Rent extraction by super-priority lenders*

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Abstract

We present striking evidence of supra-competitive pricing of debtor-in-possession (DIP) loans obtained by large firms filing for Chapter 11 bankruptcy. Fully collateralized and with super-priority and strong covenants, these loans are effectively near-risk-free: Over the past three decades, all but one DIP loan were fully repaid (principal and interest). Nonetheless, the average loan spread is a whopping 600 basis points, which is 70% higher than the average spread on *high-risk* leveraged loans obtained by the *same* firms three years prior to Chapter 11 filing. Equally surprising, the rent extraction in DIP loans is no lower for new (non-prepetition) lenders—hedge funds or private equity funds in particular—which is when lender competition ought to be at its strongest. Junior claimants often contest DIP-loan terms in court—but apparently to little avail.

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"...the question the debtor had to ask, is: Is this DIP better than a liquidation?"
—Mark Ellenberg on Lyondell Chemical Company's $8 billion DIP loan (*Bloomberg.com*, 02/28/2009)

"In the Great Recession default cycle, no DIPs defaulted."
—David Keisman, Senior Vice President, Moody's Investors Service (*Reuters*, April 2016)

1 Introduction

To preserve going-concern value and fund continued operations, firms filing for Chapter 11 bankruptcy often simultaneously arrange "debtor-in-possession" (DIP) loans. As in the Lyondell Chemical Company's $8 billion DIP loan quoted above, the amount involved can be substantial. Over the period 2002–2014, the sample of 267 DIP loans studied in this paper has an aggregate value of more than $120 billion (in constant 2017 dollars). Perched at the top of bankrupt firms' hierarchy of claims, we show that these loans were fully repaid (principal and interest) without exception. As observed by David Keisman of Moody's as well (second quote above), no DIP loan defaulted during the recent financial crisis. Moody's (2008) further identifies only a single DIP loan with less than full repayment over the period 1988–2008. In sum, the reported history from 1988–2014 shows a near-zero likelihood of anything less than full DIP-loan repayment. Hence, in the vernacular of this paper, DIP loans are nearly risk-free.

The near-risk-free status of DIP loans is, of course, a direct consequence of their super-priority status in Chapter 11, coupled with the extraordinarily strong collateral and covenant protection documented below. Essentially, since lenders are fully aware that the borrower is about to file for bankruptcy, they design the DIP loan contract so as to separate the loan repayment risk from the risk of the borrower's underlying assets. Our central question is whether this separation is also reflected in loan prices: Is the supply of DIP loans sufficiently competitive for borrowers to obtain loan terms that are commensurate with these loans' near-risk-free status?

In addition to using the London Interbank Offered Rate (LIBOR) as our pricing benchmark, we attempt to answer this question by comparing DIP-loan prices to spreads on the much more risky (non-investment-grade rated) leveraged loans obtained by the *same* bankrupt firm within three years of its Chapter 11 filing. Our baseline competitive pricing hypothesis, which predicts that DIP loans should be priced just above LIBOR and substantially below the spreads on the matched leveraged-loans, is unequivocally rejected. Instead, the evidence points to a level of rent extraction by DIP-loan providers

that is rarely seen elsewhere in US credit markets.

Our unprecedented sample consists of 393 loan facilities provided to 267 large Chapter 11 firms over the period 2002–2014, plus another 173 large Chapter 11 firms without DIP loans. It includes the most comprehensive DIP-related contractual terms in the literature. Most of the DIP-loan packages (89% of the cases) take the form of a revolving line of credit including letter of credit (LOC), and about one-third also include a term loan facility. We hand-collect data on DIP loans from court dockets, which allows us to correct instances of misclassifications in Dealscan—the most commonly used data source for leveraged loans and loan terms in extant studies.

Our analysis shows that DIP loans are priced as if their default risk were similar to that of BB-rated unsecured bonds: The average spread on the DIP loans in our sample is as much as 604 basis points (bps) higher than LIBOR. This 604 bps spread is also 235 bps *higher* than the average spread (at 369 bps) for a sample of leveraged loans issued by non-bankrupt firms matched on issuer size, industry, and year of issue (a 257 bps difference when using the "all-in spread drawn" or AISD). The additional spread alone represents a 64% [(604-369)/369] higher annual interest cost of a DIP loan. If the high spread is not enough, a fifth of the DIP-loan providers also benefit from rolling up part or all of their prepetition debt into the DIP loan, which effectively increases the spread, the control rights, and the repayment speed of the prepetition loan as well.

While the historical default rate on DIP loans is so low as to suggest only a small loan spread above LIBOR, our comparison of DIP-loan pricing to spreads on matched leveraged loans is interesting for two reasons. First, it mimics the risk-perception reflected in motions submitted by the bankrupt firm to the court when petitioning for approval. Second, it helps control for latent risk factors. We also hold the underlying borrower constant and compare DIP-loan pricing to term loans obtained by the same Chapter 11 firm prior to its bankruptcy filing. This time-series analysis, which further controls for unobserved issuer heterogeneity, is similar in spirit to the comparables (non-DIP) loan pricing analysis of Murfin and Pratt (2019). The DIP-loan LIBOR spread also appears excessive in this comparison: On average, it exceeds the prepetition-loan spread on loans taken out within three years prior to Chapter 11 filing by 255 bps, and by 152 bps on loans taken out within one year prior—when these firms are typically rated CCC or even lower. Again, while it is possible that our bankrupt *firms* are inherently more risky than the typical leveraged-loan issuer, these spreads are exorbitant as the DIP-loan *contracts* obtained by these firms are nearly risk-free.

