Abstract. We use an important legal event as a natural experiment to examine the effect of management fiduciary duties on equity-debt conflicts. A 1991 Delaware bankruptcy ruling changed the nature of corporate directors’ fiduciary duties in that state and limited managers’ incentives to take actions favoring equity over debt for firms in the vicinity of financial distress. We show that this ruling increased the likelihood of equity issues, increased investment, and reduced firm risk, consistent with a decrease in debt-equity conflicts of interest. The changes are isolated to firms relatively closer to default. The ruling was also followed by an increase in average leverage and a reduction in interest costs. Finally, we estimate the welfare implications of this change and find that firm values increased when the rules were introduced. We conclude that managerial fiduciary duties affect equity-bond holder conflicts in a way that is economically important, has impact on ex ante capital structure choices, and affect welfare.

JEL: G32, G33, L2
Managerial decisions influence the distribution of value between different parties. This can lead to conflicting interests among financial claimants, such as holders of equity and debt (Fama and Miller 1972, Jensen and Meckling 1976, Myers 1977).\(^1\) Equity holders may prefer low investment, may want to limit new equity finance, and may like high risks.\(^2\) Such costs are potentially important in light of the large apparent tax advantages of debt in conjunction with modest leverage levels (e.g. Graham 2000).\(^3\)

Unfortunately, agency costs, reflecting the different decisions that debt- and equity-holders will undertake when in control of corporate decisions, are hard to identify empirically. The importance, and even existence, of these agency costs is not well established. For example, insufficient or excessively risky investment can only be defined with reference to the socially optimal level, which is hard to estimate. Despite the challenge involved in measuring agency costs, they have a prominent role in capital structure theory. Indirect methods, such as studying firms in financial distress, are much complicated by the correlation of financial and economic distress (Asquith, Gertner, Scharfstein 1994 and Andrade and Kaplan 1998). So far, the strongest case for the existence of these agency costs is probably indirect, coming from the fact that debt contracts include a multitude of covenants aiming to curb opportunistic behavior of management (Smith and Warner, 1979).

We present a novel approach studying debt-equity conflicts and the associated agency costs, employing a 1991 legal event as a natural experiment. Our natural experiment revolves around the fiduciary duties of corporate officers. Broadly speaking, these duties require that officers take actions that are in the interest of owners. Historically, the position of U.S. courts has been that such duties are owed to the firm as a whole and to its owners, but not to other firm stakeholders, such as creditors.\(^4\) Creditors are assumed to be able to protect themselves by contractual and other means (e.g. covenants). This situation changes once a firm becomes insolvent. At this point, fiduciary duties are owed to creditors, since for insolvent firms creditors become the residual claimants. As long as the firm is solvent, however, the traditional view was that no such rights were held by creditors. This changed with the Delaware court’s ruling in the 1991 Credit Lyonnais v. Pathe Communications bankruptcy case\(^5\). The case ruling

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\(^1\) Although beyond the scope of this paper, the allocation of value and cash flow between lenders of different seniority, security status or maturity (e.g. Kroszner and Strahan, 2001) and between insiders and insiders (e.g. Jensen, 1986) may also be affected by managerial actions.

\(^2\) See Myers (2003) for list of possible agency problems between equity and debt (which can generate costs of financial distress). Several are related to the option-like features of equity (see Black and Scholes, 1973).

\(^3\) There are other possible costs of debt, including direct bankruptcy costs and other financial distress costs such as liquidity constraints or fire-sales of assets. However, these are typically identified by researchers (see e.g. Weiss (1990) and Andrade and Kaplan (1998)) as too low to counteract the tax advantage of debt. Thus trade-off theory seems to require indirect costs of debt, such as those potentially caused by agency costs between equity and debt. See e.g. Almeida and Philippon (2007), Elkhami et al (2009), and Korteweg (2009) for recent studies reaching different conclusions about whether costs of financial distress are large enough to explain capital structure in publicly traded firms.

\(^4\) However, a number of U.S. states have constituency statutes which allow corporate directors to take into account the interests of non-owners, e.g. workers, customers, creditors, and suppliers. Except for two states (Indiana and Pennsylvania), these laws do not require directors to consider non-owner interests.

argued that when a firm is not insolvent, but in the “zone of insolvency”, duties may already be owed to creditors. There was extensive press coverage at the ruling, and considerable debate and analysis about the implications, in the following months. The case was widely perceived to have created a new obligation for directors of Delaware-incorporated firms. For example, in the following March, Forbes Magazine reported that, following “a recent decision by William Allen “, “…when a company is in serious trouble, the director’s responsibility shifts somewhat in the direction of the creditors” (Forbes, 1992).

Exactly what constituted the zone of insolvency was not perfectly clear. Before these issues could be settled definitively by further court rulings, Delaware courts had backed off somewhat from the Credit Lyonnais 1991 duties. Especially the 2004 Production Resources Group v NCT and 2007 N. Am. Cath. Ed. Programming Found., Inc. v. Gheewalla cases ended up limiting the ability of creditors to sue directors for breach of fiduciary duty under Delaware corporate law.

The Credit Lyonnais v. Pathe Communications legal episode provides an interesting opportunity to assess the extent of creditor-equity holder conflict and the impact of such conflict on equilibrium capital structure. For a period of time, starting in January 1992, directors of Delaware corporations, but not of firms incorporated elsewhere, had stronger duties to creditors. This presumably limited the extent to which directors and managers were willing to take actions favoring equity at the expense of debt, as duties shifted.

Of course, fiduciary duties are not the only, and probably not the most important, motivators for corporate decisions making. Managers are subject to financial incentives (see e.g. Murphy 1999), face termination risk (Kaplan 1994), and have career concerns (Fama 1980). The business judgment rule limits the importance of the fiduciary duties. 6 On the other hand, if fiduciary duties matter, they may matter most for firms facing financial distress, where financial incentives are likely fairly weak. To what extent these duties affect managerial decision-making is an empirical question. Our empirical methodology tests the joint hypotheses that duties drive some managerial decisions and that Credit Lyonnais changed corporate officers’ perception of their duties.

Using a difference-in-difference methodology, we examine both behavioral changes (e.g. investment) and leverage outcomes following Credit Lyonnais. The difference-in-difference methodology contrasts public firms incorporated in Delaware and to those incorporated elsewhere, and before and after 1991. We use firm fixed effects to control for any heterogeneity or pre-existing differences between firms incorporated in Delaware and those incorporated elsewhere. Since the case only created new duties for firms in the zone of insolvency, any changes in corporate behavior which were driven by Credit Lyonnais should be particularly visible for firms in financial distress, but might be absent altogether for firms that are far from financial distress. For our baseline results, we focus on firms that are more financially

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6 See Johnson et al 2000 for a discussion of the business judgment rule. The rule gives managers the benefit of a doubt when courts assess their decision-making ex post, assuming that managers acted in the corporate interest.
distressed, defined using a measure of distance-to-distress (cf. Merton 1974 and Vassalou and Xing 2004). Our tests examine some of the main debt-equity conflicts that have been proposed in the theoretical literature. Existing equity holders of distressed firms may wish to reduce investment and be reluctant to provide equity financing for investment (see Myers 1977). This agency problem is often called debt overhang. In firms with a non-trivial probability of default on debt obligations, shareholders can gain by increasing risk, as suggested by Jensen and Meckling (1976), which is often called risk shifting. The gain comes at the expense of creditors. Managers of highly levered firms can borrow more and pay out cash to shareholders. Also, equityholders may wish for managers to play for time, for example by inflating profits, in order to delay bankruptcy (Asquith, Gertner, Scharfstein, 1994).

First, when a firm is highly leveraged, and debt is risky, equity-holders have a disincentive to raise new capital to invest in safe projects, even if these projects have a positive net present value. The reason is that the value of the investment would largely go to creditors by making debt less risky and expected debt recovery higher, while only having a minor effect on equity value. This conflict was first emphasized by Myers (1977) and is commonly known as the debt overhang problem. Second, equity-holders have an incentive to increase the riskiness of the existing assets, even in cases when this reduces the net present value of the firm. This is because the benefits of higher risk primarily go to equity-holders thanks to their limited liability, while the costs are primarily born by creditors due to their limited upside payoff. This conflict is commonly known as the risk-shifting problem, and is originally credited to Jensen and Meckling (1976). A third implication of these theories is that the inability of equity-holders to pre-commit not to under-invest or shift risk should make debt more costly (and less desirable) ex ante, since creditors will protect themselves through higher interest and restrictive covenants.

We find evidence consistent with of all three of these predictions.

First, Delaware firms are more likely to issue equity in the wake of Credit Lyonnais. This increase is apparent in unconditional data as illustrated in Figure 1, which shows how the frequency of positive net equity issuance was the same across Delaware and non-Delaware firms until 1991, that the rate of issuance was higher after 1991 for both groups, and that the increase was larger in Delaware firms. The change for Delaware firms is driven entirely by firms with above median leverage, and is absent in low leverage firms (regression results are reported for firms close to distress). Payout to owners (e.g. dividends) is in some sense the opposite of equity issues, and payout favors equity over debt. However, there is no reduction in dividends or repurchases after Credit Lyonnais. Moreover, investment

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7 We have also used leverage ratios and Altman’s Z score (a measure of default risk) as alternative ways of defining our sample, with similar results.
8 See e.g. Warga and Welch (1993).
9 Other papers with findings consistent with debt overhang and inability of financially distressed firms to compete effectively in product markets are Chevalier (1995) and Zingales (1998). Also, similar conflicts can arise between senior and junior creditors; see e.g. Strömberg (2000).
10 It is certainly conceivable that debt covenants are more effective at limiting dividends in distressed firms than at encouraging equity issues. That would leave more scope for fiduciary duties to matter for equity issuance, consistent with the observed patterns.
increased after Credit Lyonnais.\textsuperscript{11} This is true for capital expenditures as well as for R&D. The investment increase is economically significant (on the order of half a percent of assets for the average firm). Together with the evidence on equity issues, this is consistent with the existence of debt overhang problem in highly leveraged firms.

