Stiffing the Creditor: The Effect of Asset Verifiability on Bankruptcy*

Erasmo Giambona
Syracuse University
egiambon@syr.edu

Florencio Lopez-de-Silanes
SKEMA Business School
florencio.lopezdesilanes@skema.edu

Rafael Matta
SKEMA Business School
rafael.almeidadamatta@skema.edu

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Abstract

Evidence suggests that asset pledgeability, debt complexity, and valuable control rights of dispersed debt influence distress resolution. We model how courts' imperfect verifiability of assets and valuable control of misaligned creditors shape firms' debt structure and create coordination problems that determine distress outcomes and financing. We test the model's predictions using an exogenous variation of in-court requirements to evaluate debtor proposals: The 1999 U.S. Supreme Court surprise ruling requiring reorganization plans that keep stockholders' interest to be exposed to a "market test". We show that improved creditor protection significantly increases bankruptcy filings, recovery rates, and debt capacity of low-verifiability firms.

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1 Introduction

An implication of the optimal financial contracting literature is that an increase in the value of assets that can be verified by courts reduces the incidence of bankruptcy filings (Hart and Moore, 1998, 1994; Aghion and Bolton 1992; and Bolton and Scharfstein, 1990).[1] This literature also associates higher debt dispersion with a lower probability of bankruptcy (Diamond, 2004; and Bolton and Scharfstein, 1996).[2] More recent models argue that the likelihood of bankruptcy can be further reduced by concentrating creditor control and properly designing bankruptcy rights (von Thadden, Berglöf, and Roland, 2010; and Gennaioli and Rossi, 2013). These theories have been successful in explaining the shift in control towards creditors in distressed firms (Becker and Stromberg, 2012; Nini, Smith, and Sufi, 2012; Roberts and Sufi, 2009a; and Chava and Roberts, 2008),[3] and how asset values and creditor protection shape contracts (Benmelech, Garmaise, and Moskowitz, 2005; and Qian and Strahan, 2007).

However, according to the empirical evidence, firms with multiple uncoordinated creditors and more tangible assets often fail to renegotiate debt out of court and file for bankruptcy (Asquith, Gertner, and Scharfstein, 1994; and Gilson, John, and Lang, 1990), incurring direct and indirect costs as high as 20% of firm assets (Bris, Welch, and Zhu, 2006; and Hortaçsu et al., 2013). Additionally, recent evidence shows the existence of significant value of creditor control embedded in the price of dispersed debt (Feldhutter, Hotchkiss, and Karakas, 2016). The theoretical literature has a hard time explaining the collective action problem that arises in the real world when multiple creditors with misaligned interests acquire ownership of the firm. This "common pool" problem leads to coordination failures that often result in inefficient bankruptcy filings and is at the heart of Chapter 11 provisions of the U.S. Bankruptcy Code (Baird, 1986; and Jackson, 1986).

[1] In a world where firms' repayment commitment is limited, debt capacity depends on the value creditors can credibly threaten to obtain in bankruptcy. Borrowers' opportunistic behavior is mitigated by the incidence of inefficient bankruptcy, such that the maximum debt capacity occurs when bankruptcy is certain following default. The optimal contract sets the probability of bankruptcy to the minimum level necessary to make financing feasible. In this setting, an increase in the value of assets verifiable by courts reduces the likelihood of bankruptcy.

[2] Borrowing from multiple creditors is optimally used to discipline borrowers and increase debt capacity – and thus to reduce bankruptcy filings – whenever its positive commitment effect surpasses the increase in expected bankruptcy costs.

[3] Creditors gain control rights over distressed firms after a covenant violation (Chava and Roberts, 2008; Roberts and Sufi, 2009a; and Nini, Smith, and Sufi, 2012), or an enlargement of fiduciary duties when firms are near insolvency (Becker and Stromberg, 2012). There is also evidence that creditors influence changes in the board of directors and the replacement of CEOs (Gilson, 1990; and Hotchkiss and Mooradian, 1997; and more recently, Eckbo, Thorburn, and Wang, 2017; and Bharath, Panchapagesan, and Werner, 2014).

We attempt to bridge the gap between existing models and suggestive empirical evidence on distress resolution by going a step further. We propose and test a financial contracting model of the interplay between imperfect verifiability of assets in place and valuable control of misaligned creditors in distress. Our model predicts that bankruptcy *increases* with the verifiability of assets in place and creditors' degree of misalignment of interests. Our empirical analysis exploits an exogenous variation of in-court requirements to price assets in place. In 1999, the U.S. Supreme Court decision in Bank of America v. 203 North LaSalle established that reorganization plans in which equity holders keep an interest in the firm must be exposed to a "market test" allowing competing plans or bids for the equity interest. This court decision amounts to an increase in the verifiability of assets in place during the bankruptcy process where the unavailability of market-based information can lead to large valuation errors and the confirmation of renegotiation plans that favor debtors (Gilson, Hotchkiss, and Rubak, 2000; and Pulvino, 1999).[4] These errors are often detrimental to creditors because the 1978 U.S. Bankruptcy Code shifted bargaining power away from them by granting debtors the exclusive right to propose a reorganization plan while retaining control of the firm once in Chapter 11 (Hackbarth, Haselmann, and Schoenherr, 2015). Therefore, the situation before the 1999 ruling amounted to "stiffing the creditor" (Forbes, October 5th 1998).

In the first part of the paper, we develop a new model that builds on the incomplete contracting framework of Aghion and Bolton (1992), Hart and Moore (1998, 1994), and Bolton and Scharfstein (1990), introducing three key real-world frictions. First, the borrower raises funds from creditors whose degree of misalignment of interests cannot be contracted upon. The borrower can deal with this problem by entering *exclusive* contracts that allow creditors to coordinate actions in their best interest, such as a syndicated loan that explicitly prohibits (or implicitly hinders) the use or sale of pieces of the loan for securitization. Alternatively, the borrower can issue *non-exclusive* contracts that are ultimately owned by uncoordinated creditors, such as collateralized bond obligations or collateralized loan obligations.[5] In the spirit of Diamond (2004) and Bolton and Scharfstein (1996),

[4] Gilson, Hotchkiss, and Rubak (2000) argue that Chapter 11 is an administrative process in which the absence of market forces can lead to substantial valuation errors. The authors point out that during Chapter 11 there is no active market for the control of the assets of the distressed firm. There is also limited monitoring from the financial markets because the debtor has access to debtor-in-possession funding and the shares of the distressed firm generally stop trading (with almost no coverage from analysts).

[5] See Ivashina and Scharfstein (2010) for evidence that the increasing demand for collateralized loan obligations by pension funds, mutual funds, hedge funds and others led to a deterioration of lending standards and a reduction in the share of the syndicated loan retained by originating banks.

because creditors' ownership rights over assets in place are limited, the borrower may be able to finance a project only after pledging a portion of the verifiable assets to uncoordinated creditors. Second, the out-of-court value of the assets in distress states depends on the aggregate control exerted by creditors, which is costly and non-contractible. This creates a coordination problem among creditors as their incentive to exert control depends on the control exerted by the other creditors. Third, creditors are better informed than the borrower about their own alignment of interests over the actions to be taken; hence about the out-of-court value of the assets in distress. As a result, the borrower cannot induce efficient coordination on exerting control, often resulting in costly bankruptcy.[6] To our knowledge, we are the first to incorporate all these three frictions in the analysis of distress resolution.

In our model, the transfer of control from the borrower to creditors occurs through an out-of-court renegotiation.[7] Importantly, when the borrower enters contracts with uncoordinated creditors, the non-exclusive nature of these contracts implies that renegotiation cannot alter the terms agreed upon at issuance.[8] As a result, renegotiation involves the exchange of old contracts for a stake in the out-of-court value of the assets.[9] From the borrower's perspective, modulating the out-of-court offer is difficult because the exact outcome of the renegotiation is unknown even after conditioning on the stake offered to creditors. The borrower faces the following fundamental tradeoff: She can reduce the probability of going to court only at the expense of increasing the creditors' share of the out-of-court value. An increase in asset verifiability affects this tradeoff as it raises the creditors' payoff in bankruptcy, hence their opportunity cost of accepting the out-of-court offer of the borrower. The increase in asset verifiability complicates creditor coordination since, in order

[6] Segal (1999) shows that efficiency cannot be achieved when the principal is unable to predict the outcome of the coordination game played by the agents. In our model, the uninformed borrower (principal) deals with an even harder problem as she contracts with lenders (agents) facing strategic uncertainty (see Sakovics and Steiner, 2012).

[7] Most firms try to renegotiate the debt out of court before filing for bankruptcy (see, Gertner and Scharfstein, 1991; Asquith, Gertner, and Scharfstein, 1994; and Franks and Torous, 1994).

[8] Securitization, for example, creates dispersion in property rights, with several investors holding bonds of varying seniority backed by the same securities. This makes it harder for the servicer representing the investors to alter the terms of a contract (Piskorski, Seru, and Vig, 2010) and creates obstacles to the implementation of standard coordination mechanisms such as exit consents (Gertner and Scharfstein, 1991).

[9] Workouts are difficult because creditors that adhere to the exchange are no longer entitled to the bankruptcy proceeds if the borrower subsequently files for bankruptcy. As a result, creditors may reject the exchange fearing that other creditors may do the same and thus, lead to a self-fulfilling renegotiation failure. In such circumstances, creditors make decisions based on their beliefs about the actions of other creditors, as well as on the relative stake in the out-of-court value of the assets vis-à-vis the verifiable share of the bankruptcy proceeds. We use global games techniques to uniquely determine the incidence of bankruptcy filings. Our approach follows closely Morris and Shin (2004), who use global games methods to study the consequences of coordination problems among creditors for the pricing of debt.

to keep the probability of in-court restructuring constant, the borrower would need to increase substantially the stake offered to creditors. In these circumstances, it is optimal for the borrower to "risk-shift" and propose a less-than-offsetting increase in the out-of-court offer, which results in a higher probability of bankruptcy. Our model also predicts that the enlarged creditors' payoff in bankruptcy combined with a higher proposed stake in the out-of-court value of the assets increases the expected return of the project that can be pledged to creditors. The improved debt capacity contributes to an increase in the borrower's equity value to the extent that more projects with positive net present value can be funded.

In the second part of the paper, our empirical analysis validates the model's predictions and provides novel evidence on the effect of an increase in asset verifiability on distress resolution and debt capacity. Our analysis uses an exogenous variation of in-court requirements to price assets in place: The 1999 U.S. Supreme Court surprise ruling in Bank of America v. 203 North LaSalle. Before the ruling, existing shareholders were allowed to retain an interest in the reorganized firm even if creditors were not paid in full. This "exception" to the absolute priority rule was possible if existing shareholders contributed "new value" and retained a stake in the reorganized firm equivalent to the "new value". These "new value plans" were thus a credible threat by old shareholders to try to obtain an interest in the reorganized equity (even in plans not involving new value contributions), allowing them to receive a positive stake 80% of the time (Franks and Torous, 1994). This may partially explain why the data shows that old shareholders are able to retain full control in close to 16% of Chapter 11 reorganizations (Ivashina, Iverson, and Smith, 2016). Circuit Courts of Appeals were split on whether this "exception" constituted a violation of the absolute priority rule. On May 3, 1999, the U.S. Supreme Court ruled that new value plans violated the absolute priority rule because the debtor had an exclusive right to file a plan in Chapter 11 for six months. New value plans would now need to be subject to a "market test" by allowing impaired creditors to make competing bids on the retained interest or present competing plans. The ruling created constraints on new value plans that could the confirmed by bankruptcy judges, as it required the fairness and equitability of the restructuring plan in Chapter 11 to be assessed by a market mechanism. Overall, the change translates into increased creditor protection making it harder for judges to favor debtors in Chapter 11 cases.[10]

[10]Consistent with an improvement in creditor rights after the ruling, Bharath, Panchapagesan, and Werner (2014) find that absolute priority rule deviations reduced significantly in the 2000-2005 period.

In our empirical analysis, we use a difference-in-difference approach comparing Chapter 11 filings for low- and high-verifiability firms (our treated and control groups) before and after the 1999 U.S. Supreme Court ruling. To identify low- and high-verifiability firms, we rely on the ratio of industry-year sales of Property, Plant, & Equipment (sales of PP&E) to PP&E. This is in line with common practice of bankruptcy courts (e.g., Sontchi, 2012; and Bernstein, Seabury, and Williams, 2006), who use sales of PP&E as a measure of an asset's potential market value. According to our model, the Supreme Court's "market test" should increase verifiability more in those situations where the bankruptcy judge has a harder time verifying the equitability of a restructuring plan using information from the sales of PP&E used in the industry of the distressed firm. Our main results show that Chapter 11 filings increased by 1.2 percentage points for low-verifiability firms (relative to high-verifiability firms) in the two years after the Supreme Court decision. The increase is large compared to the 1% average Chapter 11 filings for the full sample period.

We test for a series of additional predictions of our model in terms of the type of firms that are most likely to be affected by the Supreme Court's ruling. The effect of an increase in verifiability on Chapter 11 is predicted to be stronger when firms are more likely to face financial difficulties and when creditors are more likely to face coordination problems. In line with the predictions of our model, we find that Chapter 11 filings increased by a sizable 2.9 percentage points for firms in financial alert (Altman's Z-score ≤ 3), while there was no change in Chapter 11 filings for financially sound firms (Altman's Z-score > 3). We also find that Chapter 11 filings increase by a 6.7 percentage points for firms with dispersed debt and with a mixed debt structure.

We also test our model's prediction that higher verifiability has implications for debt capacity. Lenders should be willing to provide more credit to firms if recovery rates in Chapter 11 increase as a result of higher verifiability. The additional debt capacity should be reflected in an increase in borrowers' equity value to the extent that it is used to finance positive net present value projects. In line with the model's predictions, we find significant positive abnormal returns for all affected firms in the days surrounding the 1999 Supreme Court ruling. Cumulative abnormal returns are stronger for low-verifiability firms reaching almost 1.7% in the five days surrounding the ruling. The analysis of the market response of firms with different risk levels of financial distress shows that positive abnormal returns are concentrated among firms of low-to-moderate risk of financial distress ($2.7 <$ Z-score ≤ 3 and $1.8 <$ Z-score ≤ 2.7). Arguably, higher verifiability has little effect when

the risk of bankruptcy is imminent (Z-score ≤ 1.8) or financial distress is remote (Z-score > 3). We complement the event study analysis with evidence showing that firms facing moderate-to-low risk of financial distress increased leverage between 3 and 6 percentage points in the two years following the Supreme Court decision. Meanwhile, leverage did not change either for firms with high financial distress risk or for financially sound companies. Finally, also in line with our model, we find that recovery rates for the creditors of low-verifiability firms in bankruptcy increased after 1999.

We conduct a series of tests to assess the robustness of the results. A common concern with inferences from difference-in-difference estimators is whether treatment and control group outcomes followed a "parallel trend" prior to the treatment. We find no indication of treated-firm specific trends before the Supreme Court decision. We also find that our results are robust to placebo tests, the effect of the burst of the dotcom bubble, and the use of alternative distress measures, among other tests. To conclude the series of robustness tests, we pay especial attention to our measure of asset verifiability, trying alternative specifications and constructing additional proxies using: (i) industry M&A activity; (ii) reliance on real estate assets; (iii) volume of shares traded; (iv) number of analysts making forecasts; and (v) analysts earnings forecast dispersion. Our results carry through each of the five alternative measures.

We see our model as a natural next step in the series of theoretical models explaining the resolution of financial distress. The initial approach to deal with this problem lies in the seminal works on incomplete contracts (e.g., Hart and Moore, 1998, 1994; Aghion and Bolton 1992; and Bolton and Scharfstein, 1990). In a single-creditor setting, the borrower's repayment commitment is given by the asset value the creditor can credibly threaten to obtain in inefficient bankruptcy. As a result, in distress states, financing feasibility might often require to shift control over the out-of-court versus bankruptcy decision to the creditor, leading to inefficient bankruptcy filings. In this setting, an increase in debt capacity is associated with a lower probability of bankruptcy, as the optimal contract implements the minimal incidence of inefficient bankruptcy required to make financing feasible.

An extension of the previous analysis to a multi-creditor setting allowed to examine the effect of debt dispersion on bankruptcy and debt capacity (e.g., Diamond, 2004; and Bolton and Scharfstein, 1996). These papers showed that debt dispersion can be used to mitigate borrowers' opportunistic behavior, raising debt capacity when its disciplinary effect surpasses the increase in expected bankruptcy costs. The resulting increase in debt capacity allows the optimal contract to

reduce the use of inefficient bankruptcy as a way to discipline borrowers.

The next development in this literature came from the analysis of the allocation of control and bankruptcy rights in a multi-creditor setting. In these models, the optimal debt structure could potentially eliminate the expected bankruptcy costs caused by the existence of dispersed creditors. In Gennaioli and Rossi (2013), for example, inefficient bankruptcy may be avoided by assigning exclusive control to one under-collateralized creditor and pledging the remaining assets to a dispersed class of debtholders. Meanwhile, in von Thadden, Berglöf, and Roland (2010), the disciplinary effect of dispersed debt is maximized by giving creditors under-collateralized claims that are jointly inconsistent under individual debt collection – the sum is greater than the value of verifiable assets – and consistent in bankruptcy.

Our model builds on all of these papers taking an additional step by considering situations in which the value of the assets depends not only on the out-of-court versus bankruptcy decision, but also on the aggregate non-contractible control exerted by creditors. In our setting, imperfect asset verifiability may force the borrower to raise funds from multiple uncoordinated creditors, whose degree of interest misalignment cannot be contracted upon. Since creditors are better informed about their misalignment of interest, efficient out-of-court renegotiation is harder to achieve and bankruptcy filings are more likely. In contrast to the previous literature, while an improvement in verifiability enhances debt capacity, it worsens the coordination problem among lenders, and thus increases the probability of bankruptcy.

Our paper is also related to the empirical literature on the determinants of debt renegotiation. Consistent with our findings, Gilson, John, and Lang (1990) and Asquith, Gertner, and Scharfstein (1994) show that firms are more likely to restructure in court through Chapter 11 (instead of out of court) if they have more tangible assets and borrow from multiple lenders. Similarly, Benmelech and Bergman (2008) focus on firms that renegotiate their debt out of court and find that firms are more likely to reduce their debt burden when asset liquidation value, credit quality, and investment opportunities of the borrower are low. Maksimovic and Phillips (1998) focus on the importance of industry conditions for reorganizations and find that Chapter 11 filings are more frequent and assets are sold at higher rates in declining industries. Ivashina, Iverson, and Smith (2016) focus on Chapter 11 cases finding that firms with concentrated debt structures are more likely to file a pre-arranged bankruptcy plan and re-emerge from bankruptcy more quickly. Our paper complements

all of these findings exploiting an exogenous variation of in-court requirements to evaluate debtor reorganization proposals and documenting the impact of improved creditor protection on in-court vs. out-of-court debt renegotiations.

Finally, our findings also contribute to the empirical literature on the role of legal institutions for the ability of firms to access financial markets. In La Porta et al. (1997, 1998), Demirguc-Kunt and Maksimovic (1998), and Djankov, McLiesh, and Shleifer (2007) weak creditor protection gives rise to credit frictions and has implications for real activities. La Porta and Lopez-de-Silanes (2001) examine the effect of bankruptcy laws (and the protection they give to creditors) on firms' access to credit. More recently, Rodano, Serrano-Velarde, and Tarantino (2016) focus on Italy and show how facilitating loan renegotiation (and speeding up liquidation) has the effect of reducing (increasing) investment through higher (lower) interest rates. We contribute to this literature by identifying an important channel – the role of asset verifiability – through which creditor protection and increased market participation in bankruptcy can improve access to finance and increase firm value.

The rest of the paper is organized as follows: After this introduction, Section 2 develops the theoretical model and its implications. Section 3 discusses the institutional details of bankruptcy in the U.S., describes the impact of the 1999 Supreme Court ruling, and presents the data used in our analysis. Section 4 details the empirical results and the robustness tests. The last section concludes. Proofs are collected in Internet Appendix I.A, a detailed account of the chronology of the events leading to the 1999 Supreme Court ruling is in Appendix I.B, and detailed definitions, description statistics, and correlations of all variables used in the empirical analysis are in Appendix I.C.

2 The Model

2.1 Setup

The economy lasts for three dates $t = 0, 1, 2$. There is a penniless borrower endowed with a project that needs $g > 1$ units of funding at $t = 0$ for the purchase of physical assets. If the project is financed, it generates cash flow c_ω at $t = 2$, where $\omega \in \{H, L\}$ is the performance of the project, realized at $t = 1$. The performance of project is "high" ($\omega = H$) with probability λ, or "low" ($\omega = L$) with probability $1 - \lambda$. The physical assets of the project can be restructured in court at $t = 2$ for a total value of 1. As in Diamond (2004), going to court is costly, reducing the cash flows

by a fraction γ of its value, to $(1-\gamma)\, c_\omega$. For simplicity, and without loss of generality, we assume that $\gamma = 1$, so that going to court destroys all the cash flows. Thus, c_ω and 1 can be interpreted as the out-of-court and in-court value of the assets, respectively.

The borrower has access to a continuum of creditors of measure $m > 1$, each of whom is endowed with g units of funds. In addition to providing funds for the project, creditors also exert valuable when the performance of the project is low. In particular, while the project produces verifiable cash flow $c_H = y > g$ when its performance is high, it yields cash flow $c_L = c\,(a, \delta\theta)$ when its performance is low, which depends on the aggregate monitoring – a – exerted by the creditors at $t = 1$, as well as on the alignment of interest among them, $\delta\theta$. θ is drawn from the uniform distribution on $\left[\underline{\theta}, \overline{\theta}\right]$ with $\underline{\theta} < 0$ and $\overline{\theta} > 1$, realized at $t = 1$, and $\delta \in \left(1/\overline{\theta}, 1\right]$ is the non-verifiable degree (or severity) of misalignment of interests among creditors. Following Aghion and Bolton (1992), we assume that monitoring efforts cannot be contracted upon at $t = 0$, but become contractible at $t = 1$. The idea is that it is hard to describe at $t = 0$ how exactly monitoring takes place, and, even if it were possible, enforcement ex post would be difficult.

Conflicts of interest among creditors arise because some of the creditors could favor policies that generate "short-term" gains, while others could prefer actions that maximize "long-term" value. $\delta\theta$ closer to $\overline{\theta}$ means that creditors are more aligned in pursuing long-term maximization, while $\delta\theta$ closer to $\underline{\theta}$ means that creditors are more aligned towards short-term gains. A lower δ implies that the distribution of $\delta\theta$ is more concentrated, which means that creditors are less likely to reach a consensus toward long-term value ($\delta\theta$ near $\overline{\theta}$) or short-term gains ($\delta\theta$ near $\underline{\theta}$). θ is unobservable to all participants, but creditors are better informed than the borrower about their degree of alignment of interests. Each creditor i receives a noisy private signal at $t = 1$ given by

$$x_i = \theta + \sigma\eta_i, \tag{1}$$

where η_i are i.i.d. across players and drawn from a continuous distribution f with support over $\left[-\frac{1}{2}, \frac{1}{2}\right]$, and $\sigma > 0$ is a small scale parameter.[11]

We assume that $c\,(a, \delta\theta)$ is increasing both in $\delta\theta$ and in a, capturing the benefits of creditors' increased consensus towards value maximization and monitoring efforts, respectively. This includes

[11] Satisfying (in particular) $\sigma < -\underline{\theta}$ and $\sigma < \overline{\theta} - \delta^{-1}$.

preventing management from engaging in risky investments or overinvesting in illiquid assets. Similar to Hart and Moore (1998), we assume that the borrower faces a limited commitment problem as $c(a, \delta\theta)$ cannot be contracted upon at $t = 0$. However, $c(a, \delta\theta)$ becomes verifiable at $t = 1$. The interpretation is that $c(a, \delta\theta)$ is too uncertain and complicated to be described at $t = 0$, but the complexity is resolved at $t = 1$. This opens the room for renegotiation between the borrower and creditors at $t = 1$ if the borrower is in distress.

The borrower raises funds from a subset of creditors indexed by $i \in [0, 1]$. Two contractual arrangements are possible. One arrangement consists of borrowing from a coalition of *coordinated creditors* who act collectively by pooling their information and making an unified aggregate monitoring choice $a \in \{0, 1\}$ so as to maximize the payoff of the coalition. The second arrangement consists of borrowing from *uncoordinated creditors* who choose $a_i \in \{0, 1\}$ to maximize individual payoffs given their private signals and beliefs about the monitoring choices of other creditors. In this case, the aggregate monitoring effort equals $a = \int_0^1 a_i di$. These two arrangements reflect a type of contractual incompleteness described in the financial contracting literature as "non-exclusivity". The first arrangement could be though of as resulting from an exclusive syndicated loan contract that explicitly prohibits (or implicitly hinders) the use or sale of pieces of the loan for securitization, allowing creditors to coordinate actions in their best interest.[12] The second arrangement could be seen as non-exclusive bond contracts held by dispersed and uncoordinated investors, possibly emerging from bonds acquired to back collateralized bond obligations, or from syndicated loan whose pieces are used for the issuance of collateralized loan obligations. Importantly, for both of these contractual arrangements the borrower cannot control the severity of misalignment of interests among creditors (i.e., a contractual matching contingent on δ is not possible since δ is non-verifiable).

In the context of our limited commitment model with wealth constraints, the financial contract further specifies a pair (r, ϕ), where r is the repayment to be made at $t = 2$ when the project performance is high, and $\phi \in [0, 1]$ is the creditors' ownership over the pledgeable physical assets at $t = 2$ in the event of low project performance. Enforcement is provided by courts through bankruptcy. Each lender can force the in-court restructuring of the assets at $t = 2$, in which case all creditors receive a payment of $\alpha\phi$, with $\alpha \in (0, 1)$. The parameter α is referred to as "verifiability" and rep-

[12] See Ivashina (2009) and Benmelech, Dlugosz, and Ivashina (2012) for evidence on mechanisms used to reduce asymmetric information and align incentives among creditors in a loan syndication. Druker and Puri (2009) show that syndicated loans intended for securitization usually contain covenants that facilitate sales.

resents the maximum share of the physical assets that the borrower can credibly pledge to creditors.

Our verifiability parameter α allows for the possibility that courts might be unable to fully verify the value of the assets. It is meant to reflect two key features of Chapter 11 reorganization. One is the substantial control of management over the process as debtor in possession, including the exclusive right to initially propose a reorganization plan and the possibility of receiving an equity interest in the reorganized assets by contributing new value. Another is the potential inaccurate assessment by courts of the equivalence between the received interest and the new value contribution. The combination of these features reduces verifiability and the share of the proceeds that goes to creditors.[13] In other words, ownership gives "residual rights of control" to creditors, to use the terminology of Grossman and Hart (1986).

