

# The Impact of the Agency Environment on Management's Long-Term Focus \*

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## **Abstract**

The 1991 *Credit Lyonnais* Delaware court ruling expanded the fiduciary duties of managers towards debtholders in near-insolvent firms, and arguably increased shareholders' and managers' aversion to near-insolvency situations. Differences-in-differences tests reveal that the ruling enhanced innovation efficiency and reduced managers' focus on myopic earnings goals at Delaware firms. Further, there is a shift in the shareholder base away from transient and towards dedicated institutions. The overall evidence suggests a re-orientation of focus among Delaware firms towards long-term rather than short-term goals. Shareholders and debtholders benefited from this new focus, with Tobin's Q and distance to default rising after the ruling.

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## 1. Introduction

Agency issues between shareholders and debtholders have long been hypothesized to influence managerial actions and strategic focus.<sup>1</sup> A critical issue with empirical research in this field has been the intrinsic endogeneity of managerial decisions, the nature of the firm and agency issues. This makes it difficult to attribute observed managerial actions and firm-level decisions to the influence of agency issues (Zingales 1998). In this paper, we examine the agency environment's influence on a firm's pursuit of long-term versus short-term goals in a setting that mitigates endogeneity concerns.

The 1991 court ruling on *Credit Lyonnais v Pathe Communications* provides an important exogenous shock to the agency environment of all firms incorporated in Delaware (hereafter, Delaware firms). Until this event, US courts in practice largely conformed to the premise that managers owed fiduciary duties primarily to the firm and its owners but not its creditors, unless firms were already in bankruptcy. In a path-breaking departure, the Delaware Chancery court asserted in 1991 that when a firm is *near* insolvency, the board of directors and managers bear fiduciary duties towards *both* shareholders and debtholders.

By requiring that managers and directors not act in the sole interest of shareholders when the latter may be at risk of losing control of the firm, the Delaware court ruling shifted the balance of power away from shareholders. In the context of this ruling, we examine the following question: how did the altered agency environment influence the risk-return trade-offs in Delaware firms' investment decisions, particularly those that require a longer-term-focus?

Shareholders and debtholders of near-insolvent firms are likely to have different appetites for risk. For example, in light of impending and probable bankruptcy, debtholders naturally

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<sup>1</sup> The literature on shareholder-debtholder agency issues is extensive, including among others Jensen and Meckling (1976), Myers (1977), Jensen (1986), Harris and Raviv (1990), Stulz (1990), Smith and Watts (1992). See Smith (1990) and Harris and Raviv (1991) for partial reviews.

prefer that any new projects taken on by their borrowers emphasize lower volatility. In contrast, shareholders may prefer high-risk projects in the hope of a positive realization (Jensen and Meckling 1976, Warga and Welch 1993, Eisdorfer 2008). The Delaware ruling altered the agency dynamic by restricting shareholders' ability to demand that managers pursue such projects. Interestingly, even though the ruling thus clearly tilted the balance of power in favor of debtholders, Becker and Stromberg (2012) provide evidence that Delaware firms on average experienced positive equity returns upon the 1991 court pronouncement. They further document shifts in volatility among Delaware firms following the court ruling but also acknowledge that they "...do not know which managerial choices actually drive risk and what managerial or board decisions led to a change of risk after the ruling" (Becker and Stromberg 2012).

Shifts in risk-return trade-offs in response to changes in the agency environment are interesting in their own right but also crucial to understanding changes in the value of shareholder and debtholder claims. Risk-return tradeoffs and their implications for shareholder and debtholder claims are particularly relevant in the context of firms' attempts at innovation. Innovation is considered essential for the long-term financial viability of firms and is associated with increases in future earnings, to the potential benefit of both shareholders and debtholders (Kogan, Papanikolaou, Seru and Stoffam 2012, Hirshleifer, Hsu and Li 2013, Aghion, Van Reenen and Zingales 2013). However, fostering innovation requires risky R&D investments and a "tolerance for failure" (Holmstrom, 1989, Manso 2011, Acharya, Baghai and Subramaniam 2013, Tian and Wang 2014). This poses a challenging trade-off for managers: innovation can enhance a firm's product market competitiveness and increase long-term earnings, but negative outcomes resulting from risky investments in innovation can accelerate financial distress.

We posit that newly expanded fiduciary duties toward debtholders and the resulting changes in the managers' approach to risk-return trade-offs post-1991 affected managerial decisions in a number of ways. *Conditional* on engaging in risky R&D investments, managers at Delaware firms likely exhibited a preference for projects yielding tangible and more certain benefits in the form of patents.<sup>2</sup> Thus, we examine whether the Delaware court ruling led to greater “innovation efficiency”, that is, a higher patent yield per dollar of R&D investment undertaken after the event.

Our empirical analyses rely on a difference-in-difference research design: we examine changes in Delaware firms from before to after the 1991 court ruling and compare them to contemporaneous changes in non-Delaware firms. All our regression results include firm and year fixed effects, making it unlikely that our results are driven by firm-level or time-specific characteristics. We find that in the post-1991 period, Delaware firms exhibit a significant increase in innovation efficiency, consistent with a preference for R&D projects with more tangible and certain benefits. As expected, the results are more pronounced for firms near insolvency, but they are also significant for firms further away from insolvency, suggesting that the Delaware court ruling influenced fully solvent firms' investment choices as well.

In our next analysis, we consider overall R&D expenditures. As Aghion et al. (2013) point out, “Innovating requires taking risk and forgoing current returns in the hope of future ones”. A prudent long-term focus near insolvency would require that managers restrict expenditures, particularly risky ones, sacrificing some opportunities for innovation if necessary as they concentrate on reaching financial stability. Thus, we expect Delaware firms close to insolvency at the time of the 1991 ruling to reduce their overall R&D expenditures. It is not clear

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<sup>2</sup> Patent counts and citations have been the most widely used measures of innovation output in the academic literature (Kamien and Schwartz 1975, Griliches 1990, Francis and Smith 1995, Kogan et al. 2012, Acharya et al. 2013, Aghion et al. 2013, Hirshleifer et al. 2013, Hsu, Tian and Xu 2014, Tian and Wang 2014).

whether and, if so, what effect the ruling would have had on R&D expenditures of firms further away from insolvency. The threat of bankruptcy is not imminent for such firms, implying they have weaker incentives to reduce R&D expenditures.

We find that R&D expenditures declined significantly among near-insolvent Delaware firms after 1991, consistent with such firms restricting risky R&D expenditures.<sup>3</sup> Interestingly, the effect is not just weaker but actually of the opposite sign among Delaware firms further away from insolvency: we find that they increase their R&D expenditures. These patterns are reinforced when we examine total innovation output, measured by patent counts and patent citations. Following the 1991 court ruling, total innovation output declined for Delaware firms close to insolvency while it increased for those further away from insolvency.

Becker and Stromberg (2012) document a post-1991 decline in ROA volatility for Delaware firms near insolvency but a corresponding increase in Delaware firms further away from bankruptcy. They state “...we do not have a good explanation for why volatility actually increased after the ruling for firms further from distress...” Our results point to a possible explanation. Following the 1991 court ruling, near-insolvent Delaware firms, as expected, limited their exposure to risky investments and targeted investments with more certain benefits, which allowed them to concentrate on avoiding bankruptcy. On the other hand, financially healthy Delaware firms expanded their R&D activities leading to higher innovation output.

The results with respect to Delaware firms far from insolvency point to the possibility of an unanticipated consequence of the Delaware court ruling. Consideration of near-bankruptcy

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<sup>3</sup> In additional tests, we confirm that capital expenditures (excluding R&D) exhibit a significant increase across all Delaware firms, irrespective of their proximity to insolvency, consistent with Becker and Stromberg (2012). Thus near insolvent Delaware firms exhibit a decline in R&D but an increase in capital expenditures. The explanation for this discrepancy between R&D and capital expenditures probably lies in the greater uncertainty and risk, as well as the lack of collateralizable assets, of R&D projects (Kothari, Laguerre and Leone 2002). Please see Section 4.5.2 for an expanded discussion of this issue.

scenarios is not likely to have a first-order effect on managerial choices at fully solvent firms. However, *Credit Lyonnais* was covered extensively in the media and generated intense discussion regarding the altered agency dynamic and increased uncertainty regarding near-insolvency situations.<sup>4</sup> Thus, the ruling conceivably made shareholders and managers of fully solvent firms more keenly aware of the new complexities surrounding near-insolvency situations, leading to intensified efforts at ensuring that their firms never approach bankruptcy. As part of their efforts, such firms sought out R&D projects with more certain benefits, at the same time increasing their R&D investments. The net consequence was an increase in the level of innovation for firms further away from insolvency following the ruling. Financially healthy firms were able to increase R&D investments presumably because they enjoy greater risk-bearing capacity and lower susceptibility to creditor interference. Our results suggest that such firms exploited these advantages to enhance innovation output.

We interpret our collective evidence as indicating that the Credit Lyonnais ruling strengthened Delaware firms' focus on long-term value creation, with firms selecting the appropriate long-term focus based on their contemporaneous financial health. Firms close to insolvency restricted risk-taking to avoid bankruptcy, raising the probability of their survival, and those further away from insolvency expanded their innovation attempts, reducing the probability of their insolvency in the long run.

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<sup>4</sup> According to Becker and Stromberg (2012), who provide some detail on the press coverage following the 1991 court ruling, the court ruling was immediately covered by newswires from *Reuters*, *Dow Jones* and *PR Newswire*. 24 newspapers covered the case and the ruling on the day or the following day of the ruling, including the *Wall Street Journal*, *New York Times*, *Financial Times*, *Washington Post*, *Chicago Sun-Times*, and *San Francisco Chronicle*. In just three months after the court ruling, the Credit Lyonnais case was covered 62 times in mainstream press and newswires. Even though the Credit Lyonnais case technically refers to all stakeholders, the interpretation of the court ruling and subsequent legal cases anchor on creditors. For example, see *Geyer V Ingersoll Publications* (1992), *Weaver V Kellogg* (1997), and *Medlin V Wells Fargo Bank* (2007). According to Becker and Stromberg, "The case is extensively cited by other cases, legal scholars and practicing lawyers." They report that a Lexis-Nexis search in July 2009 yielded 169 citations and the Westlaw database reported 612 citations over the same period, including 56 legal cases.

The hypothesis that the 1991 court ruling intensified managers' focus on long-term profitability at Delaware firms has an interesting testable corollary: these managers are also less likely to pursue short-term objectives. Managers often face enormous capital market pressures to continuously meet/beat quarterly earnings targets (Graham, Harvey and Rajgopal 2005). The focus on short-term targets can be counter-productive as it potentially distracts managers from pursuing long-term goals such as innovation (Aghion et al 2013). Furthermore, meeting or beating short-term earnings targets incentivizes managers to engage in myopic actions and earnings overstatements that can be detrimental to long-run value (see Bushee 1998, Graham et al. 2005, Roychowdhury 2006, Cohen and Zarowin 2010, Brochet, Loumioti and Serafeim 2014, Kothari, Mizik and Roychowdhury 2014). We expect that Delaware firms' propensity to just meet/beat short-term targets by small margins and/or to engage in earnings manipulation declines after the 1991 court ruling.

