Creditor Control and Conflict in Chapter 11 Bankruptcy

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Abstract

We analyze a sample of large privately and publicly held businesses that filed Chapter 11 bankruptcy petitions during 2001. We find pervasive creditor control. In contrast to traditional views of Chapter 11, equityholders and managers exercise little or no leverage during the reorganization process: 70 percent of CEOs are replaced in the two years before a bankruptcy filing; very few reorganization plans (at most 8 percent) deviate from the absolute priority rule in order to distribute value to equityholders. Senior lenders exercise significant control through stringent covenants contained in DIP loans, such as line-item budgets. Unsecured creditors gain leverage through objections and other court motions. We also find that bargaining between secured and unsecured creditors can distort the reorganization process. A Chapter 11 case is significantly more likely to result in a sale if secured lenders are oversecured, consistent with a secured creditor-driven fire-sale bias. It is much less likely when these lenders are undersecured or when the firm has no secured debt at all. Our results suggest that the advent of creditor control has not eliminated the fundamental inefficiency of the bankruptcy process: resource allocation questions (whether to sell or reorganize a firm) are ultimately confounded with distributional questions (how much each creditor will receive), due to conflict among creditor classes.

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Two themes dominate traditional accounts of Chapter 11 reorganization. First, managers or equity holders, or both, control the process. See, e.g., Michael Bradley & Michael Rosenzweig (1992), Lucian Bebchuk and Howard Chang (1992), Barry Adler (1993), and Alan Schwartz (1997). This is made possible by debtor-friendly features of the U.S. Bankruptcy Code and judges who are passive or biased in favor of keeping an existing business intact. Exploiting the court's protection, managers can entrench themselves and equity holders can extract concessions from creditors in the form of deviations from absolute priority. As a result, courts may permit reorganizations of firms that should be liquidated. The second theme, usually implicit in the literature, is that creditors act as a unified constituency, usually agitating for quick liquidation. Together, these traditional themes continue to influence the academic literature in many areas related to financial distress.[1]

A recent wave of literature by academics and practitioners suggests that these themes—at least in large corporate bankruptcies—are outdated. See, e.g., Douglas Baird & Robert Rasmussen (2002), David Skeel (2003), Elizabeth Warren & Jay Westbrook (2003), Harvey Miller & Shai Waisman (2004), and Barry Adler, Vedran Capkun, & Lawrence Weiss (2008). During the past decade, creditors with senior, secured claims have come to dominate the Chapter 11 process. Much of this *creditor control* is exercised through secured lines of credit, which are extended to the firm both before and after it files a bankruptcy petition. As David Skeel (2004) and Baird & Rasmussen (2006) have shown, these lines of credit limit the debtor's access to cash and impose strict requirements on business activity. Because of this control, Baird and Rasmussen (2003) argue, we have seen a dramatic increase in the proportion of Chapter 11 cases that result in piece-meal liquidation or a going-concern sale. As Lynn LoPucki (2003, 648) has shown, going-concern sales accounted for less than 20 percent of Chapter 11 cases filed by large, publicly-traded firms during the 1980s. In 2002, they accounted for about 75 percent of the cases.

In addition to shifting the focus away from equity and managerial control in Chapter 11, the recent literature also directs attention away from the unified, single-creditor framework. The onset of senior, secured creditor control raises issues of potential *creditor conflict* between senior and junior classes of debt. As senior lenders have obtained control through pre- and post-petition financing, junior lenders have used claims trading, committees, and other tactics to gain leverage over the reorganization process. See, e.g., Chaim Fortgang and Thomas Mayer (1990), Frederick Tung (1996), and Frank Partnoy and David Skeel (2007). Junior lender activism has increased as hedge funds and

[1] For example, Viral Acharya, Kose John, & Rangarajan Sundaram (2005) compare the "equity-friendly" U.S. system and the "creditor-friendly" U.K. system. And structural models used in bond pricing typically assume a single class of debt, with shareholders extracting surplus from the creditor in workouts or in bankruptcy. Examples include Pascal Francois and Erwan Morellec (2004) and Mark Broadie, Mikhail Chernov, & Suresh Sundaresan (2007).

other investors have purchased the claims of bondholders and similarly dispersed creditors who, in the past, did not participate actively in the bankruptcy process. See, e.g., Eric Fisher & Andrew Buck (2007) and Paul Goldschmid (2005).

Our paper has two objectives. The first is to provide systematic evidence on the validity of these new themes—creditor control and creditor conflict—in large, corporate Chapter 11 cases. Existing evidence is largely anecdotal, raising doubts whether a new perspective on the bankruptcy process is necessary. Our second objective is to identify the effects of creditor control and conflict on bankruptcy outcomes, such as the decision to reorganize or sell the firm. Prior theoretical literature shows that manager-creditor and equity-creditor conflict can lead to asset misallocation during the reorganization process. We use our database to investigate whether a different kind of conflict—senior creditors versus junior creditors—distorts outcomes in bankruptcy cases. As with most scholarship in this area, however, we focus exclusively on dynamics *during* the bankruptcy process. We do not analyze creditor and debtor behavior during the months preceding a bankruptcy filing. Because of this, we cannot fully evaluate the efficiency consequences of control and conflict in bankruptcy. Greater creditor control, for example, could affect the behavior of equity holders and managers prior to bankruptcy. Managers might invest in wasteful strategies to delay a filing, as Adler, Capkun, and Weiss (2008) argue.

We investigate creditor control and conflict using a unique database of Chapter 11 filings by large publicly-traded and privately-held corporations. A preliminary examination of our data provides strong evidence that the traditional view of Chapter 11 is indeed outdated. The traditional paradigms—managers vs. creditors and equityholders vs. creditors—no longer characterize the key tensions in large corporate reorganizations. We find that 70 percent of CEOs are replaced within two years of the bankruptcy filing. This represents a sharp increase over comparable figures reported in past studies and suggests strongly that Chapter 11 does not provide a safe harbor for entrenched managers. Additionally, we find that very few reorganization plans (at most 8 percent) deviate from the absolute priority rule by distributing value to equity holders even though creditors have not been paid in full. In 82 percent of the confirmed reorganization plans, equity holders received nothing.

We also find strong evidence that senior creditors obtain substantial control through their loan agreements with distressed debtors. 75 percent of the bankrupt corporations obtained senior secured financing prior to entering bankruptcy. 90 percent of these loans were secured by a lien on all of the corporation's assets. After entering bankruptcy, the debtors obtained post-petition financing in 76 percent of the cases. These too were secured by liens on all of the firm's assets. More importantly, the vast majority of the loans contained covenants imposing line-item budgets, profitability targets, or deadlines for submitting a plan of reorganization. The lender was generally free to seize collateral unilaterally—without first seeking court approval—if the corporation violated any of these covenants.

Although senior secured lenders appear to exert significant control through loan documents, we also find evidence of frequent creditor conflict. Junior creditors, acting through an creditors committee, filed objections in over 50 percent of the cases. Senior creditors too often filed objections. In 46 percent of the cases, pre- or post-petition lenders objected to actions proposed or taken by the corporations' managers.

Finally, our analysis shows that creditor conflict has an important effect on bankruptcy outcomes. We find a statistically significant, non-monotonic relationship between the ratio of secured debt-to-assets and the resolution of the case. When secured creditors are undersecured (their claims exceed the value of the firm's assets, making them the approximate residual claimants) and when there is no secured debt at all (making the unsecured creditors the approximate residual claimants), the cases are relatively long and more likely to result in a traditional reorganization.[2] But when secured creditors are oversecured (their claims are worth less than the value of the firm's assets), we expect to see—and do see—a different pattern. In these cases, theory predicts that creditor conflict is likely to be most pronounced. Oversecured creditors will prefer an immediate resolution: their claims may be paid in full during a quick sale, even if the firm is sold for less than its fundamental value; delay could hurt them if firm value is volatile and deteriorates over time. Unsecured creditors, on the other hand, will prefer a reorganization if it lengthens the case. If firm value improves over time, these creditors keep most of the upside; if value declines, they share any losses with senior creditors. Consistent with this theory, we find that cases are more likely to result in a sale when secured creditors are oversecured than when the firm has no secured debt or has an approximate residual claimant, such as an undersecured creditor. These results support the hypothesis that senior creditors have substantial power to control bankruptcy outcomes and that they exercise this power more vigilantly when delay poses a greater risk to the value of their claims.[3]

Our findings show that creditor conflict distorts economic outcomes in bankruptcy. We cannot, however, evaluate the efficiency loss associated with this conflict. Creditor conflict may yield inefficiently quick sales in some cases and inefficiently slow sales or reorganizations in others.

Our paper is organized as follows. Section 1 reviews the prior literature, 2 describes our database, 3 presents summary statistics, and 4 presents simple measures of

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[2] This is consistent with the idea that, in the absence of conflict, creditors value the reorganization process as a means of alleviating liquidity problems. See Andrei Shleifer & Robert W. Vishny (1992), Gertner & Picker (1992).

[3] Previous work in a different institutional setting (Swedish bankruptcy auctions) has also found this non-monotonic pattern, relating the senior debt to asset ratio and the probability of liquidation versus a sale-back to management. See Per Stromberg (2000)

creditor control and conflict. In Section 5, we test the effects of control and conflict on the reorganization process. Section 6 concludes.

1. PRIOR LITERATURE

The general phenomenon of creditor control has been the topic of numerous studies, some of them empirical, such as Stuart Gilson and Michael Vetsuypens (1994). The dynamics of creditor conflict have received comparatively less attention.