If the project performance is low at $t = 1$, the parties can renegotiate the contract. Since in this case the principal can no longer be repaid to the creditors unless renegotiation succeeds, we say that the borrower is "in financial distress". We take that monitoring is exerted by, and only by, those creditors that exchange their contracts for equity. Thus, renegotiation involves the exchange of old contracts for a stake on the out-of-court value of the assets. While this assumption is innocuous when the borrower raises funds from coordinated creditors, it does restrict the set of coordinating mechanisms when contracts are held by uncoordinated creditors.[14] Specifically, it does not allow for new contracts that are senior or have equal priority to old contracts in bankruptcy. This constraint is a simple way of capturing the fact that non-exclusive contractual terms are harder to renegotiate because creditors are uncoordinated at origination (bonds) or as the result of securitization (collateralized debt obligations).[15]

Given the exchange nature of contract renegotiation, the aggregate level of monitoring a is the fraction of creditors that give up on their enforcement rights to become actively involved in the decision-making process at $t = 1$. The borrower makes take-it-or-leave-it to creditors, offering each of them a stake $q \in [0, 1]$ of $c(a, \delta\theta)$ in exchange for their contracts. Creditors that accept the offer give up on their previous enforcement rights and are no longer able to enforce the payment of $\alpha\phi$ at $t = 2$. As a result, they receive qv when out-of-court reorganization succeeds and 0 when otherwise.

[13] See Gilson, Hotchkiss, and Ruback (2000) for evidence that information on the firm's assets is limited during bankruptcy procedures leading to large valuation errors that can harm creditors.

[14] See Gertner and Scharfstein (1991).

[15] See Ivashina and Scharfstein (2010) and Piskorski, Seru, and Vig (2010).

Upon the realization of $c(a, \delta\theta)$ at $t = 2$, the borrower offers a payment of ρ to the creditors that rejected the offer q. If all these creditors accept the offer, each of them receives ρ. If at least one of them rejects the offer, each receives $\alpha\phi$ (as a result of in-court enforcement). We assume that creditors accept the borrower's offers if they are indifferent. A summary description of the game timeline is presented in Figure 1.

FIGURE 1 ABOUT HERE

In order to streamline the analysis we make a few parametric assumptions. We specify $c(a, \delta\theta)$ as

$$c(a, \delta\theta) \equiv \begin{cases} v, & \text{if } a \geq 1 - \delta\theta \\ 0, & \text{if } a < 1 - \delta\theta \end{cases}, \tag{2}$$

where $g > v > 1$. This assumption implies that pledgeable income is increasing in the probability that the project performance is high (λ) and that it is efficient to minimize the probability of bankruptcy. We also take that $\lambda < g/y$, which implies that the project can be financed only if creditors receive a positive expected payment when the project performance is low. Finally, we assume that δ is sufficiently close to $1/\overline{\theta}$, implying that there is enough misalignment of interests among creditors. As will become clear later, this assumption has no implications when the borrower raises funds from coordinated creditors. When creditors are uncoordinated, this assumption implies that financing is feasible if verifiability is sufficiently large.

2.2 Equilibrium and Results

We first note that if $c(a, \delta\theta) = v$ in $t = 2$, then creditors with enforcement rights receive $\alpha\phi$. If the borrower offers them less than $\alpha\phi$, they can enforce the payment of $\alpha\phi$ in court, which would erode the cash flow v. The borrower would never offer more than $\alpha\phi$ since in this case he can increase his payoff by decreasing the offer.

Given the previous result, we now examine the renegotiation outcome when the borrower is in

distress at $t = 1$. Each creditor's net payoff of accepting the borrower's offer over rejecting it is

$$\pi\left(a, \delta\theta\right) \equiv \begin{cases} qv - \alpha\phi, & \text{if } a \geq 1 - \delta\theta \\ -\alpha\phi, & \text{if } a < 1 - \delta\theta \end{cases}. \tag{3}$$

Let us start analyzing the renegotiation process when the borrower raises funds from *coordinated creditors*. In this case, the members of the coalition pool their private information and pin down the realized θ.[16] If $\alpha\phi = 0$, we can see from creditors' net payoff in (3) that the coalition accepts any offer such that $qv \geq 0$. As a result, the borrower optimally offers $q = 0$. If $\alpha\phi > 0$, it is clearly optimal for the coalition to reject any offer $q \in \left[0, \frac{\alpha\phi}{v}\right)$. For any offer such that $qv \geq \alpha\phi$, the coalition accepts if and only if $\delta\theta \geq 0$, from which it follows that the borrower optimally offers $q = \frac{\alpha\phi}{v}$. The resulting creditors' payoff in distress is $\alpha\phi$, while that of the borrower equals $\overline{\Pi} \equiv \frac{\overline{\theta}v - \underline{\theta}}{\overline{\theta} - \underline{\theta}} - \alpha\phi$. While the distress outcome is clearly efficient, financing may not be feasible under a coordinated structure. The maximum income that can be pledged to creditors is $\lambda y + (1 - \lambda)\alpha$, which is less than the initial outlay g for $\lambda \leq \overline{\lambda}\left(\alpha\right) \equiv \frac{g - \alpha}{y - \alpha}$. This leads to Proposition 1.

Proposition 1. *Borrowing from coordinated creditors is not feasible for $\lambda \in (0, \widehat{\lambda}]$, where $\widehat{\lambda} \equiv \frac{g-1}{y-1}$. For $\lambda > \widehat{\lambda}$, there exists $\overline{\lambda}\left(\alpha\right) \in (\widehat{\lambda}, g/y)$ such that it is feasible if and only if $\lambda \geq \overline{\lambda}\left(\alpha\right)$, and $\overline{\lambda}\left(\alpha\right)$ is strictly decreasing in verifiability ($d\overline{\lambda}/d\alpha < 0$). If it is feasible, the resulting probability of bankruptcy in distress ($\omega = L$) is $-\frac{\underline{\theta}}{\overline{\theta} - \underline{\theta}}$, which is independent from verifiability α.*

If borrowing from coordinated creditors is not feasible, it may be possible to raise funds from *uncoordinated creditors*. The analysis of the renegotiation outcome under this type of contractual arrangement is as follows. From creditors' net payoff in (3), we can see that, if $\alpha\phi = 0$, creditors accept any offer such that $qv \geq 0$. In this case, the borrower's optimal offer is $q = 0$, creditors' payoff in distress is 0, and the borrower's payoff in distress is $\overline{\Pi} \equiv \frac{\overline{\theta}v - \underline{\theta}}{\overline{\theta} - \underline{\theta}}$. Similarly, if $\alpha\phi > 0$, the dominant strategy for creditors is to reject any offer $q \in \left[0, \frac{\alpha\phi}{v}\right]$, in which case the borrower's payoff in distress is

$$\underline{\Pi}\left(\phi; \alpha, \delta\right) \equiv \left(\frac{\overline{\theta} - 1/\delta}{\overline{\theta} - \underline{\theta}}\right)\left(v - \alpha\phi\right) + \left(\frac{1/\delta - \underline{\theta}}{\overline{\theta} - \underline{\theta}}\right)\left(1 - \alpha\phi\right),$$

while that of creditors is simply $\alpha\phi$.

[16] We make the common assumption that, with a continuum of i.i.d. random variables, the empirical mean equals the expected value with probability one (Judd, 1985).

We now turn our attention to the more interesting case in which $\alpha\phi > 0$ and the borrower offers $q \in \left(\frac{\alpha\phi}{v}, 1\right]$. Each creditor's preferred choice now depends on the fraction of creditors that accept the offer, and on the alignment of interests among creditors. If creditors were able to observe the alignment of interests among them, it would be a dominant strategy for all creditors to reject the borrower's offer if $\delta\theta < 0$ and to accept if $\delta\theta > 1$. For $\delta\theta \in [0, 1]$, both mutual acceptance and rejection would be self-enforcing outcomes. Therefore, successful renegotiation would be achieved if creditors could coordinate on accepting the borrower's offer. Moreover, this would be efficient since $v > 1$. However, this is not a realistic assumption as it implies that creditors perfectly know the interests of other creditors. More importantly, it fails to capture the large uncertainty about creditors' decision at the time of renegotiation and the high potential for inefficient outcomes.

Private information about the degree of alignment of interests makes creditors face a complex coordination problem in their decision to accept the borrower's offer, which depends on their beliefs about both the alignment of interests $\delta\theta$ (alignment of interest uncertainty) and the fraction of creditors a that accept the borrower's offer (strategic uncertainty). We rely on the global game approach to find the unique equilibrium of this game, which is symmetric in switching strategies around a cutoff θ^*, where all creditors accept the borrower's offer if $\theta > \theta^*$ and reject if $\theta < \theta^*$.[17] A well known result in the literature is that, as $\sigma \to 0$, the threshold creditor believes that the proportion of lenders a that accept the borrower's offer follows the uniform distribution on the unit interval. Focusing on the situation when signals become nearly precise enables to highlight strategic uncertainty rather than uncertainty about alignment of interests. The equilibrium cutoff can then be computed by the threshold type who must be indifferent between accepting and rejecting the borrower's offer given his beliefs about a. Therefore, the cutoff θ^* is the one that satisfies

$$\int_{1-\delta\theta^*}^{1} (qv - \alpha\phi)\ da + \int_{0}^{1-\delta\theta^*} (-\alpha\phi)\ da = 0. \tag{4}$$

The result is described in Proposition 2.

Proposition 2. *Suppose the borrower raises funds from uncoordinated creditors. Given $\alpha\phi > 0$ and the borrower's offer $q \in \left(\frac{\alpha\phi}{v}, 1\right]$ at $t = 1$ in the event of distress ($\omega = L$), the unique equilibrium among creditors as $\sigma \to 0$ is symmetric in switching strategies around cutoff $\theta^*(q, \phi; \alpha, \delta)$.*

[17] See Carlsson and van Damme (1993) and Morris and Shin (2003) for a comprehensive discussion of global games.

Creditors coordinate on accepting the borrower's offer if $\theta > \theta^*(q, \phi; \alpha, \delta)$*, and not accepting if* $\theta < \theta^*(q, \phi; \alpha, \delta)$*, where* $\theta^*(q, \phi; \alpha, \delta) = \frac{1}{\delta}\frac{\alpha\phi}{qv}$.

Proposition 2 states that the probability of in-court restructuring is decreasing in the borrower's offer q. Given that the borrower does not observe θ, the relationship between θ^* and q captures the main tradeoff faced by the borrower. He can reduce the probability of bankruptcy only at the expense of reducing his stake of the continuation value.

The borrower's payoff in distress when $\alpha\phi > 0$ and $q \in \left(\frac{\alpha\phi}{v}, 1\right]$ is therefore

$$\overline{\Pi}(q, \phi; \alpha, \delta) \equiv \left(\frac{\overline{\theta} - \theta^*(q, \phi; \alpha, \delta)}{\overline{\theta} - \underline{\theta}}\right) v(1 - q) + \left(\frac{\theta^*(q, \phi; \alpha, \delta) - \underline{\theta}}{\overline{\theta} - \underline{\theta}}\right)(1 - \alpha\phi). \tag{5}$$

Although the above payoff is not defined for $q = \frac{\alpha\phi}{v}$, it is straightforward to check that $\overline{\Pi}(q, \phi; \alpha, \delta) \to \underline{\Pi}(\phi; \alpha, \delta)$ as $q \to \frac{\alpha\phi}{v}$. Therefore, the borrower's payoff in distress for $\alpha\phi > 0$ is captured by the following function Π, continuous in q and defined for $q \in \left[\frac{\alpha\phi}{v}, 1\right]$:

$$\Pi(q, \phi; \alpha, \delta) \equiv \begin{cases} \overline{\Pi}(q, \phi; \alpha, \delta) & \text{if } q \in \left(\frac{\alpha\phi}{v}, 1\right] \\ \underline{\Pi}(\phi; \alpha, \delta) & \text{if } q = \frac{\alpha\phi}{v} \end{cases}. \tag{6}$$

The borrower will choose q in order to maximize his payoff in distress:

$$\max_{q \in \left[\frac{\alpha\phi}{v}, 1\right]} \Pi(q, \phi; \alpha, \delta). \tag{7}$$

An interior local maximum satisfies the following necessary first order condition:

$$\underbrace{-\frac{\partial\theta^*(q, \phi; \alpha, \delta)}{\partial q}\left[v(1 - q) - (1 - \alpha\phi)\right]}_{\substack{\text{marginal increase in payoff due to} \\ \text{lower probability of bankruptcy}}} = \underbrace{\left(\overline{\theta} - \theta^*(q, \phi; \alpha, \delta)\right) v}_{\substack{\text{marginal decrease in payoff} \\ \text{due to lower stake of} \\ \text{the continuation value}}} \tag{8}$$

Combining the result when $\alpha\phi = 0$ with condition (8) for the case when $\alpha\phi > 0$ leads to Proposition 3.

Proposition 3. *If the borrower raises funds from uncoordinated creditors, the borrower's optimal offer at* $t = 1$ *in the event of distress* ($\omega = L$) *is the unique solution to (8), which is given by*

$q^*(\phi;\alpha,\delta) = \sqrt{\frac{(v-(1-\alpha\phi))\alpha\phi}{\overline{\theta}\delta v^2}}$. *The associated probability of bankruptcy is* $p^*(\phi;\alpha,\delta) \equiv \frac{\theta^*(\phi;\alpha,\delta)-\underline{\theta}}{\overline{\theta}-\underline{\theta}}$, *where* $\theta^*(\phi;\alpha,\delta) = \sqrt{\frac{\alpha\phi\overline{\theta}}{\delta(v-(1-\alpha\phi))}}$.

Proposition 3 implies the following:

Corollary 1. *Suppose the borrower raises funds from uncoordinated creditors. For* $\phi > 0$, *the borrower's optimal offer* $q^*(\phi;\alpha,\delta)$ *and the probability of bankruptcy at* $t = 0$, $\overline{p}^*(\phi;\alpha,\delta,\lambda) \equiv (1-\lambda)\,p^*(\phi;\alpha,\delta)$, *have the following properties:*

(i) $q^*(\phi;\alpha,\delta,\lambda)$ *and* $\overline{p}^*(\phi;\alpha,\delta,\lambda)$ *are strictly increasing in verifiability (*$\phi\left(\partial q^*/\partial(\alpha\phi)\right) > 0$ *and* $\phi\left(\partial\overline{p}^*/\partial(\alpha\phi)\right) > 0$*).*

(ii) The increase in $\overline{p}^*(\phi;\alpha,\delta,\lambda)$ *caused by an increase in verifiability is higher if the probability of distress is larger (*$\phi\left(\partial^2\overline{p}^*/\partial(\alpha\phi)\,\partial\lambda\right) < 0$*).*

(iii) The increases in $q^*(\phi;\alpha,\delta,\lambda)$ *and* $\overline{p}^*(\phi;\alpha,\delta,\lambda)$ *caused by an increase in verifiability are higher if the degree of misalignment of interests among creditors is larger (*$\phi\left(\partial^2 q^*/\partial(\alpha\phi)\,\partial\delta\right) < 0$ *and* $\phi\left(\partial^2\overline{p}^*/\partial(\alpha\phi)\,\partial\delta\right) < 0$*).*

Corollary 1 states that the inefficiency resulting from filing for bankruptcy is increasing in verifiability. The intuition is as follows. Higher verifiability reduces the borrower's payoff in bankruptcy and worsens the coordination problem among creditors. The former effect makes bankruptcy filings more costly to the borrower, increasing the benefit of improving the out-of-court stake q offered to creditors. The latter effect increases the probability of bankruptcy, and thus lowers the borrower's cost of increasing creditors' share of the out-of-court value of the assets. As a result of these two effects, the borrower has a greater incentive to improve the offer made to creditors following an increase in verifiability. Since increasing q becomes increasingly less effective in reducing the coordination problem among creditors, keeping the probability of bankruptcy constant would require a substantial increase in q. Therefore, it is optimal for the borrower to propose a less-than-offsetting increase in the out-of-court offer, resulting in a higher probability of bankruptcy.

We can now derive ex ante payoffs in order to examine how the interaction of creditors' coordination problem and verifiability affects financing. Creditors' expected payoff in the event the

project is funded is given by

$$V_C(r,\phi;\alpha,\delta,\lambda) \equiv \begin{cases} P(r,\phi;\alpha,\delta,\lambda) - g & \text{if project is financed} \\ 0 & \text{if otherwise} \end{cases}, \tag{9}$$

where

$$P(r,\phi;\alpha,\delta,\lambda) \equiv \lambda r + (1-\lambda)\left[\left(1-p^*(\phi;\alpha,\delta)\right) q^*(\phi;\alpha,\delta)\, v + p^*(\phi;\alpha,\delta)\,\alpha\phi\right] \tag{10}$$

is the income pledged to creditors.

The optimal contract (r,ϕ) maximizes the borrower's payoff given the feasibility constraint $V_C(r,\phi;\alpha,\delta,\lambda) \geq 0$. If financing is feasible then, given that the creditors receive r and the borrower receives $y-r$ in the absence of distress, the optimal contract satisfies $V_C(r,\phi;\alpha,\delta,\lambda) = 0$ (otherwise the borrower's payoff can be increased by lowering r). Thus, the borrower's expected payof can be written as the return of the project in the absence of bankruptcy net of the deadweight costs of bankruptcy:

$$V_B(\phi;\alpha,\delta,\lambda) \equiv \begin{cases} \lambda y + (1-\lambda)\, v - g - D(\phi;\alpha,\delta,\lambda) & \text{if project is financed} \\ 0 & \text{if otherwise} \end{cases}, \tag{11}$$

where $D(\phi;\alpha,\delta,\lambda)$ is the deadweight loss in the event of bankruptcy, that is

$$D(\phi;\alpha,\delta,\lambda) \equiv \overline{p}^*(\phi;\alpha,\delta,\lambda)(v-1). \tag{12}$$

From Corollary 1 we know that $\overline{p}^*(\phi;\alpha,\delta,\lambda)$ is strictly increasing in the fraction of assets pledged to creditors $(\alpha\phi)$, which implies the borrower's expected payoff is strictly decreasing in $\alpha\phi$. Therefore, the optimal contract minimizes the deadweight cost of bankruptcy by setting ϕ equal to its minimum feasible level.

The share of assets pledged to creditors $(\alpha\phi)$ affects $P(r,\phi;\alpha,\delta,\lambda)$ both directly, by increasing creditors payoff in bankruptcy, and indirectly, through the borrower' optimal offer q^* and the associated probability of bankruptcy p^*. The indirect effect on the borrower's offer is positive because an increase $\alpha\phi$ makes coordination among creditors harder and bankruptcy more likely,

while reducing the borrower's payoff in bankruptcy. As a result, the borrower optimally increases the offer as the opportunity cost of doing so reduces. The indirect impact on the probability of bankruptcy is negative: Since the coordination problem among creditors becomes worse, reducing the probability of bankruptcy becomes increasingly costly, which implies that the increase in the borrower's offer less than compensate for the increase $\alpha\phi$.

Proposition 4 below states that the overall effect of $\alpha\phi$ on $P(r, \phi; \alpha, \delta, \lambda)$ is positive when taking also into account the indirect effects. Therefore, the optimal contract is such that $r = y$ and ϕ solves $P(y, \phi; \alpha, \delta, \lambda) = g$. There is a feasible solution for ϕ provided that the pledgeable income is enough to cover creditors' initial outlay, that is, $P(y, 1; \alpha, \delta, \lambda) \geq g$.

Proposition 4. *$P(r, \phi; \alpha, \delta, \lambda)$ is strictly increasing in $\alpha\phi$ and borrowing from uncoordinated creditors is feasible if and only if $P(y, 1; \alpha, \delta, \lambda) \geq g$, where $P(y, 1; \alpha, \delta, \lambda)$ is strictly increasing in α ($\partial P(y, 1; \alpha, \delta, \lambda) / \partial \alpha > 0$), and the effect is lower if the probability of distress is lower ($\partial^2 P(y, 1; \alpha, \delta, \lambda) / \partial \alpha \partial \lambda < 0$). If financing is feasible, the optimal contract specifies (r^*, ϕ^*) such that $r^* = y$ and ϕ^* is the unique solution to $P(y, \phi^*; \alpha, \delta, \lambda) = g$.*

The main feature of the optimal contract is that it minimizes the deadweight costs of bankruptcy subject to the feasibility constraint. From Corollary 1 we know that, given a feasible choice of ϕ, an increase in verifiability from α to $\alpha' > \alpha$ leads to a higher probability of bankruptcy and reduces the borrower's payoff in distress. In the intensive margin (financing is feasible under α), the optimal contract needs to be adjusted by lowering the fraction of pledged physical assets $\alpha'\phi$ to the minimum level required to maintain feasibility. This is accomplished by reducing the creditors' ownership over the verifiable physical assets to ϕ' such that $\phi' = \frac{\alpha}{\alpha'}\phi < \phi$. The new contract restores creditors' prior recovery rate in bankruptcy ($\alpha'\phi' = \alpha\phi$), the initial probability of bankruptcy, and the previous borrower's payoff. In the extensive margin (financing is not feasible under α, but is under α'), a feasible choice of ϕ implies $\alpha'\phi > \alpha$. In this case, the probability of bankruptcy is higher than that associated with the marginal project under α (i.e., the project such that $P(y, 1; \alpha, \delta, \lambda) = g$).

In the last part of this section, we derive the implications of verifiability for debt capacity, the probability of bankruptcy and the borrower's payoff:

Corollary 2. *Project financing, contractual arrangements, the probability of bankruptcy in distress ($\omega = L$), and the borrower's payoff satisfy the following:*

(i) There exists $\underline{\lambda}(\alpha) \in (0, \overline{\lambda}(\alpha))$ *such that financing is feasible if and only if* $\lambda \in [\underline{\lambda}(\alpha), g/y)$*, and* $\underline{\lambda}(\alpha)$ *is strictly decreasing in verifiability* $(d\underline{\lambda}/d\alpha < 0)$*.*

(ii) For $\lambda \in [\overline{\lambda}(\alpha), g/y)$*, funds are raised from coordinated creditors. For* $\lambda \in [\underline{\lambda}(\alpha), \overline{\lambda}(\alpha))$*, funds are raised from uncoordinated creditors.*

(iii) If financing is feasible under α*, the probability of bankruptcy in distress* $(\omega = L)$ *is less than or equal to* $p^*(1; \alpha, \delta)$*, which is the associated probability of bankruptcy in distress when financing is just feasible* $(\lambda = \underline{\lambda}(\alpha))$*. If financing is not feasible under* α *but becomes feasible under* $\alpha' > \alpha$*, with* $\underline{\lambda}(\alpha') \leq \lambda < \overline{\lambda}(\alpha')$*, then* $\phi^*\alpha' > \alpha$ *and* $p^*(\phi^*; \alpha', \delta) > p^*(1; \alpha, \delta)$*.*

(iv) If financing is not feasible under α $(\lambda < \underline{\lambda}(\alpha))$*,* $V_B(\phi^*; \alpha, \delta, \lambda) = 0$*. If it is feasible under* $\alpha' > \alpha$*, with* $\underline{\lambda}(\alpha') \leq \lambda < \overline{\lambda}(\alpha')$*, then* $V_B(\phi^*; \alpha', \delta, \lambda) > 0$ *and independent of* α $(\partial V_B(\phi^*; \alpha', \delta, \lambda)/\partial\alpha = 0)$*.*

One of the main results of the model is described in Corollary 2(iii): higher verifiability increases the probability of bankruptcy in distress. This testable implication is in contrast to the predictions of the previous literature on optimal financial contracting, which predicts that an increase in pledgeable assets allows new projects to be financed at a lower bankruptcy probability.[18] However, enhanced creditor protection can improve ex ante efficiency to the extent that it allows profitable projects to be financed ((Corollary 2(i))). This is hardly the case for borrowers that face a very low chance of financial distress (very high λ) and are likely unconstrained. Firms that have very high chances of becoming distressed (very low λ) are also unlikely to be affected by changes in verifiability. For these borrowers, the increase in pledgeable income induced by an increase in verifiability is not sufficient to allow for the funding of new projects. Therefore, the borrowers most likely to benefit from an increase in verifiability face a probability of financial distress that is neither too high nor too low (in a neighborhood of $\underline{\lambda}(\alpha)$). These borrowers should experience an increase in their equity value (Corollary 2(iv)).

[18] This literature includes the seminal papers of Hart and Moore (1998, 1994), Aghion and Bolton (1992), Bolton and Scharfstein (1990, 1996), and Diamond (2004), as well as the more recent works of von Thadden, Berglöf, and Roland (2010) and Gennaioli and Rossi (2013).

3 Data and Empirical Design

Before the Bankruptcy Reform Act of 1978, reorganization of large, publicly held corporations in the U.S. occurred through Chapter X of the Chandler Act of 1938. Under Chapter X, an independent trustee appointed by the bankruptcy court was in charge of hearing debtor and creditors and prepared a reorganization plan.

An important change to Chapter X reorganization occurred with a Supreme Court decision in 1939, which introduced what became to be known as the "new value exception" to the absolute priority rule.[19] The new value exception gives pre-bankruptcy equity holders the right to retain a stake in the reorganized firm if they contribute new equity and the new equity is indispensable for a successful reorganization.[20] The independent trustee played a central role in assuring that the new value exception was applied within the scope of the absolute priority rule. She could hear the creditors and other interested parties allowing all parties to contribute to the formulation of the reorganization plan and trying to ensure that the new equity was "reasonably equivalent" to the shareholders' contribution.

When the new Bankruptcy Code was enacted in 1978 [Public Law 95-598], the debtor became the focal figure of the reorganization process. Importantly, the debtor was granted a statutory exclusivity to propose a reorganization plan in the first 120 days after filing for Chapter 11.[21] This exclusivity can be problematic in the case of new value plans because the debtor is basically in charge of assessing whether the new equity she contributed was "reasonably equivalent" to the stake she retained in the reorganized firm. In these circumstances, the incentive of the debtor is to contribute as little new value as possible while retaining a large interest in the reorganized firm. As a consequence, circuit courts of appeals were split for several years on the compatibility of the new value exception rule and the statutory exclusivity of the debtor.[22]

Noticing the split, the Supreme Court agreed to review the case of Bank of America v. 203

[19] See Case vs. Los Angeles Lumber Products Co. [Decision 308 U.S. 106].

[20] The Supreme Court clarified that the pre-bankruptcy shareholders cannot retain a stake in the reorganized entity because it would constitute a violation of the absolute priority rule.

[21] See 11 U.S. Code 1121(b). This exclusivity might be extended for cause by the bankruptcy court up to a maximum of 18 months [11 U.S. Code 1121(d)(1)].

[22] For instance, the Second and Fourth Circuit Courts rejected, respectively, new value exception plans (affirmed by lower courts) in re Coltex Loop Central Three Partners, L.P., [Decision 138 F. 3d 39 (2d Cir. Court 1998)] and in re Bryson Properties, XVIII, [Decision 961 F. 2d 496 (4th Cir. 1992)]. Meanwhile, in re Bonner Mall Partnership [Decision 2 F. 3d 899 (9th Cir. 1993)], a District Court affirmed a new value plan.

North LaSalle,[23] for which the Seventh Circuit Court had affirmed the new value plan approved by the bankruptcy court and the district court. At the core of the case is the question of whether a reorganization plan that allows pre-bankruptcy stockholders to contribute new capital and retain a stake in the reorganized firm can be fair and equitable to the creditors when the pre-bankruptcy stockholders have the exclusive right to propose such a plan. The Supreme Court decided on the case on May 3, 1999. The centerpiece of the decision was that the debtor cannot be granted the exclusive right to present a plan when she asks to retain a stake in the reorganized firm. The Supreme Court went further saying that "if a plan grants old equity an interest, it must be exposed to a market test by allowing competing bids for equity interest or competing plans". Figure 2 presents a summary of the timeline of events leading to the 1999 Supreme Court decision. In Appendix I.B, we discuss the details of the case and report press coverage in Table I.B.1. We present the timeline of events surrounding the Supreme Court decision in Figure I.B.1.

