delaware firms that are close to insolvency are more likely to reduce the issuance of DSE following the 1991 ruling in comparison to Delaware firms that are not in the zone of insolvency, as well as relative to non-Delaware firms. Formally,

> ***Hypothesis 1a:*** *Following the 1991 Delaware ruling, Delaware firms that are close to insolvency are less likely to issue DSE, whereas non-Delaware firms and Delaware firms that are not close to insolvency are as likely to issue DSE.*

Dichev and Skinner (2002) provide distributional evidence that managers take actions to avoid debt-covenant violation. Specifically, they show that the number of observations just below the violation cutoff is small compared to the number of observations at and just above the cutoff. Thus, our next hypothesis predicts that the propensity to avoid debt covenants is lower in Delaware firms than in non-Delaware firms that are close to insolvency. We focus

on firms that are close to insolvency because they stand to lose more from covenant violation, and therefore have greater incentives to avoid covenant violation. In addition, being closer to insolvency, firms are more likely to owe fiduciary duties to creditors in Delaware following the 1991 court ruling. Formally,

> ***Hypothesis 1b:*** *Following the 1991 Delaware ruling, there is no distributional evidence of avoidance of debt-covenant violation by Delaware firms that are close to insolvency. In addition, there is distributional evidence of debt-covenant violation by non-Delaware firms that are close to insolvency.*

Fama (1980) and Fama and Jensen (1983) argue that the prevalence of top managers in the board of directors can lead to collusion and transfer of stockholders' wealth. In companies in which the board includes members that are managers and shareholders at the same time, the risk of a transfer of wealth from owners to managers is reduced, but a new risk may arise—the risk of wealth transfers from minority/outsider shareholders to controlling/insider ones. To reduce these risks, boards include independent directors who have neither a managerial role nor business or ownership ties to the company, with high institutional expertise and a professional reputation to protect. Independent directors are less likely to collude with top management or controlling shareholders, and hence they are expected to reduce the agency problems in boards (Fama and Jensen 1983).

Regulators view independent directors as more effective than inside directors in monitoring firms' management, which may explain the requirement for greater board independence in recent years. For example, the Sarbanes-Oxley Act (2002) requires that audit committees be composed entirely of outside directors, and the listing standards of US exchanges require boards to have a majority of independent directors. Extant research shows independent directors are associated with greater financial reporting quality. Specifically, board independence is associated with a reduced likelihood of fraudulent financial reporting

(Dechow et al. 1996; Beasley et al. 2000), better accruals quality (Klein 2002; Jenkins 2002), and a reduced likelihood of restatement (Abbott et al. 2004; Agrawal and Chadha 2005).

Prior literature also finds the quality of governance is negatively related to the cost of debt and positively related to firms' credit ratings (e.g., Bhojraj and Sengupta 2003; Ashbaugh-Skaife et al. 2006).[11] Better governance promotes better monitoring of management that results in higher firm value, which indirectly also benefits creditors (Ashbaugh-Skaife et al. 2006). Bond contracts include fewer covenants to protect creditors when borrowers have higher-quality governance (Li et al. 2014). More directly related to our study, Aier et al. (2014) show the impact of the 1991 court ruling on conservatism applies particularly to firms with stronger boards. Hence, we examine whether the impact of the court ruling was more pronounced for firms with better governance. More precisely, in the absence of fiduciary duty to creditors, independent directors are not expected to stop firms from circumventing covenant violations. We predict board quality is associated with DSE issuance only when directors owe fiduciary duty to creditors, that is, after 1991 ruling in Delaware firms that are close to insolvency. Formally,

> ***Hypothesis 2:*** *Following the 1991 Delaware ruling, a negative relation exists between board independence and DSE issuance for Delaware firms that are close to insolvency; and no relation exists between board independence and DSE issuance for Delaware firms that are not close to insolvency, or for non-Delaware firms.*

3. DSE and Construct-Validity Analysis

Throughout the analysis, we use mandatorily redeemable preferred-shares issuances as our proxy for DSE issuance. To measure the proportion of DSE out of total debt issuances, we scale DSE issuance by total amount of debt and DSE issuance. When a firm issues only

[11] Relatedly, Sengupta (1998) finds better disclosure quality is associated with lower cost of debt, and De Franco et al. (2014) find debt-equity conflicts covered by debt analysts increase the cost of debt financing.

DSE, the variable equals 1; and when a firm issues only debt, the variable equals 0. In all regressions, we control for variables that are associated with the decision to issue DSE. In particular, we control for the tax rate, loss carryforward, and firm size. *Tax Rate* is the effective tax rate. *Loss Carryforward* is an indicator variable of 1 for firms with non-zero loss carryforward and earnings before interest and taxes that are either negative or lower than one fifth of the loss carryforward. *Size* is the natural log of the market value of equity.

Tax is a major factor in the decision to issue DSE or debt. Firms that are highly profitable and have high tax rates can take advantage of the tax benefit associated with interest payments, and therefore would prefer to issue debt instead of DSE. We measure the effective tax rate as 1 minus the ratio of net income to earnings before taxes. Tax shields, on the other hand, lower firms' incentive to use debt financing. Auerbach and Poterba (1986) find that firms with large tax-loss carryforwards are likely to face zero marginal tax rates, and consequently, these firms are less likely to issue debt (MacKie-Mason 1990). To ensure the loss carryforwards are large, we use an indicator variable that equals 1 for firms with loss carryforward that is at least five times larger than current earnings (before interest and taxes).[12] We also control for firm size.

Before we describe the results of the various analyses, we report construct-validity analyses related to the relation between DSE issuance and creditors' interests. We first report results on the relation between DSE issuance and subsequent bankruptcy. We then discuss the association between DSE issuance and existing covenant slack.

As discussed above, the literature suggests that prior to SFAS 150, DSE issuance by a firm approaching insolvency adversely affected creditors' interests, because the issuance allowed firms to avoid covenant violation and consequently prevented creditors from taking timely actions that reduce bankruptcy risk or actions that allow them to recover more from

[12] Our definition of the loss-carryforward dummy follows Levi and Segal (2014). Similar results are obtained in specifications using a dummy that equals 1 for firms with loss carryforward that is at least three times or seven times larger than current earnings before interest and taxes.

the borrowing firm. A counter argument is that DSE issuance actually benefited creditors because of the cash infusion, which likely alleviated some of the financial constraints the firm faced. To examine which of the two is more plausible, we test the likelihood of bankruptcy among DSE issuers compared with firms that only issue debt. If DSE issuance benefits creditors or alternatively is only a financing decision, we should observe no relation between the likelihood of bankruptcy and the decision to raise capital using debt or DSE. On the other hand, if DSE issuance is associated with a greater likelihood of bankruptcy, the implication is that the decision to issue DSE is associated with the firm's difficulty in raising debt, potentially because of existing binding covenants.

We identify all COMPUSTAT firms with a form 8-K bankruptcy filing from 1996 through 2002 (the year prior to the issuance of SFAS 150) and match with all COMPUSTAT firms that issued DSE or debt in the same period.[13] This procedure yields 13,007 firm-year observations, of which 987 are classified as DSE issuance and the remaining as debt issuance. We find 11.14% of the firms that issued DSE filed for bankruptcy within five years of the issuance date, compared with only 5.76% of firms that issued debt (and no DSE) in the same window, and the difference between these two bankruptcy rates, 6.78 percentage points, is highly significant (p-value < 0.001).[14] Hence, the greater likelihood of bankruptcy by DSE issuers is consistent with the claim in the literature that DSE issuances undermine debt holders' interests (e.g., Engel et al. 1999; Moser et al. 2011; Levi and Segal 2014).

In a second sensitivity analysis, we examine the likelihood of DSE issuance and covenant slack. As we discuss above, we conjecture that firms issue DSE to avoid covenant violation. To test this conjecture, we examine the association between DSE issuance and covenant slack. In particular, we use "debt-to-EBITDA" covenant data from DealScan. We focus on this covenant because it yields the highest number of observations. In addition, prior

[13] Complete data on 8K filings are only available from 1996, the first year of mandatory EDGAR filing.
[14] In comparison, Moody's reports a 6.86% 5-year bankruptcy rate for debt rated between 1920 and 2008 (Moody's Investors Service 2009).

to the change in the reporting of DSE in 2003, DSE issuance was beneficial for firms with binding debt-to-EBITDA ratios, because the issuance had no effect on the ratio given that the principal amount of DSE was reported in the mezzanine section. This finding suggests that if DSE was used to circumvent the debt-to-EBITDA covenant, we should observe a negative relation between DSE issuance and the covenant slack, or alternatively, an association between lower slack and a greater likelihood of DSE issuance.

