

The Ownership and Trading of Debt Claims in Chapter 11 Restructurings*

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Abstract

This paper explores a novel data set that identifies over 71,000 investors holding debt claims of 136 companies filing for U.S. Chapter 11 bankruptcy protection during the period 1998 to 2009. We investigate how concentration in debt ownership relates to Chapter 11 restructurings, and how claims trading during the restructuring influences ownership concentration. Consistent with theoretical work, we find that the overall concentration of debt ownership increases the speed with which a restructuring is completed, both via pre-filing, out-of-court prepack/prearranged restructurings and traditional in-court proceedings. Increased concentration also leads to more frequent sales and lower observed recovery rates; an artifact we relate to strategic valuations by concentrated creditor classes. Our results indicate that concentration of debt ownership increases significantly over the course of the case. Alternative investors (assets management firms, hedge funds and private equity firms), an already relatively concentrated investor group, are the largest net buyers of claims in bankruptcy. The largest net sellers are dispersed nonfinancial corporations. Furthermore, we establish that trading during the case leads to higher concentration of ownership at the time of voting.

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Until recently, the prevailing wisdom among finance and legal scholars has been that filings under Chapter 11 of the U.S. Bankruptcy Code lead to slow, inefficient, and distortive restructurings of corporations in financial distress.¹ Much of the conventional wisdom rests on the idea that Chapter 11 vests too much power in the debtor—specifically the bankrupt firm’s management and current equity holders—who have a strong bias to continue running the firm. According to this view, creditors are static and have limited ability to liquidate the firm or transfer control of the assets when it pays to do so.

A newer line of thinking suggests that the nature of Chapter 11 reorganizations has changed considerably since scholars first examined Chapter 11. Based on anecdotal evidence, Baird and Rasmussen (2002, 2003) and Skeel (2003) argue that today’s Chapter 11, far from being debtor driven, is guided by creditors that have a significant influence on the restructuring of the Chapter 11 firm. Creditors set in motion a restructuring plan prior to filing, participate actively in the Chapter 11 reorganization, finance the turnaround with new money, and either push to sell the firm’s assets or take a significant ownership stake in the reorganized firm. Active debt markets aid this process by allowing investors to bet on the outcome of the restructuring and to compete for eventual control of the firm by acquiring the debt claims of the bankrupt firm. Indeed, according to the Baird and Rasmussen (2002, 2003) and Skeel (2003) view, this “market for corporate control” in distressed credit is now an integral part of the Chapter 11 reorganization.

Yet, little is known about the ownership structure of bankrupt claims, much less the influence that this structure can have on a Chapter 11 restructuring. This paper uses a novel data set that identifies the investors holding Chapter 11 claims to examine the role creditors play in affecting Chapter 11 outcomes. Specifically, we collect *complete* investor identities via two “snapshots” of holdings recorded during the Chapter 11 proceedings of 136 large debtor firms that filed for bankruptcy protection between 1998 and

¹ For instance, among finance scholars, Jensen (1991) argues that Chapter 11 “is expensive... exacerbates conflicts among different classes of creditors [and] often takes years to resolve individual cases” (p. 29), while Aghion, Hart, and Moore (1992) call Chapter 11, “inefficient and biased towards reorganization” (p. 524). Legal criticisms include Baird (1986), who states that “the entire law of corporate reorganizations is hard to justify under any set of facts and virtually impossible when the debtor is a publicly traded corporation” (p. 128), and LoPucki (1993), who argues that Chapter 11 “permits court protection for an excessive period of time” and that “the process has been disintegrating.” (p. 731).

2009. The snapshots, taken at the filing of the debtor's Schedule of Assets and Liabilities and the tabulation of votes on the debtor's Plan of Reorganization, cover claims filed by 71,358 different investors. For a subset of the claims, we also observe actual trades in and out of the instruments by investors during the Chapter 11 case.

We identify investors by institutional type and measure the concentration of ownership of Chapter 11 claims, both at the level of the bankrupt firm, and within an institutional type. We then study how the institutional structure and concentration of the capital structure relate to the evolution and outcome of the case, and how trading of claims influences the concentration of creditors in the capital structure. In the process, we document the rich set of different types of investors active in the market for distressed debt. Our institutional typology differentiates financial investors from non-financial corporations, government entities, and individuals, and separates financial investors according to whether they are a traditional commercial or investment bank, a custodian bank (holding bonds for investors) a hedge fund, a private equity fund, an asset management firm that specializes in investing in distressed debt, or an insurance or real estate company. Our strategy for identifying investors works through subsidiary and separate funds—including collateralized debt and loan obligation (CDO and CLO) structure—up to the parent investor/manager. To our knowledge, this is the first study to provide a comprehensive examination of the ownership structure of debt claims of financially distressed firms.

While focusing on firms that file for Chapter 11, our paper makes three contributions relevant to the more general literature on workouts and reorganizations of distressed firms:

First, we provide insight into the ex-ante efficiency of complex capital structures. Bargaining outcomes may be inefficient when distressed firms have many dispersed creditors, particularly when claims of these creditors differ in seniority and maturity. Gertner and Scharfstein (1991), for example, argue that complex creditor structures are likely to lead to excess liquidation of viable firms. Overall, the theoretical papers have proven very influential, and have been extended to derive full-fledged theories of how firms should design their ex-ante capital structures (e.g., Bolton and Scharfstein, 1996). However,

the theoretical work had largely abstracted from the possibility of claims trading in bankruptcy.² By consolidating claims and altering the claims structure, trading can have an important impact on the efficiency of bargaining. Our paper shows that ownership concentration in the capital structure has a significant influence on Chapter 11 restructurings and that claims trading during the case increases the concentration in that capital structure.

Second, by relating the identity and concentration of investors across the Chapter 11 debt claims to the outcome of the Chapter 11 case, our paper provides first insight into whether distressed debt trading is associated with improvements to the ex-post efficiency of the restructuring. For instance, bankruptcy practitioners—including judges, attorneys, and advisors—are split as to whether distressed debt trading helps or hinders the restructuring process. On the one side, practitioners argue that conflicts among sophisticated investors that have bought claims across the capital structure only serve to slow down the bargaining process. These investors are often accused of “gaming” the system, placing only short-term bets, litigating over small potential awards, and of scamming smaller, unsophisticated investors.³ On the other side, practitioners argue that the distressed debt traders demand a higher quality restructuring, force more credible turnarounds, and through competition for claims, push higher the prices paid to claimants wishing to forego waiting until the restructuring is complete to collect their distribution.⁴

Third, by identifying and documenting the behavior of investors that buy Chapter 11 claims—so-called “distressed debt” or “vulture” investors—we provide summary statistics on a little-known market that today could emulate the auction-market mechanisms proposed by scholars for maximizing the ex-post efficiency of distressed workouts. For instance, competitive trading in Chapter 11 claims is analogous to bidding on options to obtain “reorganization tickets” as advocated by Bebchuk (1988) and

² One notable exception is Bond and Eraslan (2010).

³For example, in a recent criticism directed at the lack of transparency associated with claims trading, Robert Gerber, Bankruptcy Judge for the Southern District of New York (Manhattan), characterizes distressed debt investors as: “not necessarily bad... but like investors generally, have their own agendas, which not infrequently consist of simply maximizing returns for themselves, in the shortest possible time horizon, without a broader regard for spending the time and effort necessary to stabilize the business, and/or maximize its value for the good of all,” (Gerber, 2009; pp 2-3). See also Miller (2002), Kurtzman (2006), and Rosenberg and Riela (2008)

⁴ For instance, see Mike Spector and Jeffrey McCracken, “Distressed Takeovers Soar,” *Wall Street Journal*, August 11, 2009; Vyvyan Tenorio, “Diamond for All Seasons,” *TheDeal.com*, September 29, 2006.

Aghion, Hart, and Moore (1992). The prices at which claims across the capital structure trade can provide an estimate for the reorganization value of the bankrupt firm. While we cannot observe the prices paid for acquiring claims in our sample, we do observe how investors concentrate in different, strategic classes within the capital structure. For instance, we document the influence of institutional type and concentration on the “fulcrum” claims in the capital structure, defined to be the class of impaired claims receiving the largest proportion of equity in a reorganized firm. Because investors in the fulcrum security become the new owners of a reorganizing firm upon exit, strategic plays for the fulcrum class has important implications for the outcome of the reorganization. Overall, we find that a transferred claim is about 11% more likely to be a voting claim.

The results of our paper can be summarized as follows. First, financial investors identified as active “alternative” investors, including asset management firms, hedge funds, and private equity funds, own a relatively small portion of the debt claims of a bankrupt firm, holding 5.1%, 0.4%, and 1.6% of all claims at the onset of the bankruptcy case. Non-financial corporations (30.5%) and banks (15.7%) own the largest holdings of all debt claims at the case start. Nevertheless, by the time that claimants vote on a bankrupt firm’s Plan of Reorganization, alternative investors double their representation in the firm’s capital structure, while non-financial corporations reduce substantially their holdings of bankruptcy claims.

Second, the concentration of debt ownership increases significantly over the course of the case, with much of the increase coming through claims purchases of voting claims by relatively concentrated alternative investors and selling of these claims by relatively dispersed nonfinancial corporations. Using a subset of claimants that we can unambiguously track from beginning of the case to the vote tabulation, we establish a positive and significant relation between the amount of trading observed during the case and the increase in concentration of the holdings of the claims at the time of voting. That is, trading during the case leads to higher concentration of ownership in the debt claims. We also show that alternative investors are net buyers in the observed trading, while nonfinancial investors—particularly

nonfinancial corporations—are net sellers, and that buys by asset managers are positively and significantly related to increases in concentration at the time of the vote on the Plan of Reorganization.

Third, the concentration of creditors across the capital structure appears to matter for restructuring outcomes in ways that are consistent with theories suggesting the higher concentration lowers negotiation costs (Berglof and von Thadden, 1994; Bolton and Scharfstein, 1996). We show that the likelihood of observing “prepackaged” or “prearranged” bankruptcy increases with the concentration of the capital structure measured at the outset of the bankruptcy case. Subsequently, the bankruptcy process moves much more quickly than in cases not filed as pre-pack/prearranged process. But a concentrated capital structure also improves the speed at which a *non*-prepack/prearranged restructuring occurs, and increases the likelihood that the firm is sold as going-concern during the bankruptcy process.

We also show that concentrated capital structures are associated with *lower* overall recovery rates to creditors, measured at the time of the bankruptcy exit. This result is driven extensively by the estimated recovery rate of the fulcrum security class. While recovery rates on senior classes of voting securities are positively related to concentration within that class, recovery rates within the fulcrum security class are lower when that class is more concentrated. We hypothesize that this finding is due to fulcrum investors that behave strategically by accepting a lower estimated recovery rate in exchange for a larger stake in the equity of the exiting firm.

Fourth, we show that ownership of claims by certain groups of institutional investors can influence the Chapter 11 case, both through the shares held by these investors and by the concentration within the groups of investors. In particular, higher bank ownership is associated with faster exits from Chapter 11, but lower recovery rates. Because banks often sit at the top of the capital structure with secured positions in the firm, this finding is consistent with banks opting for fast Chapter 11 exits that may not maximize overall recovery rates.⁵ However, it could also be the case that banks work together

⁵ This finding goes against theories that suggest that senior positions held by banks imply higher recoveries (e.g., Park, 2000) and the evidence that recovery rates are increasing in the proportion of the capital structure funded by bank loans (Carey and Gordy, 2009). Our paper distinguishes between loan *claims* originally held by banks, which are almost always senior and receive nearly full recoveries, and banks as investors in claims, including loan claims

with fulcrum security holders to “low-ball” estimated recovery rates as a strategy for awarding control to the fulcrum security holders, while assuring that the banks get back a large recovery on their own claims.

Our paper is related to a new set of works reexamining the efficiency of Chapter 11 restructurings. Bharath, Panchapegesan, Werner (2007) show that the median time spent in bankruptcy and the frequency of absolute priority deviations declined significantly from the 1980s through the early 2000s, and that management turnover in bankrupt firms increased over the same period. They attribute their findings to increased debtor-in-possession (DIP) financing—new money provided by creditors—and to creditor-induced bonus payments to managers tied to speeding up the reorganization. Ayotte and Morrison (2009) show that the likelihood of observing a Chapter 11 sale versus a reorganization increases in the value of the collateral position of the senior lender. They attribute their findings to the control exerted during the process by the senior pre-bankruptcy lender. Neither Bharath, Panchapegesan, Werner (2007) nor Ayotte and Morrison (2009) observe the identities of the creditors and the extent to which investors affect the Chapter 11 process and outcome.