Consistent with our expectations, our analyses reveal a reduced post-1991 frequency of narrowly meeting or beating short-term analysts' targets as well as lower earnings management at the Delaware firms. While the declines in narrow meet/beat frequencies and earnings management occur irrespective of a firm's proximity to bankruptcy, they are more pronounced for firms close to insolvency. The results are indicative of managers refraining from a short-term focus on preserving appearances, particularly when they have to direct their efforts towards steering the firm away from insolvency.

The heightened long-term focus at Delaware firms likely results from the court ruling better aligning the interests of managers, debtholders and equityholders with longer horizons. Importantly, equityholders tend to be heterogeneous in their investment horizons and trading frequencies (Bushee 1998, Matsumoto 2002). Institutional investors with longer investment

horizons are especially likely to appreciate an intensified long-term focus and reduced myopia (Francis and Smith 1995, Bushee 1998, Roychowdhury 2006, Aghion et al. 2013). Accordingly, we examine whether the 1991 court ruling is followed by a shift in the equity investor base of Delaware firms towards dedicated institutional investors, who typically have longer horizons and prefer stable growth in their investments (see Bushee 1998, 2001). Transient institutional investors, on the other hand, are frequent traders with shorter horizons and encourage focus on meeting or beating short-term earnings targets, even via myopic earnings management if necessary (Bushee 1998, Matsumoto 2002). Such investors are unlikely to find the new focus at Delaware firms suit their investment horizons. Indeed, we observe that investments by dedicated institutional investors rise among Delaware firms following the 1991 court ruling, while those by transient institutional investors decline. The shifts are significant for firms away from insolvency, but even more pronounced for firms close to bankruptcy.

Our results on changes in innovation activities, decline in earnings myopia and finally increases in dedicated institutional ownership serve to collectively point to a longer-term focus at Delaware firms after the 1991 court ruling. In additional tests, we confirm that our results on the above shifts are driven by firms with non-zero leverage and firms in industries with patents. Consistent with the change in firm focus being net beneficial for the value of both shareholders' and debtholders' claims, we also document that Delaware firms exhibit an increase in Tobin's Q and a decline in default risk after the 1991 court ruling.

Our study contributes to the literature by providing direct empirical evidence on the influence of agency environment on firm focus. The 1991 Credit Lyonnais court ruling allows us to examine specific managerial choices in response to an exogenous agency shock. It clearly tilted the agency environment in favor of debtholders; yet the longer-term focus it induced



among managers of Delaware firms ultimately also benefited shareholders. Our results thus highlight that a shock to any single aspect of the agency environment can have reverberating consequences throughout the firm.

The virtual impossibility of complete contracting implies that neither shareholders nor their agents (i.e., the board of directors and managers) can credibly commit ex ante to contractually protecting debtholders' interests when firms are near insolvency (Zingales 1998). For example, short-term-oriented shareholders can pressure managers at financially troubled firms to engage in "risk-shifting", i.e. pursue risky projects that reduce the probability of survival but transfer wealth from debtholders. The exogenous legal validation in the 1991 ruling of management's fiduciary responsibility towards both shareholders and debtholders in near-insolvent firms thus created a commitment to long-term value creation probably not achievable via explicit contracts.

Furthermore, our results suggest that the widely publicized ruling drew the attention of even financially healthy firms to the complexities surrounding near-insolvency situations. In doing so, it served to align the interests of managers, debtholders and longer-term shareholders in ensuring that their firms not approach near-insolvency. As a consequence, even fully solvent Delaware firms transferred their focus from meeting/beating short-term targets to expanding innovation activities. The shifts we document away from transient institutional ownership towards dedicated are particularly pertinent in this context. They suggest that the ruling triggered a mitigation of the influence of shareholders who promote a short-term focus among managers and distract them from generating long term value.

The rest of the paper is organized as follows. We discuss the 1991 Credit Lyonnais case, the associated court ruling and its implications in Section 2. Section 3 discusses the sample, the data and our dependent variables. Our results are discussed in Section 4. Section 5 concludes.

## **2. Setting**

### **2.1 The Legal Case**

Prior to *Credit Lyonnais v Pathe Communications*, conventional legal understanding was that directors and managers did not bear fiduciary responsibilities towards creditors, unless firms were already in bankruptcy. The Delaware court ruling in the Credit Lyonnais case in 1991 was instrumental in setting a legal precedent (for firms incorporated in Delaware) that directors and managers also owe fiduciary duties to creditors when firms are in the “vicinity of insolvency”, but crucially, still solvent.<sup>5</sup>

The details of the Credit Lyonnais case are as follows. The private company that emerged out of leveraged buyout (LBO) of MGM Corporation from Time Warner ran into financial difficulties almost immediately after its formation. Five months after the LBO, trade creditors forced MGM into bankruptcy. MGM’s exit from bankruptcy relied heavily on a credit line of \$145 million from Credit Lyonnais. MGM’s controlling shareholder at the time (Pathe Communication) also signed a corporate governance agreement with Credit Lyonnais. Exercising its contractual rights under this agreement, Credit Lyonnais subsequently replaced MGM’s directors inclusive of the CEO. In an attempt to re-gain control over MGM by paying down the Credit Lyonnais debt, Pathe Communication tried to raise money for the payoff by selling MGM’s interest in an overseas subsidiary. The newly-appointed management and

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<sup>5</sup> For a more detailed discussion of the ruling, see Memorandum opinion, Civ. A. No. 12150, Court of Chancery of Delaware, New Castle County. Also, for further institutional details of the case, see Becker and Stromberg (2012).

directors vetoed Pathe Communication's move. Pathe claimed that the new management was in breach of the fiduciary duties they owed to MGM stockholders by favoring creditors' interests.

On December 12 1991, the Delaware Chancery Court ruled in favor of the new (Credit Lyonnais-appointed) management. The court held that "the new management was appropriately mindful of the potential differing interests between the corporation and its controlling 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". A crucial component of this ruling, upheld in all related subsequent court opinions, was the stress on managers' primary responsibility to serve in the best interest of the corporation rather than any specific class of stakeholders.

In a further clarification, Footnote 55 of the court's pronouncement noted that "*...in managing the business affairs of a solvent corporation in the vicinity of insolvency, circumstances may arise when the right course to follow for the corporation may diverge from the choice that stockholders...would make*". The ruling, particularly Footnote 55, was immediately considered a path-breaking breach with existing legal and business understanding and practice and triggered widespread media coverage.<sup>6</sup>

The ruling generated considerable comment and controversy. The increase in fiduciary responsibilities of managers towards debtholders in the vicinity of insolvency is a distinct concept from the creditor-friendliness of the legal environment in bankruptcy. Even though the bankruptcy code does not apply to near-insolvent firms, *Credit Lyonnais* created uncertainty about the relative superiority of shareholders' versus debtholders' claims in such firms. Indeed, the exact definition of the "vicinity of insolvency" and the nature of additional obligations and

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<sup>6</sup> Please see the Introduction (footnote 5) for a discussion of press coverage and publicity for the *Credit Lyonnais* court ruling.

potential liabilities of directors and managers in that vicinity were intensely debated (see for example, Sathy 2001).

Delaware court pronouncements in relatively recent times (2004 and 2007) are perceived as partial roll-backs of the influence of the 1991 *Credit Lyonnais* decision. The 2004 Delaware Chancery Court ruling (*Production Resources v. NCT*) and the 2007 Delaware Supreme Court ruling (*North American Catholic Education Programming Foundation, Inc., v. Gheewalla*) both opine that creditors cannot sue directors and managers directly for breach of fiduciary duties, unless these duties arise from already-existing contractual arrangements. The 2004 and 2007 Delaware cases received much less publicity relative to *Credit Lyonnais*. Becker and Stromberg (2012) fail to find any significant changes around these later cases, suggesting that the perception of managers' fiduciary responsibility towards all stakeholders in near-insolvent-firms survived in spite of the partial reversals. Indeed, both court rulings explicitly re-assert the duties of directors and managers to the corporation and good-faith preservation of its value for *all* stakeholders. Indeed the 2004 *Production Resources* court ruling further asserted: "In other words, *Credit Lyonnais* provided a shield to directors from stockholders who claimed that the directors had a duty to undertake extreme risk so long as the company did not technically breach any legal obligations."

The exact implications of the *Credit Lyonnais* are debated to this day. But at the time of the 1991 court ruling, any uncertainty about the impact and scope was still largely regarded as "unidirectional" (Becker and Stromberg 2012). In other words, there was general and widespread agreement that, in light of the context, the ruling favored greater than existing protection for debtholders' interests in near-insolvency firms. For example, Forbes (1992) concluded that the *Credit Lyonnais* court ruling implied that "*when a company is in serious trouble, the directors'*

*responsibility shifts somewhat in the direction of the creditors*". Indeed, the ruling imposed that at a critical juncture when shareholders are at risk of losing control of the firm, directors and managers of the company can no longer take actions solely in the best interests of the shareholders. One example of shareholders extracting value from a nearly-bankrupt corporation is demanding that managers take on extremely risky projects in the hope of high payoffs on the "upside" (Jensen and Meckling 1976, Warga and Welch 1993, Eisdorfer 2008). The Credit Lyonnais ruling considerably weakened shareholders' legal standing to influence managers to pursue such projects.

Empirically, the 1991 Delaware court ruling provides a powerful identification strategy because it applies solely to firms incorporated in Delaware (that is, "Delaware" firms). This facilitates a direct comparison of changes in Delaware firms before and after the 1991 ruling with corresponding calendar-time changes in non-Delaware firms, who were unaffected by the ruling. Becker and Stromberg (2012) are the first to study the consequences of the ruling. They find that near-insolvent Delaware firms exhibit an increase in equity issues and capital expenditures, along with a decline in ROA volatility after the event. They argue that this is consistent with the Delaware court ruling alleviating the agency problems arising from debt-overhang and risk-shifting close to insolvency. They further document that Delaware firms *on average* experience an increase in leverage, a decrease in covenant frequency, and positive equity announcement returns upon the pronouncement of the ruling. They argue that this is consistent with debtholders and equityholders of all Delaware firms anticipating the benefits associated with the alleviation of agency issues near insolvency. Their study does not, however, address the issue of specific managerial choices, particularly with respect to risk-taking, that generate the observed mitigation in agency costs. We build on their work by providing evidence

on how the shock to agency environment affects managers' approach to risk-taking and their specific actions.

Aier, Chen and Pevzner (2014) report evidence consistent with a stronger influence of debtholders on Delaware firms' financial reporting policy following the Credit Lyonnais ruling; they document an increase in Delaware firms' reporting conservatism after the 1991 court ruling.<sup>7</sup> Our results on earnings management speak to the effect of the ruling on a different aspect of financial reporting – a firm's reduced use of discretion to inflate financial results – and arise from a distinct mechanism: a shift away from myopic goals.