For each year, we use covenants of loans that have been incepted during the year or during the previous years and have not yet matured. If a firm has more than one debt agreement with a debt-to-EBITDA covenant, we use the covenant with the lowest limit, which is the earliest trigger of covenant violation. We define covenant slack as the difference between the covenant threshold for that variable and the actual realization of the covenant variable. Actual debt-to-EBITDA is calculated as long-term debt (*DLTT+DLC*) divided by EBITDA. To maximize the size of the sample, we use all observations for which we can calculate covenant slack, and find 5,678 observations between 1994 and 2009.

We regress DSE/Debt on the slack and control variables separately for the period prior to and after SFAS 150. We expect to find a negative relation between DSE issuance and the slack only in the period prior to SFAS 150, because post SFAS 150, DSE is reported as debt and hence the issuance of DSE in the post period has an impact on debt covenants that is similar to that of any other debt. Because the dependent variable is bounded by 0 and 1, we estimate the regression using Tobit. Table 1 presents the regression results. As expected, we find that the coefficient on the slack is negative and significant in the pre SFAS 150 period, and not significant in the post period. This result validates our conjecture—firms with tighter covenants are more likely to issue DSE to avoid debt-covenant violation.

Taken together, we find that firms that issue DSE are more likely to go bankrupt in subsequent periods and that DSE issuance is higher for firms with low covenant slack.

Collectively, these results imply that firms in financial distress issued DSE, and they made this particular financing choice to avoid covenant violation.

4. DSE and Fiduciary Duties

In this section, we discuss the methodology, data, and results pertaining to Hypothesis 1a. Section 5 describes the results concerning Hypothesis 2. Because the two hypotheses cover different sample periods, we discuss the data and results separately. In section 6, we report the data and results concerning the distributional analysis (Hypothesis 1b).

4.1 Methodology

We use difference-in-differences methodology to investigate the effect of the court ruling on DSE issuances. Using data from 1988 through 1995, we estimate the following regression:

$$DSE/Debt_{it} = a + b_1 Post1991_{it} + b_2 Delaware_{it} + b_3 Delaware_{it} * Post1991_{it} + Contorls + \varepsilon_{it}. \quad (1)$$

The 1991 Credit Lyonnais v. Pathe Communications ruling requires that fiduciary duty be owed to creditors in firms that are in the "zone of insolvency." We use high leverage to capture firms' closeness to insolvency.[15] For each year, we sort the sample firms into terciles based on their debt-to-equity ratio, which is computed as long-term debt divided by the market value of equity at the end of the prior year. Firms in the top (bottom two) tercile are classified as *High* (*Low*) *Leverage*. We estimate equation (1) separately for the *High-* and *Low-Leverage* samples. We test Hypothesis 1 using the coefficient on the interaction variable of *Delaware*Post1991*. A negative coefficient indicates that Delaware firms experienced a greater decrease in DSE issuance in the period following the 1991 ruling. We expect to find a

[15] We get similar results when using Becker and Stromberg's (2012) distance-to-default measure—see discussion below.

negative and significant coefficient on the interaction variable only for the sample firms with high leverage. The control variables are those discussed in Section 3.

4.2 Data and Descriptive Statistics

We obtain data on mandatorily redeemable preferred-shares issuances (debt securities structured as equity) from Compustat's annual database.[16] We code a firm as issuing DSE when its redeemable preferred shares increase during the fiscal year, and this increase corresponds with a rise in reported cash from issuances of preferred shares.[17]

Our sample includes all observations in Compustat with non-missing values of the variables needed to estimate equation (1). All variables are winsorized at the top and bottom percentiles. We exclude financial institutions (SIC codes 6000-6499) and firms with equity market value of less than $10 million. The sample includes 9,567 observations between 1988 and 1995.[18]

Table 2 provides the mean and median of the variables in equation 1 separately for Delaware and non-Delaware firms. The number of observations of Delaware firms (4,658) is similar to non-Delaware firms (4,909). Delaware firms issue a greater proportion of DSE relative to total debt (5.2% vs. 4.5%) and are also more likely to issue DSE (6% vs. 5.2%). Delaware firms have slightly lower tax rates (27% vs. 28%) and higher tax shields (12% vs. 9%), which may explain why they are more likely to issue DSE. Delaware and non-Delaware firms have comparable size and leverage.

Table 3 compares the magnitude of DSE issuance relative to total debt issued (Panel A) and the likelihood of DSE issuance (Panel B) for high- and low-leverage firms, incorporated in Delaware and elsewhere. Panel A shows that the overall proportion of DSE issuance relative to debt issuance is similar across Delaware and non-Delaware firms,

[16] Hovakimian et al. (2001) and Fama and French (2005), for example, similarly use the change in Compustat items to gauge debt and equity issuances.
[17] We obtain similar results when we also require that redeemable preferred shares increase by at least 25%.
[18] We obtain similar results in specifications using data from three as well as five years before and after 1991.

especially after 1991. Delaware firms experienced a slight decrease in DSE issuance after 1991 (from 5.4% to 5.1%), whereas non-Delaware firms experienced an increase in DSE issuance (from 4.1% to 4.9%), but the change in DSE issuance is not significant for either Delaware or non-Delaware firms.

However, looking at the change in DSE issuance for high- and low-leverage firms, we find that with the exception of high-leverage firms in Delaware, firms increased DSE issuance, though the change is not significant. By contrast, Delaware firms with high leverage reduced DSE issuance relative to total debt issued following the court ruling in 1991, and the decrease is economically and statistically significant. In particular, the mean of DSE issuance relative to total debt issued for high-leverage firms in Delaware in the period from 1988 through 1991 is 7.73%, whereas from 1992 to 1995, the ratio has decreased to 5.12%, a decrease of 34%, which is significant at the 5% level.

Panel B replicates the analysis in Panel A using the proportion of firms issuing DSE. The proportion of all Delaware firms issuing DSE decreased from 6.3% to 5.9% after 1991, whereas the proportion of all non-Delaware firms increased from 4.7% to 5.6%, but the changes are not statistically significant. When we condition based on high/low leverage, we find that with the exception of high-leverage firms in Delaware, no change occurs in the proportion of firms issuing DSE. However, the proportion of high-leverage firms in Delaware issuing DSE is significantly lower after 1991. Prior to 1991, the proportion of high-leverage firms in Delaware issuing DSE is 9.1%, whereas after 1991, the proportion decreases to 6%, a 33% decrease that is statistically significant at the 5% level. Taken together, the univariate results reported in Table 3 support our hypothesis and suggest the 1991 Credit Lyonnais v. Pathe Communications ruling led to a reduction in DSE issuances for Delaware firms with high leverage.

4.3 Results

Table 4 presents the regression results (equation (1)) for the high- and low-leverage firms. Panel A shows the results in which the dependent variable is the ratio of DSE issuance to total debt issuance. The coefficients on the control variables are similar across the two groups of firms, generally with the predicted sign. Specifically, the coefficient on the effective tax rate is negative and significant (p-value = 0.01) in the low-leverage regression, and the coefficient on loss carryforward is positive and significant (p-value < 0.01) in both regressions. The high-leverage regression also indicates the likelihood of DSE increases with size (p-value < 0.01).

Consistent with the univariate results, both regressions show that DSE issuance on average did not change after 1991. The low-leverage regression shows Delaware firms with low leverage are more likely to issue DSE in comparison to non-Delaware firms. Directly related to the hypothesis, the coefficient on the interaction variable of the *Post1991* and the *Delaware* indicators is negative and significant (p-value = 0.01) for the high-leverage firms only, suggesting that high-leverage firms reduced DSE issuance following the court ruling.[19] Panel B of Table 4 shows the results when the dependent variable takes the value of 1 if the firm issued DSE during the year, and zero otherwise. The regression is estimated using Logit. The results are similar to those reported in Panel A. In particular, the coefficient on the interaction of the *Delaware* and *Post1991* indicators is negative and significant (p-value = 0.02) for the high-leverage firms only, indicating the likelihood of DSE issuance after the court ruling in 1991 is lower relative to the pre-1991 period only for firms that were incorporated in Delaware and are close to insolvency. The sign of the coefficients on the control variables are similar to Panel A.

[19] We obtain similar results when we include year fixed effects—the coefficient on the interaction variable of the *Post1991* and the *Delaware* indicators is negative and significant only for the high-leverage firms.

Because we scale DSE issuance by total debt and DSE issuance, a possible explanation for the decrease in DSE issuance of Delaware firms with high leverage is that these firms increased debt issuance subsequent to the court ruling. To rule out this explanation, we estimate equation (1) separately for DSE and debt issuance, both scaled by total assets at the end of the previous year. Untabulated results indicate that DSE issuances by high-leverage Delaware firms decreased after the 1991 ruling. In particular, the coefficient on the interaction of the *Delaware* and *Post1991* indicators is negative and significant (*p*-value of 0.02). By contrast, the coefficient is not different from zero for low-leverage firms. The debt-issuance regressions indicate that debt issuance did not change in the post period for Delaware and non-Delaware firms with high or low leverage. Hence, these results suggest that the decrease in the DSE to debt issuance is attributed to a decrease in DSE and not to an increase in debt issuance.