FIGURE 2 ABOUT HERE

This 1999 Supreme Court decision changed Chapter 11 reorganization substantially.[24] The decision gave the dissenting creditors in a new value plan the right to present competing bids for equity or competing plans ("market test"). This has two major implications. First, it puts constraints on "new value plans" that can be confirmed by bankruptcy judges, who are now required to verify and assess the fairness and equitability of a restructuring plan using a market mechanism.[25] Second, it leads to a significant improvement in creditor protection by making it harder for judges to favor debtors in Chapter 11 cases. These two aspects of the Supreme Court decision are at the core of our identification strategy.

In order to test the predictions of our model in the context of the 1999 Supreme Court decision, we put together data from several sources. We obtain bankruptcy data from the UCLA-LoPucky Bankruptcy Research Database (BRD) which contains Chapter 11 filings for publicly listed firms in the U.S. with total assets over $100 million. We use the BRD data to construct our variable

[23] In re 203 N. LaSalle Street Partnership [Decision 126 F. 3d 955 (7th Cir. Court 1997)].

[24] In February 2002, Westlaw (a legal service database) reported 44 Chapter 11 cases citing the 1999 ruling.

[25] One year after the Supreme Court decision, LaSalle proposed a plan in which Bank of America would receive 71 million, compared to the $60.7 = (54.5 + 6.2)$ million of the old plan. Bank of America backed the plan. See "Development Resources Bets on Downtown", Chicago Tribune, June 7, 2000.

$Chapter11$, which is an indicator equal to 1 if a company files for Chapter 11 protection in a given year, and 0 otherwise. This is the dependent variable in our probit estimations discussed below. The rest of our firm-level data and control variables is constructed from COMPUSTAT and CRSP. We exclude from our sample all financial firms (i.e., SIC 6000 – 6999). Although the main tests cover the 1998-2001 period (i.e., four years around the 1999 Supreme Court ruling), we also use data from 1995 to 2010 to perform additional tests and robustness checks. Detailed definitions of all variables can be found in Appendix Table I.C.1.

Our identification strategy assumes that the "market test" introduced by the 1999 Supreme Court decision improves the verifiability of assets in restructuring plans presented by the debtor, particularly in situations when gauging information on the value of the distressed firm is difficult due to the absence of market transactions or other competitive mechanism. In these circumstances, it is easier for a bankruptcy judge to favor debtors without an appeals court detecting the confirmation of an unfair and inequitable plan. For this reason, in order to identify treated and control firms, we compute the ratio of total Sales of Property, Plant, & Equipment (COMPUSTAT's item *sppe*) to total Property, Plant, & Equipment (PP&E) (*ppent*) at the 4-digit SIC industry-year level.[26] In line with standard court practice in Chapter 11 cases (e.g., Sontchi, 2012; Bernstein, Seabury, and Williams, 2006; and Levitin, 2016), our measure captures an asset's potential market value by analyzing transactions of comparables.[27] We use this measure to build a variable called $LowVerifiability$, which is an indicator that takes the value of 1 if the ratio of total Sales of PP&E to total PP&E in the 4-digit SIC industry-year of the firm is below median for all industry-year combined, and 0 otherwise.[28]

[26]We note that the ratio of sales of PP&E to PP&E is not a proxy for tangibility (defined as the ratio of PP&E to assets). The correlation between the two variables for our sample is only 0.192.

[27]Valuations based on transactions of comparable assets are common practice in bankruptcy cases. See, for example, In re PTL Holdings LLC, No. 11-12676 (BLS), 2011 WL 5509031, (Bankr. D. Del. Nov. 10, 2011); In re Tribune Co., No. 08-13141 (KJC), 2011 WL 5142420, at *8–12 (Bankr. D. Del. Oct. 31, 2011); In re Chemtura Corp., 439 B.R. 561, 572–90 (Bankr. S.D.N.Y. 2010); In re DBSD North Am., Inc., 419 B.R. 179, 195–99 (Bankr. S.D.N.Y. 2009), rev'd on other grounds, 634 F.3d 79 (2d Cir. 2011); In re Nellson Nutraceutical, Inc., No. 06-10072 (CSS), 2007 WL 201134, at *22–42 (Bankr. D. Del. Jan. 18, 2007); In re Oneida Ltd., 351 B.R. 79, 87–92 (Bankr. S.D.N.Y. 2006); In re Mirant Corp., 334 B.R. 800, 815–20 (Bankr. N.D. Tex. 2005); In re Heilig-Meyers Co., 319 B.R. 447, 458–63 (Bankr. E.D. Va. 2004); In re Coram Healthcare Corp., 315 B.R. 321, 337–47 (Bankr. D. Del. 2004); In re Exide Techs., 303 B.R. 48, 58–66 (Bankr. D. Del. 2003); In re Payless Cashways, Inc., 290 B.R. 689, 698–702 (Bankr. W.D. Mo. 2003); In re Joy Recovery Tech. Corp., 286 B.R. 54, 77–79 (Bankr. N.D. Ill. 2002).

[28]In unreported tests, we find that the log of the ratio of the 4-digit SIC median EBITDA multiple during bankruptcy to the firm EBITDA multiple after emerging from bankruptcy is significantly lower for low-verifiability firms. This is a measure commonly used to estimate valuation errors in bankruptcy (e.g., Gilson, Hotchkiss, and Ruback, 2000). This finding suggests that low verifiability leads to underestimation of the post-bankruptcy firm

The lower is the proportion of PP&E sold in the secondary market for the type of PP&E used by the distressed firms, the less price informative is that market. Therefore, the "market test" introduced by the 1999 Supreme Court decision should be more important in helping the assessment of fairness and equitability of a restructuring plan for low-verifiability firms. In our difference-in-difference analysis, we use the firms operating in low-verifiability industries as the treated group, while firms operating in an industry with an active secondary market for PP&E are the control group. One could argue that the courts can gauge more information on the value of a distressed firm operating in the control group, and hence on the equitability of a restructuring plan proposed by shareholders. If this is the case, then the Supreme Court's market test should be less important for such firms.

We note that using an industry-based measure to identify treated and control firms mitigates the concern that firms could sort themselves into a group or another in anticipation of the Supreme Court decision. Similarly, it is difficult to envision that firms could easily adjust their corporate policies in anticipation of what the Supreme Court would decide on May 3, 1999. In fact, it is difficult to imagine that firms in financial difficulties could find the financial resources necessary to repay some of their debt and therefore mitigate the impact of the Supreme Court decision on Chapter 11. Overall, this suggests that within our experimental design the 1999 Supreme Court decision is "unexpected" with respect to Chapter 11 outcomes.

Table 1 reports descriptive statistics for the full sample, as well as separately for low- and high-verifiability firms. The two groups are similar in terms of $Tangibility$ and $Profitability$ (differences not statistically significant), but differ in terms of $Leverage$, $TobinsQ$, $Size$, and $DispersedDebt$ (differences statistically significant). We control for these variables throughout the econometric analysis to mitigate the concern that these differences could drive the results. Appendix Tables I.C.2 and I.C.3 provide detailed descriptive statistics and pairwise correlations between variables for low-verifiability firms (treated), high-verifiability firms (control), and the combined sample.

TABLE 1 ABOUT HERE

value, and is in line with our identification strategy as the ability to assess the equitability of a restructuring plan is lower when industry sales of Property, Plant, & Equipment are low.

4 Results

In this section, we examine the effect of the 1999 Supreme Court ruling on Chapter 11 filings for low-verifiability firms (treated group) relative to high-verifiability firms (control group) using a difference-in-difference approach (e.g., Bertrand, Duflo, and Mullainathan, 2004). We also study the effect of the Supreme Court ruling on debt capacity and leverage.

4.1 The Effect of Verifiability on Chapter 11: Baseline Estimation

We first proceed to the derivation of our econometric model. We specify that whether firm i files for Chapter 11 at year t depends on

$$Chapter11^*_{i,t} = \mathbf{x}'_{i,t-1}\beta + \varepsilon_{i,t} \tag{13}$$

Where $Chapter11^*_{i,t}$ is unobervable, $\mathbf{x}'_{i,t-1}$ is a vector of variables, and $\varepsilon_{i,t}$ is a random error term. What is observed in practice is $Chapter11_{i,t}$, which is a dummy variable that takes the value of 1 if $Chapter11^*_{i,t} > 0$, and 0 if $Chapter11^*_{i,t} \leq 0$. The probability that we observe a Chapter 11 filing is therefore

$$\begin{aligned} \Pr\left(Chapter11_{i,t} = 1\right) = \Pr\left(Chapter11^*_{i,t} > 0\right) &= \Pr\left(\varepsilon_{i,t} > -\mathbf{x}'_{i,t-1}\beta\right) \\ &= 1 - F\left(-\mathbf{x}'_{i,t-1}\beta\right) \end{aligned} \tag{14}$$

Where $F(\cdot)$ is the distribution of $\varepsilon_{i,t}$. We assume $F(\cdot)$ to be the normal distribution and use a probit model to estimate the following parameters:

$$\begin{aligned} \mathbf{x}'_{i,t-1}\beta = &\beta_0 + \beta_1 LowVerifiability_{i,t-1} \times PostSupremeCourt1999_{t-1} \\ &+ \beta_2 LowVerifiability_{i,t-1} + \beta_3 PostSupremeCourt1999_{t-1} \\ &+ \mathbf{Controls}'_{i,t-1}\beta_{\mathbf{4}} \end{aligned} \tag{15}$$

Where $LowVerifiability_{i,t-1}$ is an indicator that takes the value of 1 if the ratio of Sales of PP&E to PP&E in the 4-digit SIC industry-year of firm i is lower than the overall sample median, and 0 otherwise; $PostSupremeCourt1999_{t-1}$ is a dummy variable that takes the value of 1 for the fiscal

years 1999 (i.e., June 1999 to May 2000) and 2000 (i.e., June 2000 to May 2001) (i.e., two years after the Supreme Court decision of May 3, 1999), and 0 for the years 1997 and 1998; and $\mathbf{Controls}_{i,t-1}$ is a vector of firm-level controls including $Leverage_{i,t-1}$, $Tangibility_{i,t-1}$, $TobinsQ_{i,t-1}$, the natural logarithm of $Size_{i,t-1}$, $Profitability_{i,t-1}$, and $DispersedDebt_{i,t-1}$. All of our regressions are estimated with heteroskedasticity-consistent errors clustered by firm (Petersen, 2009).

The dependent variable – $Chapter11_{i,t}$ – is defined as a lead variable (with respect to the regressors) and covers the period 1998 – 2001. That is, our model specification allows for one year to elapse between the moment in which a firm changes its policies (e.g., by increasing leverage) or a new regulation becomes effective and the moment in which these changes could lead to Chapter 11. In our context, this means that we explicitly recognize that it takes time for bankruptcy courts to interpret and internalize the 1999 Supreme Court ruling into their decisions.[29]

Our model predicts that an increase in the ability to assess the equitability of a restructuring plan presented by the debtor (increased verifiability) leads low-verifiability firms that need to restructure their debt to file more for Chapter 11 (as opposed to reorganize out of court) (Corollary 2(iii)). This occurs because higher verifiability increases the payoff for debtholders in Chapter 11, making them more reluctant to accept out-of-court debtor proposals. So, the focus of our estimation is the difference-in-difference estimator $LowVerifiability \times PostSupremeCourt1999$.[30] By design, the coefficient on the interaction term (β_1) can be used to measure the change in Chapter 11 filings for low-verifiability firms (treated group) after the Supreme Court ruling of 1999 relative to the change in the filings for high-verifiability firms (control group). Formally, the increase in Chapter 11 for low-verifiability firms relative to high-verifiability firms after the 1999 ruling – the marginal effect – is obtained from the following expression:

$$F\left(\beta_0+\beta_1+\beta_2+\beta_3+\mathbf{Controls}'_{i,t-1}\beta_{\mathbf{4}}\right)-F\left(\beta_0+\beta_2+\beta_3+\mathbf{Controls}'_{i,t-1}\beta_{\mathbf{4}}\right). \qquad (16)$$

Table 2 reports the regression estimates. In the first column, we display the results for our base sample period: 1998-2001. The coefficient estimate on $LowVerifiability \times PostSupremeCourt1999$

[29] Westlaw, one of the leading online-legal service databases, reports only two bankruptcy decisions in the year after the Supreme Court ruling of May 3, 1999 citing the ruling. However, by mid February 2002 the number of decisions citing the 1999 ruling increased to 44.

[30] Puhani (2008) shows that in nonlinear difference-in-difference models the treatment effect is the difference between the observed outcome and the cross difference of the potential non-treatment outcome, that is, the marginal effect of the interaction term.

is equal to 0.499, and it is statistically significant at the 1% level. The estimated marginal effect of 1.2 percentage points (pp) is not only statistically significant, but also economically sizable. Compared to the reported average Chapter 11 filings of 1% for the full sample in Table 1, a marginal effect of 1.2pp implies that Chapter 11 filings for low-verifiability firms more than doubled in the aftermath of the Supreme Court ruling of 1999.

TABLE 2 ABOUT HERE

In columns 2 – 5 of Table 2, we report estimation results for alternative sample periods. The coefficient estimates on our main interaction term are positive and statistically significant at the 1% level across all alternative sample periods. The estimated marginal effects are also economically large, though they display a decreasing pattern as we lengthen the sample period (arguably as time elapses firms can adjust their policies to counteract the effect of the Supreme Court decision). In the two-year window presented in column 2, the estimated marginal effect is equal to 1.4pp, which is even slightly larger than the 1.2pp of our baseline estimation which uses a four-year window. The marginal effect decreases only slightly to 1.1pp in the estimation based on the 1997 – 2002 six-year window. In contrast, the reduction is sizable in the estimations based on the eight-year and twelve-year windows, where the marginal effects are equal to 0.6pp and 0.4pp. Figure 3 presents these estimates graphically.

FIGURE 3 ABOUT HERE

The coefficient estimate on the $LowVerifiability$ dummy is negative and significant for all but the baseline estimation in column 1 (where the variable is negative but insignificant). This finding is consistent with the prediction from our model that filing for Chapter 11 is less likely for low-verifiability firms. The coefficient on the $PostSupremeCourt1999$ dummy is insignificant across all estimations, suggesting that on average the number of Chapter 11 filings in the pre and post Supreme Court decision periods remained the same.

We now turn to the control variables. Table 2 shows that $Leverage$ and $DebtDispersion$ enter our probit estimations with a positively significant coefficient. These findings suggest that the probability that a firm files for Chapter 11 protection increases with indebtedness and coordination problems among creditors (in line with evidence in Asquith, Gertner, and Scharfstein, 1994; Gilson,

John, and Lang, 1990; and more recently, Ivashina, Iverson, and Smith, 2016). Table 2 also shows that the coefficients for $TobinsQ$ and $Profitability$ are negative and significant. In line with the evidence in Benmelech and Bergman (2008) and Roberts and Sufi (2009b) in the context of debt renegotiation, these findings indicate that the probability that a firm files for Chapter 11 decreases with growth prospects and profitability. Table 2 also suggests that larger firms are more likely to file for Chapter 11. To the extent that bankruptcy is less costly for larger firms, this could explain why these firms are less reluctant to file for Chapter 11 (e.g., Bris, Welch, and Zhu, 2006). Finally, we find that tangibility is statistically insignificant across all five estimations in Table 2.

Overall, these findings support the first prediction from our model that treated firms (low-verifiability firms) file more for Chapter 11 following the increase in in-court verifiability induced by the Supreme Court decision of 1999.

4.2 The Effect of Verifiability on Chapter 11: By Financial Distress and Creditors' Coordination Problems

To link the empirical findings more closely to our theoretical model, it is important to test how verifiability affects Chapter 11 for firms that are more likely to face financial distress and when coordination among creditors is difficult.

In the context of our model, the effect of verifiability on Chapter 11 depends on whether firms are likely to face financial distress. The second prediction from our model is that the effect of verifiability on Chapter 11 filings becomes stronger as the probability that firms face financial distress increases (Corollary 1(ii)). Using Altman's (1968) Z-score (see Table I.C.1 for the definition), we categorize firms with a Z-score > 3 as financially sound and firms with a Z-score ≤ 3 as firms in financial alert. Following Altman's (1968), we further partition firms in financial alert in three groups: (1) low alert ($2.7 <$ Z-score ≤ 3); (2) moderate alert ($1.8 <$ Z-score ≤ 2.7); (3) high alert (Z-score ≤ 1.8). We use these partitions to study the second prediction from our model that the effect of verifiability on Chapter 11 filings becomes stronger as the probability that firms face financial distress increases.

Table 3 presents our difference-in-difference probit results for the different Z-score partitions. For comparison, Table 3, column 1 reports also results for our baseline estimation from Table 2, column 1. Column 2 of Table 3 shows that the coefficient estimate for $LowVerifiability \times PostSupremeCourt1999$ is positive and significant at the 1% level for the sample of firms in financial

alert (Z-score ≤ 3). The marginal effect of 2.9pp (also statistically significant at the 1% level) is almost 2.5× bigger than the marginal effect for the full sample (column 1). Column 6 presents results for financially sound firms (Z-score > 3). The coefficient for the interaction term is positive and significant at 1%, but the implied marginal effect is nearly zero (0.2pp) and statistically insignificant.[31]

For our purposes, the more interesting results concern the estimations associated with the three financial alert partitions. These regressions are shown in columns 3 to 5 of Table 3. The estimations show that the coefficient on our interaction term is positive and significant across all three financial alert partitions. The marginal effects range from -0.4pp (statistically insignificant) for the low alert group (column 5), to 1.8pp (but still insignificant) for the medium alert group (column 4), to a sizable 4.9pp (statistically significant at the 5% level) for the high alert group (column 3).

Altogether, these findings suggest that the effect of increased verifiability (induced by the Supreme Court decision of 1999) on Chapter 11 for low-verifiability firms is sizable (i.e., marginal effect of 2.9pp) for firms that could face financial distress, but economically small and statistically insignificant for financially sound firms (consistent with the assumptions in our model).

TABLE 3 ABOUT HERE

In our model, the effect of verifiability on Chapter 11 filings depends also on how difficult is for creditors to coordinate on restructuring debt out of court. We assume that the influence of lenders over distressed firms increases if debt is restructured out of court. If lenders have conflicting goals (e.g., long-term and short-term lenders have different views on the optimal investment policy once their influence on the firm increases) and are uncoordinated, then the probability that the firm files for Chapter 11 will increase. Therefore, our third prediction is that the effect of an increase in verifiability on Chapter 11 is stronger when creditors are more likely to face coordination difficulties

[31] The positively significant "raw" coefficient on the interaction term suggests that while the increased verifiability induced by the 1999 Supreme Court ruling could in principle lead financially sound firms to have to file more for Chapter 11 (should these firms become distressed), being currently distant from financial distress makes it unlikely that these firms in practice need to file for Chapter 11 (hence, the economically small and statistically insignificant marginal effect). In terms of our econometric model, this means that while β_1 in (15) is positively significant in the estimation for financially sound firms, $Chapter11^*$ is far well below 0 that any increase in verifiability will not cause $Chapter11^*$ to move to the positive region (hence, higher verifiability has no effect on the probability that financially sound firms file for Chapter 11). This can also be seen from equation (16), which determines the marginal effect. For $Chapter11^*$ sufficiently negative (the case of financially sound firms), the normal density function becomes very flat. This implies that increments in $Chapter11^*$ have small impacts on the marginal effect (16) even if the raw coefficient on the interaction term (β_1) is positively significant (Cf. Greene, 2000, p. 820-825).

and these difficulties are sufficiently severe (e.g., firms with a dispersed debt structure or firms using a mix of debt instruments).[32] As a corollary to the third prediction, our model also predicts that the effect of verifiability on Chapter 11 increases with the intensity of misalignment of interests among creditors (Corollary 1(iii)), which exacerbates coordination problems (e.g., firms with both a dispersed and mixed debt structure).

We use two measures to identify whether creditors face coordination problems. We also combine these two measures to assess the intensity of the coordination difficulties. The first measures considers whether firms have a dispersed debt structure. Following previous studies,[33] we say that a firm has a dispersed debt structure – $DispersedDebt$ – if the firm has a bond rating (COMPUSTAT item *splticrm*) and/or a commercial paper rating (*spsticrm*). We argue that having a dispersed debt structure means that the debt securities could be held by investors with very different views and preferences concerning risk, timing of returns, etc. (e.g., pension funds, insurance companies, hedge funds, vulture funds, etc.). These different views and preferences complicate the ability of the lenders to coordinate if the firm (borrower) faces financial distress and makes an out-of-court proposal to restructure its debt. The second measure to identify creditor coordination problems considers whether firms use a mix of debt instruments. COMPUSTAT reports whether firms use mortgages and secured debt (item *dm*), capital leases (*dclo*), and convertible debt (*dcvt*). We also build a measure of non-convertible unsecured debt as the difference between total debt, mortgages and secured debt, and convertible debt (*dt* – *dm* – *dcvt*). We say that a firm has a mixed debt structure – $MixedDebt$ – if the firm uses at least three of these four debt instruments.[34] As for dispersed debt, we assume that having a mixed debt structure means that lenders could have very different preferences if the firm is in financial distress and tries to renegotiate its debt out of court.

Table 4 presents the results from the estimation of our difference-in-difference probit model for various sub-samples based on our measures of dispersed and mixed debt. Our partitions range from the case where coordination among creditors is unlikely to be a problem (debt is neither dispersed

[32] For example, consider the case of debt securities held by hedge funds, vulture funds, pension funds, and other type of investors. Arguably, they have different views and preferences with respect to risk, timing of returns, etc. and this complicates their ability to coordinate.

[33] See Gilson, John, and Lang (1990), Cantillo and Wright (2000), and Faulkender and Petersen (2006).

[34] Our measure of mixed debt structure is similar in spirit to the measures of debt heterogeneity and specialization in Rauh and Sufi (2010) and Colla, Ippolito, and Li (2013). Unlike Colla, Ippolito, and Li (2013) we cannot rely on Capital IQ to build our measure of mixed debt because the availability of detailed data on debt instruments in Capital IQ only starts in 2001, which is past our period of interest.

nor mixed, column 2) to the case where coordination difficulties among creditors are likely to be severe (debt is both dispersed and mixed, column 9). For comparison, column 1 reports our baseline results for the period 1998-2001. Our findings show that when debt is neither dispersed nor mixed (column 2), the coefficient on the interaction term of interest is negative and insignificant. The associated marginal effect is also negative and insignificant. For the rest of the columns in the table, where alternative measures of coordination problems are considered, our findings show that the coefficients on the interaction term are positive and increasingly larger in terms of magnitude as we combine proxies. The coefficients are significant only when coordination problems among creditors are likely to be severe (columns 7 and 8). We find a similar pattern for the marginal effects, which are 2.9pp and 2.7pp and statistically significant only in columns 7 and 8. These effects are sizable compared to the marginal effects of 1.2pp for the full sample in column 1 (firms with and without coordination problems) and support prediction 3 from our model that the effect of higher verifiability on Chapter 11 is stronger if firms face coordination difficulties and these difficulties are sufficiently severe (see discussion at the end of section 2.1). Finally, column 9 considers firms with both dispersed and mixed debt, for which arguably the coordination problem among lenders is most severe. We find that the coefficient on the interaction term is positive and statistically significant at the 1% level. The marginal effect of 6.7pp is about 2.3× bigger than the marginal effect of 2.9pp for the case of firms with mixed debt and possibly dispersed debt (column 7) and about 2.5× bigger than the marginal effect of 2.7pp for the case of firms with dispersed debt and possibly mixed debt (column 8). Overall, these findings support prediction 4 from our model that the effect of verifiability on Chapter 11 increases with the intensity of the coordination problem among creditors.

Table 4 About Here

To sum up, the results of this section provide strong support for one of the key predictions in our model that increased in-court verifiability leads to more Chapter 11 filings. Further, we find that the effect of verifiability on Chapter 11 is stronger for firms that are more likely to face financial distress or when coordination problems among creditors are severe.

4.3 The Effect of Verifiability on Debt Capacity

4.3.1 Event Study Evidence

In this section, we study the effect of an increase in creditor protection and verifiability (induced by the Supreme Court ruling of May 3, 1999) on debt capacity. In our model, verifiability has also implications for debt capacity. Higher verifiability leads to an increase of what lenders can recover in Chapter 11, which, in turn, also strengthens creditors' bargaining power with the debtor and their payoff out of court. The consequence is that debt capacity increases because ex-ante lenders are willing to provide more credit to firms if their recovery rate in the event of distress is higher (Corollary 2(i)). Improved debt capacity contributes to an increase in the firm's equity value to the extent that more positive net present value projects can be funded (Corollary 2(iv)). Therefore, our first prediction is that higher verifiability leads to an increase in the firm's equity value if the positive effect of a higher debt capacity dominates the consequence of a reduced payoff for the debtor in case of financial distress, which is likely to be the case if the probability of financial distress is neither too high nor too low (Corollary 2(iii)). So, if the positive effect of a higher debt capacity dominates the negative effect of a higher probability of Chapter 11 (also due to higher verifiability), then we should find a positive stock price reaction.

The Supreme Court decision was widely covered by news agencies and major newspapers. On the day of the decision, the Associated Press released an article entitled "Creditors' Rights Boosted in Business Reorganizations". On May 4, the case was covered, among others, by The Wall Street Journal, The New York Times, and The Washington Post, or more specialized business publications, such as The American Banker. In all cases, the headline was that the Supreme Court decision boosted creditor rights. Table I.B.1 reports detailed press coverage of the case.

To assess how the stock market reacted to the Supreme Court decision, we measure abnormal returns using the Fama-French plus momentum model with the market portfolio proxied by the CRSP equally-weighted stock index return (which includes American Depositary Receipts (ADRs)). We compute the Cumulative Average Abnormal Returns (CAARs) over various trade-day windows around May 3, 1999. Standard errors are adjusted for cross-sectional correlation of security returns due to event-date clustering following Brown and Warner (1980).

Panel A of Table 5 reports event study evidence without conditioning on firms' financial status.

We report results for the full sample (2,684 firms from our baseline probit model with data in CRSP), the low verifiability sample (1,287 firms), and the high verifiability sample (1,397 firms). In the last column of the panel, we also report the event study results for all 387 firms with American Depository Receipts (ADRs) with available data in CRSP.[35] ADRs are an ideal comparison group to rule out the effect of news unrelated to the Supreme Court ruling of 1999 because the assets of foreign firms with ADRs are not physically located in the U.S. and are thus not under the jurisdiction of U.S. bankruptcy law.