With respect to creditor control, several papers have documented the frequency of in-bankruptcy lines of credit ("DIP financing") during the 1990s. In a study of publicly-traded firms that entered Chapter 11 between 1988 and 1997, Sandeep Dahiya, et al. (2003) found DIP financing in 31 percent of the cases, with the percentage rising to 48 in the mid-1990s. In a similar study, Maria Carapeto (2003) observed DIP financing in 41 percent of cases, with the percentage rising to a high of 67 in 1996.[4] Both studies found DIP financing more common in cases involving larger firms and in "prepackaged" case. A prepackaged case is one in which the debtor secured approval for its Chapter 11 plan, from a super-majority of creditors, *before* the firm actually filed its Chapter 11 petition. Dahiya, et al., and Carapeto also report that, relative to debtors without DIP financing, those with financing had faster cases and were more likely to reorganize or merge with another firm than undergo piecemeal liquidation. Carapeto, however, also found that the probability of liquidation was higher when the DIP financing gave the lender a security interest that was senior to existing secured debts (a "priming lien").

These papers are important but tell us little about the terms of DIP financing and why it is an effective tool of creditor control. Carapeto (2003) addresses this issue in part, showing that one characteristic of DIP financing—whether the lender receives a priming lien—has an important effect on outcomes. We do not know, however, whether other characteristics of DIP financing matter as well.[5]

The closest papers to ours in this respect are contemporaneous working papers by Sreedhar Bharath, Venky Panchapegasan, & Ingrid Werner (2007) and Greg McGlaun (2007). Bharath, Panchapegasan, & Werner (2007) investigate the determinants of absolute priority rule (APR) violations. An APR violation occurs when a reorganization plan distributes value to junior interests even though senior interests have not been paid in full. An APR violation in favor of equityholders can be viewed as evidence of manager or equityholder control. Similar to our study, Bharath, Panchapegasan, & Werner (2007)

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[4] Other studies include Upinder Dhillon, Thomas Noe, & Gabriel Ramirez (1996), Fayez Elayan & Thomas Meyer (2001), and Sris Chatterjee, Upinder Dhillon & Gabriel Ramirez (2004).

[5] Chatterjee, Dhillon & Ramirez (2004) catalogue the covenants in DIP loans to publicly-traded corporations that filed Chapter 11 petitions between 1988 and 1997. Although they compare these covenants to those in other credit agreements, the authors do not assess the effect of these covenants on bankruptcy outcomes.

find that APR violations were less common during the early 2000s than they were during the 1980s. They hypothesize—and present supporting evidence—that APR violations declined during the 1990s and 2000s because creditors exercised greater control, via DIP financing and other tools, during the same period.

McGlaun uses bankruptcy court data (from PACER) to document covenants in senior loan agreements and investigate the influence of senior lenders on bankruptcy outcomes. He finds, as do we, a relationship between the senior debt-to-assets ratio and the time to case disposition. The relationship is consistent with a desire among senior creditors to resolve cases more quickly when their claims are more at risk. But McGlaun does not find the statistically significant, non-monotonic relationship we document below.

CEO turnover in bankruptcy has also received attention as a measure of creditor control. Carapeto (2003) finds that turnover is higher among firms that receive DIP financing, consistent with the notion of creditor control. Bharath, Panchapegasan, & Werner (2007, 22) find that turnover rates in bankruptcy increased 65 percent between 1990 and the early 2000s. Among entrenched managers—those with significant equity holdings—the turnover rate rose over 200 percent, a change they attribute to increased creditor control during the same period.

Several scholars have examined CEO turnover preceding a bankruptcy filing. Ethan Bernstein (2006) finds high levels of turnover during 2001: among publicly-traded firms in bankruptcy, about 43 percent of their CEO's were replaced within two years of the filing. Oddly, this turnover rate is lower than rates estimated by other scholars using data on cases filed during the early 1980s, the heyday of management control. Gilson (1989), for example, studied sixty-nine publicly-traded firms that entered Chapter 11 between 1979 and 1984 and estimated a turnover rate equal to 55 percent during the two years preceding the bankruptcy filing. A similar rate, equal to 53 percent, can be derived from the work of Lynn LoPucki and William Whitford (1994, 723-36), who studied the forty-three largest publicly-held corporations that filed Chapter 11 petitions between 1979 and 1988 and successfully reorganized.[6]

[6] We calculated this rate using the data reported in Table IV. The time window used by LoPucki and Whitford (1994) begins 18 months prior to the Chapter 11 filing, which is slightly shorter than that used by Gilson (1989). Turnover rates rise dramatically, of course, when the window is extended to include post-petition events. LoPucki and Whitford (1994), for example, estimate a turnover rate equal to 91% based on a window beginning 18 months prior to filing and ending 6 months after plan confirmation. *Id*, at 723. Using a similar window—beginning 2 years prior to filing and ending at plan confirmation—Brian Betker (1995). See Betker for additional studies of CEO turnover in financial distressed firms.

2. DATA

We collected data on all corporate bankruptcies listed in the *Bankruptcy Datasource* "Public and Major Company Database" during the latter half of 2001.[7] This datasource is commonly used in corporate finance and is attractive because it includes filings by both publicly-traded and privately-held firms. We chose the latter half of 2001 because it offered a large number of bankruptcy filings (due to the recession), because data for earlier periods are highly incomplete, and because (at the time we began this project) we worried that we might encounter a censoring problem if we studied post-2001 years, because many cases would still be ongoing.[8]

Our initial sample included 153 cases, listed in Appendix B. For each case, we gathered information about the parent company and all of its subsidiaries in bankruptcy. Our data sources were PACER, SEC filings, and the *Bankruptcy Datasource*. PACER is our primary resource. Every bankruptcy court maintains a PACER website, which contains the docket sheet for and, often, images of all documents filed in a bankruptcy case. Because document images were unavailable or incomplete in a large number of cases, the number of observations varies in the statistical analysis below. For some measures of interest, we have complete data for all 153 cases; for others, we have complete data for only seventy-eight cases. We did not try to supplement the incomplete PACER materials by, for example, collecting physical documents from the bankruptcy courts. That would have been prohibitively costly. Also, it was very time-consuming just to extract data from the PACER websites.

In most of the analysis that follows, we will rely on information contained in the court schedules, because they offer up-to-date information about the firm's capital structure when it files, including data on secured debt. Comparable information is not available in SEC filings.

3. SUMMARY STATISTICS

Tables 1 and 2 present summary information about the businesses and their experiences in bankruptcy. We see a dramatic change in capital structure as firms approach bankruptcy. Table 1 presents statistics on the median firm's assets and debt holdings before entering bankruptcy. These statistics are based on data for publicly-held firms; the data are drawn from Compustat and SEC filings. In most cases, these data reflect the capital structure of a firm one or two years *before* the bankruptcy filing. The median firm reported assets worth $151 million, debt of about $112 million, and secured debt equal to $6 million. The bankruptcy schedules present a very different capital

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[7] The list of firms is available at http://www.bankruptcydata.com/findabrtop.asp. This database includes bankruptcy filings by (i) all publicly-traded corporations and (ii) privately-held corporations that issued public debt or were "deemed significant or newsworthy."

[8] One of the most popular courts, the Bankruptcy Court for the District of Delaware, began posting images in July 2001.

structure: the median firm (publicly-traded or privately-held) reported assets worth $66 million and secured debt of $35.7 million. Thus, we see assets drop over 60 percent and secured debt rise nearly 600 percent during the one to two years preceding the bankruptcy filing.

90 percent of the firms entered bankruptcy with secured debt. Table 2 presents important variation in the value of secured debt relative to assets. In 40 percent of the cases, the total value of secured claims was equal to less than 50 percent of asset value; in 27 percent of the cases it ranged between 50 and 100 percent of asset value; and in 23 percent of the cases, secured claims exceeded the value of the company. In other words, secured creditors were *undersecured* in nearly a quarter of the cases. Roughly the same pattern emerges when we compare the claim held by the largest (or "dominant") secured creditor to the value of the firm's assets.

Table 3 presents information about the bankruptcy cases. 95 percent of the cases were filed voluntarily by the debtors' owners. All but 3 percent of the cases were filed under Chapter 11.[9] Among these cases, nearly 75 percent resulted in a confirmed plan of reorganization; most of the remaining cases resulted in dismissal or conversion to Chapter 7. Because we do not have direct indicators of whether a plan was prepackaged, we assume that a case was prepackaged if confirmation occurred within four months.[10] 9 percent of the Chapter 11 cases were prepacks.

The third panel of Table 3 illustrates the frequency with which Chapter 11 cases resulted in the sale or liquidation of the business. Across all filings, sale or liquidation occurred in 66 percent of the cases. A traditional reorganization—in which the distressed firm's creditors retain stakes in the firm and, often, become its new owners—occurred in 32 percent of the cases.

The final panel of Table 3 summarizes case duration. Across all Chapter 11 cases, the median duration to confirmation, dismissal, or conversion to Chapter 7 was 13 months. This figure is somewhat misleading, however, because many plans are "liquidating plans" that merely distribute the proceeds from a going-concern sale that occurred months before. In these cases, the fate of the firm (whether it would be reorganized or sold off) was decided long before a plan was confirmed. The final panel of Table 3 illustrates this phenomenon. Although we do not have the dates on which sales occurred, we do have the dates when motions to conduct a sale were filed. Among firms

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[9] Bernstein (2006, 2 n.3) reports the same percentage of involuntary filings in a study of Chapter 11 filings during 2001 by publicly-traded corporations.