Overall, the results indicate that the Delaware court ruling in 1991 resulted in lower DSE issuance only in Delaware firms that were close to insolvency. These results imply that directors are less likely to allow transactions that harm debt holders only when they face explicit fiduciary duty to creditors.

4.4 Sensitivity analyses

First, we estimate equation (1) using OLS with firm and year fixed effects, and standard errors that are double clustered based on firm and year. The results are similar to those reported in Table 4, and indicate that Delaware firms with high leverage reduced DSE issuance, whereas all other firms did not change the amount of DSE issued. Results are also similar when we include in the regression the log of total assets, log of sales, return on assets, net profit margins, and book-to-market as additional controls.

Second, we conduct our main tests with high debt-to-equity as a measure of firms' distance to default. We repeat the analyses using Becker and Stromberg's (2012) distance-to-

default measure. They define the distance-to-default as low when the log of the ratio of assets to debt is less than four times the standard deviation of assets, where that standard deviation of assets is calculated following Vassalou and Xing's (2004) procedure. Vassalou and Xing (2004) calculate the standard deviation of assets with an iterative procedure. They use daily data to obtain an estimate of the volatility of equity, which is then used as an initial value for the estimation of standard deviation of assets using the Black–Scholes formula. We obtain the standard deviation of assets from Maria Vassalou's website.[20] We calculate the log of the ratio of total assets to debt for each firm-year observation, and define the distance-to-default as low when this value is less than four times the standard deviation of assets, where the standard deviation of assets is the annual average of monthly standard deviations. Firms with zero debt are defined as high distance-to-default without any calculation. We find the coefficient on *Delaware*Post1991* is negative and significant (p-value < 0.1) in the low distance-to-default sample, and not significantly different from zero in the high distance-to-default sample.

Finally, another potential explanation for the decrease in DSE issuance in the post period is that fewer debt covenants exist. If firms face fewer covenants after 1991, they have fewer covenants to circumvent and less incentive to issue DSE. To ensure that a decrease in the use of debt covenants by Delaware firms does not drive the reduction in DSE issuances after 1991, we examine data available from Capital IQ on the number of debt covenants attached to new bond issuances in the post-1991 period. If a firm has multiple issuances in a given year, we use the contract with the highest number of covenants. We find the average number of covenants has increased by 3.51 from the pre to the post periods, and Delaware firms did not experience a different change in the number of covenants relative to non-Delaware firms.

[20] http://maria-vassalou.com/research/data/

5. Board Independence and DSE Issuances

5.1 Methodology

Data on board independence are available starting in 1996. Therefore, we cannot use the change in DSE issuances around the 1991 Delaware ruling to test the effect of board independence. Instead, we examine the change in DSE issuances before and after 2003, the year when SFAS 150 came into effect. As discussed above, SFAS 150 requires DSE to be reported as debt in accordance with the economic substance of the instrument, thereby eliminating the reporting bias associated with DSE. Hence, if the quality of the board, measured by the extent of independence, is related to the reporting bias that harms creditors' interests, we expect the relation between board independence and DSE exists prior to 2003, and especially so for high-leverage firms from Delaware.

Using data from 1996 through 2002, we estimate the following regression:

$$DSE/Debt_{it} = a + b_1 HiIndepBrd_{it} + b_2 Delaware_{it} + b_3 Delaware_{it} \times HiIndepBrd_{it} + Controls + \varepsilon_{it.} \quad (2)$$

HiIndepBrd is an indicator variable of 1 if the proportion of independent directors, computed as the number of independent directors divided by total number of directors, is greater than the sample median, and 0 otherwise. The control variables are identical to those used in equation (1). All other variables are defined above. Similar to equation (1), we estimate equation (2) for firms with high and low leverage. We test Hypothesis 2 using the coefficient on the interaction variable of the Delaware and HiIndepBrd indicators; a negative coefficient b_3 supports the hypothesis.

5.2 Data and Descriptive Statistics

We use data on board independence from RiskMetrics, which provides data on independent boards starting in 1996. As before, we exclude financial institutions (SIC codes 6000-6499) and firms with equity market value of less than $10 million. The sample includes

5,202 observations between 1996 and 2009, mostly from large firms (S&P 1500 companies). Of the 5,202 observations, 2,977 (2,225) relate to Delaware (non-Delaware) firms.

Table 5 presents the descriptive statistics. In comparison to non-Delaware firms, Delaware firms are more likely to issue DSE (5.1% vs. 3%) and issue a greater proportion of DSE relative to total debt issued (4.8% vs. 2.6%). Given that SFAS 150 eliminated the reporting advantage of DSE, we also report the statistics separately for the pre- and post-SFAS 150 periods. As expected, we observe a significant decrease in DSE issuance post SFAS 150. For example, the average DSE to total debt issuance falls from 6.9% to 2.2% for Delaware firms. Further, the overall difference in DSE issuance between Delaware and non-Delaware firms is attributed primarily to the pre-SFAS 150 period.[21]

Differences in firm characteristics might explain the greater proportion of DSE issuances by Delaware firms. Delaware firms have higher loss carryforward (5.4% vs. 1.9%); however, the effective tax rate is almost identical. We also find that Delaware firms are larger, although the difference in size appears to be economically small. The leverage of Delaware firms is smaller (28% vs. 32%), which could be attributed to the fact that Delaware firms issue more DSE.

The proportion of independent directors in Delaware firms is smaller: 65% vs. 68%. However, following SOX and the ensuing changes in listing requirements in 2004, we find that the proportion of independent directors has increased significantly from 2003 onward. When we examine the mean proportion of independent directors before and after 2003, we observe that the overall difference in independent directors between Delaware and non-Delaware firms is attributed to the pre-2003 period. The mean and median proportions of independent directors are virtually identical for Delaware and non-Delaware firms after 2003.

[21] Comparing DSE-issuance statistics between the sample used to test Hypothesis 1, presented in Table 2, and the current sample, we observe significant differences. For example, the proportion of DSE to total debt issued in the pre-2003 period by Delaware firms is higher in this sample (6.5% vs. 5.2%, respectively). These differences stem from RiskMetric's bias toward large firms. Using only firms that are present in both samples, we find the proportion of DSE issuances for Delaware firms is 5.3% in 1992-1995, and 5.5% in 1996-2003.

Taken together, we observe significant differences in DSE issuance and board independence between Delaware and non-Delaware firms. However, these differences are attributed to the pre-2003 period. We also observe that after 2003, the likelihood and amount of DSE issuance decreased, whereas board independence increased irrespective of incorporation location.

Table 5, Panel B shows the mean of DSE issuance and likelihood of DSE issuance pre and post 2003 for high-/low-leverage firms for Delaware and non-Delaware firms. Consistent with the results in Table 5, Panel A, all firms experienced a significant decrease in DSE issuance after SFAS 150 came into effect. Comparing DSE issuance between Delaware and non-Delaware firms across high- and low-leverage firms, we observe greater DSE issuance in Delaware firms for the two groups. For example, the proportion of high-leverage firms in Delaware issuing DSE is 9.6% compared with 4% for non-Delaware firms prior to 2003.

5.3 Results

Table 6 presents the effect of board independence on DSE issuance before and after 2003. Table 6, Panel A shows the regression results in which the dependent variable is the ratio of DSE issuance to total debt issued (equation (2)) for the pre-2003 period. The regression is estimated separately for high- and low-leverage firms. The coefficients on the control variables are similar to those reported in Table 4. Specifically, DSE issuance is positively associated with loss carryforwards (in the low-leverage regression) and size (in the high-leverage regression), and negatively associated with the effective tax rate (in the high-leverage regression).

Consistent with the univariate results, the positive coefficient on the Delaware indicator suggests the Delaware firms, both with high and low leverage, issue more DSE relative to non-Delaware firms. The coefficient on the high-board-independence indicator is not significant, implying that no difference exists in DSE issuance between high- and low-board-independence firms. In other words, high board-independence firms are as likely to

issue DSE as low board-independence firms. However, the coefficient on the interaction variable of the Delaware and high-board-independence indicators is negative and significant (p-value < 0.05) in the high-leverage regression only. Hence, DSE issuance is negatively related to board independence only in Delaware firms that are close to insolvency. Table 6, Panel B presents the regression results in which the dependent variable takes the value of 1 if the firm issued DSE during the year, and zero otherwise. The results are similar to those in Panel A. Delaware firms are more likely to issue DSE. Board independence is not associated with the likelihood of DSE issuance in non-Delaware firms but is negatively associated with the likelihood of DSE issuance by Delaware firms that are close to insolvency.

Taken together, the regression results indicate board quality does not reduce the likelihood that firms use structured transactions that lower reported debt and mitigate the likelihood of debt-covenant violation. Board quality does, however, play a role in protecting creditors' interest, when directors have an explicit fiduciary duty to creditors.

