Do rights offerings reduce bargaining complexity in Chapter 11?*

Gunjan Seth†

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†Gunjan Seth, London Business School, gseth@london.edu.

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Abstract

The paper investigates the rising trend of rights offerings in US Chapter 11 reorganizations. In the last decade, rights offerings have been used in more than 40% of the bankruptcy filings and have evolved as a market-based response to the uncertainties in the valuation process of complex Chapter 11 cases. I find that these offerings are generally proposed by hedge funds, and highly correlated with the performance of the stock market. Their causal effect on bankruptcy outcomes is identified using the within-district random assignment of bankruptcy judges, and the S&P fluctuations during the book building phase as instruments for rights offering completion. I find that compared with other sources of financing, rights offerings are associated with higher recovery rates, shorter periods spent in Chapter 11, and reduced uncertainty about the court valuation of the reorganized company. In addition, rights offerings reduce recidivism and largely displace Section 363 asset liquidations, which have been found to be value reducing.

1 Introduction

A fundamental objective of bankruptcy procedures is to preserve and distribute the value of the reorganized firm among its existing claimants (Aghion et al. (1992), Hart (1995)). Several frictions in the bankruptcy process impede the recovery and allocation of these claims. In the U.S. Chapter 11 bankruptcy procedures, a central challenge faced by the courts is predicting the value of the reorganized firm. Uncertainty around firm valuation is exacerbated by the asymmetric information and agency conflicts between different creditor classes, i.e., depending on their seniority different creditors misreport the valuation of the reorganized firm to increase their personal recovery rates (Gilson et al. (2000)). Demiroglu et al. (2022) document that there are large absolute errors, averaging 50%, in the court determined valuations of the reorganized firm. These large valuation errors raise significant concerns regarding the efficiency of the Chapter 11 process. For instance, the overvaluation of a firm by the court could result in its inefficient continuation, while an undervaluation might lead to an inefficient liquidation of the firm. These valuation errors and disputes are commonplace in Chapter 11 (Ayotte and Morrison (2018)), creating not only distributional inefficiencies (Baird and Bernstein (2005)), but also prolonging the length and costs of the Chapter 11 process (LoPucki and Doherty (2004), Dou et al. (2021)). Notwithstanding, one of the most crucial cost of these inefficiencies in the bankruptcy process is an ex ante cost: firms face high costs of borrowing and are therefore, less able to finance profitable projects (Hart et al. (1997), Baird et al. (1998)).

Theoretical literature has suggested improving the reorganization outcomes through the distribution of option-like securities to creditors as a way of bargaining around these inefficiencies (Bebchuk (1988, 2002), and Aghion et al. (1992)).[1] However, no empirical studies have documented and analysed the consequences of using such securities on bankruptcy outcomes. My paper is the first study that investigates the implications of firms distributing securities through rights offerings in the Chapter 11 bankruptcy plan. Rights offerings allow debtors to raise new capital by offering a class of creditors (or equity holders) the right to purchase equity in the post-emergence company. The money raised in the rights offerings is used to pay off the senior claimants, thereby, ameliorating some of the bargaining frictions. In addition to providing financing to the debtor, rights offerings in bankruptcy can allow junior claimants to objectively signal their beliefs in a particular valuation of the reorganized firm. This allows for improving the accuracy of court valuations.

[1] Recent empirical literature has also pointed this out, particularly Demiroglu et al. (2022) discuss that using rights offerings can serve as a mechanism to resolve valuation disputes between creditors. In their sample period from 1995-2013, they find that 25% of bankrupt firms engage in capital injections via rights offerings. However, none of the papers have empirically tested these claims.

The last decade has witnessed an increasing trend of debtors using rights offerings to finance their emergence from U.S. Chapter 11 bankruptcies. Between 2011-2020, rights offerings have been used in 30% of bankruptcies by number, and in 50% of bankruptcies by asset size. During this period, investors have injected roughly $32 billion in large bankrupt companies via rights offerings. Further, I estimate that rights offering participants realized 30% average returns on their investments, within 3 months of the firms' emergence from bankruptcy.[2] The increased use of rights offerings can partly be attributed to the increasing participation of hedge funds and sophisticated lenders in the bankruptcy process (Jiang et al. (2012)). It could also reflect a market response to the stricter post-crisis capital regulations on traditional creditors, like banks, that disincentivize them from investing in distressed firms.

A large literature has focused on traditional sources of arranging bankruptcy financing, for example, via asset sales and debtor-in-possession (DIP) financing. In a recent study, Antill (2021) finds that Section 363 asset sales in bankruptcy destroy firm value and significantly reduce creditor recoveries. LoPucki and Doherty (2007) also document that managerial agency conflicts in bankruptcy lead to wasteful asset sales. Eckbo et al. (2021) report that DIP loans in bankruptcy are exceptionally expensive, and in more than 60% of cases the DIP loan terms are heavily contested by the junior creditors. Further, the liquidation bias of over-secured DIP lenders often results in inefficient asset sales at the expense of junior claimants (Ayotte and Ellias (2021)). Rights offerings are an alternative way of financing bankruptcies, and are particularly valuable when traditional sources of financing are limited and/or excessively costly. By expanding the space of available exit financing options, rights offerings allow firms to access new capital without resorting to secured financing, and junior creditors or pre-bankruptcy equity holders can preserve their investments in the firm. I find that bankrupt firms being financed by rights offerings do not sell any of their assets in Section 363 sales. I also document that rights offerings are substituting for Section 363 asset sales in firms that emerge from Chapter 11 as going concerns.

While theoretical literature suggests that rights offerings reduce valuation disputes and improve recovery rates, in practice a significant value of the reorganized pie is transferred to the parties underwriting the rights offering (backstop parties). Therefore, whether rights offerings improve the distributional efficiency of the Chapter 11 bankruptcy process is ultimately an empirical question, and further investigation is necessary to ascertain its effects on bankruptcy outcomes. In this paper, I use a sample of 396 large public bankruptcies from 2003-2020 to examine these issues in detail. It is challenging to estimate the effects of rights offerings

[2]The returns are calculated for firms that emerged as publicly listed, from the market value of their newly-issued common stocks (3 months after their emergence from Chapter 11).

on bankruptcy outcomes, due to an inherent selection bias in the creditors' and firm's choice of financing. For instance, it could be argued that higher quality distressed firms are being financed by rights offerings, and therefore, better bankruptcy outcomes cannot causally be attributed to rights offerings. Or it might be the case that rights offerings are being used to resolve valuation disputes in complex bankruptcy cases, where traditionally creditor recoveries are lower, and therefore, one may not find any effect of using rights offerings on bankruptcy outcomes.

To overcome this selection bias and identify the impact of rights offering on bankruptcy outcomes, I use two instruments determining the choice of rights offerings. The first instrument, relies on the within-district random assignment of judges to bankruptcy cases (Chang and Schoar (2013), Bernstein et al. (2019), Antill (2021)). I find that the probability of a rights offering significantly decreases with an increase in the bankruptcy judge's liquidation taste. The second instrument, uses S&P fluctuations over the 2 months period prior to the firm emerging from bankruptcy, as an instrument for rights offering, relying on the sensitivity of rights offering completion to market movements during the 'book-building' phase. Short run market fluctuations have been documented as a strong predictor of IPO activity (Busaba et al. (2001), Benveniste et al. (2003), Bernstein (2015)). I find that the probability of rights offering significantly increases with increasing S&P market returns during the book-building period. In the analysis, the effect of rights offering is identified from differences in bankruptcy outcomes between firms that file for bankruptcy in the same year and in the same court, but are assigned to different judges and/or experience different post-filing S&P returns.

For the instruments to be valid, they need to satisfy the exclusion restriction condition, that is, the judge liquidation propensity and the S&P returns during the book building phase must be related to the bankruptcy outcomes only through the rights offering choice. I find empirical support for the validity of my instruments. The randomization test confirms that within-court districts Chapter 11 cases are randomly assigned to bankruptcy judges, and the judge liquidation propensity is uncorrelated with a broad range of firm and bankruptcy characteristics. Similarly, I find no difference in observables between the firms that experience an S&P decline during the book building phase and other firms that filed for bankruptcy in the same year. Further, to exclude the possibility that the instruments affect bankruptcy outcomes through other channels, I conduct a placebo test on an alternate sample of prepackaged bankruptcies (that are excluded from the main sample). In prepackaged bankruptcies, the claim distribution plan and exit financing decisions have effectively been made prior to the bankruptcy filing, and therefore, the assignment of the judge should have

no impact on either the financing decision or the bankruptcy outcomes. The placebo test on prepackaged bankruptcies confirms that this is indeed the case.

Using the instrumental variables approach, I document a significant link between bankruptcy outcomes and the decision to raise financing via rights offerings. I find that using rights offerings increase the total creditor recoveries by 19% to 38%, and are associated with a higher likelihood of distribution to shareholders. The decision to use rights offering decreases bankruptcy duration by 6 to 14 months, suggesting that these offerings are a very effective tool for achieving consensus and resolving the conflicts of interest between different class of creditors. Further, I report that the OLS coefficients underestimate the causal impact of using rights offering on bankruptcy outcomes. The comparison between the OLS and IV coefficients suggests that rights offerings are being used to reduce excess delays in complex Chapter 11 cases, where junior creditor recoveries traditionally tend to be low.

Several papers document high rates of recidivism in firms emerging from Chapter 11 (Hotchkiss (1995), Gilson (1997), Roe (1983) and Altman (2013)). These high refiling rates might reflect the continuation bias of the Chapter 11 process (Hotchkiss (1995), Altman (2013)). Alternatively, Gilson (1997) suggests that firms emerging from financial distress have abnormally high leverage ratios compared with their industry peers, and therefore, are forced to refile for bankruptcy in the subsequent years. I find that using rights offering in bankruptcy reduces the likelihood of the firm refiling for bankruptcy by around 24%. Consistent with Gilson's hypothesis, the lower recidivism of these firms might be explained by the fact that firms using rights offerings emerge from bankruptcy with lower leverage in their capital structure. The average post emergence leverage ratio of firms being financed by rights offering is 44% compared with that of 56% for firms that are not financed by rights offerings.[3] There is also a notable shift in the corporate governance of firms that arranged financing via rights offering, with on average 84% of the board of directors being replaced upon emergence from bankruptcy.[4] I also find that firms that were financed by rights offering have a higher probability of being acquired in the 3 years post-emergence, compared with other bankrupt firms that were not financed via rights offerings. This indicates that firms using rights offerings experience a shift in their corporate governance and are restructured differently post-emergence.

The paper is related to several strands of literature. Efficient bankruptcy design has been a central theme of many theoretical research papers. Models by Bebchuk (1988, 2002), Roe (1983), Aghion et al. (1992),

[3]These differences in the post-emergence leverage ratio are statistically significant at the 1% level (p-value is 0.0024).
[4]For bankrupt firms that did not engage in rights offering, around 75% of the board of directors were replaced.

and Hart et al. (1997), demonstrate that the distribution of option-like securities to creditors improves the reorganization outcomes of bankruptcy. My paper provides an empirical contribution to this literature, by analyzing the impact of distributing the rights to purchase securities to creditors during the bankruptcy reorganization process. Several papers have documented that asymmetric information and conflicts of interest between senior and junior creditors create extensive frictions that distort court valuations and lead to excess delays in the reorganization process (Gilson et al. (2000), Baird and Bernstein (2005), Dou et al. (2021)). In recent work, Dou et al. (2021) document that these bargaining frictions lead to 73% increase in the duration of Chapter 11 court cases. My paper relates to this literature, by providing evidence that resolving these frictions via rights offerings reduces delays and improves bankruptcy outcomes. Closely related is the recent work by Demiroglu et al. (2022), who show that market dissemination of corporate bonds during bankruptcy improves the court valuation accuracy and the distributional efficiency of Chapter 11 reorganizations.

My paper also contributes to the literature that explores the role of governance, and capital structure in shaping post-bankruptcy firm outcomes. For example, Jiang et al. (2012) document that the increased hedge fund participation in the bankruptcy process leads to higher CEO turnover, and lower agency conflicts in the post-reorganized firm. My finding that firms engaging in rights offerings experience a shift in their corporate governance is consistent with hedge funds playing an important role both during and post-bankruptcy in the reorganized firms. An existing literature finds that reorganizations in Chapter 11 are associated with higher creditor recovery than other forms of exit (Acharya et al. (2007), Bris et al. (2006), Ivashina et al. (2016)). In similar spirit, LoPucki and Doherty (2007), Gilson et al. (2016), and Antill (2021) document a negative association between Section 363 asset liquidations and creditor recoveries. My paper contributes to this literature, by documenting the causal evidence of rights offering financing increasing creditor recovery rates, and avoiding inefficient liquidations and Section 363 asset sales. My empirical strategy follows a growing thread of literature that exploits the random assignment of judges and the variation in their interpretation of the law (Kling (2006), Doyle Jr (2007, 2008), Chang and Schoar (2013), Dobbie and Song (2015), Bernstein et al. (2019)).

The rest of the paper is organized as follows. Section 2 delineates the institutional details around the rights offering process, and the other traditional forms of bankruptcy financing. In section 3, I describe the data and summary statistics. Section 4 presents the empirical methodology, and section 5 discusses the main results. Section 6 concludes the paper.

2 Institutional Details

2.1 Rights offerings in Chapter 11

In a rights offering, a firm in bankruptcy arranges for new capital by offering a class of creditors (or equity holders) the rights to purchase securities in the post-emergence firm through the Chapter 11 plan. Typically the offering is of equity securities, but in some cases convertible debt securities could also be offered. These securities are usually offered at a discount to the *assumed* valuation of the reorganized debtor. As the new equity securities are typically sold at a discount to their assumed value, the bankruptcy claimants have a strong incentive to participate in the offering so as to avoid dilution, provided they believe that the assumed valuation of the reorganized firm is correct. That is, the claimants will decide whether to participate in the offering, and purchase the securities only if they believe that the rights offering price indeed reflects a discount to the value of the reorganized entity.[5] To ensure that the reorganized firms' capital requirements are met, rights offerings in Chapter 11 are almost always underwritten by a subset of rights offering participants, who commit to *backstop* and fund the rights offering in case it is not fully subscribed. In return for underwriting the offering, these participants receive a backstop commitment premium, that often ranges from 3 to 10% of the total offering size.

In addition to providing financing to the debtor, rights offerings in bankruptcy can allow claimants to objectively demonstrate their beliefs in a particular valuation of the reorganized firm. That is, it is a powerful tool used to achieve consensus and resolve valuation disputes amongst different creditor classes, by providing junior claimants with the means to "put their money where their mouth is." It gives junior claimants an opportunity to purchase new equity or debt securities in the reorganized firm at a discount to the plan value, and in a deleveraged capital structure. Aside from increasing creditor recoveries, it gives participants the ability to shape post emergence corporate governance matters of the firm. Further, the backstop opportunity can be used to shift recoveries in favor of the parties that are willing to underwrite the rights offering. In some large bankruptcies, to complement a rights offering, debtors also use private placements, that involve the direct issuance of equity securities to certain class of creditors who have already agreed to participate in the offering (prior to its placement). This is further illustrated in an example below, detailing Peabody Energy Corporation's financing process during its bankruptcy.

[5] The class of creditors or equity security holders solicited for participation in the rights offering is generally offered the right to purchase its pro rata share (i.e., the same percentage that its current holdings represent) of the equity available under the offering.