The studies which are closest to our own are Hotchkiss and Mooradian (1997), who examine the activities of “vulture investors” (defined from a list of 75 distressed debt investors) in distressed companies, and Jiang, Li, and Wang (2009), who track hedge fund participation in firms that file for Chapter 11. Hotchkiss and Mooradian (1997) find that vulture investors positively impact post-distress performance when they become involved in firm management, and their purchase of claims are associated with positive abnormal returns on these claims. Jiang, Li, and Wang (2009) relate the incidence of hedge fund holdings to the likelihood of emergence, absolute priority deviations, and management retention and turnover. In contrast to these papers, which rely on Securities and Exchange Commission filings and news stories for information on the holdings of claims, we follow a much broader set of investors and are able to observe direct holdings and transfers of claims through bankruptcy filing information.

but also in other unsecured claims. Our results suggest that overall recovery rates decline in bank ownership, although the recoveries on bank claims themselves are still very high.

The rest of the paper proceeds as follows. Section I describes the data. Section II presents results for the distribution of the institutional ownership. Section III analyses trading activity in bankruptcy and its connection to the concentration of claims at voting for the reorganization plan. Section IV analyses effects of ownership concentration on bankruptcy outcomes and section V concludes.

I. Data

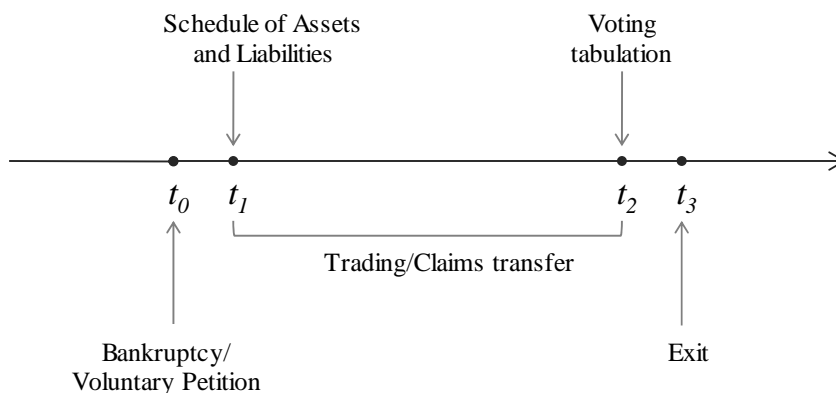
Our goal in collecting data for this study was to observe a complete set of creditors trading and holding claims against a representative sample of U.S. corporations filing for Chapter 11 bankruptcy protection. Because the bulk of the trading and ownership of Chapter 11 claims are in unregistered instruments traded over-the-counter, no one reliable source exists for observing the identity of the claimants through time pre-bankruptcy. Even for some Securities and Exchange Commission (SEC) registered securities, such as publicly traded bonds, only partial information is available on the identities of the investors.⁶ To overcome these obstacles, we rely on a sample of “snapshots” of reported creditor holdings that occur at two points during the bankruptcy process: (1) at the filing of the Schedule of Assets and Liabilities shortly after the bankruptcy case begins, and (2) at the point that votes from claimants are tabulated for purposes of accepting or rejecting the bankrupt firm’s Plan of Reorganization. Figure 1 provides a timeline representation of when these snapshots are recorded.

Data for this study were made available by the four leading providers of restructuring and insolvency administrative services: BMC Group, EPIQ Bankruptcy Solutions, Kurtzman Carson Consultants (KCC) and Donlin Recano & Company. These professional service firms are retained by the bankrupt company to record and manage the claimant databases during the course of the bankruptcy case. These firms provided to us electronic files of Schedules of Liabilities, credit registers (which track creditor-initiated amendments to the Schedule of Liabilities), and vote tabulations. Importantly, these firms also provided

⁶ Unlike public equity holdings, which require holdings disclosures by all insiders and owners of more than 5% of outstanding shares, public bond holders are typically not required to disclose their holdings or trades. The exceptions to this rule are the bondholdings of insurers, which must be disclosed to the National Association of Insurance Commissioners, pension funds and the bondholdings of registered mutual funds, which must be disclosed to the SEC.

information on the trading of claims via “assignments” that are filed in court as a record of the transaction between parties holding bilateral claims. We describe each of these data sources in more detail below. All of the claims data that we receive are available through the U.S. Public Access to Court Electronic Records (PACER) system of bankruptcy filings.⁷

Figure1
Bankruptcy timeline



A. *Snapshot 1: Schedule of Assets and Liabilities and Credit Register (t_1)*

A Chapter 11 case begins with the filing of a petition in the federal bankruptcy court in the bankruptcy district in which the firm is either headquartered, incorporated, or in which the firm does a significant amount of business. (Large firms often file in the Southern District of New York in Manhattan or Delaware Bankruptcy Courts). Shortly after filing the petition, the debtor is required to file a Schedule of Assets and Liabilities, which—as the title suggests—contains a detailed description of its assets as well as a list of all creditors, together with the amount and nature of their claims. Once the Schedules are filed

⁷ All documents disclosed in a bankruptcy filing—including Schedule of Assets and Liabilities, and voting tabulations—are public information and can be accessed on-line using PACER. This makes PACER an immensely rich source of information, however the documents are not classified in any way and instead are stored as separate PDF files numbered according to how and when they appear in the court docket. As a result, there are thousands of scanned documents per each case, and there is no other way of finding the relevant information, but by individually reviewing each one of these files. For example, to give a sense of how the list of files could grow very rapidly, each filing of proof of claim would be entered as a separate document, and so would be the respective court decision. Chang and Schoar (2006) are able to use computerized text search classification algorithms to code a number of bankruptcy characteristics by searching for certain key words and phrases in PACER. For our analysis, which relies on identification of individual creditors and detailed bankruptcy outcomes, we are not able to implement similar techniques.

and therefore made public, any claimants to the case that are omitted from the Schedules can separately request that their claims be recognized via a credit “register”. Together, the Schedules and credit register serve as a record of each asserted claim, including the amount of the claim, type of claim, and the name and address of the claimholder. The Schedules and register give us the first snapshot of creditors immediately following the bankruptcy. For ease in exposition, we denote the time in the bankruptcy process referring to the filing of the Schedules and register as t_1 .

The Schedules and register contain a comprehensive list of *all* claims at the beginning of the bankruptcy process. Information on each claim is limited to the name of the creditor, the amount of the claim, and whether the claim is administrative, priority, secured, or unsecured. In addition, we note that there are often duplicate claims filed in the register. This can occur when a parent and subsidiary both register the same claim or if the same claim is filed for multiple sub-debtors. Registered claims can also be disputed by the debtor and later disallowed by the court. In all of our analysis, we identify and eliminate, to the extent possible, all duplicate and disallowed claims.

B. Snapshot 2: Plan vote tabulations (t_2)

An important part of a bankruptcy restructuring is the Plan of Reorganization, which details how a bankrupt firm plans to restructure its operations and capital structure to make it a viable entity going forward. More specifically, the Plan contains estimates of the enterprise value of the company or the expected proceeds from the sale of the firm and how the company plans to distribute the enterprise value to the existing claimholders. The distribution of value usually comes in one of three forms—cash, new debt, or new equity—and is distributed roughly according to the absolute priority rule (APR), although claimants and the debtor have the discretion to bargain away from this distribution within some limits.⁸ In order for this Plan to be confirmed by the bankruptcy judge without a “cram-down” (a forceful confirmation over the objections of the junior classes), the Plan must be approved by all claimant classes

⁸ The distribution must be “fair and equitable” in the eyes of the court. Specifically, the distribution cannot pay a claimant class less than they would receive in a hypothetical liquidation, nor can it pay a subordinated class a higher recovery rate than a class that is senior.

that are eligible to vote for the Plan. Eligible classes include all “impaired” claimants—those not receiving 100% of their principal and interest immediately following exit—that are receiving some nonzero amount under the Plan.

Voting for the Plan takes place through a balloting process managed by restructuring and insolvency administrators, including the four firms providing data for this project. Our second snapshot comes through the record of the votes of eligible claimants to confirm or reject the plan, sorted within each voting class. The tabulations include the identity of the voting claimant, the number of claims being voted, the amount of the claim, and the vote (approve, reject, or abstain). We denote the time in each case when votes are tabulated as t_2 .

From a data quality perspective, the voting tabulation snapshot is superior to the snapshot from the Schedule of Assets and Liabilities and credit register in two important ways. First, voting tabulations are by necessity very clean datasets because only creditors certified eligible are allowed to vote, and no duplicate claims are allowed. Second, in voting tabulations we can glean information on the type of securities held in each voting class based on the description given in the Disclosure Statement, which is a background document filed along with the Plan.

Since not all claimant classes get to vote on a plan, we cannot observe the full set of claimants at t_2 . In general, two groups of claimants are not allowed to vote on the Plan, those that are unimpaired and those expected to receive zero recovery under the Plan (i.e., the most senior and the most junior tail of the claimants). Unimpaired classes, when they exist, are typically the most senior and secured classes and classes in which the amount of claims is very small.⁹ Second, any class that will receive nothing under the Plan is deemed to automatically reject the Plan and is not entitled to vote. Classes projected to receive nothing under the Plan are the junior claimants that are completely out of the money with respect to the estimated value of the reorganized company. Because they are not entitled to vote, these two types of claimant classes are given little weight by the judge during the Plan confirmation hearing; however, the

⁹ Often, senior secured classes will be deemed impaired and get a vote even though they are expected to receive a 100% recovery. They are deemed impaired because they may not receive their distribution immediately following the exit, or for some other technical reason.

bankruptcy judge will check to assure that the Plan is fair and equitable to these classes, meaning that these classes are being treated at least as well as they would be under a liquidation.

Clearly, acquiring voting claims has large strategic value to investors wishing to approve a Plan that provides a roadmap of future payouts and the distribution of new equity ownership in the firm. There are also strategic incentives to acquire claims to block a Plan since it only takes a one-third ownership stake in one voting class to have the Plan blocked, or to force a cram-down.¹⁰

C. Claims transfers

In addition to the data observed in these two snapshots, we also observe the trading of claims for a subset of the claimants in our sample. The subset is all bilateral claims; that is, these are claims which are unique to one creditor and that are not part of a registered security, debt issuance, or loan. All transfers of bilateral claims, often referred to as “assignments,” must be registered with the court and therefore are observable by the claims administrators. Bilateral claims include all trade credit, rejected lease claims, tax claims, tort claims, and a myriad of other claims against the bankrupt firm. What we do *not* observe are trades involving claims that are administered by agents or custodians, such as syndicated loans or public bonds, because courts allow the administrators to track keep track of these ownership changes on behalf of the court.

Because these take place after the bankruptcy filing, we are specifically interested in the effect of bilateral claims trading on the consolidation of ownership between the time of filing of Schedules and the vote on the Plan of Reorganization. While we do not observe trading in loan claims and bonds, we expect the trading interest in loans and bonds to correlate well across firms with the observed trading in bilateral claims for two reasons. First, the bilateral claims are typically general unsecured claims that lie in the middle of the capital structure. This is a prime trading area, typically “in the money” but impaired. Thus general interest in a firm’s bilateral claims should signal interest in other claims in the capital structure.

¹⁰ For a given class to approve the Plan, it must have a “yes” vote from 1/2 in number and 2/3 in amount of the voting claimants in that class. A Plan can be approved by the judge when all voting classes, or nearly all, vote in favor of confirmation. If a Plan fails to be confirmed, the judge can “cram-down” a Plan as long as at least one voting class approves of the Plan. In practice, cram-downs are rare.

Second, the over-the-counter trading we observe will be less active than in loans and bonds, which have more active secondary markets. Thus, we believe the volume of observed claims trading in a given firm likely serves as a lower bound on the volume of unobserved claims trading in loans and bonds.

We use the transfer data to draw connections between claims trading in bankruptcy and changes in the ownership and concentration between points t_1 and t_2 . To the extent that bi-lateral claims trading is correlated with overall claims trading, our findings shed light on how the trading of claims in bankruptcy affects bankruptcy outcomes via changes in the capital structure of the debtor. Because we only observe a partial picture of the claims transfers, our calculations represent a lower bound on the trading activity in Chapter 11.

Our data on claims transfers varies according to the provider of the data. Epiq keeps track of trades within the claims register, while Donlin Recano only note transfers for voting claimants. Meanwhile, KCC keeps the transfer records in a separate file altogether. Only BMC provides data that has the register, transfers, and voting tabulations all connected in a single dataset. Thus, for all debtors, we can observe both the sellers and buyers of the recorded bilateral claims, as well as the amount of the claim, but only for cases administered by BMC can we observe whether the transferred claim was able to vote on the Plan at t_2 .