To gain a further understanding of the impact of board independence on DSE, we re-estimate the regressions using post-SFAS 150 data. Because the new standard eliminated the reporting benefits associated with DSE, and in particular the ability of companies to circumvent covenant violation by issuing DSE, the issuance of such DSE post 2003 does not undermine creditors' interest. Hence, in contrast to our findings above, we expect that board quality should not be negatively associated with DSE issuance even when directors owe fiduciary duties to creditors. We report the results in Table 6, Panels C and D. As expected, we observe that post SFAS 150, board independence is not related to DSE issuance (Panel C) or the likelihood of DSE issuance (Panel D) for Delaware firms and for non-Delaware firms, irrespective of the likelihood of insolvency.

Table 7 shows the difference-in-differences test around 2003 for high- and low-leverage firms. We examine the change in DSE issuances around 2003. Because the "action"

is expected to be in the pre-2003 period, we treat post 2003 as the benchmark period. Using data from 1996 through 2009, we estimate the following regression:

$$DSE/Debt_{it} = a + b_1 HiIndepBrdD_{it} + b_2 Delaware_{it} + b_3 Delaware_{it} \times HiIndepBrdD_{it} + b_4 Pre2003_{it} + b_5 HiIndepBrdD_{it} \times Pre2003_{it} + b_6 Delaware_{it} \times Pre2003_{it} + b_7 Delaware_{it} \times HiIndepBrdD_{it} \times Pre2003_{it} + Controls + \varepsilon_{it}. \quad (3)$$

Pre2003 is a dummy that equals 1 for years 1996–2002 and zero for 2003–2009. The other variables are identical to those used in equation (2). We estimate equation (3) separately for firms with high and low leverage.

We test Hypothesis 2 using the coefficient on $Delaware_{it} \times HiIndepBrd_{it} \times Pre2003_{it}$. A negative coefficient for b_7 would support the hypothesis, because it indicates that the likelihood of DSE issuance in the pre-2003 period was lower for Delaware firms with high board independence. Indeed, the coefficient is negative and significant for high-leverage firms (*p*-value = 0.02). By contrast, the coefficient is not different from zero for the low-leverage firms. Hence, the results of this difference-in-differences analysis provide further support that board independence is associated with better creditor protection only when directors have an explicit duty to creditors.

5.4 Sensitivity analyses

First, we estimate equation (3) using OLS with firm and year fixed effects, and standard errors that are double clustered based on firm and year. The results are similar to those reported in Table 7, and the coefficient on the interaction term $Delaware_{it} \times HiIndepBrd_{it} \times Pre2003_{it}$ is negative and significant for high-leverage firms (*p-value* = 0.02).

Second, we replicate the regressions in Table 6, separately for firms with high and low covenant slack pre and post 2003. If DSE was used to circumvent debt covenant, we should observe a negative relation between board independence and DSE issuances for

Delaware firms that are closer to violation of debt covenant, that is, for firm with low covenant slack. As discussed above, we use debt-to-EBITDA covenant data from DealScan because it yields the highest number of observations. Out of the 5,202 observations used in the main sample, we find debt-to-EBITDA covenant data for 1,858 observations on DealScan. We define covenant slack as the difference between the covenant threshold for that variable and the actual realization of the covenant variable. We median split the sample each sample year based on the covenant slack. The estimation results are presented in Table 8. We observe that Delaware firms with low slack were more likely to issue DSE than non-Delaware firms in the pre 2003 period. However, consistent with Hypothesis 2, we find the coefficient on the interaction term $Delaware_{it} \times HIndepBrd_{it}$ is negative and significant (p-value< 0.01), indicating that Delaware firms with high board independence issued less DSE relative to Delaware firms with low board independence. By contrast, we find no relation between board independence and DSE issuance for high slack firms pre SFAS 150 or post SFAS 150 for either sample (Panel B).

Third, Nini et al. (2012) find that following credit-agreement violations, changes occur in the investment and financing behavior of violating firms. These changes suggest that creditors amend the debt agreements and impose stronger restrictions on firm decision-making, consequently indicating that creditors play an active role in the governance of corporations following the violations. Hence, to ensure such potential changes are not driving our results, we exclude from the sample those firms that violated their debt agreements. Using Nini et al. (2012) data, we exclude companies in the year of the violation and in all subsequent years, reducing the sample by a total of 968 observations.[22] The results are very similar to those presented above. For example, estimating equation (2) as in Panel A of Table

[22] Nini et al. (2012) data available at: http://faculty.chicagobooth.edu/amir.sufi/data.html.

6, we find the coefficient on $Delaware_{it} \times HIndepBrd_{it}$ for high-leverage firms is negative and significant. The results for Table 7 are also similar.[23]

6. Debt Covenant Slack Distribution

In this section, we examine the distribution of covenant slack around zero to test the extent to which Delaware firms manage their reporting to avoid violation of debt covenants after 1991 (Hypothesis 1b). Firms that wish to avoid debt covenant violation can use several means other than DSE issuance. To gauge if firms act to avoid debt covenant violations in general, we use a result-driven test, similar to Dichev and Skinner (2002) and Burgstahler and Dichev (1997). We expect covenant violation avoidance to concentrate on firms that report low positive slack. Specifically, low density in the covenant slack distribution just below zero and high density just above zero relative to expected values suggests firms engage in manipulation to avoid covenant violation.

We test the distribution of the debt-to-EBITDA covenant slack around zero. When a firm has more than one loan, we use the debt covenant with the lowest limit, because the lowest limit provides the effective covenant—violation of this limit puts the firm in technical default, so negative covenant slack values imply covenant violations. As Dichev and Skinner show, covenant violations are relatively frequent on DealScan. One potential explanation for the high frequency of violation is that debt covenants are set more tightly in private lending agreements than in public debt agreements, because of the lower renegotiation costs of these agreements.

Relevant debt covenant data on DealScan start in 1994. We use data until 2003 because a court ruling in 2004 partially reversed the Credit Lyonnais ruling (Becker and

[23] Pennsylvania and Indiana have constituency statutes that allow corporate directors to take into account the interests of non-owners (e.g., workers, customers, creditors, and suppliers) in certain situations, such as hostile takeovers. Hence, to examine whether the inclusion of firms from these states in the non-Delaware sample affect our results, we exclude firms incorporated in Pennsylvania and Indiana. We lose 353 (200) observations in the sample used to test Hypothesis 1 (2). The results (untabulated) are similar to those reported.

Stromberg 2012). Our sample includes 3,722 observations between 1994 and 2003, of which 2,341 are of Delaware firms.[24] To facilitate a larger number of observations for this distribution test, we do not require data on board independence. As in the tests above, we split the sample on debt-to-equity to distinguish between high and low insolvency risk. In each year, sample firms are sorted into terciles based on their debt-to-equity in the previous year, and firms in the highest (bottom two) tercile are classified as high-leverage firms (low-leverage firms).

Figure 1 presents the histograms. Following Dichev and Skinner, we choose the histogram bin width as $BW = 2(IQR)n^{-1/3}$, where *BW* signifies bin width, *IQR* is the sample interquartile range, and *n* is the number of observations. Figure 1.1 shows that the distribution around 0 for high-leverage Delaware firms is smooth, indicating no evidence of unusual activity to avoid violation of the debt-to-EBITDA covenant limit. Figure 1.2 presents the distribution for non-Delaware firms with high leverage, and show that a spike occurs in the number of observations just above zero. To test whether the spike in frequency above zero is greater than the expected benchmark, we use Dichev and Skinner's methodology to test for deviations from smoothness. Under the null hypothesis of no abnormal behavior, the expected number of observations in any given bin is equal to the average of the number of observations in the two immediately adjacent bins. The test statistic is the difference between the actual number of observations in any given bin and the expected number of observations, divided by the estimated standard error of the difference. Under the null hypothesis of smoothness, these standardized differences are distributed approximately normal with a mean of 0 and a standard deviation of 1. Attempts to avoid covenant violation will result in a shift

[24] Dichev and Skinner (2002) use observations up to and including the first year of covenant violation. That is, they exclude firm-years subsequent to covenant violation. The reason is that reporting manipulations are more pronounced before initial violations, when managers' incentives to avoid violations are likely to be strongest. However, because we partition the sample to high/low leverage and to Delaware/non-Delaware firms, we do not exclude observations subsequent to covenant violation in order to maintain a decent sample size. We report below in section 6.1 results when we exclude observations subsequent to violation.

of observations from bin −1 to bin 0, so we expect to observe standardized differences that are unusually negative for bin −1 and unusually positive for bin 0. We find that for high-leverage non-Delaware firms, the value of bin 0 is positive and statistically significant (p-value < 0.01) and the value of bin −1 is negative and significant (p-value < 0.05). Hence, the statistical tests indicate non-Delaware firms with high leverage are likely to manipulate financial reporting to avoid covenant violation. Taken together, the two graphs indicate that whereas non-Delaware firms with high leverage engage in manipulations to avoid covenant violation, high-leverage Delaware firms, in which directors owe fiduciary duties to creditors, do not use manipulations to avoid covenant violation.