On top of the high LIBOR spread, DIP loans charge upfront fees and annual fees that on average exceed those associated with leveraged loans by 90 bps. This finding is also surprising since leveraged loans have substantially longer maturities than DIP loans: typically five years versus ten months. While the short-term DIP-loans are rarely (if ever) renegotiated, the much longer term of leveraged loans gives rise to higher fees to compensate the lender for the much higher likelihood of loan renegotiation (Roberts and Sufi, 2009b; Roberts, 2015; Eckbo, Su, and Thorburn, 2019). To put this DIP-loan pricing in a cost-perspective, we calculate that the spread difference and extra fees relative to matched leveraged loans amount to $4.2 billion over our sample period: $2.8 billion more in annual interest and $1.4 billion more in fees, given the DIP-loan volume of $120 billion.

It is natural to assume that the high spreads and fees observed for DIP-loans provided by prepetition lenders reflects these lenders' strong bargaining position. First, prepetition lenders are often in a position to block other prospective lenders from securing DIP loans in assets that are already pledged as security for their prepetition debt. Moreover, prepetition lenders derive a competitive advantage both from being a relationship bank (Schenone, 2010; Li, Lu, and Srinivasan, 2019) and from being able to roll up their own existing debt into the DIP loans (Skeel, 2004). Also, when speed is of the essence in preparing to file for bankruptcy, arranging a competitive bidding process between prospective new lenders may be more difficult than turning to existing creditors.

Perhaps for all of these reasons, lead prepetition lenders—consisting primarily of traditional lenders but also some hedge funds (HF) and private equity (PE) funds holding the firm's debt—supply nearly 75% of the DIP loans in our sample. For this broad group of DIP-loan providers, our evidence of substantial rent extraction is important—but perhaps less of a surprise in light of the borrower's precarious financial position. Since, as reflected in the above quote by Mark Ellenberg, the alternative to a DIP loan may be liquidation rather than reorganization in Chapter 11, borrowers are in a weak position to push back during the bilateral DIP-loan negotiations with prepetition lenders.

Our perhaps most perplexing finding is the level of rent extraction by *new* DIP lenders who supply one-quarter of the DIP loans in our sample. Much as in the leveraged-loan and private-lending markets more generally (Ivashina and Sun, 2011; Demiroglu and James, 2015; Li and Wang, 2016), HF and PE funds are increasingly active in supplying DIP loans. We find no evidence indicating that DIP loans supplied by new HF and PE funds are any more risky than DIP-loans provided by traditional prepetition lenders. Moreover, potential competition among DIP-loan providers ought to be at its strongest when

the borrower is in a position to raise the DIP loan from new lenders. Nevertheless, spreads charged by new HF and PE funds (one fifth of new DIP lenders) are about 300 bps higher than for other DIP-loan providers—on top of what is already supra-competitive loan spreads by other providers.[1]

Consistent with the hypothesis that DIP-loan pricing extracts rents, we document that junior creditors file formal objections to DIP-loan terms in more than 60% of the cases. The DIP-loan spread is a significant driver of such objections: Contested DIP loans carry spreads that are on average about 90 bps higher than non-contested DIP loans. Nevertheless, courts routinely approve the generous DIP-loan terms. Our implementation of the F-test in Bertrand and Schoar (2003) for joint court (judge) fixed effects further shows that latent heterogeneity across courts and judges does not affect DIP-loan pricing. Ultimately, our evidence raises concerns about judicial oversight, which under the US Bankruptcy Code purports to "to promote DIP lending on competitive terms" (Triantis, 2019, p.8).

We end the paper with a brief discussion of potential hidden costs of supplying DIP loans that may help explain loan pricing and fees. However, while there are several issues that give rise to non-quantifiable costs, these do not seem nearly important enough to explain spreads of the magnitude documented in this paper. For example, while both speed and secrecy is essential in raising DIP loans, court motions for DIP-loan approval submitted by the borrower typically reassure the court that the time was sufficient to obtain what they characterize as competitive loan terms. Another concern may be the possibility that DIP-loan monitoring is more expensive than out-of court monitoring of leveraged loans. However, the opposite seems true as not only do DIP loans have a much shorter term (ten months on average): the court-supervised Chapter 11 proceedings also facilitates frequent (monthly) reporting. A third argument is that DIP loans are very risky *ex ante*, but that uniquely skilled DIP providers self-select their DIP lending so as to make the loans look nearly risk-free *ex post*. However, although some degree of self-selection is likely, this argument cannot explain why DIP-loan spreads charged by sophisticated financial institutions exceed those on high-risk leveraged loans provided to the same Chapter 11 firms within three years of their bankruptcy filing.

In terms of the literature, our risk-return analysis of DIP loans is unique among prior studies of DIP loans in Chapter 11 (Dahiya, John, Puri, and Ramirez, 2003; Chatterjee, Dhillon, and Ramírez, 2004; Bharath, Panchapegesan, and Werner, 2010; Hasan, Ramirez, and Zhang, 2018). Our evidence

[1]Consistent with this conclusion, DIP-loan spreads are higher in the year following the the 2008 bankruptcy of Lehman Brothers'. This exogenous shock, which constrained traditional lenders's ability to supply debt capital (Ivashina and Scharfstein, 2010), increased the demand for HF and PE funds to supply DIP loans to firms filing for bankruptcy.

also adds to a small but growing literature on rent-seeking behavior in credit and equity markets outside of bankruptcy. In particular, Schwert (2018) matches secured term loans to non-investment-grade firms with comparable public bonds and finds that loans are more expensive than bonds, raising questions about the nature of competition in the loan market. On the equity side, Brophy, Ouimet, and Sialm (2009) conclude that hedge funds—as investors of last resort—may be behaving opportunistically when participating in private placement offerings by young and relatively opaque high-risk firms.