The first row of results in Panel A shows that none of the samples show evidence of significant CAARs over the five trading days starting two weeks before the Supreme Court decision, denoted [-10; -5]. In contrast, we find evidence of significantly positive market reaction over most of the other time windows after the decision for the samples of affected firms. For the full sample, CAARs over the period from the day of the decision to one day after [0; +1] are equal to 0.72% and are statistically significant at the 5% level. The magnitude of the CAARs grows to 1.11% for the [-3; +3] and the [-5; +5] event windows but significance levels go down. Breaking up the sample among low- and high-verifiability firms allows us to see that the positive effect is for low-verifiability firms. For this group of firms, CAARs grow to almost 1.48% and 1.69% for the [-3; +3] and the [-5; +5] event windows, respectively. Based on the combined market capitalization of about $7.2 trillion of the low-verifiability firms in the NYSE, Amex, and Nasdaq (excluding ADRs) one month prior to the Supreme Court decision of May 3, 1999, the CAARs of 1.69% for the window [-5; +5] are equivalent to an increase in the equity value of these firms of about $122 billion. These results suggest that the Supreme Court decision improving creditor rights is regarded by the market as a significant positive effect from the debt capacity perspective for low-verifiability firms. Meanwhile, we do not find any evidence of statistically significant CAARs for ADRs. ADRs are not affected by the Supreme Court ruling because they are not exposed to the U.S. bankruptcy law. These findings reassure us that the positive reaction for the sample of low-verifiability U.S. firms is linked

[35] ADRs are certificates that represent securities of a non-U.S. company trading in U.S. financial markets.

to the change in creditor rights.[36]

TABLE 5 ABOUT HERE

Panel B of Table 5 allows us to start testing additional predictions of our theoretical model. To test these predictions, this panel reports event study results sorting firms by financial status using the Altman's (1968) Z-score.[37] Our theory predicts that since the probability of distress is remote for financially sound firms and the provision of funds for their projects is unlikely to be affected by verifiability, an increase in verifiability should not affect the stock price of sound firms. Panel B shows evidence that this is indeed the case: there is no evidence of a statistically significant stock price reaction for financially sound firms (Z-score > 3). Meanwhile, the panel shows significant positive CAARs of 1.35% for the overall group of firms in financial alert (Z-score ≤ 3). These firms are the main beneficiaries of the increased debt capacity brought by the Supreme Court decision.

Panel B breaks up the full sample of affected firms in low- and high-verifiability firms differentiating between those in financial alert (Z-score ≤ 3) and those firms that could be classified as financially sound (Z-score > 3). The numbers show that the low-verifiability firms in financial alert are the ones that benefit from the increased debt capacity resulting from the Supreme Court decision. Indeed, the 10-day window CAARs for low-verifiability firms is 2% and highly significant, while the abnormal return is only 0.56% and not statistically significant for the high verifiability group. The results for financially sound firms of the two subgroups are statistically insignificant and very similar to the one for the full sample.

Panel B also allows us to test additional predictions of the model by splitting the firms in the financial alert group. Our model predicts that there should be no significant effect on the equity value of firms that will face financial distress with a very high probability. The rationale behind this is that the increase in pledgeable income induced by an increase in verifiability may not be

[36] We also checked Bloomberg Businessweek for any other news that could have affected U.S. stocks in the period around May 3, 1999. The only other important event was a tornado outbreak that hit the state of Oklahoma on May 3-4, 1999. The tornadoes affected also south central Kansas and northern Texas, but the consequences were far less devastating for these regions. Given that this event is delimited geographically and that our sample includes firms across the U.S., it is reasonable to assume that the Oklahoma tornados cannot be the reason for the positive market reaction documented in Table 5. Finally, the evidence that CAARs are not statistically different from zero for ADRs mitigates the concern that the positive CAARs for the affected samples are due to the run-up of the Dow Jones industrial average in April 1999.

[37] Findings are qualitatively similar for other time windows (results not shown for space reasons).

sufficient to generate an increase in debt capacity. The evidence backs up this reasoning as we find no evidence of a statistically significant stock price reaction for the high financial alert group (Z-score < 1.8), even when we split the sample in low and high verifiability firms.[38]

Finally, Panel B also finds patterns that support the prediction that the positive effect of the decision will be concentrated in firms of low and moderate financial alert. Indeed, we find CAARs of close to 2.2% for the medium ($1.8 <$ Z-score ≤ 2.7) and low ($2.7 <$ Z-score ≤ 3) financial alert firms. The CAARs are even bigger if we restrict the sample to low-verifiability firms: 2.48% and 2.92%, respectively, for moderate and low financial alert firms (where the 44 bps difference between the two groups can be explained by the higher probability of Chapter 11 for the medium alert group compared to the low alert firms).

To complement the evidence on stock prices, we also looked at bond prices around the Supreme Court decision. If verifiability increases, the expected payoff in distress for lenders should also increases. Hence, a corollary to our debt-capacity prediction is that bond prices should increase around the Supreme Court decision. Using data from Mergent FISD, we obtain annualized-daily yields for 113 bond securities in our sample for the 10 days around the Supreme Court decision of May 3, 1999.[39] To measure abnormal bond returns, we follow Bessembinder et al. (2009) and use credit spreads (i.e., the difference between corporate bond yields and the 5-year (10-year) Treasury bond yields). Our analysis (not tabulated) shows that the credit spreads decreased by about 11 (12) basis points from an average of 1.81% (1.69%) to 1.70% (1.57%) in the [-5; +5] event window around the Supreme Court decision. These differences are statistically different from zero at the 1% level.

4.3.2 Verifiability, Firm Leverage, and Recovery Rates

The event study evidence presented in the previous section suggests that debt capacity increased for firms with a low to moderate probability of facing financial distress. But, did low verifiability firms respond by increasing leverage after the Supreme Court decision of 1999?

[38] We would like to remind the reader that the Z-score is not a perfect predictor of the probability that a firm faces financial distress and files for Chapter 11. In practice, this means that even after verifiability increases, a sizable fraction of the firms with a Z-score ≤ 1.8 will not file for Chapter 11 (see, for example, our probit estimation in Table 3 for the Z-score ≤ 1.8 partition), while for some of these firms debt capacity might increase because of verifiability. The net effect of these two forces is likely to lead to zero abnormal returns for the average firms in the Z-score ≤ 1.8 group.

[39] We note that because bonds trades very infrequently, it is possible to obtain yields only for a limited number of the bond securities in our sample.

We test this prediction by regressing market leverage – the ratio of total debt to market value of assets – on $LowVerifiability \times PostSupremeCourt1999$ and control variables. Table 6 presents the results of the leverage regressions for the full sample of firms and for different subsamples according to Z-score groups. Column 1 of the table shows that leverage did not increase for the full sample of low-verifiability firms in the two-years after the Supreme Court decision. Similarly, columns 2 and 6 show no evidence that leverage changed for the overall sample of firms in financial alert (Z-score ≤ 3) and those categorized as financially sound (Z-score > 3). However, we find differences if we split the group of financial alert firms. Among the firms in financial alert, we find that those with a low risk of financial distress ($2.7 <$ Z-score ≤ 3) and those with a moderate risk of financial distress ($1.8 <$ Z-score ≤ 2.7) increased leverage sizably by 5.9 percentage points (pp) (column 5) and 3pp (column 4), respectively. Finally, column 3 shows that, according to the predictions of our model, leverage did not change for the low-verifiability firms with a high-risk of financial distress (Z-score ≤ 1.8).[40]

Overall, the findings in Table 6 are in line with the event study evidence in Table 5 and suggest that following the Supreme Court decision of 1999, debt capacity increased for firms with low or moderate risk of financial distress and these firms responded by increasing their leverage levels.

Table 6 About Here

In our model, a higher-expected recovery rate for lenders in Chapter 11 is one of the channels through which debt capacity increases following a positive shock in verifiability (Corollary 2(iii)). Therefore, we should expect the recovery rate for the creditors of low-verifiability firms to increase following the Supreme Court decision of 1999. To test this prediction, we focus exclusively on the firms that filed for Chapter 11. Following Ivashina, Iverson, and Smith (2016), we calculate the recovery rate as the ratio of the firm value after emerging from bankruptcy to pre-bankruptcy liabilities. Using BRD data for the period 1998-2001, we identified 54 Chapter 11 with the necessary data to calculate the recovery rate. The median recovery rate for this sample of firms is 58.0%, which is very similar to the median of 58.6% in Ivashina, Iverson, and Smith (2016). To test whether recovery rates changed for treated firms after 1999, we estimate our difference-in-difference

[40] Results are similar if we use book leverage as dependent variable. The coefficients on the interaction term of interest are insignificant for the Z-score > 3, Z-score ≤ 3, and Z-score ≤ 1.8 cases. We find that book leverage also increased by 4.9% for the ($2.7 <$ Z-score ≤ 3) group. The only exception is the estimation for the ($1.8 <$ Z-score ≤ 2.7) sample, for which the interaction term is no longer positively significant.

model using the recovery rate as dependent variable in Table 7. We find that the coefficient on $LowVerifiability \times PostSupremeCourt1999$ is positive, statistically significant, and economically very sizable. Focusing on column 6, which includes all control variables, the coefficient for the interaction term is 0.359 (statistically significant at the 5% level), which means that the recovery rate for the treated firms increased by nearly 36 p.p. following the Supreme Court decision of 1999. In line with our model, this finding indicates that higher in-court verifiability operates by increasing the recovery rate of creditors in bankruptcy, which in turn leads to an increase in debt capacity.

TABLE 7 ABOUT HERE

4.4 Robustness

Our analysis thus far finds that Chapter 11 filings increased for low-verifiability firms following the 1999 Supreme Court decision and that debt capacity and actual leverage actually increased for firms with low to moderate risk of financial distress, particularly in the low-verifiability group. In this section, we perform robustness tests to rule out alternative explanations for our findings and to assess whether our results hold when we use alternative measures of asset verifiability and risk of financial distress.

4.4.1 Alternative Explanations for the Increase in Chapter 11 Filings

A key assumption in the difference-in-difference approach presented in the previous section is that Chapter 11 filings for low and high verifiability firms follow a "parallel trend" prior to the Supreme Court decision. A violation of this assumption could be problematic as it would suggest that a trend specific to low-verifiability firms rather than the Supreme Court decision is the reason that Chapter 11 filings increased for treated firms. To test this hypothesis more formally, we estimate our base difference-in-difference Chapter 11 model by adding interaction terms of the low-verifiability indicator with year dummies for 1998-2002 (with 1997 being the omitted case) (e.g., Autor, 2003; and Gormley and Matsa, 2011). Figure 4 plots the coefficients for these interaction terms (with ninety-five percent confidence intervals). We find no evidence of an increase in chapter 11 filings before the Supreme Court decision. However, we find that chapter 11 filings increase significantly for low-verifiability firms relative to the control group in each of the year after the Supreme Court

decision. Overall, Figure 4 mitigates the concern that a chapter 11-filing trend specific to low-verifiability firms (rather than the Supreme Court decision of 1999) is the reason for the increase in chapter filings that we document in the paper.

FIGURE 4 ABOUT HERE

Another implication of the results presented in the previous section is that if the increase in Chapter 11 filings for low-verifiability firms is due to the Supreme Court decision of 1999, then we should not find any effect outside of the base-event period: 1998-2001. In order to test this possibility formally, in Table 8 we carry out a placebo test analysis considering all four-year periods from 1995 to 2010, and re-estimate our baseline probit model using the second half of each of these four-year periods as the post placebo-event period. The table shows that the marginal effect on the interaction term of interest is positively significant only for the 1998-2001 period, which is the four-year period around the 1999 Supreme Court decision (our baseline estimation period). The coefficients on the interaction term in the four-year periods of 2000-2003 and 2001-2004 are negatively and statistically significant, but these effects are due to the increase in Chapter 11 filings for low-verifiability firms in the years 2000 and 2001 that followed the 1999 Supreme Court decision.

TABLE 8 ABOUT HERE

A third potential explanation of our results is that the findings could be biased if around the Supreme Court decision of 1999, some other event affected low and high verifiability firms differently. Such an event could be the economic contraction of 2001. Indeed, the eight-month period from March to November 2001 was characterized by a (modest) GDP contraction of 0.2% linked to the burst of the dotcom bubble on March 10, 2000 and the September 11, 2001 attack. Therefore, if among our low-verifiability firms we find a large proportion of dotcom firms, then it is possible that the increase in Chapter 11 filings for low-verifiability firms is due to the burst of the dotcom bubble rather than the 1999 Supreme Court decision.

To start analyzing this possibility we offer three different pieces of indirect evidence that cast doubt on this view. First, we start by noting that the event study results and the evidence presented in Tables 5 and 6 showing that low-verifiability firms with low to moderate risk of financial

distress increase leverage after 1999 are difficult to explain as a consequence of the 2001 economic contraction. Second, the placebo tests of Table 8 do not show that low-verifiability firms file more for Chapter 11 in the years of the Great Recession of 2008-2010. Indeed, Table 8 shows that the marginal effects of the of $LowVerifiability$ interacted with either $After2007$ or $After2008$ are both economically very small and statistically insignificant. If the low-verifiability firms filed more for Chapter 11 because of the economic downturn of 2001, then we should observe a similar (or even larger) effect during the Great Recession of 2008-2010. Finally, Figure 5 provides the distribution of treated and control firms in our sample across industries. This figure shows that low and high verifiability firms across industries are well distributed across industry groups. This fact should help mitigate the concern of a large concentration of low-verifiability firms in the dotcom sector.

FIGURE 5 ABOUT HERE

Although these pieces of evidence are suggestive, we complement the analysis with a series of robustness tests that assess more directly the effect of the burst of the dotcom bubble on our findings. Table 9 presents these results. The first four specifications use as the basis our baseline regression in Table 2 for the period 1998-2001 (first column). In the second column, we add industry fixed effects (using one digit SIC dummies) while in columns 3 and 4 we add the interaction of industry and year fixed effects including and excluding dotcom industries (see, Ljungqvist and Wilhelm, 2003). The evidence from this set of estimations shows that our main findings are robust as the significance and the economic magnitude of the marginal effect remain practically the same.

To further mitigate the potential effect of the March 2001 to November 2001 economic contraction, the last two columns of Table 9 re-estimate the models in columns 3 and 4 but for the shorter time window between 1999 and 2000. These last two columns show that the increase in Chapter 11 filings for low-verifiability firms is stronger in the narrower 1999-2000 window, when the effect of the 2001 economic contraction is probably weak. In model 6, which controls for the interaction of industry and year fixed effects and excludes dotcom firms, the marginal effect increases to 1.5 pp.

Overall the indirect pieces of evidence and the more formal treatment of the theory that other events, such as the 2001 economic contraction or the dotcom bubble, might explain our results are supportive of the idea that the Supreme Court decision of 1999 is a more likely explanation of the

increased Chapter 11 filings of low verifiability firms.

TABLE 9 ABOUT HERE

An alternative event around the time of the Supreme Court decision was the introduction of the decade-long revision of the Uniform Commerce Code in early 1999. To the extent that Article 9, which introduced several changes to the treatment of secured transactions, affected secured creditor rights in bankruptcy (e.g., Lupica, 2002; Adler, Capkun, and Weiss, 2012), the new code could have an effect on a firm's propensity to file for Chapter 11.[41] To take account of this possibility, Table 10 re-estimates our baseline model in Table 2 with the additional controls of the ratio of secured debt to total debt ($SecuredDebt$) and its interaction with our $PostSupremeCourt1999$. Both of these variables turn out to be statistically insignificant and do not change or main result.[42] In the rest of the regressions presented in the table we add all the control variables of firm characteristics interacted with the post-1999 indicator. These estimations allow us to additionally rule out the possibility that the effect of higher Chapter 11 filings for low-verifiability firms confounds the effect of firm characteristics on a firm's propensity to file for Chapter 11 after 1999.

TABLE 10 ABOUT HERE

An additional argument could be made that our analysis thus far has made use of control variables and that may not be sufficient. Therefore, to further mitigate the concern that differences in firm characteristics could drive our findings, Table 11 matches each of the 112 firms that filed for Chapter 11 in the period 1998-2001 to their closest non-Chapter 11 filer.[43] For the model without

[41] Article 9 regulates transactions of personal properties (i.e., properties other than real estate properties) secured by security interests. Some of the more relevant changes for our analysis concern changes on: (1) the type of assets in which a creditor can take a security interest (an expansion of the list); (2) the methods to perfect a security interest on a property; (3) the state's law applicable to a transaction; (4) the filing system, which became almost completely electronic; (5) the treatment of consumer transactions; and (6) the procedure for repossessing a property in case of default. The significantly revised Article 9 was adopted in a substantially similar form across all states becoming effective on July 1, 2001. The only exceptions were Alabama, Florida, and Mississippi, where the effective date was January 1, 2002, and Connecticut where the effective date was October 1, 2001.

[42] The lack of statistical significance is perhaps not surprising given that the revision of Article 9 was the result of a decade-long process initiated in 1989 (e.g., Harris and Mooney, 1993) giving firms sufficient time to change their capital structure to mitigate the potential effects of the reform.

[43] We identify the matches on the basis of $Leverage$, $Tangibility$, $TobinsQ$, $Size$, $Profitability$, and Altman's (1968) Z-score in the year prior to the Chapter 11 filing. We do not match on $LowVerifiability$ because our aim is to test the effect of low verifiability on Chapter 11 filings after 1999. We perform the matching using propensity

control variables (column 1), results show a marginal effect of 42.4 percentage points (pp) which translates into an almost twice as large number of Chapter 11 filings for low-verifiability firms after 1999 compared to the average Chapter 11 filings for the matched sample (which by construction is 50%). This effect is slightly lower than our base estimation of Table 2, but it is still very sizable and statistically significant. The rest of the columns in Table 11 show that the addition of other control variables is of no consequence.[44]

TABLE 11 ABOUT HERE

4.5 Alternative Asset Verifiability and Risk of Distress Measures

In previous tables, our results classify as low verifiability those firms for which industry-year sales of PP&E are below the sample median. But if verifiability decreases with the sales of PP&E, then we should also find the increase in Chapter 11 filings to be larger for firms with smaller industry-year sales of PP&E. In Table 12, we report specifications using alternative cutoffs for low verifiability firms. In column 2, we define low verifiability as an indicator for industry-year sales of PP&E below the 25th percentile. In column 3, we augment the specification in column 2 by adding a low verifiability indicator for industry-year sales of PP&E between the 25th and 50th percentiles. Finally, in column 4, we add further an indicator for industry-year sales of PP&E between the 50th and 75th percentiles. In all specifications we interact each of the low verifiability indicators with our post-1999 dummy.

Results can be summarized by focusing on column 4, which shows the equivalent of quartile indicators. We find that the marginal effect is as large as 2 pp for the interaction term for the

score matching (with replacement) and limit matches to be within a 0.5 caliper from the propensity score value (Rubin and Thomas, 1996). Post matching t-tests (unreported) show no significant differences between Chapter 11 and non-Chapter 11 firms in terms of the matching variables, which suggests that we identified good matches.

[44] A final alternative theory that we considered was "forum shopping." LoPucki (2006) argues that historically the bankruptcy courts in Delaware, New York, and New Jersey have emerged as debtor's friendly courts. So, in principle, one can expect "forum shopping" (Chapter 11 filings in debtor's friendly courts) to increase after the Supreme Court decision of 1999 as debtors try to offset the improvement in creditor rights. However, in theory, we could also expect that an increase in creditor rights should create an incentive for all courts (unwilling to lose Chapter 11 cases) to "uniformly" increase their pro-debtor bias, thus leaving the incentives to shop unchanged (e.g., Gennaioli and Rossi, 2010). In non-tabulated results, we do not find evidence that Chapter 11 filings of low verifiability firms headquartered outsides of Delaware, New York, and New Jersey (i.e., forum shoppers) increased after the Supreme Court decision of 1999. Similarly, we do not find any change in prepackaged Chapter 11 cases for low verifiability firms after 1999. We also want to note that all the results in the paper hold if we drop prepackaged Chapter 11 cases (which are 5.9% of all cases) from our sample.

lowest quartile of verifiability, 1.2pp for the interaction term of the 25th to 50th percentile of low verifiability, and only 0.9pp (statistically significant only at the 10% level) for the interaction term for the 50th to 75th percentile of low verifiability. This pattern suggests that the increase in Chapter 11 filings induced by the 1999 Supreme Court decision is larger when verifiability is lower, but decreases as verifiability increases.

TABLE 12 ABOUT HERE

We also consider the robustness of our findings to five alternative proxies for verifiability. The M&A market is a source of pricing information for a bankruptcy court. Hence, if a firm operates in an industry with limited M&A activities, then verifiability is low. So, our first alternative measure of low verifiability is an indicator equal to 1 if the ratio of total industry-year funds used for M&A activities to total industry-year assets is below the sample median. Because of the importance of real estate in the economy, real estate indexes are widely available in the U.S. Therefore, if a firm operates in an industry that makes scarce use of land, then verifiability is low compared to firms that rely more intensively on land. Therefore, we create a second verifiability measure that relies on real estate as an indicator equal to one if the ratio of total industry-year land to total industry-year PP&E is below the sample median. Our third, fourth, and fifth measure of verifiability are based on the ratios of total industry-year volume of shares traded to total shares outstanding (csho) (e.g., Easley and O'Hara, 1992; and Coller and John, 1997), industry-year number of analysts making earnings forecasts (from I/B/E/S Detail History File) to total industry-year firms' market value (e.g., Brennan, Jegadeesh, and Swaminathan, 1993; and Atiase and Bamber, 1994), and industry-year analysts earnings forecasts dispersion to total industry-year firms' market value (e.g., Brown, Richardson, and Schwager, 1987; and Barron et al., 1998). The logic of these measures is the same as the other measures. If the number of shares traded, the number of analysts following stocks, or analysts earnings forecast dispersion in an industry are below the sample median (above the median for analysts' earnings forecast dispersion), then the ability to verify the equitability of a restructuring plan may be lower.

Table 13 shows that the coefficient on $LowVerifiability \times PostSupremeCourt1999$ is positive and statistically significant for each of the five alternative measures of verifiability (columns 2 to 6).

The associated marginal effects are also positive, statistically significant, and economically sizable (ranging from 0.7pp to 1.1pp).

TABLE 13 ABOUT HERE

As a final check on alternative measures, we discuss the robustness of our findings to using an alternative proxy for the risk of financial distress. We follow Vassalou and Xing (2004) and compute the distance-to-default instead of the accounting-based Altman's Z-score. This measure is calculated as the ratio of the difference between the market value of the firm minus the face value of debt to the volatility of the firm's value. We categorize firms as in "high financial alert" if distance-to-default is equal to or less than zero. If distance-to-default is positive, the firm is classified as in "low financial alert." Table 14 reports probit results using these measures. In line with our Z-score results in Table 3, this table shows that for the high financial alert firms the coefficient on $LowVerifiability \times PostSupremeCourt1999$ is significant and economically sizeable across all five time windows. Meanwhile, the coefficient on the interaction term is never positively significant or economically sizable for low financial alert firms.

In non-tabulated results, we also checked the robustness of our leverage results using distance-to-default. The coefficient on $LowVerifiability \times PostSupremeCourt1999$ is equal to 0.102 (statistically significant at the 5% level) in the market leverage regression for the sample of firms with distance-to-default larger than 0 and less than or equal to the sample 25th percentile of 0.27. The coefficient on the interaction term is equal to 0.099 (statistically significant at the 10% level) when we use book leverage as dependent variable. These findings show that leverage increased by about 10pp for low verifiability firms with moderate-to-low risk of financial distress. We find no effect on leverage for firms that are very close to financial distress or firms with low risk of financial distress. As predicted by our theory, these findings suggest that after the Supreme Court decision of 1999, debt capacity increased for the low-verifiability firms with low-to-moderate risk of financial distress and these firms responded by increasing leverage.

TABLE 14 ABOUT HERE

5 Concluding Remarks

Current theories of financial contracting predict that firms file less for Chapter 11 following an increase in the value of assets that can be verifiable by courts, and associate higher debt dispersion with a lower incidence of Chapter 11 filings. However, the existing empirical evidence suggests that firms with more tangible assets and multiple uncoordinated creditors often fail to renegotiate debt out of court and file for Chapter 11. In this paper, we build on the elements of existing theories and propose financial contracting model of the interplay between imperfect verifiability of assets in place and valuable control of misaligned creditors in distress. In this richer setting, firms may be forced to raise funds by issuing non-exclusive contracts that are ultimately held by uncoordinated creditors. As a result, the firm propensity to file for Chapter 11 (instead of reorganizing out of court) depends on the in-court verifiability of assets place and the severity of coordination problems among creditors. Our model is able to shed predictions that are in accordance with prior empirical evidence.

To test the full empirical implications of our model, we use the 1999 U.S. Supreme Court decision in Bank of America v. 203 North LaSalle as an exogenous variation of in-court requirements to price assets in place. Our empirical results show that Chapter 11 filings for affected firms increased substantially after the 1999 Supreme Court decision. In line with our model's predictions, we also find that the increase in the propensity to file for Chapter 11 is larger for firms in financial difficulties or when coordination problems among creditors are more severe. Finally, we also find evidence that supports the view that debt capacity for affected firms increased because of the improvement in creditor rights induced by the Supreme Court decision.

Our model and empirical findings help us identify an important factor explaining the dynamics of in-court v. out-of-court reorganizations: the requirement to use a market mechanism to assess the equitability of a restructuring plan proposed by the borrower. Our paper also helps clarify some of the channels by which creditor protection increases firm value: higher verifiability leads to higher creditor protection and thus facilitates access to finance and increases firm value.

Our paper is one of the first to examine how asset verifiability in combination with valuable creditor control in distress affect distress resolution outcomes. We believe this approach opens up several potential opportunities for future research in the analysis of bankruptcy and financial distress as well as in other areas of finance. First, our model relates differences in expected bankruptcy

costs (e.g., Almeida and Philippon, 2007) to the amount of assets pledged to lenders in the event of bankruptcy. Because of the positive relation between the probability of bankruptcy and the amount of assets lenders are able to repossess, ex-ante distress costs should be larger when more assets are pledged. Second, this variation in distress costs can help explain why many firms appear to be conservative in their use of debt (Graham, 2000; Molina, 2005) and why debt markets are underdeveloped in countries with lower creditor protection, where pledging assets to lenders is more likely to be valuable in raising external finance (e.g., La Porta et al. 1997). Third, our design could also help explain liquidity policies and risk management practices. If the probability that a firm files for Chapter 11 increases in asset verifiability and coordination difficulties among lenders, then we should expect firms to hold more precautionary cash or hedge more intensively in an attempt to reduce the risk of financial distress. Fourth, our theoretical framework and empirical design could help explain why M&A premiums vary across industries if there is a relation with the bidders' ability to obtain a market-based valuation of the target firm and with the complexity of its debt structure. Relatedly, asset verifiability could also help explain peaks and troughs in M&A activities (e.g., Shleifer and Vishny, 2003; Rhodes-Kropf and Viswanathan, 2004). Finally, our framework could also be used to reassess the undervaluation motive in stock repurchases or in hedge fund activism. Our setting predicts that we should expect that when asset verifiability is higher (and misvaluation is lower), stock repurchases should be less frequent and there should be lower probability of being targeted by an activist hedge fund.

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Table 1 – Descriptive Statistics: Treated Firms and Control Firms

This table reports the sample means for the main variables used in the study. The sample includes non-financial firms over the period 1998 – 2001. Firm level data are from COMPUSTAT. LowVerifiability (HighVerifiability) is an indicator equal to 1 if the ratio of total industry-year Sales of Property, Plant, & Equipment to total industry-year Property, Plant, & Equipment is below (above) the median ratio for all industry-year combined. Leverage is the ratio of total debt to book value of total assets. Tangibility is the ratio of Property, Plant, & Equipment to total assets. TobinsQ is the ratio of market value of total assets to book value of total assets. Size is total assets measured in billions of 2001 dollars. Profitability is the ratio of earnings before interest, taxes, depreciation and amortization to book value of total assets. DispersedDebt is an indicator equal to 1 if the firm has either a bond rating or a commercial paper rating. The bankruptcy data are from the UCLA-LoPucky Bankruptcy Research Database (BRD). The database reports all chapter 11 filings for publicly listed firms in the U.S. with assets exceeding $100 million. Chapter11 is an indicator equal to 1 in the fiscal year in which a firm files for chapter 11 protection, and zero otherwise. Refer to Table I.C.1 for detailed variable definitions.