Figures 1.3 and 1.4 show the distribution for low-leverage firms. The distribution is fairly smooth for both Delaware and non-Delaware firms, indicating low-leverage firms do not engage in manipulation to avoid covenant violation.

Collectively, consistent with the idea that high-leverage firms are likely to incur greater costs as a result of covenant violation, and therefore have a greater incentive to avoid covenant violations, we observe that non-Delaware firms likely take actions to avoid covenant violation. However, we observe no such evidence for Delaware firms. Hence, these findings provide additional support to our conjecture that the imposed fiduciary duties to creditors in Delaware firms that are close to insolvency affected the reporting behavior of those firms. In particular, because of the fiduciary duties to protect creditors' interests, Delaware firms are less likely to take actions to avoid debt covenant violation.

6.1 Excluding Observations Subsequent to Covenant Violation

Dichev and Skinner (2002) show that covenant violations are relatively frequent on DealScan, and this is also true in our sample. As Figure 1 shows, the frequency of covenant violation is high, especially among high-leverage firms. Using a sensitivity analysis similar to that used in Dichev and Skinner, we exclude firm-years subsequent to covenant violation, and

use observations up to and including the first covenant violation. This restriction resulted in a sample of 485 observations of high-leverage Delaware firms and 301 observations of high-leverage non-Delaware firms. We expect to find that non-Delaware firms avoid covenant violation more frequently than Delaware firms. To test this hypothesis, we compare the covenant slack distribution around 0 of Delaware and non-Delaware firms.[25] If non-Delaware firms manage their reporting more than Delaware firms, we would expect them to have fewer observations than Delaware firms just below the covenant violation threshold (bin -1), and more observations than Delaware firms just above the threshold (bin 0). As before, we set the histogram bin width to $BW = 2(IQR)n^{-1/3}$. We then calculate the percent of observations or distribution density in each bin, by dividing the number of observations in the bin by total number of observations.

We find that non-Delaware firms have 2.4% (4.6%) fewer (more) observations than Delaware firms in bin -1 (0). These results suggest non-Delaware firms are more likely to manipulate the financial reports to avoid covenant violation. To estimate the statistical significance of the results, we use bootstrap sampling with replacement (Chernick 1999). We find that in bin -1, the distribution density of non-Delaware firms is significantly lower than that of non-Delaware firms (p-value = 0.056), and in bin 1, the distribution density of non-Delaware firms is significantly higher than that of non-Delaware firms (p-value = 0.021). These results indicate non-Delaware firms manipulate financial reporting to avoid covenant violation more than Delaware firms.

7. Conclusion

According to US accounting principles, financial reports should provide information to help shareholders and creditors assess the amount, timing, and uncertainty of prospective

[25] Jacob and Jorgensen (2007), for example, similarly compare earnings distributions of two samples to test for earnings management.

cash receipts from dividends or interest and the proceeds from the sale, redemption, or maturity of loans. Although financial reports should provide information that is useful for shareholders and creditors, US corporate governance usually protects equity investors, not debt holders. In this study, we examine whether this slant in corporate governance biases firms' reporting against creditors, and in particular, whether it is associated with a higher likelihood that firms take actions to avoid covenant violation.

To examine the research question, we use the exogenous shock to directors' fiduciary duties following the 1991 Credit Lyonnais v. Pathe Communications ruling. Before the ruling, directors of Delaware firms owed fiduciary duty only to shareholders. The ruling required directors in Delaware firms to protect creditors' interests when firms approach insolvency. We examine the relation between fiduciary duties and the likelihood firms will take action to avoid covenant violation using two test approaches. We test the effect of fiduciary duty on a specific action to circumvent debt covenants, namely, the issuance of debt structured as equity, and we examine the general propensity of managers with fiduciary duty to creditors to avoid covenant violation using the distribution of covenant slack. In both test settings, we find the likelihood that firms will take action to avoid covenant violation is significantly lower when directors owe fiduciary duties to creditors. We also show that board quality lowers the probability that firms will take action to avoid covenants only when directors have a legal fiduciary duty to creditors. Collectively, our results indicate that fiduciary duties to creditors lower the likelihood that firms will bias financial reports and circumvent debt covenants that protect creditors' interests.