[10] This cut-off captures all but two of the cases identified as "prenegotiated" in LoPucki's WebBRD database. The two exceptions were cases with durations of 7 and 9 months, respectively.

that were sold off, a motion to sell the firm was typically filed within the first 2 to 3 months of the case.

4. SIMPLE MEASURES OF CREDITOR CONTROL AND CONFLICT

Creditor Control. We can measure creditor control directly and indirectly. Direct measures include deviations from APR that favor equityholders and the terms of post-petition DIP financing. An indirect measure is the frequency of management turnover immediately before and after the bankruptcy filing. When a firm is distressed, its creditors influence the choice of management. DIP loan covenants, for example, routinely include provisions forbidding the debtor from replacing a newly-appointed CEO.[11] To be sure, management turnover may be caused by dynamics wholly separate from creditor control. Shareholders of a troubled firm may replace the CEO because they hope new leadership will help the firm recover (or because they hope to *avoid* creditor control, which may result if the firm becomes further distressed). We view management turnover as an important, but not decisive, indicator of creditor control. We expect creditor control to be positively correlated with CEO turnover, but we cannot rule out other causes of high turnover.

Statistics on CEO turnover appear in Table 4, which shows that 70 percent of CEOs were replaced within two years of the bankruptcy filing. This turnover rate is markedly higher than the rate (45 percent) among all Fortune 500 firms during a comparable two year period (1999-2000). See Steven Kaplan and Bernadette Minton (2006).[12] It is also significantly higher than the rate (about 55 percent) observed among firms that entered bankruptcy during the 1980s. The frequency of turnover in our data rises further, to about 80 percent, when we include CEO replacements that occurred during the two years after the case commenced. This is undoubtedly an underestimate, however, because we did not look systematically for post-petition turnover. If CEO turnover is a good proxy for creditor control, these data point to pervasive control. At a minimum, it suggests strongly that managers are not able to use Chapter 11 as a safe harbor when their firms encounter financial distress.

Direct measures of creditor control appear in Tables 5 and 6. Table 5 shows that deviations from APR—payments to shareholders when creditors have not been paid in full—were rare, occurring in only 8 percent of the cases. This is a dramatic shift from the frequency of APR violations during the 1980s. In a study of publicly-traded corporations that entered Chapter 11 between 1979 and 1986, for example, Weiss (1990) found APR violations in 78 percent of the cases. He also found that equityholders received some

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[11] Chatterjee, Dhillon & Ramirez (2004, 3107) report that 95 percent of DIP loans contain covenants forbidding changes in management, control, and ownership.

[12] The 45 percent figure was computed based on Table 2 of Kaplan and Minton (2006). The average number of firms during 1999 and 2000 was 733; the total number of turnovers was 328, which is about 45 percent of 733.

payment in 80 percent of the cases. That was true in only 18 percent of the cases in our sample. If APR deviations measure the degree of control exercised by managers and equityholders, as is commonly thought, the patterns in Table 5 show that these groups exercise little influence over the modern Chapter 11 process. The patterns point instead to pervasive creditor control.

Table 6 documents the frequency and terms of pre- and post-petition financing. Prior to entering bankruptcy, 75 percent of the businesses obtained financing through a revolving pre-petition credit facility (PCF). 90 percent of these facilities were secured by all or nearly all of the firm's assets. Recall that we observe very low levels of secured debt among the firms in our sample when we study documents filed one or two years before their bankruptcy filings. It seems likely, then, that most PCFs originated during the year before the bankruptcies. This is a strong measure of senior creditor control. If all of a firm's assets are encumbered by liens, it cannot obtain additional secured financing in bankruptcy without obtaining permission from or offering adequate protection to the pre-petition secured lender. See 11 U.S.C. 364(c), (d).

Upon entering bankruptcy, 50 percent of the firms obtained post-petition DIP financing. Another 26 percent obtained liquidity by filing motions to use cash collateral. These motions differ little from those for DIP financing; in either case, the debtor hopes to finance its operations using funds over which a lender has control. Indeed, cash collateral motions frequently contain the same terms found in motions for DIP financing. In over 75 percent of the cases, the firm obtained financing through a DIP loan or an order permitting it to use cash collateral. This, in turn, suggests that the providers of the firms' credit lines have substantial control over, at a minimum, the timing of the bankruptcy filings. These results are important, because they provide confirmation that a primary justification for the bankruptcy filing is the debtor's need to access cash that is not available outside bankruptcy.

The final three panels of Table 6 dissect the terms of DIP loans. 95 percent of these loans give the lender administrative expense superpriority. This is a potent form of control because it gives the lender the right to demand repayment in cash before any plan of reorganization can be confirmed. 92 percent of the loans give the lender a security interest in all of the firm's assets. This too is an important mechanism of control when combined with covenants permitting the lender to seize the collateral—without petitioning for court authorization—in the event of default. These covenants ("Automatic Stay Terminates in Event of Default") are present in 90 percent of DIP loans.

Other covenants enhance creditor control. Perhaps our most surprising result, and the strongest evidence of senior creditor control, is the large percentage of loans that impose specific line-item budgets on the firm (72 percent of loans). These budgets obligate the firm to submit detailed evidence of cash receipts and expenditures; an event of default occurs if the firm deviates from any given line-item by a significant margin (usually 5 to 15 percent). Other covenants are of the more standard variety and restrict

capital expenditures (55 percent) or require the firm to achieve certain profitability or EBITDA targets (49 percent). 90 percent of loans contained at least one of these provisions ("Any Financial Limits").

The fourth panel of Table 6 also shows that 65 percent of DIP loans contain provisions giving the lender a "priming lien," that is, a security interest with priority over pre-existing security interests. This phenomenon could be seen as a means by which DIP lenders divert value from pre-existing lenders. Most DIP lenders, however, are the same banks that extended PCFs to the debtor. A priming lien typically primes only the DIP lender's own pre-existing security interest. There is no diversion of value. As Table 6 illustrates, 66 percent of priming liens involve the DIP lender priming itself; in the remaining 34 percent, the DIP lender obtained a priming lien at the expense of another secured lender. We cannot say, however, whether the DIP lender adequately compensated the pre-existing secured lender for the priming lien.

Senior creditor control, then, appears to be pervasive in a large number of corporate bankruptcies. The majority of firms will see their CEOs replaced and will sign loan agreements that give lenders significant control over the course of the Chapter 11 process. Evidence on PCFs indicates that, for most firms, the senior lender has effective control over the debtor's access to cash and thus determines the timing of the bankruptcy filing. Our analysis of DIP covenants suggests that this control extends beyond the filing and continues throughout the bankruptcy case in the form of line-item budgetary control over the debtor's operations.

Creditor Conflict. Tables 7 and 8 offer direct and indirect measures of creditor conflict. Table 7 focuses on an indirect measure—creditor concentration. When most secured debt is held by one party and most unsecured debt by another, creditor conflict is likely to be significant. Although not reported in Table 7, secured debt is highly concentrated: in the median firm, the top three secured creditors hold 100 percent of secured debt (if the debt was syndicated, we count the group as a single creditor). Table 7 shows that unsecured claims are somewhat more dispersed, but still significantly concentrated. In the median firm, nearly 50 percent of the unsecured debt is held by three creditors.

Direct measures of creditor conflict are presented in Table 8, which catalogues the frequency with which the unsecured creditors committee (UCC) and the senior lender (the PCF lender or DIP lender) objected to actions proposed by the debtor corporation. With respect to the UCC, the most common objection (in 34 percent of cases) was to the appointment or compensation of professionals, whose fees reduce returns to unsecured creditors. Objections to the terms of the DIP loan (29 percent) and to asset sales (27 percent) were the next most common. These UCC objections suggest strongly that, in a large number of cases, the managers of the corporation are not acting to maximize the returns of unsecured creditors, who are generally the firm's residual claimants.

While senior creditors obtain substantial control through their loan agreements, they too may object to actions proposed by the debtor corporation. The most common objections are to the appointment or compensation of professionals (25 percent), asset sales (13 percent), and the use of cash collateral (11 percent). The frequency of objections raises doubts again about the conduct of management. In a significant number of cases, managers appear not to be acting to further the interests of either senior or junior lenders. We see, then, creditor conflict as well as manager-creditor conflict.

5. HYPOTHESIS TESTS

Theory. Our primary question is whether (and to what extent) creditor conflict affects the ultimate allocation of the bankrupt firm's assets. This question is important because creditor control and conflict can lead to suboptimal sales or reorganizations.[13] We provide a formal model of creditor conflict and its effect on bankruptcy outcomes in Appendix A. An intuitive sketch of the model is provided below.[14]

Consider, first, the incentives of a secured lender whose claim is *oversecured*, meaning that the firm's assets, if sold immediately, would yield more than the lender's claim. This implies that the lender will be paid in full, even if the sale occurs at a "fire sale" price that could be avoided by waiting, and perhaps reorganizing.

Relative to a strategy that maximizes the value of the bankruptcy estate, the oversecured lender is always biased toward an immediate resolution of the case. If asset value is volatile, the delay caused by the reorganization process can only harm the lender. Any increase in value will offer no benefit, because the lender's payoff is capped by its claim. Decrease in value can be costly, because it may reduce the lender's payoff.