We restrict our analysis to three years before and three years after the ruling to avoid the possibility of “leakage”, that is, any influence of the Delaware ruling on legal cases of a similar nature outside of Delaware. A shorter window also captures the period of time following the Delaware ruling when the perception that managers in near-insolvency Delaware firms are responsible towards both shareholders and debtholders was the strongest and the most pervasive.

### **3. Data**

#### **3.1. Sample**

We begin with all publicly listed firms from the Compustat/CRSP database with non-missing state of incorporation information over the sample period from 1988 to 1994. Our actual analysis concentrates on firm-years between 1988 and 1990 and those between 1992 and 1994. The one-year break in 1991 facilitates clearly-defined “before” and “after” periods straddling the 1991 Delaware court ruling. We exclude firms in financial industries (sic 6000-6999) and utilities (sic 4000-4999). We require the availability of COMPUSTAT and CRSP data necessary to construct our control variables: ROA, total assets, firm age, leverage, capital expenditures,

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<sup>7</sup> Tan and Wongsunwai (2014) find similar evidence.

equity issues, equity volatility, and ROA volatility. These variables are defined in Appendix A. The sample for every test includes the maximum number of observations available for the test, given the data requirements inclusive of dependent variables. As an example, our analysis with patent counts includes 2,075 firms and 11,803 firm-year observations between 1988 and 1994. Firms are classified as treated (or “Delaware” firms) if they are incorporated in Delaware and hence are affected by the rulings, with the rest classified as “controls”. According to this rule, we classify 1,062 firms as treated and 1,013 firms as controls.<sup>8</sup>

## **3.2. Main variables of interest**

### **3.2.1 Innovation**

Following prior research, we employ measures of innovation efficiency that capture innovation output (patent count and citations) per unit of innovation input (R&D expenses) (Hirshleifer et al. 2013). We use firm-level patent data as output-based measures of innovation (Kamien and Schwartz 1975, Griliches 1990, Hirshleifer et al. 2013, Hsu et al. 2014).<sup>9</sup> Griliches (1990) outlines the patent claim process and concludes that patents serve as good indices of contemporaneous attempts to innovate. Using the patent records of all public firms in the updated NBER patent database, we construct two metrics of innovation output: patent counts and patent citations. Patent count (*Patents*) is the number of successful patent applications filed by

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<sup>8</sup> Compustat backfills incorporation data; i.e., at any point in time, it reports the current state of incorporation. This introduces the potential of misclassification and measurement errors. Prior studies have shown that firms rarely re-incorporate. For example, Becker and Stromberg (2012) examine firm re-incorporation over 1990-2006 using the Risk-Metrics database and find that annual frequency of re-incorporation is around 1%. To further address this backfilling issue as it pertains to our sample, we obtain historical state of incorporation information from Moody’s yearly Industry Manual. Over our sample period of 1988-1994, 169 firms changed state of incorporation, among which 24 firms moved out of Delaware and 145 firms re-incorporated into Delaware. We re-estimate our analysis using historical state of incorporation and our conclusions are unchanged.

<sup>9</sup> For each patent granted by the US Patent and Trademark Office (USPTO) from 1976 to 2006, the database provides the following information: the patent assignees (i.e., the firm that filed the patent application), the Compustat-matched firm identifiers (GVKEY), the technology class, the filing date (i.e., the date on which the firm filed the patent application), a list of prior patents that are cited by the designated patent, and a list of subsequent patents that cite the designated patent through 2006. These details allow us to measure the innovation activities of each public firm along multiple dimensions.

firm  $i$  during year  $t$  that are eventually granted by the USPTO. This proxy captures firm innovation output from a quantitative perspective, and has been widely used in economics research (e.g., Griliches 1990, Hall 1993). The second measure of firm-level innovation output is qualitative. This proxy (*Citations*) represents the number of patent citations received by all successful patent applications filed by firm  $i$  in year  $t$ . Prior studies often use the number of citations received by a patent to measure the patent's technological contribution and economic value (Trajtenberg 1990, Harhoff, Narin, Scherer, and Vopel 1999, Hall, Jaffe, and Trajtenberg 2005, Aghion et al. 2013). We adjust the number of citations received by each patent by the technology category and application year, as suggested by Hall et al. (2005), to correct for truncation bias because it takes time for patents to accumulate citations.

To obtain measures of innovation efficiency, we scale each innovation output metric by R&D expenses. Following prior research, we lead all innovation measures relative to R&D (Hirshleifer et al. 2013, Hsu et al. 2014). Our primary measure computes innovation efficiency for year  $t$  as  $Patents_{t+1}/R\&D_t$  and  $Citations_{t+1}/R\&D_t$ .<sup>10</sup> Nevertheless, we also consider innovation proxies with leads of up to two years (i.e., innovation in years  $t+1$  and  $t+2$  scaled by R&D in year  $t$ ) in our robustness checks and obtain consistent results.<sup>11</sup>

Along with innovation efficiency, we also examine investment in innovation: research and development expenses as a fraction of total assets ( $R\&D/Assets$ ). R&D expenditures entail

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<sup>10</sup> R&D values are missing for a large fraction of firms in COMPUSTAT. Following prior literature, we assign the value of 0 to missing observations (Roychowdhury 2006). This results in innovation efficiency measures not being defined for firms with no R&D expenses and a smaller sample size in models which use innovation efficiency measures as the dependent variables. Observations with 0 R&D are, however, included in our tests of R&D investments. This allows for the possibility that a firm with no R&D initiated such investments after the court ruling or vice versa.

<sup>11</sup> Two studies in particular point to the appropriateness of matching R&D to the innovation output occurring in the first year or in the first two years following the R&D expenditures. Griliches (1990) discusses how patent applications tend to be filed concurrently with the R&D that generates them and are thus good indicators of contemporaneous innovation attempts. Furthermore, Hall et al. (2005) point out that in the late 1980s and early 1990s 85% of all patent grants occurred within two years following the patent applications, with about half of them occurring within the first year after application.



significant risk (Chan, Lakonishok and Sougiannis 2001, Kothari et al. 2002, Hirshleifer et al. 2013, Hsu et al. 2014). As a result, this variable captures not only the long-term focus of the firm's investments but also the firm's appetite for operational risk.

Finally, in additional analysis we examine the effect of the Delaware court ruling on the total unscaled innovation output: patent count and patent citations. We use the logarithmic value of one plus patent count or citation count to mitigate skewness in firm-level patents and citations.

### 3.2.2 Earnings manipulation

Following prior literature, we measure earnings manipulation in a number of ways. First, Burgstahler and Dichev (1997) and Dechow, Patel, and Zeckhauser (1999) find a much higher percentage of firms that narrowly meet or beat earnings targets relative to firms that narrowly miss, a pattern they point to as indicative of earnings management. To construct a variable that captures firms meeting or narrowly beating analyst forecasts, we first obtain the consensus median analyst consensus forecast before the earnings announcement from the Institutional Brokers Estimate System (I/B/E/S) database. We then construct the indicator variable  $I(Beat)$ , which equals one if the earnings announcement is equal to the consensus forecast or exceeds this forecast by two cents or less, and zero otherwise.

We also examine abnormal accruals ( $Abn\_Accruals$ ), which have been widely used to study earnings management (Dechow and Dichev 2002, McNichols 2002, Kothari, Leone and Wasley 2005). Following McNichols (2002), we estimate the following model by year for each of the 48 Fama-French industries, requiring at least 20 observations for each estimation:

$$TA_{i,t} = \alpha_0 + \alpha_1 CFO_{i,t-1} + \alpha_2 CFO_{i,t} + \alpha_3 CFO_{i,t+1} + \alpha_4 \Delta Sales_{i,t} + \alpha_5 PPE_{i,t} + \varepsilon_{i,t}$$

CFO is operating cash flow, measured as the sum of net income, depreciation and amortization, and changes in current liabilities, minus changes in current assets, scaled by

average total assets.  $\Delta Sales$  refers to change in sales revenue and  $PPE$  denotes property, plant, and equipment. The residuals from the above regression serve as our measure of abnormal accruals.

Finally, we measure real earnings management (Roychowdhury, 2006). We focus on two primary metrics: the abnormal levels of discretionary expenses and production costs. Following Roychowdhury (2006), Cohen and Zarowin (2010) and Zang (2012), we model the normal levels of discretionary expenses and production costs with the following cross-sectional regressions for each industry and year:

$$Prod_{i,t} = \alpha_0 + \alpha_1 1 / Assets_{i,t-1} + \alpha_2 Sales_{i,t} + \alpha_3 \Delta Sales_{i,t} + \alpha_4 \Delta Sales_{i,t-1} + \varepsilon_{i,t}$$

$$DiscExp_{i,t} = \alpha_0 + \alpha_1 1 / Assets_{i,t-1} + \alpha_2 Sales_{i,t-1} + \varepsilon_{i,t}$$

$Prod$  is production costs, computed as the sum of cost of goods sold and change in inventory, and  $DiscExp$  is discretionary expenses, computed as the sum of advertising expenses, R&D expenses, and SG&A expenses.  $Assets_{t-1}$  is assets at the end of year t-1 (i.e., at the beginning of year t),  $Sales$  is sales revenue, and  $\Delta Sales$  is change in sales revenue;  $Sales$  and  $\Delta Sales$  are scaled by assets at the beginning of the year. The residuals from the respective regressions yield abnormal production costs and abnormal discretionary expenses. Abnormal production costs are denoted  $RM\_Prod$ ; we multiply abnormal discretionary expenses by negative one so that the resultant measure, denoted  $RM\_DiscExp$ , is increasing in the level of earnings management.

Using the above estimates of abnormal production costs and discretionary expenses, we then construct a comprehensive measure of real earnings management. The composite measure,  $RM\_Total$ , is computed by adding  $RM\_Prod$  and  $RM\_DiscExp$ .<sup>12</sup>

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<sup>12</sup> We refrain from using abnormal cash flow from operations (CFO) as a measure of real earnings manipulation. Roychowdhury (2006) points out that the real earnings management methods available to managers can have countervailing effects on CFO. For example, while overproduction and aggressive sales discounts would generate

### 3.2.3 Shareholder clientele

To determine the percentage of shares held by institutional investors, we obtain the institutional ownership data from the Thomson Reuters Institutional (13F) Holdings database. We compute *Institutions* as the total shares held by institutional investors divided by total shares outstanding.

We then identify the institutional ownership type by using the classification developed by Bushee (1998) and used in various studies, including Bushee (2000) and Bushee and Noe (2001).<sup>13</sup> Briefly, Bushee (1998) classifies institutional investors based on investment horizon using a factor analysis and cluster analysis approach. In the paper, we focus on the ownership by two types of institutional investors, dedicated institutions and transient institutions. Dedicated (transient) institutions have low (high) portfolio turnover and less (more) diversified portfolios. We compute *Dedicated (Transient)* as the total shares held by dedicated (transient) institutions divided by total shares outstanding.

### 3.2.4 Proximity to insolvency

Our empirical analyses include examinations of differential effects depending on the firm's proximity to insolvency. Following Vassalou and Xing (2004), and Becker and Stromberg (2012), we measure proximity to insolvency using Merton's distance to default measure. Merton's (1974) model uses the market value of a firm's equity in calculating its default risk. We

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unusually low CFO, aggressive curtailing of discretionary expenses can lead to higher abnormal CFO in the contemporaneous period. The net influence of real manipulation on abnormal CFO is thus ambiguous.