D. Bankruptcy and financial data

To construct our sample, we relate the identity and concentration of ownership in the bankrupt firms to characteristics of the 136 Chapter 11 restructurings. We collect data on the restructuring characteristics via two primary sources: *The Deal Pipeline*'s Bankruptcy Insider archive of Chapter 11 restructurings and from the Disclosure Statements filed with a Plan of Reorganization near the end of a bankruptcy case. In some cases we also rely on searches of news articles related to the filing and to SEC filings for publicly traded firms. For financial information on the firms, we use Deal Pipeline (for asset and liabilities at the time of filing), Compustat (for publicly traded firms), and CapitalIQ (for private firms).

Table I provides a summary of the Chapter 11 restructurings (Panel A) and the financial characteristics of the firms (Panel B). The final sample covers the period 1998 through August 2009, when we received the last transfer of data from the restructuring and insolvency administrators. Appendix Table A.I lists the 136 firms, sorted by industry, along with some important characteristics of their Chapter 11 restructuring.

As shown in Panel A of Table I, the time pattern of bankruptcies in our sample is consistent with the unconditional distribution of bankruptcies in the U.S., with 2008 being the year with the most filings. Our sample has broad geographical coverage, with 40% of cases filed in Delaware, 23% filed in Southern District of New York, which are the largest court districts in the U.S., and the remaining 37% filed in 28 separate courts across the U.S. Consistent with the recent statistics reported by Bharath, Panchapegesan, Werner (2007), firms in our sample exit relatively quickly from Chapter 11, in just over a year.

A substantial proportion (20%) of the observed bankruptcies in our sample are filed as “prepackaged” or “prearranged” filings. A prepackaged bankruptcy, or “pre-pack”, is a filing in which all of the work of the bankruptcy reorganization, including all requisite disclosures, the Plan of Reorganization and Disclosure statement, and a tabulation of votes is completed in advance of the filing via out-of-court negotiations between the bankrupt firm and all impaired claimants. Thus, barring any unforeseen objections, the pre-pack Plan can be confirmed shortly after filing once the judge has reviewed the case details. But in our sample, pre-packs are relatively rare. The more common hybrid is the prearranged filing which has a substantial amount of the restructuring worked out with creditors prior to filing and may have what appears to be sufficient votes to confirm a Plan, but may still have hold out creditors who oppose the Plan, or at least are unwilling to commit in advance. A pre-arranged filing means that much of the restructuring has already been completed out of court, but that substantial details still need court oversight before a Plan can be approved.

Just under half (47%) of our sample firms exit via a traditional reorganization, the remainder are either sold whole to a financial (10%) or a strategic (13%) buyer via a 363 sale, or liquidated piecemeal (31%). Across reorganizations and going-concern sales, financial investors are the dominating owner of

bankrupt firms at exit, accounting for about two-thirds of control transfers. Among reorganizations, the fulcrum class of voting claims—the class of claimants that receives the controlling interest in equity at exit—is most often the class holding senior lender claims (28%) or the class of bondholders and noteholders (23%). But controlling equity also goes to general unsecured creditors (which all unsecured claimants not separated off into a distinct class) a fair amount of time (19%), as well as the original equity holders (18%).

Consistent with observed variation in the identity of the fulcrum class, recovery rates to claimants in the case also show wide variation. We calculate firm-level recovery rates two ways: (1) by dividing the estimated enterprise value (in the case of a reorganization) or the total sale proceeds (in the case of a 363 sale or liquidation) by the value of liabilities reported at filing, and (2) by calculating the weighted average recovery rate of the voting class, where the weights correspond to the pre-filing face value of the claims in that class. Both measures produce a similar distribution that shows average and median recovery rates to be around 50% of the original claims' values, with standard deviations of the same order of magnitude.

Panel B of Table I gives further information on the pre-bankruptcy characteristics of the firms in our sample. The bankrupt firms tend to be large and skewed to the right with a mean asset size of over \$2 billion and median size of \$250 million.

[TABLE I]

E. Identifying and matching creditor types

Consolidated into one database, we have information on the identities of 71,358 unique creditors holding 121,843 claims. In order to reduce the data to a manageable size, we exclude all claims of less than \$50,000 from our study. After removing these smaller claims, as well as all withdrawn, disallowed, and duplicate claims we are left with 74,290 claims. The information available through the bankruptcy filings only records the name of the creditor and the type and size of its claims. Thus, using creditors' names, for each claimant in our database we create a parent identifier and assign a parent institutional

type. For example, Citi Global Markets Inc. and Citi Capital Bankers Leasing are consolidated under the same parent, Citigroup, and given the same parent institutional type, Bank Holding Company (“bank”). These classifications were achieved using information from Capital IQ’s database on parent subsidiary relationships. Overall, we are able to classify 96.8% of the creditors’ names, or 98.3% of the total value of claims.

At the parent level we identify thirteen institutional types, nine financial and four non-financial types. The institutional types are bank, bank as custodian, asset management, private equity, hedge fund, insurance, real estate, other financials, corporations, government, individuals, and intercompany or insiders.

The category “bank” includes commercial banks, investment banks, and banks identified today as universal banks, along with any subsidiary institutions that are owned wholly within an bank or financial holding company structure. The “Bank as custodian” captures custodians and trustees of public bonds. We identify these cases via the institution name (e.g. the name is entered as “Bank of New York as trustee”) as well as by reading Disclosure Statements, which often give information on the amount of public bonds and the identity of the custodian banks. We treat these institutions separately from other bank holdings because the names we observe are not the ultimate investors in the securities, but custodians reported on behalf of the investors. Bondholders are often able to hide behind their custodial relationships throughout the case and are typically unknown to the bankrupt firm, other investors, or even the original indenture trustee.¹¹ Thus, for the purposes of the paper “Bank as custodian” should be interpreted as “unknown bondholders”.

We identify other institutional types using information in Capital IQ , the *BarclayHedge* Hedge fund database, a database containing over 14,000 hedge fund names, and information on Collateralized Loan Obligations (CLOs) collected by Benmelech, Dlugosz and Ivashina (2010). For all CLO claims in the dataset, we identify as the investor the manager of the CLO. Claimholders listed in the *BarclayHedge*

¹¹ The only point in a Chapter 11 case in which bondholders are required to disclose their identities are through Rule 2019 filings in cases in which the bondholders seek official court representation via an ad-hoc creditor committee. In future versions of this paper, we plan to explore the information available in Rule 2010 filings.

database or described in Capital IQ as asset management firms catering to “high-wealth individuals”, “pooled investors” or “endowments” were classified as hedge funds. We used Capital IQ to identify private equity funds, but also used broad-based search methods to narrow fund candidates by searching for keyword terms such as the roman numerals ‘II’ ‘III’ and ‘V’ often associated with new private equity funds, as well as terms such as “LLM”, “LLC” and “LTD”. Our asset management category contains a broad set of investment management firms including mutual funds, pension funds, fixed income funds, and a variety of more specialized funds, including institutions specializing in acquiring and holding distressed debt. Some of these funds could be hedge funds or private equity funds not positively identified as such through our other methodologies.

Real estate, insurance companies, and other financials are identified by name and through sources such as Capital IQ. We maintain a residual category of “potentially financial” firms that we do not identify via other search methods but have name characteristics (e.g., reference as an LLC or LTD) that could mean they are financial firms. However, visual inspections of these firms suggest that the bulk of these firms are small nonfinancial firms.

F. Voting-class-level data

Using information from each debtor’s disclosure statement, combined with claimant information contained in the voting tabulations (t_2), we also construct a voting-class-level dataset. This data contains information that is specific to each voting class, and allows us to investigate the impact of specific investor groups on class-specific recovery rates as well as deviations from absolute priority rule (APR).

From the disclosure statement, we gather information on the expected recovery rate for each class, as well as the type of distribution each class will receive (cash, new debt, or equity). In particular, we identify so-called “fulcrum” classes—those that receive the majority of new equity in the reorganized firm. In addition, in most cases we are able to determine the seniority of each claimant class from details in the disclosure statement, and we use this information to determine whether the APR is violated in favor of a particular class. Specifically, for cases in which a senior class receives less than 100% recovery

while a junior class receives greater than 0%, we calculate what the recovery rate would have been for each class under strict adherence to APR and then compare this to the actual recovery. In this way, we identify the extent to which particular junior classes are able to gain concessions from senior claimants.

We combine information from the disclosure statement with data gleaned from voting tabulations for each case. For each voting class, we calculate the value-weighted share of all claims that are owned by each parent institutional type as well as the concentration of creditors within each voting class. In this way, we are able to relate the presence of particular investor types as well as their concentration to class-level recoveries and deviations from APR.

II. Distribution of claims ownership

This section focuses on Table II, which summarizes claims ownership and concentration by institutional type at time of the filing of the Assets and Liabilities (t_1) and the vote tabulation (t_2).

A. Ownership at the filing of the Schedule of Assets and Liabilities

The first six columns of Panel A provide summary information on institutional type ownership in Chapter 11 claims across our sample bankrupt firms at the outset of the bankruptcy case when the firm files its Schedule of Assets and Liabilities. The first thing to note from the table is the large presence of banks and nonfinancial corporations in the capital structure of the bankrupt firms. Banks account for 15.7% (median of 7.8%) of the ownership of Chapter 11 claims and hold a claim in nearly 90% of the sample firms. Claims of nonfinancial corporations—the bulk of which arise through trade credit claims—account for another 30.5% (median of 27.3%) of all claims and are present in nearly all cases.

In contrast to banks and nonfinancial corporations, asset management companies, hedge funds and private equity funds hold relatively small shares of the claims of Chapter 11 firms. At the time of the filing of the Schedules, hedge funds account for only 0.4% of claims and private equity funds hold only 1.6% of the claims. Both institutional types appear in less than 30% of the cases in the sample. Asset management companies hold 5.1% of all claims and are more present across the bankruptcy cases, with

holdings in 61% of the sample firms. From a pure ownership size perspective, our findings do not accord well with the claim in Jiang, Li, and Wang (2010) that “close to 90% of the cases have publicly observable involvement by hedge funds”.¹² Of course, these investors can have a large influence on the case without large claimholdings, a point to which we turn to in later tables. In fact, as we will show, concentration of hedge fund holdings at the bankruptcy filing is an important determinant of the likelihood of the company filing for a pre-packaged bankruptcy.

Panel A of Table II also reports the within institutional-type concentration of investors, as measured by the Herfindahl-Hirschmann Index (HHI) of claims ownership shares with a value one corresponding to one owner within that class. In general, hedge fund and private equity investors tend to hold more concentrated shares of Chapter 11 claims (concentration index of 0.78 and 0.87, respectively) than banks and asset management firms (concentration index of 0.69 and 0.72, respectively), who in turn hold more concentrated shares than most non-financial claimants, including nonfinancial corporations (concentration index of 0.25), government entities (concentration index of 0.48), and individuals (concentration index of 0.30).

Panel B of Table II reports the distribution of claims held by each institutional type across claim types, which at the filing of Schedules, is relatively coarsely divided into secured claims, unsecured claims, and other claims (including priority employee and tax claims). The first three columns of the panel show that the majority of claims held by all institutional types are unsecured, although banks and banks as custodians hold relatively large shares of their claims as secured instruments.

B. Ownership at vote tabulation

The remaining columns of Table II report the distribution of claims ownership at the stage at which claimants vote on the Plan of Reorganization. Recall that this group of claimants is a subset of

¹² Two issues could be creating the large discrepancy in observed involvement of hedge fund investors documents in the Jiang, Li, and Wang (2010). First, they define involvement to include any involvement, including ownership of equity in the firm prior to the bankruptcy filing and involvement in providing debtor-in-possession (DIP) financing during the case. Second, the Jiang, Li, and Wang (2010) definition of a hedge fund is broader than our own, and likely includes firms that we classify as bank (including proprietary trading desks at large banks), asset management or private equity.

those included in the Schedules and credit register because it only contains claimants that are eligible to vote (impaired with recoveries greater than zero) and that choose to vote.