While the oversecured creditor will always prefer an immediate sale, the ability to realize his preferred outcome should depend on the extent to which it is oversecured. When a creditor is *substantially oversecured*, the bankruptcy judge is unlikely to grant requests for an immediate sale. When the value of the firm greatly exceeds the secured creditor's claim, it is very likely that the creditor will be paid in full, even in a reorganization. As the secured creditor becomes only *slightly oversecured*, we expect that the judge is more likely to approve attempts by the secured creditor to move for a quick sale, since its claim is more at risk.

Now consider a secured lender whose claim is *undersecured*, that is, its claim exceeds the sale value of the firm's assets. In this case, the secured lender will not be paid in full in a sale. If the creditor is *slightly undersecured*, its incentives are similar to those

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[13] Lynn LoPucki and Joseph Doherty (2007), for example, argue that bankruptcy sales generate significantly less value for creditors than traditional reorganizations.

[14] Julian Franks and Oren Sussman (2005) develop a similar theory and test it using data on relatively small, distressed companies in the United Kingdom, where senior creditors have much stronger control over the bankruptcy process than in the United States. Their empirical analysis yields results that are consistent with the theory but are not statistically significant.

of the slightly oversecured creditor, since reorganization can increase its payoff only slightly, while a decline in firm value can hurt its payoff substantially. As the secured creditor becomes *substantially undersecured*, it will have incentives that are better aligned with maximizing the value of the estate, since it will capture nearly all the upside from a successful reorganization. The substantially undersecured creditor will be the firm's approximate residual claimant and entitled to the entire value of the firm.[15] Thus, if an illiquidity problem makes reorganization socially optimal, the lender will prefer to reorganize the firm in order to improve its payoff.

Finally, consider unsecured creditors. They will generally exhibit a bias toward lengthy cases, especially reorganizations, when the firm enters bankruptcy with senior secured debt. Longer delay adds to the risk of their eventual payoff, and junior claimants typically exhibit a preference toward greater risk.[16] When the firm has no secured debt, however, unsecured creditors will prefer to make the reorganization-versus-sale decision in a way that is consistent with the maximization of firm value.

This simple analysis of creditor conflict predicts that a bankrupt firm's creditors will make the value-maximizing decision when secured creditors are substantially undersecured or when there is no secured debt.[17] If the capital structure is a mix of oversecured and unsecured debt, then a bias toward sale will result. The intensity of the bias will depend on which party exerts more control over the outcome. We expect that senior creditors will have greater influence over the outcome when their claims are large relative to the value of the firm. Thus, a capital structure with slightly oversecured senior creditors will produce relatively quick cases and yield sales more often than traditional reorganizations. As the power of unsecured creditors increases relative to secured creditors, the reverse should be true.

These observations point to the following hypothesis: because time to resolution is generally longer when a firm is reorganized than when it is sold off, a traditional

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[15] The undersecured creditor's incentives are not exactly consistent with social efficiency. It will still have a slight bias toward a quick sale, all else equal, because unsecured creditors may capture some of the upside risk to a high-value reorganization.

[16] Here, we are employing standard logic that is normally used to describe equity-versus-debt conflicts. Unsecured creditors expect to share most of the gains from a successful (high value) reorganization, but they expect to avoid most of the losses from a low-value reorganization or liquidation. These losses are borne primarily by senior secured creditors. Because of this asymmetry in payoffs, unsecured creditors prefer risk, all else equal. See Michael Jensen and William Meckling (1976).

[17] There are a few important assumptions that are implicit in this argument. For instance, it assumes that secured creditors have full control when they are oversecured. It also assumes that equity will be extinguished with certainty (which is approximately true in our data).

reorganization is more likely among (a) firms with no secured debt and those with undersecured lenders than among (b) firms with oversecured lenders.

This hypothesis would be easy to test if capital structures were randomly assigned to firms before they entered bankruptcy. With random assignment, we could assume that any correlation between the probability of reorganization and secured debt levels is due to dynamics during the bankruptcy case, such as conflict between secured lenders and other participants in the bankruptcy process. In reality, firms select their capital structures. It is possible that the reasons for choosing different secured debt ratios are the same reasons driving firms' preferences over traditional reorganizations and going-concern sales. This is an important issue because most secured debt is incurred within the year or two preceding the bankruptcy filing. There could be a close relationship between a firm's expectations in bankruptcy and its decisions to take on secured debt.

Asset liquidity is one factor that could drive both a firm's decision to take on secured debt before bankruptcy and its preference for traditional reorganization in bankruptcy. The more liquid a firm's assets—due to tangibility or industry conditions (Almeida & Campello 2007)—the more likely it is to take on secured debt.[18] At the same time, a firm with liquid assets is less likely to suffer the kinds of problems (such as asymmetric information) that make a traditional reorganization attractive, as Pulvino (1998) has shown. Asset liquidity, then, explains both capital structure and bankruptcy outcomes. Firms with relatively liquid assets are predicted to have both high secured debt ratios and low probabilities of reorganization. The opposite is expected among firms with relatively illiquid assets: these firms will have low secured debt ratios and high probabilities of reorganization.

Thus, a theory based on asset liquidity predicts a *monotonic* relationship between secured indebtedness and the probability of traditional reorganization. Our theory—based on the divergent preferences of unsecured, undersecured, and oversecured creditors—implies a *non-monotonic* relationship. The probability should be high when this ratio is very low (near zero) and when it is very large (much larger than one). This non-monotonic pattern distinguishes our theory from the pattern predicted by an asset liquidity theory.

Simple statistics. Table 9 presents capital structures and bankruptcy outcomes at different points in the ratio of secured debt to assets: unsecured firms (0), highly oversecured firms (0 – 0.50), moderately oversecured firms (0.50-1.0), and undersecured firms (> 1.0).

Several distinctive patterns emerge. First, unsecured and undersecured firms are much smaller than oversecured firms. For example, the median *unsecured* and

[18] Valeriy Sibilkov (2007) offers recent evidence showing a positive correlation between asset liquidity and secured indebtedness.

undersecured firms had assets worth $4.34 million and $18.56 million, respectively. By contrast, the median *oversecured* firm had assets ranging from $93.63 million (moderely oversecured) to $195.52 million (highly oversecured).

The small size of undersecured firms is somewhat deceiving. Prior to entering bankruptcy, these firms were comparable in size to slightly oversecured firms (for whom secured debt exceeded 50 percent of asset value). During the months prior to filing, undersecured firms suffered a larger decrease in value than any other type of firm. We are unsure why the decline was so steep for these firms.

We see a very different relationship between secured debt levels and secured debt ratios. Focusing on medians, undersecured firms had about as much secured debt ($70.87 million) as moderately oversecured firms ($87.29 million), even though the undersecured firm had much smaller asset value. Thus, variation in secured debt ratios appears to be due more to variation in asset value than in the level of secured debt. This highlights the importance of controlling for asset value in the multivariate analysis reported below.

The most important pattern in Table 9, for our purposes, is the relationship between the probability of reorganization and the ratio of secured debt to assets. We see the hypothesized non-monotonic relationship. The likelihood of reorganization is higher among unsecured (44 percent) and undersecured firms (47 percent) than it is among those with oversecured debt (21 percent for the moderately oversecured and 33 percent for the highly oversecured).[19] Also consistent with our theory, among *oversecured* firms, the probability of reorganization is declining[20] in the ratio of secured debt to assets.

Figure 1 illustrates this non-monotonic relationship using locally weighted scatterplot smoothing.[21] Here, a lowess curve displays the relationship between (i) the probability of reorganization, displayed on the y-axis, and (ii) the ratio of secured debt to assets, expressed in logs, displayed on the x-axis. The lowess curve is a standard procedure for drawing smooth curves through scatter plots. For each observation of the secured-debt-to-assets ratio (x_i), the probability of reorganization (y) is regressed on a small number of observations surrounding x_i. The fitted values from these "local" regressions are connected to form the lowess curve depicted in Figure 1. This procedure is attractive because it allows the relationship between the probability of reorganization

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[19] The difference between undersecured and slightly oversecured firms (50-100%) is statistically significant at the 5 percent level. The difference between unsecured and highly oversecured firms (0-50%) is not significant, probably due to small sample size.

[20] The difference is significant at the 10 percent level.

[21] The curve in Figure 1 is implemented using Stata's default settings, including a bandwidth equal to 0.8. An intuitive description of the lowess procedure is available in Jean Imbs and Romain Wacziarg (2003, 67-68).

(y) and the secured-debt-to-assets ratio (x) to vary across different values of the ratio. The lowess curve in Figure 1 displays a distinct non-monotonic relationship: among oversecured firms, the probability of reorganization is decreasing in the secured-debt-to-assets ratio; among undersecured firms, it is increasing in the ratio.

These patterns are consistent with the hypothesis that secured lender preferences distort real economic outcomes. But if secured lenders can distort economic outcomes, we should see a response from the UCC when lenders propose outcomes that will reduce payoffs to unsecured creditors. Objections to sales, for example, should be more common in cases involving oversecured firms than in those involving unsecured or undersecured firms. Objections should be less common among *unsecured* firms, because unsecured creditors should have significant influence over the bankruptcy process when there are no secured creditors. Objections should be less common among *undersecured* firms for two reasons. First, undersecured lenders are less likely to agitate for a quick sale. Second, when these lenders do agitate for a sale, a court is unlikely to grant a UCC's objection (relative to a case where the lenders are oversecured). This is because undersecured lenders are effectively the firm's residual claimants and will tend to advocate the socially efficient bankruptcy outcome. Because it is not costless to file an objection (a lawyer must be hired, documents must be drafted) and because any objection is likely to be denied, we expect UCC objections to be less common in undersecured firms than in oversecured firms.