<sup>13</sup> The classification data is available at: <http://acct.wharton.upenn.edu/faculty/bushee/IIclass.html>

construct the distance to default measure following Vassalou and Xing (2004) who employ Merton's model to estimate the value of contingent claims on the firm's assets.<sup>14</sup>

Firms with Merton's distance to default measure (hereafter the Merton measure) in the bottom quartile of the population in year 1990 (i.e., the year immediately before the passage of court ruling) are identified as financially distressed and close to insolvency. The indicator variable  $I(Near-Insolvency)$  is set equal to one for firms in the bottom quartile with respect to the Merton measure and zero otherwise.

## 4. Results

### 4.1 Research design

We examine the economic consequences of an expansion of fiduciary duties towards debtholders, using this general difference-in-difference regression specification:

$$Y_{it} = \beta_0 + \beta_i Post-1991_t \times I(Delaware)_i + \gamma'X_{it} + FirmFE + YearFE + \varepsilon_{it} \quad (1)$$

$Y$  refers to the various proxies for innovation efficiency and R&D investments, earnings manipulation, and shareholder clientele. These proxies are described in detail in Section 3.  $i$  indexes firms and  $t$  time. The *Post-1991* indicator is equal to one from 1992 to 1994, and zero from 1988 to 1990. There is a one-year break between the two three-year periods because the Delaware ruling occurred in 1991. The  $I(Delaware)$  indicator is equal to one in all sample years if the firm is incorporated in Delaware.  $X_{it}$  represents our control variables: ROA, log of total

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<sup>14</sup> We obtain the estimated value of asset and volatility of asset from Maria Vassalou's website. Vassalou and Xing (2004) calculate value of assets and volatility of assets using Black-Scholes (1973) formula:  $V_E = V_A N(d_1) - X e^{-rT} N(d_2)$ , where  $d_1 = (\ln(V_A/X) + (r + 1/2\delta_A^2)T) / \delta_A \sqrt{T}$  and  $d_2 = d_1 - \delta_A \sqrt{T}$ .  $V_E$  denotes market value of equity,  $V_A$  denotes value of assets,  $X$  denotes book value of debts that has maturity equal to  $T$ . Vassalou and Xing (2004) use an iterative procedure to estimate Value of asset ( $V_A$ ) and Volatility of Assets ( $\delta_A$ ). They use daily data from the past 12 months to obtain an estimate of the volatility of equity, which is then used as an initial value for the estimation of  $\delta_A$ . Using the Black-Scholes formula, and for each trading day of the past 12 months, they compute  $V_A$  using  $V_E$  as the market value of equity of that day. In this manner, they obtain daily values for  $V_A$ . They then compute the standard deviation of those  $V_A$ 's, which is used as the value of  $\delta_A$ , for the next iteration. This procedure is repeated until the values of  $\delta_A$  of two consecutive iterations converge at tolerance level of  $10E-4$ . The distance to default is calculated as the difference between value of asset and short-term and long-term debt, divided by volatility of asset.

assets, log of firm age, leverage, capital expenditures, indicator for equity issues, log of equity volatility, and log of ROA volatility (all defined in Appendix A). We follow the research design from Becker and Stromberg (2012) in including firm (*FirmFE*) and year (*YearFE*) fixed effects. As in their study, we do not include a *I(Delaware)* indicator separately as it is absorbed in the firm fixed effects. Similarly, the *Post-1991* indicator separately is absorbed in year fixed effects. In all our regressions we cluster standard errors by the interaction of the state of incorporation and year (Becker and Strömberg, 2012).

Table 1, Panel A provides descriptive statistics on our main variables of interest as well as the control variables. The number of observations (N) varies across variables depending on data availability. Therefore, for each variable, we report descriptive statistics for *all* observations with data available for that variable. In Table 1, Panel B we list the means for our variables of interest for both Delaware and non-Delaware firms before and after the Credit Lyonnais court ruling. After the court ruling, average innovation efficiency, earnings management, and shareholder clientele for Delaware firms change in the predicted direction relative to non-Delaware firms. Briefly, Delaware firms exhibit a significantly greater increase in innovation efficiency metrics, a greater decline in earnings management, as well as a larger shift towards dedicated institutional ownership and away from transient institutional ownership. In addition, Tobin's Q and Distance to Default increase for Delaware firms over and above the increase for non-Delaware firms. However, we refrain from drawing strong conclusions on statistical shifts based on these univariates. The next section discusses our multivariate tests which control for various firm characteristics, as well as firm and year fixed effects.

## **4.2. Results on innovation**

Table 2 Panel A reports the results from estimating equation (1) on the full sample with our proxies for innovation efficiency as the dependent variables. In both columns the coefficient on  $Post-1991*I(Delaware)$  is positive and significant at the 1% level, suggesting that on average Delaware firms improve innovation efficiency after the *Credit Lyonnais* court ruling. To get a sense for the economic magnitude of the changes in innovation efficiency, we evaluate the effect of  $Post-1991*I(Delaware)$  at the mean of the dependent variable. *Patents/R&D* increases by 28.46% relative to the mean for Delaware firms as compared to non-Delaware firms; *Citations/R&D* by 47.18%.

Both innovation and R&D in a given year are possibly influenced by R&D investments in previous years. We re-estimate all tests in Table 2 Panel A after controlling for R&D stock which captures the total R&D incurred over the previous three years and report them in Table 2 Panel B.<sup>15</sup> The additional data requirements for computing R&D stock lower the number of firm-years in the sample in Panel B. R&D stock is negatively associated with innovation efficiency, possibly because of its positive association with the denominator in both such measures (i.e., R&D in year t). Importantly, our main result on innovation efficiency increasing for Delaware firms after the court ruling is robust to this inclusion.

Results reported in Table 2 are based on the entire sample. In Table 3, we investigate changes in managers' innovation efficiency and investments in R&D following the Delaware court ruling conditional on the firm's proximity to insolvency. Table 3 adds to equation (1) two additional terms:  $Post-1991*I(Delaware)*I(Near-Insolvency)$  and  $Post-1991*I(Near-Insolvency)$ . In this expanded specification, the coefficient on  $Post-1991*I(Delaware)$  captures the effect for Delaware firms away from insolvency, while the sum of the coefficient on  $Post-1991*I(Delaware)$  and  $Post-1991*I(Delaware)*I(Near-Insolvency)$  captures the effect for firms

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<sup>15</sup> Specifically, R&D Stock for year t is defined  $\log(R\&D_{t-1} + R\&D_{t-2} + R\&D_{t-3})$ .

that are near insolvency. We report p-values from F-tests of the sum of the two coefficients at the bottom of Table 3.

In Panel A of Table 3, we find significantly positive coefficients of innovation efficiency on  $Post-1991*I(Delaware)$ , suggesting that even Delaware firms away from insolvency improve their innovation efficiency. Focusing on firms near insolvency, we first conclude that Delaware firms near insolvency experience significant increases in innovation efficiency. The sum of  $Post-1991*I(Delaware)$  and  $Post-1991*I(Delaware)*I(Near-Insolvency)$  is positive and significant with p-values smaller than 0.01 in columns (1) and (2). Moreover, in both columns the coefficient on  $Post-1991*I(Delaware)*I(Near-Insolvency)$  is also positive and significant, suggesting that the improvements in innovation efficiency are more pronounced for firms near insolvency than firms away from insolvency. In other words, managers' tendency to seek more certain benefits conditional on incurring R&D expenditures is more pronounced close to insolvency. Some of this incremental effect likely results from reduced risk-shifting when managers owe fiduciary responsibilities to both shareholders and debtholders near insolvency.

In Panel B of Table 3, we focus on R&D expenditures and total innovation output, partitioned on whether firms were further away from insolvency or close to it at the time of the ruling. We find significantly positive coefficient on  $Post-1991*I(Delaware)$  in column (1) of Panel B, suggesting that Delaware firms away from insolvency increase their R&D spending. In contrast, R&D spending of near-insolvent Delaware firms actually declines; the sum of  $Post-1991*I(Delaware)$  and  $Post-1991*I(Delaware)*I(Near-Insolvency)$  is negative with the p-value smaller than 0.01 (F-tests reported at the bottom of the panel). Thus, near-insolvent Delaware firms choose projects with more certain benefits and higher innovation efficiency, but they

restrict overall R&D investments. Fully solvent Delaware firms exhibit the same preference for higher-innovation efficiency projects; in addition, they expand their R&D activities.

In additional analyses reported in Table 3, Panel B we also examine the joint effect of variation in R&D expenditures and innovation efficiency on total innovation output, measured via overall patent count and patent citations. Our evidence so far indicates that innovation efficiency increased both for firms away from and near insolvency but near-insolvent Delaware firms reduced their R&D spending, making the overall effect on the innovation output ambiguous for near-insolvent firms. We use logarithms of one plus patent count or patent citation count to normalize the distributions of these variables. The coefficient on  $Post-1991 * I(Delaware)$  is positive and significant in columns (2) and (3) in Table 3, Panel B. Thus, innovation output increased for Delaware firms further away from insolvency after the Credit Lyonnais court ruling. Turning our attention to near-insolvent firms, we find that the coefficients on  $Post-1991 * I(Delaware) * I(Near-Insolvency)$  are negative both with patent count and patent citations as the dependent variable. Moreover, F-tests reported at the bottom of Panel B suggest that the total innovation output declined for near-insolvent Delaware firms.

Table 3 Panel C reports results with all innovation variables – innovation efficiency, R&D expenditures and innovation output – after controlling for R&D stock. The respective samples are smaller than those in Panels A and B because of the additional data required to compute R&D stock. As expected, leading R&D expenditures and innovation output measured via patent counts and patent citations are all positively associated with R&D stock. Furthermore Panel C confirms all primary results in Panels A and B with respect to shifts in R&D and innovation output after the Delaware court ruling.



### 4.3 Results on earnings manipulation

We next investigate whether, as a result of the expansion of fiduciary duties toward debtholders, firm focus shifts away from short term goals, such as meeting-beating analysts' expectations and earnings manipulation. Table 4, column (1) reports the results of a logistic regression in which the dependent variable is an indicator  $I(Beat)$  taking the value of one if earnings narrowly beat consensus analyst forecasts<sup>16</sup>. The coefficient on  $Post-1991*I(Delaware)$  is negative and highly statistically significant with a p-value smaller than 0.01. This result implies that Delaware firms are generally less likely to narrowly beat analysts' forecasts after the Credit Lyonnais court ruling, even after controlling for the potential time trends using the sample of non-Delaware firms. We further investigate whether these effects differ for firms near insolvency versus those further away in column (2) of Table 4. We find that the coefficients on  $Post-1991*I(Delaware)$  and on  $Post-1991*I(Delaware)*I(Near-Insolvency)$  are both significantly negative which indicates that both types of firms reduce their propensity to narrowly beat analysts' forecasts but the effect is stronger for firms close to insolvency. These results are consistent with managers of Delaware firms in general eschewing a short-term focus on meeting or beating analysts' forecasts by narrow margins if necessary. This trend is particularly pronounced in near-insolvent firms when managers presumably focus their efforts on avoiding insolvency, rather than myopically engaging in preserving appearances.