I clarify the process of rights offering, by describing the case of Peabody Energy Corporation's Chapter 11 bankruptcy. Peabody is one of the world's largest private-sector coal company, that filed for Chapter 11 bankruptcy on 13th April 2016, with assets totalling $11 billion at the time of its filing. Disagreements among Peabody and many of its creditors during the bankruptcy proceedings were mediated by Peabody proposing to raise $1.5 billion in exit financing from certain unsecured noteholders and second lien noteholders, on 22nd December 2016. The proposal involved financing $750 million through rights offering of the new Peabody common stock, at 45% discount to the plan equity value (of $3.105 billion). All holders of allowed second lien notes claims and a class of unsecured creditors received rights to purchase these rights offering shares. Further, an additional $750 million of financing was obtained through the private placement of new preferred stock exclusively to certain unsecured noteholders (at 35% discount to the plan equity value).[6] These private placement investors also agreed to backstop the $750 million rights offering, and in exchange were paid an 8% backstop fee ($60 million), and 2.5% monthly ticking fee (until the plan effective date). The final plan and disclosure statement was filed on 27th January 2017, and it was supported by 95% of unsecured creditors. On 17th March 2017, the court confirmed the plan and Peabody emerged from bankruptcy. The proceeds of $1.5 million from the rights offering and equity private placement were used to fund the plan recoveries. 3 months after emerging from bankruptcy (on 15th June 2017), the total market value of Peabody calculated from its stock price was $2.357 billion, implying a 38% return to the rights offering participants on their investment.[7]

Peabody succeeded in arranging its exit financing from a group of unsecured creditors and second lien noteholders. However, given the huge discount and high backstop premium associated with the rights offering financing, an adhoc committee of convertible bondholders strenuously objected to the terms of the exit financing during the bankruptcy proceedings. The members of this adhoc committee represented approximately 3% of the debtors' total funded debt, and argued that an excessive value of the reorganized firm was being transferred to the creditors who had agreed to participate in the private placement (i.e. the backstop investors). The bankruptcy court rejected these objections stating that, "the consideration offered under the private placement aided the debtors in attaining tremendous consensus around the plan.[8]" More

[6]The $750 million private placement investment came from the following hedge funds: Aurelius Capital Management, Contrarian Capital Management, Discovery Capital Management, Elliot Management Corporation, Panning Capital Management, and Point State Capital.

[7]The rights offering participants purchased 44% equity stake in Peabody for $750 million. The market value of this stake, 3 months after Peabody's emergence from bankruptcy is $1037 million ($= 0.44 * 2357$). This implies a return on investment of $278/750 = 38\%$.

[8]Further, the bankruptcy court stated that it would "[l]et the creditor body vote and tell me that the expenses are too high, the valuation is not right ...." Given that Peabody's plan had the support of 95% of unsecured creditors, the court was ultimately convinced that the debtors' process was driven by the need to close a transaction quickly.

generally in other cases, while the objections to rights offerings are not uncommon, bankruptcy courts have mostly demonstrated a reluctance to undo the product of consensus building exercises by the debtors and other key stakeholders in the restructuring process (refer to report by Kirkland and Ellis).

In Figure 1, I plot the fraction of Chapter 11 firms arranging financing via rights offering. There is an increasing trend of debtors using rights offerings to finance their emergence from bankruptcies. The last decade has witnessed rights offerings being used in 30% of bankruptcies by number, and in 50% of bankruptcies by asset size. From 2003-2020, investors have injected at least $40 billion in large bankrupt companies via rights offerings. There is a slight downward trend in firms using Section 363 (§363) asset sales to finance bankruptcies, suggesting that rights offerings might be substituting for asset liquidations. I briefly summarize the details of other more traditional forms of bankruptcy financing in the next subsection. The average timeline for arranging financing via rights offering is illustrated in 2. I observe that firms in Chapter 11 propose rights offerings roughly 90 days prior to their emergence from bankruptcy. The rights offering 'book-building' period commences with its announcement by the firm. During this period, the firm, backstop parties and other participants deliberate on the terms of the rights offering.[9] Within the next 40 days, the bankruptcy plan is filed by the firm. Subsequently, the firm emerges from bankruptcy after the plan has been approved by the judge, in another 50 days.

2.2 Traditional forms of bankruptcy financing

An extensive literature has recognized that asset sales are used to arrange financing when a firm is facing financial distress (Maksimovic and Phillips (1998, 2001), Pulvino (1998), Hotchkiss and Mooradian (2003)). Section 363(b) is a formal process in the US bankruptcy code (11 U.S.C §363(b)) that allows the managers of the bankrupt firms to sell assets, that are outside of the normal course of business. §363 is an expedited asset sale process that only requires the approval of the bankruptcy judge, and does not require any formal voting or consent by creditors. The size of the assets sold in §363 sales can range from one piece of an equipment to the entire firm. The process of a §363 sale involves the debtor entering into proposed purchase agreement with a potential buyer (known as the 'stalking horse bidder'). If the bankruptcy judge approves the asset sale then bids from other potential buyers are solicited. In the presence of multiple bidders, typically, an auction mechanism is used to clear the bids. Subsequent to the auction, the judge approves the asset sale

[9] A 'material adverse event' clause in the plan allows the rights offering participants to cancel their financing commitment to the firm. It might be used if the firm or market conditions were to severely deteriorate (refer to the case of Delphi Corporation).

to the winning bidder at a formal hearing. The bankruptcy judge uses his/her discretion to determine if the asset sale is justified, and whether the firm would be in worse financial shape without this sale.

In my sample period from 2003-2020, §363 sales have been used in around 28% of the bankruptcy filings to generate a total of $17.9 billion in financing. During the same period, rights offerings have been used in 24% of the cases to inject $42 billion of fresh capital into bankrupt firms. I find that no firm that was financed by rights offering sold any assets in a §363 sale. Figure 1 plots the percentage of firms involved in §363 asset sales (red line) and rights offerings (grey line). The correlation coefficient between the two series is -31%. Further, the graph shows that in the last decade (2011-2020), §363 sales have been used in only 9% of the bankruptcies, while rights offerings have been used in 46% of bankruptcies (by asset size). In recent work, Antill (2021) documents that §363 asset sales in bankruptcy destroy firm value and significantly reduce creditor recoveries. The trends in bankruptcy financing seem to suggest that rights offerings are substituting for §363 sales, and when market conditions are appropriate distressed firms choose to raise financing via rights offerings instead of asset liquidations. I explore these issues later in my paper.

Firms in bankruptcy are generally low on working capital and have run out of debt capacity, thus the provisions in Chapter 11 allow for a special kind of 'super-priority' financing, known as the DIP (debtor-in-possession) financing. The DIP facility may be used to fund the operations of the firm while it stays in Chapter 11 bankruptcy protection. The amount and terms of the DIP loan are approved by the bankruptcy judge in a formal court hearing, and the consent of prepetition secured lenders is required to modify/release the collateral for securing the DIP facility. As the collateral used for securing the DIP financing, is typically already subject to an existing lien by prepetition creditors, these creditors are in a strong position to block any new lenders from providing the DIP facility (Eckbo et al. (2021)). It is therefore, not uncommon, to find very limited participation in the DIP loan bidding process, and generally the DIP facility comes from the prepetition creditors.

3 Data

3.1 Data Sources

The analysis in this paper is based on Chapter 11 filings from 2003-2020, collected from the UCLA LoPucki Bankruptcy Research Database (BRD). These bankruptcy filings include large publicly listed firms, with

assets greater than $100 million (in constant 1980 dollars). I begin my sample from 2003, as all the U.S. bankruptcy courts started to maintain electronic records of case dockets on PACER (Public Access to Court Electronic Records) only in 2002. I hand collect data on the details of bankruptcy financing, resolution, and recovery rates from court dockets on BankruptcyData.com and PACER. BankruptcyData.com is a product of New Generation Research, that includes case information (and case dockets) and for all U.S. corporate bankruptcies. I supplement and cross-verify this data from news filing on Fativa, and 10K statements collected from the SEC EDGAR database. Financial information for the firms filing for bankruptcy is collected from CapitalIQ and COMPUSTAT.

My main sample comprises of 396 Chapter 11 filings from 2003-2020. Pre-packaged bankruptcy cases are excluded from the main sample, as the decisions on reorganization and claim distributions have been made prior to the judge assignment.[10] The main sample is restricted to non-financial bankruptcies. An alternate training sample of bankruptcy exit classifications from BankruptcyData.com is used to construct the judge liquidation taste instrument. BankruptcyData.com includes exit information on 2,288 large non-prepackaged Chapter 11 bankruptcy filings that are not part of the main sample. These cases are used as a training sample. Following Bernstein et al. (2019) and Antill (2021), the liquidation taste instrument of the judges is calculated as the fraction of their training sample cases that were converted to Chapter 7 (excluding dismissals). As the training sample cases are disjoint from the main sample, there is no mechanical correlation between the judge liquidation taste instrument and reorganizations in my main sample.

3.2 Summary Statistics

In Table 1 Panel A, I summarize firm and bankruptcy characteristics for my main sample of U.S. Chapter 11 filings during the period 2003-2020. Statistics are reported separately for 3 subsamples: (i) firms that financed their bankruptcy exit via rights offerings, (ii) firms that financed their exit via Section 363 asset sales, and, (iii) the remaining firms that did not engage in §363 sales or rights offerings. Of the 396 bankruptcy filings, 96 firms engaged in rights offerings, and 110 firms sold assets in §363 sales. I find that larger firms with average assets of $4.44 billion raise financing via rights offering, compared with smaller firms with average assets of $1.87 billion engaging in §363 sales. The leverage ratio of firms involved in rights offering is significantly higher than that of firms selling assets in §363 sales. Interestingly, the percentage of secured debt in firm's total debt (*secured debt share*) is highest, averaging 67%, for firms selling assets in §363 sales. This

[10] A sample of 86 pre-packaged bankruptcy cases from 2003-2020, is later used in the paper for conducting placebo tests.

is consistent with the evidence presented in Gilson et al. (2016) and Ma et al. (2021), who attribute §363 sales to greater use of secured debt. Secured debt percentage is significantly lower, averaging 55%, in firms raising finance via rights offering, compared with 62% in the remaining firms that are neither involved in rights offering nor in §363 sales. This difference can be explained by the fact that rights offerings are generally proposed by unsecured creditors and equity holders, and therefore, their occurrence is more prevalent in firms with lower secured debt share. There is no significant difference in profitability (as measured by EBITDA/Assets) among the 3 subsamples of firms.

The median number of plans filed by firms engaging in rights offering is 2, indicating that rights offerings are probably more likely in more complex bankruptcies. Consistent with Jiang et al. (2012), I find that hedge funds participate as equity holders and/or creditors in 86% of the bankruptcy proceedings.[11] I report that there is a greater likelihood of hedge funds being involved in the bankruptcy cases where financing is being raised via rights offerings. There is no significant difference in the amount of approved DIP financing (scaled by the firm's assets) in the 3 subsamples of firms. It is not surprising to find that a larger proportion of firms engaging in rights offerings form equity committees during their bankruptcy proceedings, given that rights offerings are often proposed by unsecured creditors committees and/or equity committees. The average judge liquidation bias is lowest for firms raising financing via rights offerings, and the S&P returns during the book building phase of the offering are higher for these firms. I will explore these differences in detail in the next section.

In Panel B, I summarize the outcomes for the 3 subsamples of bankruptcies. I find that 70% of firms selling assets in §363 are ultimately liquidated, while none of the firms engaging in rights offering are liquidated. Another 24% of firms involved in S363 asset sales are immediately acquired upon exiting bankruptcy. I also report that the average duration of 10.5 months for Chapter 11 cases for which the firms did not liquidate assets in §363 sales, is significantly shorter than the average duration of 17 months for cases in which firms sold assets in S363 sales. The overall creditor recovery rate, calculated as the ratio of total distribution to all creditors over their total claims, is highest for firms engaging in rights offering (60%), and lowest for firms involved in S363 asset sales (37%). The lower recovery rates of creditors of firms selling assets in §363 sales is consistent with the evidence documented in Antill (2021). Similar patterns are observed in the secured and unsecured creditors' recovery rates. I report the in 35% of the bankruptcies that are financed via rights offerings shareholders receive a distribution. This proportion is significantly higher compared to the sample

[11] I am extremely grateful to Wei Jiang, Kai Li, and Wei Wang for sharing their data set on hedge fund participation in the Chapter 11 process. Following their methodology, I have expanded the hedge fund participation data set to my sample period.

of §363 asset sales (5%), and other bankruptcy filings (18%). 56% of the firms that engaged in rights offering emerged as publicly listed firms with their equity securities being traded on stock exchanges. Interestingly, 44% of firms arranging financing via rights offering were taken private upon emergence, a pattern generally associated with increased (and concentrated) hedge fund participation in the exit financing process.

In Table 2, I summarize the characteristics of rights offerings. The average size of financing arranged via rights offering is $438 million, and the median financing size is $175 million. This financing via rights offering comprises of roughly 50% of the firm's total exit financing, the other 50% generally being arranged via traditional forms of financing, like secured loans. On average it represents 12% of prepetition assets, and 21% of all the impaired class claims. On average the class participating in the rights offering, injects 36% of its prepetition claims in refinancing the reorganized firm. The proceeds from the rights offering represent 51% of the reorganized firm's equity value (as determined by the court valuation), and 28% of the reorganized firm's enterprise value. In 75% of the cases the rights offerings are subscribed by the unsecured creditors. There is also a significant participation of hedge funds or private equity firms in about 70% of the rights offerings. I find that bankruptcy rights offerings allow participants to purchase the reorganized firm's equity at an average 23% discount to the court determined equity valuation. This could represent a reward for the risk undertaken by the participants in financing a distressed firm. Alternatively, it could also indicate supracompetitive pricing of these equity offerings due to the lack of participation in distressed financing markets. For the firms that emerged as publicly listed, I find that the average post-emergence 3 months market returns for the rights offerings participants was roughly 29% (and the median return was 36%). These returns are higher than the average first-day IPO returns of 17.04% during the 2003-2020 period (calculated from data on Professor Jay Ritter's website (Ritter (2022))).

4 Identification Strategy

4.1 Empirical Design

Identifying the effect of rights offerings on distressed firms' outcomes is challenging as several firm, industry and market characteristics drive the inherent selection of firms into their choice of financing. To address this bias, I compare the bankruptcy outcomes for firms that are financed with rights offering with other similar firms in the same industry that filed for Chapter 11 bankruptcy in the same year and same court. The

baseline specification is:

$$Y_i = \beta \ \textit{Rights Offering}_i + X_i'\gamma + \alpha_t + \alpha_k + \alpha_c + \epsilon_{1i} \tag{1}$$

where, Y_i measures the bankruptcy outcome (for instance, the duration of Chapter 11, and recovery rates) for firm i. The indicator variable of interest, $\textit{Rights Offering}_i$ equals 1 if the firm arranges exit financing via rights offering and equals 0 otherwise. Under the null hypothesis that rights offerings have no effect on bankruptcy outcomes, β should not be statistically different from zero. X_i includes control variables that might affect the firm's ability to arrange different forms of financing. Specifically, I include controls for the firm's pre-filing assets, leverage ratio, percentage of secured debt, profitability, and number of employees. I also control for the following bankruptcy process characteristics: the presence of creditors and equity committee, and the experience of the bankruptcy judge assigned to the case. The specification includes year of filing fixed effects (α_t) that control for the macro trends in the availability and choice of financing. Industry fixed effects (α_k) are included to control for variations in the type of operation, business, and assets determining the financing needs of a firm. I also include court of filing fixed effects (α_c) as the firm's self selection into a bankruptcy court (*forum shopping*) might affect the bankruptcy outcome (LoPucki and Whitford (1991), Eisenberg and LoPucki (1998)). In all the regressions, the standard errors are clustered at the filing-district court level to account for any correlation between cases filed in the same bankruptcy court (Bernstein et al. (2019), Iverson et al. (2020), Antill (2021)).