Mean	Leverage	Tangibility	Tobins Q	Size	Profit-ability	Dispersed Debt	Chapter11	Obs.
Full Sample	0.288	0.321	2.438	2.832	0.114	0.372	0.010	11,376
Treated: Low Verifiability	0.294	0.319	2.364	3.260	0.113	0.395	0.012	5,596
Control: High Verifiability	0.283	0.324	2.509	2.417	0.115	0.351	0.009	5,780
Treated - Control	0.011**	0.005	0.145**	0.843***	0.002	0.044***	0.003	
	(0.005)	(0.004)	(0.064)	(0.131)	(0.003)	(0.009)	(0.002)	

Note: ***, ** and * indicate statistical significance at the 1%, 5% and 10% (two-tail) test levels, respectively.

Table 2 – Chapter 11 Filings and Asset Verifiability after the Supreme Court Ruling of 1999

This table reports PROBIT estimation results from chapter 11 filing regressions over various sample periods. The bankruptcy data are from the UCLA-LoPucky Bankruptcy Research Database (BRD). All firm-level data are from COMPUSTAT. The sample includes all non-financial firms with assets exceeding $100 million. The dependent variable is Chapter11, which is an indicator equal to 1 in the fiscal year in which a firm files for chapter 11 protection, and zero otherwise. LowVerifiability is an indicator equal to 1 if the ratio of total industry-year Sales of Property, Plant, & Equipment to total industry-year Property, Plant, & Equipment is below the median ratio for all industry-year combined. PostSupremeCourt1999 is an indicator equal to 1 for the fiscal years after 1999. Marginal effects for LowVerifiability × PostSupremeCourt1999 are in percentage points [pp]. Refer to Table I.C.1 for detailed variable definitions. Standard errors reported in parentheses are based on heteroskedastic consistent errors adjusted for clustering across observations of a given firm.

	Base Sample	Other Sample Periods			
	1998-2001 (1)	1999-2000 (2)	1997-2002 (3)	1996-2003 (4)	1995-2006 (5)
LowVerifiability × PostSupremeCourt1999	0.499***	0.605***	0.549***	0.387***	0.339***
	(0.168)	(0.232)	(0.148)	(0.136)	(0.124)
Marginal Effects [pp]	**[1.2pp]*** (0.4pp)**	**[1.4pp]** (0.6pp)**	**[1.1pp]*** (0.3pp)**	**[0.6pp]*** (0.2pp)**	**[0.4pp]** (0.2pp)**
LowVerifiability	-0.145	-0.301*	-0.269**	-0.231**	-0.243**
	(0.131)	(0.180)	(0.118)	(0.112)	(0.102)
PostSupremeCourt1999	-0.087	-0.117	-0.091	0.016	-0.031
	(0.121)	(0.159)	(0.103)	(0.095)	(0.087)
Leverage	1.759***	1.355***	1.797***	1.803***	1.825***
	(0.189)	(0.234)	(0.165)	(0.150)	(0.134)
Tangibility	-0.122	-0.308	-0.114	-0.118	-0.162
	(0.154)	(0.205)	(0.131)	(0.119)	(0.105)
TobinsQ	-0.686***	-0.438***	-0.738***	-0.745***	-0.824***
	(0.161)	(0.138)	(0.138)	(0.131)	(0.126)
LnSize	0.079**	0.067	0.079***	0.073***	0.059***
	(0.032)	(0.044)	(0.026)	(0.024)	(0.021)
Profitability	-1.079***	-1.637***	-1.073***	-1.039***	-1.106***
	(0.247)	(0.380)	(0.177)	(0.156)	(0.156)
DispersedDebt	0.331***	0.322**	0.297***	0.274***	0.303***
	(0.110)	(0.158)	(0.094)	(0.086)	(0.077)
Obs.	11,376	5,710	16,853	22,071	32,305
Pseudo-R^2	0.229	0.200	0.235	0.229	0.229

Note: ***, ** and * indicate statistical significance at the 1%, 5% and 10% (two-tail) test levels, respectively.

Table 3 – Chapter 11 Filings and Asset Verifiability by Financial Conditions

This table reports PROBIT estimation results from chapter 11 filing regressions for various samples based on financial conditions. We rely on the Altman's (1968) z-score to assess financial conditions. The bankruptcy data are from the UCLA-LoPucky Bankruptcy Research Database (BRD). All firm-level data are from COMPUSTAT. The sample includes all non-financial firms with assets exceeding $100 million over the period 1998 – 2001. The dependent variable is Chapter11, which is an indicator equal to 1 in the fiscal year in which a firm files for chapter 11 protection, and zero otherwise. LowVerifiability is an indicator equal to 1 if the ratio of total industry-year Sales of Property, Plant, & Equipment to total industry-year Property, Plant, & Equipment is below the median ratio for all industry-year combined. PostSupremeCourt1999 is an indicator equal to 1 for the fiscal years after 1999. Marginal effects for LowVerifiability × PostSupremeCourt1999 are in percentage points [pp]. Refer to Table I.C.1 for detailed variable definitions. Standard errors reported in parentheses are based on heteroskedastic consistent errors adjusted for clustering across observations of a given firm.

	Base Sample	Financial Alert				Financial Soundness
		Z-score <=3	Z-score <=1.8	Z-score (1.8 to 2.7)	Z-score (2.7 to 3)	Z-score >3
	(1)	(2)	(3)	(4)	(5)	(6)
LowVerifiability × PostSupremeCourt1999	0.499***	0.504***	0.538**	1.032*	3.734***	3.336***
	(0.168)	(0.185)	(0.211)	(0.580)	(0.699)	(0.453)
Marginal Effects [pp]	**[1.2pp]*** **	**[2.9pp]** **	**[4.9pp]** **	**[1.8pp]**	**[-0.4p]**	**[0.2pp]**
	(0.4pp)	**(1.2pp)**	**(2.1pp)**	**(1.2pp)**	**(2.2pp)**	**(0.2pp)**
LowVerifiability	-0.145	-0.160	-0.203	-0.249	-4.274***	-3.393***
	(0.131)	(0.144)	(0.164)	(0.424)	(0.541)	(0.224)
PostSupremeCourt1999	-0.087	-0.125	-0.189	-0.287	0.297	-0.108
	(0.121)	(0.136)	(0.156)	(0.465)	(0.519)	(0.255)
Leverage	1.759***	1.511***	1.202***	3.397***	-0.789	0.843
	(0.189)	(0.246)	(0.276)	(0.624)	(2.638)	(0.953)
Tangibility	-0.122	-0.220	-0.367*	0.244	-0.470	-0.075
	(0.154)	(0.175)	(0.194)	(0.504)	(0.427)	(0.449)
TobinsQ	-0.686***	-0.594***	-0.560***	-0.501**	-0.007	-0.700**
	(0.161)	(0.191)	(0.217)	(0.221)	(0.429)	(0.330)
LnSize	0.079**	0.085**	0.091***	-0.013	0.279***	0.135
	(0.032)	(0.034)	(0.035)	(0.114)	(0.102)	(0.149)
Profitability	-1.079***	-1.276***	-1.088***	-3.459***	-4.423	-1.901***
	(0.247)	(0.311)	(0.294)	(1.028)	(3.290)	(0.475)
DispersedDebt	0.331***	0.303***	0.301**	-0.010		0.199
	(0.110)	(0.117)	(0.133)	(0.279)		(0.438)
Obs.	11,376	3,773	1,953	1,387	433	5,994
Pseudo-R^2	0.229	0.115	0.081	0.209	0.192	0.185

Note: ***, ** and * indicate statistical significance at the 1%, 5% and 10% (two-tail) test levels, respectively.

Table 4 – Chapter 11 Filings and Asset Verifiability by Debt Ownership Dispersion and Debt Mix

This table reports PROBIT estimation results from chapter 11 filing regressions for various samples based on debt ownership dispersion and debt mix. The bankruptcy data are from the UCLA-LoPucky Bankruptcy Research Database (BRD). All firm-level data are from COMPUSTAT. The sample includes all non-financial firms with assets exceeding $100 million over the period 1998 – 2001. The dependent variable is Chapter11, which is an indicator equal to 1 in the fiscal year in which a firm files for chapter 11 protection, and zero otherwise. LowVerifiability is an indicator equal to 1 if the ratio of total industry-year Sales of Property, Plant, & Equipment to total industry-year Property, Plant, & Equipment is below the median ratio for all industry-year combined. PostSupremeCourt1999 is an indicator equal to 1 for the fiscal years after 1999. Marginal effects for LowVerifiability × PostSupremeCourt1999 are in percentage points [pp]. Mixed Debt is a dummy variable that takes a value of 1 if the firm utilizes at least 3 of the following four debt instruments, and zero otherwise (Mortgages & Other Secured Debt; Capital Leases; Convertible Debt; and Non-Convertible Unsecured Debt). Refer to Table I.C.1 for detailed variable definitions. Standard errors reported in parentheses are based on heteroskedastic consistent errors adjusted for clustering across observations of a given firm.

	Base Sample	Dispersed/Mixed Debt							
		No/No	No/ Possible	Possible/ No	No/Yes	Yes/No	Possible/ Yes	Yes/ Possible	Yes/Yes
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
LowVerifiability × PostSupreme Court1999	0.499***	-0.189	0.104	0.182	0.288	0.292	0.721**	0.641***	1.075***
	(0.168)	(0.410)	(0.288)	(0.229)	(0.488)	(0.289)	(0.301)	(0.206)	(0.398)
Marginal Effects[pp]	**[1.2pp]*** (0.4pp)**	**[-0.1pp] (0.3pp)**	**[0.1pp] (0.3pp)**	**[0.5pp] (0.4pp)**	**[0.6pp] (1.1pp)**	**[1.6pp] (1.0pp)**	**[2.9pp]** (1.4pp)**	**[2.7pp]*** (1.0pp)**	**[6.7pp]** (3.0pp)**
LowVerifiability	-0.145	0.183	0.056	0.082	0.172	0.105	-0.291	-0.229	-0.622*
	(0.131)	(0.332)	(0.223)	(0.188)	(0.356)	(0.242)	(0.236)	(0.166)	(0.332)
PostSupreme Court1999	-0.087	0.299	0.050	0.191	-0.185	0.218	-0.302	-0.074	-0.369
	(0.121)	(0.313)	(0.216)	(0.175)	(0.374)	(0.231)	(0.202)	(0.153)	(0.247)
Leverage	1.759***	1.668***	1.748***	1.455***	1.819***	1.381***	1.845***	1.698***	1.985***
	(0.189)	(0.346)	(0.239)	(0.240)	(0.449)	(0.298)	(0.304)	(0.257)	(0.437)
Tangibility	-0.122	-0.570	-0.328	0.049	0.105	0.300	-0.066	-0.059	-0.143
	(0.154)	(0.368)	(0.287)	(0.192)	(0.541)	(0.222)	(0.294)	(0.187)	(0.372)
TobinsQ	-0.686***	-0.662**	-0.503***	-0.552***	-0.464*	-0.483**	-0.809***	-0.779***	-1.155***
	(0.161)	(0.294)	(0.173)	(0.181)	(0.262)	(0.203)	(0.228)	(0.224)	(0.362)
LnSize	0.079**	0.200***	0.203***	0.013	0.213**	-0.049	0.154***	0.027	0.136**
	(0.032)	(0.055)	(0.052)	(0.041)	(0.096)	(0.052)	(0.059)	(0.039)	(0.068)
Profitability	-1.079***	-0.598	-0.749***	-1.127***	-1.865**	-1.77***	-2.681***	-2.318***	-3.673***
	(0.247)	(0.383)	(0.205)	(0.326)	(0.742)	(0.489)	(0.614)	(0.497)	(1.062)
DispersedDebt	0.331***			0.454***			0.258		
	(0.110)			(0.149)			(0.172)		
Obs.	11,376	4,477	7,141	7,224	1,264	2,747	2,158	4,235	894
Pseudo-R^2	0.229	0.194	0.218	0.211	0.246	0.187	0.230	0.200	0.209

Note: ***, ** and * indicate statistical significance at the 1%, 5% and 10% (two-tail) test levels, respectively.

Table 5 – Market Performance around the Supreme Court Ruling of May 3, 1999

This table reports Cumulative Average Abnormal Returns (CAARs) around the Supreme Court Ruling on May 3, 1999 ("event date"). The sample includes all non-financial firms with assets exceeding $100 million. Affected firms are those subject to the U.S. Bankruptcy Code. Low Verifiability (High Verifiability) is an indicator equal to 1 if the ratio of total industry-year Sales of Property, Plant, & Equipment to total industry-year Property, Plant, & Equipment is below (above) the median ratio for all industry-year combined. American Depository Receipts (ADRs) are foreign stocks traded on a U.S. stock exchange as identified from CRSP. Z-score is the Altman's z-score (Altman, 1968). Refer to Table I.C.1 for detailed variable definitions. Abnormal returns are estimated using the standard event study methodology with the Fama-French plus momentum factors and the CRSP equally-weighted Index (which includes ADRs). *t*-statistics (in parentheses) are based on standard errors adjusted for cross-sectional correlation of security returns due to event-date clustering (Brown and Warner, 1980).

Panel A – Cumulative Average Abnormal Returns (CAARs) [time windows in days]	Affected Firms			Comparison Firms
	Full Sample	Low Verifiability	High Verifiability	ADRs
[-10; -5]	0.15% (0.28)	0.10% (0.18)	0.20% (0.33)	-1.02% (-0.66)
[0; 0]	0.39% (1.77)*	0.46% (1.98)**	0.33% (1.32)	-0.37% (0.59)
[0; +1]	0.72% (2.28)**	0.81% (2.44)**	0.64% (1.81)*	-0.34% (-0.38)
[-3; +3]	1.11% (1.88)*	1.48% (2.39)**	0.76% (1.15)	0.81% (0.48)
[-5; +5]	1.11% (1.50)	1.69% (2.18)**	0.56% (0.68)	0.31% (0.15)

Panel B – Cumulative Average Abnormal Returns (CAARs): by Verifiability and Z-score [time window: -5; +5]	Full Sample	Low Verifiability	High Verifiability
Financial Alert – Z-score<=3	1.35% (1.77)*	2.00% (2.41)**	0.56% (0.56)
High Alert – Z-score (less than 1.8)	0.60% (0.62)	1.47% (1.39)	-0.42% (-0.30)
Medium Alert – Z-score (from 1.8 to 2.7)	2.17% (2.31)**	2.48% (2.14)**	1.79% (1.50)
Low Alert – Z-score (from 2.7 to 3)	2.24% (1.74)*	2.92% (1.73)*	1.38% (0.77)
Financial Soundness – Z-score>3	1.18% (1.36)	1.39% (1.48)	1.02% (1.09)

Note: ***, **, and * indicate statistical significance at the 1%, 5%, and 10% (two-tail) test levels, respectively.

Table 6 – Leverage and Asset Verifiability by Financial Conditions

This table reports OLS estimation results from market leverage regressions for various samples based on financial conditions. We rely on the Altman's (1968) z-score to assess financial conditions. All firm-level data are from COMPUSTAT. The sample includes all non-financial firms with assets exceeding $100 million over the period 1998 – 2001. The dependent variable is Leverage (market), which is defined as the ratio of total debt to market value of assets. LowVerifiability is an indicator equal to 1 if the ratio of total industry-year Sales of Property, Plant, & Equipment to total industry-year Property, Plant, & Equipment is below the median ratio for all industry-year combined. PostSupremeCourt1999 is an indicator equal to 1 for the fiscal years after 1999. Refer to Table I.C.1 for detailed variable definitions. Standard errors reported in parentheses are based on heteroskedastic consistent errors adjusted for clustering across observations of a given firm.

	Full Sample	Financial Alert				Financial Soundness
		Z-score <=3	Z-score <=1.8	Z-score (1.8 to 2.7)	Z-score (2.7 to 3)	Z-score >3
	(1)	(2)	(3)	(4)	(5)	(6)
LowVerifiability × PostSupremeCourt1999	-0.002	0.011	0.003	0.030**	0.059**	0.005
	(0.006)	(0.010)	(0.015)	(0.015)	(0.025)	(0.007)
LowVerifiability	-0.007	-0.011	-0.004	-0.021*	-0.039**	-0.012**
	(0.006)	(0.008)	(0.011)	(0.011)	(0.017)	(0.006)
PostSupremeCourt1999	-0.001	-0.009	-0.007	-0.032***	-0.050***	-0.026***
	(0.004)	(0.007)	(0.011)	(0.011)	(0.018)	(0.005)
TobinsQ	-0.013***	-0.033***	-0.030***	-0.027***	-0.057***	-0.008***
	(0.001)	(0.007)	(0.007)	(0.011)	(0.015)	(0.001)
R&D	-0.751***	-0.698***	-0.418***	-1.246***	-1.413***	-0.473***
	(0.048)	(0.093)	(0.088)	(0.169)	(0.301)	(0.036)
LnSize	0.002	-0.020***	-0.017***	-0.025***	-0.024***	-0.003
	(0.002)	(0.002)	(0.003)	(0.003)	(0.005)	(0.002)
Profitability	-0.299***	0.007	0.126***	0.282***	0.005	-0.145***
	(0.029)	(0.038)	(0.046)	(0.091)	(0.172)	(0.018)
Tangibility	0.205***	0.015	0.029	-0.078***	-0.073**	0.090***
	(0.013)	(0.014)	(0.018)	(0.019)	(0.036)	(0.014)
Obs.	10,539	3,509	1,802	1,297	410	5,511
R^2	0.254	0.098	0.104	0.137	0.184	0.145

Note: ***, ** and * indicate statistical significance at the 1%, 5% and 10% (two-tail) test levels, respectively.

Table 7 – Recovery Rates and Asset Verifiability after the Supreme Court Ruling of 1999

This table reports OLS estimation results from bankruptcy-recovery rate regressions. The bankruptcy data are from the UCLA-LoPucky Bankruptcy Research Database (BRD), which includes firms with assets exceeding $100 million. The sample includes non-financial firms that filed for bankruptcy during the period 1998-2001. The dependent variable is Recovery Rate, which is the ratio of firm value after emerging from bankruptcy to pre-bankruptcy liabilities. All firm-level data are from COMPUSTAT. LowVerifiability is an indicator equal to 1 if the ratio of total industry-year Sales of Property, Plant, & Equipment to total industry-year Property, Plant, & Equipment is below the median ratio for all industry-year combined. PostSupremeCourt1999 is an indicator equal to 1 for the fiscal years after 1999. Refer to Table I.C.1 for detailed variable definitions. Standard errors reported in parentheses are based on heteroskedastic consistent errors adjusted for clustering across observations of a given firm.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
LowVerifiability × PostSupremeCourt1999	0.288**	0.323**	0.341**	0.332**	0.328**	0.357**	0.359**
	(0.141)	(0.145)	(0.147)	(0.141)	(0.146)	(0.145)	(0.150)
LowVerifiability	-0.224**	-0.240**	-0.242**	-0.233**	-0.230**	-0.244**	-0.243*
	(0.110)	(0.116)	(0.1171)	(0.112)	(0.114)	(0.119)	(0.124)
PostSupremeCourt1999	-0.178**	-0.211**	-0.226**	-0.225**	-0.226**	-0.284***	-0.295***
	(0.085)	(0.087)	(0.089)	(0.090)	(0.093)	(0.103)	(0.107)
Leverage		0.283	0.284	0.284	0.290	0.277	0.304
		(0.198)	(0.200)	(0.203)	(0.230)	(0.210)	(0.219)
Tangibility			0.197***	0.195***	0.195***	0.209***	0.219***
			(0.066)	(0.067)	(0.068)	(0.065)	(0.069)
TobinsQ				-0.034	-0.032	-0.046	-0.066
				(0.118)	(0.125)	(0.112)	(0.128)
LnSize					0.004	0.002	0.010
					(0.038)	(0.035)	(0.038)
Profitability						0.524*	0.526*
						(0.275)	(0.280)
DispersedDebt							-0.067
							(0.088)
Obs.	54	54	54	54	54	54	54
R^2	0.066	0.128	0.140	0.140	0.141	0.226	0.111

Note: ***, ** and * indicate statistical significance at the 1%, 5% and 10% (two-tail) test levels, respectively.

Table 8 – Chapter 11 Filings and Asset Verifiability: Placebo Tests

This table reports marginal effects in percentage points (pp) from PROBIT estimations from chapter 11 filing regressions for various sample periods. All estimations include the same control variables as those in Table 2 (coefficients unreported). The bankruptcy data are from the UCLA-LoPucky Bankruptcy Research Database (BRD). All firm-level data are from COMPUSTAT. The sample includes all non-financial firms with assets exceeding $100 million. The dependent variable is Chapter11, which is an indicator equal to 1 in the fiscal year in which a firm files for chapter 11 protection, and zero otherwise. LowVerifiability is an indicator equal to 1 if the ratio of total industry-year Sales of Property, Plant, & Equipment to total industry-year Property, Plant, & Equipment is below the median ratio for all industry-year combined. After1996 is an indicator equal to 1 for the fiscal years after 1996. After1997 to After2008 are defined similarly. PostSupremeCourt1999 is an indicator equal to 1 for the fiscal years after 1999. Refer to Table I.C.1 for detailed variable definitions. Standard errors reported in parentheses are based on heteroskedastic consistent errors adjusted for clustering across observations of a given firm.

	Marginal Effects pp	Obs.	Sample Period
LowVerifiability × After1996	-0.2pp		
	(0.2pp)	10,767	1995 - 1998
LowVerifiability × After1997	<0.1pp		
	(0.2pp)	11,190	1996 - 1999
LowVerifiability × After1998	0.4pp		
	(0.3pp)	11,452	1997 - 2000
LowVerifiability × PostSupremeCourt1999	**1.2pp*** **		
	(0.4pp)	**11,376**	**1998 - 2001**
LowVerifiability × After2000	0.4pp		
	(0.4pp)	11,111	1999 - 2002
LowVerifiability × After2001	-1.2pp**		
	(0.5pp)	10,881	2000 - 2003
LowVerifiability × After2002	-1.0pp**		
	(0.4pp)	10,602	2001 - 2004
LowVerifiability × After2003	-0.1pp		
	(0.3pp)	10,454	2002 - 2005
LowVerifiability × After2004	0.1pp		
	(0.3pp)	10,427	2003 - 2006
LowVerifiability × After2005	0.2pp		
	(0.2pp)	10,402	2004 - 2007
LowVerifiability × After2006	0.2pp		
	(0.2pp)	10,343	2005 - 2008
LowVerifiability × After2007	<0.1pp		
	(0.2pp)	10,208	2006 - 2009
LowVerifiability × After2008	-0.3pp		
	(0.3pp)	9,968	2007 - 2010

Note: ***, ** and * indicate statistical significance at the 1%, 5% and 10% (two-tail) test levels, respectively.

Table 9 – Chapter 11 Filings and Asset Verifiability: Controlling for the Effect of the Dotcom Contraction

This table reports PROBIT estimation results from chapter 11 filing regressions with different combinations of industry and year fixed-effects. The bankruptcy data are from the UCLA-LoPucky Bankruptcy Research Database (BRD). All firm-level data are from COMPUSTAT. The sample includes all non-financial firms with assets exceeding $100 million. The dependent variable is Chapter11, which is an indicator equal to 1 in the fiscal year in which a firm files for chapter 11 protection, and zero otherwise. LowVerifiability is an indicator equal to 1 if the ratio of total industry-year Sales of Property, Plant, & Equipment to total industry-year Property, Plant, & Equipment is below the median ratio for all industry-year combined. PostSupremeCourt1999 is an indicator equal to 1 for the fiscal years after 1999. Marginal effects for LowVerifiability × PostSupremeCourt1999 are in percentage points [pp]. In the estimations in columns 4 and 6 we exclude firms operating in the dotcom industries (identified following Ljungqvist and Wilhelm, 2003). Refer to Table I.C.1 for detailed variable definitions. Standard errors reported in parentheses are based on heteroskedastic consistent errors adjusted for clustering across observations of a given firm.

	Base-Time Window: 1998 – 2001				**Shorter-Time Window: 1999 – 2000**	
	(1)	(2)	(3)	(4)	(5)	(6)
LowVerifiability × PostSupremeCourt1999	0.499***	0.507***	0.417**	0.418**	0.627***	0.630***
	(0.168)	(0.167)	(0.176)	(0.177)	(0.244)	(0.244)
Marginal Effects [pp]	**[1.2pp]*** (0.4pp)**	**[1.2pp]*** (0.4pp)**	**[1.1pp]*** (0.4pp)**	**[1.2pp]*** (0.4pp)**	**[1.4pp]** (0.6pp)**	**[1.5pp]** (0.6pp)**
LowVerifiability	-0.145	-0.151	-0.089	-0.098	-0.294	-0.301
	(0.131)	(0.128)	(0.137)	(0.137)	(0.192)	(0.192)
PostSupremeCourt1999	-0.087	-0.099	-0.476	-0.473	-0.608	-0.609
	(0.121)	(0.120)	(0.663)	(0.661)	(0.632)	(0.630)
Leverage	1.759***	1.758***	1.806***	1.789***	1.344***	1.325***
	(0.189)	(0.193)	(0.202)	(0.203)	(0.243)	(0.245)
Tangibility	-0.122	0.113	0.234	0.220	0.009	0.005
	(0.154)	(0.170)	(0.174)	(0.175)	(0.222)	(0.223)
TobinsQ	-0.686***	-0.664***	-0.750***	-0.742***	-0.488***	-0.477***
	(0.161)	(0.157)	(0.162)	(0.162)	(0.135)	(0.136)
LnSize	0.079**	0.083**	0.074**	0.076**	0.057	0.058
	(0.032)	(0.033)	(0.033)	(0.034)	(0.046)	(0.046)
Profitability	-1.079***	-1.275***	-2.056***	-2.080***	-2.243***	-2.258***
	(0.247)	(0.306)	(0.460)	(0.474)	(0.502)	(0.514)
DispersedDebt	0.331***	0.373***	0.444***	0.437***	0.448***	0.445***
	(0.110)	(0.112)	(0.114)	(0.114)	(0.165)	(0.165)
Industry Fixed Effects (FEs)	No	Yes	No	No	No	No
Year FEs × Industry FEs	No	No	Yes	Yes	Yes	Yes
Dotcom Industries Included?	Yes	Yes	Yes	No	Yes	No
Obs.	11,376	11,376	10,591	9,785	5,504	5,108
Pseudo-R^2	0.229	0.241	0.268	0.262	0.244	0.237

Note: ***, ** and * indicate statistical significance at the 1%, 5% and 10% (two-tail) test levels, respectively.