Moreover, our evidence on debt contract design in Chapter 11 fills a gap in the literature on financial contracting (Roberts and Sufi, 2009a). Under Chapter 11, disclosure obligations are heightened and debtor activities are scrutinized by creditors as well as by the bankruptcy court. We show that this extraordinary level of oversight produces contractual arrangements that are particularly heavy on covenants, milestones, and other protective provisions. These provisions are likely brought in to help resolve incentive conflicts between debtor management and the super-priority (DIP) creditors. Of course, it is precisely *because* of this heightened level of control rights—which we show has led to a near-zero historical default rate—that leads us to expect DIP-loan spreads over LIBOR to be close to zero.

The rest of the paper is organized as follows. In Section 2, we provide some institutional background on DIP-loan approval process. In Section 3, we discuss sampling procedure, and characteristics of borrowers and DIP-loan terms. Section 4 discusses evidence on DIP-loan historical default rate, while Section 5 documents spreads and fees on DIP loans, matched leveraged loans, and loans by the same bankrupt firms at three years or one year prior to their Chapter 11 filing. Section 6 provides multivariate evidence on the determinants of spreads, lender type, and roll-up. Section 7 examines objections to DIP-loan terms and judicial oversight. Section 8 provides some discussion on why new DIP-loan lenders earn rents. Section 9 concludes the paper.

2 The DIP-loan approval process

Under the US Bankruptcy Code, a debtor must be able to fund both the bankruptcy process and the cost of business operations to continue as a going-concern. When internal sources of cash are insufficient, and/or a debtor is unable to obtain unsecured credit in the ordinary course of business, §364 of the Bankruptcy Code permits the debtor to arrange a DIP loan with super-priority status after notice and a court hearing. Under §364(d), the DIP loan may be secured by "priming lien", i.e., by a senior or equal

lien on property that is already subject to an existing lien by prepetition lenders. Permitting priming of the prepetition lien encourages bids by new lenders. It is also intended to reduce the ability of the prepetition secured creditors to extract excessive returns for providing new financing (Triantis, 2019). Our empirical evidence below, however, leads us to question whether the latter has worked as intended.

To support a priming lien request, the debtor needs to show a judge that it has no unencumbered asset for secured borrowing, and that major prepetition lenders have given consent to the priming of their liens as well as the use of cash collateral. The debtor also needs to show that the prepetition lien that is subordinated (or primed) by the DIP loan is adequately protected. A motion for DIP financing approval is complex as it (1) explains the specific relief that the debtor seeks and provides key information on the type, amount, lead lenders, and important contractual requirements of the DIP loan, (2) describes the debtor's liquidity position and its need for DIP financing, (3) provides detailed background information on its business operations and prepetition capital structure, typically helping the debtor justify its need for DIP financing and identify available lenders, and (4) specifies a pre-negotiated plan or restructuring support agreement, if there is one. We provide a number of excerpts from randomly-selected motions for DIP financing in Appendix A.

Access to DIP financing must be approved by the judge through an interim order that is often immediately issued after the motion is filed (typically, within a few days after the Chapter 11 filing). This interim authorization is followed by public hearings in which key stakeholders are given the opportunity to file objections to terms of the DIP loan. After public hearings, the judge issues a final order approving the DIP loan or denies it altogether.[2] Figure 1 presents the timeline of DIP financing approval process.

3 Data sources and firm and loan characteristics

3.1 Sample formation

We obtain all Chapter 11 filings by large US public firms (with assets above $100 million in constant 1980 dollars) over the period 2002–2014, from the UCLA-LoPucki Bankruptcy Research Database. We start our sample in 2002 as US bankruptcy courts in all 94 districts started to maintain electronic

[2] As we will show later, the judge rarely requests the debtor and its lenders to amend their DIP-loan pricing in response to such objections, before issuing the final order. It is also rare for a judge to issue an order to reject the DIP loan as a whole. In our sample, only three DIP-loan motions were ultimately denied by the judge. The Chapter 11 filing by Mississippi Chemical Corp. on May 16, 2003, is one such example. The judge initially issued an interim order approving DIP financing. After several public hearings, the judge issued a final order denying the postpetition financing on August 28, 2003.

case dockets on the Public Access to Court Electronic Record (PACER) after 2001. We collect key characteristics of each case such as the court where the case is filed, the judge assigned to the case, prepackaged/pre-negotiated filing, and plan confirmation date. We retrieve reorganization or liquidation plans and disclosure statements confirmed by the bankruptcy court from *bankruptcydata.com* and PACER. The status of each case such as reorganization, liquidation, sold as a going-concern, dismissed, or pending is cross-checked and verified using all above mentioned sources. This initial sampling results in a total of 454 Chapter 11 cases.