Second, we test the existence of the risk-shifting problem by examining risk and volatility.\textsuperscript{12} We find that after Credit Lyonnais, the standard deviation of Return On Assets (ROA) falls (again, only for high leverage firms), the monthly standard deviation of equity returns falls, and the implied volatility of asset value falls. These effects are fairly modest in magnitude, however. For example, annual asset volatility falls by about 0.6% of assets. The findings on risk are indirect, in the sense that we provide no evidence on board decision-making or firm policies that may have caused the increase in risk (although we do rule out a mechanical link to the level of investment).

Third, we examine bankruptcy duration, based on the idea that creditors prefer bankruptcies to be short, and that bankruptcy duration can therefore be used as a proxy for indirect bankruptcy costs (see Franks and Torous 1989, Ayotte and Skeel 2004, and Bris, Welch and Zhu 2009.). We find that both Delaware and non-Delaware bankruptcies became shorter after Credit Lyonnais, and that the fall was larger and more significant for Delaware bankruptcies (the difference-in-difference estimate is 4.7 months, or 19% of the pre-Credit Lyonnais average), but that the difference is insignificantly different from zero.\textsuperscript{13} This result is illustrated in Figure 2.

Fourth, if Credit Lyonnais reduced agency costs of debt, equilibrium leverage should increase and the cost of debt fall. As predicted, we find that the net debt of Delaware firms increased by approximately 0.91% of assets after 1991 (relative to the change for non-Delaware firms), whereas the cost of debt fell by 23 basis points (the average value is 10.3%).

The welfare implications of these findings are not obvious. It is possible that creditor-friendly director duties, such as the ones in place after 1991 in Delaware, reduce agency costs of financial distress. This would improve welfare and increase firm value. In this case, both equity and debt values should increase upon the announcement of the new ruling. On the other hand, the fiduciary duties might be a pure reallocation from equity to debt, generating no net reduction in the costs of financial distress. In this case, the price of debt could still increase, but the price of equity could go down, leaving the aggregate firm value unaffected or even decreasing. In this case, there are no positive aggregate welfare effects. One way to distinguish between these theories is to examine the change in equity values around the time of Credit Lyonnais (under the assumption that debt values do not decrease, which seems plausible).

\textsuperscript{11} We sometimes suppress the whole diff-in-diff definition when discussing the results, but all the results reported here are based on difference-in-difference estimates, i.e. comparing the change for Delaware incorporated firms to that of firms incorporated in other states (and controlling for firm characteristics). Also, all results include firm FE and clustering by the interaction of year and Delaware incorporation.

\textsuperscript{12} This is also called asset substitution.

\textsuperscript{13} The drop in bankruptcy duration outside Delaware is very imprecisely estimated, affecting the precision with which the double difference can be estimated.
To test these competing theories, we examine the response of equity prices around the announcement of the ruling. Since Credit Lyonnais made actions favoring equity over debt less feasible, the ruling might be bad news for some firms in financial distress. For firms that were not distressed, the reduction in future games at the expense of debt holders should be positive (as long as equity holders pay for such costs ex-ante by raising less debt or paying higher interest rates). We find that Delaware firms increased in equity value by 60.6 basis points (relative to non-Delaware) firms on Dec, 30, 1991, the day that the case ruling was announced (t-stat 3.1). We interpret this return differential as a measure of the announcement effect for Credit Lyonnais. The value-weighted return differential on the day of the ruling was 41.4 bp (t-stat 5.9). Dec, 30 was the third highest daily Delaware to non-Delaware difference in 1991. The five day announcement return was 206 bp (equal weighted, t-stat 4.9) and 55 basis points (value weighted, t-stat 3.4). Residual returns from the CAPM or the Fama-French three factor model (both estimated in the first 11 months of 1991) suggest slightly smaller effects: 173 and 141 basis points equal weighted ( t-stats 4.2 and 3.4), 28 and 38 basis points value-weighted ( t-stats 1.8 and 2.5). These returns are also significantly higher than the Delaware-non Delaware return differentials at other year-ends (and are thus unlikely to be driven by other end-of-the-year effects, such as tax considerations).

The valuation improvements for Delaware firms following the Credit Lyonnais ruling suggest that equity-debt conflicts do indeed come with significant costs, and that ex-ante, those costs are borne by equity (Fama and Jensen 1983). An important implication is that reducing conflict creates value. In addition, this is consistent with the view of the capital structure literature that there must be large intangible costs of financial distress to motivate observed capital structures (see e.g. Myers 1993).

This paper is related to several strands of research. First, it is generally related to the literature on stakeholder corporations and the optimal allocation of corporate control rights (see Zingales, 2000) and the discussion of whether fiduciary should be extended to other stakeholders (see e.g. Tirole, 2001). Our evidence suggests that extending fiduciary duties to include creditors for firms close to insolvency may be welfare-increasing. Second, our paper is related to literature on competition between states in corporate law (see, e.g., Bebchuk, Cohen and Ferrell 2002). The Credit Lyonnais duties are a prime example of how important the Delaware courts are, and how the differences between Delaware corporate law and other jurisdictions can be of significance. Third, the paper is related to the trade-off theory of capital structure and other work on the agency costs of debt (with many of the key papers are cited above). Among papers that find evidence pointing away from equity-debt conflicts are Parrino and Weisbach (1999) and Rauh (2009) (in both cases, the topic is risk shifting). Among papers with more supportive findings are Esty (1997) (for financial firms), Shleifer and Summers (1988) (arguing that equity appropriates value from other stakeholders), and Asquith, Gertner and Scharfstein (1994) (providing indirect evidence of conflicts among financially distressed junk bond issuers). Finally, our paper also relates to the legal literature that has analyzed the emergence of Delaware as a preferred bankruptcy venue in the 1990s (see e.g.. LoPucki and Doherty (2006) and Rasmussen and Thomas

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14 CL ruling reported in WSJ Dec, 31
15 The value weighted return differential may be smaller than the equal weighted return because it puts less weight on firms with low market values. Such firms are perhaps more likely to face bankruptcy and financial distress, thus likely more affected by Credit Lyonnais.
I. Fiduciary duties and the Credit Lyonnais v. Pathe Communications case

Corporate directors owe fiduciary duties to the corporation and its stockholders. Ordinarily, they do not owe fiduciary duties to creditors (or any other stakeholders). Once a firm is insolvent, this changes, and the corporation’s creditors can sue directors for breach of fiduciary duties. Prior to Credit Lyonnais, the generally held understanding of Delaware law was that officers did not owe fiduciary duty to creditors prior to insolvency. The case changed this understanding, and created fiduciary duties sometime prior to bankruptcy and insolvency.\(^\text{16}\)

The Credit Lyonnais case followed the leveraged buyout of MGM Corporation in November 1990, financed by several banks and Time Warner (the seller). The newly private company had trouble meeting financial obligations almost immediately, and trade creditors forced it into bankruptcy court within five months. As part of the exit from bankruptcy, MGM secured a credit line from the U.S. subsidiary of Credit Lyonnais, a French bank. Pathe Communications, MGM's controlling stockholder, and Credit Lyonnais also entered into a corporate governance agreement. Subsequently, Credit Lyonnais used its contractual right under that agreement to replace MGM directors, including the CEO. Pathe’s owners felt the new CEO favored creditor’s interests, and sued, claiming among other things that the new CEO breached a duty of good faith owed to them.

The case (which in fact consisted of several lawsuits considered together) was ruled by Chancellor William Allen, a respected Delaware bankruptcy judge. In the November 1991 ruling, the court held that the CEO had been “appropriately mindful of the potential differing interests between the corporation and its 98% shareholder. At least where a corporation is operating in the vicinity of insolvency, a board of directors is not merely the agent of the residue risk bearers, but owes its duty to the corporate enterprise”. In footnote 55 of the ruling, the fiduciary duties of firms in financial distress were discussed: “in the vicinity of insolvency, circumstances may arise when the right (both the efficient and

\(^{16}\) What was generally believed by practicing corporate lawyers and corporate directors is more important than whether or not the perception was correct (i.e. was an accurate prediction of hypothetical future case outcomes). There is uncertainty about many legal rules under a common-law legal system (such as the in the US). See Gennaioli and Shleifer (2007) for a discussion of this.
the fair) course to follow for the corporation may diverge from the choice that the stockholders... would make”.

The Credit Lyonnais case, and especially footnote 55, quickly became the focus of attention in the business press and among lawyers. Reuters reported a long newswire on December 30, titled “Court upholds Parretti Ouster from MGM”, focusing on how the decision favored creditors over the owners. Dow Jones Newswire and PR Newswire also covered the ruling on December 30. The Wall Street Journal covered the story extensively the following day, emphasizing that the ruling confirmed the bank’s extensive governance role (but did not explicitly mentioning the fiduciary duties of the board or footnote 55). Apart from the Wall Street Journal, there were at least twenty-three newspaper stories about the case the following day (including in The Baltimore Sun, Chicago Sun-Times, Houston Chronicle, Financial Post, The Globe and Mail, The Las Vegas Review-Journal, The San Francisco Chronicle, the New York Times, Financial Times, St Louis Post-Dispatch, and the Washington Post).

Very quickly, news stories and analysis by legal scholars emphasized that the change in governance took the form of new fiduciary duties for directors of Delaware corporations. The case was perceived by many to have outlined a fiduciary duty of corporate officer to creditors, for firms in what has usually been called the “zone of insolvency”. On February, 1, 1992, The Financial Times’ Business Law Brief discussed the change of fiduciary duties and reported that “boards of directors of Delaware companies who might be ‘in the vicinity of insolvency’ are pondering the implications of the Chancellor's pronouncement” (Financial Times Business Law Brief 1992). In March of 1992, Forbes Magazine explained the implications in plain English: “when a company is in serious trouble, the director’s responsibility shifts some what in the direction of the creditors”. The magazine also emphasized both the legal attention (the case had “corporate lawyers buzzing”) and the broad implications for directors: “All this is of intense interest at a time when many junk-bond-financed companies are frequently on the edge of insolvency. The job of their directors may be complicated by Chancellor Allen’s ruling” (Forbes 1992).