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Figure 1

Covenant Slack

Figure 1.1

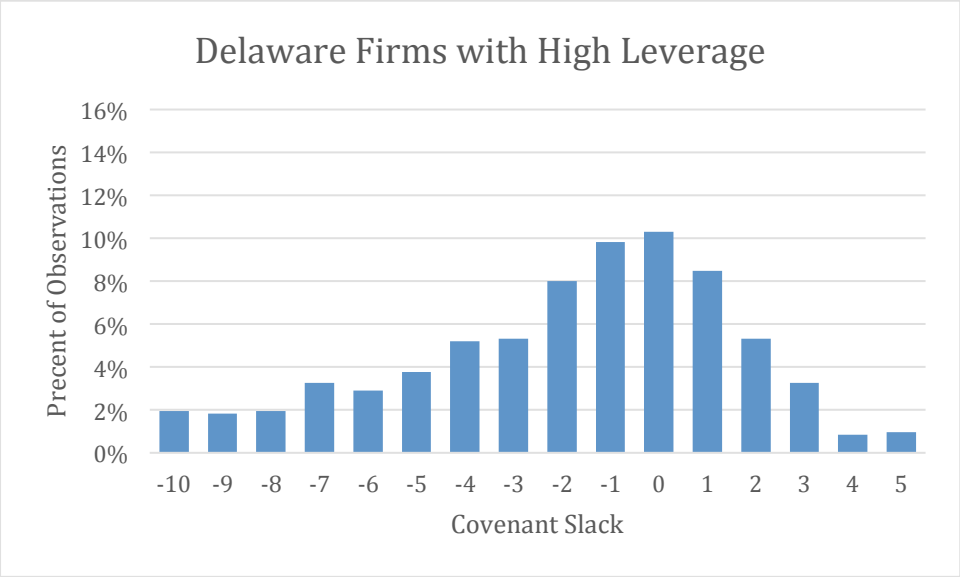


Figure 1.2

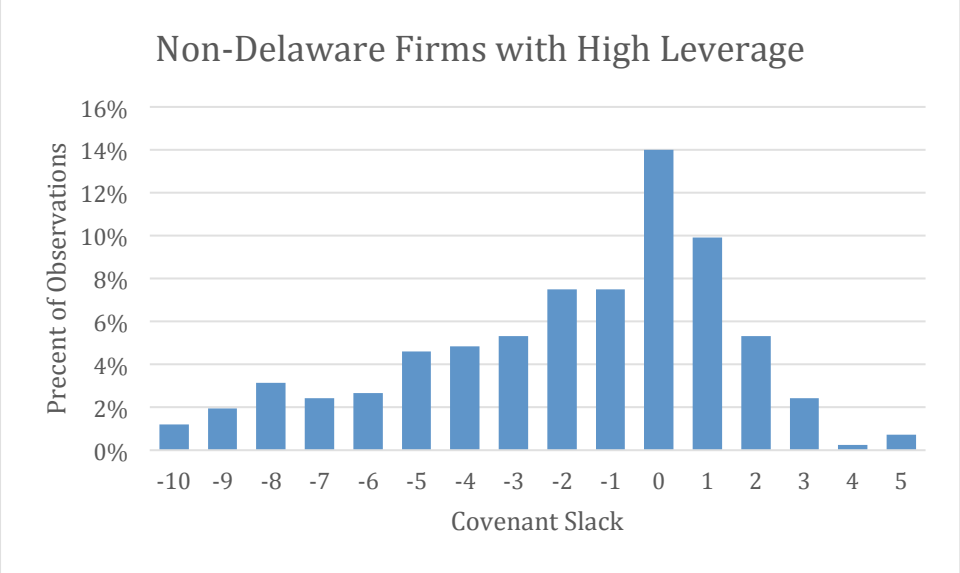


Figure 1.3

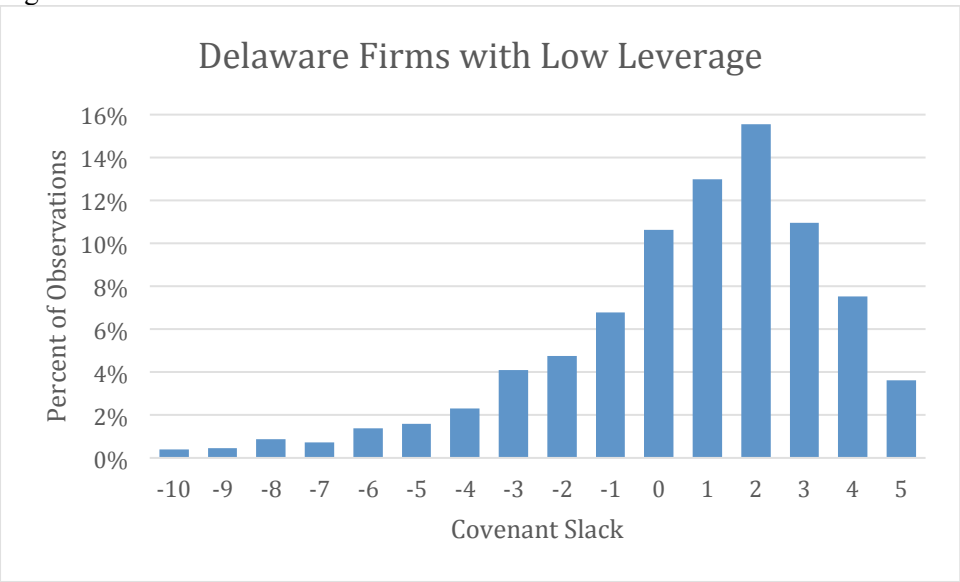
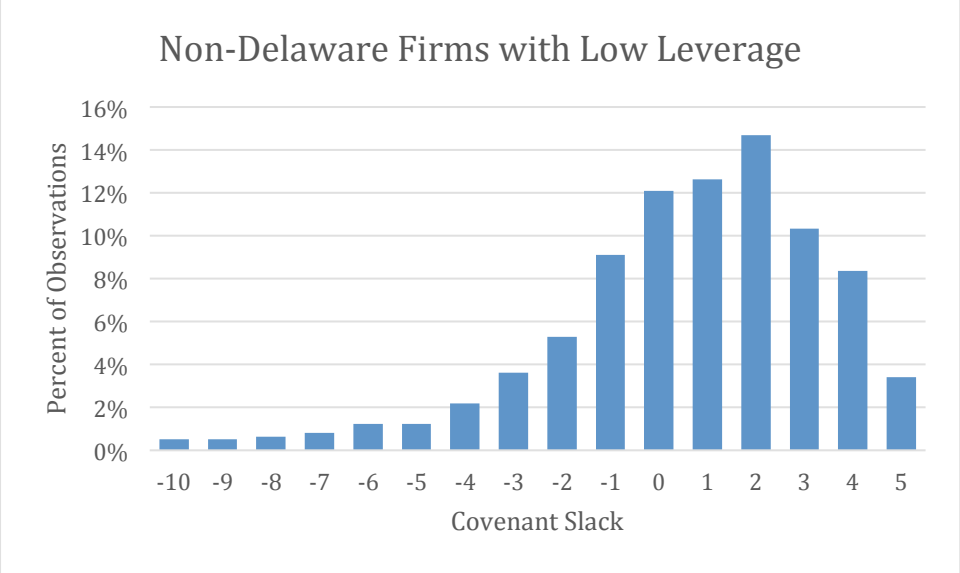


Figure 1.4



The figures present the distribution of the debt-to-EBITDA covenant slack around zero. The slack is computed as the difference between the maximum limit set by the debt covenant and the actual ratio of total debt to EBITDA for the year. The sample includes 3,722 observations between 1994 and 2003, of which 2,341 are of Delaware firms, and covenant slack distribution is presented separately for firms with high and low leverage.

Table 1

The relation between DSE issuances and debt covenant slack

The table shows that firms closer to covenant violation are more likely to issue DSEs. The dependent variable is DSE/Debt, the dollar amount of DSE issued by the firm divided by the dollar amount of debt and DSE issued by the firm. Covenant slack is the difference between the maximum threshold for the debt-to-EBITDA ratio, above which the firm is in violation of its debt covenants, and the actual debt-to-EBITDA the firm reported; covenant slack is sorted into quintiles each year, and the Covenant Slack variable takes the values 0 to 4 accordingly. Tax Rate is the effective tax rate. Loss Carryforward is a dummy variable that equals 1 for firms with non-zero loss carryforward and earnings before interest and taxes that are either negative or less than one fifth of the loss carryforward. Size is the natural log of the market value of equity. The sample includes 5,678 observations between 1996 and 2009, and regression is estimated using Tobit for the 1996-2002 and 2003-2009 sub-periods. *, **, and *** indicate two-sided significance at the 0.10, 0.05, and 0.01 levels.

$$DSE/Debt_{it} = b_1 Covenant\ Slack_{it} + Controls + \varepsilon_{it}$$

	Before 2003		After 2003	
	Estimates	p-value	Estimates	p-value
Intercept	-3.833	(<.01)***	-3.769	(<.01)***
Covenant Slack$_{t-1}$	-0.232	(<.01)***	0.052	(0.68)
Leverage$_{t-1}$	0.786	(<.01)***	0.963	(<.01)***
Tax Rate$_{t-1}$	-1.885	(<.01)***	-2.108	(<.01)***
Loss Carryforward$_{t-1}$	1.130	(<.01)***	1.048	(0.07)*
Size$_{t-1}$	0.127	(0.02)**	-0.440	(<.01)***
Observations	3,071		2,607	
R-Square	7.46%		4.06%	

Table 2

Descriptive Statistics for H1

The sample includes 9,567 debt and debt securities structured as equity (DSE) issuances for Delaware and non-Delaware firms between 1988 and 1995. Financial institutions (SIC codes 6000-6499) and firms with equity market value of less than $10 million are excluded. DSE issuance is a dummy variable that equals 1 for firms that issued DSE and 0 for firms that issued only debt during the year. DSE/Debt is the dollar amount of DSE issued by the firm divided by the dollar amount of debt and DSE issued by the firm. Leverage is the natural log of 1 plus long-term debt divided by the market value of equity. Tax Rate is the effective tax rate. Loss Carryforward is a dummy variable that equals 1 for firms with non-zero loss carryforward and earnings before interest and taxes that are either negative or less than one fifth of the loss carryforward. Size is the natural log of the market value of equity. *, **, and *** indicate two-sided significance at the 0.10, 0.05, and 0.01 levels.

	(A) Delaware Firms (N = 4,658)		(B) Non-Delaware Firms (N = 4,909)		(A)− (B)
Variable	Mean	Median	Mean	Median	T-test
DSE issuance$_t$	0.0608	0	0.0517	0	0.0090*
DSE/Debt$_t$	0.0524	0	0.0451	0	0.0073*
Leverage$_{t-1}$	0.3554	0.1894	0.3553	0.2269	0.0000
Tax Rate$_{t-1}$	0.2718	0.3295	0.2809	0.3351	−0.0091**
Loss Carryforward$_{t-1}$	0.1237	0	0.0900	0	0.0336***
Size$_{t-1}$	12.06	11.78	12.00	11.74	0.0548

Table 3

Decrease in DSE issuances in Delaware after 1991 (H1)

This table shows the change in the issuances of debt securities structured as equity (DSE) for Delaware and non-Delaware firms after 1991. In each year, sample firms are sorted into terciles based on their debt-to-equity in the previous year, and firms in the highest (bottom two) tercile are classified as High-Leverage Firms (Low-Leverage Firms). Panel A presents the DSE/Debt of the firms, which is the dollar amount of DSE issued by the firm divided by the dollar amount of debt and DSE issued by the firm during the year. Panel B presents the DSE issuance, a dummy variable that equals 1 for firms that issued DSE and 0 for firms that issued only debt. The sample includes 9,567 observations between 1988 and 1995. *, **, and *** denote two-sided significance at the 0.10, 0.05, and 0.01 levels.

Panel A: DSE/Debt of Delaware and non-Delaware firms

	Delaware Firms			Non-Delaware Firms		
	High-Leverage Firms (N=1,473)	Low-Leverage Firms (N=3,185)	All Firms (N=4,658)	High-Leverage Firms (N=1,716)	Low-Leverage Firms (N=3,193)	All Firms (N=4,909)
a. 1988-1991	0.0773	0.0437	0.0544	0.0641	0.0288	0.0410
b. 1992-1995	0.0512	0.0508	0.0509	0.0785	0.0324	0.0487
b − a	−0.0260	0.0071	−0.0035	0.0144	0.0036	0.0077
(t-statistics)	(−2.12)**	(0.95)	(−0.55)	(1.18)	(0.61)	(1.34)

Panel B: Proportion of firms issuing DSE

	Delaware Firms			Non-Delaware Firms		
	High-Leverage Firms (N=1,473)	Low-Leverage Firms (N=3,185)	All Firms (N=4,658)	High-Leverage Firms (N=1,716)	Low-Leverage Firms (N=3,193)	All Firms (N=4,909)
a. 1988-1991	0.0912	0.0504	0.0634	0.0731	0.0338	0.0473
b. 1992-1995	0.0601	0.0582	0.0588	0.0855	0.0391	0.0555
b − a	−0.0311	0.0078	−0.0046	0.0124	0.0054	0.0082
(t-statistics)	(−2.26)**	(0.94)	(−0.65)	(0.96)	(0.81)	(1.29)