The raw distribution of claims ownership is actually quite close to the distribution at the outset of the case, but with some important exceptions. First, it appears that banks increase their ownership share at tabulation while banks as custodians decrease their ownership share. But this is largely an artifact of the fact that some banks, acting as administrative agents, report loan holdings at the time of the Schedules on behalf of other syndicate members, and thus are labeled as a custodial holder, while at vote tabulation, all syndicate members report on their own behalf so that the only custodial holdings are for bondholders. This is notable for two reasons. First, most of the observed increase in the percentage of bank holdings between the filing of Schedules and the vote tabulation can be attributed to a shift in who is reporting the bank claims (agent versus syndicate member), not to any actual increase in bank holdings. We show in Table III that banks are actually net sellers of bilateral claims, if anything, they are reducing their exposure in the case. Second, the bank-as-custodian holdings at tabulation probably provide a better estimate of the holdings of bondholders, which is only 3.2% of total claims and present in only 35% of the cases.

The more interesting change in the distribution of claims ownership documented in Panel A comes via increases in the proportion of Chapter 11 claims by asset management firms, hedge funds, and private equity firms. Each of these institutional types hold significantly larger shares of the voting claims than claims at the outset of the case, with hedge funds and private equity funds more than doubling their claims ownership to hold 2.3% and 3.6% of all claims that are tabulated at the time of the Plan vote. Meanwhile, nonfinancial corporations, governments and intercompany claimants (claims held by subsidiaries of the filing company) all hold substantially smaller positions at the time of voting.

Panel B of Table II provides greater detail on the types of claims held by each institutional type category at the time of the Plan vote. Interestingly, banks, asset management firms, hedge funds, and private equity firms, all hold roughly about the same amounts of their claims as general unsecured claims, loans, and notes, with splits across the three categories of about 45%, 40%, and 10%, respectively. The

distribution highlights the fact that claims trading allows investors to move across categories, so that for example, banks are not the only owners of loan claims and proprietary sections of banks can acquire claims outside the realm of debt that would normally be issued by a bank.

III. Claims Trading During the Chapter 11 Restructuring

In this section, we examine patterns in claims trading using observations of transfers of bilateral claims recorded as “assignments” in case filings.

A. Overview of claims trading

Table III summarizes patterns in claims trading across institutional types. Panel A reports the proportion of total claims traded that are bought and sold by each institutional type and the net percentage buys for that group, reported first as a percentage of all buyers and sellers, and then on a mean basis across the sample firms. The first thing to note is that asset management firms and hedge funds, and to a lesser extent private equity investors, are large net buyers, banks are active on both the buy and sell side of the trading (but are slight net sellers), and nonfinancial corporations are large net sellers, as are insurance firms and banks as custodians. Taken together, asset management firms and hedge funds generate nearly a third of all claims purchases, sell almost no claims, and are responsible for nearly all net buys (along with private equity funds). Meanwhile, corporations and insurance claims—holders of original trade and insurance claims—are responsible for more than one-third of all claims sales.

Panel B of Table III digs down into the types of claims sold during the bankruptcy by focusing on the sales of claims in the 26 bankruptcies administered by BMC Group, the data provider that tracks claims from the time they are entered in the Schedules or credit register through to the time of the vote tabulation. This allows us to split claims trading according to whether the claims are later eligible to vote. The pattern that emerges shows that claims buying by banks, asset management firms, and hedge funds is more concentrated in those claims that can eventually be voted as part of the Plan. Meanwhile, banks concentrate their selling of claims nearly entirely in non-voting claims.

The Panel B statistics suggest that purchases of Chapter 11 claims by sophisticated investors—banks, asset management firms, and hedge funds—are strategic in the sense that they concentrate on claims that will allow them to influence the voting on the Chapter 11 Plan. For instance, a proportionally large amount of claims acquired by these investors are for voting purposes. Based on the BMC sample, 29% of all registered claims are eligible to vote and only 5% of registered claims end up voting when weighted by the size of the claim. But among claims that are transferred, 36% are voting claims (16% weighted by size of the claim), showing that voting claims represent a much higher percentage of transferred claims than of registered claims in general. A traded claim is about 38% more likely to be a voting claim by number ($(36\% * (1-29\%)) / (29\% * (1-36\%))$), and more than two and a half times more likely to be a voting claim when weighted by size.

B. The relation between claims trading and creditor concentration

Gertner and Scharfstein (1991) argue that a major impediment to efficient reorganizations is the inability for dispersed creditors such as bondholders to coordinate bargaining amongst themselves and with the managers of the bankrupt firm. They assume that the ex-ante capital structure of the distressed firm is fixed and show that coordination within Chapter 11 can improve efficient bargaining. Likewise, Berglöf and von Thadden (1994) and Bolton and Scharfstein (1996) argue that complex capital structures can deter efficient ex-post renegotiation of defaulted contracts, which in turn influences the structure of the ex-ante contract and capital structure of the borrowing firm. All of these papers abstract from the possibility that the ownership structure of debt can be changed through claims trading.

Table IV shows that the volume of claims trading across our sample firms is positively and significantly associated with concentration in the capital structure of the firms. Panel A of Table IV focuses on the subset of claims tracked by BMC Group to see whether trading of claims in the 26 cases where we can unambiguously follow claims from the time of the bankruptcy filing through the time of voting increases the concentration of ownership in the claims. The results show that there is a positive and significant relation between claims trading and both the level of creditor concentration at the end of

the case and the change in creditor concentration over the course of the case (concentration is computed using Herfindahl-Hirschman index). The estimates imply that a one standard deviation increase in claims trading (measured relative to total claims that can be traded) results in 0.61 standard deviation increase in the overall level of creditor concentration in the case.

In Panel B, we look across the full sample but focus on the top three net buyer of voting claims according to Table III (banks, assets management firms and hedge funds). That is, we include all observed transfers involving at least one of the top three buyers; the total number of such cases is 51. Because in the full sample we no longer can calculate change in concentration of the voting creditors we instead rely on the concentration at voting tabulation as a proxy. Consistent with the univariate results, purchases of the voting claims by asset management firms have an important impact on the consolidation of their positions. However, we do not find that trading by banks and hedge funds leads to increased concentration at voting.

IV. The Relation between Claims Ownership and Chapter 11 Outcomes

So far, we have analyzed the distribution of claims ownership of Chapter 11 firms and the effect of claims trading on the concentration of ownership in the bankrupt firms. We now turn to the relation between the concentration of creditor ownership and bankruptcy outcomes.

The first set of results is reported in Table V, where we examine the impact of firm-level creditor concentration on several variables related to the evolution and outcome of the Chapter 11 restructuring. We estimate each case using a linear least squares model in which the bankruptcy outcome measure is the dependent variable and creditor concentration is the explanatory variable. We also include several control variables, including the ratio of assets-to-liabilities at filing based on the amounts reported by firms in their original Chapter 11 petitions, and a dummy equal to one when firms file for bankruptcy during a recession, as defined by the National Bureau of Economic Research (NBER). Each regression also includes fixed effects for industry (industry classifications are reported in the Appendix). The number of sample firms in the regressions is slightly reduced because of missing data for some observations. Panel

A of Table V reports regressions using the concentration of claims ownership at the filing of the Schedules of Assets and Liabilities near the outset of the Chapter 11 restructuring, while Panel B uses the concentration of ownership at the tabulation of votes for the Plan of Reorganization.

Panel A shows that the pre-bankruptcy concentration of creditors—as proxied by the concentration of claims ownership at the Filing of Schedules—is an important determinant of observing a prepackaged or prearranged bankruptcy. A one standard deviation increase in concentration (0.21) increases the likelihood of observing pre-pack/prearranged bankruptcy by 13 percentage points, a nearly two-thirds increase, compared to the unconditional probability of 18%.

Panel B shows that the concentration of ownership at vote tabulation is no longer associated with the likelihood of observing a pre-pack/prearranged bankruptcy. The differences in this result between Panels A and B likely reflect two features of the evolution of a Chapter 11 restructuring. First, prior to filing, concentration in “tails” of the capital structure are important to determining whether a pre-pack/prearranged filing occur; concentration at the most senior and junior credit classes improves the likelihood of observing a filing in which much of the restructuring details have been fleshed out prior to the court filing. Second, investors trade during the case to achieve a level of concentration that lowers ex-post negotiation costs. Conditional on the decision to file without a formal prepackaged or prearranged plan, the concentration of ownership going forward has no bearing on the original filing decision.

Consistent with the idea formulated by Bolton and Scharfstein (1996) that higher concentration of creditors in the capital structure lowers coordination costs, we find that higher creditor concentration reduces the time the firm spends in bankruptcy. Not surprisingly, this result holds for firms filing a pre-pack/prearranged bankruptcy; when creditor concentration is high, the case length is almost of full year lower than traditional non pre-pack/prearranged filings. But we also find that the concentration of creditors has a significant economic impact on the duration of the bankruptcy process independent of the pre-pack/prearranged outcomes. Noticeably, the effect of the concentration of the voting classes has a particularly strong impact of the time the firm spends in bankruptcy process. For instance, a one standard deviation in the concentration of the voting class reduces the time in bankruptcy by roughly one quarter.

Three of our outcome variables are related to how a firm exits Chapter 11: through a traditional reorganization, via a 363 sale to a strategic or financial buyer, or through a piecemeal liquidation. We find that higher creditor concentration lowers the likelihood of a liquidation but only through the influence of concentration on observing pre-pack/prearranged bankruptcy, which rarely results in a liquidation. However, the concentration of impaired creditors is an important determinant of whether or not a firm is sold out of Chapter 11; higher concentration increases the likelihood of observing a sale.¹³

We also examine the impact of creditor concentration on firm-level estimated recovery rates to creditors. As mentioned earlier, the estimated recovery rates are calculated based either on forward-looking estimates of enterprise value for the exiting firms in the case of reorganizations, or total cash proceeds collected from a sale in the case of 363 sale or liquidation. We find that higher levels of concentration are associated with lower recovery rates to creditors. This result is somewhat surprising given that higher levels of concentration appear to lower ex-post costs of coordination, which should in turn, lead to *higher* recovery rates. However, the recovery rates that we observe may also reflect strategic interactions occurring between creditors at the voting class level.

Gilson, Hotchkiss, and Ruback (2000) postulate that the estimated value used to determine recovery rates in a reorganization is itself an outcome of bargaining among different creditor classes and managers running the bankrupt firm. This bargaining over value has strategic consequences because a higher valuation implies more claimants are “in the money” and can therefore receive a recovery and vote on the Plan. Likewise, a lower value makes more claimants “out of the money” and keeps claimants receiving a recovery and voting on the Plan to a smaller number. These strategic considerations are particularly important when claimants receive their recovery in the form of equity in the exiting firm. In this case, the fewer the claimants receiving a recovery, the larger is the equity ownership stake for the remaining claimants in the emerging firm. Because recoveries are based on the priority structure of the debt, senior claimants stand to gain the most from a low valuation while junior claimants gain from higher

¹³ This finding is supportive of Baird and Rasmussen’s (2007) contention that more creditor control in bankruptcies has led to a higher frequency of sales out of Chapter 11 and fewer traditional reorganizations.

valuations. Consistent with this thinking, Gilson, Hotchkiss, and Ruback (2000) find that bankruptcy restructurings in which senior creditors have more bargaining power tend to have lower estimated recoveries, while restructurings in which junior claimants have stronger power have higher recoveries. Thus, the finding that higher concentrated capital structures are associated with lower recovery rates could reflect the outcome of bargaining in which concentrated senior creditors bias down the negotiated valuation lower. We investigate this possibility further in Table VII.

[TABLE V]

First, we use Table VI to extend the results in Table V by focusing on the identity of the creditors based on their institutional type. Table VI reports coefficients from regressions of bankruptcy outcome on measures of concentration by institutional type. We include only one institutional type at a time in the regression (i.e., in Panel A, each estimate derives from a separate regression). We run the types one at a time to conserve degrees of freedom. In results not reported, we find the correlation between shares held by alternative investment types (assets management firm, hedge fund and private equity firm) to be negative and statistically insignificant at the filing and at the voting tabulation. In Panel A, the explanatory variable of interest is the percentage share of total claims held by a given institutional type. In Panel B, in addition to the share of claims we look at the concentration of the holdings *within* an institutional type grouping using the Herfindahl-Hirschman index. If for a given bankruptcy an institutional type is missing, Herfindahl-Hirschman index is not well defined (i.e., unlike share, it cannot be set to zero); as a result, the number of observations in Panel B drops. Results in Panel A and B also can be thought of as extensive and intensive margins of concentration (i.e., between claims classes vs. within class).