These predictions are borne out in the data, as Table 9 shows. Objections to sale occurred in 29 to 50 percent of cases involving oversecured firms. The percentages are much lower (11 percent and 20 percent, respectively) in cases involving unsecured and undersecured firms.

Multivariate analysis. Tables 10 and 11 analyze the probability of traditional reorganization using a probit model. The dependent variable equals 1 when a Chapter 11 case concluded with a traditional reorganization and equals 0 when the case concluded in a sale of the entire firm. The latter category includes liquidating plans of reorganization, section 363 sales, conversions to Chapter 7, and dismissals. The coefficients in Tables 10 and 11 are elasticities, that is, they report the percent change in the probability of reorganization associated with either a 1 percent change in the dependent variable (if it is continuous) or a discrete change in that variable (if it is a dummy).

Table 10 presents models in which the probability of traditional reorganization is a function of the pervasiveness of secured debt, firm size, and other variables. In Columns (1) through (4), the variable "Secured Debt=0" is a dummy equal to one for unsecured firms and zero for all others. Similarly, "Secured Debt > 100% Assets" is a dummy equal to one among undersecured firms and zero among all others. The coefficients for these variables tell us whether unsecured and undersecured firms are more (or less) likely to undergo a traditional reorganization than oversecured firms (the excluded category).

Column (1) displays a simple model in which reorganization is a function of only the pervasiveness of secured debt and the size of the firm, as measured by the log of total assets. Columns (2) through (4) expand this model to include covariates that are largely fixed at the moment a firm enters distress (Column (2)) and covariates that are endogenously determined as the firm becomes distressed and enters bankruptcy (Columns (3) and (4)). Regardless of the specification, the primary result is the same: the probability of a traditional reorganization rises significantly (by 40 and 50 percent) among unsecured and undersecured firms.[22] This is consistent with our theory linking secured creditor preferences and bankruptcy outcomes.

Columns (5) and (6) explore this theory further by distinguishing firms with no secured debt (the excluded category) from those with substantially oversecured creditors ("Secured Debt > 0% but < 50% Assets"), slightly oversecured creditors ("Secured Debt > 0% but < 50% Assets"), and undersecured creditors ("Secured Debt > 100% Assets"). We do not distinguish between slightly and substantially undersecured creditors because our data include too few (twenty) undersecured firms. Our theory predicts that the probability of a traditional reorganization will not differ between unsecured and undersecured firms. Among oversecured firms, the probability should be lower among firms with slightly oversecured debt than among those with substantially oversecured debt. This theory finds some but not complete support. The probability of traditional reorganization does not differ between firms with no secured debt (the excluded category) and those with undersecured creditors, as predicted. But firms with substantially oversecured debt are no more likely to reorganize than those with slightly oversecured debt.

Although this pattern is inconsistent with our theoretical model, it could be due to an arbitrary definition (based on a 50 percent cutoff) of "slightly" and "substantially" oversecured debt. Table 11 explores this possibility. It uses a range of dummies to identify firms that are slightly and substantially oversecured. Columns (1) and (2) report coefficients for the secured debt dummies only; coefficients for other covariates are suppressed. The estimates confirm an inconsistency with our theory: the probability of reorganization is not monotonically declining, among oversecured firms, as the ratio of secured debt to assets increases. This inconsistency may show that our theory is incomplete, or it may show that our dataset is too small to account for the heterogeneity among firms with oversecured debt.

Overall, however, Tables 10 and 11 are consistent with the hypothesis that bankruptcy outcomes are influenced by the divergent preferences of creditors. The results are also inconsistent with at least one alternative theory, based on asset liquidity. An argument based only on asset liquidity would predict that sale probabilities are strictly

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[22] Estimates in Table 9 are robust to various sensitivity tests (including models that remove a proportion—5 or 10 percent—of the smallest and largest cases, as measured by total assets).

increasing in the ratio of secured debt to assets, but we find clear evidence of a non-monotonic relationship.

6. DISCUSSION AND CONCLUSIONS

The data presented here show that, among large privately and publicly held businesses, creditor control is pervasive. Equityholders and managers exercise little or no leverage during the reorganization process. 80 percent of CEOs are replaced before or soon after a bankruptcy filing. 67 percent of firms are sold off. Very few reorganization plans (at most 8 percent) deviate from the absolute priority rule in order to distribute value to equityholders.

Creditors dictate the dynamics of the reorganization process. Senior lenders exercise significant control through stringent covenants contained in DIP loans. Unsecured creditors gain leverage through objections and other court motions.

Bargaining between secured and unsecured creditors can distort the reorganization process. A Chapter 11 case is significantly more likely to result in a sale if secured lenders are oversecured; it is much less likely when these lenders are undersecured or when the firm has no secured debt at all.

We draw two conclusions from these patterns. First, the advent of creditor control has not eliminated the fundamental inefficiency of Chapter 11: resource allocation questions (whether to sell or reorganize a firm) are confused with distributional questions (how much each creditor will receive). Instead of separating the two questions, Chapter 11 gives senior lenders, unsecured creditors, and equityholders leverage over resource allocation issues. Because these parties have distinct preferences, the bargaining process can yield a misallocation of assets. During the 1980s, this problem was noted by Baird and Thomas Jackson (1984, 121), who emphasized the conflict between creditors and equity holders. Today, as our data show, the problem persists, but now the conflict is between senior and junior lenders.

Second, although creditors have obtained significant control over the reorganization process, it is somewhat unclear whether they have complete control. Both senior and junior lenders regularly object to actions taken by the debtor's management. This raises interesting questions about the incentives of managers: if equity holders are not part of the picture, and if both senior and junior creditors are unhappy with the firm's activities, then in whose interest are the managers acting?

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Figure 1: Lowess curve relating the probability of reorganization (y-axis) to the ratio of secured debt to assets, in logs (x-axis).

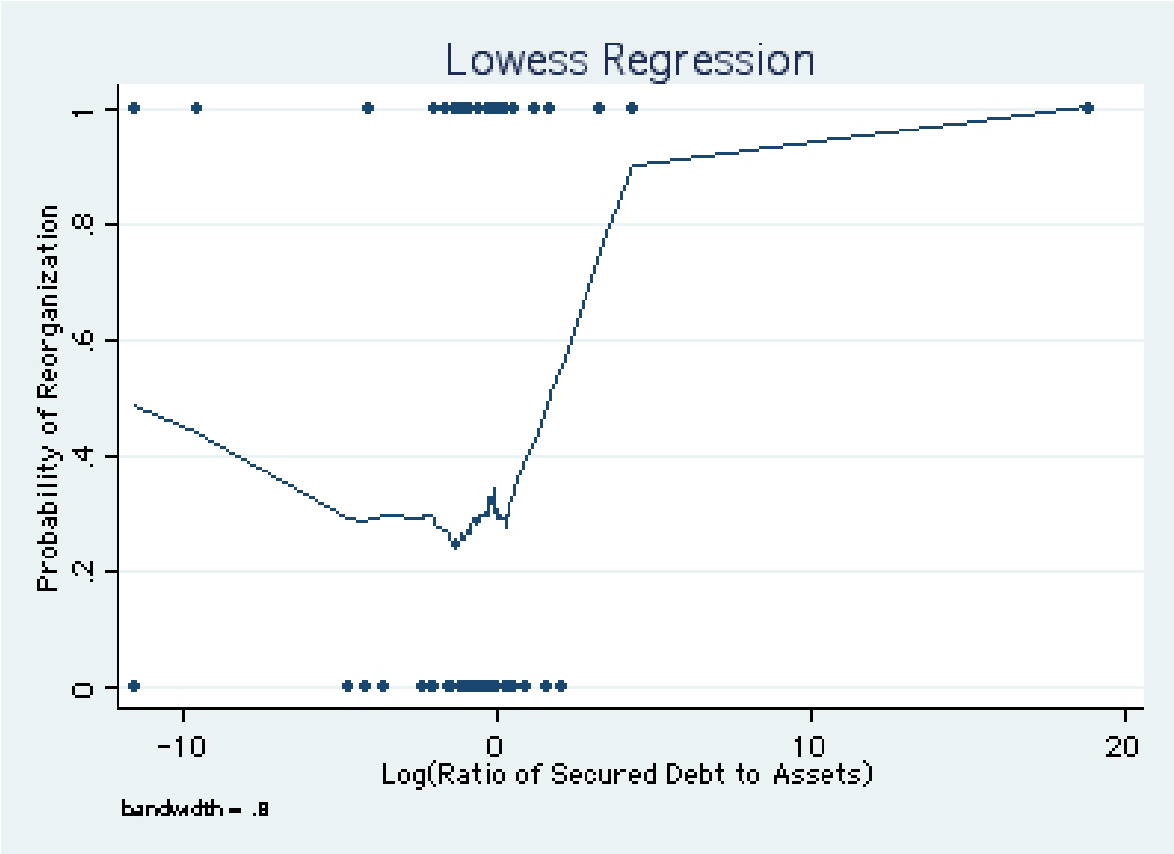

Table 1: Capital Structure of Parent and Subsidiaries, Before and At Filing

	N	Mean	SD	Median	Min	Max
Assets (millions)						
Before (Compustat)	99	662.8	1,447.8	151.2	0.9	10,255.0
At Filing	90	503.7	1,773.0	66.0	0.0	15,859.9
Debt (millions)						
Before (Compustat)	99	574.1	1,256.8	111.6	0.6	8,704.8
Secured Debt (millions)						
Before (Compustat)	96	147.0	477.7	6.0	0.0	4,228.9
At Filing	90	190.3	476.7	35.7	0.0	3,986.8