The case is extensively cited by other cases, legal scholars, and practicing lawyers. It is discussed in textbooks and law firm memos and taught at law schools. Referring to the 1993 meeting of the American Bar Association, a participant commented: “Credit Lyonnais generated considerable comment and controversy over the additional obligations imposed on -- and thus the potential liability of -- boards of directors”. Lawsuits citing Credit Lyonnais appeared in the next several years following ruling. The fiduciary duties implied by Credit Lyonnais were invoked as matter of fact in educational materials for practicing bankruptcy lawyers: “...directors of corporations merely in the ‘vicinity’ of insolvency owe duties to creditors” (Hughes and McGee 1995).

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17 This followed extensive coverage of the case during the Fall (e.g., eight Reuters news stories about the case in December alone).

18 The Credit Lyonnais case is cited 169 times according to Lexis-Nexis, whereas the Westlaw database reports 612 citations (both based on search in July 2009). Among these are 56 legal cases, many court documents, and a large number of legal articles.


Delaware courts handled many bankruptcies and other corporate legal matters during the sample period we consider, but no other case relating to bankruptcy seems to have been as important or have received anything like the wide attention devoted to Credit Lyonnais. Approximately fifteen Delaware cases were mentioned in the Wall Street Journal during 1991-1992. While the Wall Street Journal only provides a crude proxy for legal importance, it likely does reflect public attention fairly well. The cases mentioned in the WSJ related to product liability, class action suits, financial reporting, merger and acquisitions and anti-trust. None of the cases discuss the ruling in any detail, and most are only brief notes. Only one of the cases concerned fiduciary duties, in relation to a merger (some shareholders thought the board made the wrong decision about a tender offer). Unlike Credit Lyonnais, none of these cases appear to have set important precedents.

More recently, Delaware case law has limited the extent of the Credit Lyonnais fiduciary duties. Delaware courts have reemphasized that creditors can protect their interests “through contractual agreements ... and other sources of creditor rights.” (Production Resources Group v. NCT Group, 2004)

The Delaware Supreme court, in N. Am. Cath. Ed. Programming Found. v. Gheewalla, 2007, held that, regardless of the corporation’s solvency, directors must continue to act in the best interest of the corporation and its owners. Thus, creditors have no direct claim for breach of fiduciary duty against directors of a Delaware corporation: “the creditors of a Delaware corporation that is either insolvent or in the zone of insolvency have no right, as a matter of law, to assert direct claims for breach of fiduciary duty against the corporation’s directors.”

Still, for several years following the Credit Lyonnais ruling, the general view of market participants was most likely that management owed fiduciary duties to creditors when the firm was in the “zone of insolvency.”

The Credit Lyonnais ruling set a precedent for firms incorporated in Delaware, but had no prejudicial power for other firms. Because about half of U.S. public corporations are incorporated there, the case provides a useful division of public firms into treated and untreated groups. This division relies on a firm distinction between Delaware and non-Delaware corporate law. However, other jurisdictions may incorporate ideas and learn from Delaware (see Linos 2006). Our empirical strategy relies on the comparison of firms incorporated in Delaware relative to those outside Delaware, so such “leakage” might be problematic. We believe this problem is limited for three reasons. First, fiduciary duties can be the subject of legislation, and thereby outside of the scope of precedents. We have implemented our tests excluding states without constituency statutes, i.e. where fiduciary duties are legislated (but not excluding Delaware), with similar results. Second, we restrict our tests to five years before and after the Credit Lyonnais case. Thus, even if there is leakage of legal rules from Delaware, but it is not very fast, it should not affect our results. Finally, if there were some leakage even during the short window we

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21 One law firm still recommended its corporate clients that “directors should take special care in distress situations to build a record of staying informed and taking actions that best serve the entire corporate enterprise rather than any single group interested in the corporation”. See Simpson Thacher (2008).

22 An Ohio court described the rejection of Credit Lyonnais duties due to that state’s constituency statutes in the following manner: “...because Ohio Revised Code Section 1701.59 provides that directors are permitted but not required to evaluate the interests of creditors, that there is no duty for directors to consider creditors when making decisions”, Official Committee of Unsecured Creditors of PHD, Inc. v. Bank One, NA, 2003.
study, that will tend to obscure the impact of Credit Lyonnais. Thus, if we find significant changes after the case, as we do, this concern suggests that we may underestimate the magnitudes slightly.

II. Data

We collect firm level information on accounting data and state of incorporation from Compustat, covering the 1986-1997 period. We use five years before (1987-1991) and five years after the event (1992-1997), and include data from 1986 to be able to calculate changes in variables. We drop utilities and financial firms. We use Compustat’s incorporation code to identify the state of incorporation. Of the 6,608 firms in 1991, we identify 44.4% as incorporated in Delaware. The Delaware firms tend to be slightly larger (median assets $82.0 million versus $71.8 million for non-Delaware firms), consistent with Bebchuk and Cohen (2003). The Compustat incorporation data is backfilled (i.e., at any point in time, Compustat reports the current state of incorporation). This reduces concerns about endogeneity, but may introduce measurement error. For a subsample of 485 firms we verified the state of incorporation during our sample, and there were 37 differences, i.e. less than 8% of firms appeared misclassified. Moodie (2004) reports 327 reincorporations to Delaware and 34 from Delaware by New York Stock Exchange (NYSE) listed firms during the 1960-2002 period. The RiskMetrics database (covering S&P1500 and a few other large firms every two or three years from 1990) reports 286 incorporation changes over 1990-2006, i.e. an annual frequency of around 1.0%. The only period with a significant difference in the rate of reincorporations is 1999 and 2000, when the rate is 1.5% per year. Of the 103 firms in this sample that reincorporated between 1990 and 1998, 68 switched to or from Delaware. Excluding these 68 firms (or a subset of them that switched in the two years after the ruling) from our regressions has no noticeable effect on any of our estimates.

Firm control variables are defined from Compustat and CRSP variables as follows. ROA is Ebitda divided by total assets (At). ROS is earnings before interest, tax, depreciation and amortization (Ebitda) divided by sales. The log of market value is the natural logarithm of the number of shares outstanding times the end of year share price. Leverage is assets minus common equity (book value) and minus tax liabilities, divided by assets. Market leverage is assets minus common equity (book value) and minus tax liabilities, divided by assets minus common equity (book value) and minus tax liabilities plus market value of equity. We define Q as assets minus common equity (book value) plus the market value of equity minus tax liabilities, divided by assets minus 0.1 times common equity (book value) and plus 0.1 times the market value of equity. Finally, two year stock return is the two-year log change in stock price. We eliminate observations where ROS is outside [-1,1], where ROA is outside [-0.5,0.5], where Depreciation over Assets is outside [0,0.3], and where Leverage is outside [0,1].

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23 This adjustment limits Q to a maximum value of ten.
24 The goal of this is to avoid data errors. These limits correspond to a round number right above the 99th percentile, and its reciprocal, except for leverage and depreciation over assets, where the lower bound we use is zero for conceptual reasons. If we winsorize instead of eliminating observations throughout, results are very similar. This is also true for dependent variables. If we cut-off exactly at the first and 99th percentiles, we also get similar results.
Dependent variables using Compustat data are investment (Capx divided by At), Capex and R&D (Capx plus Xrd, divided by At), and Capex and R&D over Sales (Capx plus Xrd, divided by Sale). For regressions with these variables, we exclude observations where the dependent variable is outside [0,0.5], [0,1.3] and [0,3], respectively. Net debt is defined as Dlc plus Dltt minus Ch, divided by assets. In regressions with this dependent variable, observations are excluded where net debt is outside the [-0.7,1.3] range. We also use an indicator variable taking the value one when a firm’s investment is above the median investment ratio in its industry-year. Equity issues are defined as the change in book equity minus changes in retained earnings (and adjusted for deferred taxes as in e.g. Baker, Stein and Wurgler 2003), normalized by lagged assets. Values outside the [-0.16,0.9] range are dropped, following the winsorizing in Baker, Stein and Wurgler (low asset firms sometimes produce very large ratios, so some winsorizing is necessary, but using wider or narrower cutoffs has little effect on the variable). We also form an indicator variable for observations with positive values for equity issues.

Quarterly Compustat data is used to calculate the standard deviation of ROA (EBITDA over lagged assets) changes. The variable is annualized. Equity volatility is calculated as the annualized monthly standard deviation of stock return, taken from CRSP, for the preceding calendar year. CRSP price data is also used to calculate implied asset volatility using the Merton (1974) model following the procedure of Vassalou and Xing (2004). This is calculated annually using daily price data. For volatility tests, we exclude observations where the dependent variable is very large (the volatility measure is outside [0,1]).

For baseline results, we only include firms within a certain distance to default according to Merton (1974). Intuitively, the distance to default measure does not only take in to account the amount of leverage a firm has, measured as debt relative to market value of assets, but also its asset volatility. We define as low distance to default any firm-year for which the log of assets over debt is less than 3.7 times the standard deviation of assets, estimated following Merton (1974). The cut-off of 3.7 corresponds to the median distance to default in our sample, so that the sample is cut in approximately half. We also use alternative sample definitions, based on book leverage and Altman’s Z score (Altman 1984), in both cases with cutoffs defined so as to cut the sample approximately in half.

We used daily factor returns from Kenneth French’s web site, together with CRSP daily returns, to estimate CAPM and Fama French-3-factor models for January to November 1991. We only used returns calculated from consecutive transaction prices (not bid-ask spreads). The loadings (beta estimates) were used to calculate one and five day residuals for the period following the announcement of the ruling in the Credit Lyonnais case (Dec, 30, 1991). Average stock returns, as well as average CAPM and FF residuals, equally- and value-weighted, were calculated for firms incorporated in Delaware and firms incorporated in other states, respectively.