[TABLE VI]

There is a clear relation between likelihood of a pre-packaged/prearranged bankruptcy and concentration of the creditors at register. Panel A in Table VI indicates that the share of hedge funds holdings, and to a lesser degree, the share of holdings at the custodian level has a positive and significant impact on the likelihood of observing a pre-pack/prearranged bankruptcy. From Table II, we know that almost all hedge fund holdings and over two-thirds of the claims handled by custodians are concentrated

in unsecured claims.¹⁴ This suggests that the presence of a large junior class dominated by hedge funds is important for the pre-pack/prearranged outcome. Interestingly, the concentration of ownership *within* the hedge fund group does not have an impact on likelihood of observing a pre-pack/prearranged filing. This is consistent with anecdotal evidence on coordination among multiple hedge funds investing in distressed firms (e.g., CIT bankruptcy¹⁵). Yet concentration of ownership within groups does matter among other alternative investment firms (asset managers and private equity firms) by increasing the likelihood of observing a sale or liquidation and, subsequently, decreasing the likelihood of reorganization.

Table VII returns to exploring creditor recovery rates by disaggregating recoveries at the voting-class level. That is, we observe estimated recovery rates at the level of each eligible voting class of creditors, from the top of the capital structure, down to the junior impaired classes that still receive some form of recovery. This allows us to examine more closely the extent to which concentration influences strategic plays on the valuation of the firm, and thus expected recovery rates.

In particular, a tension between the desire for a lower valuation among senior claimants and a higher valuation among junior claimants overlaps at the “fulcrum security,” defined to be the most junior class of claimants that is just in-the-money for a given valuation. When cash or new debt is paid to senior claimants in to make them whole, the fulcrum class is most likely to be the group of claimants to receive the bulk of equity in the exiting firm. Thus the fulcrum has large strategic value to investors wishing to control the firm when it emerges from bankruptcy.

For the purposes of bargaining in attempt to maximize their take of the equity, the fulcrum class will want the valuation to be large enough to assure they are in-the-money but small enough to cut out all claimants that are junior to them in the capital structure. By following a strategy that achieves a valuation

¹⁴ Interpretation of the share and concentration at the custodian level is not without a caveat. Specifically, concentration is not directly comparable to other concentration measures as it essentially picks up the number of custodians chosen for the issue. Thus, higher concentration at the custodian level is likely to pick up firms less different bond issues outstanding and/or firms with smaller bond issues. Our results are robust to the inclusion of a control for assets size at filing, but Bank as custodian might be a proxy for capital structure.

¹⁵ Ivashina and Scharfstein “Restructuring CIT Group” Harvard Business School Case. In CIT case coordination a group of six hedge funds holding strategic junior positions in the capital structure was the determinant force behind pre-packaged bankruptcy.

that keeps them at the fulcrum, and by also guaranteeing that all classes senior to them are made whole, fulcrum security claimants can assure that they will be in the position to own the firm at exit once their claims are converted to new equity.

The tension at the fulcrum security can also influence the negotiated value of the firm at exit, and therefore firm-level recovery rates. For instance, holders of the fulcrum security would be willing to accept a lower valuation that leads to a lower estimated recovery rate for their class, if by doing so, they still receive the majority of company stock at exit. Indeed, if the goal of the fulcrum investor is to own the firm at exit, the estimated recovery rate that they accept as part of a plan may be low (and much lower than their private value for the equity). Thus, strong investor groups may be observed accepting lower recovery rates for their class if part of the fulcrum.

Panel A in Table VII shows that across all voting classes, recovery rates are increasing in creditor concentration. The positive association appears in these regressions but not in the debtor level regressions because each class is weighted equally in the Table VII regressions, but weighted by the dollar value of the class in the debtor level regressions. The classes driving the positive association are senior secured and unsecured classes with high recoveries and high concentration. But the more interesting aspect of the Table VII is the evidence of “tension” at the fulcrum security. In the fulcrum class, recovery rates are strongly decreasing in concentration, so much so they swamp (in an equally weighted comparison), the increase in recovery rates in the senior classes for a given change in concentration. Panel B of Table VII shows that variation in recovery rates as a function of concentration is not driven by large deviations from absolute priority.

Table VIII examines variation in class-level recovery rates as a function of the concentration of ownership within a class by various institutional types. In Table VIII, our measure of concentration is the share of given class held by each institutional type and the methodology employed is similar to that in Panel A of Table VI. The most striking result from Table VII is the performance of private equity investors, who are clear losers in unsecured classes, both in non-fulcrum and fulcrum securities, but recovery rates at the fulcrum seem particularly sensitive to private equity ownership. The estimates for the

unsecured fulcrum classes imply that for every one percentage point increase in ownership of the fulcrum security by a PE firm, recovery rates drop by 2 percentage points (i.e. 2 cents on the dollar) or by 4 percent, measured at a 50% recovery rate. However, these large ‘losses’ could simply reflect that PE investors are willing to trade estimated recovery for a higher equity stake in the firm.

[TABLES VII & VIII]

V. Conclusion

The focus of this paper is the relation between firm debt ownership and bankruptcy outcomes. In particular, we provide insight on the role of different institutional investors and concentration of debt ownership on resolution of Chapter 11 filings. Several theoretical papers including Gertner and Scharfstein (1991) and Bolton and Scharfstein (1996) argue that complexity and dispersion of ownership among creditors should lead to large bankruptcy costs. However, little empirical evidence exists on the subject. Indeed, while there is a general impression that advances in financial markets, such improvements in liquidity, the propagation of investor activism, the syndication and securitization of debt and increasing trading of claims *in* bankruptcy, should have important implications for the bankruptcy process, the empirical evidence remains partial and indirect. This paper fills this gap. We also provide first insight on the trading of claims in bankruptcy.

To conduct this study we put together a comprehensive dataset covering *all* creditors holding Chapter 11 claims for 136 large U.S. bankruptcies between 1998 and 2009. The data tracks creditors through two snapshots taken at the filing of the debtor’s Schedule of Assets and Liabilities and the tabulation of votes on the debtor’s Plan of Reorganization. Overall, we cover claims filed by 71,358 different investors. For a subset of 26 bankruptcies, we also observe actual trades in and out of the instruments by investors during the Chapter 11 case.

Consistent with theoretical work, we find that the concentration of creditors across the capital structure at the onset of bankruptcy has an important impact on restructuring outcomes by increasing likelihood of “prepackaged” or “prearranged” bankruptcy and by accelerating the bankruptcy process

including cases not filed as pre-pack/prearranged process. Concentrated capital structure also increases the likelihood that the firm is sold as going-concern during the bankruptcy process.

Our results indicate that concentration of debt ownership increases significantly over the course of the case. Alternative investors (assets management firms, hedge funds and private equity firms), an already relatively concentrated investor group, are the largest net buyers of the claims in bankruptcy. The largest net sellers are dispersed nonfinancial corporations. Furthermore, we establish that trading during the case leads to higher concentration of ownership at the time of voting.

More broadly, asset management firms, hedge funds, and private equity funds, own a relatively small portion of the debt claims of a bankrupt firm (a total of 7.1% of all claims at the bankruptcy filing) in contrast to 16% held by banks and 30% held in hand of non-financial corporations. Yet, by the time that claimants vote on a bankrupt firm's Plan of Reorganization, alternative investors double their representation in the firm's capital structure.

Finally, we show that ownership of claims by bank and asset managers can influence the Chapter 11 case, both through the shares held by these investors and by the concentration within the groups of investors.

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TABLE I
DESCRIPTION OF FIRMS FILING FOR CHAPTER 11 BANKRUPTCY

Panel A: Bankruptcy characteristics (136 firms)

Filing year	1998	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Obs.	1	1	8	13	17	10	16	19	12	32	7
	0.7%	0.7%	5.9%	9.6%	12.5%	7.4%	11.8%	14.0%	8.8%	23.5%	5.2%

Filing court	% Obs.	Filing type	% Obs.
Delaware	40.0%	Non-specific Ch. 11	77.9%
Southern District NY	23.0%	Pre-pack/Prearranged Ch. 11	19.1%
Other	37.0%	Tort-related Ch. 11	3.0%

	Median	Mean	Std Dev
Time in bankruptcy (days)	377	428	265
Overall recovery rate			
Value at exit/Liabilities at filing	51.0%	54.7%	51.1%
Weighted average claim recoveries	52.0%	53.3%	31.1%

<u>Restructuring outcome:</u>		<u>Claimant group with controlling equity interest at exit, the fulcrum class (reorganizations only):</u>	
Reorganized	46.6%	DIP Lenders	8.8%
Sold to a financial buyer	9.9%	Prepetition Lenders	28.0%
Sold to a strategic buyer	13.0%	Notes/Bondholders	22.8%
Liquidated piecemeal	30.5%	General Unsecured	19.3%
<u>Identity of owner at exit:</u>		Subordinated Debt	3.5%
Financial	64.8%	Equity	17.5%
Strategic	35.2%		

Panel B: Pre-bankruptcy firm characteristics

	Source	Obs.	Mean	Std. Dev.	Median
Total assets (million \$US)	Capital IQ	132	\$1,929.2	\$4,860.5	\$250.4
Revenue (million \$US)	Compustat	64	\$3,858.7	\$13,018.4	\$705.2
Employees	SDC	71	6,731	11,780	1,994
Cash (million \$US)	Capital IQ	66	\$233.1	\$574.4	\$27.5
Total liabilities (million \$US)	Capital IQ	132	\$1,817.6	\$4,313.7	\$374.5
Total liabilities/Total assets	Capital IQ	131	2.8	10.6	1.07
Total liabilities/Total assets (no outliers)	Capital IQ	129	1.5	1.49	1.05
Total Debt (million \$US)	Capital IQ	66	\$1,895.1	\$3,686.6	\$393.4
% Bank debt	Capital IQ	51	46.54%	31.27%	39.91%
% Secured debt	Capital IQ	55	59.16%	37.89%	59.05%
% Long term debt	Capital IQ	51	66.38%	35.42%	84.13%

TABLE II
DISTRIBUTION OF CREDITORS BY INSTITUTIONAL TYPE

This table reports the distribution of Ch. 11 claim ownership sorted by the institutional type of the claimholder at two points in time: The filing of the Schedule of Assets and Liabilities (t_1) and at the tabulation of votes on a Plan of Reorganization (t_2). We measure institutional type at the parent level. All numbers are value-weighted. The level of creditor concentration is measured at the time of voter tabulation using a dollar-weighted Herfindahl-Hirschman index, with a maximum of one. Panel A reports the distribution of ownership across the sample of 136 debtor firms, where absent institutional type receives a zero weight in the calculation. Panel B reports the distribution of holdings across claimant classes in the capital structure for a given institutional type.

Panel A: General distribution by institutional type

Creditor institutional type:	At filing of Schedule of Assets and Liabilities (t_1), all creditors						At voting tabulation (t_2), voting creditors only					
	Cases involving ownership of given institutional type (%)	Mean (%)	Std. Dev. (%)	Median (%)	95 th %	Concentration (0 to 1)	Cases involving ownership of given institutional type (%)	Mean (%)	Std. Dev. (%)	Median (%)	95 th %	Concentration (0 to 1)
Financial creditors:												
Bank	89.26	15.74	20.12	7.80	55.6	0.69	72.81	22.43	27.72	11.21	82.8	0.56
Bank as custodian (bonds)	39.67	9.60	19.94	0.00	59.1	0.84	35.09	3.20	9.34	0.00	25.9	0.85
Asset management	61.16	5.09	14.61	0.13	28.2	0.72	61.40	9.10	17.77	0.86	47.6	0.66
Hedge fund	26.45	0.44	2.30	0.00	1.13	0.78	38.60	2.31	9.15	0.00	11.1	0.75
Private equity	28.93	1.63	8.81	0.00	3.20	0.87	29.82	3.55	14.18	0.00	24.5	0.89
Potentially financial	94.21	4.55	7.39	1.87	19.4	0.76	86.84	7.35	11.53	1.75	32.2	0.90
Insurance	66.12	2.19	8.99	0.11	7.24	0.74	35.09	1.92	7.94	0.00	10.8	0.75
Real estate	56.20	1.13	2.96	0.02	6.82	0.62	26.32	0.82	2.97	0.00	5.27	0.78
Other financial	44.63	1.51	5.66	0.00	8.19	0.29	21.93	1.80	10.16	0.00	5.70	0.40
Non-financial creditors:												
Corporation	97.52	30.50	24.34	27.26	76.0	0.25	95.61	26.37	25.96	20.25	90.5	0.43
Government	91.74	6.41	9.85	2.37	22.3	0.48	40.35	4.47	14.95	0.00	39.2	0.32
Person	92.56	11.77	17.09	4.82	52.9	0.30	83.33	12.40	22.60	2.41	73.5	0.44
Intercompany/Insider	35.54	5.80	12.58	0.00	33.9	0.80	11.40	2.23	9.90	0.00	20.0	0.80
Unknown	89.26	3.65	9.52	0.74	15.6	0.46	65.79	2.06	5.40	0.09	9.94	0.59