Table 2: Capital Structure of Parent and Subsidiaries, Before and At Filing

	Ratio of Total Secured Debt to Total Assets		Ratio of Dominant Secured Creditor's Claim to Total Assets	
	N	**Mean**	**N**	**Mean**
No Secured Debt				
Before	97	0.35		
At Filing	88	0.10		
Secured Debt Covers < 50% of Assets				
Before	97	0.55		
At Filing	88	0.40	88	0.40
Secured Debt Covers >50% but <100% of Assets				
Before	97	0.08		
At Filing	88	0.27	88	0.26
Secured Debt Covers > 100% of Assets				
Before	97	0.02		
At Filing	88	0.23	88	0.20

Table 3: Filings and Outcomes

Variable	N	Mean	SD	Median	Min	Max
Types of Filings						
Chapter 7 Filings	153	0.03				
Chapter 11 Filings	153	0.97				
Prepackaged Chapter 11 Case	146	0.09				
Involuntary Filings	153	0.05				
Venue						
Filed in Delaware	153	0.22				
Filed in SDNY	153	0.10				
Legal Outcomes in Chapter 11						
Confirmed Chapter 11	146	0.75				
Chapter 11 Converted to Chapter 7	146	0.14				
Chapter 11 Dismissed	146	0.09				
Case Ongoing	149	0.02				
Economic Outcomes in Chapter 11						
Traditional Reorganization	146	0.32				
Entire Firm Sold Off	148	0.66				
Any Asset Sales	149	0.85				
Case Duration in Chapter 11						
To Outcome	142	15.33	10.92	13.1	1.13	61.9
To Motion for Sale of Firm	25	2.87	3.92	0.9	0	16.2
To Motion for First Sale	106	2.26	3.07	1.33	0	16.57

Table 4: CEO Turnover

Variable	N	Mean
Turnover within one year of filing	134	0.41
Turnover within two years of filing	135	0.70
Turnover during two years after filing	134	0.17
Any Turnover	138	0.78

Table 5: Equity Payoffs

Variable	N	Mean
Equity holders Received Payment	83	0.18
APR Deviation	109	0.08
APR Deviation, excluding warrants	109	0.06

Table 6: Terms of Financing

	N	Mean	SD	Median	Min	Max
Pre-petition Financing						
Had Pre-petition Credit Facility (PCF)	106	0.75				
If PCF, was it Secured?	76	0.97				
If PCF, was it Secured by All Assets?	67	0.90				
Post-petition DIP Financing						
Had DIP Loan	151	0.50				
Used Cash Collateral	152	0.26				
Used DIP Loan or Cash Collateral	152	0.76				
If DIP loan, DIP lender is also the PCF lender?	64	0.53				
Size of DIP Loan						
Maximum DIP Loan	67	92.77	247.98	20.00	0.20	1743.00
DIP Loan ÷ Assets	52	0.87	3.66	0.15	0.01	26.28
DIP Loan ÷ Unencumbered Assets	53	-0.70	11.91	0.14	-82.55	17.23
Priority of DIP Loan						
DIP Secured by All Assets?	63	0.92				
DIP with Admin. Expense Superpriority?	63	0.95				
DIP with Priming Security Interest?	62	0.65				
If DIP with Priming Security Interest, was lender also the PCF lender?	38	0.66				
Financial covenants in DIP Loan						
Budget Limits	58	0.72				
Capital Expenditure Limits	55	0.55				
EBITDA Targets	51	0.49				
Any Financial Covenants	59	0.90				
Other Covenants in DIP Loan						
Automatic Stay Terminates in Event of Default	58	0.90				
Power of Attorney	44	0.27				
Deadlines for Disclosure Statement or Plan	46	0.24				
Sale Requirements	47	0.23				

Table 7: Unsecured Creditor and Equity Concentration

	N	Mean	SD	Median	Min	Max
Unsecured Debt Concentration						
Largest Creditor, Share of Unsecured Parent Debt	86	.39	.30	0.29	0.00	1.00
Top 3 Creditors, Share of Unsecured Parent Debt	81	.51	.31	0.49	0.00	1.00
Equity Concentration						
Largest Shareholder, Share of Equity	102	0.36				
Top 2 Shareholders, Share of Equity	89	0.50				
Equity Committee Appointed	153	0.05				

Table 8: Objections and Motions

Variable	N	Mean	SD	Median	Min	Max
Unsecured Creditors Committee						
Any UCC Objections	153	0.52				
UCC Objected to Professionals	153	0.34				
UCC Objected to DIP Loan	153	0.29				
UCC Objected to Sale	153	0.27				
UCC Objected to Exclusivity Extension	153	0.15				
	153	0.14				
UCC Objected to Plan						
UCC Objected to Lifting Stay	153	0.05				
UCC Moved for Exclusivity Extension	153	0.03				
UCC Objected to Conversion	153	0.03				
UCC Moved for Conversion	153	0.03				
UCC Moved for Sale	153	0.01				
Total UCC Objections	153	1.34	1.53	1.00	0.00	5.00
Primary Secured Lender						
Any DIP/PCF Objections	107	0.46				
DIP/PCF Lender Objected to Professionals	107	0.25				
DIP/PCF Lender Objected to Sale	107	0.13				
DIP/PCF Lender Objected to Cash Collateral Use	107	0.11				
DIP/PCF Moved for Lifting Stay	107	0.09				
DIP/PCF Lender Objected to Exclusivity Extension	107	0.07				
DIP/PCF Lender Objected to Plan	107	0.07				
DIP/PCF Lender Objected to Lifting Stay	107	0.05				
DIP/PCF Lender Moved for Conversion	107	0.03				
DIP/PCF Lender Objected to Conversion	107	0.02				
Total DIP/PCF Objections	107	0.82	1.10	0.00	0.00	4.00

Table 9: Firm Characteristics by Secured Debt Level

	Secured Debt/Assets			
	0 (N=9)	**0 – 0.50 (N=35)**	**0.50 – 1.0 (N=24)**	**> 1.0 (N=20)**
Traditional reorganization	0.44	0.33	0.21	0.47
UCC objected to sale	0.11	0.29	0.50	0.20
UCC objected to sale, conditional on sale	0.20	0.41	0.58	0.33
CEO turnover, 2 years	0.67	0.81	0.75	0.68
Public	0.78	0.77	0.83	0.90
Prepack	0.11	0.09	0.04	0.06
Assets, mean (median)	28.19	1093.16	190.46	105.95
	(4.34)	(195.52)	(93.63)	(18.56)
Compustat assets, mean (median)	79.20	1795.15	480.78	148.69
	(18.89)	(668.67)	(148.69)	(151.2)
Sec. Debt, mean (median)	0.00	238.46	156.37	238.69
	(0.00)	(32.31)	(87.29)	(70.87)

Table 10: Probability of Traditional Reorganization
Probit Model, Reporting Marginal Effects

	(1)	(2)	(3)	(4)	(5)	(6)
Secured Debt = 0	0.424**	0.424**	0.523**	0.570***		
	[0.032]	[0.033]	[0.012]	[0.008]		
Secured Debt > 0% but < 50% Assets					-0.435**	-0.471**
					[0.026]	[0.016]
Secured >50% but < 100% Assets					-0.421**	-0.445**
					[0.014]	[0.011]
Secured Debt > 100% Assets	0.328**	0.349**	0.490***	0.616***	-0.037	0.058
	[0.026]	[0.022]	[0.003]	[0.000]	[0.859]	[0.790]
Assets (millions)	0.061**	0.072**	0.095***	0.099**	0.094**	0.100**
	[0.034]	[0.027]	[0.008]	[0.016]	[0.014]	[0.024]
		-0.122	-0.201	-0.206	-0.200	-0.207
		[0.368]	[0.183]	[0.182]	[0.185]	[0.184]
Publicly Traded		0.135	0.091	0.018	0.091	0.019
		[0.400]	[0.638]	[0.927]	[0.642]	[0.926]
Telecom		0.038	0.147	0.153	0.147	0.153
		[0.808]	[0.391]	[0.391]	[0.391]	[0.391]
Software, Internet, High-Tech		0.062	0.144	0.335	0.141	0.338
		[0.819]	[0.568]	[0.206]	[0.598]	[0.223]
Finance			0.211*	0.238**	0.210*	0.239**
			[0.077]	[0.046]	[0.079]	[0.038]
Pre-petition CEO turnover			-0.237*	-0.286**	-0.236*	-0.286**
			[0.066]	[0.028]	[0.065]	[0.029]
Filed in Delaware			-0.213	-0.265*	-0.213	-0.264*
			[0.159]	[0.059]	[0.158]	[0.059]
Filed in SDNY				0.259**		0.259**
				[0.038]		[0.037]
Had DIP Loan				0.015		0.014
				[0.907]		[0.917]
UCC Objected to DIP Loan				-0.295*		-0.295*
				[0.072]		[0.072]
Equity Committee Appointed	0.424**	0.424**	0.523**	0.570***		
	[0.032]	[0.033]	[0.012]	[0.008]		
Observations	83	83	78	78	78	78

Dependant variable equals 1 if the case resulted in a traditional reorganization and 0 if it resulted in a sale. Robust p-values appear in brackets. * indicates significance at the 10 percent level, ** at the 5 percent level, and *** at the 1 percent level.