We calculate bankruptcy durations as the time from filing to exit, using Lynn LoPucki’s database on large corporate bankruptcies (assets of at least 100 million prior to filing, in 1980 dollars).

Summary statistics are in provided in Table 1.

III. Results
In this section, we evaluate the effect of the Credit Lyonnais court ruling on firms in Delaware. We employ a difference-in-difference method (see e.g. Bertrand, Duflo, and Mullainathan, 2004), using the fact that firms in Delaware were subject to a different legal environment after November 1991, but that firms outside Delaware were not. We examine a range of corporate outcomes, and use regressions with firm and year combinations defining the unit of observations. This permits controlling extensively for firm level variables. We use return on assets, return on sales, the log of assets (book value), the log of sales, the log of equity market value, depreciation over assets, book leverage (defined as assets minus equity minus deferred taxes, over assets), and market leverage (defined as assets minus book equity minus deferred taxes, over assets minus book equity plus market equity), two year lagged stock return, and Tobin’s q (capped at 10). We also include firm fixed effects in order to control for unmeasured heterogeneity between firms, thus reducing the potential for omitted variables problems. Because of the firm fixed effects, firms that only appear before or after the 1991 cut-off do not help identify the Credit Lyonnais coefficient in our regressions (although they do help identify other coefficients). Therefore, compositional changes in the Delaware and non-Delaware firm populations will be econometrically unimportant for our identification.

We restrict our sample to firms that are most plausibly affected by the Credit Lyonnais ruling, i.e. those that are relatively close to financial distress. For our baseline definition of this group, we rely on distance-to-default, and restrict our regressions to those firms that have a value below 3.7. We report results using alternative definitions of distress, based on book leverage and z-scores, in section G below. We also report results for non-distressed firms (or more exactly, firms above the median for these three definitions of distress).

**A. Investment**

We first consider whether agency conflicts result in lower investment caused due to debt overhang. We use three measures of investment: CAPEX over assets, CAPEX and R&D over assets, and CAPEX and R&D over sales. The regressions are presented in Table 2.

In the first column, we regress a measure of investment on the Credit Lyonnais dummy and controls on the subsample of firms with a low distance to default. The overall fit of the regression is good, mostly reflecting the high explanatory power of firm fixed effects. The coefficient estimate for the Credit Lyonnais indicator (Delaware firms after 1991) is positive and statistically significant at the 1% level. In other words, after 1991, investment is higher for firms incorporated in Delaware, compared to firms incorporated elsewhere, controlling for firm averages and ten performance and accounting variables. The magnitude is fairly large, amounting to an increase in CAPEX by 71 basis points of assets. The mean of this variable is 6.8 percent of assets per year, so the effect is equal to over ten percent of mean investment. This coefficient is much lower for the subsample of firms with high distance to default (i.e. with low leverage), only 17 basis points, and statistically insignificant (see Table 8). Hence, consistent with a debt overhang explanation, the positive effect of the Credit Lyonnais ruling is only found among

25 For example, Bebchuk and Cohen 2003 report that Delaware firms are larger and younger than other firms.

26 This is cutoff is essentially arbitrary, reflecting the fact that being in the vicinity of financial distress or the perception of being there is not easily defined. However, the exact value of the cutoff does not affect our results.
the most levered firms. In column two, we instead use a dummy variable indicating whether a firm’s investment is above the median for firms in that industry in that year as the dependent variable. This avoids any concerns about outliers. The coefficient estimate is 0.0338, implying that Credit Lyonnais reduced the probability of investing below industry-year median by 3.38%. In column three, we include R&D expenditures in the dependent variable. This may be a more appropriate measure given the underlying theory (i.e. Myers 1977 concerns all forms of investment including in intangibles), but reduces the sample size due to the imperfect reporting of R&D expenditure in COMPUSTAT. The implied magnitude corresponds to about five percent of mean investment. In column four, we normalize by sales instead of assets, with similar results (the estimated effect is 1.26% of sales, corresponding to seven percent of mean investment).

Overall, then, the results for firm investment suggest that debt overhang matters for distressed firms.

**B. Payout and equity issues**

When a firm is distressed, it may be in the interest of equity-holders to increase payout and limit new equity finance, even if this forces the firm to forego valuable investment opportunities. To examine if Credit Lyonnais reduced such behavior, we examine dividends, repurchases and equity issues. First we examine firm payouts. We control for firm variables, firm and time fixed effects, a Delaware indicator, and the interaction between the Delaware dummy and a dummy for observations after 1991 (“Delaware * After 1991”), which identifies the marginal effect of Credit Lyonnais. We cluster errors by the interaction of year and the Delaware dummy throughout. We have also used state of incorporation*year clustering or simply state of incorporation. These alternatives give very similar t-stats, occasionally somewhat higher. Clustering by firm gives much smaller standard errors. Corporate payout is often subject to limitation by covenants, which may limit the effect of any changes in managerial preferences (i.e., if distressed firms already were unable to pay dividends).

Regressions are reported in Table 3. There is no economically significant effect for dividends (column one) or repurchases (column two). This implies that, apart from what’s explained by firm controls and overall time series patterns capture by fixed effects, Delaware firms did not experience a change in payout policy compared to non-Delaware firms in the wake of Credit Lyonnais.

Covenants may explain why we see no effect of Credit Lyonnais on payout: payout was circumscribed for firms in and near distress even before Credit Lyonnais. Perhaps fiduciary duties had no further bite, so Credit Lyonnais did not matter for dividends even if it did change duties in a meaningful way. Covenants, being contract clauses, are likely to be more effective at limiting behavior (e.g. payout) than

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27 We have tried including separate dummies for each individual state of incorporation. However, this variation does not affect our findings of interest. Therefore we present results distinguishing only between Delaware and other states. Furthermore, we have included industry times year interaction dummies, but they do not change results noticeably, so we exclude them.

28 Covenants are much less likely to matter for the investment results reported above. Covenants that limit investment in the upward direction are common, but we find an increase in investment. Covenants that force investment up (i.e. to avoid debt overhang) are probably difficult to write and enforce.

29 We have found the same absence of an effect using alternative normalizations of dividends and repurchases, including net income, cash flow and market value of equity.
at encouraging it (e.g. investment). They may therefore specifically suggest why we observe no effect on payout, but large significant effects in other areas, as we will show below. Common covenants that limit payout include those that limit the ratio of debt to equity or tangible net worth (since dividends and repurchases reduce the denominators).

In contrast with the payout results, we find a positive coefficient on the Credit Lyonnais dummy for equity issues. The relative increase in equity issuances of Delaware firms relatively close to default is 98 basis points of assets per year, about a tenth of the sample average. The coefficient is significant at the 5% level using errors clustered at the year*Delaware level (i.e. twenty clusters). Next we regress an indicator for equity issues above zero on the Credit Lyonnais indicator and controls. This variable discards the information contained in the amount of equity issues, but is less affected by outliers. The estimated effect is positive and significant, suggesting that Credit Lyonnais increased the likelihood of firms issuing equity by 4.09% for the subsample with relatively low distance to default. With this result in hand, we can ask if there is a difference between firms closer vs. farther to distress, since Credit Lyonnais should have affected the incentives of the first group more.\(^{30}\) When looking at the subsample of firms with relatively high distance to default (see Table 8), in contrast, we find a much lower (although still statistically significant) effect of the likelihood of issuing equity, with a coefficient of 2.91%.\(^{32}\)

The results for payout and equity issues provide some evidence consistent with debt-equity conflicts. In particular, the higher equity issues after 1991 in Delaware are in line with the predictions of the debt overhang hypothesis.

**C. Risk and volatility**

The theory of risk-shifting predicts that equity holders in firms with risky debt can benefit at the expense of debt-holders by increasing firm risk. This is contrary to the interest of debt-holders, and is therefore the sort of action that could be affected by the change in fiduciary duties induced by Credit Lyonnais. We test if there is a reduction in risk of Delaware firms after 1991, and if any such pattern is driven by relatively highly levered firms. This is a challenging test to implement, because there are few good measures of operational risk. We use three proxies, each potentially subject to criticism. First, we use the trailing standard deviation of eight quarterly changes in ROA. This requires a fair amount of accounting data, yet provides a noisy estimate of risk that is likely to be slow to reflect changes in corporate policy. The advantage of this measure is that we avoid using financial prices, which may be affected by other factors than operating policy. The second measure is monthly equity price volatility over the last year. Because it relies on one year of history instead of two, it may be better at picking up time series changes. However, equity volatility may be affected by corporate leverage as well as various market factors. To mitigate the first of these problems, we also use implied asset volatility from the Merton (1973) model as our third measure of risk.

\(^{30}\) One common implication from theories of equity-debt conflict is that the conflict of interest between equity and debt is expected to be most severe when debt ratios are high.

\(^{32}\) We have also used splits based on book leverage as well as Altman’s (1968) z score. The results are very similar.
Regression tests of changes in risk around 1991 are presented in Table 4. In column one, the dependent variable is the volatility of ROA. The estimated coefficient for the Credit Lyonnais indicator is negative and significantly different from zero at the 10% level using the sample of low distance to default firms. The magnitude is 42 basis points, corresponding to about six percent of the mean of annual ROA standard deviation. The overall fit of the regression is good, mostly reflecting the high explanatory power of firm fixed effects. In column two, the dependent variable is equity volatility. Here, the negative effect is significant at the 1% level. The coefficient estimate is 148 basis points, corresponding to about ten percent of the mean of equity volatility. The implied magnitude for asset volatility is smaller, 21 basis points, significant at the 1% level. For all three measures of risk, there appears to be a small drop after the Credit Lyonnais ruling, consistent with a reduction in risk shifting.