To identify DIP loans, we rely on manually-collected information. Specifically, we search key phrases including "debtor-in-possession financing", "DIP financing", "post-petition financing", and "secured financing" in the electronic court docket through PACER to determine whether a Chapter 11 firm obtains DIP financing. For each sample case, we download the motion, the interim order, the objection to motion (if any), the final order for DIP financing, and the master DIP credit agreement and fee letters (whenever available). We manually processed more than 1,500 court documents and conducted multiple rounds of cross-checks. This search results in the most comprehensive data set on DIP financing facilities in the literature to date. For example, with 393 DIP-loan facilities (2002-2014), our manual search more than doubles the sample of 157 facilities in the comprehensive study of Hasan, Ramirez, and Zhang (2018), which is based on Dealscan (2002–2012). We also find that Dealscan lacks comprehensive coverage of many special features of DIP loans identified by our manual search, including detailed classification of covenants, milestones, and roll-up provisions, which are central to understanding the low risk of DIP loans.[3]

A total of 281 of the 454 Chapter 11 cases received a final order for DIP financing from the judge. We are able to obtain relevant documents on DIP financing for 267 of these 281 cases. There are a total of 269 loan packages as two sample firms had two packages each, resulting in 393 individual loan facilities. We focus on the first/initial DIP-financing package which is typically obtained by bankrupt firms at the time of Chapter 11 filing, not subsequently amended packages or packages offered later in the bankruptcy process by different DIP lenders. The first/initial package should reflect the risk of the borrower at the time of filing. Moreover, information such as credit agreement is more likely to be available in the

[3]Dealscan has information for 43% (114 out of 267) of our Chapter 11 firms with DIP loans. Comparing our loan-spread information with that of Dealscan, the spreads in Dealscan are for the most part consistent with our information provided one uses LIBOR as the basis (one exception is Anchor Glass Container Corpor's DIP loan from 2005, where Dealscan lists a spread of 325 bps while our manually collected data shows a spread of 700 bps). Dealscan under-reports AISD when information on annual fees is missing, and in those case Dealscan (wrongly) equates AISD with the LIBOR spread.

first/initial package.[4]

Figure 2 presents the frequency of sample firms with DIP loans over the period 2002–2014 and across industries. Panel A shows that the fraction of Chapter 11 firms with DIP financing peaked at 88% in 2006 just prior to the financial crisis, dropped to a low of 51% in 2009, and has since stayed between 60% and 70%. The sample-wide average fraction of Chapter 11 firms with DIP financing is 62%.[5] Panel B shows the frequency of DIP loans across the 12 Fama-French industries. The top three industries with the highest shares of DIP financing are manufacturing (86%), wholesale and retail (82%), and consumer durables (77%). The bottom three industries with the lowest shares of DIP financing are finance (24%), telecommunication (34%), and business equipment (44%). This industry pattern is consistent with the notion that industries with large working capital need and easy-to-value collateral are more likely to get DIP loans.

3.2 Pre-filing firm characteristics and Chapter 11 outcomes

We retrieve pre-filing financial statements from Compustat, as of the last fiscal year before the Chapter 11 filing. Detailed information on the sample firms' debt structure—such as the amount of bank loans outstanding at the time of bankruptcy filing—is extracted from CapitalIQ, 10K, and 10Q filings from Edgar, as well as the reorganization or liquidation plans. From the above data sources, we construct firm- and case-level control variables. These include *Size* (the natural logarithm of book assets); *Leverage* (the ratio of total liabilities to book assets) and *ROA* (the ratio of EBITDA to book assets), both measure the degree of financial distress; *Cash* (the ratio of cash and marketable securities to book assets), which measures short-term liquidity; *Tangibility* (the ratio of PP&E to book assets), which measures the tangibility of assets; *Bank loan* (the ratio of amount of outstanding bank loans at bankruptcy filing to book assets); *Industry distress* (an indicator variable on whether the median sales growth of two-digit SIC industry peers of a Chapter 11 firm is below -5%), which accounts for potential industry-level distress (see Table 1 for more detailed variable definitions).

[4] Junior DIP loans, those funded by either secured or unsecured debt holders and ranked lower in priority than existing DIP loans, are sometime provided later in the bankruptcy restructuring process and are typically used as part of the loan-to-own process. These loans typically carry even higher spreads than the initial loan packages. For example, in Eastman Kodak's bankruptcy (filed on January 19, 2012), the initial senior DIP loan carried a spread of 325 bps above LIBOR. A junior DIP loan was subsequently added ten months after the Chapter 11 filing at a spread of 1250 bps (provided by UBS and hedge funds Centerbridge and GSO).

[5] This is substantially higher than the average fraction of 30% reported by Dahiya, John, Puri, and Ramirez (2003) for the period 1988-1997, while comparable to the average fraction reported by Bharath, Panchapegesan, and Werner (2010) for the period 1995–2005.

Table 2 compares firm and Chapter 11 case characteristics for the 267 Chapter 11 firms with DIP financing and the 173 Chapter 11 firms without DIP financing. Panel A shows that the mean (median) book assets of firms with DIP financing is $3,713 million ($686 million) and mean (median) total liabilities is $3,823 million ($779 million), both are comparable to those of firms without DIP financing. The mean (median) sales at $2,941 million ($828 million) and number of employees at 10,474 (3,327) for firms with DIP financing are much higher than those for firms without DIP financing. Both the mean and median leverage ratios of firms with DIP financing are close to one, comparable to those of firms without DIP financing. Comparing financial performance and liquidity position of these two sets of firms, we find that the mean (median) ROA for firms with DIP financing (0.043 (0.050)) is higher than that for firms without DIP financing, and firms with DIP financing have lower cash balance.