In Table 5, we report the results from our examination of various measures of earnings manipulation. In column (1), we analyze abnormal accruals and find, consistent with our prediction, that Delaware firms exhibit significantly lower abnormal accruals after the court ruling. We are particularly interested in measures of real activities manipulation since it is more

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<sup>16</sup> We estimate the model using conditional logit model with firm fixed effect, in which all observations where there are no within-firm variations in the dependent variables are dropped from the estimation.

highly associated with negative future performance and value destruction than accruals management (Cohen and Zarowin 2010, Kothari et al. 2014). Columns (2) through (4) in Table 5 report the results for various measures of real activities manipulation. The coefficients in all columns are significantly negative with p-values smaller than 0.01 indicating a significant reduction in real activities manipulation for Delaware firms after the court ruling.

In Table 6, we re-examine changes in earnings manipulation distinguishing between firms that are close to insolvency versus those further away. With respect to abnormal accruals (column (1)), the coefficient on  $Post-1991 * I(Delaware)$  is not statistically significant at conventional levels indicating no significant changes in accrual-based earnings management among firms away from insolvency. Moreover, while the coefficient on  $Post-1991 * I(Delaware) * I(NearInsolvency)$  is significantly negative, the sum of coefficients on  $Post-1991 * I(Delaware)$  and  $Post-1991 * I(Delaware) * I(Near-Insolvency)$ , which identifies the effect for firms close to default, is not significantly different from zero (F-test reported at the bottom of the panel). The reduction in real activities manipulations is apparent for both types of firms (columns (2) through (4) but the effect is significantly stronger for firms near insolvency. These results support the notion that when fiduciary duties are expanded to debtholders, managers shift their focus away from myopic real activities manipulations which can have a detrimental effect on future operations.

#### **4.4. Results on shareholder clientele**

Our tests so far provide evidence that managers shift focus away from short-term and toward more long-term goals. In this section, we investigate whether the shareholder base changes to reflect this new focus. In particular, we re-estimate equation (1) using the total percentage ownership by institutional investors, the percentage ownership by dedicated

institutional investors, and the percentage ownership by transient institutional investors as our dependent variables. Table 7 reports the results of these OLS regressions. In columns (1) and (2), where the dependent variables are respectively the total percentage of institutional investors and the percentage of dedicated institutional investors, the coefficient on  $Post-1991 * I(Delaware)$  is positive and statistically significant at the 1% level. Thus, consistent with our predictions, institutional owners in general and dedicated owners with a long-term investment horizon in particular, add Delaware firms' shares to their portfolios following the 1991 court ruling. Moreover, as evidenced by the significantly negative coefficient on  $Post-1991 * I(Delaware)$  in column (3) of Table 7, transient institutions reduce their holdings in Delaware firms. Given that these institutions emphasize short-term results, we view their exit as a natural consequence of the shift in the firm's focus. When we evaluate economic magnitudes at the means of the dependent variable, we find that the fraction of dedicated investors increases by approximately 15%, while the fraction of transient investors decreases by a similar percentage: 13%. The percentage changes are estimated relative to the respective mean ownership values. This implies that for Delaware firms, mean dedicated institutional ownership rises from 7.07% to 8.14% while transient institutional ownership declines from 5.50% to 4.75% as a consequence of the 1991 court ruling.

In Table 8, we further examine changes in shareholder base splitting the firms into those near and away from insolvency. The increase in institutional ownership in general and dedicated institutional ownership in particular is evident for both types of firms (columns (1) and (2)) but the effect is significantly stronger for firms near insolvency (F-tests reported at the bottom of the table). Similarly, the decrease in the ownership by transient institutions is more pronounced for firms near insolvency (column 3). The results suggest that the shift in focus towards the longer-

term and away from short-term targets is a more salient determinant of shifts in institutional ownership when firms are close to insolvency.

## 4.5. Additional tests

### 4.5.1 Changes in Firm Value and Default Risk

Our results so far suggest that Delaware firms experienced changes in firm focus towards long-term value creation and financial health after the 1991 court ruling. As a follow-up analysis, we test whether there was a corresponding increase in overall valuations of shareholders' and debtholders' claims, as well as a decline in default risk for Delaware firms. We proxy for firm value using *Tobin's Q*, computed as the sum of market value of equity and liabilities divided by the sum of book value of equity and liabilities. We rely on the Merton *Distance to Default* measure discussed earlier in the paper to capture changes in default risk. Table 9 reports the results of our analyses.

The coefficient on  $Post-1991 * I(Delaware)$  is significantly positive in column (1) indicating that Tobin's Q increases for Delaware firms following the expansion of fiduciary duties to debtholders. The increase represents around 5% of the mean, implying that mean Tobin's Q for Delaware firms rises from 1.53 to around 1.61 as a result of the court's ruling.

In column (2), the coefficient on  $Post-1991 * I(Delaware)$  is significantly positive indicating a *decline* in default risk following the court ruling, consistent with the re-orientation in focus increasing Delaware firms' ability to avoid financial distress. The increase in distance to default represents around 8.49% of the mean, implying that the *Distance to Default* metric for Delaware firms rises from 1.61 to around 1.75 as a result of the court's ruling.

### **4.5.2 Capital expenditures**

We find consistent evidence that R&D expenditures and total innovation output increase when firms are further away from insolvency but decline when firms are closer to insolvency. Becker and Stromberg (2012) find that capital expenditures (excluding R&D) exhibit a significant increase across all Delaware firms, irrespective of their proximity to insolvency. In untabulated results, we confirm the Becker and Stromberg (2012) results with capital expenditures in our sample. The key difference between the results is that for Delaware firms close to insolvency, R&D expenditures decline while capital expenditures increase. The explanation for this discrepancy between R&D and capital expenditures probably lies in the greater uncertainty and risk associated with R&D projects (Chan et al. 2001, Kothari et al. 2002). Further, the success of R&D often depends on human expertise and the ability of the firm to leverage its knowledge base; to that extent, relative to conventional capital expenditures, R&D often involves fewer collateralizable fixed asset investments (Roychowdhury and Watts 2007). These inherent differences can explain why in near-insolvent Delaware firms, debtholders would still be interested in limiting R&D investments, even as they place fewer restrictions on conventional capital expenditures. Given their expanded fiduciary duties towards debtholders, managers in such firms would thus restrict R&D after the 1991 court ruling.

### **4.5.3 Robustness**

We conduct a variety of robustness exercises. First, we identify all industries that do not include any firm with patents, and exclude these industries from our tests on innovation involving patent frequency and citations. Our results are robust to this exclusion.

Second, we confirm that all our results inclusive of those we obtain with innovation and R&D, narrow meet/beats and earnings management as well institutional ownership are indeed driven by firms with non-zero leverage. Firms with zero leverage do not exhibit similar patterns.

Third, we exclude from the analysis two non-Delaware states (Pennsylvania and Indiana) that already had statutes requiring managers to consider debt-holders' interests near insolvency, similar to the stipulation for Delaware firms in the 1991 court ruling.<sup>17</sup> Our results are not influenced by this exclusion.

Fourth, we augment our multivariate regressions with state of location and industry fixed effects.<sup>18</sup> These fixed effects control for geography-driven or industry-driven variation in economic conditions. Our results are similar after incorporating these fixed effects.

Fifth, we repeat our analyses using Altman's Z-Score (Altman 1968) to capture near-insolvency instead of the Merton *Distance to Default* metric and find very similar results using this alternative measure of proximity to insolvency.

Finally, our tests on a myopic focus rely on narrow meet/beats of analysts' forecasts in Table 4, and on earnings management proxies in Tables 5 and 6. In robustness analysis, we consider a third metric that combines attributes of both: an indicator variable capturing whether a firm meets or beats analysts' forecasts and also simultaneously exhibits above-median measures of real earnings management. The results we obtain with this metric are similar to those we observe in Tables 5 and 6. In other words, real manipulation to meet/beat analysts' forecasts declines for both fully solvent and near-insolvent Delaware firms, with the decline being more pronounced for the latter.

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<sup>17</sup> A number of states allow corporate directors to take into account the interests of nonowners, e.g., employees, customers, creditors, and suppliers, in certain situations (notably, hostile takeovers). Prior to 1991, only Indiana and Pennsylvania *required* directors to consider non-owner interests (Becker and Stromberg 2012).

<sup>18</sup> In Table 4, we drop the firm fixed effects while adding state of location and industry fixed effects, as conditional logits models cannot accommodate as many fixed effects easily.

## 5. Conclusion

Agency issues, particularly between debtholders and shareholders, have long been considered important determinants of crucial aspects of a firm, including capital structure, cost of capital, investment policy, firm strategy and firm value. The 1991 Credit Lyonnais Delaware court ruling, in a significant break with existing legal presumption, established a precedent for the expansion of fiduciary duties to debtholders when a firm is near insolvency. The ruling immediately and pervasively shifted perceptions about the balance of agency issues between shareholders and debtholders for Delaware firms, with debtholders widely perceived as having gained additional protection in near-insolvency situations.

We exploit this natural shock to analyze the importance of agency issues in influencing firms' strategic choices with respect to investments that impose risk but can also increase long-term value and financial health. Our results are consistent with managers at Delaware firms adopting a long-term focus towards such investments. Innovation efficiency of R&D investments rises systematically across all Delaware firms, consistent with managers seeking out R&D projects with more certain benefits after the 1991 court ruling. R&D expenditures and total innovation output measured via patent counts and citations rise (fall) for firms far from (or close to) insolvency. The patterns suggest that in Delaware firms already close to bankruptcy at the time of the court ruling, managers avoided bearing additional risk and sacrificed the benefits of innovation, consistent with them being mindful of their fiduciary responsibilities towards debtholders. In contrast, in Delaware firms not close to bankruptcy at the time of the court ruling, managers took advantage of the capacity to bear risk to increase their innovation efforts, with the goal of building competitiveness and avoiding financial distress in the long run. Reaffirming this shift towards a longer term focus, Delaware firms also exhibit an across-the board reduction in

myopic earnings manipulations and narrow meeting/beating of analysts' forecasts. Interestingly, changes in shareholder base are consistent with this shift towards more long-term goals: dedicated investors characterized by longer investment horizon add Delaware firms to their portfolios, and transient institutions with a shorter investment horizon leave. Finally we find that shareholders and debtholders benefit from this new focus induced by the altered agency environment, as manifested in an increase in firm valuations (measured via Tobin's Q) and stronger financial health (as measured via Merton's distance to default metric).

Our results demonstrate that an exogenous shift in the agency environment favoring debtholders can shape real decisions at the firm in a manner that is actually beneficial for shareholders as well. Close to insolvency, the shift in the balance of power from shareholders to debtholders motivated firms to seek out projects with more certain benefits, facilitating their survival and their long-term ability to generate wealth for all stakeholders. Further away from insolvency, firms improved their product market competitiveness via increased investments in innovation. This latter effect arises conceptually as a combination of two factors: (a) debtholders are more tolerant of risky innovation measures when firms are far away from insolvency; and (b) shareholders have a heightened aversion to being in near-bankruptcy situations, and hence focus on long-term actions to keep the firm from progressing towards insolvency.