As with previous tests, we wish to compare low and high debt firms. In column four and five, we repeat the regression for the whole sample (i.e., using asset volatility as the dependent variable), finding a statistically significant but smaller economic effect. When restricting the sample to the firms with relatively high distance to default (see Table 8) the effect is indeed even smaller. For equity volatility, the coefficient goes from 148 basis points for the firms relatively closer to distress to 34 basis points for the firms relatively farther from distress.\footnote{We have included investment (capex over assets) as a further control, but it does not affect the coefficient of interest, so we present results with the same controls as in the regressions in Table three and four, which do not include investment as a control.}

The results in Table 4 are consistent with deliberate reduction in volatility by corporations in Delaware after Credit Lyonnais. As with the earlier findings, results are driven primarily by firms that are relatively closer to financial distress. The evidence is indirect, however, and provides no direct evidence of what managerial choices produce the extra risk. It is not clear which types of management or board decisions that may change the risk profile of (non-financial) firms. Nevertheless, it appears that risk is lower for the firms affected by Credit Lyonnais.

**D. Bankruptcy duration**

We next consider the duration of bankruptcies. This has been used as a measure of indirect bankruptcy costs by, e.g., Franks and Torous (1989) and Bris, Welch and Zhu 2009. The motivation is that operating in bankruptcy may hurt business operations and product market performance, and that a longer bankruptcy therefore may be more harmful to creditors.

We find that both Delaware and non-Delaware bankruptcies became shorter after Credit Lyonnais, falling by 6.3 months outside Delaware and by 11.0 months in Delaware (see Figure 2). The drop in Delaware is significantly different from zero at the 1% level, and the drop outside Delaware is insignificant. However, the difference-in-difference, 4.7 months, or 19% of the pre-Credit Lyonnais average, is insignificantly different from zero, largely because the wide confidence interval around the drop for non-Delaware firms.

\footnote{There is a similar difference between high and low leverage samples for equity asset volatility and ROA standard deviation. For equity volatility these measures, the coefficient of interest is are no longer significantly different from zero for the firms with relatively high distance to default even for the low debt sample.}
This evidence, while statistically weak, is consistent with faster bankruptcies in the wake of Credit Lyonnais, thereby likely reducing losses imposed on creditors. Given the statistical weakness, and the fact that there is a simultaneous (but smaller) drop outside Delaware, we consider this evidence suggestive

E. Capital structure impact

If Credit Lyonnais reduces costs of financial distress, it ought to increase equilibrium leverage. For example, the trade-off theory predicts that lower distress costs allow firms to take advantage of the tax shields provided by higher leverage. In Table 5, we therefore regress measures of leverage on firm controls, firm and time fixed effects, and the Credit Lyonnais indicator. For tests where the dependent variable involves leverage, the controls exclude book and market leverage. We do however include the lag of leverage in order to control for possible leverage dynamics.

In columns one and two, we find that Credit Lyonnais coincides with small increases in both book and market leverage, 23 and 47 basis points respectively (although the coefficient is not statistically significant from zero for book leverage). The small economic magnitude of these estimates may not be too surprising given the fact that deliberate actions drive only modest year-to-year changes in leverage (e.g., firms’ market leverage is largely driven by equity price changes Welch, 2004).

To accurately measure the firms’ true indebtedness it may be important to measure debt net of cash (Almeida, Campello and Weisbach 2004). Net debt is also increased following Credit Lyonnais, with a point estimate of 87 basis points. This effect is larger than the effect for gross leverage, corresponding to four percent of the standard deviation of the dependent variable (the mean for net debt is low, 0.17, so the estimated effect is larger in compared to the mean). The effect is highly significant. In column four, we test whether interest costs were affected by the Credit Lyonnais ruling, controlling for leverage. If agency costs of debt were reduced by the ruling, interest costs should fall. Indeed, controlling for leverage and other controls, interest costs are lower by 20 basis points following Credit Lyonnais, which can be compared to a mean interest rate of 10.3 percent (i.e. the reduction in interest costs are around 2% of the mean cost). In the last column, we examine the effect on an indicator equal to one if interest costs are above 10% (this is close to the Compustat median in each of the sample years). The coefficient is negative and significant, implying that Credit Lyonnais reduced the likelihood that a firm paid above 10% for its debt by 1.9%.

In Table 6, we split the sample by distance to default. For firms relatively close to distress, there is no increase in leverage after Credit Lyonnais (the point estimate is negative but insignificant), whereas firms farther from default experience an increase of 73 basis points. This is consistent with larger gains from Credit Lyonnais for those firms that previously had low leverage. The interest cost drop identified above points the other way, however. The point estimate is only significant for the firms relatively closer to default. Perhaps this is evidence of a differential response to firms at different leverage levels: some lever up and others reap the benefits of lower agency costs in the form of lower interest costs.

The leverage increase following Credit Lyonnais is modest, but important. The concurrent fall in interest costs establishes that the leverage increase was not the result of increased credit demand (in which case
interest paid would be expected to go up). Taken together, higher leverage and lower interest rates suggest that the reduction in equity-debt conflicts that Credit Lyonnais produced had an impact on capital structure.

**F. Valuation**

To assess the welfare impact we turn to equity values. An implication of most theories of agency costs of debt is that equityholders will pay the costs from these anticipated conflicts ex ante when the firm raises debt, through higher interest rates and restrictive covenants, and pay using less debt (thus missing out on, e.g., tax advantages). We can test this using information in stock prices.

To assess the valuation impact of Credit Lyonnais, we compare the returns of Delaware and non-Delaware firms at the time the Credit Lyonnais ruling was delivered. In general, the relative valuation of Delaware and non-Delaware firms is stable. In daily returns during 1991, the standard deviation of the equal weighted aggregate market index is 71 basis points, but the standard deviation of the Delaware - non-Delaware daily return difference (also equal weighted) is only 24 basis points. Thus, we may be able to identify even fairly modest effects. Delaware firms in general should benefit from Credit Lyonnais, for example through lower interest rates, but the effect should not be homogenous across firms of different capital structure. Low leverage firms have less to gain form Credit Lyonnais, and unlevered firms may get no benefit (although if they may raise debt in the future, there may be some benefit). Firms with higher leverage would appear to have more to gain, since they can save more on interest costs, and would appear more at risk for various games at creditors’ expense. These effects will be diluted if stock prices take into account expected future changes in agency costs and firms are not expected to maintain current capital structures indefinitely. For example, a firm with little debt may see no effective changes immediately (consistent with e.g. our investment results), but if it is expected that the firm may have debt in the future, firm value may increase with Credit Lyonnais. For owners of firms with very high leverage, the benefits of Credit Lyonnais may be somewhat negated, since equityholders may actually gain from risk shifting and other games. We therefore predict a reverse U-shape to the relation between leverage and announcement period return differentials between Delaware and non-Delaware firms.

The case ruling was announced on Dec, 30, 1991, was immediately reported on newswires and was covered extensively by the press the following day.\(^{36}\) We assign December, 30, as the announcement day, but it is plausible that the news, if relevant to market prices, would only be reflected in market prices after a few more days, or at least after news reports on the day after. As it turns out, magnitudes change, the direction of results is not very sensitive to the number of days included in the announcement returns.

We find that Delaware firms increased in value by 60.6 basis points (relative to non-Delaware firms) on the day of the ruling, with a t-statistic of 3.1 (the value-weighted differential was 41.4 basis points, t-stat 5.9). This was the second highest return differential in 1991. The positive effect was not reversed or crowded out by later returns. The five trading day window starting on December, 30 and running to

\(^{36}\) As mentioned above, Reuters, Dow Jones Newswire and PR Newswire reported on the ruling on Dec 30 and many newspapers covered the ruling in their print editions on Dec, 31, 1991 (including the Wall Street Journal, the Washington Post, the New York Times and the Financial Times).
January, 6, 1992, saw a 206 basis point relative increase in Delaware firm values, equal weighted, with a t-statistic of 4.9. The value-weighted five-day return was 55 basis points (t-stat 3.4). Residual returns, which control for factor loadings, may allow cleaner identification of the announcement effects. Residual from the CAPM or the Fama-French three factor model (both estimated for each stock in the first 11 months of 1991) were smaller but significantly different from zero. The various permutations of announcement returns are presented in Table 7. An alternative way of forming standard errors is to repeat the analysis for other year-ends. This will be more conservative if there are year-end Delaware-non Delaware patterns for, e.g., tax reasons. Considering the 1980/81 through 2007/08 year-ends, twenty-eight observations, the 1991/92 returns are the second highest return (comparing second to last trading day of each year) or highest (five day returns starting second to last trading day). The t-stats implied by the standard errors from these regressions are 2.7 (one day) and 3.0 (five days), both implying significance at the 1% level.

These effects on equity values provide further evidence that debt-equity conflict cause financial distress costs, that these costs can affect firm values in a negative way, and that ex-ante, the costs are borne by equity holders, consistent with Fama and Jensen (1983).

It may be interesting to compare the response to the Credit Lyonnais announcement across firms. For example, very high leverage firms might gain less from Credit Lyonnais (because there owners wanted to risk-shift or under-invest). Similarly, low leverage firms might have gained less (because they had no debt on which to save interest costs) or more (they had more scope to increase leverage in response to changed conditions). Figure 3 presents a third degree polynomial fit to the return difference across firms with various levels of book leverage. The estimated relation between leverage and return differentials roughly follows an inverse U shape. At low levels of leverage, the return differential is increasing in leverage, reaching an estimated peak around 0.15, where the predicted return is 50 basis points, after which return differential is falling in leverage. The graph falls to a low prediction of about 12 basis points around a leverage of 0.6, and then turns positive. However, this is estimated in the tail of the leverage distribution (the empirical leverage distribution is plotted in the graph, for reference). Therefore, the precise shape of the curve is not precisely estimated. A 95% confidence interval for the estimated regression line is plotted on the graph, showing this uncertainty about the precise shape. The general pattern is consistent with the prediction that the average benefits of Credit Lyonnais were largest for firms with positive but modest leverage, but low or insignificant for high leverage firms.