A crucial challenge in identifying the effects of rights offering on bankruptcy outcomes is the implicit selection issue that arises from the decision to raise financing via rights offering. If the decision to raise financing via rights offering is related to unobservable firm quality (captured in the error term, ϵ_{1i}), then the estimate of β will be biased. For instance, it might be the case that unsecured creditors and equity holders only propose rights offerings for 'good' viable firms, and therefore, the financing via rights offering is restricted to higher quality firms. If this were the case then better bankruptcy outcomes of firms engaging in rights offering would be due to the higher quality firms selecting into rights offering. This would result in an upward bias in the estimate of β. To test whether the undertaking of rights offering improves bankruptcy outcomes, by faster resolution of valuation disputes among different class of creditors, or by reducing the need for asset liquidations, one needs to compare two identical firms that do and do not arrange financing via rights offerings.

To identify the causal effect of rights offering on bankruptcy outcomes, I instrument for the rights offering completion choice using the propensity of the judge to liquidate a firm, and the S&P return fluctuations over the 2 months of the book-building phase. The first instrument, judge liquidation bias, measures the bankruptcy judge's propensity to convert Chapter 11 filings to Chapter 7. This instrument makes use of the fact that while the bankruptcy code is uniform at the federal level, each bankruptcy judge's interpretation of the law varies significantly (LoPucki and Whitford (1992), Bris et al. (2006), Chang and Schoar (2013)). Bankrupt firms may choose to file their case in any jurisdiction, however, post filing in a particular jurisdiction the assignment of the bankruptcy judge is random (Chang and Schoar (2013), Bernstein et al. (2019), Antill (2021)). Therefore, this instrument exploits judge heterogeneity resulting from the within-district random assignment of judges to bankruptcy cases. An important attribute of this instrument is that it is calculated from a separate training sample of Chapter 11 cases that is disjoint from the main sample of bankruptcies, ensuring that there is no mechanical relationship between the instrument and the bankruptcy outcome for any case.

The second instrument, measures the CRSP equal-weighted S&P returns over the 2 months book-building period prior to emergence from bankruptcy. This instrument exploits the fact that short run market fluctuations during the book-building phase are a strong predictor of IPO activity (see Busaba et al. (2001), Benveniste et al. (2003), Dunbar and Foerster (2008), Bernstein (2015)). On average, debtors in Chapter 11 first announce (or propose) rights offering roughly 90 days prior to emerging from bankruptcy. Within the next 40 days, the disclosure statement and bankruptcy plan is filed by the debtors, that is subsequently approved by the judge in another 50 days (see figure 2 for an illustration of the bankruptcy timeline). I define the start of the book-building period of the rights offering 90 days prior to the firm emerging from bankruptcy, because it coincides with the time at which the average bankrupt firm announces its rights offering. For measuring the S&P returns instrument, I choose a fixed length window of 2 months for all firms, to avoid any possible correlations between the length of the actual book building period with the bankruptcy outcomes. The instrument relies on the sensitivity of rights offering completion to market fluctuations during the book-building phase.

To implement the instrumental variables approach, I estimate the following first-stage regression:

$$Rights\ Offering_i = \delta\ Judge\ Bias_i + \phi\ S\&P_i + X_i'\gamma_2 + \alpha_t + \alpha_k + \alpha_c + \epsilon_{2i} \tag{2}$$

where, $JudgeBias_i$ is the first instrumental variable, that equals the fraction of Chapter 11 cases that are converted by the bankruptcy judge to Chapter 7. Importantly, I include court fixed effects (α_c), to ensure that I exploit judge heterogeneity within a court district. Further, year of filing fixed effects (α_t), industry fixed effects (α_k), and controls for the firm and bankruptcy characteristics (X_i) are included in all specifications. In an additional specification, I include fixed effects for bankruptcy filing court $\times$ year (α_{ct}) to ensure that the instrument is capturing the judge heterogeneity within the same court in the same year. $S\&P_i$ is the second instrumental variable, that measures the 2 month S&P returns during the book building phase prior to the firm emerging from bankruptcy.

The second-stage equation estimates the effect of rights offering on bankruptcy outcomes:

$$Y_i = \theta \ \widehat{Rights\ Offering}_i + X_i'\gamma_3 + \alpha_t + \alpha_k + \alpha_c + \epsilon_{3i} \tag{3}$$

where, $\widehat{Rights\ Offering}_i$ is the predicted value of the probability of a firm arranging financing via rights offering, estimated from equation 2. If the conditions for instrument validity are satisfied, θ measures the causal effect of rights offering on bankruptcy outcomes. I implement the instrumental variable estimator using the two-stage least squares (2SLS) procedure.

A salient feature of the instrumental variables regression is that the causal estimates are being determined only from the *sensitive* firms (Angrist and Imbens (1995)). That is, the estimates are coming from only those bankrupt firms that would alter their exit financing choices if the market conditions deteriorated while they were deciding on the terms of the rights offering, or because their cases were randomly assigned to judges that commonly liquidate firms. In my analysis the effects of rights offering are, therefore, identified from differences in bankruptcy outcomes between similar firms that file for bankruptcy in the same year and in the same district, but are assigned to different judges and/or experience different post-filing S&P returns. In the next subsections, I discuss the assumptions that need to be satisfied for the instruments to be valid.

4.2 First Stage Regression

For the instruments to be valid, they must strongly affect the rights offering financing choice of the firm. The first stage results, presented in Table 3, demonstrate the effect of judge liquidation bias and S&P returns

during the book-building phase on the rights offering choice.[12] The dependent variable, *Rights Offering* equals 1 if a firm secures exit financing via rights offering, and zero otherwise. All specification include filing year and industry fixed effects. I also include the following controls for firm and bankruptcy characteristics: prefiling asset size, leverage ratio, secured debt share, profitability, number of employees, presence of equity and creditors committee, and judge experience. In column (1), I report that the probability of completing a rights offering significantly decreases with an increase in the liquidation propensity of the bankruptcy judge, and with a decrease in the S&P returns during the book-building period.

Column (2) further controls for the court of bankruptcy filing, and provides a sharper test for testing the effect of judge heterogeneity within a court district on the rights offering choice. In column (2), I report that the coefficient on the liquidation taste instrument is -0.48. This implies that a one-standard-deviation increase in the liquidation propensity of the judge decreases the probability of a rights offering by roughly 0.08. The coefficient on the S&P returns during the book building-period is 0.83, implying that a one-standard-deviation increase in market returns increases the probability of rights offering by around 0.06. These estimate are both economically and statistically significant. The instruments have an F-statistic above 10, suggesting that the instruments are strong and unlikely to be biased towards the OLS estimates (Bound et al. (1995), Staiger and Stock (1997)). The overidentifying restrictions J-statistic is small (with a p-value of 0.86), indicating that the model is not misspecified (Hansen (1982)).[13] To account for the time varying trends in the appointment of judges to different bankruptcy courts, in a separate specification I also control for court $\times$ year of filing fixed effects, and continue to find similar results.[14]

What is a reasonable counterfactual for firms that decide to raise financing via rights offering in bankruptcy? One might argue, that the firms that were ultimately liquidated in Chapter 11, were of worse quality than those that were reorganized. In columns (3) and (4), I restrict my sample to firms that were reorganized and emerged from Chapter 11 as going concerns. In the sample of firms that were reorganized, I continue to find that the instrumental variables strongly affect the rights offering financing choice of firms. I report that a one-standard-deviation increase in judge liquidation bias decreases the probability of a rights offering by 11%, while a one-standard-deviation increase in the S&P returns increases this probability by 12% (column (4)). The F-statistic of the instruments (in this subsample) is 50, thereby, ruling out the concern of weak

[12] For 31 of the 396 Chapter 11 filings the judge liquidation bias instrument is not available, and therefore, the final sample size in Table 3 columns (1) and (2) is 365 bankruptcies.

[13] The p-values from the overidentification tests of regressing creditor recoveries on rights offerings using judge liquidation bias and S&P returns as instruments are reported in Table 5.

[14] The first stage results of this specification are presented in Table IA.1 column (1).

instruments. In columns (5) and (6), I similarly report that the instrumental variables are both statistically and economically significant in predicting rights offering, when the firms liquidating their assets in §363 sales are excluded from the sample. This sample partition allows me to compare the firms that arranged financing via rights offering with other similar firms in bankruptcy that did not liquidate their assets in §363 asset sales.

4.3 The Exclusion Restriction Condition

To be valid, the instrumental variables not only need to affect the rights offering choice, but are also required to satisfy the exclusion restriction. That is, the instruments must not affect the bankruptcy outcomes through any other channel except for the decision to raise financing via rights offerings.[15] More specifically, the exclusion restriction requires that the instruments are uncorrelated with the residuals in equation 1. In this section, I present evidence that ameliorates concerns regarding the exclusion restriction.

If less lenient judges were non randomly assigned to bankruptcy cases in which the firm has worse prospects, this would violate the exclusion restriction condition. However, this seems unlikely as several courts explicitly state that the judges within their district are randomly assigned to bankruptcy cases, and courts implement this randomization using several methods, like computerized random draws and blind rotation systems (Iverson et al. (2020)). In contemporaneous work, Hüther and Kleiner (2022) argue that there is a possibility that bankruptcy judges might be non-randomly assigned owing to hedge funds timing the firms' bankruptcy filings so as to avoid strict judges. To mitigate this concern, Hüther and Kleiner (2022) suggest using a *recentered* judge liquidation bias instrumental variable, based on the recentering econometric approach developed in Borusyak and Hull (2020) and Borusyak et al. (2022).[16] I find that all the results are virtually identical when I use the recentered judge liquidation bias as an instrumental variable in my regressions.[17] Further, in very large bankruptcy cases with dispersed debt and equity ownership, it is highly unlikely that a single creditor (or hedge fund) can influence the timing of bankruptcy filing of the firm. My

[15]These two requirements are sufficient to ensure the instruments' validity when treatment effects are homogeneous. If the treatment effects are heterogeneous, the monotonicity condition also needs to be satisfied in order to estimate the local average treatment effect (LATE). The monotonicity condition would require that, all else equal, there must be no firms whose chances of arranging financing via rights offering increase as the judge liquidation bias increases, and/or the S&P returns decline.

[16]The recentered judge liquidation bias instrumental variable partials out any variation in the judge liquidation bias owing to the recent assignment of bankruptcy cases to other judges in the same court district (in the last 7 days).

[17]See Appendix Table IA.2 Panel A for the results. I follow the methodology outlined in Hüther and Kleiner (2022) to estimate the recentered judge liquidation bias instrument. As a further robustness test, I restrict my sample to the bankruptcy filings with hedge fund involvement. Even in this subsample I continue to find that increasing judge liquidation bias strongly reduces the likelihood of a rights offering completion (Table IA.2 Panel B).

subsequent analysis confirms that the judge liquidation bias is not correlated with any of the firm's pre-filing characteristics.

In Table 4 Panel A, I formally test whether there is any difference in observables between the firms that are assigned to the highest liquidation bias judges and the other firms that file for bankruptcy in the same court. A firm is classified as being assigned to the least lenient judge cohort, if the liquidation bias of the judge is within the highest 25% of bankruptcy filers in a given court. Similarly firms are assigned to the second, third, and fourth quartile, based on the liquidation bias of the judge. I find no significant differences in the four sets of firms across a list of observables such as firm financial information at the time of bankruptcy filing, amount of DIP loan approved, presence of equity and creditors committee, and the S&P returns during the book building phase. In columns (1)-(4), I report the mean value of firm and bankruptcy characteristics across the quartiles. Column (5) reports that there is no significant difference in means between the first and last quartile of firms. These results indicate that within the same court district, a similar set of bankrupt firms are randomly assigned to judges with different liquidation preferences.

It might be a potential concern that different types of firms file for bankruptcy during different market cycles, and therefore, the S&P returns might determine the type of firms that file for bankruptcy at a particular time. First, all my specifications control for year of filing fixed effects, thereby, the coefficients are estimated by comparing across firms that filed for bankruptcy in the same year. Second, I test whether within the firms that filed for bankruptcy in the same year, there are any differences in characteristics between firms that experience different S&P returns during the book building period prior to emerging from bankruptcy. In Panel B, I split the sample of firms that filed for bankruptcy in the same year, into four quartiles based on the S&P returns during the book building phase. A firm is classified into the first quartile if the S&P returns during the 2 months of the book building period are within the lowest 25% of bankruptcy filers in a given year. Similarly, based on the level of S&P returns, firms are assigned to the second, third, and fourth quartile. In columns (1)-(4), I report the mean value of firm and bankruptcy characteristics across the quartiles, and column (5) reports the p-value for testing for differences in the means between the first and fourth quartile of firms. There is no difference in the two sets of firms at the standard 10% significance level, across a list of observable firm financial attributes, and bankruptcy characteristics. This suggests that the firms filing for bankruptcy within the same year, face random S&P returns during their book-building periods.

To address the concern that S&P returns might be affecting bankruptcy outcomes through channels other than rights offering, I conduct the following placebo tests. In Panel C, I regress creditor recovery rates on the two months S&P returns during the book building phase of the rights offering, that is prior to the firm emerging from bankruptcy. In column (1), I report that these pre-emergence returns are significantly correlated with creditor recovery rates. If the exclusion restriction is violated, then the two months S&P returns affect recovery rates through channels other than the bankruptcy financing channel. These alternative channels should also be in force *outside* the book building period of the rights offering, when the firms' bankruptcy financing choice is fixed. Using this setting as a placebo, in column (2) I find that the two month S&P returns immediately following the firm's emergence from bankruptcy do not predict creditor recovery rates. In column (3), I similarly find that the two months S&P returns just prior to the firm filing for bankruptcy are not correlated with recovery rates. In columns (4) and (5), I repeat the analysis by including both pre-emergence S&P returns and the returns outside the rights offering book-building phase. In contrast to the S&P returns prior to the firm's emergence from bankruptcy, outside the book-building window S&P returns are not correlated with recovery rates. These findings are consistent with the notion that the short-run S&P returns affect bankruptcy outcomes only through their impact on firms' bankruptcy financing choices.

