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 of 1998 through 2009. We investigate how concentration in debt ownership relates to Chapter11 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, via both pre-filing prepack/ prearranged restructurings and traditional in-court proceedings. Increased concentration also leads to higher probability of a firm sale and lower probability of a liquidation. Our results indicate that concentration of debt ownership increases significantly over the course of the case. We establish that trading during the case, particularly via claims purchases by asset management firms and hedge funds, leads to higher concentration of ownership when a plan of reorganization is voted upon.

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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 new 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 debt claims, how debt ownership evolves through bankruptcy, and ultimately, how debt ownership structure influences the Chapter 11 restructuring.[2] These are the three aspects that we investigate in this paper. Specifically, we create a

[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).

[2] As Levitin (2010) points out: "The debate over claims trading (in Chapter 11) operates on a limited evidentiary base. Arguments about claims trading are based on theory, common sense, and anecdote, but not data."

novel data set that identifies the investors holding Chapter 11 claims and examine the role these investors play in affecting Chapter 11 outcomes.

We collect a comprehensive set of investors' 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 2009. The snapshots, taken at the filing of the debtor's schedules of assets and liabilities and at the tabulation of votes on the debtor's plan of reorganization, cover claims filed by 71,358 different investors. For a large subset of bankruptcies and 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. This enables us to document the rich set of different 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 (reporting bond and other securities holdings on behalf of private investors), an asset management firm, hedge fund, private equity fund, or an insurance or real estate company.

Our main focus is on how the concentration of the capital structure relates to the evolution and outcome of the case, and how claims trading influences debt ownership concentration over the course of the Chapter 11 case. To our knowledge, this is the first study to provide a comprehensive empirical examination of the debt ownership structure of corporations and the affect this structure has on restructurings following financial defaults.

The results of our paper can be summarized as follows. First, at the onset of the bankruptcy case, 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 6.9%, 0.4%, and 2.4%, respectively, of all claims. However, these investors increase their holdings by about 50% during the case, owning roughly 15% of the claims by the time votes are tabulated on the plan of reorganization. It is banks (22.1%) and non-financial corporations (23.8%) that own the

largest fraction of debt claims at the start of a Chapter 11 case, and it is these investors that continue to hold the majority of shares at the time the plan is voted upon.

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 banks and alternative investors. Using claimants that we can track from the beginning of the case to 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 a higher concentration of ownership in the debt claims. We also show that alternative investors are net buyers in the observed trading, and that they account for nearly 70% of all creditors who enter the capital structure via claims trading. Our results show that buys by asset managers, in particular, are positively and significantly related to increases in concentration at the time of the vote on the plan of reorganization. Thus, while alternative investors hold a relatively small fraction of debt claims during bankruptcy, their purchases are of strategic importance: they tend to acquire claims in concentrated lots and focus their purchases on claims that are important to voting outcomes.

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.

While high creditor concentration appears to improve the speed with which a restructuring occurs, it is associated with lower overall (estimated) recover rates to creditors. When we instrument for the claims trading associated with increases in concentration, we find that the negative relation persists; in that sense, the negative relation is causal. This result is puzzling given that theories argue that higher

concentration in the capital structure should improve the efficiency of the restructuring. We explore a variety of explanations, including that more concentrated senior creditors push for quick restructurings at the expense of less concentrated junior creditors, that "fulcrum" security holders in a position to gain controlling equity in the restructured company strategically undervalue the equity, and that distressed debt investors concentrate their holdings in firms with lower ex-ante values (to take advantage of more upside opportunities). None of these explanations appear to be driving the result. The finding is made more puzzling by the fact that relation between concentration and recovery rates is positive within creditor voting classes, so that when voting within a particular class is concentrated among a few investors, the recovery rate to that class is higher. In class-level regressions, we show that higher class-level concentration also results in favorable a deviation from absolute priority (APR) to the high-concentration class. APR deviations are also higher during economic downturns, when the immediacy of completing a restructuring could give more bargaining power to junior classes pushing for a distribution larger than APR would allow.

Taken together, our results could imply that sophisticated investors that are concentrated across the capital structure bargain in a way that leads to lower valuations of the restructured firm at exit, relative to firms with claims held by more dispersed creditors. Our results do not determine whether this lower valuation is a strategic play to allows these investors to exit with undervalued assets (Gilson, Hotchkiss, and Ruback, 2000), or reflects deadweight losses related to poor coordination by investors with divergent interests (Baird and Rasmussen, 2010).

While focusing on firms that file for Chapter 11, our paper makes a more general contribution to the capital structure literature, particularly with respect to how the ex-ante capital structure influences workouts and reorganizations following default. 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 theories of how firms should design their ex-ante capital structures (e.g., Bolton

and Scharfstein, 1996). However, the theoretical work typically abstracts from the possibility that claims trading can alter creditor structures.[3] By consolidating claims and altering the ownership structure of debt claims, trading can have an important impact on the efficiency of bargaining. Our paper shows that claims trading during the case increases ownership concentration and alters the identity of the creditors (in favor of arguably more sophisticated investors), particularly in creditor classes that have strategic weight at the voting on the plan of reorganization. We also show that ownership concentration ultimately has a significant influence on Chapter 11 restructurings and the outcome of the case.

By relating the identity and concentration of investors across the Chapter 11 debt claims to the outcome of the Chapter 11 case, our paper also provides first insight into whether distressed debt trading is associated with improvements to the ex-post efficiency of the restructuring. This is an important point as legal scholars, as well as bankruptcy practitioners, are split as to whether distressed debt trading helps or hinders the restructuring process. On the one side, Baird and Rasmussen (2010) argue that distressed debt trading is "toxic" (p. 7) to the Chapter 11 process because distressed debt traders reflect multiple and conflicting interests that slow the restructuring down and increase costs associated with the case. Likewise, bankruptcy judge Robert Gerber of the Southern District of New York characterizes distressed debt traders as:

> …not necessarily bad… [but] have their own agendas, which not infrequently consist of simply maximizing returns… 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).

On the other side, Levitin (2010) argues that claims trading can enhance the efficiency of Chapter 11 reorganizations by demanding a higher quality restructuring, forcing more credible turnarounds, and, through competition for claims, pushing higher the prices paid to claimants wishing to forego waiting until the restructuring is complete to collect their distribution. Similarly, bankruptcy creditor rights attorneys Jon Kibbe, Michael Friedman, and Keith Sambur warn that efforts to dampen claims trading

[3] One notable exception is Bond and Eraslan (2010).

could "destroy or impair the sales value of securities" and reduce participation of sophisticated investors in Chapter 11 restructurings (Kibbe, Friedman, and Sambur, 2009, pp. 2-3).

Our paper is related to Bharath, Panchapegesan, and Werner (2007) and Ayotte and Morrison (2009), who show that the speed and efficiency of Chapter 11 restructurings increased significantly from the 1980s through the early 2000s, a period coincident with both an increase in the sophistication of Chapter 11 players and the development of distressed debt trading markets. But neither Bharath, Panchapegesan, and 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. Our findings also relate to 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. These papers find that the presence of sophisticated investors can increase the efficiency of the Chapter 11 case and the performance of firms following the restructuring. We follow a much broader set of investors—virtually the entire capital structure of the distressed firms in our sample—and observe direct holdings and transfers of claims through bankruptcy filings. This enables us to focus in much more detail on the evolution of the structure during the Chapter 11 case, and how this evolution influences the restructuring of the distressed firm.

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

A. Ownership of bankrupt claims

To understand structure and evolution of the ownership of bankrupt claims, we need 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

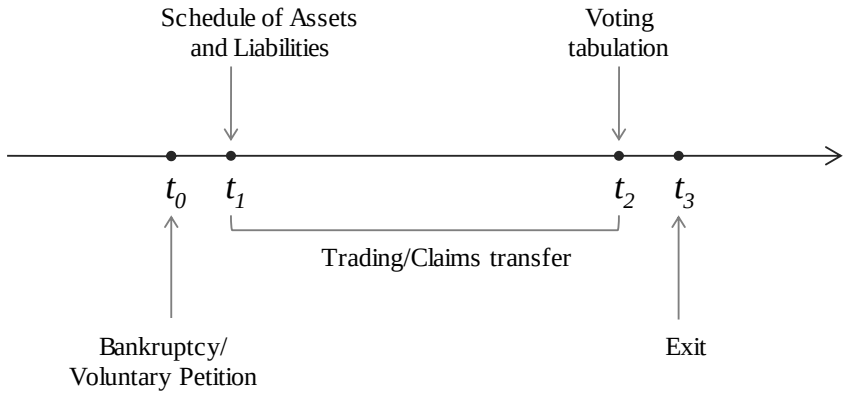
are in unregistered instruments traded over-the-counter, no one reliable source exists for observing the identity of the claimants through time during bankruptcy. Even for some Securities and Exchange Commission (SEC) registered securities, such as publicly traded bonds, only partial information is available on the identities of the investors.[4] To overcome these obstacles, we rely on a sample of "snapshots" of creditor holdings that are reported at two points during the bankruptcy process: (1) at the filing of the schedules 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, Donlin Recano & Compan and Kurtzman Carson Consultants (KCC). These professional service firms are retained by the bankrupt company to record and manage the claimant databases during the course of the bankruptcy case. Each of these firms provided us with electronic versions of the schedules of liabilities, supplemented with information from the client "credit register," and records of vote tabulaitons. These firms also provided 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. While we received our data in an easily readable electronic format, all of the data are also available in flat-text (pdf) format through the U.S. Public Access to Court Electronic Records (PACER) system of bankruptcy filings, the disclosure of which is regulated by the Federal Rules of Bankruptcy Procedure.[5]

[4] 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.

[5] 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 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

Figure1
Bankruptcy timeline



A.1. Snapshot 1: Schedule of Assets and Liabilities and Credit Register (t1)

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 its schedules of assets and liabilities, which—as the name suggests—contain a detailed description of the bankrupt company's assets as well as a list of all creditors, together with the amount and nature of their claims. Once the schedules are filed and therefore made public, any claimants to the case that are omitted from the schedules can separately request that their claims be recognized through a central "credit register," maintained by restructuring and insolvency administration firms on behalf of their bankruptcy client. 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

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 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.

register give us the first snapshot of creditors immediately following the bankruptcy. For ease of exposition, we denote the time in the bankruptcy process referring to the filing of the schedules as t_1.

The schedule, supplemented with the register, contains a comprehensive list of *all* claims as of the start 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.[6]

A.2. 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.[7] 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 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

[6] There are often duplicate, overlapping, illegitimate claims filed in the register by different parties to the case. For instance, a creditor may assert the same claim against a parent and subsidiary, or even against multiple subsidiaries that are consolidated under the same case filing. Alternatively, claims are asserted that later prove to be unjustified. Throughout our analysis, we identify and eliminate, to the greatest extent possible, all duplicate, overlapping, and illegitimate claims.

[7] 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.

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, only a subset of claimants is observable 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. Unimpaired classes, when they exist, are typically the most senior and secured classes and classes in which the amount of claims is very small.[8] 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 bankruptcy judge is supposed 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.

[8] 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, they may receive new debt claims with different terms than their original debt, or for some other technical reason.

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.[9]

A.3. 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, 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 (Rule 3001e of the Federal Rules of Bankruptcy Procedure) 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. We do not observe 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 (see Levitin (2010) for more details on Rule 3001e).

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. Second, the over-the-counter trading we observe will be less active than in loans and bonds, which have

[9] 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.

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.

There is some variation in how the data on claims transfers was provided to us by the different restructuring and insolvency administrative firms. Only BMC Group (43 bankruptcy cases) provides data identification information that links the claimants at register, in claims transfers, and at voting tabulation into one coherent dataset. For this reason, we can use the BMC cases to unambiguously identify buyers and sellers of claims, the amount of the claims, and whether the transferred claims were ultimately allowed to vote on the plan of reorganization. The data provided by Epiq (52 bankruptcy cases) tracks reassignments within the claims register, but does not identify directly the buyer or seller as a separate record. For this reason, we had to extract the name of the original claimholder and the claim buyer from the name and address fields in the data. For example, the creditor name might be listed in the register as "ASLAN Capital Master Fund, LP Fully transferred from: Milberg Factors, Inc.," or, alternatively, the first line of the address could be something like "Transferor: Valassis Direct Mail, Inc.". To identify transferred claims with the Epiq data, we search for "transferred" or "transferor" in the creditor name and address, and then separated out the buyer's name from the sellers' names based on these two patterns. Epiq does not provide a link between records at the register and records at tabulation. The Donlin Recano data (10 bankruptcy cases) contain a separate field indicating claims which were traded; however we only have data for a subset of voting claims, rather than an entire sample of traded claims. KCC (31 bankruptcy cases) provided us with three data sets for each case identifying claims at register, voter tabulation, and list of transferred claims. But because there is no unique claim identifier, we can only

merge the transferred claims to the register by name and claim amount, which perhaps leads to the least reliable match.