Table 11: Probability of Traditional Reorganization, Using Controls in Specification (2) of Table 10: Probit Model, Reporting Marginal Effects

	(1)	(2)
Secured Debt > 0% but < 25% Assets	-0.424***	
	[0.008]	
Secured Debt > 25% but < 50%	-0.300	
	[0.111]	
Secured Debt > 50% but < 75%	-0.327**	
	[0.027]	
Secured Debt > 75% but < 100%	-0.372**	
	[0.021]	
Secured Debt > 100%	-0.055	
	[0.798]	
Secured Debt > 0% but < 10%		-0.314
		[0.240]
Secured Debt > 10% but < 20%		-0.416***
		[0.003]
Secured Debt > 20% but < 30%		-0.300
		[0.153]
Secured Debt > 30% but < 40%		-0.278
		[0.239]
Secured Debt > 40% but < 50%		-0.392**
		[0.028]
Secured Debt > 50% but < 60%		-0.297
		[0.125]
Secured Debt > 60% but < 70%		
Secured Debt > 70% but < 80%		-0.377**
		[0.012]
Secured Debt > 80% but < 90%		
Secured Debt > 90% but < 100%		-0.196
		[0.429]
Secured Debt > 100%		-0.083
		[0.700]
Observations	78	69

Dependant variable equals 1 if the case resulted in a traditional reorganization and 0 if it resulted in a sale. Robust p-values appear in brackets. * indicates significance at the 10 percent level, ** at the 5 percent level, and *** at the 1 percent level.

Appendix A: Formal Model

Consider a firm that has recently filed for bankruptcy; we will refer to the bankruptcy filing date as date 0. The firm faces a simple decision about whether to conduct an immediate sale, or wait and reorganize.

If the firm chooses to sell immediately at date 0, a value X will be realized, which is known by all participants. If it instead chooses to wait, the future value of the firm when the reorganization plan is confirmed (call this date 1) may increase or decrease from its value on the filing date. Suppose that with probability p the firm's value increases to uX by date 1, where u >1, and with probability (1-p) the firm's value decreases to dX, where d <1. We focus on parameter values such that uX > F > dX. Assuming a discount rate of zero, it is value-maximizing to reorganize if and only if

$$G(p) = pu + (1-p)d > 1$$

Or, equivalently, the probability p_e above which reorganization is value-maximizing is given by $p_e > (1-d)/(u-d)$.

We suppose that p is random and, for simplicity, is distributed uniform over the interval [0,1]. This implies that it is efficient to sell and to reorganize the firm with positive probability, depending on the realization of p. Social efficiency is not guaranteed, because parties who exert influence over the decision may have incentives that are distorted by their position in the capital structure.

For simplicity, we focus on the conflict between senior and junior creditors, supposing that equity is sufficiently "out of the money" that their interests will be extinguished in all possible outcomes. This makes the junior creditors the residual claimants in the bankruptcy process. Distributions will be made according to priority: the secured creditor will receive the first F dollars of any realized value, with unsecured creditors receiving the remainder if any exists.

Suppose the senior creditors have allowed claims worth F, secured by all the firm's assets. Then we will say that secured creditors are *oversecured* if F/X < 1, and *undersecured* if F/X > 1. We suppose that bankruptcy outcomes will be determined as follows: management will pursue the efficient outcome unless the secured creditor attempts to force a sale. For concreteness, we suppose this is achieved by making a motion to lift the automatic stay, though other methods of creditor control (such as including covenants in the DIP loan that force the firm to find a buyer) apply as well. If the judge grants the motion, the secured creditor will be able to seize its collateral. We assume that if this occurs, management will agree to sell the firm in advance of the seizure of collateral, knowing that it has no hope of reorganizing. The sale could be a going-concern or piece-meal sale of assets, as either interpretation is consistent with the model.

We assume that the judge's decision to lift the stay depends on the amount owed to the secured creditor, as well as the sale and reorganization values of the firm (X and G(p)X,

respectively). Specifically, the probability that the judge grants a motion to lift the stay is a function of the following ratio:

$$K = \min\{F,X\}/(G(p)X).$$

We denote the probability of approving the motion to lift the stay as L(K), and assume it is always strictly between 0 and 1. We also assume, importantly, that L(K) is increasing in K, which is consistent with the bankruptcy code. To see this, note that the numerator of K, min{F,X}, represents the secured portion of the creditor's claim, which is entitled to adequate protection. The denominator of K, G(p)X, is the expected reorganization value of the firm. If min{F,X} is low relative to G(p)X, then it is more likely that the secured creditor's collateral is protected from a decline in value, and hence the judge will be less likely to find an absence of adequate protection. Conversely, as min{F,X} approaches G(p)X, there is greater likelihood that the secured creditor's claim will decline in value in the reorganization process, increasing the likelihood that the judge will find an absence of adequate protection.

We now analyze the probability of reorganization as a function of F/X, depending on whether the secured creditor is oversecured or undersecured.

Case 1: Secured creditors are oversecured: F/X < 1

When secured creditors are oversecured, they will always make a motion to lift the stay in an attempt to force a sale if management would not propose a sale themselves. To see this, note that if the firm is sold, the secured creditor receives F. If the firm is reorganized, the secured creditor receives pF + (1-p)dX, which is always strictly less than F, since dX < F. Thus, using our assumption that p is distributed uniform between 0 and 1, the probability that reorganization occurs when the secured creditor is oversecured is

$$\Pr(\text{reorg, over}) = 1 - p_e - \int_{p_e}^{1} L(K)dp$$

The second term in the expression, p_e, is the probability that a sale is efficient (this follows from our assumption that p is distributed uniform), so the manager voluntarily chooses it. The third term is the probability that the judge approves a secured creditor motion to liquidate, conditional on management preferring reorganization. Note that in the oversecured case, K = F/(G(p)X). Thus, the integral is strictly increasing in F/X, since L(K) is increasing in K, and K is increasing in F/X for all p between 0 and 1. This implies that Pr(reorg, over) is strictly decreasing in F/X when the secured creditor is oversecured.

Case 2: Secured creditors are undersecured: F/X >1

Unlike Case 1, if the secured creditor is oversecured, he may favor a reorganization if p is sufficiently high. This will be the case if and only if

$$X < pF + (1-p)dX$$

Rearranging this expression, the threshold p* above which the secured creditor prefers a reorganization is given by $p^* > (1-d)/(F/X - d)$. The threshold p* is decreasing in F/X, implying

that as the secured creditor becomes more undersecured, he will favor reorganization for a larger fraction of firms. Using our assumption that p is distributed uniform, the probability of reorganization is

$$\Pr(\text{reorg, under}) = 1 - p_e - \int_{p_e}^{p^*} L(K)dp$$

In the undersecured case, K = 1/G(p). Thus, K does not depend on F/X, but the threshold p* is decreasing in F/X and L(K) is strictly positive for all p. Thus, the value of the integral is strictly decreasing in F/X, implying that the probability of reorganization is increasing in F/X. Note that as F/X approaches u (meaning the secured creditor becomes the full residual claimant), p_e approaches p*, making the value of the integral zero and the probability of reorganization becomes simply 1 – (1-d)/(u-d).

Case 3: No secured debt

Clearly, when there is no secured creditor to make a motion to lift the stay, reorganization will occur if and only if it is efficient. Thus, the probability of reorganization is simply Pr(reorg, no) = 1 – (1-d)/(u-d). Note that this probability is the same as the upper limit in Case 2, where the secured creditor is maximally undersecured.

Our analysis has shown that the probability of reorganization is strictly decreasing in F/X for F/X <1, and strictly increasing in F/X for F/X > 1. Finally, note that when F = X (when the secured creditor is neither under- nor oversecured), Pr(reorg, over) and Pr(reorg, under) are equal, since p* = 1. Thus, the model predicts that the probability of reorganization is non-monotonic in F/X, is minimized at F = X, and is maximized in the cases where there is no secured debt, and where the undersecured creditor becomes the full residual claimant.