The pre-filing characteristics suggest that, notwithstanding the higher ROA, firms with DIP financing are somewhat more financially constrained than firms without DIP financing. Furthermore, firms with DIP financing have more tangible assets than firms without DIP financing, capturing a greater borrowing base for secured financing. About a fifth of firms with DIP financing file for Chapter 11 in a period of industry distress. Slightly below a fifth of firms with DIP financing file for Chapter 11 within one year after the Lehman Brothers' bankruptcy. Both statistics are comparable across the two sets of firms. Finally, the median firm with DIP loans has slightly higher bank loans to assets.

Turning to Chapter-11 case and outcome characteristics in Panel B, it shows that about 70% of the cases with DIP financing are filed in the Delaware court or the court of South District of New York (NYSD). Slightly less than 30% are either prepackaged or pre-negotiated Chapter 11 filings. These statistics are comparable to those for cases without DIP financing. In two-thirds of the cases, firms with DIP financing successfully reorganize and emerge from Chapter 11 as going-concerns while liquidation (including conversions to Chapter 7) occurs in about a fifth of the cases. In contrast, in about half of the cases, firms without DIP financing successfully emerge from Chapter 11 and about two-fifths of these firms are liquidated. The combination of high emergence and low liquidation rates of firms with DIP financing partly reflects both the greater going-concern values of these firms and the role of DIP in resolving their financial constraint to facilitate the reorganization process (Dahiya, John, Puri, and Ramirez, 2003). Finally, the bankruptcy duration is comparable between the two sets of firms. Our sample of firms with DIP financing on average spend 13.6 months (median 10.3 months) in Chapter 11,

excluding the ten cases that remain pending.[6]

3.3 DIP-loan contract terms

Table 3 describes in unprecedented detail DIP-loan terms, all of which are hand-collected from court records. For each DIP-loan package in our sample, we determine the interim and final approval amount, loan facility type (the package may contain both a revolver including a letter of credit and a term loan), loan maturity, seniority and security (including super-priority, first lien on unencumbered assets, and priming lien), the use of proceeds (e.g., working capital needs, pay prepetition or postpetition obligations), covenants, prepayment clauses (including asset sale sweep, debt issuance sweep, and extra cash sweep), milestones, and events of default. We also determine whether a DIP loan requires roll-up of prepetition claims and the nature and amount of prepetition claims that are rolled up. Finally, we determine the type of DIP lenders.

The mean (median) final DIP-loan package is $377 million ($80 million), which corresponds to 15% of book assets (total liabilities).[7] In 89% of the DIP loans, the loan facility is a revolver. Term loans are present in 38% of the cases, and multiple-facility packages are present in 37% of the cases. While not tabulated, there is a trend towards increasing use of term loans in DIP-loan packages, which coincides with the rise of term loans in the leveraged-loan market in general. DIP-loan maturity averages 10 months (median 9 months), and in 64% of the cases loan maturity is tied to plan confirmation or §363 sale. The combination of a relatively short maturity and DIP loans representing a small share of total liabilities lowers DIP-lenders' risk exposure.[8]

In terms of seniority, all DIP loans have super-priority status, 99% are secured or have a first or second lien on the debtor's assets, and 83% have a priming lien. The share of DIP loans with a priming lien is high relative to that in earlier sample periods (Skeel, 2004). Moreover, 22% of the DIP loans include a roll-up provision. This provision allows DIP-loan providers to convert all or a portion of their prepetition

[6]The duration is shorter than the average 18 months reported in Bharath, Panchapegesan, and Werner (2010) over the period 1979–2005, and the 16 months in Jiang, Li, and Wang (2012) over the period 1996–2007. The general decline in number of months under Chapter 11 bankruptcy is in part driven by the Bankruptcy Abuse Prevention and Consumer Protection Act (BAPCPA) in 2005, which puts a limit of 18 months on the exclusivity period of debtor filing a reorganization plan.

[7]Dahiya, John, Puri, and Ramirez (2003) report a somewhat higher average ratio of DIP-loan size to total assets at 20% in their sample of 165 DIP loans over the period 1988-1998. It is worth noting that their sample firms are smaller than ours as they do not impose our minimum book assets restriction of $100 million on Chapter 11 firms.

[8]Bradley and Roberts (2015) report an average maturity of 3.5 years for syndicated loans and 12 years for bonds over the period 1993–2001.

secured debt into the postpetition DIP loan and to accrue interest at the DIP-loan rate. For the 50 cases with the roll-up provision, the mean (median) amount of the roll-up is $209 million ($86 million), which represents 48% (50%) of the DIP-loan amount. Thus, the roll-ups in our sample are substantial. Furthermore, while the stated purpose of the DIP loan is to finance working capital in 98% of the cases, in as many as 58% of the cases the DIP-loan proceeds are also used to pay prepetition debt expenses (both interest and principal). The combination of a substantial roll-up and payment of prepetition debt expenses further reduces the risk exposure of prepetition DIP lenders.

DIP loans make extensive use of covenants. Table 3 shows that almost all (98%) of the loans include affirmative or negative covenants, 85% have financial covenants, and 53% and 55% have liquidity/cash and EBITDA level covenants, respectively. Moreover, DIP loans make extensive use of prepayment requirements (cash sweeps). Specifically, 41% require prepayments from asset sale, 17% require prepayment from debt issuance, and 5% require prepayment if there are extra cash holdings on the balance sheet.