Table 10 – Chapter 11 Filings and Asset Verifiability: Controlling for Other Interactive Effects

This table reports PROBIT estimation results from chapter 11 filing regressions adding as regressors the control variables interacted with the PostSupremeCourt1999 indicator. The bankruptcy data are from the UCLA-LoPucky Bankruptcy Research Database (BRD). All firm-level data are from COMPUSTAT. The sample includes all non-financial firms with assets exceeding $100 million. The dependent variable is Chapter11, which is an indicator equal to 1 in the fiscal year in which a firm files for chapter 11 protection, and zero otherwise. LowVerifiability is an indicator equal to 1 if the ratio of total industry-year Sales of Property, Plant, & Equipment to total industry-year Property, Plant, & Equipment is below the median ratio for all industry-year combined. PostSupremeCourt1999 is an indicator equal to 1 for the fiscal years after 1999. Marginal effects for LowVerifiability × PostSupremeCourt1999 are in percentage points [pp]. In columns 8 and 10, SecuredDebt is defined as the ratio of secured debt to total debt. Refer to Table I.C.1 for detailed variable definitions. Standard errors reported in parentheses are based on heteroskedastic consistent errors adjusted for clustering across observations of a given firm.

	Base (1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
LowVerifiability × PostSupremeCourt1999	0.499***	0.499	0.508***	0.489***	0.481***	0.493***	0.497***	0.442**	0.472***	0.395**
	(0.168)	(0.169)	(0.169)	(0.168)	(0.170)	(0.168)	(0.168)	(0.181)	(0.174)	(0.187)
Marginal Effects [pp]	**[1.2pp]*** (0.4pp)**	**[1.1pp]*** (0.4pp)**	**[1.2pp]*** (0.4pp)**	**[1.2pp]*** (0.4pp)**	**[1.1pp]*** (0.4pp)**	**[1.2pp]*** (0.4pp)**	**[1.1pp]*** (0.4pp)**	**[1.4pp]*** (0.5pp)**	**[1.1pp]*** (0.4pp)**	**[1.2pp]*** (0.5pp)**
LowVerifiability	-0.145	-0.147	-0.146	-0.140	-0.135	-0.141	-0.141	-0.081	-0.134	-0.063
	(0.131)	(0.132)	(0.130)	(0.131)	(0.132)	(0.132)	(0.130)	(0.144)	(0.136)	(0.147)
PostSupremeCourt1999	-0.087	0.004	-0.274	-0.350	-1.203***	-0.110	-0.187	-0.054	-1.565***	-1.846
	(0.121)	(0.184)	(0.183)	(0.355)	(0.344)	(0.129)	(0.174)	(0.163)	(0.425)	(0.503)
Leverage × PostSupremeCourt1999		-0.163							-0.227	-0.150
		(0.261)							(0.397)	(0.411)
Tangibility × PostSupremeCourt1999			0.460						0.444	0.294
			(0.301)						(0.316)	(0.324)
TobinsQ × PostSupremeCourt1999				0.214					0.330	0.223
				(0.280)					(0.341)	(0.312)
LnSize × PostSupremeCourt1999					0.160***				0.155**	0.224***
					(0.048)				(0.069)	(0.078)
Profitability × PostSupremeCourt1999						0.383			0.286	-0.460
						(0.503)			(0.531)	(0.683)
DispersedDebt × PostSupremeCourt1999							0.147		-0.112	-0.090
							(0.182)		(0.229)	(0.241)
SecuredDebt × PostSupremeCourt1999								0.035		0.212
								(0.254)		(0.264)
Leverage	1.759***	1.858***	1.758***	1.760***	1.764***	1.734***	1.759***	1.563***	1.894***	1.693***
	(0.189)	(0.248)	(0.190)	(0.189)	(0.191)	(0.185)	(0.190)	(0.191)	(0.320)	(0.327)
Tangibility	-0.122	-0.122	-0.385	-0.126	-0.120	-0.127	-0.119	0.019	-0.387	-0.150
	(0.154)	(0.154)	(0.243)	(0.155)	(0.155)	(0.154)	(0.154)	(0.163)	(0.259)	(0.261)
TobinsQ	-0.686***	-0.683***	-0.691***	-0.835***	-0.696***	-0.683***	-0.689***	-0.635***	-0.919***	-0.803***
	(0.161)	(0.158)	(0.163)	(0.249)	(0.158)	(0.158)	(0.160)	(0.148)	(0.282)	(0.252)
LnSize	0.079**	0.079**	0.079**	0.079**	-0.027	0.078**	0.078**	0.094***	-0.026	-0.056
	(0.032)	(0.032)	(0.032)	(0.032)	(0.047)	(0.032)	(0.032)	(0.036)	(0.059)	(0.067)
Profitability	-1.079***	-1.066***	-1.097***	-1.073***	-1.116***	-1.382***	-1.087***	-1.508***	-1.331***	-1.226***
	(0.247)	(0.245)	(0.251)	(0.249)	(0.232)	(0.438)	(0.247)	(0.326)	(0.464)	(0.441)
DispersedDebt	0.331***	0.330***	0.336***	0.331***	0.335***	0.334***	0.245	0.391***	0.405**	0.448**
	(0.110)	(0.110)	(0.110)	(0.110)	(0.111)	(0.110)	(0.153)	(0.116)	(0.180)	(0.185)
SecuredDebt								0.105		0.004
								(0.214)		(0.206)
Obs.	11,376	11,376	11,376	11,376	11,376	11,376	11,376	8,969	11,376	8,969
Pseudo-R^2	0.229	0.229	0.231	0.230	0.234	0.230	0.230	0.228	0.237	0.237

Note: ***, ** and * indicate statistical significance at the 1%, 5% and 10% (two-tail) test levels, respectively.

Table 11 – Chapter 11 Filings and Asset Verifiability: Evidence from Propensity Score Matching Sample

This table reports PROBIT estimation results from chapter 11 filing regressions using a matched sample. We match chapter 11 firms to non-chapter 11 firms on the basis of leverage, tangibility, Tobin's Q, size, profitability, and Altman's (1968) z-score in the year prior to the chapter 11 filing. We do not match on LowVerifiability because our objective is to test the effect of low verifiability on chapter 11 filings after 1999. We perform the matching using propensity score matching (with replacement) and limit matches to be within a 0.5 caliper from the propensity score value (Rubin and Thomas, 1996). The bankruptcy data are from the UCLA-LoPucky Bankruptcy Research Database (BRD). All firm-level data are from COMPUSTAT. The sample includes non-financial firms with assets exceeding $100 million over the period 1998 – 2001. The dependent variable is Chapter11, which is an indicator equal to 1 in the fiscal year in which a firm files for chapter 11 protection, and zero otherwise. LowVerifiability is an indicator equal to 1 if the ratio of total industry-year Sales of Property, Plant, & Equipment to total industry-year Property, Plant, & Equipment is below the median ratio for all industry-year combined. PostSupremeCourt1999 is an indicator equal to 1 for the fiscal years after 1999. Marginal effects for LowVerifiability × PostSupremeCourt1999 are in percentage points [pp]. Refer to Table I.C.1 for detailed variable definitions. Standard errors reported in parentheses are based on heteroskedastic consistent errors adjusted for clustering across observations of a given firm.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
LowVerifiability × PostSupremeCourt1999	1.109***	1.158***	1.170***	1.140***	1.226***	1.183***	1.189***
	(0.364)	(0.368)	(0.367)	(0.371)	(0.378)	(0.379)	(0.380)
Marginal Effects [pp]	**[42.4pp]*** (13.8pp)**	**[43.7pp]*** (13.8pp)**	**[43.9pp]*** (13.7pp)**	**[42.8pp]*** (13.9pp)**	**[45.2pp]*** (13.8pp)**	**[43.4pp]*** (14.0pp)**	**[43.3pp]*** (14.0pp)**
LowVerifiability	-0.064	-0.065	-0.065	-0.051	-0.114	-0.103	-0.092
	(0.285)	(0.286)	(0.288)	(0.288)	(0.291)	(0.292)	(0.294)
PostSupremeCourt1999	-0.492**	-0.466**	-0.466**	-0.453**	-0.416*	-0.365	-0.352
	(0.219)	(0.223)	(0.224)	(0.225)	(0.229)	(0.231)	(0.232)
Leverage		0.435	0.351	0.276	0.129	0.168	0.098
		(0.304)	(0.314)	(0.365)	(0.376)	(0.383)	(0.399)
Tangibility			0.425	0.447	0.503	0.425	0.442
			(0.440)	(0.442)	(0.444)	(0.444)	(0.450)
TobinsQ				0.103	0.063	0.019	-0.001
				(0.228)	(0.226)	(0.234)	(0.236)
LnSize					-0.144*	-0.134*	-0.172**
					(0.075)	(0.074)	(0.079)
Profitability						-1.054	-1.116
						(0.989)	(1.024)
DispersedDebt							0.261
							(0.238)
Obs.	224	224	224	224	224	224	224
Pseudo-R^2	0.074	0.081	0.085	0.086	0.100	0.106	0.111

Note: ***, ** and * indicate statistical significance at the 1%, 5% and 10% (two-tail) test levels, respectively.

Table 12 – Chapter 11 Filings and Asset Verifiability: Using Different Cutoffs of Industry Sales of Property, Plant, & Equipment to Define Asset Verifiability

This table reports PROBIT estimation results from chapter 11 filing regressions using different cutoffs of industry sales of Property, Plant, & Equipment to define asset verifiability. The bankruptcy data are from the UCLA-LoPucky Bankruptcy Research Database (BRD). All firm-level data are from COMPUSTAT. The sample includes all non-financial firms with assets exceeding $100 million. The dependent variable is Chapter11, which is an indicator equal to 1 in the fiscal year in which a firm files for chapter 11 protection, and zero otherwise. LowVerifiability is an indicator equal to 1 if the ratio of total industry-year Sales of Property, Plant, & Equipment to total industry-year Property, Plant, & Equipment is below the median ratio for all industry-year combined. LowVerifiability$_{\text{[0th - 25th PCTL]}}$ is an indicator equal to 1 if the ratio of total industry-year Sales of Property, Plant, & Equipment to total industry-year Property, Plant, & Equipment is below the 25$^{\text{th}}$ percentile of the ratio for all industry-year combined. LowVerifiability$_{\text{[25th - 50th PCTL]}}$ and LowVerifiability$_{\text{[50th - 75th PCTL]}}$ are defined similarly. PostSupremeCourt1999 is an indicator equal to 1 for the fiscal years after 1999. Marginal effects for the interaction terms are in percentage points [pp]. Refer to Table I.C.1 for detailed variable definitions. Standard errors reported in parentheses are based on heteroskedastic consistent errors adjusted for clustering across observations of a given firm.

	Base Cutoff	Different Industry Sales of PP&E Cutoffs		
	(1)	(2)	(3)	(4)
LowVerifiability × PostSupremeCourt1999	0.499***			
	(0.168)			
Marginal Effects [pp]	**[1.2pp]*** **			
	(0.4pp)			
LowVerifiability	-0.145			
	(0.131)			
LowVerifiability$_{\text{[0th - 25th PCTL]}}$ × PostSupremeCourt1999		0.554***	0.677***	0.875***
		(0.204)	(0.217)	(0.252)
Marginal Effects [pp]		**[1.4pp]*** **	**[1.5pp]*** **	**[2.0pp]*** **
		(0.5pp)	**(0.5pp)**	**(0.6pp)**
LowVerifiability$_{\text{[0th - 25th PCTL]}}$		-0.291*	-0.296*	-0.313
		(0.172)	(0.179)	(0.197)
LowVerifiability$_{\text{[25th - 50th PCTL]}}$ × PostSupremeCourt1999			0.340*	0.538**
			(0.199)	(0.235)
Marginal Effects [pp]			**[0.7pp]**	**[1.2pp]** **
			(0.5pp)	**(0.5pp)**
LowVerifiability$_{\text{[25th - 50th PCTL]}}$			-0.017	-0.033
			(0.151)	(0.171)
LowVerifiability$_{\text{[50tht - 75th PCTL]}}$ × PostSupremeCourt1999				0.381
				(0.245)
Marginal Effects [pp]				**[0.9pp]***
				(0.5pp)
LowVerifiability$_{\text{[50tht - 75th PCTL]}}$				-0.035
				(0.176)
PostSupremeCourt1999	-0.087	0.036	-0.087	-0.288*
	(0.121)	(0.098)	(0.121)	(0.174)
Leverage	1.759***	1.746***	1.768***	1.777***
	(0.189)	(0.191)	(0.190)	(0.191)
Tangibility	-0.122	-0.142	-0.132	-0.154
	(0.154)	(0.151)	(0.154)	(0.155)
TobinsQ	-0.686***	-0.663***	-0.680***	-0.689***
	(0.161)	(0.164)	(0.161)	(0.163)
LnSize	0.079**	0.083***	0.081***	0.089***
	(0.032)	(0.032)	(0.032)	(0.032)
Profitability	-1.079***	-1.092***	-1.088***	-1.073***
	(0.247)	(0.258)	(0.250)	(0.254)
DispersedDebt	0.331***	0.325***	0.328***	0.329***
	(0.110)	(0.110)	(0.110)	(0.110)
Obs.	11,376	11,376	11,376	11,375
Pseudo-R^2	0.229	0.226	0.231	0.234

Note: ***, ** and * indicate statistical significance at the 1%, 5% and 10% (two-tail) test levels, respectively.

Table 13 – Chapter 11 Filings and Asset Verifiability: Various Proxies for Asset Verifiability

This table reports PROBIT estimation results from chapter 11 filing regressions using various proxies for asset verifiability. The bankruptcy data are from the UCLA-LoPucky Bankruptcy Research Database (BRD). All firm-level data are from COMPUSTAT. The sample includes all non-financial firms with assets exceeding $100 million. The dependent variable is Chapter11, which is an indicator equal to 1 in the fiscal year in which a firm files for chapter 11 protection, and zero otherwise. LowVerifiability is an indicator equal to 1 if the ratio of total industry-year Sales of Property, Plant, & Equipment to total industry-year Property, Plant, & Equipment is below the median ratio for all industry-year combined. Alternatively, LowVerifiability is an indicator equal to 1 if the ratio of total industry-year funds used for M&A activities to total industry-year assets is below the sample median (column 2), or if the ratios of total industry-year Land to total industry-year Property, Plant, & Equipment, total industry-year share-traded volume to total industry-year shares outstanding, total industry-year number of analysts making earnings forecasts (from I/B/E/S Detail History File) to total industry-year firms' market value, or total industry-year analysts' earnings forecast dispersion to total industry-year firms' market value are below (above for analysts' dispersion) the sample median (columns 3, 4, 5, and 6). PostSupremeCourt1999 is an indicator equal to 1 for the fiscal years after 1999. Marginal effects for LowVerifiability × PostSupremeCourt1999 are in percentage points [pp]. Refer to Table I.C.1 for detailed variable definitions. Standard errors reported in parentheses are based on heteroskedastic consistent errors adjusted for clustering across observations of a given firm.

		Low Verifiability Measures				
	Base	Alternative 1	Alternative 2	Alternative 3	Alternative 4	Alternative 5
	Industry PP&E Sales < 50th PCTL	Industry M&A Activities < 50th PCTL	Industry Land Usage < 50th PCTL	Industry Share Volume < 50th PCTL	Industry Analysts < 50th PCTL	Industry Analysts' Dispersion > 50th PCTL
	(1)	(2)	(3)	(4)	(5)	(6)
LowVerifiability × PostSupremeCourt1999	0.499***	0.406**	0.382**	0.584***	0.504***	0.300**
	(0.168)	(0.184)	(0.169)	(0.169)	(0.171)	(0.135)
Marginal Effects [pp]	**[1.2pp]*** (0.4pp)**	**[1.1pp]** (0.4pp)**	**[0.7pp]* (0.4pp)**	**[1.0pp]** (0.4pp)**	**[1.1pp]*** (0.4pp)**	**[0.9pp]*** (0.3pp)**
LowVerifiability	-0.145	-0.229	-0.373***	-0.608***	-0.321**	-0.068
	(0.131)	(0.151)	(0.140)	(0.133)	(0.136)	(0.125)
PostSupremeCourt1999	-0.087	0.047	-0.001	-0.202	-0.077	0.048
	(0.121)	(0.098)	(0.114)	(0.129)	(0.122)	(0.120)
Leverage	1.759***	1.738***	1.758***	1.763***	1.759***	1.740***
	(0.189)	(0.186)	(0.188)	(0.190)	(0.189)	(0.190)
Tangibility	-0.122	-0.139	-0.066	-0.043	-0.159	-0.139
	(0.154)	(0.151)	(0.159)	(0.151)	(0.149)	(0.147)
TobinsQ	-0.686***	-0.661***	-0.671***	-0.670***	-0.668***	-0.646***
	(0.161)	(0.158)	(0.159)	(0.160)	(0.160)	(0.161)
LnSize	0.079**	0.094***	0.091***	0.091***	0.087***	0.093***
	(0.032)	(0.032)	(0.032)	(0.032)	(0.034)	(0.034)
Profitability	-1.079***	-1.066***	-1.134***	-1.106***	-1.076***	-1.060***
	(0.247)	(0.259)	(0.277)	(0.262)	(0.247)	(0.257)
DispersedDebt	0.331***	0.312***	0.321***	0.356***	0.321***	0.316***
	(0.110)	(0.110)	(0.111)	(0.110)	(0.111)	(0.110)
Obs.	11,376	11,376	11,376	11,376	11,376	11,376
Pseudo-R^2	0.229	0.223	0.226	0.234	0.226	0.223

Note: ***, ** and * indicate statistical significance at the 1%, 5% and 10% (two-tail) test levels, respectively.

Table 14 – Chapter 11 Filings and Asset Verifiability: Using Distance-to-Default as a Proxy for Risk of Financial Distress

This table reports PROBIT estimation results from chapter 11 filing regressions using distance-to-default (Vassalou and Xing, 2004) as a proxy for financial distress (various sample periods). The bankruptcy data are from the UCLA-LoPucky Bankruptcy Research Database (BRD). All firm-level data are from COMPUSTAT. The sample includes all non-financial firms with assets exceeding $100 million. The dependent variable is Chapter11, which is an indicator equal to 1 in the fiscal year in which a firm files for chapter 11 protection, and zero otherwise. LowVerifiability is an indicator equal to 1 if the ratio of total industry-year Sales of Property, Plant, & Equipment to total industry-year Property, Plant, & Equipment is below the median ratio for all industry-year combined. PostSupremeCourt1999 is an indicator equal to 1 for the fiscal years after 1999. Marginal effects for LowVerifiability × PostSupremeCourt1999 are in percentage points [pp]. Refer to Table I.C.1 for detailed variable definitions. Standard errors reported in parentheses are based on heteroskedastic consistent errors adjusted for clustering across observations of a given firm.

	Base Sample	Other Sample Periods			
	1998-2001 (1)	1999-2000 (2)	1997-2002 (3)	1996-2003 (4)	1995-2006 (5)
Panel A: High Financial Alert: Distance-to-Default<=0					
LowVerifiability × PostSupremeCourt1999	0.490*	0.805**	0.534**	0.430*	0.352*
	(0.279)	(0.378)	(0.250)	(0.233)	(0.209)
Marginal Effects [pp]	**[2.4pp]***	**[4.3pp]***	**[2.5pp]***	**[2.0pp]***	**[1.8pp]**
	(1.4pp)	**(2.4pp)**	**(1.3pp)**	**(1.2pp)**	**(1.1pp)**
Controls	Yes	Yes	Yes	Yes	Yes
Obs.	2,023	1,092	2,694	2,931	3,355
Pseudo-R^2	0.167	0.171	0.121	0.124	0.118
Panel B: Low Financial Alert: Distance-to-Default>0					
LowVerifiability × PostSupremeCourt1999	-3.213***	-0.001	-0.089	-0.108	-0.227
	(0.429)	(0.002)	(0.476)	(0.461)	(0.437)
Marginal Effects [pp]	**[-0.1pp]**	**[-0.1pp]**	**[<0.1pp]**	**[<-0.1pp]**	**[<-0.1pp]**
	(0.2pp)	**(0.1pp)**	**(0.1pp)**	**(0.1pp)**	**(0.1pp)**
Controls	Yes	Yes	Yes	Yes	Yes
Obs.	7,151	3,543	10,836	14,685	21,769
Pseudo-R^2	0.117	0.191	0.070	0.063	0.059

Note: ***, ** and * indicate statistical significance at the 1%, 5% and 10% (two-tail) test levels, respectively.

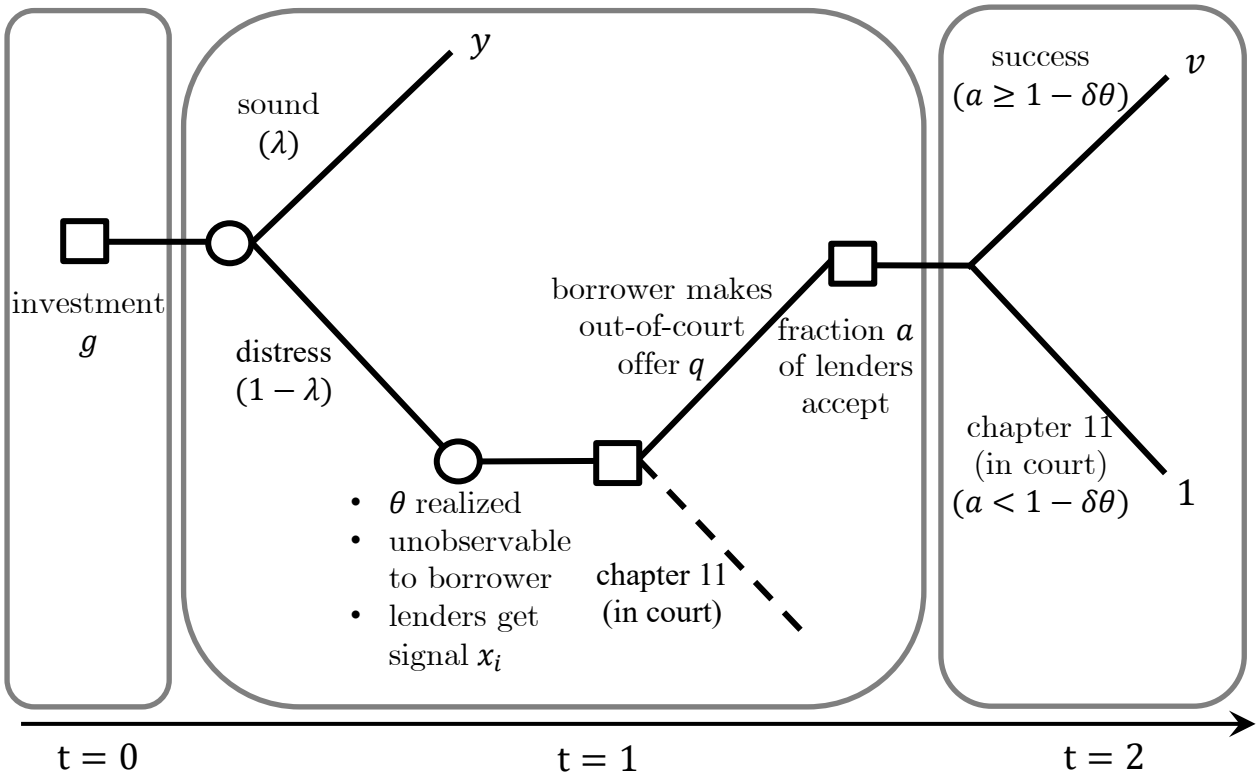

Figure 1 – Game Timeline

This figure presents the sequence of events and players' actions. Round nodes indicate the uncertain state of nature. Square nodes indicate decisions made by the players.

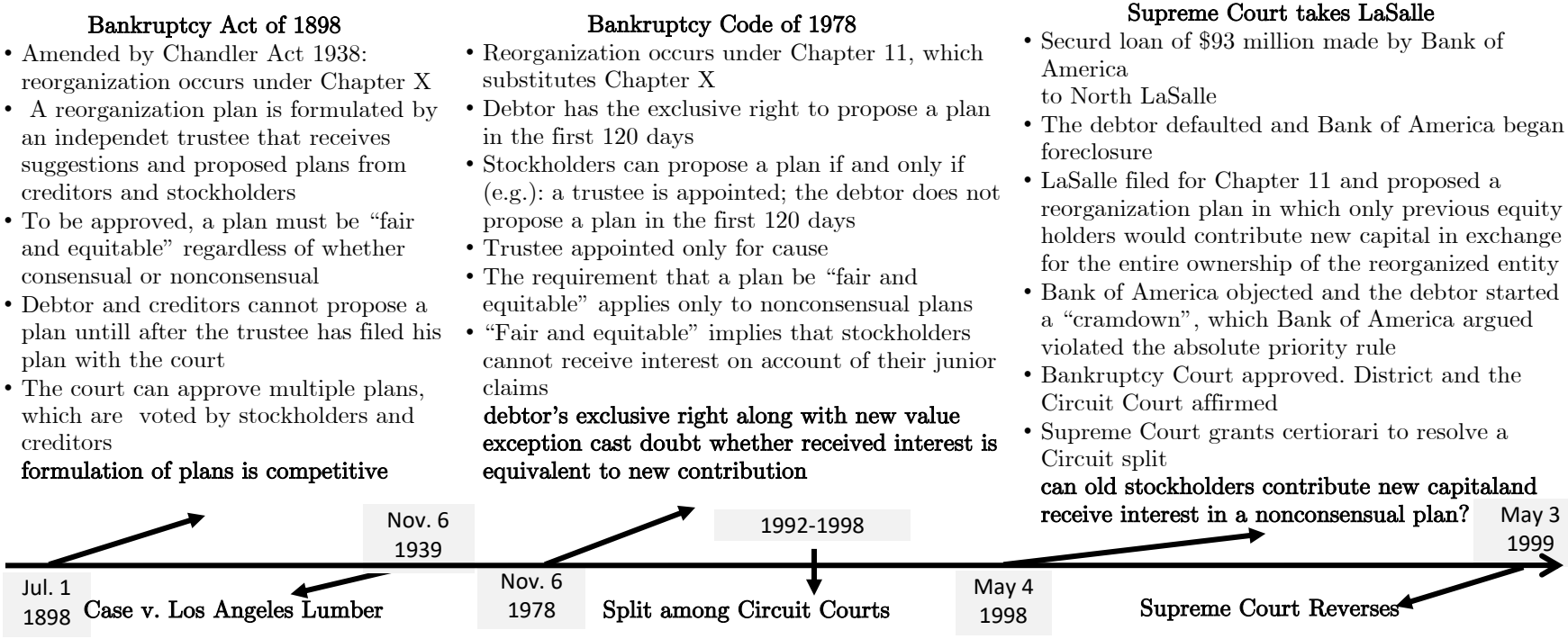

Figure 2 – Institutional Timeline

This figure presents regulations and court decisions leading to the 1999 U.S. Supreme Court ruling in Bank of America v. 203 North LaSalle.