As a further evidence in support of my identification assumption, in Panel D, I report the univariate correlations between the instrumental variables and the firm and bankruptcy characteristics. Column (1) reports the correlation between the observable characteristics of firms that file for bankruptcy and the liquidation bias of the judges assigned to them. Column (2) reports the p-value of these correlations, and finds that none of the characteristics are significantly correlated with the judge liquidation bias. In columns (3) and (4), I find no significant correlations between the S&P returns and firm characteristics. To supplement the univariate analysis, in Panel E, I present the results of randomization tests that show that the instruments are orthogonal to a comprehensive set of firm and bankruptcy characteristics, as well as the industry conditions. Column (1) of Table 4 Panel E, reports that the adjusted R^2 of regressing the judge liquidation bias instrument on a set of court and year of filing fixed effects and no other controls is 0.634, implying a substantial variation in judge liquidation preferences between courts and over time. In the next column I add industry fixed effects, and their inclusion only reduces the adjusted R^2, indicating that the within court and year of filing variations between judge liquidation bias are uncorrelated with the industry fixed effects. In column (3), I include control variables for firm and bankruptcy characteristics, and find that

none of these variables are significant and the R^2 is unaffected by their addition. I also include the S&P returns during the book building period, and find no significant correlation between the two instruments. Similar randomization results of the S&P returns instrument are reported in columns (4)-(6). I find that the S&P returns during the book-building period are orthogonal to a comprehensive set of firm attributes, bankruptcy characteristics, and the judge liquidation bias.

As a final check, I conduct the following placebo test. In the construction of my main sample, prepackaged bankruptcies were excluded, because the bankruptcy plan and exit financing decisions have effectively been made prior to the bankruptcy filing. It is therefore, highly unlikely that a judge's liquidation taste would influence the form-of-exit financing choices in these cases. For this placebo test, I construct an alternate sample consisting of only prepackaged bankruptcies. During my sample period, between 2003-2020, 86 prepackaged Chapter 11 bankruptcies were filed, and in 15 of these filings the firms arranged financing via rights offering. The decision and arrangement of the rights offering financing was made prior to the firms' filing for bankruptcy. In this alternate sample of prepackaged bankruptcies, I re-estimate the first stage instrumental variable equation 2, and as expected find that the judge liquidation taste has a small and statistically insignificant coefficient, and the instrument F-stat is close to 0.[18] As the judge assignment is not correlated with rights offerings in prepackaged bankruptcies, in this sample of bankruptcies, I can test if the judge liquidation bias affects bankruptcy duration through some other channels. I find that the judge liquidation bias is not correlated with bankruptcy duration in the sample of prepackaged bankruptcies, lending support to my argument that the liquidation bias of judges affects bankruptcy outcomes through the form-of-exit financing choices.

5 Results

5.1 Rights offerings and recovery rates

An existing literature finds that reorganizations in Chapter 11 are associated with higher creditor recovery than other forms of exit (Acharya et al. (2007), Bris et al. (2006), Ivashina et al. (2016)). Rights offering encourage firm reorganization by increasing the space of available exit financing options for firms. LoPucki and Doherty (2007), Gilson et al. (2016), and Antill (2021) document a negative relation between Section

[18] The results on prepackaged bankruptcies are reported in Table IA.3.

363 asset liquidations and creditor recoveries. This would imply that by avoiding Section 363 asset sales, rights offerings must have a positive impact on creditor recoveries. In this section I empirically test this hypothesis, by regressing creditor recovery rates on the probability of completing a rights offering.

Table 5 reports the results. The dependent variable *creditors' recovery rate*, is calculated as the ratio of the total amount of distributions over the total amount of claims. In column (1) of Table 5, I report the endogenous OLS model, and find that using rights offering significantly increases creditor recovery rate by 0.074 cents per dollar of debt claim. Column (2) reports the 2SLS estimate. I find that using rights offering significantly increases the total creditor recoveries by 0.38 cents per dollar of debt claim. The average recovery rate in the sample is 0.50 cents per dollar of debt claim, thereby, implying a 76% increase in recoveries with the use of rights offering. The last row reports a high p-value for the overidentifying restrictions J-statistic, indicating that the model is not misspecified (Hansen (1982)). In another setting, I control for court $\times$ year of filing fixed effects to account for the time varying trends in the appointment of judges to different bankruptcy courts, and find similar results.[19]

It is interesting to note that the OLS coefficient reported in column (1) underestimates the effect of rights offering on creditor recoveries, compared to the IV estimate. This suggests that the selection bias associated with the decision to obtain financing via rights offering is negative, and on average firms with worse creditor recovery prospects are more likely to be financed via rights offerings. These findings support the claim that rights offerings are being used to reduce excess delays and increases recoveries in complex Chapter 11 cases, where junior creditor recoveries have traditionally tended to be lower. In columns (3) and (4), I restrict my sample to the firms that reorganized and emerged as going concerns from Chapter 11 bankruptcy. In the 2SLS estimates in column (4), I report that in the sample of firms that reorganized, rights offerings significantly increase creditor recovery rates by 20 cents per dollar of debt claim. This implies a 40% increase over the sample average recovery rate with the use of rights offering. In columns (5) and (6), similar effects are reported by excluding the sample of firms that liquidated their assets in §363 asset sales.

In Table 6, I test whether rights offerings increase the likelihood of shareholders' receiving any distribution in bankruptcy. Pre-petition shareholders may receive a payoff in Chapter 11 by retaining their stake in the reorganized firm, after all the creditor claims are satisfied. In other instances, shareholders may receive cash through APR (absolute priority rule) deviations as a 'gift' from other creditors. The dependent variable *shareholders' distribution*, equals 1 in cases where shareholders receive a payoff in the bankruptcy plan, and

[19]The results of this specification are presented in Table IA.1 columns (2)-(3).

equals 0 otherwise. In column (2), I report the 2SLS estimate. I find that using rights offering significantly increases the likelihood of distribution to shareholders by 50%. In columns (3) and (4), I restrict my sample to the firms that emerged as going concerns from Chapter 11 bankruptcy. In this sample I find that shareholders were 40% more likely to receive a payoff if the firm raised financing via rights offering (column (4)). In columns (5) and (6), I report similar effects by excluding the sample of firms that liquidated their assets in §363 sales.

5.2 Bankruptcy duration and corporate governance

Delays in the bankruptcy proceedings increase the direct costs of financing bankruptcies. Longer duration bankruptcies are associated with higher fees (LoPucki and Doherty (2004)). In this section, I document the impact of using rights offering financing on bankruptcy duration. All specifications follow the empirical model described in Section 3, and control for the year of filing, court of filing and industry fixed effects. In addition controls are included for the following set of firm and bankruptcy characteristics: prefiling asset size, leverage ratio, secured debt share, profitability, number of employees, presence of equity and creditors committee, and judge experience. The same specification with all the control variables has been used in the first stage regression (in Table 3). Judge liquidation bias, and S&P fluctuations during the book building phase are used as instruments for the rights offering completion probability.

In column (1) of Table 7, I report the endogenous OLS model, and find that rights offerings significantly reduce bankruptcy duration by around 3 months. Column (2) reports the 2SLS estimate. The coefficient on rights offering is significant and equals -14.23, implying that firms that finance their bankruptcy exits via rights offerings spend on average 14 months lesser time in bankruptcy. In columns (3) and (4), I restrict my sample to the firms that reorganized and emerged as going concerns from Chapter 11 bankruptcy. In the endogenous OLS model (column (3)), I find no difference between bankruptcy durations for firms that use rights offering and firms that do not use rights offering, as the rights offering coefficient is insignificant. In the 2SLS estimates in column (4), I report that in the sample of firms that reorganized, rights offerings significantly reduce bankruptcy duration by around 6 months. In columns (5) and (6), similar effects are reported by excluding the sample of firms that liquidated their assets in §363 asset sales.

Using a structural model, Dou et al. (2021) document that excess delay is one of the most costly bankruptcy inefficiency. Specifically, they predict that the conflict of interest between senior and junior creditors and

the asymmetric information between these two creditor classes, causes excessive delays in the bankruptcy proceedings. They find that eliminating these two economic frictions reduces the bankruptcy duration by around 13 months. As the rights offerings are being used by bankrupt firms to resolve these bargaining frictions, we would expect to find that their use reduces the bankruptcy duration. I find empirical evidence in support of the fact that rights offering are effective in reaching faster consensus between creditor classes in bankruptcy. Also the delay and costs associated with arranging financing via rights offering and private placements is minimized as these securities are exempted from the SEC securities registration (Section 1145) process.

I next study the impact of rights offerings on post-emergence corporate governance decisions of the firm. I find that firms that use rights offerings replace 84% of their board of directors upon emerging from bankruptcy, compared with 77% of the directors being replaced in firms that do not engage in rights offering. This difference is statistically significant at the 10% level. During bankruptcy special types of bonus programs allow firms to retain their key employees. These are known as key employee retention programs (KERP) and key employee incentive programs (KEIP). These contracts had become increasingly commonplace in bankruptcies from the late 1990s, until Congress imposed restrictions limiting the use of these contracts in BAPCA in 2005 (refer to Goyal and Wang (2017) for details). I find that there are considerable shifts in the corporate governance of firms using rights offerings, and these firms are less likely to use employee retention contracts during bankruptcy. The IV 2SLS results are reported in Table 8. Financing via rights offering reduces the probability of a firm using KERP/KEIP by 41% in the full sample, and by around 19% in the sample of firms that emerge from Chapter 11 (columns (1) and (2), respectively).

I also find that firms that were financed by rights offering are restructured differently and have a higher probability of being acquired in the 3 years post-emergence, compared with other bankrupt firms that were not financed via rights offerings. The dependent variable in columns (4) and (5) of Table 8, *mergers* equals 1 if there have been any acquisitions, mergers, divestures, or spin-offs of the firm in the 3 after its emergence from bankruptcy. The sample is limited to the firms that emerged from Chapter 11 as going concerns. I find in column (4), that rights offerings increase the probability of the firm being acquired in the years after emerging from bankruptcy. This indicates that firms using rights offerings experience a shift in their corporate governance and are restructured differently post-emergence, compared with other firms that do not use rights offerings. As rights offerings are often proposed and subscribed by hedge funds, my findings are

consistent with hedge funds playing an important role both during and post-emergence in the reorganized firms (Jiang et al. (2012)).

5.3 Recidivism

Several papers find evidence of firms refiling for bankruptcy after emerging from Chapter 11 as going concern (Hotchkiss (1995), Gilson (1997), Roe (1983) and Altman (2013)). Around 18% of the firms emerging from Chapter 11 refile for bankruptcy. An interesting debate in this literature revolves around whether these high rates of recidivism reflect the continuation bias of the Chapter 11 process (Hotchkiss (1995), Altman (2013)). The alternate hypothesis suggested by Gilson (1997) emphasizes that firms emerge from financial distress with abnormally high leverage ratios compared with their industry peers, and therefore, are forced to refile for bankruptcy in the subsequent years. Further, Roe (1983) and Bebchuk (1988) argue that barriers to reducing debt in a reorganization are so strong that Chapter 11 should be replaced with an alternative system that either requires or encourages firms to adopt equity-heavy capital structures. In my setup, I find that using rights offerings significantly reduces the leverage ratio of the post emergence firm. Firms that use rights offering emerge with lower median leverage ratio of 45% (mean 44%) compared with the median leverage ratio of 57% (mean 56%) for firms that are not financed via rights offerings. These differences in leverage ratios are statistically significant at the 1% level.

I test whether using rights offering also lowers the refiling rate for firms emerging from Chapter 11 as going concern. In Table 9, I report my results. In column (2) I find that using rights offerings reduces the probability of a firm refiling for bankruptcy within 2 years after emerging by 7.3%. Similarly in columns (4), I find that using rights offering reduces the probability of firms refiling for bankruptcy within 5 years by about 19.3%. The probability of refiling for bankruptcy anytime after emergence reduces by 24.5% (column (6)). Taken together, the results of lower post-emergence leverage ratios and lower refiling rates of firms being financed by rights offerings are consistent with Gilson's (1997) hypothesis. Therefore, firms using rights offering are less likely to refile for bankruptcy which might be attributable to their less leveraged capital structures post emergence.

5.4 Are rights offerings substituting for asset liquidations?

In this subsection, I test if firms using rights offerings are less likely to engage in Section 363 asset liquidations. In Table 10 Panel A, I test which firm characteristics might affect the firm's choice to sell its assets in §363 sales. The sample is restricted to firms that either engaged in rights offerings or §363 sales. The dependent variable, is 1 if the firm engaged in rights offering and is 0 if the firm sold assets in §363 sale. In column (1), controlling for year of filing and industry fixed effects, I find that smaller firms with lower leverage ratios and higher secured debt share are more likely to sell assets in §363 sales. The presence of an equity committee strongly decreases the probability of a §363 sale. In column (2), I control for the court of filing fixed effects, and find similar results.[20] After controlling for the firm and bankruptcy characteristics at filing, I find that S&P fluctuations during the book building phase strongly predict the probability of a rights offering. In column (2), I find that a 1 standard deviation increase in S&P returns increases the probability of rights offering by around 5%. This evidence suggests that firms are more likely to replace asset sales with rights offerings to finance their exit from bankruptcy when the market returns are high.

In Panel B, I control for these observable firm and bankruptcy characteristics, and test whether rights offering substitute for §363 asset sales. I use the full sample of bankruptcies and the dependent variable, Section 363 sale is 1 if the firm sold assets in §363 sale during bankruptcy and 0 otherwise. Since, judge liquidation bias affects the likelihood of a firm selling assets in §363 sale (Antill (2021)), I use the judge liquidation bias as a control variable and not as an instrument for this regression.[21] Thus, the only variable used to instrument for rights offering choice in columns (2) and (4) is the S&P fluctuation prior to emerging from bankruptcy.[22] In column (1) and (2), I report the results for the full sample, and the IV regression in column (2) suggests that rights offerings do not substitute for §363 sales. This indicates that there are some unobservable variations between firm quality that explain whether the firm sells it assets in §363 sales or finances itself via rights offering. This could be related to the fact that 70% of the firms that sell assets in §363 ultimately end up being liquidated. It might be argued that these firms were of lower (unobservable) quality, and therefore, the asset sales could not be avoided. In columns (3) and (4), I restrict my sample to firms that emerge from Chapter 11 as going concerns. In this subsample of firms, I find that financing via

[20] In columns (3) and (4), I report the Probit regression coefficients and continue to find that smaller firms with lower leverage ratios, higher secured debt share and lower profitability are more likely to sell assets in §363 sales.

[21] Since, judge liquidation bias might affect the likelihood of a §363 asset sale through channels other than rights offering completion, it violates the exclusion restriction condition in this case.

[22] I find very similar results by using both judge liquidation bias and S&P returns as instruments for rights offering completion choice.

rights offering reduces the likelihood of a §363 asset sale by 24% (column (4)). Therefore, in the sample of firms that are reorganized in Chapter 11, I find that rights offerings are substituting for §363 asset sales.

5.5 Unintended inter-claimant wealth transfers

By purchasing securities in the reorganized firm through rights offering in bankruptcy, a class of claimants can support a particular valuation of the reorganized firm. This allows for price discovery of the continuation value of the reorganized firm, which reduces the uncertainty in court valuation of the firm and increases the distributional efficiency of the bankruptcy process. Demiroglu et al. (2022) document that public dissemination of transactions in defaulted bonds of bankrupt firms reduces errors in court determined value of the reorganized firm, and largely eliminates inter-claimant wealth transfers. In this subsection, I test whether rights offerings improve court valuations and reduce unintended wealth transfers. For this analysis, I focus on a subsample of firms that emerged as publicly listed firms after their bankruptcy proceedings. This allows me to calculate and compare the market value of the reorganized firm's equity with its court determined value in the bankruptcy plan. Then I replicate the methodology followed by Demiroglu et al. (2022), to calculate the unintended wealth transfers resulting from the court misvaluation of securities.