B. 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 in conjunction with plans of reorganization. In some cases, we also rely on searches of news articles and SEC filings (among the subset of public firms) for information relevant to the case. For financial information on the firms, we use *Deal Pipeline* for asset and liabilities at the time of filing, *Compusstat* for publicly traded firms, *SDC* for number of employees, and *CapitalIQ* for information on 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.

The time pattern of bankruptcies in our sample, shown in Panel A of Table I, 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, and Werner (2007), firms in our sample exit relatively quickly from Chapter 11, in just over a year on average.

Roughly 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 (32%). 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 bankruptcy exit—is most often the class holding senior lender claims (29%) or the class of bondholders and noteholders (24%). But controlling equity also goes to general unsecured creditors (which include all unsecured claimants not separated off into a distinct class) a fair amount of time (19%), as well as the original equity holders (16%).

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 $1.9 billion and median size of $250 million.

[TABLE I]

C. Identifying and matching creditor types

A total of 1,461,967 claims were filed in the 136 bankruptcies in our study. In the original data we only have the names of the creditors. Before assigning creditors institutional type, we reduce the data to a manageable size by excluding all claims of less than $50 thousand, most of which are held by individuals or are trade and tax claims. This exclusion reduces the number of claims to 122,530. While this is a drastic reduction on an equally-weighted basis, on a value-weighted basis only 2.4% of claims are dropped from the sample. The sample is further reduced by eliminating all withdrawn, disallowed, and duplicate claims, resulting in a final database of 79,527 claims, which are held (either at t_1 or t_2) by 71,358 unique creditors.

Our basic process for classifying observed claimholders according to institutional type is to match creditor names to lists of names of financial institutions. Based on this match, we create a parent identifier and assign a parent institutional type to the creditor record. 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"). At the parent level, we identify thirteen institutional types, nine financial and four non-financial. The institutional types are bank, bank as custodian, asset management, hedge fund, private equity, insurance, real estate, other financials, corporations, government, individuals, and intra-company 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 a bank or financial

holding company structure. These classifications are achieved using information from Capital IQ's database on parent subsidiary relationships. 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.[10] 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* database or described in Capital IQ as asset management firms catering to "high-wealth individuals", "pooled investors" or "endowments" are classified as hedge funds. We use Capital IQ to identify private equity funds, but also use 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

[10] 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.

identified as such through our other methodologies. Together, we often label hedge funds, private equity funds, and asset management companies as "alternative investors."

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.

Overall, out of 71,358 unique creditors, we are able to classify 96.8% of the creditors' names, or 98.3% of the total value of claims.

D. Voting-class-level data

In addition to collecting debtor-level data, we also construct a voting-class-level dataset using information from each debtor's disclosure statement, combined with claimant information contained in the voting tabulations (t_2). 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 a distribution violates the absolute priority rule (APR). 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

Table II reports the distribution of claims ownership across institutional types and across the capital structure of the bankrupt firms at the filing of the Schedule of Assets and Liabilities (t_1) and at vote tabulation (t_2). The group of claimants at vote tabulation is a subset of those included in the Schedules because it contains only claimants that are eligible to vote.

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 at the filing of 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 22.1% (median of 13.7%) of the ownership of Chapter 11 claims and hold a claim in nearly 90% of the sample firms. (Conditional on at least one bank holding claims at bankruptcy, banks account for 22.1% / 88.7% = 24.9% of the ownership of Chapter 11 claims.) Note that holdings by banks are not limited to loan claims originated by the bank themselves. As will become more apparent below, bankrupt claims are often acquired and held by banks through their proprietary trading desks. These desks acts as broker-dealers in the secondary market for claims and also trade on their own account.

Nonfinancial corporations account for another 23.8% (median of 16.7%) of all claims and are present in nearly all cases. A large portion of claims held by nonfinancial corporations are in the form of trade credit and related claims for services and products purchased by the bankrupt firm. However, nonfinancial corporations can also be involved in loans, bond purchases, and other forms of financing.

Overall this figure maps well with findings by Rajan and Zingales (1995), who show that trade credit represents about 22.8% of liabilities of private U.S. firms, and *Compustat* figures, which show that the average Compustat firm in 2010 had accounts payable of 32.1% of liabilities.

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 and construction of the credit register, hedge funds account for only 0.4% of claims and private equity funds hold only 2.4% of the claims. Both institutional types appear in less than 30% of the cases in the sample. Asset management companies hold 6.9% of all claims and are more present across the bankruptcy cases, with holdings in about 65% 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".[11] Of course, hedge fund investors can have a large influence on the case without large claim-holdings, a point to which we return in later tables. But, to the degree that hedge fund investors assert influence over the case, they do so using a relatively small share of the overall holdings of Chapter 11 claims.

Panel A of Table II also reports the within institutional-type concentration of investors, as measured by the Herfindahl-Hirschmann index (HH index) of claims ownership shares with a value one corresponding to one owner within that investor type. In general, hedge fund and private equity investors tend to hold more concentrated shares of Chapter 11 claims (concentration index of 0.75 and 0.83, respectively) than banks and asset management firms (concentration index of 0.67 and 0.71, respectively), who in turn hold more concentrated shares than most non-financial claimants, including nonfinancial corporations (concentration index of 0.27), government entities (concentration index of 0.54), and individuals (concentration index of 0.32).

[11] Two issues could be creating the large discrepancy in observed involvement of hedge-fund investors documented by 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.

Panel B of Table II reports the distribution of claims held by each institutional type *within* a claim type, which at the time of schedules and register 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 secured claims are held by banks and nonfinancial corporations and that corporations also hold the largest share of unsecured claims.

Panel C reports the distribution of claim-holdings by institutional type *across* claim types. According to these results, at the time of the filing of the Schedules of Assets and Liabilities, all claimants hold the largest proportion of their Chapter 11 claims as unsecured claims. However because senior loan claims are often secured with collateral, a substantial proportion of bank holdings are in the form of secured claims at the time of the case filing.

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 (t_2). It is important to keep in mind that the distribution of claims ownership at the outset of the case is not directly comparable to the observed distribution at vote tabulation, since at t_2 we only observe voting creditors. Even so, 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 as custodians decrease their ownership share between t_1 and t_2. This could be due to 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, syndicate members usually report on their own behalf. While we attempted to classify administrative agents as banks (and not custodians) at the filing of the Schedules, if the agent bank was labeled as a "custodian" and not an "agent" it would be misclassified by our algorithms. To the extent that this affects our classification, the bank-as-custodian holdings at tabulation probably provide a better estimate of the holdings of bondholders, which is only 4.22% of total claims and present in only 34.5% of the cases.

The more interesting change in the distribution of claims ownership documented in Panel A of Table II comes via increases in the proportion of Chapter 11 claims held 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 3.5%, respectively, of all claims that are tabulated at the time of the plan vote. If we also consider the holdings of investment management firms, which include "alternative" investment strategies that are similar to hedge funds and private equity (and may also include hedge and private equity funds not positively identified from our sources), holdings by alternative investors average about 15% of all claims at tabulation, compared with about 10% of holdings at the filing of the Schedules.

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. The panel reports claims ownership across the capital structure of the bankrupt firms by sorting ownership into voting classes, sorted by absolute priority. Most of the class names are self-explanatory. But the class of "General unsecured" claims is a catch-all class that can contain trade claims, unsecured bonds and notes, as well as a variety of other unsecured claims, when these claims are not identified separately for purposes of voting.

At vote tabulation, banks hold the largest amounts of claims in loan (35.2%) and senior "Notes" (40.1%) classes, although the grouping of "alternative investors" – asset management companies, hedge funds, and private equity funds – together hold a large proportion of loan claims (21.5%) and a non-trivial proportion of the Notes (8.5%) and General unsecured (8.8%) classes. Nonfinancial corporations hold the largest proportion of general unsecured (40.5%), and trade (58.5%) claims, while unrelated persons hold the largest shares of employee/pension (44.9%) and tort (45.4%) claims.

Equity is a voting class only when pre-bankruptcy equity holders are allotted some nonzero distribution under the plan of reorganization, i.e. in cases when equity is "in-the-money" or close to being "in-the-money". When pre-bankruptcy equity is far out-of-the-money, claimants receive no distribution under a plan of reorganization and do not vote on the plan. Thus, when we observe voting claims on

equity, these claims are close to in-the-money. Panel B of Table II shows that voting equity claims are held predominantly by nonfinancial corporations (44.7%) and unrelated persons (20.16%). More notable, sophisticated alternative investors shy away from this class, with asset managers holding 4% of the equity claims and hedge and private equity funds holding zero.

Panel C of Table II reports the distribution of the holdings of voting claims across institutional types. Banks, asset management firms, hedge funds, and private equity firms, all hold roughly about the same proportions 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 trade across categories, so that for example, banks own a substantial amount of claims that are not loan claims and, likewise, non-bank investors, including asset management companies, hedge funds, and private equity funds, can hold substantial portions of their portfolio in loans. In contrast, nonfinancial creditors, including corporations, governments, and unrelated persons, hold most of their claims in General unsecured claims – the class that often contains trade and tort claims – or in the trade and tort classes when they are identified separately.

[TABLE II]

C. Claimholders involvement in Chapter 11 financing and control events

One thing that we cannot observe directly from the claims data is the extent to which claimholders play important roles in the Chapter 11 process outside of acquiring, holding, and voting the claims themselves. Table III reports the frequency with which investors in our claims data also act as players in relevant financing and control events that occur during the Chapter 11 case, including acting as investors in debtor-in-possession (DIP) financing, providing debt financing at the bankruptcy exit, providing equity financing (via direct capital injections and rights offerings) at bankruptcy exit, and acquiring the company via "Section 363 Sales" during the bankruptcy process. Claimant involvement in financing and control events indicates that claimholders are playing an active or strategic role in the bankruptcy, rather than passively awaiting a distribution.

Panel A reports the frequency of claimholder participation in events at the bankruptcy level, for claimholders observed both at the filing of Schedules (t_1) and at vote tabulation (t_2). The panel shows claimholder involvement in a significant fraction of financing and investment events. Claimants at t_1 provide DIP financing in approximately 60% of the cases that use DIP financing and about half of all cases that provide exit financing, either in the form of debt or equity. By the time plan votes are tabulated at t_2, claimants provide equity financing at exit in fully 70% of the cases. In contrast, claimholders are not often involved in acquisitions through 363 sales; t_1 claimholders are acquirers in about 12% of all sales, while t_2 investors are involved in about 3% of sales. The low incidence of Chapter 11 acquisitions by claimants shows that "credit bidding"—in which claimants use the face value of their claims as a medium of exchange for bidding—is relatively uncommon. It also shows that investors interested in buying Chapter 11 companies outright do not typically take toehold positions in the claims structure prior to bidding on the firm.

Panel B of Table III breaks down the frequencies reported in Panel A for voting claimholders by coarse voting class (loans, unsecured claims, and equity) at t_2. It also reports the frequency with which claimholders in the fulcrum class—the class receiving the majority of new equity at exit—are also active in financing and investments. The first four columns of Panel B report the proportion of cases in which a given class overlaps with the financing or investment event. For instance, we identify a loan class in 68.1% of the cases that also have a DIP loan and in 11.7% of the cases that involve equity financing at exit. The latter four columns report the proportion of cases that involve an event and voting class that also has an event investor in the claims structure of that voting class. So, among the cases that involve a DIP loan and have a loan class in the voting structure, claimholders in that class provide the DIP 7.8% of the time. Likewise, unsecured claimants provide the DIP in 17.2% of the cases, and equity does so in 9.1% of the cases.