Table 4

Testing the decrease in DSE Issuances in Delaware after 1991 (Hypothesis 1)

This table tests the decrease in issuances of debt securities structured as equity (DSE) by Delaware firms after 1991. The dependent variable in Panel A is DSE/Debt, the dollar amount of DSE issued by the firm divided by the dollar amount of debt and DSE issued by the firm. The dependent variable in Panel B is an indicator that equals 1 for firms that issued DSE and 0 for firms that issued only debt. Delaware is an indicator variable that equals 1 for firms incorporated in Delaware. Post1991 is an indicator variable that equals 1 for 1992–1995. All other variables are defined in the notes to previous tables. The regressions are estimated separately for high- and low-leverage firms—firms in the highest tercile (bottom two terciles) of leverage during the year are classified as High-Leverage Firms (Low-Leverage Firms). The sample includes 9,567 observations between 1988 and 1995. *,**, and *** denote two-sided significance at the 0.10, 0.05, and 0.01 levels.

$$Dependent_{it} = a + b_1 Post1991_{it} + b_2 Delaware_{it} + b_3 Delaware_{it} \times Post1991_{it} + Controls + \varepsilon_{it} \quad (1)$$

Panel A: Tobit regression with DSE/Debt as dependent variable

	Hypothesis[a]	High-Leverage Firms		Low-Leverage Firms	
		Estimates	p-value	Estimates	p-value
Intercept		−9.244	(<.01)***	−6.182	(<.01)***
$Delaware_t$		0.474	(0.13)	0.720	(0.05)**
$Post1991_t$		0.294	(0.29)	0.121	(0.74)
$Delaware_t$*$Post1991_t$	(1)	−1.067	(0.01)***	0.109	(0.82)
$Leverage_{t-1}$		0.253	(0.19)	−1.089	(0.31)
$Tax\ Rate_{t-1}$		−0.760	(0.12)	−2.816	(<.01)***
$Loss\ Carryforward_{t-1}$		1.020	(0.01)***	1.123	(<.01)***
$Size_{t-1}$		0.382	(<.01)***	−0.071	(0.30)
Observations		3,189		6,378	
Pseudo R-Square (LRI)		2.47%		2.80%	

(a) Hypothesis 1 predicts fewer Delaware firms with high leverage will issue DSE after 1991. The coefficient on Delaware*Post1991 is expected to be negative for high-leverage firms.

Panel B: Logistic regression with DSE issuances as dependent variable

	Hypothesis[b]	High-Leverage Firms		Low-Leverage Firms	
		Estimates	p-value	Estimates	p-value
Intercept		−5.667	(<.01)***	−2.398	(<.01)***
$Delaware_t$		0.270	(0.18)	0.365	(0.06)*
$Post1991_t$		0.103	(0.57)	0.066	(0.73)
$Delaware_t$*$Post1991_t$	(1)	−0.626	(0.02)**	0.044	(0.86)
$Leverage_{t-1}$		0.149	(0.24)	−0.454	(0.42)
Tax $Rate_{t-1}$		−0.576	(0.09)*	−1.583	(<.01)***
Loss $Carryforward_{t-1}$		0.607	(0.01)***	0.456	(0.01)***
$Size_{t-1}$		0.259	(<.01)***	−0.046	(0.21)
Observations		3,189		6,378	
Pseudo R-Square (LRI)		3.15%		3.14%	

(b) Hypothesis 1 predicts fewer Delaware firms with high leverage will issue DSE after 1991. The coefficient on Delaware*Post1991 is expected to be negative for high-leverage firms.

Table 5

Descriptive Statistics for H2

The sample includes 5,202 debt and debt securities structured as equity (DSE) issuances for Delaware and non-Delaware firms between 1996 and 2009. Financial institutions (SIC codes 6000-6499) and firms with equity market value of less than $10 million are excluded. DSE issuance is a dummy variable that equals 1 for firms that issued DSE and 0 for firms that issued only debt. DSE/Debt is the dollar amount of DSE issued by the firm divided by the dollar amount of debt and DSE issued by the firm. IndepBrd is the proportion of board members that are independent. *,**, and *** denote two-sided significance at the 0.10, 0.05, and 0.01 levels.

Panel A: Comparing Delaware and non-Delaware firms

	(A) Delaware Firms (N = 2,977)		(B) Non-Delaware Firms (N = 2,225)		(A) − (B)
Variable	Mean	Median	Mean	Median	T-test
DSE issuance$_t$ 1996–2009	0.0507	0	0.0301	0	0.0206***
1996–2002	0.0687	0	0.0411	0	0.0276***
2003–2009	0.0219	0	0.0127	0	0.0091
DSE/Debt$_t$ 1996–2009	0.0475	0	0.0262	0	0.0213***
1996–2002	0.0649	0	0.0347	0	0.0302***
2003–2009	0.0196	0	0.0127	0	0.0069
IndepBrd$_t$ 1996–2009	0.6540	0.6923	0.6758	0.7143	−0.0218***
1996–2002	0.6024	0.6250	0.6346	0.6667	−0.0321***
2003–2009	0.7367	0.7500	0.7408	0.7500	−0.0041
Leverage$_{t-1}$	0.2836	0.1661	0.3233	0.2497	−0.0397***
Tax Rate$_{t-1}$	0.3327	0.3584	0.3330	0.3596	−0.0003
Loss Carryforward$_{t-1}$	0.0537	0	0.0189	0	0.0349***
Size$_{t-1}$	14.55	14.45	14.40	14.28	0.1454***

Panel B: Comparing high- and low-leverage firms

	Delaware Firms		Non-Delaware Firms	
	High-Leverage Firms (N = 841)	Low-Leverage Firms (N = 2,136)	High-Leverage Firms (N = 892)	Low-Leverage Firms (N = 1,333)
DSE issuance$_t$				
a. 1996–2002	0.0958	0.0574	0.0403	0.0416
b. 2003–2009	0.0369	0.0165	0.0162	0.0102
b − a	−0.0589***	−0.0408***	−0.0241**	− 0.0315***
DSE/Debt$_t$				
a. 1996–2002	0.0891	0.0548	0.0353	0.0343
b. 2003–2009	0.0339	0.0146	0.0161	0.0102
b − a	− 0.0552***	−0.0402***	−0.0192*	−0.0242***

Table 6

Testing the effect of board independence on DSE issuances (H2)

This table tests the relation between board independence and issuances of debt securities structured as equity (DSE). Delaware is an indicator variable that equals 1 for firms incorporated in Delaware. HiIndepBrd is an indicator variable that equals 1 for firms with a proportion of independent directors that is greater than the sample median. The sample includes 5,202 observations between 1996 and 2009. Panels A and B present the estimation results for 1996–2002, and Panels C and D, the results for 2003–2009. *,**, and *** denote two-sided significance at the 0.10, 0.05, and 0.01 levels.

$$Dependent_{it} = a + b_1 HiIndepBrd_{it} + b_2 Delaware_{it} + b_3 Delaware_{it} \times HiIndepBrd_{it} + Controls + \varepsilon_{it} \quad (2)$$

Panel A: Tobit regression with DSE/Debt as dependent variable 1996-2002

	Hypothesis[a]	High-Leverage Firms		Low-Leverage Firms	
		Coefficient	p-value	Coefficient	p-value
Intercept		−9.356	(<.01)***	−5.093	(0.01)**
$Delaware_t$		2.047	(<.01)***	0.903	(0.09)*
$HiIndepBrd_t$		0.488	(0.46)	−0.036	(0.95)
$Delaware_t$*$HiIndepBrd_t$	(2)	−1.968	(0.02)**	−0.891	(0.27)
$Leverage_{t-1}$		0.847	(0.05)**	−4.604	(0.02)**
$Tax\ Rate_{t-1}$		−2.001	(0.04)**	−0.629	(0.56)
$Loss\ Carryforward_{t-1}$		1.165	(0.13)	2.209	(<.01)**
$Size_{t-1}$		0.266	(0.07)*	−0.085	(0.46)
Observations		1,064		2,131	
Pseudo R-Square (LRI)		6.22%		2.78%	

(a) Hypothesis 2 predicts board independence will affect DSE issuances only before 2003 in Delaware firms with high leverage. Coefficient on Delaware*HiIndepBrd should be negative and significant for high-leverage firms.