TABLE II – continued

Panel B: Creditors' ownership by credit class

Creditor institutional type:	At filing of Schedule of Assets and Liabilities (t_1), all creditors			At voting tabulation (t_2), voting creditors only							
	Secured	Unsecured	Other	General unsecured	Loans	Notes	Employee/Pension	Tort	Trade claims	Equity	Other
Financial creditors:											
Bank	39.66	56.81	3.53	42.16	38.00	16.93	0.00	0.00	0.62	1.08	1.20
Bank as custodian (bonds)	19.00	75.52	5.48	40.86	28.50	22.95	0.00	2.50	2.50	2.69	0.00
Asset management	15.80	78.80	5.40	46.53	36.71	11.30	1.43	1.43	0.64	1.95	0.00
Hedge fund	5.12	94.27	0.61	46.14	39.98	10.90	0.00	0.00	2.30	0.00	0.68
Private equity	12.34	81.50	6.16	57.99	32.38	5.88	0.00	0.00	2.94	0.00	0.80
Potentially financial	6.23	88.74	5.03	62.51	22.21	8.24	0.04	3.71	1.18	0.87	1.24
Insurance	20.75	70.47	8.78	54.56	34.53	3.11	0.00	2.50	0.91	2.50	1.89
Real estate	6.98	89.36	3.67	83.33	6.67	3.33	0.00	3.33	3.33	0.00	0.00
Other financial	11.91	78.66	9.44	58.63	20.72	12.00	0.00	0.00	4.22	0.43	4.00
Non-financial creditors:											
Corporation	10.08	84.10	5.81	68.76	12.91	8.34	0.68	3.95	3.41	1.70	0.24
Government	8.02	39.64	52.34	66.05	13.04	6.51	5.36	2.17	1.78	1.81	3.26
Person	6.64	83.36	10.00	68.29	8.97	9.10	1.51	5.54	1.38	1.83	3.38
Intercompany/Insider	3.16	95.52	1.32	36.63	6.95	0.00	0.00	0.00	0.00	7.69	48.73
Unknown	5.29	88.56	6.16	71.26	11.19	8.37	0.00	4.00	2.78	2.13	0.28

TABLE III
ANALYSIS OF CLAIMS TRADING IN BANKRUPTCY

The focus of the table is on the transfer of bilateral creditor claims observed *after* the bankruptcy filing but before the voting on the Plan of Reorganization. In Panel A, the first three columns report the institutional type of buyers and sellers as a percentage of all transfers (value-weighted). To compute these numbers we condition the sample on those cases in which we have record of at least one transfer. In the “who sells” and “who buys” analysis, the mean corresponds to the unconditional mean, that is, we use zeros if there is no sell or buy information for a given type. For example, if in the typical case \$100 of claims were traded, we would expect \$9.34 of those to be sold by banks, and \$60.64 sold by corporations. Conditional means (conditional on a given institutional type engaging in trading) can be easily computed using percentage of cases with seller/buyer of a given type. In Panel B, we use a subset of 26 bankruptcies for which we can unambiguously link claims between the register and voting tabulations. We use this information to separate trading by claim class. All numbers are value-weighted.

<i>Panel A: Claims trading by institutional type</i>									
Creditor institutional type:	% of all sellers	% of all buyers	% of all net buyers	Who sells:			Who buys:		
				% of cases with seller of type	Mean (%)	Std.Dev. (%)	% of cases with buyer of type	Mean (%)	Std.Dev. (%)
Financial creditors:									
Bank	42.92	40.48	-2.45	25.35	9.34	24.9	21.13	8.86	25.37
Bank as custodian (bonds)	7.08	1.79	-5.29	4.23	0.94	7.41	8.45	2.23	10.95
Asset management	1.04	17.28	16.24	14.08	3.07	16.52	39.44	13.01	27.93
Hedge fund	0.19	14.72	14.54	11.27	0.87	4.95	56.34	25.84	33.09
Private equity	0.00	4.72	4.72	0.00	0.00	0.00	36.62	13.44	27.70
Potentially financial	2.08	1.19	-0.90	43.66	7.05	17.76	49.30	13.78	26.09
Insurance	8.86	1.74	-7.12	8.45	1.30	6.60	5.63	0.80	5.45
Real estate	0.18	0.06	-0.12	8.45	0.79	5.28	12.68	3.88	14.95
Other financial	0.10	0.79	0.69	7.04	0.03	0.20	5.63	0.23	1.13
All financial creditors	62.46	82.78	20.31		23.40			82.07	
Non-financial creditors:									
Corporation	33.86	6.46	-27.40	85.92	60.64	38.58	52.11	15.39	29.62
Government	0.19	0.08	-0.11	11.27	0.10	0.68	4.23	0.02	0.12
Person	2.08	0.36	-1.73	38.03	9.61	25.10	12.68	0.47	2.35
Intercompany/Insider	1.05	6.47	5.42	1.41	0.02	0.16	2.82	0.76	5.52
Unknown	0.36	3.85	3.49	33.80	6.22	18.59	8.45	1.28	6.64
All non-financial creditors	37.54	17.22	-20.31		76.6			17.93	

TABLE III – continued*Panel B: Claims trading by class*

Creditor institutional type:	Non-voting claims:			Voting claims:		
	% of all sellers	% of all buyers	% of all net buyers	% of all sellers	% of all buyers	% of all net buyers
Financial creditors:						
Bank	7.73	9.53	1.80	0.00	19.12	19.12
Bank as custodian (bonds)	0.97	0.79	-0.18	0.00	0.00	0.00
Asset Management	0.47	26.59	26.12	0.00	29.88	29.88
Hedge fund	0.19	26.92	26.74	0.33	39.14	38.82
Private equity	0.00	0.45	0.45	0.00	0.33	0.33
Potentially financial	10.09	6.59	-3.50	11.59	7.87	-3.72
Insurance	3.58	2.41	-1.17	0.07	0.00	-0.07
Real estate	2.13	0.53	-1.59	3.15	0.04	-3.10
Other financial	1.12	1.56	0.44	0.00	0.00	0.00
All financial creditors	26.28	75.37	49.09	15.13	96.39	81.26
Non-financial creditors:						
Corporation	66.88	10.17	-56.71	70.81	1.35	-69.46
Government	1.28	0.11	-1.18	0.23	0.00	-0.23
Person	1.78	4.06	2.27	12.73	2.24	-10.49
Intercompany/Insider	0.00	0.00	0.00	0.00	0.00	0.00
Unknown	3.77	10.29	6.53	1.10	0.02	-1.07
All non-financial creditors	73.72	24.63	-49.09	84.87	3.61	-81.26

TABLE IV**THE EFFECT OF CLAIMS TRADING ON CREDITOR CONCENTRATION**

This table explores the relation between bilateral claims trading and changes in and the level of creditor concentration during a Chapter 11 case. Panel A uses a subset of 26 bankruptcies for which we can unambiguously follow claims from the time of the filing of the Schedule of Assets and Liabilities through to the time at which voting occurs on the Plan of Reorganization. We measure the level of creditor concentration at the time of voter tabulation using a dollar-weighted Herfindahl-Hirschman index (HHI), with a maximum of one. Change in creditor concentration is the difference between HHI computed at the voter tabulation and HHI computed at the filing of the Schedule of Assets and Liabilities and Register (conditional on being in a class that eventually votes). In Panel B, we focus on the top three net buyer of voting claims according to Table III (banks, assets management firms and hedge funds) using all observed transfers involving at least of the top three buyers. Because we no longer can calculate change in concentration of the voting creditors and instead rely on the concentration at voting tabulation as a proxy. All models are estimated using linear least squares. Standard errors are reported in parenthesis. ***, ** and * indicate statistical significance at 1%, 5%, and 10% level, respectively.

Panel A: Claims trading by voting class

	Creditor concentration	Change in creditor concentration
Total trading/Total voting claims	1.389*** (0.473)	1.043*** (0.341)
Assets/Liabilities	-0.035 (0.104)	-0.035 (0.075)
Economic recession	0.081 (0.154)	0.130 (0.111)
Industry fixed effects	Yes	Yes
Observations	26	26
R-squared	0.48	0.47

Panel B: Claims trading by institutional type (top three net buyers of voting claims)

	Creditor concentration (Buys)	Creditor concentration (Sells)
Banks	-4.265 (7.675)	-0.091 (0.361)
Asset management	1.272*** (0.441)	22.904 (51.019)
Hedge Funds	-1.952 (2.137)	0.662 (12.842)
Assets/Liabilities	-0.088 (0.074)	-0.147* (0.080)
Economic recession	0.084 (0.072)	0.059 (0.080)
Industry fixed effects	Yes	Yes
Observations	51	51
R-squared	0.35	0.20

TABLE V
CREDITOR CONCENTRATION AND BANKRUPTCY OUTCOME

This table examines the relation between the concentration of creditors in a bankrupt firm and variables measuring the outcome of the bankruptcy. Concentration is measured as the dollar-weighted Herfindahl-Hirschman index of shares held by creditor claimants. Panel A measures creditor concentration following the onset of bankruptcy, based on holdings reported in the Ch. 11 Schedule of Assets and Liabilities and follow-on credit register. Panel B calculates creditor concentration based on holdings of impaired creditors that vote on the bankrupt firm's Plan of Reorganization. Assets/Liabilities at filing is based on the amounts reported by a firm in their original Ch. 11 petition. Economic recession is a dummy equal to 1 if the firm files for bankruptcy during a recession period, as defined by National Bureau of Economic Research. All models are estimated using linear least squares. Standard errors are reported in brackets. ***, ** and * indicate statistical significance at 1%, 5%, and 10% level, respectively.

Panel A: Creditor concentration at filing of Schedule of Assets and Liabilities (t_1), all creditors

Dependent variable:	Prepackaged/ prearranged bankruptcy	Time in bankruptcy (month)	Outcome: Reorganization	Outcome: Sale	Outcome: Liquidation	Recovery rate
Creditor concentration	0.596*** (0.165)	-9.629** (4.703)	0.100 (0.304)	-0.009 (0.250)	-0.017 (0.278)	-0.471 (0.350)
Pre-pack bankruptcy	--	-9.789*** (2.972)	0.292 (0.183)	0.161 (0.151)	-0.415** (0.168)	-0.193 (0.219)
Concentration * Pre-pack	--	5.796 (7.109)	-0.285 (0.456)	0.017 (0.375)	0.192 (0.417)	0.578 (0.525)
Assets/Liabilities at filing	-0.059 (0.069)	-0.244 (1.428)	-0.152* (0.091)	0.070 (0.075)	0.094 (0.084)	0.060 (0.103)
Economic recession	0.126* (0.073)	-5.626*** (1.565)	0.079 (0.098)	-0.163** (0.081)	0.068 (0.090)	-0.095 (0.115)
Industry fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	115	108	115	115	115	103
R-squared	0.20	0.39	0.19	0.12	0.23	0.06

Panel B: Creditor concentration at voting tabulation (t_2), voting creditors only

Dependent variable:	Prepackaged/ prearranged bankruptcy	Time in bankruptcy (month)	Outcome: Reorganization	Outcome: Sale	Outcome: Liquidation	Recovery rate
Creditor's concentration	0.011 (0.154)	-10.031*** (3.295)	-0.191 (0.212)	0.382** (0.180)	-0.206 (0.181)	-0.479** (0.237)
Pre-packaged bankruptcy	--	-12.871*** (2.817)	0.300 (0.184)	0.122 (0.157)	-0.407** (0.158)	-0.188 (0.205)
Creditor's concentration * Pre-pack.	--	10.486 (7.636)	-0.437 (0.454)	0.125 (0.387)	0.317 (0.389)	0.294 (0.492)
Assets/Liabilities at filing	-0.098 (0.088)	0.132 (1.646)	-0.192* (0.108)	0.124 (0.092)	0.056 (0.093)	0.040 (0.117)
Economic recession	0.077 (0.086)	-4.736*** (1.635)	0.042 (0.106)	-0.057 (0.090)	-0.018 (0.091)	-0.081 (0.119)
Industry fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	108	101	108	108	108	99
R-squared	0.08	0.40	0.15	0.14	0.24	0.08

TABLE VI

CREDITOR CONCENTRATION BY INSTITUTIONAL TYPE AND BANKRUPTCY OUTCOME

This table extends the results in Table V by focusing on the identity of the claimholders by institutional type. Each reported number corresponds to the coefficient in a regression of a bankruptcy outcome on a measure of concentration of interest. We include one institutional type at a time (i.e., in Panel A, each number corresponds to a different regression); the correlation in concentration across institutional types is economically and statistically weak. In Panel A, the explanatory variable of interest is the percentage share of the total claims held by a given institutional type. In Panel B, in addition to the share of claims we look at the concentration of the holdings, at measured by Herfindahl-Hirschman index *within* an institutional type. The interaction term between the two measures is meant to capture cases where a given institutional type is a large creditor and the holdings are concentrated among a few investors. In addition to the reported variables, each regression includes industry fixed effects, an economic recession dummy identifying bankruptcies that are filed during a recession period (as defined by National Bureau of Economic Research), and the ratio of assets to liabilities at the bankruptcy filing. For compactness of reporting, we omit other control variable and standard errors. ***, ** and * indicate statistical significance at 1%, 5%, and 10% level, respectively. *Alternative investors* include asset management firms, hedge funds, and private equity firms. The institutional type is defined at the parent level. Each panel reports two sets of results: (i) creditors' concentration as computed at the file of the Schedule of Assets and Liabilities, and (ii) creditors' concentration as computed at the voting tabulation. Voting tabulation only includes voting (impaired) classes. All models are estimated using linear least squares.