Using the bankruptcy plan valuation, the court distributes securities of the reorganized firm to different claimants. Therefore, the recovery rate of the claimants depends on the market performance of these securities. This can be best explained using an example. Consider a very simple bankruptcy filing in which secured creditors are owed \$50 million and unsecured creditors are owed \$100 million, and suppose that the court determines that the value of the reorganized firm is \$100 million. For simplicity assume that there is no cash or notes distribution, and the court only distributes the securities of the reorganized firm to the claimants. Then based on priority of the claims, the court with distribute 50% of the securities of the new firm to the secured creditors for a plan implied recovery rate of 100%, and the remaining 50% securities to the junior creditors for a plan implies recovery rate of 50%. However, suppose after emergence from bankruptcy the securities of the reorganized firm trade for \$140 million. This would imply a market recovery rate of 140% (=70/50) for the secured creditors. This constitutes as an unintended deviation resulting from court misvaluation of the reorganized firm's securities. The size of the deviation in this case is \$20 million dollars, that is gained by secured creditors at the expense of unsecured creditors. The size of this deviation as a percentage of the reorganized firm's market value is 14.3% (=20/140). And the size of this deviation as

a percentage of the average of the firm's court and market values is 16.7% (20/120).[23] In the analysis that follows, I use a similar approach in calculating the size of unintended inter-claimant wealth transfers in the sample of firms that emerged as publicly listed from bankruptcy.[24]

In Table 11, I present my results. I have a sample of 118 firms that emerged from bankruptcy as publicly listed. 44% of these firms raised financing via rights offerings in bankruptcy. I continue to find that the recovery rate calculated from the market value of the firm's securities, is higher for firms engaging in rights offerings compared with other firms. I report similar trends for secured and unsecured creditors' recovery rate, although the recovery rates are not statistically significantly different. I find that in 48% of bankruptcies involving rights offerings pre-petition equity holders get some distribution, as opposed to equity holders getting distributions in 33% of cases not involving rights offerings. I find that the market value of firms involved in rights offerings is 14% higher than their court determined plan values, while the market value of firms not involved in rights offering is 5% higher than their court values. This might indicate that on average, the firms raising financing via rights offerings outperform the other firms after emerging from bankruptcy. There is only a slight insignificant difference in the absolute court valuation errors between firms engaging in rights offerings (54%) versus other firms (51%). However, I find that the probability of unintended wealth transfers is higher in firms that do not use rights offerings compared with firms that use rights offerings, 30% and 19% respectively. This indicates that the use of rights offerings helps avoid unintended inter-claimant wealth transfers in bankruptcy, thereby, improving on the distributional efficiency of the Chapter 11 process.

6 Conclusion

The paper documents and analyses the rising trend of distressed firms raising financing via rights offerings in US Chapter 11 bankruptcies. Rights offerings allow firms to raise new capital by offering a class of creditors (or equity holders) the right to purchase equity in the post-emergence company. My paper shows that these rights offerings have evolved as a market based solution to resolve the creditor bargaining frictions in bankruptcy. Large uncertainties and valuation disputes among different creditor classes are commonplace in Chapter 11 bankruptcies. The disagreements in assigning a value to the reorganized firm, often lead to

[23] If instead the market value of the firm was $80 million, then the size of unintended deviation would be $10 million. That is, unsecured creditors would have gained $10 million at the expense of secured creditors. In this case the size of this deviation as a percentage of the reorganized firm's market value is 12.5% (=10/80), and as a percentage of the average of firm's court and market values is 11.1% (=10/90).

[24] Please refer to Demiroglu et al. (2022) for additional details on the methodology.

excess delays, reduce creditor recoveries, and adversely effect the distributional efficiency of the Chapter 11 bankruptcy process. The distribution of securities via rights offering in bankruptcy ameliorates these frictions by allowing for the price discovery of the reorganized firm value. Through rights offerings the participating creditors can authenticate their beliefs, by purchasing the securities of the firm at a particular price, thereby, building creditor consensus around a particular valuation of the reorganized firm. It is therefore not surprising that these rights offerings are increasing in Chapter 11 bankruptcies, with their use extending to 86% of the bankruptcies in 2019 (by asset size).

Raising capital via rights offering is an attractive exit financing option for firms in bankruptcies, especially when the traditional sources of financing are limited and/or excessively costly. By expanding the space of available exit financing options, rights offerings allow firms to access new capital without resorting to asset liquidations or secured financing. In fact, I find that the use of rights offerings completely displaces §363 asset sales that have been negatively associated with creditor recoveries in prior literature (LoPucki and Doherty (2007), Gilson et al. (2016), Antill (2021)). Further evidence suggests that firms in bankruptcy are most likely to replace §363 asset sales with rights offering financing when the market returns are high. This finding is consistent with a large literature documenting increased IPO activity during periods of market booms.

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Figure 1: Trends in Bankruptcy Rights Offerings and Section 363 assets sales

The figure plots the proportion of Chapter 11 bankruptcy cases that were financed via rights offerings. The grey line plots the percentage of firms, by asset size at filing, that used rights offering (left axis). The red line plots the percentage of firms, by asset size at filing, that used Section 363 sales (left axis). The annual number of firms that used rights offering to finance their exit from bankruptcy are plotted as dark blue bars (right axis).

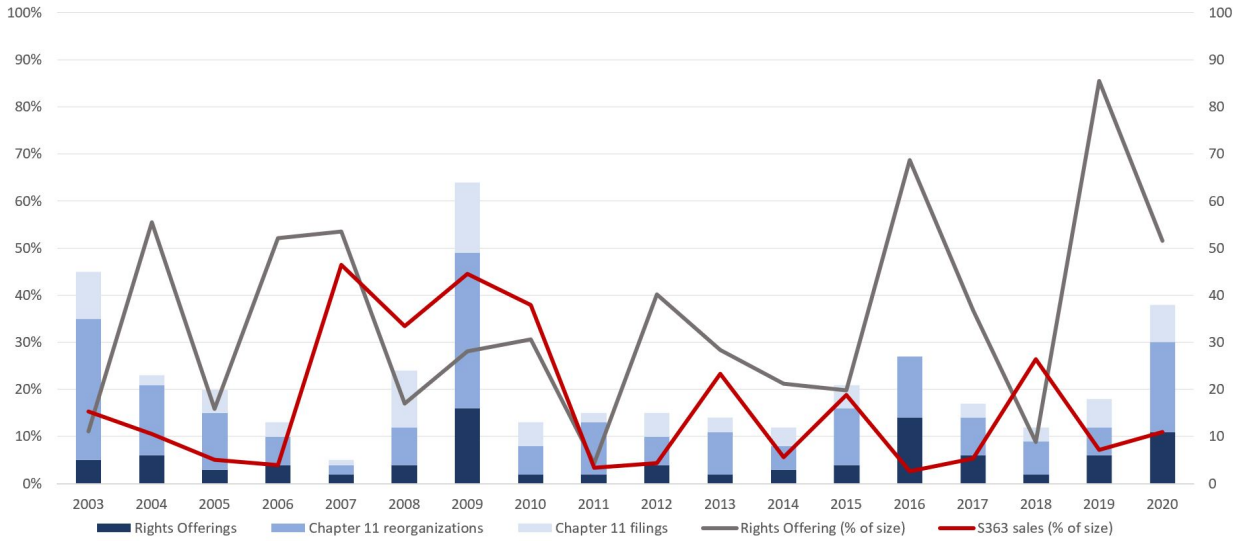

Figure 2: Chapter 11 Bankruptcy Timeline

figure presents the key events during Chapter 11 reorganizations as well as the average time interval between each event and the filing date.

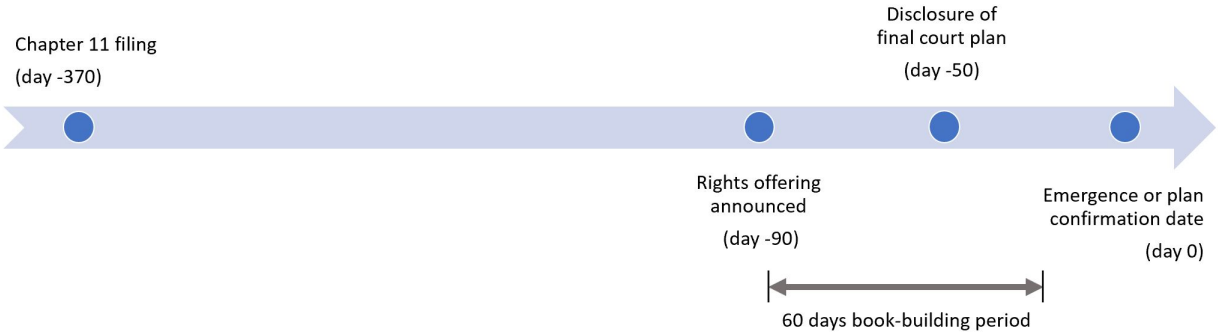

Table 1: Panel A: Summary Statistics

This table reports the summary statistics for U.S. Chapter 11 bankruptcy filings between 2003 - 2020. Statistics are reported for 3 subsamples of bankruptcies: (i) firms that financed their bankruptcy exit via rights offerings, (ii) firms that financed their exit via Section 363 asset sales, and, (iii) the remaining firms that did not engage in Section 363 sales or rights offerings. *Assets* reports the assets of the firm (in $ billion) at filing. *Employees* reports the number of employees with the firm at filing (in thousands). *Leverage Ratio* is the ratio of firm's total debt to total assets at filing. *Secured Debt share* measures the proportion of firm's total debt that is secured. *Bank loans/Assets* reports the total bank debt as a proportion of the firm's prefiling assets. $EBITDA/Assets$ measures firm's profitability as a ratio of its annual earnings (before interest, taxes and depreciation) to firm's assets. *Number of plans* equals the plans filed by the firm in Chapter 11. *Hedge Fund Participation* equals 1 if hedge funds were involved (as equity holders or creditors) during the firm's bankruptcy proceedings. *DIP Loan/Assets* equals the amount of approved debtor in possession (DIP) loan scaled by the total assets of the firm at filing. *Creditors Committee* equals 1 if a formal committee of creditors was appointed during the bankruptcy proceedings. *Equity Committee* equals 1 if a formal committee of equity holders was appointed during the bankruptcy proceedings. *Delaware/NY SD* equals 1 if the bankruptcy case was filed in the courts of Delaware or the Southern district of New York. *Judge liquidation bias* measures the fraction of Chapter 11 cases that converted to Chapter 7 by the bankruptcy judge appointed on the case. *S&P Returns (pre-emergence)* report the CRSP equal weighted S&P returns over the 2 months book-building period prior to the firm emerging from bankruptcy (the book-building period commences 3 months prior to the confirmation of firms' bankruptcy plan).

	Rights Offering (N = 96)			§363 sales (N = 110)			Other filings (N = 190)		
	Mean	Median	S.D.	Mean	Median	S.D.	Mean	Median	S.D.
Firm Characteristics (pre-filing)									
Assets ($ billion)	4.44	1.72	9.09	1.87	0.61	8.70	2.66	0.80	4.95
Employees (in thousands)	9.22	2.98	15.64	9.57	2.70	26.78	7.50	2.56	17.92
Leverage Ratio	0.76	0.68	0.37	0.55	0.49	0.31	0.78	0.70	0.37
Secured Debt share	0.56	0.61	0.34	0.67	0.77	0.33	0.62	0.64	0.33
Bank loans/Assets	0.28	0.22	0.24	0.29	0.26	0.24	0.35	0.26	0.39
EBITDA/Assets	-0.02	0.06	0.37	-0.01	0.03	0.18	0.02	0.07	0.25
Chapter 11 Characteristics									
Number of plans	2.18	2	1.23	1.70	1	1.04	2.15	2	1.37
Hedge Fund Participation	0.92	1	0.28	0.83	1	0.38	0.86	1	0.35
DIP Loan/Assets	0.14	0.07	0.16	0.13	0.08	0.14	0.11	0.06	0.15
Creditors Committee	0.87	1	0.34	0.97	1	0.16	0.89	1	0.32
Equity Committee	0.19	0	0.40	0.06	0	0.25	0.10	0	0.30
Delaware/NY SD	0.58	1	0.50	0.65	1	0.48	0.54	1	0.50
Judge liquidation bias	0.53	0.56	0.14	0.61	0.61	0.16	0.57	0.57	0.18
S&P Returns (pre-emergence)	0.04	0.04	0.07	0.04	0.03	0.06	0.03	0.04	0.08

Panel B: Summary Statistics

This table reports the summary statistics for U.S. Chapter 11 bankruptcy filings between 2003 - 2020. Statistics are reported for 3 subsamples of bankruptcies: (i) firms that financed their bankruptcy exit via rights offerings, (ii) firms that financed their exit via Section 363 asset sales, and, (iii) the remaining firms that did not engage in Section 363 sales or rights offerings. *Liquidation/conversion* equals 1 if the firm was liquidated or the Chapter 11 bankruptcy case was converted to Chapter 7. *Acquisition* equals 1 if the firm was acquired upon exit. *Number of plans* equals the plans filed by the firm in Chapter 11. *Duration of Ch11* measures the number of months spent by the firm in Chapter 11, from the date of filing to the date of plan confirmation. *Creditors' Total Recovery Rate* is the total dollar amount distributed to all the creditors at the end of the bankruptcy, as a percentage of the total dollar amount of pre-petition claims. The recovery rates are calculated based on the plan value assigned by the court to the reorganized firm. *Secured Creditors' Recovery Rate* is the dollar amount distributed to all the secured creditors at the end of the bankruptcy, as a percentage of the total dollar amount of secured creditors' pre-petition claims. *Unsecured Creditors' Recovery Rate* is the dollar amount distributed to all the unsecured creditors at the end of the bankruptcy, as a percentage of the total dollar amount of unsecured creditors' pre-petition claims. *Shareholders' Distribution* equals 1 if the (pre-petition) equity holders received a payoff in the bankruptcy proceedings, and equals 0 otherwise. *Emerged as publicly listed* equals 1 if the firm emerged as a publicly listed company upon exiting from bankruptcy.