In addition to covenants and prepayment clauses, DIP lenders also impose a long list of milestones and events of default. Not achieving milestones constitutes a default event. The three most common milestones or events of default are Chapter 7 conversion or case dismissed (93% of our sample), appointment of trustee or examiner (83%), and loss of automatic stay or exclusivity (71%). The next two common milestones or events of default are change of control (68%) and plan and disclosure statement filing and approval (66%). These requirements help control DIP lenders' exposure to risk associated with the debtor's loss of control of its business. Moreover, 13% of the loans require the debtor to set up a bidding procedure for selling assets through §363 of the Bankruptcy Code. About 18% of the loans require the debtor to hire specific key personnel such as a chief restructuring officer, and 16% of them require the debtor to release any claim that it may have against DIP lenders. These contract provisions grant DIP lenders strong protection as well as influence in the business operations of the debtor.

3.4 Who are DIP-loan providers?

The lead lenders of DIP loans, such as book runner, agent bank, and syndication agent etc., are typically listed in the motion for DIP financing and master creditor agreement, from which we identify the name and institutional type of lead DIP lenders in our sample. We determine whether each lead DIP lender is a traditional lender such as banks and financing companies, or alternative investors such as HF and PE funds by searching the lender's website and cross-referencing industry publications such as Barron's,

Alpha Magazine, and Institutional Investors.

We determine the quantity and type of prepetition debt as well as the identity of lead prepetition lenders at the time of bankruptcy filing from the motion for DIP financing. We also resort to CapitalIQ and company's SEC filings immediately before bankruptcy for such information. Comparing the names of DIP lenders with those of prepetition lenders, we determine whether the lead prepetition lenders act as lead lenders of DIP loans and the type(s) of prepetition debt that they hold. Note that the background section of the motion for DIP financing does not list all lenders of prepetition loans and nor do other sources such as company's SEC filings. Our classification as to whether a DIP loan is provided by prepetition lenders is based on whether any of the lead lenders of a prepetition loan is also a lead lender of DIP financing as disclosed in the motion. We can identify whether DIP lenders hold prepetition debt in a non-leading role only if such information is provided in the motion. This does not rule out the possibility that a DIP lender can be a non-lead prepetition lender but the motion does not provide such information (and as a result, we fail to capture it).

Table 3 shows that 58% of DIP loans are provided by prepetition traditional lenders (including banks and financing companies), and 17% of DIP loans are provided by HF and PE lenders that also hold prepetition debt. Overall, 75% of DIP loans are provided by preptition lenders. For the remainder provided by new lenders, we separate them into traditional and HF/PE lenders, with shares at 20% and 5%, respectively. There are 61 unique HFs and PE funds participating in DIP financing to 63 Chapter 11 firms in our sample. The top five players are Cerberus Capital (Ableco Finance LLC) involved in 10 cases in our sample, Silver Point Capital (Silverpoint Finance LLC) in 7 cases, Tennenbaum Capital Partners in 5 cases, Oaktree Capital in 4 cases, Black Diamond Capital Management LLC in 3 cases, and DDJ Capital management in 3 cases.

In summary, Table 3 shows that DIP loans (1) represent a relatively small share of overall liabilities, (2) have short maturity, (3) super-priority and multiple restrictive covenants and provisions, (4) include mandatory prepayment clauses and milestones, and (5) have active participation by skilled alternative lenders. In other words, DIP-loan providers enjoy extraordinarily strong protection of their super-priority debt claims. The central question for the remainder of the paper is whether this extraordinary protection results in low default risk and is priced in spread.

4 DIP-loan default risk

In this section, we discuss DIP-loan default risk—which is treated sparsely in the extant literature—and provide an estimate of their *ex post* likelihood of default. We combine four data sources to show that the default rate with less than full recovery of DIP loans is near-zero: 0.13% or lower. The first data source comes from Moody's (2008), which compiles all DIP loan defaults over the period 1988–2008. The report identifies two DIP-loan defaults among the 297 cases considered: Marvel Entertainment (Chapter 11 petition filed on December 27, 1996) and Winstar Communication (filed on April 18, 2001). However, notwithstanding Moody's classification, Marvel's DIP-loan providers recovered 100%, while Winstar's DIP-loan providers suffered a significant loss of about 75% on the $300 million loan.[9]

The second source comes from the statement by David Keisman (Senior Vice President at Moody's Investors Service) quoted at the beginning of this article. In his interview with *Reuters* in 2016, he confirmed that no DIP loan defaulted in the recent "Great Recession default cycle". This, of course, stands in sharp contrast to the leveraged loan default rate, which according to PIMCO was about 20% during the financial crisis.[10] PIMCO also assesses the leveraged loan default rate after the 2000 "dotcom bust" at 25%.

The third source comes from our manual checking of bankruptcy plans and disclosure statements to determine whether there is any mention of default or impairment of claims in our sample of 269 DIP loan packages over the period 2002–2014. We separate *technical default* with full recovery from *actual payment default* with less than full recovery, which turns out to be important. Technical default includes violation of *non-payment terms*, such as DIP-loan covenants and milestones, which triggers DIP-loan providers to demand full repayment. Indeed, 93% of the DIP loans in our sample treat a conversion to Chapter 7 or a case dismissal as events of technical default, which triggers full repayment without impairing recovery. Relatedly, DIP loans require settlement in cash and are regarded as impaired in the reorganization plan if the payment is in some other form (such as new debt or equity of the emerged firm) and/or the payment is made late. To illustrate these technical issues, Appendix B provides a detailed discussion of the six DIP-loan packages in our sample that had their claims impaired due to violation of loan contracts. In all

[9]The DIP loan was provided by Citigroup, CIBC, Credit Suisse First Boston, Bank of New York Co,, and Chase Manhattan Co, on May 14, 2001. Winstar's bankruptcy was attributed to a failure of Lucent Technologies to honor a contract in the midst of telecom bubble burst. The case was converted to a Chapter 7 and liquidated for only $38 million, implying an estimated recovery in the 20-30% range according to Moody's (2008).