Panel A: Explanatory variable –share (%) of the total claims by institutional type

Dependent variables:	At filing of Schedule of Assets and Liabilities (t_1), all creditors							At voting tabulation (t_2), voting creditors only						
	Obs.	Prepack/prearr. bankruptcy	Time in bankruptcy	Outcome: Reorganization	Outcome: Sale	Outcome: Liquidation	Recovery rate	Obs.	Prepack/prearr. bankruptcy	Time in bankruptcy	Outcome: Reorganization	Outcome: Sale	Outcome: Liquidation	Recovery rate
Bank	115	0.04	-3.70	0.30	0.10	-0.33	-0.27	108	0.30**	-6.90**	0.23	0.04	-0.25*	-0.39**
Bank as custodian	115	0.47***	-5.64	0.56**	-0.23	-0.28	-0.10	108	0.38	7.22	1.07**	-0.88**	-0.14	0.20
Alternative investors	115	0.25	-0.72	0.20	-0.14	0.00	-0.11	108	0.02	-1.10	0.36*	-0.18	-0.14	-0.16
Asset management	115	-0.06	3.83	0.34	-0.33	0.06	-0.07	108	-0.01	0.97	0.42	-0.45*	0.05	-0.14
Hedge fund	115	4.60***	-22.04	1.06	1.50	-2.56	-1.00	108	0.02	25.98	0.95*	-0.40	-0.53	-0.18
Private equity	115	0.56	-7.94	-0.14	0.13	0.06	-0.13	108	0.06	-6.01	-0.05	0.32	-0.20	-0.12
Other financials	115	-0.65**	3.45	-1.10***	0.35	0.97***	-0.12	108	-0.21	7.21	-0.04	0.13	0.18	0.69**
Non-financials	115	-0.20	4.97*	-0.27*	0.14	0.12	0.29	108	-0.19*	3.79	-0.38***	0.16	0.20	0.21

TABLE VI -continued

Panel B: Explanatory variable –share (%) of the total claims and concentration by institutional type

Dependent variables:	At filing of Schedule of Assets and Liabilities (t_1), all creditors							At voting tabulation (t_2), voting creditors only						
	Obs.	Prepack/prearr. bankruptcy	Time in bankruptcy	Outcome: Reorganization	Outcome: Sale	Outcome: Liquidation	Recovery rate	Obs.	Prepack/prearr. bankruptcy	Time in bankruptcy	Outcome: Reorganization	Outcome: Sale	Outcome: Liquidation	Recovery rate
Bank: Share	101	0.10	-10.84	0.41	0.97*	-0.74	0.94	79	0.04	-3.50	-0.72	0.35	0.52	-0.71**
Concentration		0.15	0.04	0.00	0.28	0.01	0.53**		-0.04	-3.55	-0.48*	0.27	0.28	-0.28
Share*Concentration		0.09	6.02	-0.22	-1.01	0.50	-1.80*		0.25	-4.43	1.04	-0.18	-1.00*	0.67
Bank as cust.: Share	45	0.74	-4.55	-2.28	1.93	0.35	0.23	39	4.63	-87.43	-0.86	0.45	-0.33	3.42
Concentration		0.26	-7.08	-0.53	0.25	0.28	0.34		0.20	-9.90	-0.49	0.16	0.24	0.41
Share*Concentration		-0.51	-10.04	2.52	-1.98	-0.55	-0.06		-4.40	97.07	1.51	-1.19	0.60	-3.20
Alt. investors: Share	85	1.16	-18.78	0.00	0.13	0.15	0.99	84	0.46	-9.13	1.01	-0.25	-0.18	0.10
Concentration		0.07	-4.50	-0.62***	0.27*	0.36*	-0.07		0.01	-3.08	-0.30	0.09	0.44***	-0.03
Share*Concentration		-0.98	19.00	0.36	-0.32	-0.27	-1.10		-0.62	8.29	-0.91	0.22	0.05	-0.14
Asset maneg.: Share	71	0.52	-12.05	0.17	0.67	-0.02	1.89	67	0.49	-20.04	0.60	-0.46	0.15	-0.06
Concentration		0.08	-1.64	-0.75***	0.34**	0.58***	-0.03		-0.16	-3.05	-0.48**	0.04	0.50**	-0.11
Share*Concentration		-0.62	15.04	0.39	-1.30	-0.03	-2.17		-0.74	23.86	-0.41	0.07	0.05	0.05
Hedge fund: Share	32	5.53**	-21.16	3.61	1.19	-0.74	4.21	42	-1.94	-58.86	3.54	3.56	-4.60	6.54*
Concentration		-0.12	-3.31	0.21	0.05	-0.06	0.16		0.02	-6.83	-0.28	0.23	0.29	0.32
Share*Concentration		0.60	-47.74	-6.75	0.83	0.17	-3.65		2.03	111.81	-3.23	-3.68	4.37	-6.73*
Private equity: Share	33	12.38	-341.10	-92.80	-6.84	99.64	36.15	32	0.05	-87.04	0.54	-0.73	0.19	-4.36
Concentration		0.37	-21.22***	-0.33	0.45	-0.12	0.37		0.81	-11.21	-0.27	0.13	0.15	-0.66
Share*Concentration		-11.68	337.51	92.66	7.11	-99.77	-36.27		0.06	74.23	-1.07	1.19	-0.12	4.43
Other fin.: Share	110	-0.51	-5.10	-1.27*	1.05*	0.52	0.06	95	0.45	-6.38	0.33	-0.26	0.29	1.10
Concentration		0.16	-3.97	0.34	0.12	-0.38*	0.13		0.13	-3.76	-0.05	0.08	0.10	-0.19
Share*Concentration		-0.06	14.22	0.19	-1.34	0.97	-0.37		-1.20	20.56	-0.76	0.89	-0.23	-0.79
Non-financials: Share	113	-0.45**	8.46**	-0.36	0.29	0.12	0.71**	105	-0.30	6.28	-0.59***	0.08	0.54***	0.62**
Concentration		-0.51	2.49	-0.41	0.86**	-0.21	0.82		0.09	-3.14	-0.56*	0.29	0.42	0.10
Share*Concentration		1.34**	-19.35	0.43	-0.61	-0.04	-1.52*		0.16	-7.03	0.48	0.23	-0.88**	-0.96*

TABLE VII**CREDITOR CONCENTRATION AND RECOVERY RATES AT THE VOTING-CLASS LEVEL**

The focus of this tale is to look at the class level recovery rates. Each observation now corresponds to a class; each bankruptcy has more than one class of claimants. In Panel A the dependent variable is class-level recovery rate; in Panel B, we look at the recovery rates in excess of the recovery rates predicted by absolute priority rule (APR). The last three columns in each panel focus on the fulcrum class defined as class that will be the residual owners of the reorganized company (i.e., the most junior class that is in-the-money). The interaction term indicated those cases where the fulcrum class is very concentrated. All models are estimated using linear least squares. For the full sample (All classes), standard errors are clustered at the debtor level and are reported in parenthesis. ***, ** and * indicate statistical significance at 1%, 5%, and 10% level, respectively.

Panel A: Dependent variable is class-level recovery rate

Regression sample:	All classes	Secured classes only	Unsecured classes only	All classes	Secured classes only	Unsecured classes only
Creditor concentration	0.235** (0.088)	0.239** (0.061)	0.205* (0.084)	0.301** (0.108)	0.121** (0.045)	0.278** (0.097)
Fulcrum class	--	--	--	0.213** (0.066)	-0.191** (0.059)	0.283*** (0.072)
Creditor concentration*Fulcrum	--	--	--	-0.573** (0.206)	-0.119 (0.540)	-0.805*** (0.168)
Assets/Liabilities	0.098 (0.076)	-0.032 (0.098)	0.077 (0.098)	0.108 (0.076)	-0.026 (0.106)	0.091 (0.098)
Economic recession	-0.032 (0.119)	-0.146 (0.120)	-0.032 (0.112)	-0.029 (0.121)	-0.161 (0.104)	-0.012 (0.109)
Industry fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	188	45	143	188	45	143
R-squared	0.04	0.12	0.03	0.06	0.21	0.07

Panel B: Dependent variable is class-level deviation from APR recovery rate

Regression sample:	All classes	Secured classes only	Unsecured classes only	All classes	Secured classes only	Unsecured classes only
Creditor concentration	-0.029 (0.058)	0.050 (0.032)	-0.031 (0.062)	-0.041 (0.050)	0.006 (0.081)	-0.041 (0.061)
Fulcrum class	--	--	--	-0.036 (0.031)	-0.070 (0.066)	-0.041* (0.018)
Creditor concentration*Fulcrum	--	--	--	-0.147 (0.176)	-0.074 (0.242)	0.052 (0.157)
Assets/Liabilities	0.016 (0.066)	0.084 (0.125)	0.005 (0.046)	0.011 (0.065)	0.087 (0.121)	0.002 (0.046)
Economic recession	-0.049 (0.050)	0.083* (0.035)	-0.116* (0.056)	-0.048 (0.049)	0.076* (0.034)	-0.117* (0.059)
Industry fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	188	45	143	188	45	143
R-squared	0.01	0.07	0.02	0.01	0.09	0.02

TABLE VIII

INSTITUTIONAL OWNERSHIP SHARE AND RECOVERY RATES AT THE VOTING-CLASS LEVEL

This table extends results in Table IV by focusing on creditors' institutional type. Each reported number corresponds to the coefficient in a regression of bankruptcy outcome—recovery rate and deviation from absolute priority rule (APR)—on a measure of concentration of interest. Explanatory variables a share of the claims held by a given institutional type. We include one institutional type at a time, thus each number corresponds to a different regression. In addition to the reported variables, each regression includes industry fixed effects, economic recession dummy identifying bankruptcies that happen during the recession period and the ratio of assets to liabilities at the bankruptcy filing. For compactness of reporting, we omit other control variable and standard errors. ***, ** and * indicate statistical significance at 1%, 5%, and 10% level, respectively. The institutional type is defined at the parent level. All models are estimated using linear least squares.