[TABLE III]

Overall, the statistics in Panel B of Table III show that claimholders active in financings come from both secured and unsecured claims, and rarely from equity. In fact, the statistics likely understate

secured claimant participation in DIP loans since secured claimants are often "taken out" of the capital structure prior to voting through roll-ups of their pre-bankruptcy debt with the DIP loan. To the extent that these rolled up DIP lenders also provide exit financing, secured claimants will also be underrepresented in the exit financing categories.

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. While changes in holdings between the snapshots at times t_1 and t_2 yield some insight into the trading that occurs during the case, the fact that we only observe the subset of claimants that are eligible to vote at t_2 makes it difficult to attribute observed shifts in the distribution to actual trading-oriented changes in ownership.

A. Overview of claims trading

Table IV 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 final two columns show the proportion of claims purchased by each institutional type when we divide buyers by whether they are existing claimants or new entrants. 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). Thus, the results in Panel A are generally supportive of the findings in Table II that alternative investors take on a much larger role in the capital structure through acquisitions of claims during the case. The final columns of Panel A show that to a large extent these alternative investors use claims trading to

enter the capital structure of bankrupt firms. That is, these investors aren't necessarily consolidating prior investments in these firms, but instead often become creditors for the first time during the bankruptcy process. In particular, asset management firms account for 54.2% of all new creditors. Banks, on the other hand, make up 51.9% existing creditors who purchase claims, but only 2.8% of new claimants.[12] Meanwhile, corporations and insurance claimants—holders of original trade and insurance claims—are responsible for more than one-third of all claims sales. This latter finding is consistent with the fact that among the set of bilateral claims that we observe being traded, many are trade claims and insurance claims.

Panel B of Table IV is set up as two 14 x 14 matrices in which each row and column references an institutional type. The top half of Panel B reports the distribution of claims sales from a given institutional type to other institutional types, while the bottom half reports the distribution of buys by a given institutional type from other institutional types. The general patterns that emerge from Panel B are consistent with the findings in Panel A: (i) much of the selling of claims during Chapter 11 are by banks and non-financial corporations (distribution in lower half of the panel is concentrated on banks and corporations as the two entities from which other institutions buy) and (ii) much of the buying of Chapter 11 claims is by banks, asset management companies, and hedge funds (distribution in upper half of panel concentrates on (1), (3), and (4)).

Finally, Panel C of Table IV 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 that contains an extensive accounting for Chapter 11 claims from the time they are entered in the Schedules or credit register through to the time of the vote tabulation. This detailed record keeping allows us to track whether traded claims are eventually allowed to vote on the plan of reorganization. Panel C shows that claims bought by banks, asset management firms, and hedge funds are concentrated in the classes that

[12] Table IV also shows that corporations account for 12.9% of new creditors. This surprisingly high figure is largely due to three creditors which were classified as corporations by our algorithm but should properly be coded as "other financial." We plan to fix this issue in a later draft of the paper.

eventually votes for the plan. Meanwhile, most of the claims sold by banks are non-voting claims. The Panel C statistics suggest that purchases of Chapter 11 claims by 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. More generally, we find that a disproportionally large amount of traded claims 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 among themselves and with the managers of the bankrupt firm. The underlying assumption is that the ex-ante capital structure of the distressed firm is fixed, thus, 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.

In this section we investigate the effect of claims trading in bankruptcy on concentration of claims ownership. Using claim-level data, we start by asking what determines whether a claim is traded. Table V presents estimates from probit regressions in which the dependent variable equals one when a claim is observed to be sold and zero otherwise. Results are reported for the both the full sample of claims, and the subsample of claims against clients of BMC Group, for which we observe the most

accurate tracking of traded claims. As explanatory variables, we focus on size, the secured status of the claim, and institutional ownership. Claim size is sorted into terciles.[13] *Small claims* are claims between $50 and $100 thousand (bottom tercile) and *Large claims* are claims above $300 thousand (top tercile). The omitted category is medium-sized claims.

The results in Table V indicate that, compared to medium sized claims, both large and small claims are more likely to be traded in bankruptcy. However, the economic effect is significantly larger for smaller claims. Compared to an unconditional probability of a mid-size claims being traded (4.7%), small claims are three times more likely to be to be traded, whereas large claims are nearly two times more likely to be traded. Consistent with the premise that claims trading in bankruptcy is primarily driven by strategic motivations, unsecured claims—which are more likely to be impaired than secured claims and therefore eligible to vote on a plan—are 13 percentage points more likely to be traded than secured claims (2.3 times larger than an unconditional mean).

Claims held by banks and alternative investors including asset management firms, hedge funds, and private equity firms are more likely to be sold, although the economic and statistical magnitude of the effects only holds in the full-sample regressions. We find that claims held by corporations (predominately trade credit claims) are 2.8 percentage points more likely to be sold after the bankruptcy filing compared to other creditors.[14] This result is consistent with the finding that corporations are the largest net sellers of claims in bankruptcy, as documented in table IV, and suggests that trade claims are more likely to be sold than other types of debt claims. At the same time, the claim-size effect appears to be less pronounced among claims sold by corporations.

Motivated by the fact that trade claims are more likely to be sold than other types of debt claims, we use the share of claims owned by corporations to instrument for the effect of trading in bankruptcy on the ownership concentration. The point is to show that trading has an important influence on the

[13] We obtain similar results when sorting claims in quintiles.
[14] Omitted category (other creditors) is all claims owned by: bank as custodian, potentially financial, insurance, real estate, other financial, government, intra-company, and unknown.

concentration of claims ownership at the time of voting on the reorganization plan, and ultimately on the outcome of bankruptcy. However, observed claims transfers could be endogenously related to debt ownership concentration through mechanisms that also affect restructuring outcome. For instance, trading activity could be higher in cases in which the capital structures are simple, which in turn leads to quick resolution of bankruptcy.

Thus, our focus on trade claims is also motivated by their arguably exogenous nature; amounts of accounts payable are likely to be formed as a result of long term relationships in the supply chain as well as the particular industry in which a firm operates.[15] Thus, variation in claims trading due to differences in levels of accounts payable across companies should be exogenous to changes in the overall concentration of debt claims in the capital structure.

There are two other reasons why using corporate holdings of debt claims as a proxy for the amount of trade claims in the capital structure make it a good instrument for the level of claims trading in general. First, the market for trade claims is likely to be highly illiquid and costly to trade in outside of bankruptcy. Indeed, no centralized information source exists on trade claims until the filing of the schedules and the creation of a claims register during bankruptcy. So, even when the bankruptcy is anticipated, it is unlikely that one can change the concentration of trade credit prior to the bankruptcy filing, particularly if the trade claims are widely held. This stands in contrast to claims held by financial institutions, which are actively traded during bankruptcy, but also likely to be traded prior to the filing in anticipation of the bankruptcy.[16] Second, as documented earlier, trade claims represent an important part of the filing firms' ownership structure, and tend to be concentrated in unsecured/voting claims.

[15] Although our sample contains primarily very large firms, Peterson and Rajan (1997) find evidence that firms rely on trade credit when they have limited access to other sources of capital. In particular, growth companies obtain more trade credit. The rationale is that suppliers might be better able to determine a firm's future prospects than a bank, and are thus willing to lend to a currently unprofitable company because they can see the growth potential, while a bank may not be willing to do so. This type of heterogeneity in trade-claim structure would still be exogenous to the anticipated bankruptcy outcomes.

[16] According to practitioners, the market for trade claims in bankruptcy can be arcane. For example, it is not uncommon for a buyer to mail checks to potential sellers for the amount of their claims, stipulating that if the check is cashed this represent a legal transfer of claims to the buyer. Large claims and especially claims held by financial institutions are likely to be traded in a centralized way.

A possible criticism of using the amount of trade claims in the capital structure as a source of exogenous variation in bankruptcy trading is that it could be correlated with the conditions of distress (and ultimately bankruptcy outcomes). For example, it could be that banks cut access to capital at the first sign of distress while suppliers are more willing to continue to extend trade credit to a distressed firm (this contrasts with the intuition in Petersen and Rajan, 1997). If this is true, then firms with higher amounts of trade credit are likely more distressed than other similar firms.

We use an additional variable to instrument for trading in bankruptcy that is a likely to affect any claimholder in bankruptcy, not just trade claimants.[17] The variable is a dummy equal to one if the bankruptcy filing took place in December. The rationale for the December variable is that claimholders are more likely to sell claims when the present value of the tax deduction for realized losses on the claim are at their highest. The alternative in other months to selling immediately is to hold the position in the claim until the end of the year and then sell, but this requires paying legal and administrative fees to represent the claimholder during that period, which would be costlier than being able to sell upon a filing that occurs at the end of the year. On the other hand, the calendar timing of the Chapter 11 filing is likely to be exogenous to the debt ownership structure.

Figure 2 plots the total mean and median traded amount of claims traded as a fraction of all registered claims by the month in which a company files for bankruptcy. It is clear that there is a significant increase in trading among the filings that take place in December. On average, 8.9% of all registered claims are sold for filings that take place in December, compared to an average for other months equal to 2.4%. The figure also shows that there is nothing unusual about December in terms of number of Chapter 11 filings. In our sample, 12 filings fall in December, compared to an average number of filings in other months of 11.2 (median of 11.0 months).

Table VI reports results of first-stage instrumental variable regressions for trading activity. The left hand side variable is total traded amount scaled by total claims outstanding. The sample is a cross-

[17] This is likely to have a larger effect for claimants whose claims are small as a percentage of their total assets. Unfortunately, we do not observe financial information for claim holders.

section of Chapter 11 filings. We can only observe whether traded claims are allowed to vote for BMC cases, hence the sample is significantly reduced when we look at the voting claims.[18] We include several control variables, which we use in the rest of the multivariate analysis. These variables include the logarithm of assets size based on the amounts reported by firms in their original Chapter 11 petitions, an indicator variable equal to one if the firm had positive EBITDA prior to filing, and a dummy variable equal to one when a firm files for bankruptcy during a recession, as defined by the National Bureau of Economic Research (NBER). Only limited information is available for pre-bankruptcy EBITDA. To account for this, we control for the level effect for those firms that have EBITDA data available. Each regression also includes industry fixed effects (industry classifications are reported in the Appendix).

The instrumental variables are the share of debt claims owned by corporations at t_1 and an indicator variable equal to one if the bankruptcy filing takes place in December. Consistent with our premise there is a positive and significant relation between the instrumental variables and trade intensity. Using non-robust standard errors, the *F*-statistic for joint significance in both samples is in excess to 10 with *p*-value close to zero. Following Stock, Wright, and Yogo (2002), we can rule out weak instruments. Also, and perhaps more convincingly, our results are robust to estimation using limited information maximum likelihood (LIML), which is more robust to weak instruments than two-stage least squares.

[TABLE VI]

Table VII explores the relation between bilateral claims trading and changes in and the level of creditor concentration during a Chapter 11 case. Panel A presents both OLS and instrumental variables or two stage least squares (2SLS) estimates of the impact of claims trading on the concentration of creditors. We measure the level of creditor concentration at the time of voter tabulation using a dollar-weighted HH index. Change in creditor concentration is the difference between HH index computed at the voter tabulation (conditional on being in a class that eventually votes) and HH index computed at the time of the schedules and register. The results show that there is a positive and significant relation between claims

[18] There are two BMC cases for which no register data was received, and five cases with no tabulation. We need both for the analysis reported in Table VI, so seven of the 43 cases get excluded.

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. The estimates imply that a one standard deviation increase in voting claims trading results in a 0.45 standard deviation increase in the overall level of creditor concentration, and a 0.41 standard deviation increase in the change in concentration between the register and tabulation. Further, a one standard deviation increase in overall claims trading results in a 0.59 standard deviation increase in the change in concentration between the register and tabulation.

In Panel B, we focus on the top three buyers of claims according to Table IV: banks, asset management firms and hedge funds. (We do not examine trading of voting claims in this panel due to a lack of statistical power.) Consistent with the univariate results, purchases of 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.