Appendix B: Full Sample and Sample Included in Probit Regressions

Firm Name	Court	Filing Date	Included in Regressions?
eBiz Enterprises, Inc.	AZ	9/7/2001	Yes
Southwest Supermarkets LLC	AZ	11/5/2001	Yes
FourthStage Technologies, Inc.	AZ	12/31/2001	Yes
Fountain View Inc.	CDCA	10/2/2001	Yes
Cohen Medical Corp (aka Tower Health)	CDCA	10/4/2001	Yes
House2Home, Inc.	CDCA	11/8/2001	Yes
Kushner-Locke International, Inc.	CDCA	11/21/2001	Yes
BMK, Inc.	CDCA	12/3/2001	Yes
Drkoop.com	CDCA	12/17/2001	Yes
GenSci Regeneration Sciences	CDCA	12/20/2001	Yes
Internet Commerce & Communications	CO	7/31/2001	
North Lily Mining Co.	CO	9/6/2001	
NetLibrary*	CO	11/14/2001	
Amherst Reeves Worldwide, LLC	CO	12/12/2001	
Pensat, Inc.	DC	10/9/2001	
Ardent Communications, Inc.	DC	10/10/2001	
AxisTel (Novo Networks, Inc.)	DE	7/30/2001	Yes
Intira Corp.	DE	7/30/2001	Yes
DIMAC Direct, Inc.	DE	8/2/2001	Yes
Mosler, Inc.	DE	8/6/2001	Yes
Covad Communications	DE	8/15/2001	Yes
Steel Heddle Group, Inc.	DE	8/28/2001	Yes
U.S. Wireless Corp.	DE	8/29/2001	Yes
Breakaway Solutions, Inc.	DE	9/5/2001	Yes
American Tissue, Inc.	DE	9/10/2001	Yes
Family Wonder Holdings, LLC	DE	9/10/2001	Yes
McCrory Corp.	DE	9/10/2001	Yes
MCMS, Inc.	DE	9/18/2001	Yes
International Knife & Saw, Inc./IKS Corp.	DE	9/24/2001	
Exodus Communications, Inc.	DE	9/26/2001	Yes
Assisted Living Concepts, Inc.	DE	10/1/2001	Yes
Federal-Mogul Global Inc.	DE	10/1/2001	Yes
iBEAM Broadcasting Corp.	DE	10/11/2001	Yes
Polaroid Corp.	DE	10/12/2001	Yes
Net2000 Communications Inc.	DE	10/16/2001	Yes
VecTour, Inc.	DE	10/16/2001	Yes
American Classic Voyages, Inc.	DE	10/19/2001	Yes
United Petroleum Corp.	DE	10/30/2001	
General Datacomm Industries, Inc.	DE	11/3/2001	Yes
ANC Rental Corp.	DE	11/13/2001	Yes
Classic Communications, Inc.	DE	11/14/2001	Yes

Firm Name	Court	Filing Date	Included in Regressions?
Global Telesystems, Inc.	DE	11/14/2001	Yes
Burlington Industries, Inc.	DE	11/15/2001	Yes
Sleepmaster LLC	DE	11/20/2001	Yes
Valley Media, Inc.	DE	11/20/2001	Yes
Hayes Lemmerz International, Inc.	DE	12/5/2001	Yes
Lason, Inc.	DE	12/5/2001	Yes
NationsRent, Inc.	DE	12/17/2001	Yes
Greate Bay Casino Corp.	DE	12/28/2001	Yes
Derby Cycle Corp.	DE	8/20/2001	Yes
Wavve Telecommunications	EDCA	8/15/2001	Yes
W.R. Carpenter North America, Inc.	EDCA	12/31/2001	Yes
NetVoice Technologies, Inc.	EDLA	10/17/2001	Yes
Global Technovations, Inc.	EDMI	12/18/2001	
Thermadyne Holdings Corp.	EDMO	11/19/2001	Yes
Digital Teleport/DTI Holdings, Inc.	EDMO	12/31/2001	Yes
Midway Airlines Corp.	EDNC	8/13/2001	
International Total Services, Inc.	EDNY	9/13/2001	
Cyberedge Enterprises	EDNY	10/1/2001	
Burpee Holding Co.	EDPA	9/21/2001	
Wheland Manufacturing Co.	EDTN	11/7/2001	
Nx Networks, Inc.	EDVA	11/2/2001	
Worden, Inc.	EDWA	12/7/2001	Yes
Aquasearch, Inc.	HI	10/29/2001	Yes
Aztec Technology Partners, Inc.	MA	10/5/2001	
ACT Manufacturing, Inc.	MA	12/21/2001	
Arch Wireless, Inc.	MA	12/6/2001	Yes
Railworks Corp.	MD	9/20/2001	
Startec Global Communications Corp.	MD	12/14/2001	
GRG, Inc.	MDFL	8/7/2001	
World Commerce Online Inc.	MDFL	8/20/2001	
Planet Hollywood International, Inc.	MDFL	10/19/2001	
ThermaCell Technologies, Inc.	MDFL	11/7/2001	
Transit Group, Inc.	MDFL	12/28/2001	
BuildNet, Inc.	MDNC	8/8/2001	Yes
PHICO Group, Inc.	MDPA	12/14/2001	Yes
Regal Cinemas, Inc.	MDTN	10/12/2001	Yes
Phoenix Restaurant Group, Inc.	MDTN	11/2/2001	Yes
Wall Street Deli, Inc.	NDAL	10/1/2001	
VelocityHSI, Inc.	NDCA	8/14/2001	
Egghead.com	NDCA	8/15/2001	
At Comm Corp.	NDCA	8/15/2001	
Centura Software Corp. a/k/a Mbrane	NDCA	8/21/2001	
Komag Inc.	NDCA	8/24/2001	
Enlighten Software Solutions, Inc.	NDCA	9/13/2001	

Firm Name	Court	Filing Date	Included in Regressions?
At Home Corporation a/k/a Excite @home	NDCA	9/28/2001	
Netcentives, Inc.	NDCA	10/5/2001	
HealthCentral.com	NDCA	10/9/2001	
Mayan Networks Corp.	NDCA	11/6/2001	
ATG, Inc.	NDCA	12/3/2001	
OmniSky Corp.	NDCA	12/10/2001	
Calico Commerce, Inc.	NDCA	12/14/2001	
Dialpad Communications, Inc.	NDCA	12/19/2001	
Ha-Lo Industries, Inc.	NDIL	7/30/2001	Yes
Cytomedix, Inc.	NDIL	8/7/2001	Yes
Sames Corp.	NDIL	8/17/2001	
ABC-NACO, Inc.	NDIL	10/18/2001	Yes
Advance Mixer, Inc.	NDIN	12/12/2001	
Semiconductor Laser International Corp.	NDNY	10/18/2001	
Planet Entertainment Corp.	NDNY	11/30/2001	
Phar-Mor, Inc.	NDOH	9/24/2001	Yes
Nesco, Inc.	NDOK	11/26/2001	Yes
Sheffield Steel Corp.	NDOK	12/7/2001	Yes
Stonebridge Technologies, Inc.	NDTX	9/6/2001	
NAB Asset Corp.	NDTX	9/26/2001	
Alford Refridgerated Warehouses, Inc.	NDTX	11/6/2001	
CoServ, LLC	NDTX	11/30/2001	
Adesta Communications, Inc.	NE	11/3/2001	Yes
Impower, Inc.	NJ	8/3/2001	Yes
Infu-Tech, Inc.	NJ	8/21/2001	Yes
Response USA, Inc.	NJ	8/30/2001	Yes
Decision Link, Inc.	NV	12/6/2001	Yes
Aladdin Gaming, LLC	NV	9/28/2001	
UCI Medical Affiliates, Inc.	SC	11/3/2001	
Anacomp, Inc.	SDCA	10/19/2001	Yes
Tri-National Development Corp.	SDCA	10/23/2001	Yes
Vitech America, Inc.	SDFL	8/17/2001	
Amerijet International, Inc.	SDFL	8/22/2001	
Renaissance Cruises, Inc.	SDFL	9/25/2001	
Viasource Communications, Inc.	SDFL	11/15/2001	
Rhythms NetConnections, Inc.	SDNY	8/1/2001	
AccuHealth, Inc.	SDNY	8/10/2001	Yes
FutureLink Corporation	SDNY	8/14/2001	Yes
Ames Department Stores, Inc.	SDNY	8/20/2001	Yes
DelSoft Consulting, Inc.	SDNY	8/31/2001	Yes
Dairy Mart Convenience Stores, Inc.	SDNY	9/24/2001	Yes
Cygnifi Derivatives Services	SDNY	10/3/2001	Yes
Swissair Group, Inc.	SDNY	10/9/2001	Yes
Bethlehem Steel Corp.	SDNY	10/15/2001	Yes

Firm Name	Court	Filing Date	Included in Regressions?
eLOT, Inc.	SDNY	10/15/2001	Yes
HMG Worldwide Corp.	SDNY	10/23/2001	Yes
Virtual Growth, Inc.	SDNY	12/13/2001	Yes
Valeo Electrical Systems, Inc.	SDNY	12/14/2001	Yes
Audio Visual Services Corp.	SDNY	12/17/2001	
Lodgian, Inc.	SDNY	12/20/2001	Yes
Nations Flooring, Inc.	SDNY	12/20/2001	Yes
York Research Corp.	SDNY	12/20/2001	Yes
Genesis Worldwide, Inc.	SDOH	9/17/2001	
Spinnaker Industries, Inc.	SDOH	11/13/2001	
Chiquita Brands International, Inc.	SDOH	11/28/2001	
Pioneer Companies, Inc.	SDTX	7/31/2001	
PowerBrief Inc.	SDTX	10/2/2001	
Metals USA, Inc.	SDTX	11/14/2001	Yes
Luminant Worldwide Corp.	SDTX	12/7/2001	Yes
Arrow Dynamics, Inc.	UT	12/3/2001	
Quality Stores, Inc.	WDMI	10/20/2001	Yes
Trism, Inc.	WDMO	12/18/2001	Yes
Brylin Hospitals, Inc.	WDNY	10/29/2001	
Homeland Holding Corp.	WDOK	8/1/2001	
Edgewater Steel Ltd	WDPA	8/6/2001	
The Carbide/Graphite Group Inc.	WDPA	9/21/2001	
Tristar Corp.	WDTX	8/8/2001	Yes
Play By Play Toys & Novelties, Inc.	WDTX	11/1/2001	Yes
Westar Financial Services	WDWA	12/20/2001	Yes