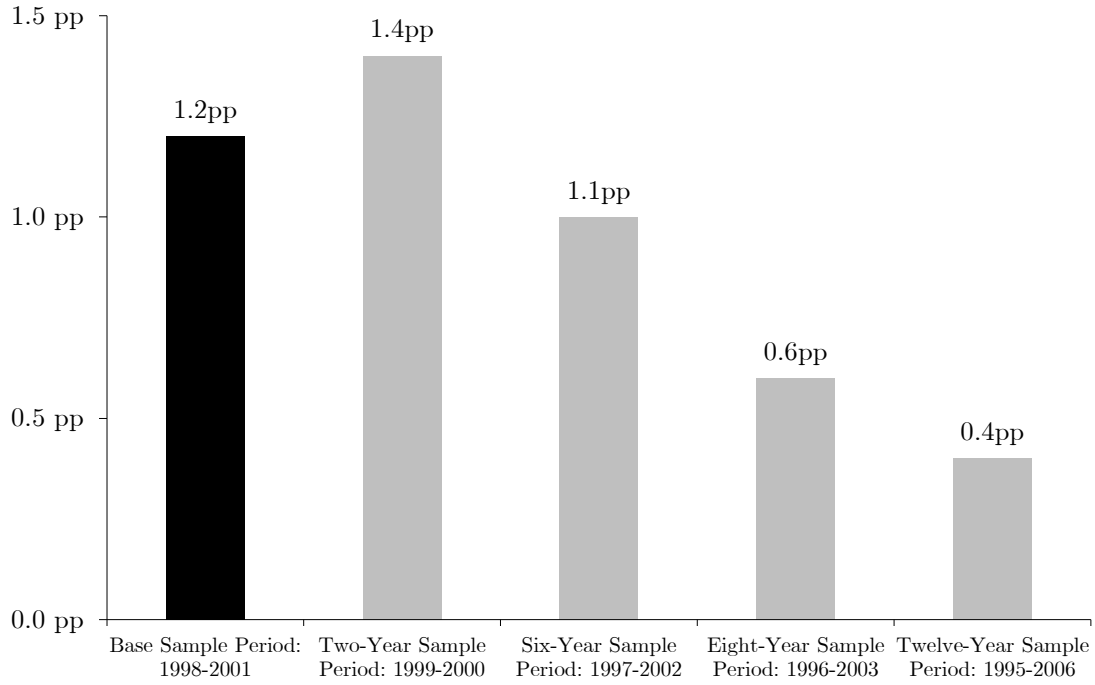

Figure 3 – Marginal Effects from Chapter 11 Filing PROBIT Estimations

This figure reports marginal effects in percentage points (pp) associated to the interaction term of the PROBIT estimations in columns 1 to 5, Table 2. These marginal effects measure the increase in chapter 11 filings for treated firms (LowVerifiability) after the Supreme Court decision of 1999, relative to the increase in chapter 11 filings for control firms (HighVerifiability). The bankruptcy data are from the UCLA-LoPucky Bankruptcy Research Database (BRD). All firm-level data are from COMPUSTAT. The sample includes all non-financial firms with assets exceeding $100 million. LowVerifiability (HighVerifiability) is an indicator equal to 1 if the ratio of total industry-year Sales of Property, Plant, & Equipment to total industry-year Property, Plant, & Equipment is below (above) the median ratio for all industry-year combined. Refer to Table I.C.1 for detailed variable definitions.

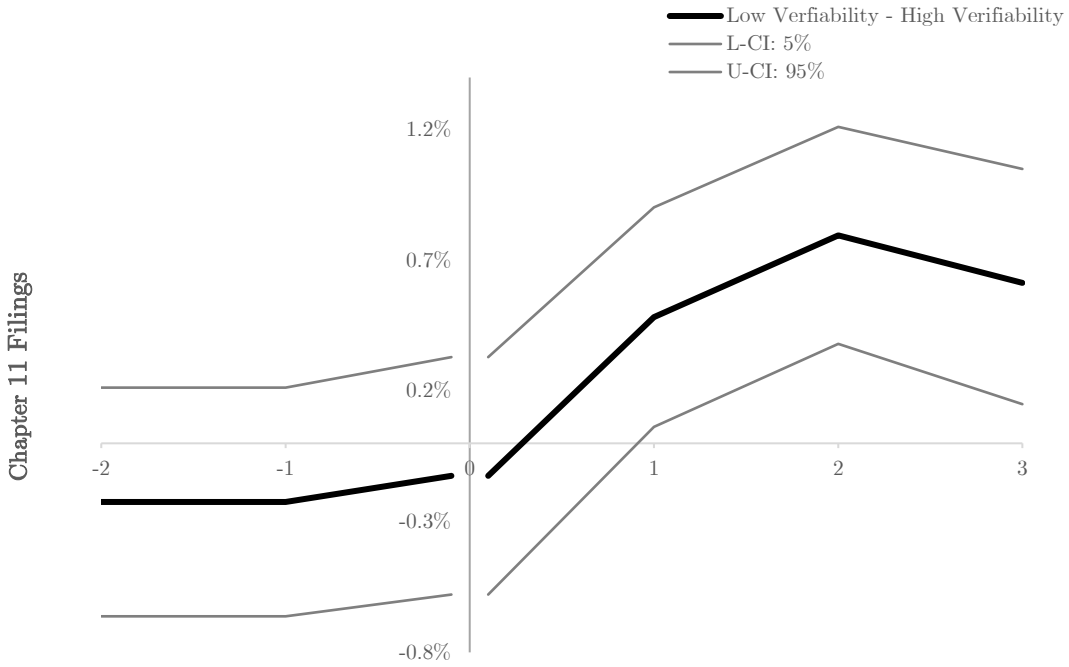

Figure 4 – Chapter 11 Filings around the Supreme Court Decision of 1999: Low-Verifiability vs. High-Verifiability Firms

This figure reports the point OLS estimates from our chapter 11 filing regression. The bankruptcy data are from the UCLA-LoPucky Bankruptcy Research Database (BRD). All firm-level data are from COMPUSTAT. The sample includes all non-financial firms with assets exceeding $100 million. Refer to Table I.C.1 for detailed variable definitions. The regression specification is the same to that reported in Tables 2, except that the effect of LowVerifiability is allowed to vary by year for each year starting two years prior to the Supreme Court decision of 1999 and ending three years after the decision. Ninety-five-percent confidence intervals are also plotted.

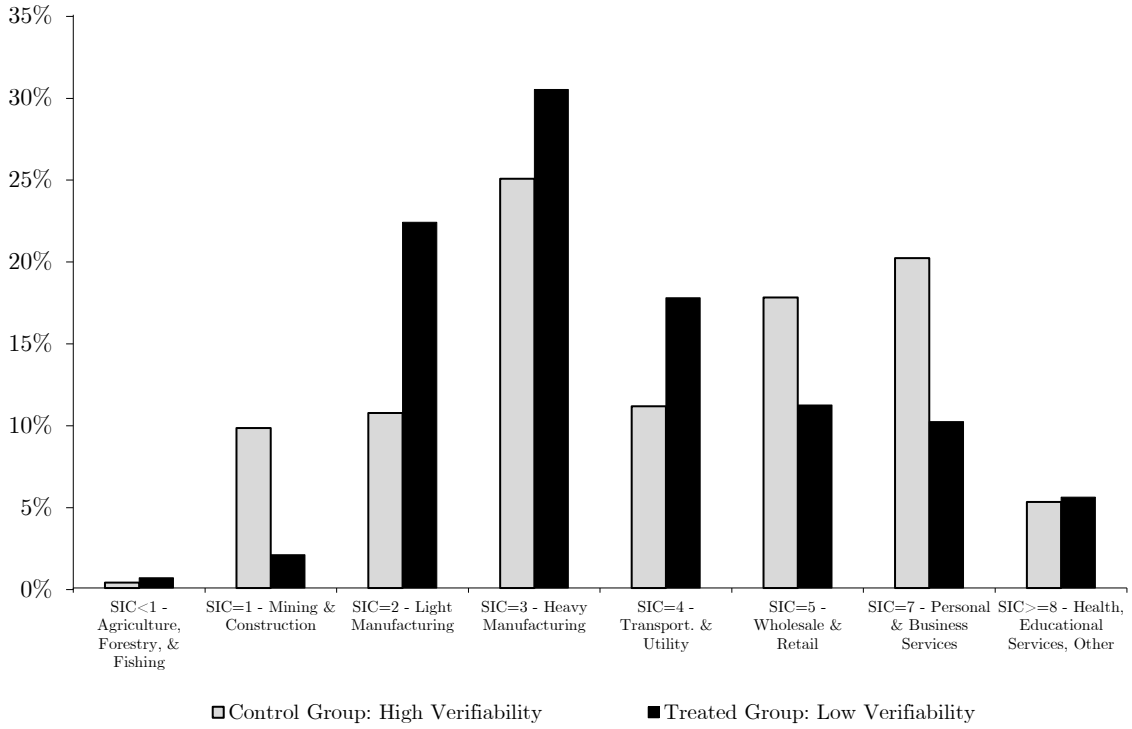

Figure 5 – Percentage of Firms by Industry: Control and Treated Groups

This figure reports the distribution of treated (LowVerifiability) and control firms (HighVerifiability) by SIC groups. All firm level data are from COMPUSTAT. All firm-level data are from COMPUSTAT. The sample includes all non-financial firms with assets exceeding $100 million. LowVerifiability (HighVerifiability) is an indicator equal to 1 if the ratio of total industry-year Sales of Property, Plant, & Equipment to total industry-year Property, Plant, & Equipment is below (above) the median ratio for all industry-year combined. Refer to Table I.C.1 for detailed variable definitions.

Internet Appendix

Appendix I.A

Proof of Proposition 1. See discussion in the text. □

Proof of Proposition 2. Morris and Shin (2003) and Frankel, Morris, and Pauzner (2003) prove this result for a general class of global games including those where θ is drawn from a uniform distribution on $\left[\underline{\theta}, \overline{\theta}\right]$, the noise terms η_i are i.i.d. accross players and drawn from a uniform distribution on $\left[-\frac{1}{2}, \frac{1}{2}\right]$, and that satisfy the following additional conditions: (i) $\pi(a, \theta)$ increasing in θ, (ii) π increasing in a, (iii) there exists a unique θ^* that satisfies $\int_0^1 \pi(a, \theta)\, da = 0$, (iv) there exists $\overline{d}$ and $\underline{d}$ with $\sigma < \min\left\{\overline{\theta} - \overline{d}, \underline{d} - \underline{\theta}\right\}$, and $\epsilon > 0$ such that $\pi(a, \theta) \leq -\epsilon$ for all $a \in [0, 1]$ and $\theta \leq \underline{d}$ and $\pi(a, \theta) > \epsilon$ for all $a \in [0, 1]$ and $\theta \geq \overline{d}$, (v) continuity of $\int_0^1 g(a)\, \pi(a, \theta)\, da$ with respect to θ and density g. Our setup clearly satisfies all these conditions. □

Proof of Proposition 3. Differentiating the borrower's payoff in distress $\Pi(q, \phi; \alpha, \delta)$ we obtain

$$\frac{d\Pi(q, \phi; \alpha, \delta)}{dq} = \frac{\frac{1}{\delta}\frac{\alpha\phi}{q^2 v}}{\overline{\theta} - \underline{\theta}}\left[v(1 - q) - (1 - \alpha\phi)\right] - v\left(\frac{\overline{\theta} - \frac{1}{\delta}\frac{\alpha\phi}{qv}}{\overline{\theta} - \underline{\theta}}\right). \tag{A.1}$$

The first term on right-hand side of (A.1) converges to 0 as q goes to $1 - \frac{(1-\alpha\phi)}{v}$, while the second term is negative since $\delta\overline{\theta} > 1 > \frac{\alpha\phi}{v-(1-\alpha\phi)}$. Thus (A.1) is negative for q close enough to $1 - \frac{(1-\alpha\phi)}{v}$. Moreover, as q converges to $\frac{\alpha\phi}{v}$, (A.1) is positive as long as $\delta\overline{\theta} < \frac{(v-(1-\alpha\phi))}{\alpha\phi}$, which is true for δ sufficiently close to $\frac{1}{\overline{\theta}}$. This implies that there exists $q^* \in \left(\frac{\alpha\phi}{v}, 1 - \frac{(1-\alpha\phi)}{v}\right)$ that satisfies the equality. Moreover, this is the unique global maximizer since $\Pi(q, \phi; \alpha, \delta)$ is strictly concave in q:

$$\frac{d^2\Pi(q, \phi; \alpha, \delta)}{dq^2} = -\frac{2\alpha}{q^3 v\delta\left(\overline{\theta} - \underline{\theta}\right)}\left(v - (1 - \alpha\phi)\right) < 0. \qquad \square$$

Proof of Corollary 1. Differentiating $q^*(\phi; \alpha, \delta)$ and $\overline{p}^*(\phi; \alpha, \delta, \lambda)$ gives

$$\begin{aligned}
\frac{\partial \overline{p}^*}{\partial \alpha} &= \phi(1 - \lambda)\frac{\overline{\theta}(v - 1)}{2\delta(v + \alpha\phi - 1)^2}\sqrt{\frac{\delta(v - (1 - \alpha\phi))}{\alpha\overline{\theta}}} > 0, \\
\frac{\partial^2 \overline{p}^*}{\partial \alpha \partial \delta} &= -\phi(1 - \lambda)\frac{v - 1}{4\delta\alpha\phi(v + \alpha\phi - 1)}\sqrt{\frac{\overline{\theta}\alpha\phi}{\delta(v + \alpha\phi - 1)}} < 0, \\
\frac{\partial^2 \overline{p}^*}{\partial \alpha \partial \lambda} &= -\phi\frac{\overline{\theta}(v - 1)}{2\delta(v + \alpha\phi - 1)^2}\sqrt{\frac{\delta(v + \alpha\phi - 1)}{\alpha\phi\overline{\theta}}} < 0, \\
\frac{\partial q^*}{\partial \alpha} &= \phi\frac{v + 2\alpha\phi - 1}{2\overline{\theta}v^2\delta}\sqrt{\frac{\delta\overline{\theta}v^2}{\alpha\phi(v + \alpha\phi - 1)}} > 0, \\
\frac{\partial^2 q^*}{\partial \alpha \partial \delta} &= -\phi\frac{v + 2\alpha\phi - 1}{4\delta\alpha\phi(v + \alpha - 1)}\sqrt{\frac{\alpha\phi(v + \alpha\phi - 1)}{\delta\overline{\theta}v^2}} < 0.
\end{aligned} \qquad \square$$

Proof of Proposition 4. Plugging $q^*(\phi;\alpha,\delta)$, $p^*(\phi;\alpha,\delta)$, and $\theta^*(\phi;\alpha,\delta)$ into the pledgeable income (10) gives

$$P(r,\phi;\alpha,\delta,\lambda)=\lambda r+(1-\lambda)\left\{\frac{\alpha\phi}{\delta\left(\overline{\theta}-\underline{\theta}\right)}\left[-1+\sqrt{\delta\overline{\theta}}\left(\frac{\alpha\phi+(v-(1-\alpha\phi))}{\sqrt{\alpha\phi\,(v-(1-\alpha\phi))}}\right)\right]-\frac{\underline{\theta}}{\overline{\theta}-\underline{\theta}}\alpha\phi\right\} \tag{A.2}$$

Differentiating (A.2) with respect to verifiability $\alpha\phi$ gives

$$\frac{\left[(v-(1-\alpha\phi))^2+4\alpha\phi v+3(\alpha\phi)^2-4\alpha\phi\right]\sqrt{\delta\overline{\theta}}-2(v-(1-\alpha\phi))(\delta\underline{\theta}+1)\sqrt{\alpha\phi\,(v-(1-\alpha\phi))}}{\frac{2\delta\left(\overline{\theta}-\underline{\theta}\right)\alpha\phi(v-(1-\alpha\phi))^2}{(1-\lambda)\sqrt{\alpha\phi(v-(1-\alpha\phi))}}}.$$

The denominator is clearly positive and the numerator can be rewritten as

$$\begin{aligned}&\left((v-(1-\alpha\phi))-\sqrt{\alpha\phi\,(v-(1-\alpha\phi))}\right)^2+\left(\sqrt{\delta\overline{\theta}}-1\right)\left[(v-(1-\alpha\phi))^2+\alpha\phi\,(v-(1-\alpha\phi))\right]\\&\quad+\left[\sqrt{\delta\overline{\theta}}2\alpha\phi\,(v-(1-\alpha\phi))+\alpha\phi\,(v-1)\right]-2\delta\underline{\theta}\,(v-(1-\alpha\phi))\sqrt{\alpha\phi\,(v-(1-\alpha\phi))}>0,\end{aligned}$$

which implies that $\partial P(r,\phi;\alpha,\delta,\lambda)/\partial(\alpha\phi)>0$. Thus, we have that financing is feasible if and only $P(y,1;\alpha,\delta,\lambda)\geq g$. Since $\lim_{\alpha\to 0}P(y,1;\alpha,\delta,\lambda)=\lambda y<g$ and $P(y,\phi;\alpha,\delta,\lambda)$ is strictly increasing in ϕ (as $\alpha>0$), feasibility implies that there is a unique $\phi^*\in(0,1]$ that solves $P(y,\phi^*;\alpha,\delta,\lambda)=g$. Since the borrower's payoff is strictly decreasing in $\alpha\phi$, the optimal contract sets $r=y$ and $\phi=\phi^*$. □

Proof of Corollary 2. Part (i) is a direct consequence of Proposition 1. We now show (ii), from which (iii) follows immediately. We have that

$$\lim_{\alpha\to 1}P\left(y,1;\alpha,\delta,\widehat{\lambda}\right)=\widehat{\lambda}y+(1-\widehat{\lambda})\left[\left(1-\frac{\sqrt{\frac{\overline{\theta}}{\delta v}}-\underline{\theta}}{\overline{\theta}-\underline{\theta}}\right)\sqrt{\frac{v}{\overline{\theta}\delta v^2}}v+\frac{\sqrt{\frac{\overline{\theta}}{\delta v}}-\underline{\theta}}{\overline{\theta}-\underline{\theta}}\right].$$

Given that $v>1$, we have $\lim_{\alpha\to 1}P\left(y,1;\alpha,\delta,\widehat{\lambda}\right)>\widehat{\lambda}y+1-\widehat{\lambda}=g$. This implies there exists $\overline{\alpha}\in(0,1)$ such that $P\left(y,1;\alpha,\delta,\widehat{\lambda}\right)>g$ for all all $\alpha\geq\overline{\alpha}$. In addition, we have that $\lim_{\alpha\to 0}P\left(y,1;\alpha,\delta,\widehat{\lambda}\right)=\widehat{\lambda}y<g$. Thus, there exists $\underline{\alpha}\in(0,\overline{\alpha})$ satisfying $P\left(y,1;\underline{\alpha},\delta,\widehat{\lambda}\right)=g$. It follows that for $\alpha\leq\underline{\alpha}$ there exists $\underline{\lambda}(\alpha)\in[\widehat{\lambda},\overline{\lambda}(\alpha))$ such that $P(y,1;\alpha,\delta,\underline{\lambda}(\alpha))=g$, with financing being feasible if and only if $\lambda\geq\underline{\lambda}(\alpha)$. For $\alpha>\underline{\alpha}$ there exists $\underline{\lambda}(\alpha)\in(0,\widehat{\lambda})$ such that $P(y,1;\alpha,\delta,\underline{\lambda}(\alpha))=g$, which implies the project if financed if and only if $\lambda\geq\underline{\lambda}(\alpha)$. Differentiating both sides with respect to α gives $\frac{d\underline{\lambda}}{d\alpha}=-\frac{\partial P(y,1;\alpha,\delta,\underline{\lambda}(\alpha))/\partial\alpha}{\partial P(y,1;\alpha,\delta,\underline{\lambda}(\alpha))/\partial\underline{\lambda}}$, which is negative since both $\partial P(y,1;\alpha,\delta,\underline{\lambda}(\alpha))/\partial\alpha$ and $\partial P(y,1;\alpha,\delta,\underline{\lambda}(\alpha))/\partial\underline{\lambda}$ are positive. □

Appendix I.B

203 North LaSalle Street Partnership was a real estate partnership headquartered in Chicago, Illinois. The principal asset of the firm was 15 floors of an office building in downtown Chicago which was financed by Bank of America with a $93 million dollar mortgage secured by the property. LaSalle also owed $90,000 to unsecured trade creditors. In January 1995, LaSalle defaulted on the mortgage and Bank of America immediately started foreclosure. To stop Bank of America from repossessing the property, LaSalle filed for Chapter 11 protection. Bank of America filed a motion to terminate the debtor's exclusive right to propose a reorganization plan hoping to present a competing plan and liquidate the property. The Bankruptcy Court rejected the motion of Bank of America on the ground that the Bankruptcy Code grants the debtor a statutory exclusivity to present a reorganization plan. The court further upheld LaSalle's request to have the exclusivity period extended for cause.

LaSalle later proposed a plan in which Bank of America's $93 million claim would be split into a secured debt claim of $54.5 million and an unsecured deficiency claim of $38.5 million. The former would be paid in full over a period from 7 to 10 years, while the unsecured deficiency would be discharged for 16% of its value (6.2 million in dollar terms). On the other hand, unsecured trade creditors would receive the entire $90,000 except for the accrued interests (which amounted to a few thousand dollars at the time LaSalle proposed the plan). LaSalle's proposal also gave some of its partners the exclusive right to contribute $6.1 million in new equity capital over the course of five years ($4.1 million in present value terms) in exchange for retaining LaSalle's ownership in full.

Bank of America objected to the plan while trade creditors (unsurprisingly) approved it. But the bankruptcy court crammed down the plan on Bank of America. Upper courts followed suit. Bank of America first appealed the decision of the bankruptcy court before the District Court. On May 1, 1996, the district court affirmed the plan proposed by LaSalle and rejected one by one all of the fourteen objections made by Bank of America.[1] The plan was further affirmed by the Seventh Circuit Court of Appeals on September 29, 1997.

The only remaining option for Bank of America at this stage was to bring the case for review to the U.S. Supreme Court. In the petition, Bank of America argued that LaSalle's plan violated the absolute priority rule, which prevents pre-bankruptcy equity holders to contribute new capital and retain a stake in the reorganized entity when senior claims have not been paid in full. On May 4, 1998, the Supreme Court granted review noticing that Circuit Courts had been split in the resolution of similar cases.[2] The decision of the Supreme Court to review the case meant that the Court was going to decide on whether the new value exception could lead to a violation of the absolute priority rule, and hence on whether the new value exception could cause a "violation of creditor rights". Figure 2 in the main text presents a summary of the timeline of events leading to the 1999 Supreme Court decision.

Given the importance of what was a stake, it is not surprising that the case received large

[1] Bank of America v. 203 N. LaSalle Street Partnership, [Decision 195 B. R. 692, 696 (ND Ill. 1996)].
[2] See Decision 523 U. S. 1106.

media coverage and many interested parties, including the American Bankers Association, the American Council of Life Insurance, the American College of Real Estate Lawyers, and the United States Solicitor General filed briefs as amici curiae (friends of the court).[3] They submitted detailed arguments for or against the new value exception and its implications for creditor protection. The groups representing the banking industry and the United States sided with Bank of America, while legal scholars were split.

The Supreme Court held a hearing on the case on November 2, 1998. The lawyers for LaSalle argued that the plan didn't constitute a violation of the absolute priority rule because the pre-bankruptcy partners maintained the ownership of the reorganized entity only because they contributed new equity. Bank of America objected that the value of the property was higher than the value of the new contribution. Therefore, the pre-bankruptcy partners retained an interest in the partnership on the ground of their old equity position and, since not all senior claim holders had been paid in full, the new value plan constituted a violation of the absolute priority rule.

At the core of the dispute was the statutory exclusivity to file a plan granted by the Bankruptcy Code of 1978 to the debtor. The lawyers for Bank of America made this point clear: "We asked for the permission to put in a competing plan .... (but) we were not allowed to file because of the statutory exclusivity of 1121 (c)".[4] The Solicitor General further stressed that the statutory exclusivity granted to the debtor was problematic because it could lead to a violation of creditor rights. Figure I.B.1 presents a timeline of events surrounding the Supreme Court decision on the case.

FIGURE I.B.1 ABOUT HERE

On May 3, 1999, the Supreme Court reversed the judgement of the Seventh Circuit Court with an 8-1 decision [Decision 526 U.S. 434]. In the holding, the Court said: "A debtor's pre-bankruptcy equity holders may not, over the objection of a senior class of impaired creditors, contribute new capital and receive ownership interests in the reorganized entity, when that opportunity is given exclusively to the old equity holders under a plan adopted without consideration of alternatives". Without this market test, the Supreme Court's opinion was that the decision on whether the new value contribution was "top dollar" would be left to the discretion of bankruptcy court judges, whereas the market would be best suited to the role of determining value.

Appendix Table I.B.1 reports detailed press coverage of the case including the Supreme Court's decision to grant review on May 4, 1998, the oral arguments in front of the Supreme Court on November 2, 1998, and the day of the decion on May 3, 1999. One year after the Supreme Court decision, LaSalle proposed a plan in which Bank of America would receive $71 million, compared to the $60.7 = (54.5+6.2)$ million of the old plan. Bank of America backed the plan. See "Development Resources Bets on Downtown", Chicago Tribune, June 7, 2000.

TABLE I.B.1 ABOUT HERE

[3]See, for example, "Court to Rule on Equity Owners and Lenders' Rights in Bankruptcy Cases", The Associated Press, May 4, 1998; "Top Court to Resolve Equity-Lender Fight", The Wall Street Journal, May 5, 1998; "Stiffing the Creditor," Forbes, October 5, 1998. See Table I.B.1 for detailed press coverage of the case.

[4]U.S. Supreme Court Media, Bank of America vs. 203 North LaSalle Partnership, http://www.oyez.org/cases.

Table I.B.1 – The Bank of America v. 203 N. LaSalle: Press Coverage

This table reports in reverse chronological order the press coverage of the Bank of America v. 203 N. LaSalle Case.