[TABLE VII]

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 VIII, 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. The number of sample firms in the regressions is slightly reduced because of missing data for some observations. Panel A of Table VIII 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 9.8 percentage points, an over fifty percent 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 concentration of the voting class (Panel B) reduces the time the firm spends in bankruptcy independent of the pre-pack/prearranged outcomes. A one standard deviation increase in the concentration of the voting class reduces the time in bankruptcy by roughly one and a half months, a 10.6% reduction from the mean stay in bankruptcy of 14 months.

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. The concentration of impaired creditors is an economically important determinant of whether or not a firm is sold out of Chapter 11; a debtor with a one-standard-deviation higher level of creditor

concentration is 6.8 percentage points more likely to be sold than the average debtor.[19] However, the effect of concentration on the sale is not statistically significant.

Finally, Table VIII also reports the impact of concentration on overall, firm-level creditor recovery rates. 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. Panel A of Table VIII shows that there is no statistically significant relation between concentration at the filing of schedules and register and recovery rates. However, the sign on the concentration variable measured in Panel B using concentration among voting creditors is *negative* and statistically significantly, suggesting that higher creditor concentration at voting is associated with lower recovery rates. This result is surprising given that higher levels of concentration appear to lower ex-post costs of coordination, which should in turn, lead to *higher* recovery rates. Table VIII also show s that pre-pack/pre-arranged bankruptcies have an independent effect on recovery rates that is negative. Overall, speedier restructurings appear also to have lower recovery rates. We investigate this result in greater detail below.

[TABLES VIII & IX]

Table IX reports results of an instrumental variable approach where we examine the exogenous impact of claims trading on bankruptcy outcomes, using the same instruments as in Tables VI and VII. As we have described, claims trading in bankruptcy both consolidates claim ownership and allows different investors to enter the capital structure of the debtor. As the set of creditors and their relative bargaining power are changed as a result, this could impact the final outcome of the bankruptcy. Throughout we control for the initial (t_1) claims concentration and pre-pack bankruptcies. We find that increased trading of voting claims significantly reduces the likelihood of liquidation. A one standard deviation increase in the share of voting claims traded decreases the probability of being liquidated by 9.1 percentage points, a 28.9% decline from the unconditional likelihood of liquidation.

[19] 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.

We also examine the impact of creditor concentration on firm-level estimated recovery rates to creditors using the instrumented estimates of creditor concentration. As in Table VIII, we find that higher levels of voting class concentration are associated with lower recovery rates to creditors. To the extent that our instruments are exogenous to recovery rates, this result suggests that claims trading, and subsequent increases in creditor concentration, lead to lower creditor recovery rates.

In unreported results, we examine several explanations for the finding that higher creditor concentration results in lower creditor recoveries. First, we look at whether more concentrated senior creditors push for quick restructurings at the expense of dispersely held junior creditors. Gilson, Hotchkiss, and Ruback (2000) show that senior creditors have a bias towards lower valuations in restructurings, because the lower valuation "squeezes out" more junior claimants, rendering a larger claim for senior creditors in the restructured firm. If the senior classes are more concentrated than junior classes, then the high concentration-low recovery rate could be evidence that junior creditors have been pushed out in cases in which senior creditors have more bargaining power. However, we find that senior and secured voting classes are only slightly more concentrated than unsecured, junior classes; the difference is not statistically significant. Moreover, when we control for the concentration of senior creditors in our regressions, the variable has no impact on the original result, suggesting that concentrated senior creditors do not explain the lower recovery rates.

Second, we examine whether the low recovery rates can be explained by the high concentration of holdings in claims in the fulcrum class, the class of claims that receive the bulk of new equity in restructured firms. Investors in the fulcrum class may have incentives to accept a recovery rate that undervalues their position if in return they obtain larger amounts of new equity in the restructured firm. But when we add the concentration within the fulcrum class of securities to our regressions, the large negative relation persists.

Third, we also consider whether distressed debt investors concentrate their holdings in firms that are more severely distressed with low expected recoveries. If this were the case, then the low expected recovery rates we observe could merely reflect lower ex ante values, and the recovery rates in firms with

high levels of concentration could actually be large relative to their pre-filing values. The impetus for sophisticated investors to focus on such companies would be that deep-discounted debt claims have more upside potential. However, when we control for pre-filing estimated recoveries using observable bond prices of bankrupt firms, our result persists. In any case, the results in Table IX using the instrumented claims trading amount should not be susceptible to this form of endogeneity.

To gain more insight into the influence of creditor concentration on bankruptcy outcomes, including the lower overall recover rates, we use Table X to extend the results in Tables VIII and IX by focusing on the identity of the creditors based on their institutional type. Table X 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, measuring the influence of concentration across a group of investors within a given type versus concentration of particular investor holdings within a type.

[TABLE X]

There is a clear relation between the likelihood of a pre-packaged/prearranged bankruptcy and the presence of certain institutional types at t_1. Panel A in Table X indicates that the share of alternative investors at the beginning of the case, and in particular the share of hedge funds holdings, and to a lesser degree, the share of bank holdings, has a positive and significant impact on the likelihood of observing a

pre-pack/prearranged bankruptcy. From Table II Panel C, we know that almost all hedge fund holdings and over fifty percent of the claims handled by banks are concentrated in unsecured claims.[20] This suggests that the presence of a large junior class dominated by hedge funds is important for the pre-pack/prearranged outcome. 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.[21] Yet, when the share of claims holdings is large, concentration of ownership within hedge funds decreases the likelihood of a liquidation and increases likelihood of a sale. For example, for a firm at the 90th percentile of hedge fund claims ownership (2.3%), a one standard deviation increase in the concentration of hedge fund ownership results in a 9.5 percentage point increase in the likelihood of liquidation, and a 4.4 percentage point drop in the likelihood of a sale. Meanwhile, the same standard deviation shock to hedge fund concentration for a firm at the 10th percentile of hedge fund claims ownership (0.01%) results in a 13.1 percentage point increase in the likelihood of liquidation, and a 12.5 percentage point drop in the likelihood of a sale. Thus, moving from the 10th to the 90th percentile reverses the impact of hedge fund concentration by 3.6 percentage points for liquidations and 8.1 percentage points for sales.

Meanwhile, a large presence of non-financial creditors is associated with a decreased likelihood of a pre-pack/prearranged bankruptcy and with longer stays in bankruptcy. Non-financial creditors are relatively dispersed (Table II Panel A) and are also likely to be both less financially sophisticated and less active in the bankruptcy process. Because of this, negotiation with this group is likely difficult and, consistent with theory (Bolton and Scharfstein, 1996), we see that pre-bankruptcy deals are less likely, and the duration of the bankruptcy process is also longer when non-financial creditors hold large stakes.

[20] Interpretation of the share and concentration at the bank level is not without a caveat. Specifically, concentration is not directly comparable to other concentration measures as due to loan syndication it essentially picks up the number of lead arrangers.

[21] For example see Ivashina and Scharfstein ("Restructuring CIT Group" Harvard Business School Case), who show that in the CIT restructuring, coordination among a group of six hedge funds holding strategic junior positions in the capital structure was the determinant force behind forming pre-packaged bankruptcy plan.

The economic magnitude of these effects is large: a one standard deviation increase in the share of nonfinancial creditors is associated with a 10.8 percentage point reduction in the probability of a pre-pack/prearranged bankruptcy and an extra 1.3 months in Chapter 11. Results in Panel B suggest that these effects are mostly driven by the extensive margin; higher concentration *within* the non-financial creditors has relatively small effects on the likelihood of a pre-pack/prearranged bankruptcy and the length of time in bankruptcy.

We return now to the effects of creditor concentration on debtor-level recovery rates. Panel A of Table X shows that a large share of bank claimants at both t_1 and t_2 leads to lower recovery rates. A one standard deviation increase in the share of bank claim ownership is associated with a 9.2 percentage point reduction in firm-level recovery rates using estimates from t_1, or a 7.3 percentage point reduction in recovery rates using t_2 estimates. As banks are typically among the most senior claimants, this finding is consistent with the theory in Gilson, Hotchkiss, and Ruback (2000) that senior creditors may prefer lower valuations which squeeze out junior claimants. Further, we also find that a large bank presence is weakly associated with a higher likelihood of a pre-pack/prearranged bankruptcy, and shorter bankruptcy durations, consistent with the idea that banks may prefer shorter stays in Chapter 11 and lower overall recoveries. However, controlling for the share of bank claimants does not change the result from Table VIII Panel B that higher creditor concentration is associated with lower overall recovery rates.[22] Thus, while it may be true that senior creditors push for lower valuations, this effect does not explain the general relationship between concentration and recovery rates discussed above.

Table XI explores creditor recovery rates further by disaggregating recoveries at the voting-class level. That is, we measure the relation between recovery rates *within* a voting creditor class and the concentration of ownership within the class. 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.

[22] In fact, both overall creditor concentration and the share of bank claims are negatively and significantly related to recovery rates simultaneously. These results are unreported, but are available upon request.

All the regressions are value-weighted so that small classes do not have a large bearing on the results. Because recovery rates generally follow absolute priority, it is important to control for the relative seniority of each voting class. We do so by including a dummy for secured classes and an interaction term with concentration. The results indicate that concentration within a voting class has a positive impact on a class-level recovery rates. The impact is economically meaningful: a standard deviation increase in voting class concentration increases class-level recovery rates by 13.1 percentage points. That said, overall creditor concentration (including unimpaired and fully impaired classes) has an offsetting effect.

Table XI also examines deviations from the absolute priority rule (APR) by class, showing that concentration of a voting class also has a positive impact on the concessions with which that class can gain from other creditors. In particular, a one standard deviation increase in voting class concentration increases that classes "excess recovery"—that is, its recovery rate in excess of what it would be granted under the APR—by 4.3 percentage points. Since senior creditors are bounded above by receiving a distribution equivalent to their full claim, these APR deviations are likely transfers to concentrated junior classes. This finding supports the idea that more junior concentrated classes can use their bargaining power to gain higher recoveries, at the cost of lower recoveries to senior creditors.

[TABLE XI]

Overall, our results on recovery rates likely reflect outcomes to bargaining in which concentrated junior classes are able to extract wealth transfers from senior creditors in return for a quick restructuring. What is less clear is why such restructurings should lead to lower overall recovery rates.

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 as 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 the likelihood of "prepackaged" or "prearranged" bankruptcy and by accelerating the bankruptcy process including cases not filed as pre-pack/prearranged process. Concentrated capital structures also increase 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.

References

Aghion, Philippe, Oliver Hart, John Moore, 1992. "The economics of bankruptcy reform," *Journal of Law, Economics, and Organization* 8, 523-546.

Ayotte, Kenneth and Edward R. Morrison, 2009. "Creditor control and conflict in Chapter 11," *Journal of Legal Analysis* 1, 511-551.

Baird, Douglas, 1986. "The uneasy case for corporate reorganizations," *Journal of Legal Studies* 15, 127-147.

Baird, Douglas and Robert Rasmussen, 2002. "The end of bankruptcy," *Stanford Law Review* 55, 751-790.

Baird, Douglas and Robert Rasmussen, 2003. "Chapter 11 at twilight," *Stanford Law Review* 56, 673-700.

Baird, Douglas and Robert Rasmussen, 2010. "Anti-bankruptcy," *Yale Law Journal* 199, 648-.

Bebchuk, Lucian, 1988. "A new approach to corporate reorganizations," *Harvard Law Review* 101, 775-804.

Benmelech, Efraim, Jennifer Dlugosz and Victoria Ivashina, 2010. "Securitization without adverse selection: The case of CLOs," working paper.

Bharath, Sreedhar, Venkatesh Panchapegesan and Ingrid Werner, 2007. "The changing nature of Chapter 11," Working paper.

Bolton, Patrick and David, Scharfstein, 1996. "Optimal debt structure and the number of creditors," *Journal of Political Economy* 104, 1-25.

Bond, Philip and Hulya Eraslan, 2010. "Strategic voting over strategic proposals," *Review of Economic Studies*, forthcoming.

Carey, Mark and Michael Gordy, 2007, Debt composition and recoveries on defaulted debt, working paper.

Chang, Tom, and Antoinette Schoar, 2006, "The effect of judicial bias in Chapter 11 reorganization," Working paper, MIT Sloan School of Management.

Gertner, Robert and David Scharfstetin, 1991. "A theory of workouts and the effects of reorganization law," *Journal of Finance* 46, 1189-1221.