	Rights Offering (N = 96)			§363 sales (N = 110)			Other filings (N = 190)		
	Mean	Median	S.D.	Mean	Median	S.D.	Mean	Median	S.D.
Bankruptcy Outcomes									
Liquidation/conversion	0	0	0	0.70	1	0.46	0.08	0	0.27
Acquisition	0.04	0	0.20	0.24	0	0.43	0.06	0	0.24
Duration of Ch11 (months)	10.46	8.53	7.58	17.17	11.70	17.23	10.54	8.55	8.05
Creditors' Total Recovery Rate	0.60	0.58	0.26	0.37	0.28	0.29	0.52	0.50	0.28
Secured Creditors' Recovery Rate	0.86	1	0.22	0.73	0.99	0.33	0.80	1	0.28
Unsecured Creditors' Recovery Rate	0.40	0.29	0.36	0.20	0.06	0.29	0.30	0.16	0.33
Distribution to Equity holders	0.35	0	0.48	0.05	0	0.23	0.18	0	0.39
Emerged as publicly listed	0.56	1	0.50	0.02	0	0.16	0.33	0	0.49

Table 2: Characteristics of Rights Offerings

This table reports the summary statistics for the rights offerings financing facilities that were arranged in the Chapter 11 bankruptcy filings. *Rights Offering Size* reports the amount of capital injected into the bankrupt firm via rights offering in dollar million. *Offering Size/Total Exit Financing* is the ratio of the rights offering amount to the total exit financing amount. Total exit financing includes all financing agreements that were made by the firm at the time of emerging from bankruptcy, including rights offering financing and other secured financing loans. *Offering Size/Prepetition Assets* is the ratio of the rights offering amount to the total assets of the firm at the time of its filing for bankruptcy. *Offering Size/Impaired Class Claims* is the ratio of the rights offering amount to the total amount of claims of all the classes that were impaired by the firm's bankruptcy filing. *Offering Size/Participating Class Claims* is the ratio of the rights offering amount to the total amount of claims of all the creditors in the class that participated in arranging the rights offering. *Offering Size/Plan Equity Value* equals the ratio of the offering size to the court approved equity valuation of the firm reported in the final bankruptcy plan. *Offering Size/Plan Enterprise Value* equals the ratio of the offering size to the court approved total enterprise valuation of the firm in the final bankruptcy plan. The table also lists the participants in the bankruptcy rights offering. *Secured Claimants* equals 1 if the rights offering was subscribed by secured creditors and equals 0 otherwise. Similarly, *Unsecured Claimants* equals 1 if the rights offering was subscribed by unsecured creditors and equals 0 otherwise, and *Pre-petition Equity holders* equals 1 if the rights offering was subscribed by old equity holders and equals 0 otherwise. *Hedge Fund or Private Equity Firm* equals 1 if the rights offering was proposed and/or underwritten (i.e. backstopped) by hedge funds or private equity firms. *Rights Offering Discount to Plan Value* is calculated as the percentage of discount at which the rights issue securities are offered to the participating class of creditors. This discount is calculated with respect to the court determined equity value of the firm in the bankruptcy plan. *Discount to Plan Value* reports the actual size of this discount in million dollars. *Discount (as fraction of impaired class claims)* calculates the ratio of the dollar amount of the discount to the total amount of claims of all the classes that were impaired by the firm's bankruptcy filing. *Discount (as fraction of participating class claims)* calculates the ratio of the dollar amount of the discount to the total amount of claims of the creditor class that participated in arranging the rights offering. *Returns wrt Market* are calculated for the firms that arranged rights offering financing and were publicly listed upon emergence. The returns on the rights offering are calculated as the difference between the rights offering price and the market value of the newly-issued equity securities of the reorganized firm (3 months post emergence), scaled by the market value of these securities.

	Mean	Median	SD	N
Size of Rights Offering				
Rights Offering Size ($ million)	438.16	175	1024.77	96
Offering Size/Total Exit Financing	0.50	0.42	0.30	96
Offering Size/Prepetition Assets	0.12	0.10	0.11	96
Offering Size/Impaired Class Claims	0.21	0.14	0.23	94
Offering Size/Participating Class Claims	0.36	0.23	0.35	81
Offering Size/Plan Equity Value	0.51	0.44	0.32	91
Offering Size/Plan Enterprise Value	0.28	0.22	0.21	89
Participation in Rights Offering				
Secured Claimants	0.19	0.00	0.39	96
Unsecured Claimants	0.75	1.00	0.44	96
Pre-petition Equity holders	0.16	0.00	0.37	96
Hedge Fund or Private Equity Firm	0.70	1.00	0.46	96
Discount on the Rights Offering				
Rights Offering Discount to Plan Value	0.23	0.24	0.17	56
Discount to Plan Value ($ million)	150.19	48.76	302.08	56
Discount (fraction of impaired class claims)	0.07	0.03	0.10	55
Discount (fraction of participating class claims)	0.12	0.07	0.15	51
Returns to Rights Offering				
Returns wrt Market (3 months post emergence)	0.29	0.36	0.43	49

Table 3: First Stage

This table reports the determinants of rights offering. The dependent variable *Rights Offering* is 1 for firms that were financed by rights offering and 0 otherwise. *Judge liquidation Bias* is calculated as the fraction of Chapter 11 cases that converted to Chapter 7 by the bankruptcy judge appointed on the case. *S&P Returns* are the 2 months pre-emergence equal weighted S&P returns (during the book building phase). *Log(Assets)* is the logarithm of assets at filing. *Leverage* is defined as the total debt over total assets. *Secured debt share* measures the percentage of secured debt in total debt. *Profitability* is defined as the ratio of its annual earnings (before interest, taxes and depreciation) to firm's assets (EBITDA/Assets). *Log(Employees)* is the logarithm of employees at filing. *Equity Committee* equals 1 if an equity committee was formed, and equals 0 otherwise. *Creditors Committee* equals 1 if a creditors' committee was formed, and equals 0 otherwise. *Log(Judge experience)* is the logarithm of judge experience (in moths) calculated from the date of appointment of judge to the date of filing. *Delaware/NY SD* is 1 if the case was filed in Delaware or Southern District of New York. Columns (1) and (2) report results for the full sample of bankruptcies. Columns (3) and (4) exclude the firms that were liquidated in bankruptcy (no firms that engaged in rights offerings were liquidated). Columns (5) and (6) exclude firms that made asset sales in Section 363 (no firms that engaged in rights offerings made Section 363 sales). All specifications include year of filing and industry fixed effects. Industry fixed effects are defined using 2-digit SIC codes. Columns (2), (4), and (6) also include court of filing fixed effects. The instruments are *judge liquidation bias* and *S&P returns*, and their combined F-statistic is reported in the last row. Standard errors clustered by court of filing are denoted in parentheses. *** denotes significance at 1%, ** at 5%, and * at 10%.

	Rights Offering					
	Full Sample		Reorganized Firms		Excluding §363 sales	
	(1)	(2)	(3)	(4)	(5)	(6)
Judge liquidation bias	-0.301***	-0.475**	-0.303**	-0.708***	-0.310**	-0.634***
	(0.095)	(0.199)	(0.134)	(0.162)	(0.113)	(0.177)
S&P Returns	0.765***	0.825***	1.405***	1.679***	1.368***	1.553***
	(0.180)	(0.177)	(0.350)	(0.248)	(0.316)	(0.224)
log(Assets)	0.071*	0.076**	0.048	0.060	0.054	0.051
	(0.034)	(0.034)	(0.060)	(0.057)	(0.072)	(0.070)
Leverage	0.123**	0.126***	0.039	0.029	-0.026	-0.021
	(0.045)	(0.039)	(0.086)	(0.085)	(0.041)	(0.077)
Secured Debt share	-0.136**	-0.124	-0.204**	-0.147	-0.111	-0.098
	(0.064)	(0.078)	(0.090)	(0.110)	(0.132)	(0.141)
Profitability	0.050	0.043	0.031	0.016	-0.017	-0.006
	(0.057)	(0.059)	(0.105)	(0.090)	(0.083)	(0.078)
log(Employees)	0.026	0.027	0.033	0.031	0.044	0.056
	(0.029)	(0.037)	(0.050)	(0.055)	(0.059)	(0.063)
Equity Committee	0.174	0.164	0.090	0.050	0.070	0.032
	(0.118)	(0.133)	(0.133)	(0.157)	(0.121)	(0.146)
Creditors Committee	-0.113*	-0.108	-0.085	-0.071	-0.080	-0.064
	(0.062)	(0.064)	(0.060)	(0.021)	(0.067)	(0.066)
log(Judge Experience)	-0.008	-0.005	-0.032*	-0.038*	-0.025	-0.031
	(0.013)	(0.014)	(0.018)	(0.021)	(0.032)	(0.035)
Delaware/NY SD	0.000		-0.017		0.023	
	(0.058)		(0.063)		(0.073)	
Year FE	YES	YES	YES	YES	YES	YES
Industry FE	YES	YES	YES	YES	YES	YES
Court FE	NO	YES	NO	YES	NO	YES
Observations	365	365	278	278	263	263
Adjusted R^2	0.115	0.068	0.098	0.074	0.109	0.070
Instrument F-statistic		13.55		61.26		32.31

Table 4: Panel A: Judge Liquidation Bias and Firm Characteristics

This table presents the firm and bankruptcy characteristics for bankrupt firms that were assigned to different liquidation propensity judges. A firm is classified as being assigned to the first quartile of high liquidation bias judges if its bankruptcy judge is among the top 25% judges with the highest liquidation bias, among all the bankruptcy judges assigned to cases filed in the same court. Similarly, the firms in second, third and fourth quartile are classified. That is, a firm is assigned to the fourth quartile if its bankruptcy judge is among the 25% judges with the lowest liquidation bias, among all the bankruptcy judges assigned to cases filed in the same court. Column (1) reports the average statistics for firm and bankruptcy characteristics for the firms assigned to the top 25% liquidation bias judges, and columns (2)-(4) report these statistics for the second, third and last quartile of judges. Column (5) reports the p-value of testing for the differences in columns (1) and (4), with the assumption of unequal variances. All variables are defined in Table 1.

	Judge Liquidation Bias				
	First Quartile	Second Quartile	Third Quartile	Fourth Quartile	Diff. (1)-(4) (p-value)
Firm Characteristics (pre-filing)					
Assets ($ billion)	2.45	3.44	3.60	2.49	0.9601
Employees (in thousands)	7.94	9.45	8.25	8.75	0.7556
Leverage Ratio	0.67	0.73	0.71	0.74	0.1621
Secured Debt share	0.6	0.61	0.59	0.62	0.9083
Bank loans/Assets	0.32	0.34	0.32	0.28	0.3260
EBITDA/Assets	-0.01	0.03	0.03	-0.03	0.6682
Chapter 11 Characteristics					
DIP Loan/Assets	0.13	0.12	0.11	0.13	0.9978
Creditors Committee	0.91	0.92	0.85	0.92	0.7933
Equity Committee	0.14	0.08	0.12	0.13	0.9012
S&P Returns (pre-emergence)	0.03	0.03	0.06	0.03	0.6504

Panel B: S&P Returns and Firm Characteristics

This table presents the firm and bankruptcy characteristics for bankrupt firms that experienced different S&P drop during the book building period of the rights offering. A firm is classified as being assigned to the first quartile of lowest S&P returns if the 2 months S&P returns during its book building period are among the bottom 25% of the distribution of all bankrupt firms in the same year. Similarly, the firms in second, third and fourth quartile are classified. That is, a firm is assigned to the fourth quartile if its S&P returns during the book building period are among the top 25% of the distribution of all bankrupt firms in the same year. Column (1) reports the average statistics for firm and bankruptcy characteristics for the firms assigned to the bottom 25% S&P returns, and columns (2)-(4) report these statistics for the second, third and last quartile of returns. Column (5) reports the p-value of testing for the differences in columns (1) and (4), with the assumption of unequal variances. All variables are defined in Table 1.

	S&P Returns				
	First Quartile	Second Quartile	Third Quartile	Fourth Quartile	Diff. (1)-(4) (p-value)
Firm Characteristics (pre-filing)					
Assets ($ billion)	2.59	3.55	2.10	3.17	0.5669
Employees (in thousands)	8.90	12.32	6.24	6.28	0.3619
Leverage Ratio	0.68	0.70	0.72	0.75	0.2087
Secured Debt share	0.56	0.64	0.67	0.60	0.5088
Bank loans/Assets	0.3	0.30	0.35	0.32	0.6955
EBITDA/Assets	-0.01	0.00	0.00	0.02	0.5159
Chapter 11 Characteristics					
DIP Loan/Assets	0.13	0.12	0.14	0.10	0.1020
Creditors Committee	0.90	0.93	0.89	0.91	0.8466
Equity Committee	0.15	0.10	0.11	0.08	0.1336
Judge liquidation bias	0.59	0.57	0.54	0.58	0.6935

Panel C: Placebo Test

This table reports a placebo test to access the validity of the S&P returns instrumental variable exclusion restriction. The dependent variable *Creditor Recovery Rates* is calculated as the ratio of the total dollar amount of distributions over the total dollar amount of claims of all creditor classes. The claims and distributions are obtained from the bankruptcy disclosure statement. The distributions are calculated based on the plan value assigned by the court to the reorganized firm. *S&P Returns pre-emergence* are the two-month S&P returns during the book building period of the rights offering, that is prior to the firm emerging from bankruptcy. *S&P Returns post-emergence* are the two-month S&P returns calculated immediately after the firm emerging from bankruptcy. *S&P Returns post-filing* are the two-month S&P returns calculated from 60 days prior to the firm filing for bankruptcy. All specifications include year of filing, court of filing, and industry fixed effects (2-digit SIC codes). The following firm and bankruptcy characteristics are used as control variables: prefiling asset size, leverage ratio, secured debt share, profitability, number of employees, presence of equity and creditors committee, and judge experience. The control variables are defined in Table 3. The model is estimated using OLS, and standard errors clustered by court of filing are denoted in parentheses. *** denotes significance at 1%, ** at 5%, and * at 10%.

	Creditor Recovery Rates				
	(1)	(2)	(3)	(4)	(5)
S&P Returns pre-emergence	0.351**			0.353**	0.334**
	(0.036)			(0.141)	(0.146)
S&P Returns post-emergence		0.015		0.042	
		(0.095)		(0.082)	
S&P Returns pre-filing			-0.144		-0.119
			(0.113)		(0.120)
Industry FE	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES
Court FE	YES	YES	YES	YES	YES
Control Variables	YES	YES	YES	YES	YES
Observations	392	392	392	392	392
Adjusted R^2	0.256	0.247	0.249	0.252	0.253

Panel D: Correlation between Instrumental Variables and Firm Characteristics

This table presents the univariate correlation of firm and bankruptcy characteristics with judge liquidation propensity, and S&P returns during the book building phase of the rights offering. All the firm and bankruptcy characteristics are demeaned for court of filing, year of filing and industry fixed effects. Column (1) reports the correlation between firm characteristics and judge liquidation propensity. Column (2) reports the p-value of this correlation. Column (3) reports the correlation between firm characteristics and S&P returns during the book building phase of the rights offering. Column (4) reports the p-value of this correlation. All variables are defined in Table 1.

	Judge Liquidation Bias		S&P Returns	
	Correlation	p-value	Correlation	p-value
Firm Characteristics (pre-filing)				
Assets ($ billion)	0.003	0.9552	0.029	0.5646
Employees (in thousands)	-0.021	0.6859	-0.046	0.3598
Leverage Ratio	0.013	0.8076	0.031	0.5427
Secured Debt share	-0.020	0.7006	0.049	0.3297
Bank loans/Assets	0.027	0.6153	0.011	0.8325
EBITDA/Assets	0.030	0.5734	0.032	0.5233
Chapter 11 Characteristics				
DIP Loan/Assets	-0.024	0.6466	0.036	0.4720
Creditors Committee	-0.010	0.8512	0.001	0.9809
Equity Committee	-0.015	0.7767	-0.028	0.5731
S&P Returns (pre-emergence)	-0.051	0.3329		
Judge liquidation bias			-0.042	0.4240

Panel E: Randomization Test (multivariate results)

This table reports the randomization test for the instrumental variables. The dependent variable in columns (1) - (3) is the *Judge liquidation Bias* that is calculated as the fraction of Chapter 11 cases that converted to Chapter 7 by the bankruptcy judge appointed on the case. The dependent variable in columns (4) - (6), *S&P Returns*, are the 2 months pre-emergence equal weighted S&P returns (during the book building phase). All specifications include year and court of filing fixed effects. Columns (2), (3), (5) and (6) additionally include industry fixed effects. The firm and bankruptcy characteristics are included in columns (3) and (6). These independent variables are defined in Table 3. Standard errors clustered by court of filing are denoted in parentheses. *** denotes significance at 1%, ** at 5%, and * at 10%.