Panel A: Dependent variable is class-level recovery rate

Regression Sample:	Non-fulcrum classes			Fulcrum classes		
	All	Secured	Unsecured	All	Secured	Unsecured
Bank	0.126 (0.139)	-0.114 (0.180)	0.177 (0.164)	-0.021 (0.214)	-0.004 (0.227)	0.048 (0.267)
Bank as custodian	0.286 (0.252)	-1.010 (0.611)	0.519* (0.263)	-0.541 (0.308)	0.693 (0.716)	-0.804** (0.306)
Alternative investor	0.082 (0.182)	-0.022 (0.074)	-0.170 (0.166)	0.079 (0.254)	0.051 (0.335)	0.673* (0.308)
Asset manager	0.171 (0.218)	-0.063 (0.243)	-0.026 (0.226)	0.307 (0.319)	0.539 (0.492)	0.761* (0.360)
Hedge fund	0.748 (0.800)	0.255 (0.700)	-0.017 (1.510)	0.036 (0.781)	-0.342 (1.003)	2.593 (1.554)
Private equity	-0.154 (0.215)	0.046 (0.291)	-0.323*** (0.064)	-0.852 (0.865)	-0.282 (0.617)	-1.793** (0.702)
Other financial	-0.046 (0.110)	0.033 (0.161)	-0.296* (0.128)	0.314* (0.143)	0.139 (0.166)	0.581*** (0.059)
Non-financials	-0.122 (0.102)	0.113 (0.099)	-0.075 (0.116)	-0.186 (0.222)	-0.192 (0.105)	-0.402 (0.213)

Panel B: Dependent variable is class-level deviation from APR recovery rate

Regression Sample:	Non-fulcrum classes			Fulcrum classes		
	All	Secured	Unsecured	All	Secured	Unsecured
Bank	-0.061 (0.076)	-0.191* (0.093)	-0.044 (0.105)	0.208* (0.090)	0.245 (0.140)	0.307** (0.122)
Bank as custodian	0.612** (0.234)	-0.299 (0.185)	0.758*** (0.170)	-0.660 (0.350)	0.387 (0.197)	-0.839** (0.277)
Alternative investor	0.089 (0.097)	-0.015 (0.031)	0.214 (0.121)	-0.126 (0.172)	-0.125 (0.254)	-0.368 (0.295)
Asset manager	0.142 (0.107)	0.033 (0.096)	0.276* (0.125)	-0.170 (0.184)	-0.076 (0.365)	-0.392 (0.290)
Hedge fund	-0.168 (0.369)	-0.099 (0.733)	0.088 (0.253)	-0.457 (0.883)	-0.829 (0.818)	-0.735 (0.475)
Private equity	-0.005 (0.097)	-0.118 (0.254)	0.076 (0.104)	-0.066 (0.214)	-0.181 (0.715)	-0.818 (0.616)
Other financial	0.111 (0.158)	-0.228** (0.069)	0.218 (0.149)	-0.260 (0.205)	0.209* (0.085)	-0.292* (0.148)
Non-financials	-0.049 (0.077)	0.193*** (0.044)	-0.119 (0.107)	0.091 (0.074)	-0.080 (0.060)	0.046 (0.110)

TABLE A.I
LIST OF BANKRUPTCY CASES IN SAMPLE

Filing Date	Debtor	Assets at filing (\$US Millions)	Pre-pack	Outcome	Filing Date	Debtor	Assets at filing (\$US Millions)	Pre-pack	Outcome
<u>Mining & construction:</u>					<u>Manufacturing - continued:</u>				
11/13/2002	Horizon Natural Resources	--		Sold to financial buyer	1/29/2007	PT Holdings Company	\$153.70		Reorganized
9/25/2003	JA Jones	--		Liquidated	8/16/2007	Quaker Fabric	\$155.20		Liquidated
10/29/2006	I E Liquidation/Ideal Electric	\$22.60		Sold to strategic buyer	11/9/2007	Levitt and Sons	\$411.00		Liquidated
12/12/2008	CDX Gas	\$500.00		Reorganized	1/7/2008	Heartland Automotive	\$334.00		Reorganized
<u>Manufacturing:</u>					1/28/2008	American LaFrance	\$189.00		Reorganized
4/2/2001	W.R. Grace & Co.	\$2,584.90		In process	2/22/2008	Wellman	\$124.30		Reorganized
6/28/2001	360 Networks	\$6,326.00		Reorganized	3/5/2008	Ziff Davis Media	\$313.00	Yes	Reorganized
11/2/2001	General Datacomm Ind.	\$64.00		Reorganized	3/16/2008	Shapes-Arch Holdings	\$0.10		Sold to financial buyer
12/5/2001	Hayes Lemmerz Intern.	\$2,800.00		Reorganized	3/30/2008	AMPEX Corporation	\$26.50	Yes	Reorganized
3/12/2002	Zenith Industrial	\$166.00		Sold to financial buyer	4/4/2008	Sturgis Iron & Metal Co.	\$23.40		Liquidated
3/13/2002	Guildford Mills	\$551.10	Yes	Reorganized	4/23/2008	Kimball Hill	\$795.50		Liquidated
4/15/2002	Exide	\$2,100.00		Reorganized	7/8/2008	Syntax-Brilliant Corporation	\$175.70		Liquidated
5/31/2002	Farmland	\$2,700.00		Liquidated	7/15/2008	Pierre Foods	\$304.20		Reorganized
6/8/2002	DESA Holdings	\$235.00		Sold to financial buyer	8/27/2008	NetEffect	\$1.00		Sold to strategic buyer
11/15/2002	Oakwood Homes	\$812.00	Yes	Sold to financial buyer	11/13/2008	The Antioch Company	\$66.40	Yes	Reorganized
5/19/2003	Weirton Steel	\$696.00		Sold to financial buyer	12/30/2008	Constar International	\$420.00	Yes	Reorganized
7/15/2003	Loral Space Communications	\$2,654.00		Reorganized	1/2/2009	Recycled Paper Greetings	\$100.00	Yes	Sold to strategic buyer
8/20/2003	Ddi Corp.	\$203.00	Yes	Reorganized	2/21/2009	Journal Register Company	\$142.20	Yes	Reorganized
8/26/2003	Met-Coil Systems	\$50.00		Reorganized	3/16/2009	Masonite Corporation	\$1,527.50	Yes	Reorganized
3/31/2004	Dan River	\$441.80		Reorganized	<u>Services:</u>				
9/1/2004	Techneglas	\$100.00		Reorganized	7/19/1998	FPA Medical	\$831.20	Yes	Sold to strategic buyer
9/3/2004	Quigley (Pfizer Sub)	\$155.20		Liquidated	11/27/2002	Genuity	\$1,940.00	Yes	Sold to strategic buyer
12/16/2004	Tropical Sportswear	\$247.10		Sold to strategic buyer	1/19/2005	American Banknote Corp	\$124.70	Yes	Reorganized
5/17/2005	Collins & Aikman Corp	\$3,196.70		Liquidated	2/18/2005	Access Cardiosystems	\$10.00		Reorganized
7/26/2005	Protocol Services	\$140.50		Reorganized	5/31/2005	WATTS Health Foundation	\$54.80		Sold to strategic buyer
12/1/2005	Nobex Corp.	\$10.00		Sold to strategic buyer	7/5/2005	St. Vincent's Medical Centers	\$971.90		Reorganized
2/10/2006	JL French	\$341.40	Yes	Reorganized	9/30/2005	The Brooklyn Hospital	\$233.00		Reorganized
3/3/2006	Dana Corporation	\$7,900.00		Reorganized	4/16/2007	Bayonne Medical Center	\$88.00		Sold to strategic buyer
4/10/2006	Global Home Products	\$472.50		Reorganized	1/23/2008	PRC	\$354.00	Yes	Reorganized
7/27/2006	Source Enterprises	\$4.30		Reorganized	2/14/2008	Charys Holding	\$245.00	Yes	Reorganized
8/17/2006	Weld Wheel Industries	\$31.70		Sold to strategic buyer	3/10/2008	Terisa Systems	\$12.00	Yes	Reorganized
8/21/2006	Radnor Holdings	\$361.50		Sold to financial buyer	3/11/2008	Louisiana Riverboat Gaming	\$250.40		Reorganized
8/31/2006	Portrait Corporation of	\$153.20		Sold to strategic buyer	5/5/2008	Tropicana Entertainment	\$2,840.00		Reorganized
9/20/2006	CEP Holdings	\$20.00		Liquidated	7/7/2008	National Dry Cleaners	\$0.50		Liquidated
10/30/2006	Dura Automotive Systems	\$1,990.00		Reorganized	1/12/2009	Apex Silver Mines	\$721.30	Yes	Reorganized

TABLE A.I – continued

Filing Date	Debtor	Assets at filing (\$US Millions)	Pre-pack	Outcome	Filing Date	Debtor	Assets at filing (\$US Millions)	Pre-pack	Outcome
<u>Transportation, communication, and utilities:</u>					<u>Wholesale & retail trade - continued</u>				
5/21/2001	Teligent	\$1,200.00		Reorganized	1/20/2004	Wickes	\$155.50		Liquidated
11/13/2001	ANC Rental	\$6,497.50		Sold to financial buyer	4/29/2004	Women First Healthcare	\$49.10		Liquidated
1/28/2002	Global Crossing	\$22,400.00		Sold to strategic buyer	6/14/2004	ACR Management	\$100.00	Yes	Reorganized
12/19/2002	Focal Communications	\$561.00		Reorganized	6/15/2004	Kiel Bros. Oil Comp.	\$50.20		Liquidated
3/14/2003	TWI	--		In process	11/4/2004	Rhodes Inc.	\$50.00		Liquidated
6/19/2003	Touch America	\$1,608.10		Liquidated	1/11/2005	Ultimate Electronics	\$329.10		Sold to strategic buyer
7/8/2003	National Energy & Gas	\$7,613.00		Reorganized	4/8/2005	Norstan Apparel	\$19.60		Liquidated
7/8/2003	USGEN New England	\$2,337.40		Liquidated	7/11/2005	GT Brands Holding	\$208.80		Liquidated
9/14/2003	Northwestern Corporation	\$2,624.90		Reorganized	1/12/2006	Musicland	\$371.50		Liquidated
9/12/2004	US Airways	\$8,806.00		Sold to strategic buyer	1/25/2006	G+G Retail	\$83.60	Yes	Sold to strategic buyer
9/14/2005	Delta Air Lines	\$21,561.00		Reorganized	2/3/2006	Glazed Investment	\$28.60	Yes	Sold to strategic buyer
9/14/2005	Northwest Airlines	\$14,352.00		Reorganized	12/29/2006	Advanced Marketing Services	\$100.00		Liquidated
9/23/2005	Entergy New Orleans	\$703.20		Reorganized	10/16/2007	Movie Gallery	\$892.00	Yes	Reorganized
11/7/2005	FLYi/Atlantic Coast Airlines	\$378.50		Liquidated	1/22/2008	Buffets Holdings	\$963.00		Reorganized
12/20/2005	Calpine Corporation	\$26,628.80		Reorganized	2/7/2008	Manchester	\$131.60		In process
1/25/2006	Leaseway Motorcar Transport	\$177.70		Reorganized	3/26/2008	Hoop Retail Stores	\$100.00		Liquidated
10/15/2006	Sea Containers	\$1,700.00		Reorganized	5/2/2008	Linens 'n Things	\$1,740.40		Liquidated
10/15/2007	Kitty Hawk	\$40.00		Liquidated	8/20/2008	Hines Horticulture	\$297.40		Sold to financial buyer
11/8/2007	SN Liquidation	\$97.00	Yes	Sold to financial buyer	10/6/2008	Paper International	\$100.00		Reorganized
11/19/2007	Performance Transport	\$20.50		Liquidated	11/24/2008	T H Agriculture & Nutrition	\$78.00		Reorganized
12/24/2007	Maxjet	\$14.80		Liquidated	1/5/2009	Blue Tulip	\$6.70		Liquidated
4/2/2008	ATA Airlines	\$250.40		Reorganized	1/5/2009	Smitty's Building Supply	\$21.20		Reorganized
4/5/2008	Skybus Airlines	\$100.00		Liquidated	<u>Finance, insurance, and real estate:</u>				
4/26/2008	EOS Airlines	\$70.20		Liquidated	10/31/2000	PRS Insurance Group			
<u>Wholesale & retail trade:</u>					12/17/2002	Conseco	\$1,794.80		Reorganized
10/12/2001	Polaroid Corp.	\$1,800.00		Sold to financial buyer	9/8/2003	DVI Inc	\$1,870.00		Liquidated
12/2/2001	Enron	\$24,700.00		Sold to strategic buyer	3/6/2006	Plus Funds Group	\$7.80		Liquidated
1/22/2002	Kmart	\$16,287.00		Reorganized	4/13/2006	USA Commercial Mortgage	\$100.00		Sold to financial buyer
10/1/2002	Agway	\$1,574.40		Liquidated	12/28/2006	Ownit Mortgage Solutions	\$696.60		Liquidated
1/31/2003	American Commercial Lines	\$838.90		Reorganized	2/5/2007	Mortgage Lenders Network	\$464.80		Liquidated
4/1/2003	Fleming Companies	\$4,200.00		Reorganized	7/30/2007	New 118th	\$2.70		In process
5/13/2003	Orion Refining	\$691.00		Liquidated	8/6/2007	American Home Mortgage	\$20,553.90		Liquidated
5/30/2003	The Penn Traffic Company	\$742.00		Reorganized	9/28/2007	NetBank	\$87.20		Liquidated
10/8/2003	Chi-Chi's	\$50.00		Liquidated	2/10/2008	Cornerstone Ministries Invest.	\$159.10		Liquidated
10/29/2003	Piccadilly	\$159.00	Yes	Sold to financial buyer	3/31/2009	USI Senior Holdings	\$50.00	Yes	Reorganized