While we find that after the Delaware court ruling firms become more oriented towards the long-term and the investor base in Delaware firms shifts towards dedicated investors, we perceive the Credit Lyonnais court ruling as the catalyst that triggers these contemporaneous shifts. In other words, it is difficult to conceptually identify the precedence or the causal effect between the shifts towards a long-term focus and towards dedicated institutional ownership. Rather, they are likely manifestations of different parties to the firm simultaneously adapting to



the shock in the agency environment. Nevertheless, our research design does allow us to conclude that the expansion of fiduciary duties to debtholders was necessary to jump-start both the changes in firm focus and the shift in shareholder base. Indeed, while debtholders routinely include covenants in loan and bond agreements to restrict managerial choice, it is difficult to *ex ante* contractually ensure that managers will bear fiduciary duties towards debtholders if firms veer close to bankruptcy. The optimal course of action even for preserving debtholders' interests near insolvency depends on the specific circumstances, which are unknown at time when the contracts are written. Thus, the exogenous Delaware court ruling is likely to have played a crucial role in inducing a shift in focus towards creating long-term value that could not have been achieved contractually.

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## Appendix A Variable Definitions

Variables	Definition
<i>I(Delaware)</i>	Indicator equal to one if firms are incorporated in Delaware
<i>Post-1991</i>	Indicator equal to one for years 1992-1994 and zero for years 1988-1990
<i>ROA</i>	Net income over lagged total asset
<i>Assets</i>	Total assets
<i>Firmage</i>	Number of years since a firm first appeared in CRSP
<i>Leverage</i>	Short term debt plus long term debt minus cash, all divided by total assets
<i>CAPX/Assets</i>	Capital expenditures over total assets
<i>I(Issue Equity)</i>	Following Baker, Stein and Wrugler (2003), indicator equal to one if stock issuance is positive, where stock issuance is calculated as change in common equity plus change in deferred tax minus change in retained earnings, all scaled by total assets
<i>Distance to Default</i>	Following Vassalou and Xing (2004), who employ Merton's model to estimate the value of contingent claims on the firm's assets, Distance to Default is calculated as the difference between value of assets and short-term and long-term debt, divided by volatility of assets, where value of assets and volatility of assets are calculated using Black-Scholes formula and are obtained from Maria Vassalou's website.
<i>I(Near-Insolvency)</i>	Indicator equal to one if the <i>Distance to Default</i> measure is in the bottom quartile of the sample for sample firms in 1990, the year immediately preceding the Credit Lyonnais court ruling.
<i>Equity Volatility</i>	Log of annualized monthly standard deviation of the stock return in year t, taken from CRSP
<i>ROA Volatility</i>	Standard deviation of quarterly ROA in year t
<i>Number of Patents</i>	Total number of successful patent applications filed by firm i in year t+1 that are subsequently approved by the USPTO. We use the logarithm of the patent count plus 1 to mitigate skewness in the firm-level patent counts. The data is downloaded from NBER patent database.
<i>Patent Citations</i>	Total number of citations received by all patents that are filed by firm i in year t+1 and that are subsequently approved by the USPTO. The citation measure is adjusted for truncation following Hall, Jaffe and Trajtenberg (2005). We use the logarithmic citation count plus 1 to mitigate skewness in firm-level patents and citations. The data is downloaded from NBER patent database.
<i>R&amp;D/Assets</i>	Research and development expenses in year t+1/Total assets in year t+1
<i>Patents/R&amp;D</i>	Number of patents in year t+1 divided by R&D expense in year t
<i>Citations/R&amp;D</i>	Number of patent citations in year t+1 divided by R&D expense in year t
<i>R&amp;D Stock</i>	R&D Stock for year t is defined as $\log(R\&D_{t-1} + R\&D_{t-2} + R\&D_{t-3})$
<i>I(Beat)</i>	Indicator equal to one if a firm's reported earnings are equal to analyst consensus or exceed analyst consensus by less than two cents, and zero otherwise.
<i>Abn_Accruals</i>	Accrual-based earnings management defined as the residual from the following regression for each year and each Fama-French 48 industry that has at least 20 observations: $TA_{i,t} = \alpha_0 + \alpha_1 CFO_{i,t-1} + \alpha_2 CFO_{i,t} + \alpha_3 CFO_{i,t+1} + \alpha_4 \Delta Sales_{i,t} + \alpha_5 PPE_{i,t} + \epsilon_{i,t}$
<i>RM_Prod</i>	Real earnings management based on production costs defined as the residual from the following regression for each year and each Fama-French 48 industry that has at least 20 observations: $Prod_{i,t} = \alpha_0 + \alpha_1 1 / Assets_{i,t-1} + \alpha_2 Sales_{i,t} + \alpha_3 \Delta Sales_{i,t} + \alpha_4 \Delta Sales_{i,t-1} + \epsilon_{i,t}$
<i>RM_DiscExp</i>	Real earnings management based on discretionary expenses defined as minus one times the residual from the following regression for each year and each Fama-French 48 industry that has at least 20 observations: $DiscExp_{i,t} = \alpha_0 + \alpha_1 1 / Assets_{i,t-1} + \alpha_2 Sales_{i,t-1} + \epsilon_{i,t}$ . Higher values of <i>RM_DiscExp</i> represent greater cuts in discretionary expenses and thus more earnings management.
<i>RM_Total</i>	$RM\_Prod + RM\_DiscExp$
<i>% Total Inst</i>	Percent of shares outstanding held by institutional investors
<i>% Ded Inst</i>	Percent of shares outstanding held by dedicated institutions
<i>% Transi Inst</i>	Percent of shares outstanding held by transient institutions
<i>Tobin's Q</i>	Market value of equity plus the book value of assets minus the sum of book value of common equity and deferred taxes, all divided by the book value of assets.

### Table 1 Descriptive Statistics

The sample period is from 1988 to 1994 (excluding 1991 – the year of the Credit Lyonnais court ruling). We exclude financial and utility industries (sic 4000-4999 and sic 6000-6999). Panel A shows descriptive statistics and Panel B reports univariate comparison between Delaware firms and non-Delaware firms in the Pre- (1988-1990) and Post- (1992-1994) periods. All variables are defined in Appendix A.

Panel A Descriptive Statistics						
	N	Mean	Median	Std	p25	p75
<i>Patents/R&amp;D</i>	9,400	0.239	0.000	0.683	0.000	0.228
<i>Citations/R&amp;D</i>	9,400	4.544	0.000	22.414	0.000	3.044
<i>R&amp;D/Assets</i>	19,589	0.036	0.000	0.070	0.000	0.044
<i>Number of patents</i>	19,974	6.456	0.000	51.039	0.000	0.000
<i>Number of patent citations</i>	19,974	131.463	0.000	1227.644	0.000	0.000
<i>I(Beat)</i>	7,417	0.227	0.000	0.419	0.000	0.000
<i>Abn_Accruals</i>	18,416	-0.001	0.006	0.101	-0.037	0.048
<i>RM_Prod</i>	15,925	-0.011	-0.002	0.228	-0.127	0.115
<i>RM_DiscExp</i>	16,663	-0.003	0.031	0.284	-0.111	0.159
<i>RM_Total</i>	14,938	-0.027	0.029	0.448	-0.219	0.240
<i>% Total Inst</i>	12,117	29.442	26.320	21.201	10.638	45.963
<i>% Ded Inst</i>	12,117	8.521	6.654	7.750	2.242	12.689
<i>% Transi Inst</i>	12,117	4.810	2.900	5.550	0.406	7.371
<i>Tobin's Q</i>	19,786	1.670	1.305	1.127	1.012	1.912
<i>Distance to Default</i>	12,813	1.872	1.782	1.875	0.926	2.835
<i>ROA</i>	20,071	0.001	0.036	0.178	-0.031	0.088
<i>Total Assets</i>	20,071	592.133	65.914	1754.936	17.057	286.873
<i>Firmage</i>	20,071	16.303	10.000	14.764	6.000	23.000
<i>Leverage</i>	20,071	0.100	0.130	0.338	-0.093	0.318
<i>Capx/Assets</i>	20,071	0.078	0.050	0.098	0.023	0.094
<i>I(Issue Equity)</i>	20,071	0.686	1.000	0.464	0.000	1.000
<i>Equity Volatility</i>	20,071	0.144	0.122	0.090	0.084	0.176
<i>ROA Volatility</i>	20,071	0.024	0.011	0.039	0.005	0.026

**Table 1 Descriptive Statistics Continued**

<b>Panel B Univariate Comparison</b>							
	Delaware firms		Non-Delaware firms		diff-in-diff (Post-Pre)		p-value
	Pre Mean	Post Mean	Pre Mean	Post Mean			
<i>Patents/R&amp;D</i>	0.201	0.274	0.230	0.241	0.062	**	0.030
<i>Citations/R&amp;D</i>	3.614	6.149	3.900	4.028	2.406	**	0.010
<i>R&amp;D/Assets</i>	0.036	0.043	0.031	0.034	0.005	**	0.025
<i>Number of Patents</i>	6.303	6.949	5.837	6.552	-0.069		0.962
<i>Number of Patent Citations</i>	116.500	152.660	111.046	138.482	8.725		0.803
<i>I(Beat)</i>	0.200	0.240	0.177	0.269	-0.052	***	0.009
<i>Abn_Accruals</i>	-0.001	-0.008	0.004	0.004	-0.007	**	0.014
<i>RM_Prod</i>	-0.008	-0.019	-0.006	-0.008	-0.010		0.180
<i>RM_DiscExp</i>	-0.008	-0.037	0.024	0.020	-0.024	***	0.007
<i>RM_Total</i>	-0.027	-0.077	0.004	0.003	-0.050	***	0.001
<i>% Total Inst</i>	29.155	33.256	25.485	28.572	1.014		0.189
<i>% Ded Inst</i>	7.031	10.585	6.571	8.934	1.192	***	0.000
<i>% Transi Inst</i>	5.492	5.116	4.207	4.423	-0.593	***	0.004
<i>Tobin's Q</i>	1.529	1.902	1.490	1.679	0.183	***	0.000
<i>Distance to Default</i>	1.609	1.969	1.823	2.046	0.136	**	0.040



## Table 2 Innovation Efficiency

The sample period is from 1988 to 1994 (excluding 1991 – the year of the Credit Lyonnais court ruling). We exclude financial and utility industries (sic 4000-4999 and sic 6000-6999). All variables are defined in Appendix A. Panel A examines the effect of the court ruling on innovation efficiency and Panel B re-estimates the models from Panel A controlling for R&D stock T-statistics are presented beneath the coefficients within parentheses. \*, \*\* and \*\*\* denote significance level at 10%, 5% and 1% respectively. Standard errors are corrected for heteroscedasticity and are clustered by the interaction of year and state of incorporation level.