**G. Robustness tests**

We now run three sets of robustness tests. The first such test is to examine firms outside of financial distress, and to use alternative definitions of distress. The second set of tests attempts to deal with concerns about differences in the business cycle between Delaware and other states by introducing state times year fixed effects based on firm head quarters. The last set of tests shrinks the time window around the Credit Lyonnais ruling from five to four years and then three years. For these robustness

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37 The graph is based on coefficient estimates from a regression of the daily return on 12/20/1991 on a Delaware dummy, three powers of leverage, and the interaction of the Delaware dummy with the leverage powers. The graph is based on these coefficient estimates.
tests, we focus on three important coefficients estimated in Tables 2, 3 and 4: the estimated effect for Capex/Assets (Table 2, baseline coefficient estimate 0.0071***), positive equity issues (Table 3, baseline coefficient estimate 0.0409**) and equity volatility (table 4, baseline coefficient estimate -0.0148***).

The new law about fiduciary duties established in the Credit Lyonnais ruling would have immediate impact for firms in distress. Hence, the behavioral impact we identify for distressed firms above, may be smaller or entirely absent for firms that are not distressed. In table 8, we examine this, and simultaneously vary the definition of financial distress (since no cut-off is likely to perfectly identify the relevant group of firms). As alternatives to distance-to-default, we use book leverage and Altman’s (1968) Z-score. In Table 8, the first row, we report estimated coefficients from regressions run for distressed firms, as above, and separately for firms that are less distressed (or less likely to be distressed), based on the distance-to-default measure. For investment, the coefficient estimate for firms that are less distressed is positive (17 basis points) but not significantly different from zero. For equity issues, there is a positive and significant effect for less distressed firms, but much smaller than for distressed firms. For volatility, again there appears to be a significant effect for the less distressed firms, but the estimated magnitude is much smaller than for our sample of distressed firms.

In the next two rows of Table 8, distressed and less distressed firms are defined based on book leverage (above and below 0.5) or Z-score (above or below 2), with cutoffs chose so that the samples are very close in size. For investment, the pattern is strong and consistent: there is no effect for the less distressed firms, but a large and significant effect for distressed firms. For equity issues, there is a consistent ranking, but for two of the three distress measures, there if a positive coefficient estimate also outside the group we identify as most likely to be distressed. Finally, for volatility, the pattern is less consistent. For all three distress metrics, there is a negative and significant effect on volatility for less distressed firms. For two out of three measures, the effect is larger for distressed firms than for less distressed firms, but for one metric (book leverage), it’s similar for the two groups of firms. Overall, it appears that most of the patterns we have identified around the Credit Lyonnais verdict are much weaker for firms in good financial health. However, there are one or two exceptions, perhaps reflecting imperfect sample splits. The volatility results appear the least different across groups.

The next robustness test, presented in Table 9, aims to address concerns about business cycle variation across geographic regions. For example, if the U.S. Northeast (where Delaware is) was worse hit by the 1990-91 recession, perhaps (some of) the patterns we find could be reflective of such effects. We include state times year fixed effects, to deal with this concern. The key assumption is that headquarter location is a better identifier of geographic location, and therefore regional business cycles, than incorporation. Since incorporation varies with locations (e.g., some of the firms located in Texas are headquartered in Delaware, some are not), do this does not affect our identification strategy, although it adds a large number of fixed effects (approximately 470). The results in columns one to three considers the same key dependent variables we examined in Table 8, i.e. investment, the equity issuance dummy, and share price volatility. The coefficient estimates are very close to the base line results, and highly significant. The R-squared is increase by a couple of percentage points by the additional dummies, in all three regressions.
The next six columns examine the impact of changing the time window around Credit Lyonnais. The trade-off here is between adding years to get better data and to give behavioral adjustments time to manifest in the financial outcomes we study, against the higher risk with longer time windows of picking up differential trends. A narrower window, while limiting the amount of data we see, and setting a higher bar for how quickly behavioral changes affect observables, reduces concerns about differential trends of any kind. In table 9, columns four to six, we use a four year window (i.e., 1988-1991 vs. 1992-1995), and in columns seven to nine, a three year window (i.e., 1989-1991 vs. 1992-1994). Results for all three dependent variables remain statistically significant. The results for equity issues seem are somewhat larger in the shorter time window than what we find in the baseline with a five year window, whereas the other two dependent variables give results that are very close to the baseline. The examination of how behavior changes over time can be pushed a little further by examining the effect year-by-year. In figure four, the year-by-year difference in investment between Delaware and non-Delaware firms is plotted. It is clear that there is a gradual ramp-up from 1991 to 1993, but after that, there is no apparent trend. One possibility is that the impact of Delaware was felt only with a lag, because of adjustment costs of some kind (e.g. lags between planning and implementation).

The robustness tests presented in this section suggest that the effect of Credit Lyonnais were most strongly felt for firms that appear more financially distressed, and that the results are not particularly sensitive to the time window chosen to examine the impact of Credit Lyonnais. This supports the interpretation of CL as a change in corporate decision-making toward the interests of creditors, but only for the firms where the case ruling was meant to apply, who found themselves in the zone of financial distress.

IV. Conclusions
The Credit Lyonnais case created fiduciary duties toward creditors in Delaware-incorporated firms in “zone of insolvency”. Because this did not affect firms incorporated outside Delaware, Credit Lyonnais provides a natural experiment for examining whether and how equity-debt conflict affects firm behavior. In our tests we control for time and firm fixed effects and eliminate changes affecting the whole firm population by differencing with non-Delaware firms. We find important changes in behavior after Credit Lyonnais. Firms increase equity issues and investment, consistent with debt overhang. Firms reduced operational and financial risk, consistent with risk shifting and asset substitution theories.

Credit Lyonnais appears to have had little impact on firms with low leverage or high distance to default, consistent with these firms not being in the zone of insolvency, almost certainly not being financially distressed, and likely being far from bankruptcy. Instead, the effects are isolated to the subset of firms where financial distress being relatively more likely. This is consistent with Credit Lyonnais being the true driver of our results, and is inconsistent with explanations involving contemporaneous changes specific to Delaware firms.

We conclude that firm in distress sometimes have an incentive to undertake actions that hurts debt and favors equity. Such behavior leads to indirect costs of financial distress, discouraging leverage and reducing overall firm value. Indeed, we find that Credit Lyonnais was followed by slight increases in
leverage, and a modest increase in average firm values around the time of announcement. Firms thus appear to have reaped immediate benefits of lower agency costs in the form of better access to debt at lower costs. In addition, stock prices responded positively to the ruling, especially for firms with high but not ultra-high debt, confirming the welfare impact of agency costs.  

Our results are consistent with theories of capital structure based on agency costs. Such costs are an important part of how the trade-off theory of capital structure is usually understood (see Myers 2003). Moreover, agency costs due to debt-equity conflicts have important implications beyond the simple trade-off framework, which would be interesting to explore in future research.

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38 If some of the gains are tax savings, the net welfare benefit is lower than what we estimate, of course. If market leverage increases by 0.25 and tax rates are 0.4, the tax saving implied are about 10 basis points of firm value, or about 20 basis point of equity for a typical firm. This is modest compared to most of the valuation estimates provided in Table 7.
V. References


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*Equity-Linked Investors, L.P., v Adams*, (Del Ch 1997)


*Production Resources Group, L.L.C. v. NCT Group, Inc.*, 863 A.2d 772, 790 (Del. Ch. 2004)

Figure 1 – Equity issues: difference-in-difference

The graph presents difference-in-difference estimates (1987-1991 vs. 1992-97, Delaware incorporation vs. incorporation in a non-Delaware state) of the frequency of positive equity issues. Both the differences are positive and significant at the 1% level. The difference-in-difference is 2.90% (equity issues increased in Delaware incorporated firms relative to Non-Delaware firms), significantly different from zero at the 1% level.
Figure 2 – Bankruptcy duration: difference-in-difference

The graph presents difference-in-difference estimates (1987-1991 vs. 1992-97, Delaware incorporation vs. incorporation in a non-Delaware state) of the duration of bankruptcies. Bankruptcies are classified based on date of filing. The difference-in-difference is -4.7 months, insignificantly different from zero (p-value 15.9%).
Figure 3 – Announcement returns: Delaware vs. non-Delaware firms, by leverage

The graph presents a third degree fitted polynomial for value weighted return difference across Delaware and non-Delaware firms for Dec, 30, 1991 (the trading day of the Credit Lyonnais v. Pathe Communications ruling), in basis points, by leverage. Leverage is the ratio of long term debt (Compustat items DLC and DLTT) to book assets (Compustat item AT). The average return differential (value weighted) across all firms is 41 basis points. The 95% confidence interval for the regression line is indicated with thin lines. The grey line with markers shows the empirical distribution of leverage.
**Figure 4 – Time patterns in the effect of Credit Lyonnais: Delaware - non Delaware difference in CapEx/Assets by year**

The graph presents the average difference between Delaware and non-Delaware firms, after firm and year fixed effects and controls, by year, relative to 1987. Vertical bars indicate 95% confidence interval. The dotted line indicates the period after Credit Lyonnais ruling.
Table 1: Summary statistics and correlations