Gerber, Robert, 2009, Letter to Advisory Committee on Bankruptcy Rules RE: Fed R Bankr. P. 2019, dated January 9, 2009, United States Bankruptcy Court, Southern District of New York.

Gilson, Stuart, Edith Hotchkiss, and Richard Ruback, 2000, "Valuation of bankrupt firms," *Review of Financial Studies* 13, 43-74.

Hotchkiss, Edith, and Robert Mooradian, 1997, "Vulture investors and the market for control of distressed firms," *Journal of Financial Economics* 43, 401-432.

Jackson, Thomas, 1986. *The Logic and Limits of Bankruptcy Law*. Harvard University Press.

Jensen, Michael, 1991. "Corporate control and the politics of finance," *Journal of Applied Corporate Finance* 4, 13-33.

Jiang, Wei, Kai Li and Wei Wang, 2009. "Hedge funds in Chapter 11," Working paper.

Levitin, Adam, 2010. "Bankruptcy markets: Making sense of claims trading," *Brooklyn Journal of Corporate, Financial & Commercial Law*, 64-10.

LoPucki, Lynn, 1993. "The trouble with Chapter 11," *Wisconsin Law Review*, 740-741.

Miller, Harvey, 2002. "Chapter 11 reorganization cases and the Delaware myth," *Vanderbilt Law Review* 55, 2014-2015.

Park, Cheol, 2000. "Monitoring and structure of debt contracts," *Journal of Finance* 55, 2157-2195.

Peterson, Mitchell and Raghuram Rajan, 1997. "Trade credit: Theories and evidence," Review of Financial Studies 10, 661-691.

Rajan, Raghuram and Luigi Zingales, 1995. "What do we know about capital structure? Some evidence from international data," *Journal of Finance* 50, 1421-1460.

Skeel, David, 2003. "Creditor's ball: The 'new' new corporate governance in Chapter 11," *University of Pennsylvania Law Review* 152, 917-953.

Stock, James, Jonathan Wright and Motohiro Yogo, 2002, "A survey of weak instruments and weak identification in Generalized Method of Moments," *Journal of Business and Economic Statistics* 20, 518-529.

FIGURE 2
CLAIM TRADING BY MONTH

The figure shows mean and median of share of claims traded in bankruptcy for all firms that file in a given month. The bars correspond to number of filings in a given month.

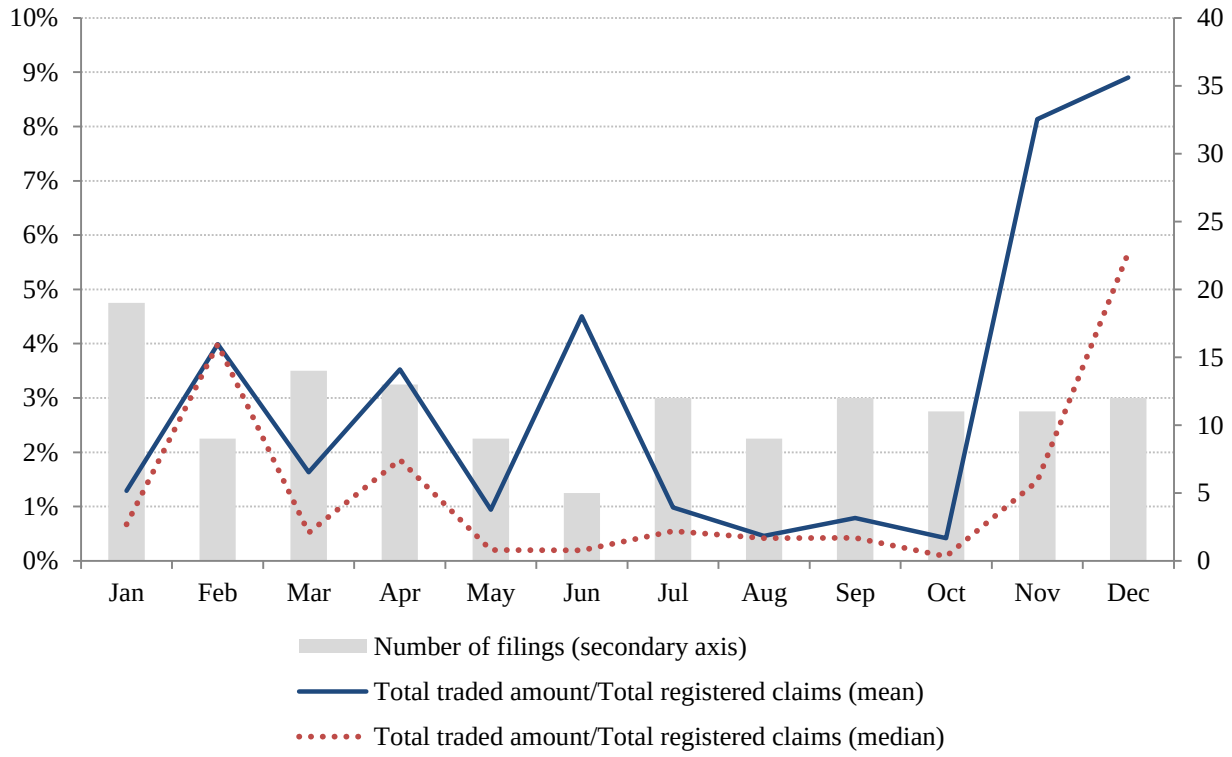


TABLE I

DESCRIPTION OF FIRMS FILING FOR CHAPTER 11 BANKRUPTCY

This table summarizes the characteristics of the 136 firms in our sample that file for Chapter 11 bankruptcy protection. Panel A reports summary statistics on filing, evolution, and outcome of the bankruptcies, based on data collected from the *Deal Pipeline* and Chapter 11 disclosure statements. Panel B reports financial characteristics of the sample firms prior to filing for bankruptcy, based on data collected from *Deal Pipeline*, Capital IQ, SDC, and Compustat.

Panel A: Bankruptcy characteristics (136 filings)

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%	5.1%

Filing court	% Obs.	Filing type	% Obs.
Delaware	40.4%	Non-specific Ch. 11	78.4%
Southern District NY	22.1%	Pre-pack/Prearranged Ch. 11	18.7%
Other	37.5%	Tort-related Ch. 11	3.0%

	Median	Mean	Std Dev
Time in bankruptcy (days)	377	439.5	309.0
Overall recovery rate			
Value at exit/Liabilities at filing	50.8%	54.0%	51.1%
Weighted average claim recoveries	51.9%	52.9%	31.1%

Restructuring outcome:		Claimant group with controlling equity interest at exit, the fulcrum class (reorganizations only):	
Reorganized	45.2%	DIP Lenders	8.6%
Sold to a financial buyer	9.7%	Prepetition Lenders	29.3%
Sold to a strategic buyer	12.7%	Notes/Bondholders	24.1%
Liquidated piecemeal	32.1%	General Unsecured	19.0%
Identity of owner at exit:		Subordinated Debt	3.5%
Financial	64.8%	Equity	15.5%
Strategic	35.2%		

Panel B: Pre-bankruptcy firm characteristics

	Source	Obs.	Mean	Std. Dev.	Median
Total assets (million $US)	Deal Pipeline	133	$1,915.2	$4,844.7	$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
Pre-bankruptcy EBITDA (million $US)	Deal Pipeline	59	$170.4	$615.9	$20.7
Total liabilities (million $US)	Deal Pipeline	133	$1,805.4	$4,299.6	$372.1
Total liabilities/Total assets	Deal Pipeline	132	3.52	18.2	1.07
Total liabilities/Total assets (no outliers)	Deal Pipeline	130	1.52	1.49	1.06
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 CLAIM OWNERSHIP BY INSTITUTIONAL TYPE

This table reports the distribution of Chapter 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 shows how ownership by different institutional types varies *within* a given type of credit claim (secured, unsecured, etc.). Panel C reports how ownership by a given institutional type is distributed *across* identified the claimant classes in the capital structure.

Panel A: General distribution by institutional type

	At filing of Schedule of Assets and Liabilities (t_1), all creditors						At votes tabulation (t_2), voting creditors only					
Creditor institutional type:	Cases involving ownership of given institutional type (%)	Mean (%)	Std. Dev. (%)	Median (%)	95th %	Concentration (0 to 1)	Cases involving ownership of given institutional type (%)	Mean (%)	Std. Dev. (%)	Median (%)	95th %	Concentration (0 to 1)
Financial creditors:												
Bank	88.72	22.08	24.91	13.71	76.5	0.67	72.41	21.70	27.29	10.73	82.86	0.56
Bank as custodian (bonds)	44.36	11.85	21.86	0.00	62.5	0.83	34.48	4.22	12.34	0.00	28.09	0.83
Asset management	64.66	6.93	17.84	0.13	47.0	0.71	62.93	9.10	17.66	0.86	47.65	0.66
Hedge fund	26.32	0.43	2.28	0.00	1.69	0.75	38.79	2.31	9.08	0.00	11.19	0.75
Private equity	28.57	2.36	12.16	0.00	9.72	0.83	30.17	3.52	14.06	0.00	24.53	0.88
Potentially financial	94.74	3.56	6.89	1.09	16.5	0.32	87.07	7.52	11.58	1.91	32.29	0.46
Insurance	63.91	1.93	8.72	0.04	5.64	0.73	34.48	1.89	7.87	0.00	10.87	0.75
Real estate	54.14	0.86	2.60	0.00	5.31	0.62	25.86	0.80	2.95	0.00	5.27	0.78
Other financial	42.11	1.54	6.24	0.00	8.59	0.75	22.41	1.78	10.07	0.00	5.70	0.91
Non-financial creditors:												
Corporation	96.99	23.83	23.16	16.71	74.1	0.27	95.69	26.06	26.02	19.99	90.56	0.43
Government	87.22	5.52	11.26	1.43	18.9	0.54	39.66	4.36	14.81	0.00	39.24	0.80
Person	93.23	11.41	18.75	3.48	60.2	0.32	82.76	12.19	22.46	2.39	73.52	0.44
Intra-company/Insider	33.08	4.14	9.85	0.00	23.2	0.79	11.21	2.19	9.82	0.00	20.04	0.80
Unknown	89.47	3.57	8.35	0.55	24.0	0.47	65.52	2.36	6.41	0.09	12.33	0.59
Total:		100						100				

TABLE II – *continued*

Panel B: Distribution of creditors within credit class

	At filing of Schedule of Assets and Liabilities (t_1), all creditors			At votes tabulation (t_2), voting creditors only							
Creditor institutional type:	Secured	Unsecured	Other	General unsecured	Loans	Notes	Employee/ Pension	Tort	Trade claims	Equity	Other
Financial creditors:											
Bank	37.52	8.84	3.96	13.70	35.22	40.10	0.00	0.00	15.37	13.45	4.55
Bank as custodian (bonds)	6.80	9.56	2.26	2.07	1.06	7.66	0.00	3.40	0.03	10.86	0.00
Asset management	3.71	4.69	2.43	5.79	13.00	3.77	12.50	0.22	0.28	4.08	0.00
Hedge fund	1.61	1.21	0.35	1.10	3.71	1.29	0.00	0.00	1.73	0.00	1.58
Private equity	0.63	0.40	0.11	1.89	4.76	3.44	0.00	0.00	0.00	0.00	2.57
Potentially financial	3.47	5.60	4.76	7.10	7.96	3.05	0.14	11.12	2.92	4.36	5.95
Insurance	3.41	1.93	0.65	1.36	3.74	0.92	0.00	0.09	0.07	0.03	0.31
Real estate	0.20	1.43	0.63	1.68	0.03	0.16	0.00	0.35	0.13	0.00	0.00
Other financial	0.67	1.86	1.65	0.66	3.36	3.58	0.00	0.00	0.84	0.78	4.13
Non-financial creditors:											
Corporation	23.34	35.92	22.31	40.49	18.88	15.31	4.92	32.01	58.47	44.74	18.17
Government	7.88	3.71	43.94	4.49	0.39	0.78	37.50	6.25	10.86	0.51	2.93
Person	6.45	13.33	13.29	15.35	5.42	16.80	44.94	45.38	8.21	20.16	29.86
Intra-company/Insider	2.60	4.20	2.80	1.72	2.07	0.00	0.00	0.00	0.00	0.16	29.56
Unknown	1.72	7.33	0.87	2.61	0.41	3.14	0.00	1.17	1.08	0.88	0.41
Total:	100	100	100	100	100	100	100	100	100	100	100