[10]Source: *Financial Times*, July 5, 2019.

of those cases, DIP-loan providers recovered 100% of their principal and accrued interest.

To estimate the default rate for the universe of DIP loans, we need the number of DIP loans issued over the period 1988–2010. We resort to *bankruptcydata.com* as the fourth data source to retrieve such information as Moody's (2008) significantly underreports the number of DIP loans. According to *bankruptcydata.com*, more than 1,600 US public firms filed for Chapter 11 bankruptcy over the period 1988–2008, of which more than 700 received DIP financing—more than twice the number of cases in Moody's sample, and another 100 firms obtained DIP financing during the financial crisis period (2009–2010), making a total of at least 800 cases of DIP loans for the period of 1988–2010. Given only one payment default that resulted in less than full recovery during this period, our estimate of the DIP-loan default rate is 0.13% (1/800).

To place the low default rate of 0.13% in perspective, recall that rating agencies map loan-default risk into a rating score, which helps guide loan pricing. In this mapping, a loan spread of 602 bps—the average for our DIP-loan sample shown in Table 4 below—is comparable to a B-rated leveraged loan with an average one-year default rate of 3.44% over the period 1983–2017 (Exhibit 34 in *Moody's Investor Service Data Report*, February 15, 2018). Again using 800 DIP loans as the denominator, this corresponds to 28 DIP-loan defaults expected over our sample period—not just the *one* observed *ex post*. Our default rate estimate of 0.13% should have resulted in a DIP loan rating of Baa1 or higher by Moody's (Exhibit 35 in *Moody's Investor Service Data Report*, February 15, 2018) or BBB+ of higher by S&P (Table 9 in *S&P's 2016 Annual Global Corporate Default Study and Rating Transitions*).[11] In sum, there is a substantial mismatch between the actual default risk of DIP loans and their loan spreads and rating scores.

5 DIP-loan spreads and fees

5.1 Data on spreads and fees

For each loan facility in a DIP-loan package, we collect information on amount, interest, and fees from motions and credit agreements. The interest charged on DIP facilities is typically expressed as a spread over one or several reference rates, with LIBOR rates being the most common. At times, spread is

[11] During the 1990s when DIP loans started to gain prominence, Fitch Investors Services rated DIP loans as investment grade (primarily A ratings) but subsequently discontinued the rating service on DIP loans (Chatterjee, Dhillon, and Ramírez, 2004).

expressed above the US Prime rate or Federal Funds rate. Interest can also be expressed as a fixed rate. In addition, lenders often impose a floor rate on the reference rate. In situations where the reference rate is below the floor, the floor rate will serve as the reference rate.

We retrieve monthly three-month LIBOR rates, US Prime rates, and Federal Funds rates from Bloomberg and determine the rates applicable in the month of the final approval of DIP loans by the judge. For loan facilities in our sample that are not quoted over LIBOR, we express the loan spread over LIBOR as follows. First, if the actual spread is over the Prime rate or Federal Funds rate, we adjust the spread by the difference between the three-month LIBOR and the reference rate in that month. Second, if the interest of a DIP facility is expressed as a fixed rate, we calculate the difference between the fixed rate and three-month LIBOR as LIBOR spread. This procedure allows us to report LIBOR spread for all loan facilities in our sample that have loan interest information.

The upfront fee includes closing fee, issue discount, underwriting and arranger fee, structuring fees, agent fee, and monitoring fee.[12] The annual fee (also known as facility fee) is an annual charge on the entire commitment amount, and the commitment fee is charged on the portion of the commitment amount that is unused. We convert all fees expressed in dollar terms to basis points by scaling fees with the dollar value of the facility amount. Following Dealscan, we define all-in spread drawn (AISD) as the sum of LIBOR spread and annual fee, and all-in spread undrawn (AISU) as the sum of annual fee and commitment fee. It is worth pointing out that, with 90% coverage, our sample has one of the most complete coverage of loan fees in the literature (Berg, Saunders, and Steffen, 2016).

5.2 Spreads and fees at the DIP-loan facility level

Table 4 provides the summary statistics at the level of DIP-loan facilities. It covers facility type (revolver and term loan), facility size, interest spread, and fees for the 393 facilities within the 269 loan packages. We show that, 69% of the facilities are revolvers and the remainder are term loans. The mean (median) amount of each facility (either revolver or term loan) is \$260 million (\$65 million), and the mean (median) ratio of facility amount to assets is 0.102 (0.072). In terms of spreads, the mean (median) LIBOR spread is 604 bps (526 bps). For a subsample of 52 loan facilities that quote fixed rates, both the mean and the median rate exceed 1,000 bps.

[12]For loan packages that contain both a revolver and a term loan, we follow Dealscan and put the upfront fee on the revolver unless the credit agreement specifically says that the fee applies to both facilities. See "WRDS's Overview of Dealscan", Technical Document, Wharton Research Data Services, 2010.