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<th>Return on Sales</th>
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<th>Sales</th>
<th>Market Value</th>
<th>Divide nds/Assets</th>
<th>Equity issues/Assets</th>
<th>Capex/Assets</th>
<th>Capex and R&amp;D / Assets</th>
<th>Capex /Sales</th>
<th>Std dev. ROA</th>
<th>Equity volatility</th>
<th>Asset volatility</th>
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<td>55,330</td>
<td>57,357</td>
<td>49,246</td>
<td>46,944</td>
<td>53,813</td>
<td>29,272</td>
<td>28,209</td>
<td>40,826</td>
<td>46,973</td>
<td>48,991</td>
<td>47,971</td>
<td></td>
</tr>
<tr>
<td>Mean (Delaware)</td>
<td>0.0825</td>
<td>0.0953</td>
<td>1,017.6</td>
<td>846.691</td>
<td>714.88</td>
<td>0.0114</td>
<td>0.0970</td>
<td>0.0669</td>
<td>0.1444</td>
<td>0.2042</td>
<td>0.0692</td>
<td>0.1474</td>
<td>0.0302</td>
<td>0.5023</td>
<td>0.3736</td>
</tr>
<tr>
<td>Mean (Other)</td>
<td>0.0840</td>
<td>0.1048</td>
<td>1,302.1</td>
<td>1,119.2</td>
<td>884.86</td>
<td>0.0141</td>
<td>0.0782</td>
<td>0.0682</td>
<td>0.1196</td>
<td>0.1485</td>
<td>0.0655</td>
<td>0.1510</td>
<td>0.0296</td>
<td>0.4743</td>
<td>0.3672</td>
</tr>
</tbody>
</table>

Return on Assets 1.00 0.557 -0.013 0.058 0.116 0.316 -0.272 0.190 -0.183 -0.350 -0.001 -0.332 -0.352 -0.040 -0.07
Return on Sales 1.00 0.165 0.112 0.113 0.346 -0.230 0.044 -0.209 -0.287 0.011 -0.366 -0.294 -0.108 -0.057
Assets 1.00 0.727 0.555 -0.028 -0.062 -0.072 -0.044 -0.020 -0.001 -0.131 -0.131 0.104 0.109
Sales 1.00 0.678 0.025 -0.096 -0.018 -0.043 -0.035 -0.001 -0.141 -0.155 0.100 0.091
Market Value 1.00 0.112 -0.057 0.031 -0.019 -0.021 -0.002 -0.161 -0.149 0.044 -0.018
Dividends/Assets 1.000 -0.098 0.042 -0.146 -0.083 0.007 -0.194 -0.150 -0.087 -0.131
Equity issues/Assets 1.000 0.028 0.240 0.316 -0.002 0.149 0.320 -0.119 -0.278
Capex/Assets 1.000 0.488 0.207 -0.005 -0.082 -0.024 -0.041 -0.110
Capex and R&D / Assets 1.000 0.554 0.268 0.116 -0.143 -0.143 -0.329
Capex/Sales 1.000 0.239 0.105 0.250 -0.154 -0.263
Standard deviation ROA changes 1.000 0.001 0.390 -0.028 -0.157
Equity volatility 1.000 0.685 0.101 0.130
Asset volatility 1.000 -0.293 -0.363
Book leverage 1.000 0.768
Market leverage 1.000

Notes: Sample is Compustat firms from 1987 to 1997. Return on assets is EBITDA over assets, return on Sales is EBITDA over Sales, Market Value is number of shares outstanding times end of year share price. Equity issues are calculated as in Baker, Stein and Wurgler (2003): the change in book equity minus the change in retained earnings, divided by assets, and is winsorized. The equity issuer dummy is equal to one if equity issues are at least 1% of assets. Standard deviation is the annualized standard deviation of eight quarterly roa changes (if less than one). Equity volatility is the annualized monthly standard deviation of returns over the last three years (if less than 1). Asset volatility is the Merton (1974) model implied annual asset volatility (if less than one).
**Table 2. Investment and R&D**

<table>
<thead>
<tr>
<th>Dependent variable:</th>
<th>Capex / Assets</th>
<th>Capex / Assets &gt; Industry-Year median</th>
<th>Capex + R&amp;D / Assets</th>
<th>Capex + R&amp;D / Sales</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sample:</td>
<td>Low distance to default</td>
<td>Low distance to default</td>
<td>Low distance to default</td>
<td>Low distance to default</td>
</tr>
<tr>
<td>Delaware * Post 1991</td>
<td>0.0071 ***</td>
<td>0.0338 **</td>
<td>0.0073 **</td>
<td>0.0126 ***</td>
</tr>
<tr>
<td></td>
<td>(0.0022)</td>
<td>(0.0127)</td>
<td>(0.0032)</td>
<td>(0.0045)</td>
</tr>
<tr>
<td>Firm controls</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Year Fixed Effects</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Firm Fixed Effects</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>R-squared</td>
<td>0.687</td>
<td>0.587</td>
<td>0.811</td>
<td>0.848</td>
</tr>
<tr>
<td>Observations</td>
<td>$N = 16,270$</td>
<td>$N = 17,165$</td>
<td>$N = 8,423$</td>
<td>$N = 8,438$</td>
</tr>
</tbody>
</table>

**Notes:** Each column presents the coefficient estimates from an OLS regression. Firm controls are return on assets, return on sales, the log of assets (book value), the log of sales, the log of equity market value, depreciation over assets, leverage (defined as assets minus equity minus deferred taxes, over assets), and market (defined as assets minus book equity minus deferred taxes, over assets minus book equity plus market equity), two year stock return, and $q$ (capped at 10). Low distance to default is any firm-year for which the log of assets over debt is less than 3.7 times the standard deviation of assets, estimated following Merton (1974). Standard errors are clustered, where clusters are defined by year and whether a firm is incorporated in Delaware.

* significant at 10%; ** significant at 5%; *** significant at 1%
## Table 3. Equity issues, payout

<table>
<thead>
<tr>
<th>Dependent variable:</th>
<th>Dividends/Assets</th>
<th>Repurchases/Assets</th>
<th>Equity issues/Assets</th>
<th>Equity issues/Assets &gt; 0</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(1)</td>
<td>(2)</td>
<td>(3)</td>
<td>(4)</td>
</tr>
<tr>
<td>Sample:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Delaware * Post 1991</td>
<td>0.0006 **</td>
<td>-0.0007 *</td>
<td>0.0098 **</td>
<td>0.0409 **</td>
</tr>
<tr>
<td></td>
<td>(0.0002)</td>
<td>(0.0004)</td>
<td>(0.0034)</td>
<td>(0.0163)</td>
</tr>
<tr>
<td>Firm controls</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Year Fixed Effects</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Firm Fixed Effects</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>R-squared</td>
<td>0.737</td>
<td>0.453</td>
<td>0.595</td>
<td>0.416</td>
</tr>
<tr>
<td>Observations</td>
<td>N = 19,131</td>
<td>N = 16,179</td>
<td>N = 16,932</td>
<td>N = 16,932</td>
</tr>
<tr>
<td>Number of clusters</td>
<td>20</td>
<td>20</td>
<td>20</td>
<td>20</td>
</tr>
</tbody>
</table>

Notes: Each column presents the coefficient estimates from an OLS regression. Firm controls are return on assets, return on sales, the log of assets (book value), the log of sales, the log of equity market value, depreciation over assets, leverage (defined as assets minus equity minus deferred taxes, over assets), and market (defined as assets minus book equity minus deferred taxes, over assets minus book equity plus market equity), two year stock price change, and q (capped at 10). Low distance to default is any firm-year for which the log of assets over debt is less than 3.7 times the standard deviation of assets, estimated following Merton (1974). Standard errors are clustered, where clusters are defined by year and whether a firm is incorporated in Delaware. * significant at 10%; ** significant at 5%; *** significant at 1%
Table 4. Volatility and risk

<table>
<thead>
<tr>
<th>Dependent variable:</th>
<th>Volatility of ROA (1)</th>
<th>Equity volatility (2)</th>
<th>Asset volatility (3)</th>
<th>Equity volatility (4)</th>
<th>Asset volatility (5)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sample:</td>
<td>Low distance to default</td>
<td>Low distance to default</td>
<td>Low distance to default</td>
<td>All firms</td>
<td>All firms</td>
</tr>
<tr>
<td>Delaware * Post 1991</td>
<td>-0.0042 * (0.0021)</td>
<td>-0.0148 *** (0.0030)</td>
<td>-0.0021 *** (0.0005)</td>
<td>-0.0081 *** (0.0017)</td>
<td>-0.0016 *** (0.0002)</td>
</tr>
<tr>
<td>Firm controls</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Year Fixed Effects</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Firm Fixed Effects</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>R-squared</td>
<td>0.822</td>
<td>0.709</td>
<td>0.745</td>
<td>0.750</td>
<td>0.715</td>
</tr>
<tr>
<td>Observations</td>
<td>N = 9,391</td>
<td>N = 14,958</td>
<td>N = 17,165</td>
<td>N = 28,704</td>
<td>N = 33,333</td>
</tr>
<tr>
<td>Number of clusters</td>
<td>20</td>
<td>20</td>
<td>20</td>
<td>20</td>
<td>20</td>
</tr>
</tbody>
</table>

Notes: Each column presents the coefficient estimates from an OLS regression. Firm controls are return on assets, return on sales, the log of assets (book value), the log of sales, the log of equity market value, depreciation over assets, leverage (defined as assets minus equity minus deferred taxes, over assets), and market (defined as assets minus book equity minus deferred taxes, over assets minus book equity plus market equity), two year stock price change, and q (capped at 10). Low distance to default is any firm-year for which the log of assets over debt is less than 3.7 times the standard deviation of assets, estimated following Merton (1974). Standard errors are clustered, where clusters are defined by year and whether a firm is incorporated in Delaware. * significant at 10%; ** significant at 5%; *** significant at 1%
### Table 5. Leverage and interest cost