TABLE II – *continued*

Panel C: Creditors' ownership by credit class

	At filing of Schedule of Assets and Liabilities (t_1), all creditors				At votes tabulation (t_2), voting creditors only								
Creditor institutional type:	Secured	Unsecured	Other	Total:	General unsecured	Loans	Notes	Employee/ Pension	Tort	Trade claims	Equity	Other	Total:
Financial creditors:													
Bank	44.14	52.38	3.49	100	42.33	39.12	15.67	0.00	0.00	0.61	1.07	1.19	100
Bank as custodian (bonds)	20.63	73.22	6.16	100	38.43	29.62	24.26	0.00	2.50	2.50	2.69	0.00	100
Asset management	18.71	75.84	5.45	100	47.36	37.55	9.86	1.37	1.37	0.62	1.87	0.00	100
Hedge fund	9.06	90.35	0.59	100	45.12	41.22	10.75	0.00	0.00	2.25	0.00	0.66	100
Private equity	11.99	82.13	5.88	100	56.34	37.17	2.86	0.00	0.00	2.86	0.00	0.78	100
Potentially financial	6.20	89.25	4.55	100	62.12	23.43	7.50	0.04	3.69	1.16	0.85	1.22	100
Insurance	20.19	70.80	9.00	100	54.56	37.03	0.61	0.00	2.50	0.91	2.50	1.89	100
Real estate	6.77	89.71	3.52	100	83.33	6.67	3.33	0.00	3.33	3.33	0.00	0.00	100
Other financial	16.28	74.44	9.29	100	56.37	23.77	11.54	0.00	0.00	4.06	0.42	3.85	100
Non-financial creditors:													
Corporation	10.53	83.75	5.71	100	68.43	13.56	8.21	0.67	3.88	3.35	1.67	0.24	100
Government	7.69	39.40	52.92	100	66.05	13.04	6.51	5.36	2.17	1.78	1.81	3.26	100
Person	7.29	83.54	9.17	100	68.61	8.98	8.92	1.49	5.48	1.37	1.81	3.33	100
Intra-company/Insider	3.56	95.78	0.66	100	36.63	6.03	0.00	0.00	0.00	0.00	8.61	48.73	100
Unknown	6.06	88.51	5.43	100	71.33	11.05	8.57	0.00	3.94	2.74	2.10	0.28	100

TABLE III
LINKS BETWEEN CLAIMHOLDERS AND CHAPTER 11 FINANCING AND CONTROL EVENTS

This table reports the frequency with which we observe that Ch.11 claimholders are also involved in Chapter 11 financing and control events. We record the identities and holdings of Chapter 11 claimholders at two points in time: the filing of the Schedule of Assets and Liabilities (t_1), and the tabulation of votes on the Plan of reorganization (t_2). Note that we observe at t_2 only those claimholders that are eligible to vote, which is a subset of the claimants observed at t_1. Financing events include debtor-in-possession (DIP) financing, new debt and equity financing at bankruptcy exit. Control events include acquisitions via "Section 363 Sales," and ownership of controlling equity interests at bankruptcy exit. Panel A reports the frequency of claimholder participation in events at the bankruptcy level, for claimholders observed at t_1 and t_2. Panel B reports the frequency with which certain voting classes are present in cases involving the financing and investment events, and the fraction of events in which a claimholder within a voting class is also involved in the financing or control event. Voting classes are separated according to whether the claimholders were secured or senior lenders, unsecured claimholders junior to the lenders, or equity claimants prior the bankruptcy filing, and whether the voting class is "fulcrum", defined to be the class receiving the majority of new equity in the company at bankruptcy exit.

Panel A: Bankruptcy level analysis (136 filings)

Event:	Total number of events	Proportion of events including a claimant	
		At filing of Schedule of Assets and Liabilities (t_1), all creditors	At votes tabulation (t_2), voting creditors only
DIP loan	95	58.9%	34.7%
Exit financing (debt)	37	51.4%	45.9%
Exit financing (equity)	10	50.0%	70.0%
Acquirer in 363 Sale	34	11.8%	2.9%

Panel B: Class level analysis (99 filings)

Event:	Proportion of cases with events in which given class is present				Proportion of events including a voting claimholder in a given class			
	Lender class	Unsecured class	Equity class	Fulcrum class	Lender class	Unsecured class	Equity class	Fulcrum class
DIP loan	68.1%	68.8%	68.8%	66.0%	7.8%	17.2%	9.1%	19.4%
Exit financing (debt)	28.7%	30.1%	31.3%	53.2%	18.5%	28.6%	0.0%	28.0%
Exit financing (equity)	11.7%	11.8%	12.5%	17.0%	18.2%	36.4%	0.0%	37.5%
Acquirer in 363 Sale	19.1%	20.4%	18.8%	4.3%	5.6%	5.3%	0.0%	50.0%

TABLE IV

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. Panel B is set up as a 14 x 14 array in which each row and column references an institutional type. The top half of Panel B reports the distribution of claims sales from a given institutional type to other institutional types, while the bottom half reports the distribution of buys by a given institutional type from other institutional types. Panel C separates trades by institutional types into claims that are eventually used to vote on a plan, and those claims that are non-voting. This panel uses a subset of 26 bankruptcies for which we can unambiguously link claims between the register and voting tabulations. All figures are value-weighted.

Panel A: Claims trading by institutional type

Creditor institutional type:	% of all sellers	% of all buyers	% of all net buyers	Who sells:			Who buys:			% purchased by *existing* creditors of type	% purchased by *new* creditors of type
				% of cases with seller of type	Mean (%)	Std.Dev. (%)	% of cases with buyer of type	Mean (%)	Std.Dev. (%)		
Financial creditors:											
Bank	42.80	40.48	-2.32	25.35	9.34	24.91	21.13	8.86	25.37	51.93	2.78
Bank as custodian (bonds)	7.22	1.79	-5.43	4.23	0.94	7.41	8.45	2.23	10.95	1.58	3.01
Asset management	1.04	17.28	16.24	14.08	3.07	16.52	39.44	13.01	27.93	8.92	54.18
Hedge fund	0.19	14.72	14.53	11.27	0.87	4.95	56.34	25.84	33.09	5.62	2.05
Private equity	0.00	4.70	4.70	0.00	0.00	0.00	36.62	13.44	27.70	15.84	13.19
Potentially financial	2.09	1.19	-0.90	43.66	7.05	17.76	49.30	13.78	26.09	0.09	5.83
Insurance	8.85	1.74	-7.11	8.45	1.30	6.60	5.63	0.80	5.45	1.42	3.38
Real estate	0.18	0.06	-0.12	8.45	0.79	5.28	12.68	3.88	14.95	0.00	0.33
Other financial	0.10	0.79	0.69	7.04	0.03	0.20	5.63	0.23	1.13	0.97	0.23
All financial creditors	62.47	82.76	20.29		23.40			82.07		86.38	84.97
Non-financial creditors:											
Corporation	33.86	6.47	-27.38	85.92	60.64	38.58	52.11	15.39	29.62	5.18	12.86
Government	0.19	0.08	-0.11	11.27	0.10	0.68	4.23	0.02	0.12	0.00	0.42
Person	2.08	0.36	-1.72	38.03	9.61	25.10	12.68	0.47	2.35	0.22	0.97
Intra-company/Insider	1.05	6.47	5.43	1.41	0.02	0.16	2.82	0.76	5.52	8.22	0.79
Unknown	0.36	3.85	3.49	33.80	6.22	18.59	8.45	1.28	6.64	--	--
All non-financial creditors	37.53	17.24	-20.29		76.60			17.93		13.62	15.03
Total:	100	100	0	--	100	--	--	100	--	100	100

Panel B: Claims trading between institutions

		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	Total:
		To whom do institutions sell their claims?														
	Financial creditors:															
(1)	Bank	48.63	0.42	15.24	11.87	8.26	0.12	0.00	0.00	0.62	8.62	0.00	0.01	2.63	3.58	100
(2)	Bank as custodian (bonds)	8.51	8.56	39.74	25.81	3.88	3.17	7.24	0.00	0.00	1.03	1.03	1.03	0.00	0.00	100
(3)	Asset management	67.72	2.42	1.82	5.28	0.17	0.07	0.00	0.00	10.97	11.56	0.00	0.00	0.00	0.00	100
(4)	Hedge fund	22.47	0.00	12.56	9.01	0.00	4.62	0.00	0.00	3.17	3.27	0.00	0.00	0.00	44.91	100
(5)	Private equity	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100
(6)	Potentially financial	21.81	11.50	8.25	8.16	0.45	5.85	4.02	0.06	6.03	4.45	0.00	0.09	24.58	4.75	100
(7)	Insurance	87.04	0.00	8.42	2.50	0.01	0.84	1.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100
(8)	Real estate	4.94	1.43	40.23	32.18	2.22	5.84	4.11	0.00	0.00	8.56	0.00	0.50	0.00	0.00	100
(9)	Other financial	40.07	0.00	0.00	29.07	0.00	8.76	0.00	3.49	0.00	4.79	0.00	0.00	0.57	13.25	100
	Non-financial creditors:															
(10)	Corporation	25.13	2.15	19.30	20.59	2.25	1.87	0.11	0.08	0.59	6.91	0.00	0.49	14.26	6.26	100
(11)	Government	49.26	0.00	22.65	3.40	0.16	0.37	0.00	0.00	0.00	21.90	0.00	2.25	0.00	0.00	100
(12)	Person	67.89	0.00	8.65	10.38	5.91	1.39	0.64	0.11	0.00	2.65	0.28	1.92	0.00	0.20	100
(13)	Intra-company/Insider	0.00	0.00	0.00	0.00	0.00	0.00	92.42	0.00	7.58	0.00	0.00	0.00	0.00	0.00	100
(14)	Unknown	19.49	0.00	29.16	10.43	0.87	5.63	1.62	8.42	0.00	5.93	0.00	18.28	0.17	0.00	100
		From whom do institutions buy their claims?														
	Financial creditors:															
(1)	Bank	51.42	10.05	37.74	34.50	74.90	4.20	0.00	0.00	33.41	57.11	0.00	1.61	17.42	39.80	
(2)	Bank as custodian (bonds)	1.51	34.40	16.57	12.64	5.92	19.24	29.91	0.00	0.00	1.15	92.00	20.83	0.00	0.00	
(3)	Asset management	1.75	1.41	0.11	0.37	0.04	0.06	0.00	0.00	14.49	1.87	0.00	0.00	0.00	0.00	
(4)	Hedge fund	0.10	0.00	0.13	0.11	0.00	0.72	0.00	0.00	0.74	0.09	0.00	0.00	0.00	2.16	
(5)	Private equity	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
(6)	Potentially financial	1.12	13.37	0.99	1.16	0.20	10.26	4.80	2.06	15.89	1.44	0.00	0.53	7.92	2.57	
(7)	Insurance	19.06	0.00	4.32	1.51	0.01	6.27	6.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
(8)	Real estate	0.02	0.15	0.43	0.40	0.09	0.90	0.43	0.00	0.00	0.24	0.00	0.25	0.00	0.00	
(9)	Other financial	0.10	0.00	0.00	0.19	0.00	0.72	0.00	5.31	0.00	0.07	0.00	0.00	0.01	0.34	
	Non-financial creditors:															
(10)	Corporation	21.02	40.63	37.81	47.35	16.16	53.44	2.21	42.16	25.43	36.20	0.71	46.15	74.64	55.03	
(11)	Government	0.23	0.00	0.25	0.04	0.01	0.06	0.00	0.00	0.00	0.64	0.00	1.19	0.00	0.00	
(12)	Person	3.49	0.00	1.04	1.47	2.61	2.43	0.76	3.62	0.00	0.85	7.29	11.16	0.00	0.11	
(13)	Intra-company/Insider	0.00	0.00	0.00	0.00	0.00	0.00	55.51	0.00	10.04	0.00	0.00	0.00	0.00	0.00	
(14)	Unknown	0.17	0.00	0.60	0.25	0.07	1.70	0.33	46.85	0.00	0.33	0.00	18.28	0.01	0.00	
	Total:	100	100	100	100	100	100	100	100	100	100	100	100	100	100	

TABLE IV– *continued*

Panel C: 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	7.75	9.51	1.76	0.00	19.14	19.14
Bank as custodian (bonds)	0.97	0.78	-0.18	0.00	0.00	0.00
Asset Management	0.47	26.62	26.15	0.00	29.89	29.89
Hedge fund	0.18	26.92	26.74	0.33	39.13	38.80
Private equity	0.00	0.45	0.45	0.00	0.33	0.33
Potentially financial	10.11	6.59	-3.51	11.60	7.86	-3.74
Insurance	3.58	2.41	-1.17	0.07	0.00	-0.07
Real estate	2.13	0.53	-1.59	3.14	0.04	-3.10
Other financial	1.12	1.56	0.43	0.00	0.00	0.00
All financial creditors	26.31	75.38	49.07	15.13	96.39	81.25
Non-financial creditors:						
Corporation	66.87	10.19	-56.68	70.80	1.35	-69.45
Government	1.28	0.11	-1.18	0.23	0.00	-0.23
Person	1.78	4.05	2.28	12.74	2.24	-10.49
Intra-company/Insider	0.00	0.00	0.00	0.00	0.00	0.00
Unknown	3.76	10.27	6.51	1.10	0.02	-1.07
All non-financial creditors	73.69	24.62	-49.07	84.87	3.61	-81.25
Total:	100	100	0	100	100	0

TABLE V
WHAT DETERMINES THAT A CLAIM IS TRADED?