<b>Panel A: Complete Sample</b>		
	(1)	(2)
	<i>Patents/R&amp;D</i>	<i>Citations/R&amp;D</i>
<i>Post-1991*I(Delaware)</i>	0.068*** (3.779)	2.144*** (4.613)
<i>ROA</i>	0.067 (1.386)	0.730 (0.470)
<i>Log Assets</i>	0.007 (0.472)	0.237 (0.615)
<i>Log Firmage</i>	0.080 (1.280)	-0.102 (-0.052)
<i>Leverage</i>	0.069 (0.829)	1.742 (0.615)
<i>Capx/Assets</i>	-0.028 (-0.305)	-1.029 (-0.287)
<i>I(Issue Equity)</i>	0.013 (0.593)	0.614 (0.913)
<i>Log Equity Volatility</i>	0.040*** (3.138)	1.268* (1.956)
<i>Log ROA Volatility</i>	-0.010 (-1.625)	-0.341 (-1.326)
Observations	9,400	9,400
R-squared	0.507	0.378
Year FE	Yes	Yes
Firm FE	Yes	Yes

**Table 2 Innovation Efficiency – Continued**

<b>Panel B: Sub-Sample with R&amp;D Stock as Control Variable</b>		
	(1)	(2)
	<i>Patents/R&amp;D</i>	<i>Citations/R&amp;D</i>
<i>Post-1991*I(Delaware)</i>	0.076*** (3.483)	2.548*** (4.529)
<i>R&amp;D Stock</i>	-0.070*** (-2.801)	-2.196** (-2.562)
<i>ROA</i>	0.055 (1.104)	0.041 (0.026)
<i>Log Assets</i>	0.026 (1.262)	0.787 (1.238)
<i>Log Firmage</i>	0.149*** (2.642)	1.020 (0.588)
<i>Leverage</i>	0.090 (0.974)	2.135 (0.683)
<i>Capx/Assets</i>	-0.070 (-0.562)	-2.840 (-0.591)
<i>I(Issue Equity)</i>	0.011 (0.499)	0.550 (0.831)
<i>Log Equity Volatility</i>	0.040*** (2.602)	1.330* (1.766)
<i>Log ROA Volatility</i>	-0.010 (-1.400)	-0.320 (-1.110)
Observations	8,952	8,952
R-squared	0.508	0.377
Year FE	Yes	Yes
Firm FE	Yes	Yes

### Table 3 Innovation and Proximity to Insolvency

The sample period is from 1988 to 1994 (excluding 1991 – the year of the Credit Lyonnais court ruling). We exclude financial and utility industries (sic 4000-4999 and sic 6000-6999). Panel A examines the effect of the court ruling on innovation efficiency, and Panel B on R&D expenses as well as total innovation output. In Panel C, we re-estimate the models from Panels A and B controlling for R&D stock. The number of observations is reduced relative to those reported in Table 2 because of the availability of Merton's Distance to Default measure. All variables are defined in Appendix A. T-statistics are presented beneath the coefficients within parentheses. \*, \*\* and \*\*\* denote significance level at 10%, 5% and 1% respectively. Standard errors are corrected for heteroscedasticity and are clustered by the interaction of year and state of incorporation level.

<b>Panel A: Innovation Efficiency</b>		
	(1) <i>Patents/R&amp;D</i>	(2) <i>Citations/R&amp;D</i>
<i>Post-1991*I(Delaware)</i>	0.032* (1.746)	1.464*** (3.476)
<i>Post-1991*I(Delaware)*I(Near-Insolvency)</i>	0.182*** (3.201)	6.478*** (6.301)
<i>Post-1991*I(Near-Insolvency)</i>	0.015 (0.266)	-0.333 (-0.321)
<i>ROA</i>	-0.001 (-0.023)	0.500 (0.426)
<i>Log Assets</i>	0.023 (1.177)	0.657 (1.510)
<i>Log Firmage</i>	0.019 (0.211)	-1.216 (-0.529)
<i>Leverage</i>	0.017 (0.191)	2.610 (1.052)
<i>Capx/Assets</i>	-0.204* (-1.791)	-8.467* (-2.029)
<i>I(Issue Equity)</i>	0.020* (1.736)	1.029*** (2.867)
<i>Log Equity Volatility</i>	0.053*** (3.320)	1.480** (2.038)
<i>Log ROA Volatility</i>	0.001 (0.286)	-0.125 (-0.966)
Observations	5,727	5,727
R-squared	0.415	0.241
Year FE	Yes	Yes
Firm FE	Yes	Yes
F test on <i>Post-1991*I(Delaware)+Post-1991*I(Delaware)*I(Near-Insolvency)=0</i>		
P-value	0.007	0.000

**Table 3 Innovation and Proximity to Insolvency - Continued**

<b>Panel B: R&amp;D and Innovation Output</b>			
	(1)	(2)	(3)
	<i>R&amp;D/Assets</i>	<i>Log (1+Patents)</i>	<i>Log(1+Citations)</i>
<i>Post-1991*I(Delaware)</i>	0.003*** (3.002)	0.060*** (3.513)	0.130*** (3.375)
<i>Post-1991*I(Delaware)*I(Near-Insolvency)</i>	-0.006*** (-4.183)	-0.069*** (-2.804)	-0.149*** (-2.700)
<i>Post-1991*I(Near-Insolvency)</i>	0.003** (2.269)	0.008 (0.467)	0.024 (0.530)
<i>ROA</i>	-0.009 (-1.012)	0.061* (1.893)	0.100 (1.386)
<i>Log Assets</i>	0.001 (1.161)	0.099*** (7.655)	0.209*** (8.304)
<i>Log Firmage</i>	-0.002 (-1.268)	0.087*** (3.684)	0.208*** (2.969)
<i>Leverage</i>	-0.004 (-1.101)	-0.073*** (-4.215)	-0.148*** (-2.918)
<i>Capx/Assets</i>	-0.005 (-1.078)	-0.103** (-2.036)	-0.222* (-1.823)
<i>I(Issue Equity)</i>	-0.001 (-1.080)	-0.006 (-0.768)	-0.018 (-1.036)
<i>Log Equity Volatility</i>	-0.000 (-0.045)	0.009 (0.951)	0.010 (0.480)
<i>Log ROA Volatility</i>	-0.000 (-0.068)	0.014*** (3.414)	0.025*** (2.783)
Observations	11,650	11,803	11,803
R-squared	0.785	0.938	0.897
Year FE	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes
F test on <i>Post-1991*I(Delaware)+Post-1991*I(Delaware)*I(Near-Insolvency)=0</i>			
P-value	0.001	0.001	0.001

**Table 3 Innovation and Proximity to Insolvency - Continued**

<b>Panel C: Innovation and R&amp;D , Sub-Samples using R&amp;D Stock as Control Variable</b>					
	(1)	(2)	(3)	(4)	(5)
	<i>Patents/R&amp;D</i>	<i>Citations/R&amp;D</i>	<i>R&amp;D/Assets</i>	<i>Log (1+Patents)</i>	<i>Log(1+Citations)</i>
<i>Post-1991*I(Delaware)</i>	0.040** (2.034)	1.764*** (4.024)	0.003*** (2.786)	0.054*** (2.772)	0.112*** (3.029)
<i>Post-1991*I(Delaware)*I(Near-Insolvency)</i>	0.191*** (3.101)	6.678*** (6.479)	-0.006*** (-4.316)	-0.071** (-2.676)	-0.137*** (-2.834)
<i>Post-1991*I(Near-Insolvency)</i>	0.007 (0.112)	-0.398 (-0.374)	0.003** (2.331)	0.019 (0.720)	0.042 (0.817)
<i>R&amp;D Stock</i>	-0.086*** (-3.874)	-2.755*** (-4.193)	0.003** (2.035)	0.116*** (10.141)	0.195*** (6.277)
<i>ROA</i>	-0.030 (-0.558)	-0.630 (-0.828)	-0.005 (-0.827)	0.110** (2.100)	0.178* (1.760)
<i>Log Assets</i>	0.053** (2.348)	1.719** (2.194)	0.001* (1.962)	0.072*** (4.873)	0.160*** (4.550)
<i>Log Firmage</i>	0.059 (0.594)	-0.359 (-0.168)	-0.002 (-0.591)	0.076** (2.180)	0.158** (2.043)
<i>Leverage</i>	0.026 (0.313)	2.741 (1.153)	-0.002 (-0.792)	-0.062*** (-3.627)	-0.138** (-2.521)
<i>Capx/Assets</i>	-0.284 (-1.662)	-12.338* (-1.939)	-0.004 (-1.183)	-0.046 (-0.993)	-0.119 (-1.108)
<i>I(Issue Equity)</i>	0.016 (1.419)	0.957** (2.468)	-0.000 (-0.755)	-0.005 (-0.470)	-0.016 (-0.533)
<i>Log Equity Volatility</i>	0.056*** (3.325)	1.604*** (2.046)	-0.001 (-0.589)	0.005 (1.121)	-0.003 (-0.217)
<i>Log ROA Volatility</i>	0.000 (0.104)	-0.137 (-1.063)	0.000 (0.120)	0.015*** (3.838)	0.029*** (2.856)
Observations	5,558	5,558	11,241	11,394	11,394
R-squared	0.415	0.239	0.791	0.941	0.903
Year FE	Yes	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes	Yes
F test on <i>Post-1991*I(Delaware)+Post-1991*I(Delaware)*I(Near-Insolvency)=0</i>					
P-value	0.008	0.000	0.000	0.017	0.005

**Table 4 Narrow Meet/Beats of Analyst Forecasts**

The sample period is from 1988 to 1994 (excluding 1991 – the year of the Credit Lyonnais court ruling). We exclude financial and utility industries (sic 4000-4999 and sic 6000-6999). We estimate the model using conditional logit model with firm fixed effects, in which all observations where there are no within firm variations in the dependent variables will be dropped from the estimation. All variables are defined in Appendix A. T-statistics are presented beneath the coefficients within parentheses. \*, \*\* and \*\*\* denote significance level at 10%, 5% and 1% respectively. Standard errors are corrected for heteroscedasticity and are clustered by the interaction of year and state of incorporation level.

	(1) <i>I(Beat)</i>	(2) <i>I(Beat)</i>
<i>Post-1991*I(Delaware)</i>	-0.310*** (-2.93)	-0.251** (-2.04)
<i>Post-1991*I(Delaware)*I(Near-Insolvency)</i>		-0.915*** (-2.58)
<i>Post-1991*I(Near-Insolvency)</i>		0.128 (0.36)
<i>ROA</i>	2.906*** (6.53)	2.982*** (4.31)
<i>Log Assets</i>	-0.076 (-0.89)	-0.086 (-0.69)
<i>Log Firmage</i>	0.030 (0.15)	0.397** (2.23)
<i>Leverage</i>	-0.990*** (-3.88)	-0.893** (-2.42)
<i>Capx/Assets</i>	0.038 (0.10)	-0.202 (-0.29)
<i>I(Issue Equity)</i>	-0.069 (-1.41)	0.038 (0.60)
<i>Log Equity Volatility</i>	-0.006 (-0.07)	-0.069 (-0.56)
<i>Log ROA Volatility</i>	-0.215*** (-6.46)	-0.172*** (-4.08)
Observations	4,274	3,083
R-squared	0.039	0.038
Year FE	Yes	Yes
Firm FE	Yes	Yes
F test on <i>Post-1991*I(Delaware)+Post-1991*I(Delaware)*I(Near-Insolvency)=0</i>		0.000
P-value		

### Table 5 Earnings Manipulation

The sample period is from 1988 to 1994 (excluding 1991 – the year of the Credit Lyonnais court ruling). We exclude financial and utility industries (sic 4000-4999 and sic 6000-6999). All variables are defined in Appendix A. T-statistics are presented beneath the coefficients within parentheses. \*, \*\* and \*\*\* denote significance level at 10%, 5% and 1% respectively. Standard errors are corrected for heteroscedasticity and are clustered by the interaction of year and state of incorporation level.