	Judge Liquidation Bias			S&P Returns		
	(1)	(2)	(3)	(4)	(5)	(6)
log(Assets)			-0.001			-0.001
			(0.005)			(0.003)
Leverage			0.008			0.005
			(0.006)			(0.008)
Secured debt share			-0.017			0.007
			(0.025)			(0.005)
Profitability			0.031			0.012
			(0.035)			(0.016)
log(Employees)			-0.008			-0.001
			(0.007)			(0.005)
Equity Committee			-0.011			-0.006
			(0.027)			(0.010)
Creditors Committee			0.001			0.002
			(0.020)			(0.014)
S&P Returns			-0.082			
			(0.112)			
Judge liquidation bias						-0.038
						(0.059)
Year FE	YES	YES	YES	YES	YES	YES
Industry FE	NO	YES	YES	NO	YES	YES
Court FE	YES	YES	YES	YES	YES	YES
Observations	365	365	365	365	365	365
Adjusted R^2	0.634	0.610	0.606	0.097	0.092	0.073

Table 5: Rights Offering and Recovery Rates

This table reports the effect of rights offering on the creditor recovery rates. The dependent variable *Creditor Recovery Rates* is calculated as the ratio of the total dollar amount of distributions over the total dollar amount of claims of all creditor classes. The claims and distributions are obtained from the bankruptcy disclosure statement. The distributions are calculated based on the plan value assigned by the court to the reorganized firm. *Rights Offering* is 1 for firms that were financed by rights offering and 0 otherwise. All specifications include year of filing, court of filing, and industry fixed effects (2-digit SIC codes). The following firm and bankruptcy characteristics are used as control variables: prefiling asset size, leverage ratio, secured debt share, profitability, number of employees, presence of equity and creditors committee, and judge experience. The control variables are defined in Table 2. Columns (1) and (2) report results for the full sample of bankruptcies. Columns (3) and (4) exclude the sample of firms that were liquidated. Columns (5) and (6) exclude firms that made asset sales in Section 363. Columns (1), (3) and (5) report the results using the OLS specification. In columns (2), (4) and (6) the instrumental variable 2SLS second stage results are reported. The following instruments are used for rights offering completion: the *judge liquidation bias* and the *S&P returns*. The first stage instrumental variable regression is reported in Table 3. The first stage combined F-statistic for the instruments is reported in the second last row, and the p-value for the Hansen J-statistic overidentification test is reported in the last row. Standard errors clustered by court of filing are denoted in parentheses. *** denotes significance at 1%, ** at 5%, and * at 10%.

	Creditor Recovery Rates					
	Full Sample		Reorganized Firms		Excluding §363 sales	
	OLS	IV 2SLS	OLS	IV 2SLS	OLS	IV 2SLS
	(1)	(2)	(3)	(4)	(5)	(6)
Rights Offering	0.074**	0.378**	0.054	0.196**	0.046	0.205**
	(0.036)	(0.162)	(0.036)	(0.088)	(0.038)	(0.088)
Industry FE	YES	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES	YES
Court FE	YES	YES	YES	YES	YES	YES
Control Variables	YES	YES	YES	YES	YES	YES
Observations	365	365	278	278	263	263
Adjusted R^2	0.281	0.282	0.337	0.339	0.277	0.201
Instrument F-statistic (First Stage)		13.55		61.26		32.31
Overidentification test J-statistic (p-value)		0.8559		0.9826		0.6681

Table 6: Rights Offering and Distributions to (Old) Shareholders

This table reports the effect of rights offering on the creditor recovery rates. The dependent variable *Shareholders' Distribution* equals 1 if (pre-petition) equity holders receive a payoff in the bankruptcy proceedings, and equals 0 otherwise. *Rights Offering* is 1 for firms that were financed by rights offering and 0 otherwise. All specifications include year of filing, court of filing, and industry fixed effects (2-digit SIC codes). The following firm and bankruptcy characteristics are used as control variables: prefiling asset size, leverage ratio, secured debt share, profitability, number of employees, presence of equity and creditors committee, and judge experience. The control variables are defined in Table 2. Columns (1) and (2) report results for the full sample of bankruptcies. Columns (3) and (4) exclude firms that were liquidated. Columns (5) and (6) exclude firms that made asset sales in Section 363. Columns (1), (3) and (5) report the results using the OLS specification. In columns (2), (4) and (6) the instrumental variable 2SLS second stage results are reported. The following instruments are used for rights offering completion: the *judge liquidation bias* and the *S&P returns*. The first stage instrumental variable regression is reported in Table 3. Standard errors clustered by court of filing are denoted in parentheses. *** denotes significance at 1%, ** at 5%, and * at 10%.

	Shareholders' Distribution					
	Full Sample		Reorganized Firms		Excluding §363 sales	
	OLS	IV 2SLS	OLS	IV 2SLS	OLS	IV 2SLS
	(1)	(2)	(3)	(4)	(5)	(6)
Rights Offering	0.127***	0.494**	0.107***	0.390***	0.107***	0.377***
	(0.035)	(0.223)	(0.115)	(0.088)	(0.032)	(0.107)
Industry FE	YES	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES	YES
Court FE	YES	YES	YES	YES	YES	YES
Control Variables	YES	YES	YES	YES	YES	YES
Observations	365	365	278	278	263	263
Adjusted R^2	0.281	0.281	0.252	0.260	0.239	0.239

Table 7: Bankruptcy Duration and Rights Offering

This table reports the effect of rights offering on the duration of Chapter 11 court cases. The dependent variable *Bankruptcy duration* equals the amount of time measured in months, that the firm spends in Chapter 11, from the date of its filing to the date of emergence. *Rights Offering* is 1 for firms that were financed by rights offering and 0 otherwise. All specifications include year of filing, court of filing, and industry fixed effects (2-digit SIC codes). The following firm and bankruptcy characteristics are used as control variables: prefiling asset size, leverage ratio, secured debt share, profitability, number of employees, presence of equity and creditors committee, and judge experience. The control variables are defined in Table 2. Columns (1) and (2) report results for the full sample of bankruptcies. Columns (3) and (4) exclude the firms that were liquidated. Columns (5) and (6) exclude firms that made asset sales in Section 363. Columns (1), (3) and (5) report the results using the OLS specification. In columns (2), (4) and (6) the instrumental variable 2SLS second stage results are reported. The following instruments are used for rights offering completion: the *judge liquidation bias* and the *S&P returns*. The first stage instrumental variable regression is reported in Table 3. Standard errors clustered by court of filing are denoted in parentheses. *** denotes significance at 1%, ** at 5%, and * at 10%.

	Bankruptcy Duration (months)					
	Full Sample		Reorganized Firms		Excluding §363 sales	
	OLS	IV 2SLS	OLS	IV 2SLS	OLS	IV 2SLS
	(1)	(2)	(3)	(4)	(5)	(6)
Rights Offering	-2.900**	-14.253**	-0.489	-6.277***	-0.003	-7.153***
	(1.214)	(7.079)	(0.330)	(1.985)	(0.410)	(2.181)
Industry FE	YES	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES	YES
Court FE	YES	YES	YES	YES	YES	YES
Control Variables	YES	YES	YES	YES	YES	YES
Observations	365	365	278	278	263	263
Adjusted R^2	0.118	0.117	0.383	0.391	0.399	0.415

Table 8: Rights Offering, Corporate Governance, and the nature of reorganization

This table reports the effect of rights offering on the corporate governance and post-emergence restructuring of the firm. The dependent variable in columns (1) to (3), *KERP/KEIP* equals 1 if there were any key employee retention programs (KERP) or key employee incentive programs (KEIP) in place during the firm's bankruptcy process, and equals 0 otherwise. The dependent variable in columns (4) and (5), *Mergers (within 3 years)* equals 1 if there have been any acquisitions, mergers, divestures, or spin-offs of the reorganized firm in the 3 after its emergence from bankruptcy, and equals 0 otherwise. *Rights Offering* is 1 for firms that were financed by rights offering and 0 otherwise. All specifications include year of filing, court of filing, and industry fixed effects (2-digit SIC codes). The following firm and bankruptcy characteristics are used as control variables: prefiling asset size, leverage ratio, secured debt share, profitability, number of employees, presence of equity and creditors committee, and judge experience. The control variables are defined in Table 2. The results are reported on the sample of the firms that emerged from Chapter 11 as going concerns (i.e. they exclude the firms that were liquidated). All columns report the IV 2SLS results. The following instruments are used for rights offering completion: the *judge liquidation bias* and the *S&P returns*. The first stage instrumental variable regression is reported in Table 3. Column (1) reports the results for the full sample of bankruptcies. Columns (2) and (4), exclude the sample of firms that were liquidated. Columns (5) and (6) exclude firms that made asset sales in Section 363. Standard errors clustered by court of filing are denoted in parentheses. *** denotes significance at 1%, ** at 5%, and * at 10%.

	KERP/KEIP			Mergers (within 3 years)	
	Full Sample	Reorganized	Excluding §363	Reorganized	Excluding §363
	(1)	(2)	(3)	(4)	(5)
Rights Offering	-0.414***	-0.186***	-0.210**	0.508***	0.433***
	(0.133)	(0.068)	(0.107)	(0.102)	(0.103)
Industry FE	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES
Court FE	YES	YES	YES	YES	YES
Control Variables	YES	YES	YES	YES	YES
Observations	365	278	263	278	263
Adjusted R^2	0.180	0.146	0.160	0.207	0.198

Table 9: Rights Offering and Recidivism

This table reports the effect of rights offering on refiling rates of firms emerging from Chapter 11. The dependent variable *Refiled (2 years)* in columns (1) and (2), is 1 if the firm refiled for bankruptcy in the 2 years after its emergence from bankruptcy and 0 otherwise. In columns (3) and (4), the dependent variable *Refiled (5 years)* is 1 if the firm refiled for bankruptcy in the 5 years after its emergence from bankruptcy and 0 otherwise. In columns (5) and (6), the dependent variable *Refiled (anytime)*, is 1 if the firm has ever refiled for bankruptcy after emerging from its current bankruptcy. *Rights Offering* is 1 for firms that were financed by rights offering and 0 otherwise. All specifications include year of filing, court of filing, and industry fixed effects (2-digit SIC codes). The following firm and bankruptcy characteristics are used as control variables: prefiling asset size, leverage ratio, secured debt share, profitability, number of employees, presence of equity and creditors committee, and judge experience. The control variables are defined in Table 2. The sample includes all firms that emerged from Chapter 11 as going concern. Columns (1), (3) and (5) report the results using the OLS specification. In columns (2), (4) and (6) the instrumental variable 2SLS second stage results are reported. The following instruments are used for rights offering completion: the *judge liquidation bias* and the *S&P returns*. The first stage instrumental variable regression is reported in Table 3. Standard errors clustered by court of filing are denoted in parentheses. *** denotes significance at 1%, ** at 5%, and * at 10%.

	Recidivism (for firms emerging from Chapter 11 going concerns)					
	Refiled (2 years)		Refiled (5 years)		Refiled (anytime)	
	OLS	IV	OLS	IV	OLS	IV
	(1)	(2)	(3)	(4)	(5)	(6)
Rights Offering	-0.028	-0.073**	0.038	-0.193*	0.016	-0.245**
	(0.018)	(0.031)	(0.056)	(0.114)	(0.059)	(0.123)
Industry FE	YES	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES	YES
Court FE	YES	YES	YES	YES	YES	YES
Control Variables	YES	YES	YES	YES	YES	YES
Observations	278	278	278	278	278	278
Adjusted R^2	0.036	0.033	0.246	0.249	0.310	0.318

Table 10: Panel A: Characteristics of Chapter 11 Rights Offering and Section 363 sales

This table compares the characteristics of firms that arrange exit finance via rights offerings with those that sell assets in Section 363 sales. The dependent variable *Rights Offering* is 1 for firms that were financed by rights offering and 0 for firms that liquidated their assets in Section 363 sale. *Log*(*Assets*) is the logarithm of assets at filing. *Leverage* is defined as the total debt over total assets. *Secured debt share* measures the percentage of secured debt in total debt. *Profitability* is defined as the ratio of its annual earnings (before interest, taxes and depreciation) to firm's assets (EBITDA/Assets). *Log*(*Employees*) is the logarithm of employees at filing. *Equity Committee* equals 1 if an equity committee was formed, and equals 0 otherwise. *Creditors Committee* equals 1 if a creditors' committee was formed, and equals 0 otherwise. *Log(Judge experience)* is the logarithm of judge experience (in moths) calculated from the date of appointment of judge to the date of filing. *Judge liquidation Bias* is calculated as the fraction of Chapter 11 cases that converted to Chapter 7 by the bankruptcy judge appointed on the case. *S&P Returns* are the 2 months pre-emergence equal weighted S&P returns (during the book building phase). *Delaware/NY SD* is 1 if the case was filed in Delaware or Southern District of New York. All specifications includes year of filing and industry fixed effects. Industry fixed effects are defined using 2-digit SIC codes. Columns (2) and (4) also include court of filing fixed effects. In columns (1) and (2), ordinary least square (OLS) estimates are reported, and in columns (3) and (4) the Probit estimates are reported. Standard errors clustered by court of filing are denoted in parentheses. *** denotes significance at 1%, ** at 5%, and * at 10%.

	Rights Offering or §363 sale			
	OLS Regressions		Probit Regressions	
	(1)	(2)	(3)	(4)
log(Assets)	0.150**	0.163**	0.738***	0.790***
	(0.062)	(0.067)	(0.153)	(0.237)
Leverage	0.582***	0.643***	2.844***	3.488***
	(0.104)	(0.122)	(0.387)	(0.914)
Secured Debt share	-0.140**	-0.166**	-0.454**	-0.568*
	(0.057)	(0.059)	(0.188)	(0.324)
Profitability	0.233*	0.128	1.072**	1.030**
	(0.119)	(0.118)	(0.445)	(0.491)
log(Employees)	-0.005	-0.009	0.027	0.024
	(0.032)	(0.054)	(0.050)	(0.137)
Equity Committee	0.400**	0.402**	1.922***	2.358***
	(0.171)	(0.150)	(0.594)	(0.582)
Creditors Committee	-0.222	-0.206	-1.241*	-1.028*
	(0.198)	(0.204)	(0.724)	(0.607)
log(Judge Experience)	0.039	0.071*	0.168	0.486***
	(0.037)	(0.039)	(0.125)	(0.099)
Judge liquidation bias	-0.301	0.418	-1.172	3.084
	(0.235)	(0.434)	(0.803)	(1.940)
S&P Returns	0.479**	0.811***	3.428***	6.360***
	(0.187)	(0.211)	(1.095)	(2.132)
Delaware/NY SD	0.010		3.941**	
	(0.076)		(1.579)	
Year FE	YES	YES	YES	YES
Industry FE	YES	YES	YES	YES
Court FE	NO	YES	NO	YES
Observations	193	193	164	136
Adjusted/Pseudo R^2	0.328	0.347	0.488	0.546

Panel B: Are Rights Offering substituting for Section 363 sales?