Panel A: May 3, 1999 – The Supreme Court Decision	
Publication Name/Type of Source/Date	**Article's Title/Headline**
BCD News and Comment/Newsletter/June 1, 1999	**New Value Plan Was Unconfirmable** "A debtor's pre-bankruptcy equity holders may not, over the objection of a senior class of impaired creditors, contribute new capital and receive ownership interests in the reorganized entity, when that opportunity is given exclusively to the old equity holders under a plan adopted without consideration of alternatives."
Business Wire/Newswire/May 20, 1999	**U.S. Supreme Court Makes It More Difficult to Cram Down Real Estate Lenders** "On May 3, 1999, the United States Supreme Court limited the ability of equity holders to retain ownership of business entities through a Chapter 11 bankruptcy reorganization by means of the so-called "new value" exception to the absolute priority rule."
Mergers & Acquisitions Report/Newsletter/May 17, 1999	**Supreme Court Throws Investment Bankers A Bone** "The court decided that LaSalle, the debtor and old equity holder in the bankrupt entity, could not receive ownership in the surviving entity through a new investment if creditors object and other alternatives are not considered."
The American Banker/Newspaper/May 12, 1999	**Docket: Bankruptcy Win May Not Count for Much** "Though the banking industry won a recent bankruptcy case before the Supreme Court, legal experts are divided on whether the decision will do much to help lenders."
Troubled Company Reporter/Newsletter/May 5, 1999	**203 N. LA SALLE: Supreme Court Sides With Creditors** "The United States Supreme Court delivered its decision concerning the new value exception to the absolute priority rule Monday in the case of Bank of America National Trust and Savings Association v. 203 North LaSalle Street Partnership, stating that pre-petition equity holders may not, over the objection of a senior class of impaired creditors, contribute new capital to and receive ownership interests in a reorganized debtor when that opportunity is given exclusively to the old equity holders."
The Wall Street Journal/Newspaper/May 4, 1999	**Creditor Rights in Realty Reorganizations Aided** "Supreme Court bolsters the rights of creditors in real-estate bankruptcy reorganizations."
The New York Times/Newspaper/May 4, 1999	**Ruling Narrows Rights of Debtors** "Banks and insurers won new leverage in bankruptcy proceedings today when the United States Supreme Court ruled that judges should not give the owner of an insolvent company an exclusive right to buy a stake in a reorganized business."
The American Banker/Newspaper/May 4, 1999	**In Brief: B of A Wins Bankruptcy Case in High Court**

	"The Supreme Court on Monday made it tougher for equity holders in bankrupt real estate developments to retain the property without repaying creditors in full."
The Washington Post/Newspaper/May 4, 1999	**Digest** "The Supreme Court ruled in a Chicago case that unsecured creditors can bar shareholders from putting up new money to retain ownership of a reorganized firm, if no one else was given a chance to come up with an alternative plan."
The Associated Press/Newswire/May 3, 1999	**Creditors' Rights Boosted in Business Reorganization** "The Supreme Court today strengthened creditors rights against those of shareholders in some bankruptcy cases in which an insolvent firm is being reorganized."
Panel B: November 2, 1998 – The Supreme Court Hearing	
The American Banker/Newspaper/November 3, 1998	**B of A Bankruptcy Priority Case Argued Before Supreme Court** "The Supreme Court held arguments Monday in the only banking case on its agenda this term, probing whether senior creditors or shareholders of insolvent companies have an upper hand in bankruptcies."
Business Wire/Newswire/November 2, 1998	**Supreme Court to Hear Bankruptcy Case** "A Court ruling in Bank of America National Trust & Savings Assn. v. 203 N LaSalle Street Partnership could mean that lenders will be forced to accept reduced debt payoffs in some bankruptcy cases."
The Washington Post/Newspaper/November 2, 1998	**Supreme Court Calendar** "The Supreme Court will hear arguments today in Bank of America v. 203 N. LaSalle St. Partnership. Regarding the "new value" principle in bankruptcy rules."
National Mortgage News/Industry Trade Press/October 19, 1998	**Supreme Court Decision May Affect CRE Lending** "This November, the United States Supreme Court will hear oral arguments regarding a key bankruptcy question being disputed in a single-asset commercial real estate case."
Forbes/Magazine/October 5, 1998	**Stiffing the Creditor** "A lot rides on an eventual Supreme Court decision. That's why eight outsiders have filed friend-of-the-court briefs, including the American Bankers Association, the American Council of Life Insurance, the American College of Real Estate Lawyers and the Solicitor General."
The American Banker/Newspaper/October 1, 1998	**Supreme Court to Weigh Case on Bankruptcy Law** "Bankruptcy law tops the banking industry's agenda for the Supreme Court term that starts next week. The justices will hold arguments Nov. 2 in Bank of America v. 203 N. LaSalle Street Partnership, which centers on whether secured creditors or owners of insolvent companies get the edge in corporate bankruptcies."
Panel C: May 4, 1998 – The Supreme Court	

Granted Certiorari	
Mergers & Acquisitions Report/Newsletter/June 8, 1998	**Supreme Court May Throw Vultures a Bone; Chapter 11 Ruling Could Push Open the Door on New Value Reorgs** "Distressed investors may soon be dealt a very lucky hand. And doing the dealing will be none other than the U.S. Supreme Court, which plans to hear a bankruptcy case that could prove to be vulture-friendly, according to bankruptcy lawyers."
BCD News and Comment/Newsletter/May 26, 1998	**Supreme Court To Decide New Value At Last** "The Supreme Court will finally get its chance to rule on a matter of great interest to the bankruptcy community, namely, whether the new value corollary to the absolute priority rule survived the passage of the Bankruptcy Code."
The American Banker/Newspaper/May 20, 1998	**Docket: Banks Fight to Keep Edge in Bankruptcy** "The Supreme Court will decide this fall whether secured creditors or owners of insolvent companies get the edge in corporate bankruptcies."
BestWire/Newswire/May 11, 1998	**Supreme Court to Review Bankruptcy Case** "The Supreme Court agreed last week to settle a long-running bankruptcy dispute--whether equity owners of a bankrupt business can retain their ownership rights by pumping more money into the business without making sure creditors get paid."
Troubled Company Reporter/Newsletter/May 8, 1998	**US Supreme Court to Hear Ownership Issue** "The U.S. Supreme Court will resolve a long-standing dispute over the rights of bankrupt debtors to retain ownership of their reorganized company even though creditors haven't been fully paid off."
The Wall Street Journal/Newspaper/May 5, 1998	**Top Court to Resolve Equity-Lender Fight** "Supreme Court has agreed to resolve a dispute over the rights of equity holders and lenders in bankruptcy reorganization..."
The Associated Press/Newswire/May 4, 1998	**Court to Rule on Equity Owners and Lenders Rights in Bankruptcy Cases** "The Supreme Court today agreed to use a Chicago case to resolve conflicting rulings over the rights of equity owners in a bankrupt business and the rights of lenders to whom the business owes money."
BCD News and Comment/Newsletter/November 11, 1997	**New Value Corollary Survived Passage of Code** "The new value corollary to the absolute priority rule survived the passage of the Code and it remains a part of bankruptcy jurisprudence."

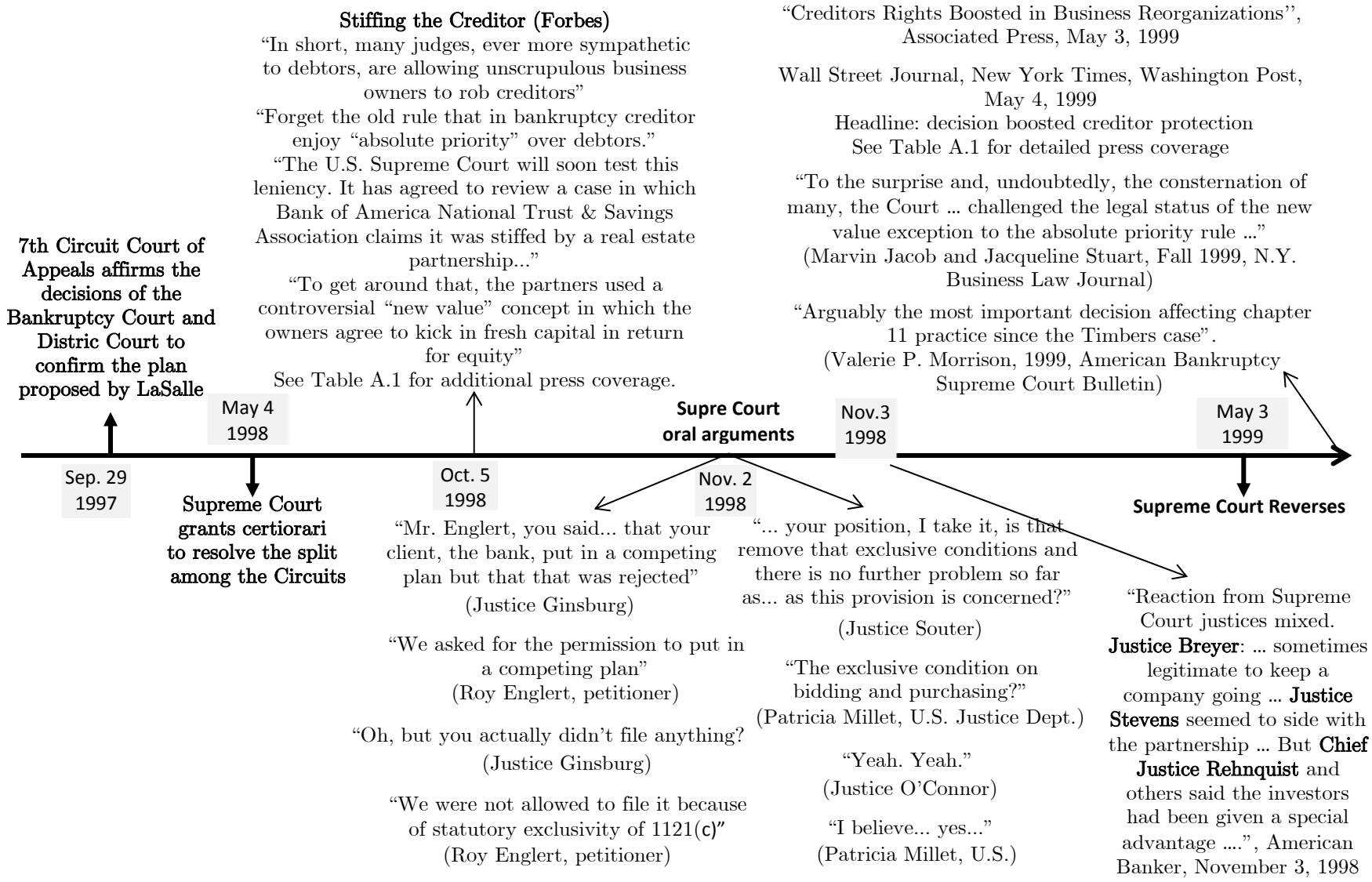

Figure I.B.1 – Event Timeline
This figure presents events, press releases, and specialists' reactions around the 1999 U.S. Supreme Court ruling in Bank of America v. 203 North LaSalle.

APPENDIX I.C

Table I.C.1 – Variable Definitions

This table provides a definition of the variables used in the paper.

Variables:	Definition:
Chapter11	Chapter11 is an indicator equal to 1 for the fiscal year in which a firm files for chapter 11 protection, and zero otherwise. The bankruptcy data are from the UCLA-LoPucky Bankruptcy Research Database (BRD). The database reports chapter 11 filings for publicly listed firms in the U.S. with total assets exceeding $100 million. We exclude financial firms: SIC 6000 – 6999. Base sample period 1998 – 2001. Extended sample period 1995 – 2010.
LowVerifiability	LowVerifiability is an indicator equal to 1 if the ratio of total 4-digit SIC-year Sales of Property, Plant, & Equipment (COMPUSTAT's item sppe) to total 4-digit SIC-year Property, Plant, & Equipment (COMPUSTAT's item ppent) is below the median ratio for all 4-digit SIC-year combined. HighVerifiability is defined as 1 – LowVerifiability. The sample includes firms with total assets exceeding $100 million. We exclude financial firms: SIC 6000 – 6999. Base sample period 1998 – 2001. Extended sample period 1995 – 2010.
PostSupremeCourt1999	PostSupremeCourt1999 is an indicator equal to 1 for the fiscal years after 1999. For example, for the base sample period 1998 – 2001, PostSupremeCourt1999 is equal to 1 for the fiscal years 2000 and 2001, and zero for the fiscal years 1998 and 1999.
After1996, and After1997 to After2008	After1996 is an indicator equal to 1 for the fiscal years 1997 and 1998, and zero for the fiscal years 1995 and 1996. After1997 to After2008 are defined similarly.
Leverage	Leverage is the ratio of total debt (COMPUSTAT's items dlc + dltt) to book value of total assets (COMPUSTAT's item at). The sample includes firms with total assets exceeding $100 million. We exclude financial firms: SIC 6000 – 6999. Base sample period 1998 – 2001. Extended sample period 1995 – 2010.
Leverage (market)	Leverage (market) is defined as the ratio of total debt (COMPUSTAT's items dlc + dltt) to market value of assets (COMPUSTAT's items at + prcc_c×csho – ceq – txditc). The sample includes firms with total assets exceeding $100 million. We exclude financial firms: SIC 6000 – 6999. Base sample period 1998 – 2001.
Recovery Rate	Recovery Rate is defined as the ratio of firm assets value after emerging from chapter 11 to pre-bankruptcy liabilities. The data necessary to calculate recovery rates are from the UCLA-LoPucky Bankruptcy Research Database (BRD). The database reports chapter 11 filings for publicly listed firms in the U.S. with total assets exceeding $100 million. We exclude financial firms: SIC 6000 – 6999. Base sample period 1998 – 2001.
Tangibility	Tangibility is the ratio of property, plant, & equipment (COMPUSTAT's item ppent) to book value of total assets (COMPUSTAT's item at). The sample includes firms with total assets exceeding $100 million. We exclude financial firms: SIC 6000 – 6999. Base sample period 1998 – 2001. Extended sample period 1995 – 2010.
TobinsQ	TobinsQ is the ratio of market value of total assets (COMPUSTAT's items at – ceq + prcc_c×csho) to book value of total assets (COMPUSTAT's item at). The sample includes firms with total assets exceeding $100 million. We exclude financial firms: SIC 6000 – 6999.

	Base sample period 1998 – 2001. Extended sample period 1995 – 2010.
R&D	R&D is the ratio of R&D expenses (COMPUSTAT's item xrd) to total assets (COMPUSTAT's item at). We set R&D equal to 0, if xrd is missing. The sample includes firms with total assets exceeding $100 million. We exclude financial firms: SIC 6000 – 6999. Base sample period 1998 – 2001.
Size ($B)	Size is total assets (COMPUSTAT's item at) (measured in billions of 2001 dollars using the Producer Price Index (PPI) published by the U.S. Department of Labor as the deflator). We use the natural logarithm of Size (LnSize) in all our regressions. The sample includes firms with total assets exceeding $100 million. We exclude financial firms: SIC 6000 – 6999. Base sample period 1998 – 2001. Extended sample period 1995 – 2010.
Profitability	Profitability is the ratio of earnings before interest, taxes, depreciation and amortization (COMPUSTAT's item oibdp) to book value of total assets (COMPUSTAT's item at). The sample includes firms with total assets exceeding $100 million. We exclude financial firms: SIC 6000 – 6999. Base sample period 1998 – 2001. Extended sample period 1995 – 2010.
DispersedDebt	DispersedDebt is an indicator equal to 1 if the firm has either a bond rating (COMPUSTAT's item splticrm) or a commercial paper rating (COMPUSTAT's item spsticrm). The sample includes firms with total assets exceeding $100 million. We exclude financial firms: SIC 6000 – 6999. Base sample period 1998 – 2001. Extended sample period 1995 – 2010.
MixedDebt	MixedDebt is a dummy variable that takes a value of 1 if the firm utilizes at least 3 of the following four debt instruments, and zero otherwise (Mortgages & Other Secured Debt – COMPUSTAT's item dm, excluding capital leases (item dclo); Capital Leases – item dclo; Convertible Debt – item dcvt; Non-Convertible Unsecured Debt, defined as dltt + dlc – dm – dcvt). The sample includes firms with total assets exceeding $100 million. We exclude financial firms: SIC 6000 – 6999. Base sample period 1998 – 2001.
SecuredDebt	SecuredDebt is defined as the ratio of secured debt (COMPUSTAT's item dm) to total debt (COMPUSTAT's items dlc + dltt). The sample includes firms with total assets exceeding $100 million. We exclude financial firms: SIC 6000 – 6999. Base sample period 1998 – 2001.
Z-score	Z-score is the Alman's Z-score (Altman, 1968), computed as follows: $(1.2\times X_1 + 1.4\times X_2 + 3.3\times X_3 + 0.6\times X_4 + 1.0\times X_5)$, where X_1 is equal to the ratio of working capital (COMPUSTAT's item wcap) to total assets (COMPUSTAT's item at), X_2 is equal to the ratio of retained earnings (COMPUSTAT's item re) to total assets, X_3 is equal to the ratio of earnings before interest and taxes (COMPUSTAT's item ebit) to total assets, X_4 is the ratio of market value of equity (COMPUSTAT's items prcc_c×csho) to book value of total debt (COMPUSTAT's items dlc + dltt), X_5 is the ratio of sale (COMPUSTAT's item sale) to total assets. The sample includes firms with total assets exceeding $100 million. We exclude financial firms: SIC 6000 – 6999. Base sample period 1998 – 2001.
Distance-to-Default	Distance-to-Default is Merton's (1974) distance to default calculated following Vassalou and Xing (2004). In Merton's (1974), equity is viewed as a call option on the firm's assets with a strike price equal to the book value of the firms' liabilities (a firm defaults when its assets' value falls below the book value of debt). Distance-to-Default is the ratio of the difference between the estimated market value of the firm and the face value of the firm's debt to the estimated volatility of the

	market value of the firm. See Vassalou and Xing (2004) equations (1) to (9) for details. The inputs for the calculation are the stock market price and the number of shares outstanding from CRSP (items prc and shrout) and current liabilities and long-term debt items from COMPUSTAT (items dlc and dltt). The sample includes firms with total assets exceeding $100 million. We exclude financial firms: SIC 6000 – 6999. Base sample period 1998 – 2001. Extended sample period 1995 – 2006.
Alternative Low Verifiability Measures:	**Definition:**
LowVerifiability**[0th - 25th PCTL]**	LowVerifiability**[0th - 25th PCTL]** is an indicator equal to 1 if the ratio of total 4-digit SIC-year Sales of Property, Plant, & Equipment (COMPUSTAT's item sppe) to total 4-digit SIC-year Property, Plant, & Equipment (COMPUSTAT's item ppent) is below the 25th percentile of the ratio for all 4-digit SIC-year combined. The sample includes firms with total assets exceeding $100 million. We exclude financial firms: SIC 6000 – 6999. Base sample period 1998 – 2001.
LowVerifiability**[25th - 50th PCTL]**	LowVerifiability**[25th - 50th PCTL]** is an indicator equal to 1 if the ratio of total 4-digit SIC-year Sales of Property, Plant, & Equipment (COMPUSTAT's item sppe) to total 4-digit SIC-year Property, Plant, & Equipment (COMPUSTAT's item ppent) is between the 25th and 50th percentiles of the ratio for all 4-digit SIC-year combined. The sample includes firms with total assets exceeding $100 million. We exclude financial firms: SIC 6000 – 6999. Base sample period 1998 – 2001.
LowVerifiability**[50tht - 75th PCTL]**	LowVerifiability**[50tht - 75th PCTL]** is an indicator equal to 1 if the ratio of total 4-digit SIC-year Sales of Property, Plant, & Equipment (COMPUSTAT's item sppe) to total 4-digit SIC-year Property, Plant, & Equipment (COMPUSTAT's item ppent) is between the 50th and 75th percentiles of the ratio for all 4-digit SIC-year combined. The sample includes firms with total assets exceeding $100 million. We exclude financial firms: SIC 6000 – 6999. Base sample period 1998 – 2001.
Industry M&A Activities < 50th PCTL	[Industry M&A Activities < 50th PCTL] is an indicator equal to 1 if the ratio of total 4-digit SIC-year funds used for M&A activities (COMPUSTAT's item aqc) to total 4-digit SIC-year assets (COMPUSTAT's item at) is below the median ratio for all 4-digit SIC-year combined. The sample includes firms with total assets exceeding $100 million. We exclude financial firms: SIC 6000 – 6999. Base sample period 1998 – 2001.
Industry Land Usage < 50th PCTL	[Industry Land Usage < 50th PCTL] is an indicator equal to 1 if the ratio of total 4-digit SIC-year Land (COMPUSTAT's item fatp) to total 4-digit SIC-year Property, Plant, & Equipment (COMPUSTAT's item ppent) is below the median ratio for all 4-digit SIC-year combined. The sample includes firms with total assets exceeding $100 million. We exclude financial firms: SIC 6000 – 6999. Base sample period 1998 – 2001.
Industry Share Volume < 50th PCTL	[Industry Share Volume < 50th PCTL] is an indicator equal to 1 if the ratio of total 4-digit SIC-year share-traded volume (COMPUSTAT's item cshtr_f) to total 4-digit SIC-year shares outstanding (COMPUSTAT's item csho) is below the median ratio for all 4-digit SIC-year combined. The sample includes firms with total assets exceeding $100 million. We exclude financial firms: SIC 6000 – 6999. Base sample period 1998 – 2001.
Industry Analysts < 50th PCTL	[Industry Analysts < 50th PCTL] is an indicator equal to 1 if the ratio of total 4-digit SIC-year number of analysts making earnings forecasts (from I/B/E/S Detail History File) to total 4-digit SIC-year firms'

	market value (COMPUSTAT's items at – ceq + prcc_c×csho) is below the median ratio for all 4-digit SIC-year combined. The sample includes firms with total assets exceeding $100 million. We exclude financial firms: SIC 6000 – 6999. Base sample period 1998 – 2001.
Industry Analysts' Dispersion $< 50^{th}$ PCTL	Industry Analysts' Dispersion $< 50^{th}$ PCTL] is an indicator equal to 1 if the ratio of total 4-digit SIC-year analysts' earnings forecast dispersion (from I/B/E/S Detail History File) to total 4-digit SIC-year firms' market value (COMPUSTAT's items at – ceq + prcc_c×csho) is below the median ratio for all 4-digit SIC-year combined. The sample includes firms with total assets exceeding $100 million. We exclude financial firms: SIC 6000 – 6999. Base sample period 1998 – 2001.

Table I.C.2 - Descriptive Statistics

This table reports descriptive statistics for the variables used in the paper for LowVerifiability firms (Panel A), HighVerifiability firms (Panel B), and the combined sample (Panel C). The sample includes non-financial firms over the period 1998 – 2001. The bankruptcy data are from the UCLA-LoPucky Bankruptcy Research Database (BRD). The database reports all chapter 11 filings for publicly listed firms in the U.S. with assets exceeding $100 million. Firm level data are from COMPUSTAT. LowVerifiability (HighVerifiability) is an indicator equal to 1 if the ratio of total industry-year Sales of Property, Plant, & Equipment to total industry-year Property, Plant, & Equipment is below (above) the median ratio for all industry-year combined. Refer to Table I.C.1 for detailed variable definitions.

Panel A: Low Verifiability Firms

	Mean	St. Dev.	Min.	Median	Max.	Obs.
Chapter 11	0.012	0.108	0.000	0.000	1.000	5,596
Leverage	0.294	0.251	0.000	0.275	2.884	5,596
Leverage (market)	0.234	0.199	0.000	0.201	0.618	5,193
Tangibility	0.319	0.219	0.000	0.276	0.922	5,596
TobinsQ	2.364	2.838	0.528	1.522	38.993	5,596
R&D	0.030	0.072	0.000	0.000	0.780	5,596
Size ($B)	3.260	7.812	0.109	0.660	50.000	5,596
Profitability	0.113	0.161	-4.280	0.126	0.452	5,596
DispersedDebt	0.395	0.489	0.000	0.000	1.000	5,596
MixedDebt	0.232	0.422	0.000	0.000	1.000	4,668
SecuredDebt	0.290	0.364	0.000	0.064	1.000	4,470
Z-score	13.669	22.851	-1.644	3.856	77.761	4,892
Distance-to-Default	2.463	3.073	-5.295	2.181	12.996	4,589

Panel B: High Verifiability Firms

	Mean	St. Dev.	Min.	Median	Max.	Obs.
Chapter 11	0.009	0.094	0.000	0.000	1.000	5,780
Leverage	0.283	0.245	0.000	0.267	2.581	5,780
Leverage (market)	0.241	0.207	0.000	0.204	0.618	5,346
Tangibility	0.324	0.257	0.000	0.239	0.922	5,780
TobinsQ	2.509	3.898	0.528	1.432	38.993	5,780
R&D	0.030	0.070	0.000	0.000	0.780	5,780
Size ($B)	2.417	6.054	0.120	0.506	50.000	5,780
Profitability	0.115	0.166	-4.280	0.129	0.452	5,780
DispersedDebt	0.351	0.477	0.000	0.000	1.000	5,780
MixedDebt	0.228	0.420	0.000	0.000	1.000	4,714
SecuredDebt	0.307	0.365	0.000	0.099	1.000	4,499
Z-score	14.152	23.604	-1.644	4.008	77.761	4,875
Distance-to-Default	2.314	2.989	-4.957	2.052	12.757	4,585

Table I.C.2 - Descriptive Statistics (cont'd)

Panel C: Combined Sample

	Mean	St. Dev.	Min.	Median	Max.	Obs.
Chapter 11	0.010	0.101	0.000	0.000	1.000	11,376
Leverage	0.288	0.248	0.000	0.271	2.884	11,376
Leverage (market)	0.238	0.203	0.000	0.203	0.618	10,539
Tangibility	0.321	0.239	0.000	0.260	0.922	11,376
TobinsQ	2.438	3.419	0.528	1.479	38.993	11,376
R&D	0.030	0.071	0.000	0.000	0.780	11,376
Size ($B)	2.832	6.987	0.109	0.577	50.000	11,376
Profitability	0.114	0.164	-4.280	0.127	0.452	11,376
DispersedDebt	0.372	0.483	0.000	0.000	1.000	11,376
MixedDebt	0.230	0.421	0.000	0.000	1.000	9,382
SecuredDebt	0.299	0.365	0.000	0.082	1.000	8,969
Z-score	13.910	23.230	-1.644	3.938	77.761	9,767
Distance-to-Default	2.388	3.032	-5.295	2.107	12.996	9,174

Table I.C.3 – Main Variable Correlations

This table reports pairwise correlation coefficients between our main variables (Tables 2 – 4) for LowVerifiability firms (Panel A), HighVerifiability firms (Panel B), and the combined sample (Panel C) over the period 1998-2001. The sample includes non-financial firms over the period 1998 – 2001. The bankruptcy data are from the UCLA-LoPucky Bankruptcy Research Database (BRD). The database reports all chapter 11 filings for publicly listed firms in the U.S. with assets exceeding $100 million. Firm level data are from COMPUSTAT. LowVerifiability (HighVerifiability) is an indicator equal to 1 if the ratio of total industry-year Sales of Property, Plant, & Equipment to total industry-year Property, Plant, & Equipment is below (above) the median ratio for all industry-year combined. Refer to Table I.C.1 for detailed variable definitions.

Panel A: Low Verifiability Firms

	Chapter 11	Leverage	Tangibility	TobinsQ	LnSize	Profitability	Dispersed Debt
Chapter 11	1.000						
Leverage	0.133***	1.000					
Tangibility	0.041***	0.281***	1.000				
TobinsQ	-0.043***	-0.182***	-0.210***	1.000			
LnSize	0.032**	0.136***	0.226***	-0.122***	1.000		
Profitability	-0.059***	-0.119***	0.109***	-0.185***	0.176***	1.000	
DispersedDebt	0.078***	0.349***	0.224***	-0.115***	0.635***	0.075***	1.000

Panel B: High Verifiability Firms

	Chapter 11	Leverage	Tangibility	TobinsQ	LnSize	Profitability	Dispersed Debt
Chapter 11	1.000						
Leverage	0.147***	1.000					
Tangibility	0.030**	0.338***	1.000				
TobinsQ	-0.032**	-0.255***	-0.222***	1.000			
LnSize	0.041***	0.171***	0.172***	-0.167***	1.000		
Profitability	-0.045***	-0.032**	0.123***	-0.198***	0.201***	1.000	
DispersedDebt	0.080***	0.382***	0.209***	-0.150***	0.634***	0.065***	1.000

Panel C: Combined Sample

	Chapter 11	Leverage	Tangibility	TobinsQ	LnSize	Profitability	Dispersed Debt
Chapter 11	1.000						
Leverage	0.140***	1.000					
Tangibility	0.035***	0.310***	1.000				
TobinsQ	-0.036***	-0.221***	-0.217***	1.000			
LnSize	0.037***	0.154***	0.195***	-0.146***	1.000		
Profitability	-0.052***	-0.075***	0.117***	-0.191***	0.187***	1.000	
DispersedDebt	0.079***	0.366***	0.214***	-0.134***	0.636***	0.069***	1.000

Note: ***, ** and * indicate statistical significance at the 1%, 5%, and 10% (two-tail) test levels, respectively.