	(1)	(2)	(3)	(4)
	<i>Abn_Accruals</i>	<i>RM_Prod</i>	<i>RM_DiscExp</i>	<i>RM_Total</i>
<i>Post-1991*I(Delaware)</i>	-0.007*** (-3.250)	-0.019*** (-5.951)	-0.028*** (-4.640)	-0.049*** (-6.424)
<i>ROA</i>	0.392*** (4.014)	-0.301*** (-4.548)	0.023 (0.903)	-0.214*** (-5.994)
<i>Log Assets</i>	-0.011*** (-4.483)	0.042*** (7.400)	-0.024*** (-3.067)	0.014* (1.654)
<i>Log Firmage</i>	-0.015*** (-2.798)	-0.041*** (-4.215)	0.040*** (2.720)	0.011 (0.395)
<i>Leverage</i>	0.013* (1.948)	0.033*** (3.301)	-0.015 (-1.154)	0.041* (1.911)
<i>Capx/Assets</i>	-0.004 (-0.254)	-0.048* (-1.904)	-0.300*** (-8.849)	-0.378*** (-7.555)
<i>I(Issue Equity)</i>	0.003* (1.674)	0.004** (2.036)	-0.017*** (-5.449)	-0.015*** (-3.145)
<i>Log Equity Volatility</i>	-0.000 (-0.107)	-0.007*** (-2.952)	-0.001 (-0.189)	-0.002 (-0.393)
<i>Log ROA Volatility</i>	-0.012*** (-9.115)	-0.005*** (-3.064)	-0.009*** (-5.761)	-0.011*** (-4.099)
Observations	18,416	15,925	16,663	14,938
R-squared	0.519	0.763	0.728	0.773
Year FE	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes

**Table 6 Earnings Manipulation and Proximity to Insolvency**

The sample period is from 1988 to 1994 (excluding 1991 – the year of the Credit Lyonnais court ruling). We exclude financial and utility industries (sic 4000-4999 and sic 6000-6999). The number of observations is reduced relative to those reported under Table 5 because of the availability of Merton's Distance to Default measure. All variables are defined in Appendix A. T-statistics are presented beneath the coefficients within parentheses. \*, \*\* and \*\*\* denote significance level at 10%, 5% and 1% respectively. Standard errors are corrected for heteroscedasticity and are clustered by the interaction of year and state of incorporation level.

	(1) <i>Abn_Accruals</i>	(2) <i>RM_Prod</i>	(3) <i>RM_DiscExp</i>	(4) <i>RM_Total</i>
<i>Post-1991*I(Delaware)</i>	0.001 (0.445)	-0.012*** (-2.817)	-0.011* (-1.830)	-0.027*** (-2.855)
<i>Post-1991*I(Delaware)*I(Near-Insolvency)</i>	-0.011* (-1.750)	-0.024*** (-2.714)	-0.029** (-2.135)	-0.050*** (-3.516)
<i>Post-1991*I(Near-Insolvency)</i>	0.005 (0.693)	0.005 (0.543)	-0.012 (-0.883)	-0.007 (-0.550)
<i>ROA</i>	0.421*** (4.319)	-0.261*** (-11.120)	-0.008 (-0.177)	-0.226*** (-4.262)
<i>Log Assets</i>	-0.016*** (-4.641)	0.041*** (3.885)	-0.015 (-1.126)	0.019 (1.620)
<i>Log Firmage</i>	-0.016* (-1.906)	-0.037*** (-3.034)	0.036** (2.140)	0.012 (0.340)
<i>Leverage</i>	0.028*** (3.383)	0.046*** (5.192)	-0.024 (-1.122)	0.025 (1.176)
<i>Capx/Assets</i>	-0.012 (-0.630)	-0.061** (-2.268)	-0.306*** (-6.467)	-0.401*** (-7.714)
<i>I(Issue Equity)</i>	0.001 (0.661)	0.000 (0.266)	-0.015*** (-2.746)	-0.013** (-2.561)
<i>Log Equity Volatility</i>	0.002 (0.791)	-0.005 (-1.469)	-0.002 (-0.333)	0.003 (0.264)
<i>Log ROA Volatility</i>	-0.010*** (-9.046)	-0.003** (-2.413)	-0.007*** (-3.327)	-0.005*** (-2.841)
Observations	11,310	10,384	10,431	9,852
R-squared	0.500	0.744	0.705	0.750
Year FE	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes
F test on <i>Post-1991*I(Delaware)+Post-1991*I(Delaware)*I(Near-Insolvency)=0</i>				
P-value	0.227	0.000	0.005	0.000



**Table 7 Shareholder Clientele**

The sample period is from 1988 to 1994 (excluding 1991 – the year of the Credit Lyonnais court ruling). We exclude financial and utility industries (sic 4000-4999 and sic 6000-6999). All variables are defined in Appendix A. T-statistics are presented beneath the coefficients within parentheses. \*, \*\* and \*\*\* denote significance level at 10%, 5% and 1% respectively. Standard errors are corrected for heteroscedasticity and are clustered by the interaction of year and state of incorporation level.

	(1) % Total Inst	(2) % Ded Inst	(3) % Transi Inst
<i>Post-1991*I(Delaware)</i>	1.375*** (4.850)	1.290*** (7.543)	-0.655*** (-4.044)
<i>ROA</i>	1.299 (1.133)	-1.716*** (-2.805)	4.007*** (10.917)
<i>Log Assets</i>	7.544*** (6.296)	1.855*** (8.013)	1.645*** (8.603)
<i>Log Firmage</i>	5.705*** (9.302)	1.698*** (2.994)	0.943** (2.017)
<i>Leverage</i>	-6.525*** (-7.503)	-0.995** (-2.543)	-2.993*** (-10.176)
<i>Capx/Assets</i>	4.322** (2.349)	-1.087 (-1.611)	3.831*** (5.422)
<i>I(Issue Equity)</i>	0.379** (2.316)	-0.222** (-2.012)	0.526*** (4.467)
<i>Log Equity Volatility</i>	-0.970*** (-3.277)	-0.260 (-1.565)	0.287*** (2.793)
<i>Log ROA Volatility</i>	-0.075 (-0.749)	0.048 (1.020)	0.008 (0.192)
Observations	12,117	12,117	12,117
R-squared	0.907	0.698	0.685
Year FE	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes

**Table 8 Shareholder Clientele and Proximity to Insolvency**

The sample period is from 1988 to 1994 (excluding 1991 – the year of the Credit Lyonnais court ruling). We exclude financial and utility industries (sic 4000-4999 and sic 6000-6999). The number of observations is reduced relative to those reported under Table 7 because of the availability of Merton's Distance to Default measure. All variables are defined in Appendix A. T-statistics are presented beneath the coefficients within parentheses. \*, \*\* and \*\*\* denote significance level at 10%, 5% and 1% respectively. Standard errors are corrected for heteroscedasticity and are clustered by the interaction of year and state of incorporation level.

	(1) % Total Inst	(2) % Ded Inst	(3) % Transi Inst
<i>Post-1991*I(Delaware)</i>	0.928** (2.404)	0.700*** (3.296)	-0.675*** (-3.032)
<i>Post-1991*I(Delaware)*I(Near-Insolvency)</i>	1.794** (2.164)	3.425*** (6.899)	-0.751* (-1.707)
<i>Post-1991*I(Near-Insolvency)</i>	-0.265 (-0.447)	-0.775* (-1.820)	0.368 (1.368)
<i>ROA</i>	0.762 (0.371)	-1.803* (-1.860)	4.390*** (7.149)
<i>Log Assets</i>	7.610*** (11.988)	1.839*** (7.326)	1.737*** (9.877)
<i>Log Firmage</i>	5.503*** (7.469)	1.004** (1.976)	1.371** (2.256)
<i>Leverage</i>	-8.059*** (-6.070)	-1.544*** (-3.113)	-3.602*** (-10.758)
<i>Capx/Assets</i>	5.902*** (2.687)	-1.623 (-1.544)	4.424*** (5.942)
<i>I(Issue Equity)</i>	0.531*** (3.291)	-0.172 (-1.437)	0.561*** (4.406)
<i>Log Equity Volatility</i>	-1.319*** (-3.759)	-0.325 (-1.645)	0.283** (2.212)
<i>Log ROA Volatility</i>	0.041 (0.342)	0.052 (0.742)	0.043 (0.952)
Observations	8,233	8,233	8,233
R-squared	0.901	0.632	0.660
Year FE	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes
F test on <i>Post-1991*I(Delaware)+Post-1991*I(Delaware)*I(Near-Insolvency)=0</i>			
P-value	0.000	0.000	0.000

### Table 9 Change in Firm Value and Default Risk

The sample period is from 1988 to 1994 (excluding 1991 – the year of the Credit Lyonnais court ruling). We exclude financial and utility industries (sic 4000-4999 and sic 6000-6999). *Tobin's Q* and *Distance to Default* are measured at the end of each year from 1988 to 1990 (period before Delaware ruling) and between 1992 and 1994 (period after Delaware ruling). All variables are defined in Appendix A. T-statistics are presented beneath the coefficients within parentheses. \*, \*\* and \*\*\* denote significance level at 10%, 5% and 1% respectively. Standard errors are corrected for heteroscedasticity and are clustered by the interaction of year and state of incorporation level.

	(1) <i>Tobin's Q</i>	(2) <i>Distance to Default</i>
<i>Post-1991*I(Delaware)</i>	0.083*** (3.998)	0.159*** (3.351)
<i>ROA</i>	0.882*** (11.440)	0.602*** (7.982)
<i>Log Assets</i>	-0.276*** (-4.478)	-0.617*** (-11.811)
<i>Log Firmage</i>	-0.034 (-0.587)	-0.296*** (-4.123)
<i>Leverage</i>	0.004 (0.104)	-2.543*** (-22.689)
<i>Capx/Assets</i>	1.078*** (8.450)	-0.259 (-1.200)
<i>I(Issue Equity)</i>	0.123*** (11.135)	0.061** (2.448)
<i>Log Equity Volatility</i>	0.062*** (4.532)	-1.631*** (-34.789)
<i>Log ROA Volatility</i>	0.053*** (8.525)	-0.003 (-0.257)
Observations	19,786	12,813
R-squared	0.720	0.798
Year FE	Yes	Yes
Firm FE	Yes	Yes