This table presents a set of probit regressions analyzing the likelihood that a given claim is traded. The dependent variable is equal to 1 if the claim was sold and 0 otherwise. Claim size is sorted in terciles. *Small claim* corresponds to claims in the bottom size-tercile (claims between $50 and $100 thousand) and *Large claim* corresponds to the top size-tercile (claims above $300 thousand). Throughout the analysis we exclude claims below $50 thousand. Reported coefficients are marginal effects; 0.1 stand for 10% percentage point change in the dependent variable. *Alternative investors* include asset management firms, hedge funds, and private equity firms. The institutional type is defined at the parent level. The analysis is at the claim level; i.e., there are multiple claims per bankruptcy. Standard errors are clustered by bankruptcy. *** , ** and * indicate statistical significance at 1%, 5%, and 10% level, respectively.

	All claims administrators		BMC claims only	
Small claim	0.097*	0.166**	0.140**	0.222**
	(0.074)	(0.109)	(0.108)	(0.150)
Large claim	0.043***	0.048**	0.037*	0.037**
	(0.021)	(0.026)	(0.025)	(0.022)
Portion of claim that is secured	0.005	0.006	-0.029	-0.027
	(0.040)	(0.039)	(0.068)	(0.065)
Portion of claim that is unsecured	0.131***	0.128***	0.127**	0.121**
	(0.071)	(0.068)	(0.085)	(0.080)
Owned by:				
Corporation	0.028**	0.094***	0.023	0.124***
	(0.013)	(0.053)	(0.017)	(0.084)
Person	0.066	0.045	0.067	0.042
	(0.081)	(0.067)	(0.093)	(0.076)
Bank	0.238***	0.265***	-0.009	0.007
	(0.071)	(0.082)	(0.026)	(0.032)
Alternative investor	0.262***	0.277***	0.012	0.024
	(0.099)	(0.103)	(0.031)	(0.037)
Owned by corp. * Small claim		-0.082**		-0.098**
		(0.034)		(0.050)
Owned by corp. * Large claim		-0.015		-0.015
		(0.015)		(0.016)
Observations	78,933	78,933	44,758	44,758
Pseudo *R*-squared	0.10	0.12	0.12	0.15

TABLE VI
CREDITOR CONCENTRATION: FIRST STAGE

This table presents first stage regressions using our proposed instruments. The left hand side variable is total amount traded in bankruptcy scaled by total amount of claims outstanding at register. The sample is a cross-section of Chapter 11 filings; each observation corresponds to a different firm filing for bankruptcy. The dependent variables of interest are *Share of claims owned by corporation* and *Filed in December* , a dummy equal to 1 if the filing took place in the month of December and 0 otherwise. Assets are measured in millions and were compiled from each firms' Chapter 11 petition. Only limited information is available for pre-bankruptcy EBITDA. To account for this, we control for the level effect for those firms that have EBITDA data available. Positive EBITDA is a dummy variable indicating if the firm had positive EBITDA prior to filing. 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 clustered by industry and reported in parenthesis. We can only observe if a traded claim was eventually allowed to vote for BMC cases; as a result the sample is reduced. *** , ** and * indicate statistical significance at 1%, 5%, and 10% level, respectively.

Dependent variable:	Total traded amount/Total claims amount:	
	All claims	Voting claims
Instruments:		
Share of claims owned by corporation	0.082**	0.039
	(0.035)	(0.028)
Filed in December	0.047	0.169**
	(0.053)	(0.081)
Ln(Assets)	0.004	-0.005
	(0.003)	(0.004)
EBITDA data available	-0.011	-0.026
	(0.021)	(0.016)
Positive EBITDA	-0.001	0.016
	(0.019)	(0.012)
Economic recession	-0.009	0.010
	(0.012)	(0.023)
Industry fixed effects	Yes	Yes
F-stat (robust standard errors)	3.02	3.37
p-value	(0.054)	(0.051)
F-stat (non-robust standard errors)	10.23	21.91
p-value	(0.000)	(0.000)
Observations	98	36
R-squared	0.276	0.691

TABLE VII

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 presents regular OLS and instrumental variables estimates of the impact of claims trading on the concentration of creditors. We measure the level of creditor concentration at the time of voter tabulation using a dollar-weighted Herfindahl-Hirschman (HH) index, with a maximum of one. Change in creditor concentration is the difference between HH index computed at the voter tabulation and HH index computed at the filing of the Schedule of Assets and Liabilities and Register (conditional on being in a class that eventually votes). We measure claims trading as the share of all claims that are traded in odd columns, and the share of all voting claims that are traded in even columns. We can only observe if a traded claim was allowed to vote for a subset of cases. In Panel B, we focus on the three most active buyers of claims based on Table IV (banks, assets management firms and hedge funds). We do not examine trading of voting claims in this panel due to a lack of statistical power. Assets are measured in millions and were compiled from each firms' Chapter 11 petition. Only limited information is available for pre-bankruptcy EBITDA. To account for this, we control for the level effect for those firms that have EBITDA data available. Positive EBITDA is a dummy variable indicating if the firm had positive EBITDA prior to filing. 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 parenthesis. *** , ** and * indicate statistical significance at 1%, 5%, and 10% level, respectively.

Panel A: Claims trading by class

	Creditor concentration at voting tabulation (t_2)				Change in creditor concentration			
	OLS	OLS	2SLS	2SLS	OLS	OLS	2SLS	2SLS
Total traded amount/Total claims:								
All claims	0.182	--	-0.496	--	0.492*	--	3.139*	--
	(0.542)		(1.417)		(0.280)		(1.648)	
Voting claims	--	1.597***	--	2.230***	--	1.296***	--	1.849***
		(0.362)		(0.691)		(0.269)		(0.531)
Ln(Assets)	-0.037**	-0.013	-0.036***	-0.007	-0.037***	-0.003	-0.040***	0.002
	(0.014)	(0.025)	(0.014)	(0.022)	(0.013)	(0.015)	(0.014)	(0.014)
EBITDA data available	0.124	0.327	0.115	0.348**	0.269**	0.567***	0.301**	0.586***
	(0.093)	(0.198)	(0.087)	(0.169)	(0.108)	(0.185)	(0.127)	(0.159)
Positive EBITDA	-0.089	-0.430**	-0.091	-0.450**	-0.185*	-0.627***	-0.175	-0.645***
	(0.095)	(0.207)	(0.087)	(0.178)	(0.110)	(0.195)	(0.123)	(0.168)
Economic recession	-0.113*	0.043	-0.124**	0.051	-0.190**	0.095	-0.148*	0.102
	(0.061)	(0.087)	(0.058)	(0.071)	(0.073)	(0.077)	(0.077)	(0.064)
Industry fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	98	36	98	36	98	36	98	36

TABLE VII– *continued*

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

	Creditor concentration at voting tabulation (t_2)		Change in creditor concentration	
	(Buys)	(Sells)	(Buys)	(Sells)
Banks	-0.221	0.040	10.535	0.146
	(10.241)	(0.220)	(11.713)	(0.172)
Asset management	1.354***	-7.496	0.997***	11.995
	(0.289)	(30.122)	(0.232)	(24.671)
Hedge funds	-3.652**	-8.534	0.246	-53.042***
	(1.418)	(16.382)	(1.013)	(19.748)
Ln(Assets)	-0.035**	-0.036**	-0.037***	-0.036***
	(0.015)	(0.014)	(0.013)	(0.013)
EBITDA data available	0.123	0.122	0.263**	0.258**
	(0.094)	(0.095)	(0.110)	(0.111)
Positive EBITDA	-0.089	-0.089	-0.186*	-0.186*
	(0.095)	(0.095)	(0.111)	(0.111)
Economic recession	-0.115*	-0.117*	-0.191**	-0.202***
	(0.062)	(0.063)	(0.075)	(0.074)
Industry fixed effects	Yes	Yes	Yes	Yes
Observations	98	98	98	98
R-squared	0.2	0.15	0.19	0.18

TABLE VIII
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 firms' Plan of Reorganization. Assets are measured in millions and were compiled from each firms' Chapter 11 petition. Control variables are the same as in Table VII. All models are estimated using linear least squares. Standard errors are clustered by industry and reported in parenthesis. *** , ** 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:			Recovery rate
			Reorganization	Sale	Liquidation	
Creditor concentration	0.467*	-3.418	0.244	0.112	-0.310	-0.449
	(0.228)	(4.998)	(0.131)	(0.234)	(0.310)	(0.317)
Pre-pack bankruptcy	--	-7.884*	0.224	0.248	-0.448*	-0.191
		(3.280)	(0.114)	(0.178)	(0.184)	(0.148)
Concentration * Pre-pack	--	-0.438	-0.209	-0.290	0.470	0.494
		(7.403)	(0.160)	(0.326)	(0.437)	(0.368)
Ln(Assets)	-0.001	0.988**	0.069**	-0.030	-0.034	-0.039
	(0.018)	(0.250)	(0.019)	(0.022)	(0.028)	(0.023)
EBITDA data available	0.029	-2.590	-0.184	0.079	0.107	-0.093
	(0.068)	(1.883)	(0.096)	(0.101)	(0.087)	(0.058)
Positive EBITDA	0.028	0.786	0.321**	-0.138	-0.214	0.290***
	(0.106)	(1.577)	(0.098)	(0.138)	(0.154)	(0.052)
Economic recession	0.090	-4.884*	0.202*	-0.238***	0.015	-0.104**
	(0.153)	(1.979)	(0.098)	(0.053)	(0.106)	(0.036)
Industry fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	119	115	119	119	119	107
R-squared	0.095	0.349	0.217	0.124	0.154	0.081

TABLE VIII - *continued*

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

Dependent variable:	Prepackaged/ prearranged bankruptcy	Time in bankruptcy (month)	Outcome:			Recovery rate
			Reorganization	Sale	Liquidation	
Creditor concentration	-0.004	-5.909*	-0.165	0.260	-0.129	-0.565***
	(0.074)	(2.496)	(0.228)	(0.138)	(0.206)	(0.121)
Pre-pack bankruptcy	--	-11.646***	0.254	0.084	-0.323**	-0.219**
		(1.159)	(0.145)	(0.093)	(0.124)	(0.058)
Concentration * Pre-pack	--	9.830*	-0.174	0.086	0.106	0.365*
		(4.445)	(0.408)	(0.398)	(0.256)	(0.163)
Ln(Assets)	-0.005	0.716	0.049**	-0.024	-0.031	-0.044*
	(0.021)	(0.366)	(0.015)	(0.019)	(0.024)	(0.021)
EBITDA data available	0.026	-4.143**	-0.225	0.212	0.023	-0.060
	(0.108)	(1.611)	(0.131)	(0.154)	(0.154)	(0.085)
Positive EBITDA	0.017	1.293	0.311*	-0.260	-0.084	0.236***
	(0.137)	(1.305)	(0.130)	(0.243)	(0.247)	(0.033)
Economic recession	0.088	-4.318	0.141	-0.133	-0.044	-0.119*
	(0.147)	(2.594)	(0.099)	(0.096)	(0.096)	(0.047)
Industry fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	111	108	111	111	111	103
R-squared	0.01	0.33	0.16	0.12	0.11	0.11

TABLE IX

CREDITOR CONCENTRATION AND BANKRUPTCY OUTCOME: INSTRUMENTAL VARIABLES APPROACH

This table presents instrumental variables estimates of the impact of claims trading on various bankruptcy outcomes. In all regressions, trading intensity (whether among all claims or only voting claims) has been instrumented for by December filing and the share of all claims that are owned by corporations. Odd-numbered columns include all bankruptcy cases. Even-numbered columns include only BMC cases since these are the only cases for which we can identify voting claims. Control variables are the same as in Table VII. Standard errors are clustered by industry and reported in brackets. *** , ** and * indicate statistical significance at 1%, 5%, and 10% level, respectively.