<table>
<thead>
<tr>
<th>Dependent variable:</th>
<th>Leverage</th>
<th>Market leverage</th>
<th>Net debt (book)</th>
<th>Interest cost</th>
<th>Interest cost &gt; 10%</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(1)</td>
<td>(2)</td>
<td>(3)</td>
<td>(4)</td>
<td>(5)</td>
</tr>
<tr>
<td>Sample:</td>
<td>All firms</td>
<td>All firms</td>
<td>All firms</td>
<td>All firms</td>
<td>All firms</td>
</tr>
<tr>
<td>Delaware * Post 1991</td>
<td>0.0023</td>
<td>0.0047**</td>
<td>0.0087***</td>
<td>-0.0020**</td>
<td>-0.0189**</td>
</tr>
<tr>
<td></td>
<td>(0.0013)</td>
<td>(0.0017)</td>
<td>(0.0022)</td>
<td>(0.0008)</td>
<td>(0.083)</td>
</tr>
<tr>
<td>Firm controls</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Firm controls (without leverage)</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Lag of dependent variable</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Year Fixed Effects</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Firm Fixed Effects</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>R-squared</td>
<td>0.875</td>
<td>0.964</td>
<td>0.817</td>
<td>0.551</td>
<td>0.458</td>
</tr>
<tr>
<td>Observations</td>
<td>N = 30,485</td>
<td>N = 30,452</td>
<td>N = 29,132</td>
<td>N = 23,216</td>
<td>N = 34,162</td>
</tr>
<tr>
<td>Number of clusters</td>
<td>20</td>
<td>20</td>
<td>20</td>
<td>20</td>
<td>20</td>
</tr>
</tbody>
</table>

**Notes:** Each column presents the coefficient estimates from an OLS regression. Firm controls are return on assets, return on sales, the log of assets (book value), the log of sales, the log of equity market value, depreciation over assets, leverage (defined as assets minus equity minus deferred taxes, over assets), and market (defined as assets minus book equity minus deferred taxes, over assets minus book equity plus market equity), two year stock price change, and q (capped at 10). Firm controls without leverage is the same set of controls except leverage and market leverage. Standard errors are clustered, where clusters are defined by year and whether a firm is incorporated in Delaware.

* significant at 10%; ** significant at 5%; *** significant at 1%
## Table 6. Leverage and interest cost

<table>
<thead>
<tr>
<th>Dependent variable:</th>
<th>Market leverage</th>
<th>Market leverage</th>
<th>Interest cost</th>
<th>Interest cost</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(1)</td>
<td>(2)</td>
<td>(3)</td>
<td>(4)</td>
</tr>
<tr>
<td>Sample:</td>
<td>High distance to default</td>
<td>Low distance to default</td>
<td>High distance to default</td>
<td>Low distance to default</td>
</tr>
<tr>
<td>Delaware * Post 1991</td>
<td>0.0073 *** (0.0022)</td>
<td>-0.0010 (0.0008)</td>
<td>-0.0012 (0.0010)</td>
<td>-0.0027 * (0.0013)</td>
</tr>
</tbody>
</table>

- Firm controls
  - X
- Firm controls (without leverage)
  - X
- Lag of dependent variable
  - X
- Year Fixed Effects
  - X
- Firm Fixed Effects
  - X

R-squared | 0.955 | 0.979 | 0.635 | 0.599 |

Observations | $N = 15,342$ | $N = 15,110$ | $N = 11,065$ | $N = 12,151$ |

Number of clusters | 20 | 20 | 20 | 20 |

Notes: Each column presents the coefficient estimates from an OLS regression. Firm controls are return on assets, return on sales, the log of assets (book value), the log of sales, the log of equity market value, depreciation over assets, leverage (defined as assets minus equity minus deferred taxes, over assets), and market (defined as assets minus book equity minus deferred taxes, over assets minus book equity plus market equity), two year stock price change, and q (capped at 10). Firm controls without leverage is the same set of controls except leverage and market leverage. Low distance to default is any firm-year for which the log of assets over debt is less than 3.7 times the standard deviation of assets, estimated following Merton (1974). Standard errors are clustered, where clusters are defined by year and whether a firm is incorporated in Delaware.

* significant at 10%; ** significant at 5%; *** significant at 1%
Table 7. Announcement returns: Delaware – non Delaware differentials

<table>
<thead>
<tr>
<th></th>
<th>Raw return</th>
<th>CAPM residuals</th>
<th>Fama French three factor residuals</th>
<th>Raw returns, alternative standard errors</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>EW</td>
<td>VW</td>
<td>EW</td>
<td>VW</td>
</tr>
<tr>
<td>One day return</td>
<td>(1)</td>
<td>(2)</td>
<td>(3)</td>
<td>(4)</td>
</tr>
<tr>
<td></td>
<td>60.6 ***</td>
<td>41.4 ***</td>
<td>40.0 **</td>
<td>24.0 ***</td>
</tr>
<tr>
<td></td>
<td>(19.5)</td>
<td>(7.0)</td>
<td>(19.7)</td>
<td>(6.8)</td>
</tr>
<tr>
<td>Five day return</td>
<td>206 ***</td>
<td>55 ***</td>
<td>173 ***</td>
<td>27.7 *</td>
</tr>
<tr>
<td></td>
<td>(42.1)</td>
<td>(16.2)</td>
<td>(41.1)</td>
<td>(15.3)</td>
</tr>
</tbody>
</table>

Notes: Each column presents the return differential between Delaware and non-Delaware firms around the announcement of the Credit Lyonnais ruling on December, 30, 1991, in basis points. The five day return refers to Dec, 30 and 31, 1991 as well as January, 2, 3 and 5, 1992. EW refers to equal weighted returns, VW to value weighted (using the market value of equity in Dec 1991). CAPM and Fama French three factor residuals refer are based on models estimated in the first eleven months of 1991. In columns (7) and (8), standard errors are calculated from 28 annual observations of the trading days around each year-end (two last d-trading days and there first of the following year) 1980/81-2007/08. T-stats are reported below each return differential.

* significant at 10%; ** significant at 5%; *** significant at 1%
### Table 8. Non-distressed firms, alternative definitions of distress

<table>
<thead>
<tr>
<th>Grouping variable [value for distressed firms]</th>
<th>Capex/ Assets (Table 2)</th>
<th>Equity Issues &gt; 0 (Table 3)</th>
<th>Equity volatility (Table 4)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Distressed</td>
<td>Less distressed</td>
<td>Distressed</td>
</tr>
<tr>
<td>Distance to default [log(V/D) &lt; 3.7σ]</td>
<td>0.0071***</td>
<td>0.0017</td>
<td>0.0409 **</td>
</tr>
<tr>
<td>Book leverage [D/V &gt; 0.5]</td>
<td>0.0063 ***</td>
<td>0.0017</td>
<td>0.0411 ***</td>
</tr>
<tr>
<td>Altman's (1968) z-score [z &lt; 2]</td>
<td>0.0116 ***</td>
<td>0.000</td>
<td>0.0490 ***</td>
</tr>
</tbody>
</table>

**Notes:** Each cell represents one regression. The columns indicate dependent variables and the Table in which the baseline result for that variable can be found. The Rows indicate the variable along which the sample is split, and the numerical value at which the cutoff is done. Regressions include the same control variables as the corresponding tables. For each regression, only one coefficient is reported: the estimated coefficient for the Delaware* Post 1991 interaction dummy.

* significant at 10%; ** significant at 5%; *** significant at 1%
### Table 9. Robustness tests

<table>
<thead>
<tr>
<th>Geographic controls</th>
<th>Four year window</th>
<th>Three year window</th>
</tr>
</thead>
<tbody>
<tr>
<td>Capex/Assets</td>
<td>Equity Issues &gt; 0</td>
<td>Equity volatility</td>
</tr>
<tr>
<td>(1)</td>
<td>(4)</td>
<td>(7)</td>
</tr>
<tr>
<td>Equity volatility</td>
<td>(2)</td>
<td>(5)</td>
</tr>
<tr>
<td>(3)</td>
<td>(6)</td>
<td>(8)</td>
</tr>
<tr>
<td>Delaware * Post 1991</td>
<td>0.0055 ***</td>
<td>0.0067 ***</td>
</tr>
<tr>
<td></td>
<td>(0.0023)</td>
<td>(0.0024)</td>
</tr>
<tr>
<td></td>
<td>0.0418 ***</td>
<td>0.0505 ***</td>
</tr>
<tr>
<td></td>
<td>(0.0180)</td>
<td>(0.0148)</td>
</tr>
<tr>
<td></td>
<td>-0.0146 ***</td>
<td>-0.0161 ***</td>
</tr>
<tr>
<td></td>
<td>(0.0030)</td>
<td>(0.0030)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Firm controls</th>
<th>Capex/Assets</th>
<th>Equity Issues &gt; 0</th>
<th>Equity volatility</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(1)</td>
<td>(4)</td>
<td>(7)</td>
</tr>
<tr>
<td></td>
<td>Equity volatility</td>
<td>(2)</td>
<td>(5)</td>
</tr>
<tr>
<td></td>
<td>(3)</td>
<td>(6)</td>
<td>(8)</td>
</tr>
<tr>
<td></td>
<td>X</td>
<td>X</td>
<td>X</td>
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<td>X</td>
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<td></td>
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<td></td>
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<td>X</td>
<td>X</td>
</tr>
<tr>
<td></td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>R-squared</td>
<td>0.701</td>
<td>0.694</td>
<td>0.727</td>
</tr>
<tr>
<td>Observations</td>
<td>15,739</td>
<td>14,266</td>
<td>10,231</td>
</tr>
<tr>
<td>Number of clusters</td>
<td>20</td>
<td>16</td>
<td>249</td>
</tr>
</tbody>
</table>

* Notes: The table presents robustness tests of regressions in Tables 2, 3 and 4, with additional controls or shorter windows around 1991. Each column represents one regression, corresponding to the regression s in the Tables above, but with some variation. In the first three columns, fixed effects are included for each year interacted with the HQ state of each firm. In columns four to six, the sample period is restricted to 1988-1995, and in columns seven to nine, to 1989-1994. Standard errors are clustered. In columns one to six, clusters are defined by year and whether a firm is incorporated in Delaware. In columns seven to nine, clusters are defined by state of incorporation times year.

* significant at 10%; ** significant at 5%; *** significant at 1%