Panel B: Logistic regression with DSE issuances as dependent variable 1996-2002

	Hypothesis[b]	High-Leverage Firms		Low-Leverage Firms	
		Coefficient	p-value	Coefficient	p-value
Intercept		−5.916	(<.01)***	−2.261	(0.01)**
$Delaware_t$		1.395	(<.01)***	0.439	(0.12)
$HiIndepBrd_t$		0.362	(0.45)	−0.020	(0.96)
Delaware*$HiIndepBrd_t$	(2)	−1.280	(0.03)**	−0.483	(0.26)
$Leverage_{t-1}$		0.539	(0.04)**	−2.088	(0.04)**
$Tax\ Rate_{t-1}$		−1.596	(0.02)**	−0.374	(0.54)
$Loss\ Carryforward_{t-1}$		0.585	(0.20)	1.130	(0.00)***
$Size_{t-1}$		0.191	(0.04)**	−0.036	(0.55)
Observations		1,064		2,131	
Pseudo R-Square (LRI)		7.74%		3.24%	

(b) Hypothesis 2 predicts board independence will affect DSE issuances only before 2003 in Delaware firms with high leverage. Coefficient on Delaware*HiIndepBrd should be negative and significant for high-leverage firms.

Panel C: Tobit regression with DSE/Debt as dependent variable from 2003-2009

	High-Leverage Firms		Low-Leverage Firms	
	Coefficient	p-value	Coefficient	p-value
Intercept	−2.309	(0.68)	4.024	(0.51)
$Delaware_t$	1.172	(0.41)	0.807	(0.56)
$HiIndepBrd_t$	−0.311	(0.85)	−1.361	(0.55)
$Delaware_t$*$HiIndepBrd_t$	2.345	(0.28)	−0.964	(0.72)
$Leverage_{t-1}$	−3.200	(0.16)	−5.393	(0.37)
Tax $Rate_{t-1}$	−9.177	(0.04)**	−13.738	(0.02)**
Loss $Carryforward_{t-1}$	−1.290	(0.60)	1.709	(0.37)
$Size_{t-1}$	−0.231	(0.52)	−0.817	(0.11)
Observations	669		1,338	
Pseudo R-Square (LRI)	9.28%		13.33%	

(a) Hypothesis 2 predicts board independence will affect DSE issuances only before 2003 in Delaware firms with high leverage. Coefficient on Delaware*HiIndepBrd should not be significant for either high- or low-leverage firms.

Panel D: Logistic regression with DSE issuances as dependent variable from 2003-2009

	High-Leverage Firms		Low-Leverage Firms	
	Coefficient	p-value	Coefficient	p-value
Intercept	−0.214	(0.94)	2.071	(0.40)
$Delaware_t$	0.573	(0.44)	0.500	(0.41)
$HiIndepBrd_t$	−0.073	(0.93)	−0.763	(0.50)
$Delaware_t$*$HiIndepBrd_t$	1.083	(0.32)	−0.184	(0.89)
$Leverage_{t-1}$	−1.831	(0.11)	−3.333	(0.23)
Tax $Rate_{t-1}$	−4.165	(0.01)***	−6.091	(<.01)***
Loss $Carryforward_{t-1}$	−0.584	(0.61)	0.465	(0.52)
$Size_{t-1}$	−0.141	(0.46)	−0.310	(0.08)
Observations	669		1,338	
Pseudo R-Square (LRI)	9.89%		15.40%	

(b) Hypothesis 2 predicts board independence will affect DSE issuances only before 2003 in Delaware firms with high leverage. Coefficient on Delaware*HiIndepBrd should not be significant for either high- or low-leverage firms.

Table 7

Testing the effect of board independence on DSE issuances (H2)

This table presents a difference-in-differences test of the relation between board independence and issuances of debt securities structured as equity (DSE) around 2003. Delaware is an indicator variable that equals 1 for firms incorporated in Delaware. Pre2003 is an indicator variable that equals 1 for years 1996–2002 and zero for 2003–2009. HiIndepBrd is an indicator variable that equals 1 for firms with a proportion of independent directors that is greater than the sample median. The sample includes 5,202 observations between 1996 and 2009, and a Tobit regression is used to estimate the regression. *,**,*** denote two-sided significance at the 0.10, 0.05, and 0.01 levels.

$$DSE/Debt_{it} = a + b_1 HiIndepBrd_{it} + b_2 Delaware_{it} + b_3 Delaware_{it} \times HiIndepBrd_{it} + b_4 Pre2003_{it} + b_5 HiIndepBrd_{it} \times Pre2003_{it} + b_6 Delaware_{it} \times Pre2003_{it} + b_7 Delaware_{it} \times HiIndepBrd_{it} \times Pre2003_{it} + Controls + \varepsilon_{it} \quad (3)$$

	Hypothesis[a]	High-Leverage Firms		Low-Leverage Firms	
		Coefficient	p-value	Coefficient	p-value
Intercept		−9.086	(<.01)***	−5.876	(<.01)***
$Delaware_t$		0.430	(0.67)	0.584	(0.56)
$Pre2003_t$		1.103	(0.23)	1.952	(0.05)**
$Delaware_t$*$Pre2003_t$		1.826	(0.13)	0.396	(0.73)
$HiIndepBrd_t$		−0.534	(0.64)	−1.306	(0.43)
$Delaware_t$*$HiIndepBrd_t$		1.159	(0.20)	1.284	(0.87)
$HiIndepBrd_t$*$Pre2003_t$		1.928	(0.39)	−0.334	(0.48)
$Delaware_t$*$HiIndepBrd_t$*$Pre2003_t$	(2)	−4.138	(0.02)**	−0.623	(0.77)
$Leverage_{t-1}$		0.491	(0.25)	−4.885	(0.01)***
$Tax\ Rate_{t-1}$		−2.983	(<.01)***	−2.122	(0.05)**
$Loss\ Carryforward_{t-1}$		0.951	(0.19)	2.031	(<.01)***
$Size_{t-1}$		0.171	(0.19)	−0.158	(0.16)
Observations		1,733		3,469	
Pseudo R-Square (LRI)		7.61%		6.21%	

(a) Hypothesis 2 predicts board independence will affect DSE issuances before 2003 only in Delaware firms with high leverage. Coefficient on Delaware*HiIndepBrd*Pre2003 should be negative and significant for high-leverage firms.

Table 8

Testing the effect of board independence on DSE issuances by debt covenant slack (H2)

The table tests the relation between board independence and issuances of debt securities structured as equity (DSE) by firms with high and low debt covenant slack. Covenant slack is calculated using the debt-to-EBITDA covenant values, as the covenant threshold from DealScan minus the actual realization of the covenant variable. Firms are sorted into two equal groups based on covenant slack, and regressions are estimated separately for firms with high and low covenant slack. Board independence is expected to lower DSE issuances only before 2003 in Delaware firms with low covenant slack. The sample includes 1,858 observations between 1996 and 2009. Panel A presents the estimation results for 1996–2002, and Panel B the results for 2003–2009. *, **, and *** denote two-sided significance at the 0.10, 0.05, and 0.01 levels.

$$DSE/Debt_{it} = a + b_1 HiIndepBrd_{it} + b_2 Delaware_{it} + b_3 Delaware_{it} \times HiIndepBrd_{it} + Controls + \varepsilon_{it} \quad (2)$$

Panel A: Tobit regression with DSE/Debt as dependent variable before 2003

	Hypothesis[a]	Firms with low covenant slack		Firms with high covenant slack	
		Coefficient	p-value	Coefficient	p-value
Intercept		−7.611	(0.01)**	−17.459	(0.04)**
$Delaware_t$		4.180	(<.01)***	1.329	(0.60)
$HiIndepBrd_t$		1.151	(0.08)*	1.952	(0.18)
$Delaware_t$*$HiIndepBrd_t$	(2)	−6.232	(<.01)***	−4.892	(0.27)
$Leverage_{t-1}$		0.908	(0.04)**	5.865	(0.02)**
Tax $Rate_{t-1}$		−3.653	(<.01)***	1.311	(0.51)
Loss $CarryForward_{t-1}$		−1.143	(0.20)	6.393	(0.02)**
$Size_{t-1}$		0.264	(0.15)	0.498	(0.28)
Observations		463		460	
Pseudo R-Square (LRI)		14.29%		13.04%	

(a) Hypothesis 2 predicts board independence will affect DSE issuances only before 2003 in Delaware firms with low covenant slack. Coefficient on Delaware*HiIndepBrd should be negative and significant for firms with low covenant slack.

Panel B: Tobit regression with DSE/Debt as dependent variable after 2003

	Firms with low covenant slack		Firms with high covenant slack	
	Coefficient	p-value	Coefficient	p-value
Intercept	2.871	(0.66)	−15.927	(0.27)
$Delaware_t$	−2.706	(0.63)	0.939	(0.91)
$HiIndepBrd_t$	−0.760	(0.64)	1.969	(0.45)
$Delaware_t$*$HiIndepBrd_t$	7.587	(0.33)	−2.816	(0.81)
$Leverage_{t-1}$	0.007	(0.99)	−3.559	(0.57)
Tax $Rate_{t-1}$	−8.554	(0.06)*	−14.407	(0.16)
Loss $CarryForward_{t-1}$	−0.600	(0.77)	10.852	(0.12)
$Size_{t-1}$	−0.689	(0.18)	0.535	(0.51)
Observations	470		465	
Pseudo R-Square (LRI)	11.58%		13.42%	