Dependent variable:	Time in bankruptcy (month)		Outcome:						Recovery rate	
			Reorganization		Sale		Liquidation			
Total traded amount/Total claims:										
All claims	7.069	--	-5.221	--	1.465	--	2.309	--	-0.902	--
	(33.674)		(3.463)		(1.725)		(2.636)		(1.422)	
Voting claims	--	-34.053	--	-0.291	--	1.688	--	-1.851**	--	-3.757**
		(26.064)		(1.072)		(1.115)		(0.854)		(1.708)
Creditor concentration (t_1)	-3.474	3.165	0.136	0.518	0.038	-0.172	-0.149	-0.332	-0.325	-0.398
	(3.110)	(6.278)	(0.206)	(0.401)	(0.199)	(0.380)	(0.172)	(0.328)	(0.206)	(0.607)
Pre-pack bankruptcy	-7.912***	-14.645***	0.061	0.183	0.172	0.356*	-0.244***	-0.486***	-0.018	-0.169
	(1.512)	(2.999)	(0.114)	(0.198)	(0.110)	(0.183)	(0.076)	(0.142)	(0.083)	(0.152)
Ln(Assets)	0.977***	1.114	0.076***	0.127***	-0.033*	-0.034	-0.035	-0.099**	-0.035*	-0.126
	(0.294)	(0.981)	(0.023)	(0.040)	(0.020)	(0.026)	(0.025)	(0.044)	(0.021)	(0.081)
EBITDA data available	-2.477	-2.190	-0.262	-0.102	0.106	-0.027	0.137	0.145	-0.121	-0.403*
	(2.074)	(3.408)	(0.164)	(0.259)	(0.110)	(0.167)	(0.139)	(0.237)	(0.103)	(0.237)
Positive EBITDA	0.766	-0.823	0.330**	0.128	-0.138	-0.145	-0.220	-0.083	0.294	0.961*
	(1.770)	(4.507)	(0.162)	(0.268)	(0.112)	(0.171)	(0.136)	(0.252)	(0.182)	(0.504)
Economic recession	-4.803***	-0.337	0.131	-0.182	-0.224***	-0.277**	0.053	0.223	-0.106	-0.191
	(1.437)	(2.959)	(0.118)	(0.246)	(0.070)	(0.133)	(0.086)	(0.213)	(0.100)	(0.140)
Industry fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	115	39	119	41	119	41	119	41	107	40
R-squared	0.39	0.47	0.12	0.34	0.15	0.39	0.25	0.36	0.10	0.26

TABLE X

CREDITOR CONCENTRATION BY INSTITUTIONAL TYPE AND BANKRUPTCY OUTCOME

This table extends the results in Tables VIII & IX 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. *Alternative investors* include asset management firms, hedge funds, and private equity firms. The institutional type is defined at the parent level. 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 control variables used in Table VII. For compactness of reporting, we omit other control variables and standard errors. 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. *** , ** and * indicate statistical significance at 1%, 5%, and 10% level, respectively.

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

	At filing of Schedule of Assets and Liabilities (t_1), all creditors						At voting tabulation (t_2), voting creditors only					
Dependent variable:	Prepack/prearr. bankruptcy	Time in bankruptcy	Outcome: Reorganization	Outcome: Sale	Outcome: Liquidation	Recovery rate	Prepack/prearr. bankruptcy	Time in bankruptcy	Outcome: Reorganization	Outcome: Sale	Outcome: Liquidation	Recovery rate
Bank	0.32*	-5.37	0.21	0.06	-0.23	-0.38**	0.41**	-7.48**	0.24	0.05	-0.25	-0.28***
Bank as custodian	0.25	-7.59*	0.28	0.04	-0.28*	-0.17	0.04	-4.41	0.72***	-0.55**	-0.15	0.22
Alternative investors	0.23**	-2.30	0.15	0.11	-0.19	-0.01	0.01	0.10	0.40**	-0.23*	-0.13	-0.17
Asset management	-0.12	-0.26	0.38*	-0.13	-0.18	0.04	0.04	-0.73	0.41*	-0.41***	0.03	-0.13
Hedge fund	4.63**	-19.75	0.76*	1.32	-2.04	-0.30	-0.04	10.74*	0.83***	-0.34**	-0.47*	-0.12
Private equity	0.66***	-4.90***	-0.32**	0.49***	-0.11	-0.08	-0.02	-3.59	0.10	0.12*	-0.18	-0.21
Other financials	-0.63*	14.11*	-0.53**	-0.16	0.83**	0.00	-0.22	5.28	-0.13	-0.07	0.23	0.55**
Non-financials	-0.36***	6.87**	-0.27**	-0.09	0.27	0.34**	-0.20*	3.78	-0.41***	0.18	0.18*	0.04
Observations	119	115	119	119	119	107	111	108	111	111	111	103

TABLE X - *continued*

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

	At filing of Schedule of Assets and Liabilities (t_1), all creditors							At voting tabulation (t_2), voting creditors only						
Dependent variables:	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	106	0.66	-20.95**	0.58	0.17	-0.44	-0.19	80	0.39	-4.83	-0.21	0.14	0.21	-0.59**
Concentration		0.25	-3.72	0.20	-0.15	0.12	0.32		-0.03	-2.88	-0.27	0.08	0.23	-0.36
Share*Concentration		-0.35	18.54	-0.47	-0.08	0.19	-0.35		-0.16	-3.11	0.54	0.02	-0.69	0.68*
Bank as cust.: Share	56	1.43	-1.14	0.26	0.22	-0.49	0.35	39	-1.28**	-15.83**	0.13	-0.48*	0.10	0.65
Concentration		0.06	-3.61	-0.05	0.17	-0.12	0.06		-0.63*	0.49	-0.65	-0.01	0.51	0.32
Share*Concentration		-1.60	-11.99	-0.00	-0.09	0.09	-0.43		1.81**	25.66	0.11	0.30	0.03	-0.49
Alt. investors: Share	89	-0.33	-5.81	0.91	-0.67***	-0.30	0.69	86	-0.14	-10.32	0.57	-0.82	0.49	-0.62
Concentration		-0.18	1.89	-0.33**	-0.04	0.31	-0.28		-0.18	-4.20	-0.46	-0.06	0.59**	-0.28
Share*Concentration		0.69	1.80	-0.78	0.89***	0.07	-0.81		-0.03	12.74	-0.32	0.66	-0.57*	0.64
Asset maneg.: Share	74	-0.26	-3.80	0.37	-0.54	0.14	1.13	70	-0.99	-6.09	0.15	-0.90	1.04**	-0.79
Concentration		-0.07	0.65	-0.60***	0.00	0.63*	-0.27		-0.46	0.59	-0.59***	-0.03	0.67**	-0.21
Share*Concentration		0.18	1.88	0.16	0.51	-0.54	-1.48*		0.67	11.11	0.06	0.41	-0.77*	0.71
Hedge fund: Share	33	5.38	-10.05	2.70	-6.12*	2.11*	1.28	43	-2.35	-33.74	-1.22	2.50	-1.77	2.95
Concentration		-0.09	-1.96	-0.11	-0.41	0.43*	-0.11		-0.28	-4.14	-0.80***	0.19***	0.46**	0.09
Share*Concentration		0.80	-23.94	-5.22	11.55**	-5.12***	0.30		2.20	46.67	1.92	-2.63	1.22	-2.85
Private equity: Share	35	4.03	-405.89	-137.67***	21.67	116.00***	47.94***	33	4.06**	-179.05***	5.89	-5.56	-0.33	-5.47***
Concentration		0.47*	-18.15	0.17	0.82	-0.99**	0.65***		1.13	-17.15	0.40	-0.32	-0.08	-0.79**
Share*Concentration		-3.16	402.51	137.26***	-21.07	-116.20***	-47.96***		-4.08**	165.56**	-6.21*	5.81	0.40	5.46***
Other fin.: Share	114	-0.65*	-2.96	-0.82***	0.57	0.47	0.36	98	0.23	-6.90*	0.72*	-0.59	0.04	0.83**
Concentration		0.11	-2.55	0.52***	-0.09	-0.42**	0.07		0.09	-3.23	0.25*	-0.19	-0.03	-0.31*
Share*Concentration		0.21	29.09	0.35	-1.22	0.74	-0.68		-0.65	16.74**	-1.33**	0.75	0.35	-0.62
Non-financials: Share	117	-0.42**	6.29	-0.48*	0.08	0.33	0.70*	108	-0.27	4.67	-0.68**	0.12	0.50*	0.50
Concentration		-0.13	-4.06	-0.33	0.54	-0.19	0.34		0.12	-4.63	-0.49	0.15	0.34*	0.11
Share*Concentration		0.45	-3.13	0.86	-0.70	-0.28	-1.36		0.07	-2.31	0.57	0.21	-0.80	-1.09**

TABLE XI

CREDITOR CONCENTRATION AND RECOVERY RATES AT THE VOTING-CLASS LEVEL

The focus of this table 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. There are two dependent variables of interest: (i) class-level recovery rates, and (ii) class-level recovery rates in excess of the recovery rates predicted by absolute priority rule (APR). All models are estimated using linear least squares. All regressions are value-weighted by the total asset size of the voting class relative to the value of all voting claims *** , ** and * indicate statistical significance at 1%, 5%, and 10% level, respectively.

Dependent variable:	Class-level recovery rate				Class-level deviation from APR recovery rate			
Voting class concentration	0.230*	0.244*	0.211	0.387***	0.086***	0.084***	0.064	0.128***
	(0.122)	(0.127)	(0.156)	(0.141)	(0.030)	(0.031)	(0.039)	(0.046)
Secured class	--	0.347***	0.295***	0.338***	--	-0.042	-0.073	-0.045
		(0.066)	(0.106)	(0.064)		(0.042)	(0.075)	(0.041)
Secured class*Class-level concentration	--	--	0.130	--	--	--	0.078	--
			(0.186)				(0.094)	
Overall creditor concentration	--	--	--	-0.338**	--	--	--	-0.103*
				(0.158)				(0.058)
Ln(Assets)	0.011	0.005	0.006	0.001	-0.010	-0.009	-0.008	-0.010
	(0.023)	(0.022)	(0.022)	(0.021)	(0.008)	(0.007)	(0.006)	(0.007)
EBITDA data available	-0.192	-0.169	-0.169	-0.230*	-0.029	-0.031	-0.032	-0.050
	(0.126)	(0.113)	(0.109)	(0.122)	(0.058)	(0.058)	(0.058)	(0.062)
Positive EBITDA	0.192	0.274**	0.268**	0.321***	0.070	0.060	0.057	0.075
	(0.131)	(0.121)	(0.118)	(0.121)	(0.050)	(0.047)	(0.047)	(0.051)
Economic recession	-0.045	-0.046	-0.047	-0.064	0.047***	0.047**	0.046**	0.041**
	(0.087)	(0.081)	(0.082)	(0.078)	(0.017)	(0.018)	(0.018)	(0.017)
Industry fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	171	171	171	171	171	171	171	171
R-squared	0.09	0.23	0.23	0.26	0.09	0.10	0.11	0.12

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