This table tests whether rights offering reduce the probability of firm selling assets in a Section 363 sale during bankruptcy. The dependent variable *Section 363 sale* is 1 if the firm sold assets in Section 363 sale during bankruptcy and is 0 otherwise. *Rights Offering* is 1 for firms that were financed by rights offering and 0 otherwise. All specifications include year of filing, court of filing, and industry fixed effects (2-digit SIC codes). The following firm and bankruptcy characteristics are used as control variables: prefiling asset size, leverage ratio, secured debt share, profitability, number of employees, presence of equity and creditors committee, judge experience, and judge liquidation bias. The control variables are defined in Table 3. Columns (1) and (2) report results for the full sample of bankruptcies. Columns (3) and (4) exclude the sample of firms that were liquidated. Columns (1) and (3) report the results using the OLS specification. In columns (2) and (4) the instrumental variable 2SLS second stage results are reported. The following instrument is used for rights offering completion: the *S&P returns*. The first stage instrumental variable F statistic is reported in the last row. Standard errors clustered by court of filing are denoted in parentheses. *** denotes significance at 1%, ** at 5%, and * at 10%.

	Section 363 sale			
	Full Sample		Reorganized Firms	
	OLS	IV 2SLS	OLS	IV 2SLS
	(1)	(2)	(3)	(4)
Rights Offering	-0.301***	0.205	-0.133***	-0.237**
	(0.055)	(0.676)	(0.019)	(0.103)
Industry FE	YES	YES	YES	YES
Year FE	YES	YES	YES	YES
Court FE	YES	YES	YES	YES
Control Variables	YES	YES	YES	YES
Observations	365	365	278	278
Adjusted R^2	0.355	0.277	0.250	0.229
Instrument F-Statistic (First Stage)		22.87		62.88

Table 11: Recovery Rates for firms emerging as publicly listed

This table reports the summary statistics for firms that emerged as publicly listed from Chapter 11 bankruptcy filings. Statistics are reported for 2 subsamples of bankruptcies: (i) firms that financed their bankruptcy exit via rights offerings, and, (ii) the other bankrupt firms that did not engage in rights offerings. *Total recovery rate* is the amount distributed to all the claimants at the end of the bankruptcy, as a percentage of their pre-petition claims, calculated based on the post-emergence market value of firms. The market value of the reorganized firm is calculated from its stock price 3 months after its emergence from bankruptcy. *Secured creditors' recovery rate* is the amount distributed to all the secured claimants at the end of the bankruptcy, as a percentage of their pre-petition claims, calculated based on the post-emergence market value of firms. The post-emergence market value is the market value of the reorganized firms' securities 3 months after emerging from bankruptcy, discounted back to the date of plan confirmation using the CRSP equal weighted returns. *Unsecured creditors' recovery rate* is the amount distributed to all the unsecured claimants at the end of the bankruptcy, as a percentage of their pre-petition claims, calculated based on the post-emergence market value of firms. *Distribution to equity holders* equals 1 if the pre-petition equity holders received any distribution in the bankruptcy proceedings. *Misvaluation* equals to the difference between market valuation and court plan valuation of the reorganized firm scaled by the average of the market and court valuations $((V_{market}-V_{court})/V_{avg})$.The average of the market and court valuations, V_{avg} equals $(V_{market}+V_{court})/2$. *Absolute Misvaluation* equals to the absolute difference between market valuation and court plan valuation of the reorganized firm scaled by the average of the market and court valuations $|V_{market}-V_{court}|/V_{avg}$. *Unintended wealth transfer* equals 1 if there were any unintended wealth transfers between claimants due to differences in court plan value and market value of the reorganized firm. *Size of unintended wealth transfer* equals the dollar amount of the wealth transfers scaled by the average of the market and court valuations. *% of board of directors replaced* equals to the number of board of directors that were fired/replaced during bankruptcy scaled by the total number of board of directors immediately prior to filing for bankruptcy.

	Rights Offering (N=52)			No Rights Offering (N=66)			Difference
	Mean	Median	SD	Mean	Median	SD	(p-value)
Total recovery rate (market value)	0.80	0.69	0.73	0.69	0.66	0.29	0.3048
Secured creditors' recovery rate	0.95	1	0.20	0.93	1	0.31	0.7163
Unsecured creditors' recovery rate	0.60	0.42	0.81	0.54	0.53	0.40	0.6073
Distribution to equity holders	0.48	1	0.50	0.33	0	0.48	0.1061
Misvaluation: $(V_{market}-V_{court})/V_{avg}$	0.14	0.20	0.62	0.05	0.02	0.62	0.4390
Absolute Misvaluation: $\lvert V_{market}-V_{court}\rvert/V_{avg}$	0.54	0.56	0.34	0.51	0.46	0.37	0.6012
Unintended wealth transfer	0.19	0	0.40	0.30	0	0.46	0.1731
Size of unintended wealth transfer	0.05	0	0.18	0.05	0	0.12	0.8793
% of board of directors replaced	0.84	0.88	0.19	0.77	0.86	0.28	0.0913

Appendix

Table IA.1: Rights Offerings and Recovery Rates (with Court × Year fixed effects)

This table reports the determinants of rights offering and the effect of using rights offering on recovery rates. The dependent variable in column (1), *Rights Offering* is 1 for firms that were financed by rights offering and 0 otherwise. In columns (2) and (3), the dependent variable is the creditor recovery rate. *Creditor Recovery Rates* is calculated as the ratio of the total dollar amount of distributions over the total dollar amount of claims of all creditor classes. *Judge liquidation Bias* is calculated as the fraction of Chapter 11 cases that converted to Chapter 7 by the bankruptcy judge appointed on the case. *S&P Returns* are the 2 months pre-emergence equal weighted S&P returns (during the book building phase). The firm and bankruptcy characteristics control variables are defined in Table 3. All specifications include court × year of filing fixed effects and industry fixed effects. Industry fixed effects are defined using 2-digit SIC codes. Column (2) reports the OLS coefficient of rights offering on recovery rates, while column (3) reports its IV 2SLS coefficient on recovery rates. The instruments are *judge liquidation bias* and *S&P returns*, and their combined F-statistic is reported in the second last row. The p-value for the Hansen J-statistic overidentification test is reported in the last row. Standard errors clustered by court of filing are denoted in parentheses. *** denotes significance at 1%, ** at 5%, and * at 10%.

	Rights Offering	Recovery Rate	
	First Stage	OLS	IV 2SLS
	(1)	(2)	(3)
Judge liquidation bias	-0.667***		
	(0.137)		
S&P Returns	0.774***		
	(0.152)		
Rights Offering		0.100*	0.424**
		(0.052)	(0.193)
log(Assets)	0.095**	0.007	-0.026
	(0.044)	(0.029)	(0.022)
Leverage	0.149***	0.021	-0.035
	(0.039)	(0.059)	(0.030)
Secured debt share	-0.044	0.006	0.023
	(0.062)	(0.062)	(0.050)
Profitability	0.022	-0.053	-0.066
	(0.053)	(0.098)	(0.048)
log(Employees)	0.022	0.011	0.008
	(0.040)	(0.025)	(0.022)
Equity Committee	0.284***	0.249***	0.158***
	(0.103)	(0.061)	(0.049)
Creditors Committee	-0.090	-0.118**	-0.089***
	(0.071)	(0.056)	(0.032)
log(Judge Experience)	-0.017	-0.005	-0.007
	(0.026)	(0.024)	(0.016)
Industry FE	YES	YES	YES
Court × Year FE	YES	YES	YES
Observations	365	365	365
Adjusted R^2	0.129	0.264	0.056
Instrument F-statistic	37.65		
Overidentification test J-statistic (p-value)			0.8018

Table IA.2: Hedge Fund Participation and the Judge Liquidation Bias Instrument

Panel A: Recentered Judge Liquidation Bias Instrumental Variable

This table reports the determinants of rights offering and the effect of using rights offering on recovery rates for the full sample using the recentered judge liquidation bias instrumental variable. The dependent variable in column (1), *Rights Offering* is 1 for firms that were financed by rights offering and 0 otherwise. In columns (2) and (3), the dependent variable is the creditor recovery rate. *Creditor Recovery Rates* is calculated as the ratio of the total dollar amount of distributions over the total dollar amount of claims of all creditor classes. *Recentered Judge liquidation Bias* is calculated following the methodology of Hüther and Kleiner (2022). The first step is to predict the *Expected judge conversion rate* by regressing the assigned bankruptcy judge's liquidation bias on the mean judge conversion rate among all large cases filed in the same court within the past 7 days, and court, year, industry fixed effects and debtor control variables mentioned in Table 3. Next, the exogenous variation in judge conversion rate, i.e. the *Recentered Judge liquidation Bias* instrumental variable is calculated by subtracting the *expected judge conversion rate* from the assigned judges's *liquidation bias*. *S&P Returns* are the 2 months pre-emergence equal weighted S&P returns (during the book building phase). The firm and bankruptcy characteristics control variables are defined in Table 3. All specifications include court fixed effects, year of filing fixed effects and industry fixed effects. Industry fixed effects are defined using 2-digit SIC codes. Column (2) reports the OLS coefficient of rights offering on recovery rates, while column (3) reports its IV 2SLS coefficient on recovery rates. The instruments are *recentered judge liquidation bias* and *S&P returns*, and their combined F-statistic is reported in the second last row. The p-value for the Hansen J-statistic overidentification test is reported in the last row. Standard errors clustered by court of filing are denoted in parentheses. *** denotes significance at 1%, ** at 5%, and * at 10%.

	Rights Offering	Recovery Rate	
	First Stage	OLS	IV 2SLS
	(1)	(2)	(3)
Recentered Judge liquidation bias	-0.580**		
	(0.238)		
S&P Returns	0.894***		
	(0.192)		
Rights Offering		0.074**	0.389**
		(0.035)	(0.164)
log(Assets)	0.060	0.001	-0.023*
	(0.047)	(0.022)	(0.014)
Leverage	0.150***	0.059	0.010
	(0.038)	(0.048)	(0.038)
Secured debt share	-0.105	0.009	0.045
	(0.068)	(0.053)	(0.078)
Profitability	0.040	-0.041	-0.055
	(0.050)	(0.082)	(0.045)
log(Employees)	0.036	0.017	0.012
	(0.048)	(0.020)	(0.017)
Equity Committee	0.152	0.291***	0.239***
	(0.140)	(0.045)	(0.061)
Creditors Committee	-0.095	-0.107**	-0.074***
	(0.076)	(0.051)	(0.025)
log(Judge Experience)	0.007	-0.032*	-0.034***
	(0.014)	(0.018)	(0.010)
Court FE	YES	YES	YES
Year FE	YES	YES	YES
Industry FE	YES	YES	YES
Observations	365	365	365
Adjusted R^2	0.050	0.284	0.056
Instrument F-statistic	12.82		
Overidentification test J-statistic (p-value)			0.9012

Panel B: Subsample of bankruptcies with hedge fund participation

This table reports the determinants of rights offering and the effect of using rights offering on recovery rates for the subsample of bankruptcies with hedge fund participation. The dependent variable in column (1), *Rights Offering* is 1 for firms that were financed by rights offering and 0 otherwise. In columns (2) and (3), the dependent variable is the creditor recovery rate. *Creditor Recovery Rates* is calculated as the ratio of the total dollar amount of distributions over the total dollar amount of claims of all creditor classes. *Judge liquidation Bias* is calculated as the fraction of Chapter 11 cases that converted to Chapter 7 by the bankruptcy judge appointed on the case. *S&P Returns* are the 2 months pre-emergence equal weighted S&P returns (during the book building phase). The firm and bankruptcy characteristics control variables are defined in Table 3. All specifications include court fixed effects, year of filing fixed effects and industry fixed effects. Industry fixed effects are defined using 2-digit SIC codes. Column (2) reports the OLS coefficient of rights offering on recovery rates, while column (3) reports its IV 2SLS coefficient on recovery rates. The instruments are *judge liquidation bias* and *S&P returns*, and their combined F-statistic is reported in the second last row. The p-value for the Hansen J-statistic overidentification test is reported in the last row. Standard errors clustered by court of filing are denoted in parentheses. *** denotes significance at 1%, ** at 5%, and * at 10%.

	Rights Offering	Recovery Rate	
	First Stage	OLS	IV 2SLS
	(1)	(2)	(3)
Judge liquidation bias	-0.507**		
	(0.244)		
S&P Returns	0.817***		
	(0.181)		
Rights Offering		0.082*	0.466***
		(0.045)	(0.139)
log(Assets)	0.064*	0.002	-0.020***
	(0.034)	(0.015)	(0.007)
Leverage	0.158***	0.024	-0.041
	(0.037)	(0.050)	(0.040)
Secured debt share	-0.103	0.044	0.077
	(0.080)	(0.058)	(0.079)
Profitability	0.063	-0.076	-0.095***
	(0.050)	(0.046)	(0.036)
log(Employees)	0.035	0.025	0.010
	(0.043)	(0.028)	(0.025)
Equity Committee	0.132	0.319***	0.268***
	(0.159)	(0.029)	(0.062)
Creditors Committee	-0.094	-0.106*	-0.071**
	(0.062)	(0.052)	(0.034)
log(Judge Experience)	-0.007	-0.035***	-0.034***
	(0.019)	(0.006)	(0.006)
Industry FE	YES	YES	YES
Court FE	YES	YES	YES
Year FE	YES	YES	YES
Observations	322	322	322
Adjusted R^2	0.049	0.303	0.300
Instruments F-statistic	10.35		
Overidentification test J-statistic (p-value)			0.8118

Table IA.3: Placebo Test with Prepackaged Bankruptcies

This table reports the determinants of rights offering for prepackaged bankruptcies. The dependent variable *Rights Offering* is 1 for firms that were financed by rights offering and 0 otherwise. *Judge liquidation Bias* is calculated as the fraction of Chapter 11 cases that converted to Chapter 7 by the bankruptcy judge appointed on the case. *Pre-filing S&P Returns* are the 2 months pre-filing equal weighted S&P returns during the book building phase of the rights offering. The book-building period for prepackaged bankruptcies is defined as the 2 months prior to the firm filing for a prepackaged bankruptcy. The firm and bankruptcy characteristics control variables are defined in Table 3. The instrument is the *judge liquidation bias* in column (1), and the *Pre-filing S&P returns* in column (2). Instrument F-statistic is reported in the last row. Standard errors clustered by court of filing are denoted in parentheses. *** denotes significance at 1%, ** at 5%, and * at 10%.

	Rights Offering	Bankruptcy Duration
	(1)	(2)
Judge liquidation bias	-0.079	-0.800
	(0.701)	(1.269)
log(Assets)	-0.072	0.019
	(0.177)	(0.193)
Leverage	-0.030	0.022
	(0.109)	(0.352)
Secured debt share	-0.638**	0.707
	(0.176)	(0.604)
Profitability	0.254	0.284
	(0.149)	(0.251)
log(Employees)	0.014	0.036
	(0.098)	(0.120)
Equity Committee	-0.234	1.461
	(0.682)	(1.028)
Creditors Committee	0.315	0.638
	(0.402)	(0.762)
log(Judge Experience)	0.191	0.383
	(0.208)	(0.310)
Year FE	YES	YES
Industry FE	YES	YES
Court FE	YES	YES
Observations	86	86
Adjusted R^2	0.014	0.289
Instrument F-statistic	0.015	