The mean upfront fee is 100 bps and the median is 25 bps. The mean annual and commitment fees, are 43 bps and 84 bps, respectively. The mean (median) AISD is 640 bps (562 bps), while the mean (median) AISU is 127 bps (50 bps). These AISD and AISU values substantially exceed those reported for syndicated loans in prior work. For example, Bradley and Roberts (2015) report that the average AISD for the population of syndicated loans over the period 1993–2001 is between 170–220 bps. For the period 1986–2011, Berg, Saunders, and Steffen (2016) report a mean (median) AISD of 157 bps (150 bps) for credit lines and 271 bps (250 bps) for term loans, and that the mean (median) AISU is 31 bps (25 bps) for credit lines, and 58 bps (50 bps) for term loans. In addition, Becker and Ivashina (2016), Billett, Elkamhi, Popov, and Pungaliya (2016), Li, Lu, and Srinivasan (2019) and Eckbo, Su, and Thorburn (2019) report average spreads on leveraged loans in the range of 250 bps to 350 bps during the mid-1990s to the early 2000s. All of the above evidence suggests that DIP loans are indeed expensive in terms of AISD.

Figure 3 plots the average LIBOR spread and AISD on DIP-loan facilities in our sample and, for comparison purposes, on leveraged loan facilities in Dealscan over the sample period. Leveraged loans are syndicated loans rated below investment grade (at Ba1 or below by Moody's and at BB+ or below by S&P or Fitch). We show that, the average spread on DIP facilities is in the range of 400 bps to 600 bps before the financial crisis. During the financial crisis of 2008-2009, the average spread jumps to above 800 bps and remains high until 2014. More importantly, Figure 3 shows a large and persistent annual average difference in LIBOR spreads on DIP loans and those on leveraged loans. This difference starts out at about 200 bps at the beginning of the sample period (2002) and reaches about 400 bps with the onset of the financial crisis and thereafter.

5.3 Matched-loan analysis: motivation

Since, in a competitive market, near-risk-free loans should have near-zero spreads, the risk-free rate is itself the most powerful pricing benchmark for our DIP loans. Hence, if our DIP loans are truly as low risk as we argue above, we do not need to further benchmark the DIP loan prices to more risky leveraged loans in order to conclude in favor of the rent extraction hypothesis. However, since the market for leveraged loans is highly competitive, matching our DIP-loan spreads to spreads in (high-default-risk) leveraged loans with similar borrower asset characteristics helps underscore the degree of supra-competitive DIP-loan pricing.

The pricing of leveraged loans is competitive for two reasons. First, it is the sophisticated syndication

process itself, which differs from the more private lending process behind DIP loans. Second, leveraged loans use largely standardized contracts designed by the Loan Syndication and Trading Association (LSTA) to promote post-origination market liquidity. These contracts contain less of the bankruptcy-specific provisions that characterizes DIP loans. Major participants in the leveraged-loan market are Collateralized Loan Obligations (CLOs), mutual funds, and other institutional investors. Traditional bank lenders play a much smaller role in this market than in the more private DIP-lending process.[13]

In the following, we implement two loan-matching procedures to control for potential effects of latent differences in borrower asset risk. In the first procedure, we identify a (non-bankrupt) leveraged-loan issuer in the year of the Chapter 11 filing that matches our Chapter 11 firm on book assets and Fama-French-12 (FF12) industry. In the second procedure, we match a DIP loan to loans issued by the same firm in the years prior to its Chapter 11 filing. We report borrower characteristics, spreads, and fees of these matches.

5.4 Contemporaneous loan matching

Table 5 compares borrower and loan-facility characteristics of DIP loans to Dealscan's leveraged loans matched by book assets, FF12 industry, and year of issue.[14] As expected, DIP-loan borrowers have significantly lower operating performance (ROA), higher leverage, and lower cash holdings than their matching firms. Asset tangibility is, however, similar across the two sets of firms, which supports the matching exercise. We also note that DIP-loan borrowers are in two-digit SIC industries that are in significantly greater financial distress than their matching firms. Turning to loan-facility characteristics, DIP loans are smaller (in median), more likely to be revolvers, and have much shorter maturity than their leveraged-loan matches. More importantly, the mean (median) difference in LIBOR spread between DIP facilities and their matched leveraged-loan facilities is 235 bps (604-369; 201 bps). The AISD premium averages 257 bps (640-383), with a median of 237 bps.

Figure 4 shows the frequency distribution of DIP-loan LIBOR spreads (Panel A) and matched leveraged-loan LIBOR spreads (Panel B). In Panel A, the mass is centred around 500 bps with a fat right tail reaching 1,800+ bps. In Panel B, the mass is centred around 350 bps with much less fat right tail.

[13] A substantial fraction of the DIP loans in our sample are not covered by Dealscan, likely because Dealscan focuses on syndicated loans. Comparing DIP-loan facilities in our sample that are covered by Dealscan with those that are not, the latter carry LIBOR spreads that are 140 bps higher than the former (statistically significant at the 1% level).

[14] We classify a loan in Dealscan as a leveraged loan if "MarketSegment" specifies it as "Leverage", "High Leveraged", or "LBO". Loan facilities of these three categories account for close to 30% of total facilities in Dealscan.

This is strong evidence that DIP-loan spreads are higher than those of the matched leveraged loans (235 bps higher on average), further supporting our rent-extraction argument. Again, while the *assets* of the Chapter 11 firms in our sample are in worse shape (more risky) than those of the matched leveraged-loan borrowers, the DIP-loan *contracts* nevertheless have much lower default risk. Because the latter employ super-priority, collateral, and other powerful protection clauses to effectively decouple loan repayment risk from the risk of the borrower's assets, they should be priced at lower—not higher—spreads.

The average LIBOR-spread difference is significant in economic terms as it represents approximately a 64% (100*235/369) increase in annual interest expense over and beyond that paid by the matched leveraged-loan borrowers. In other words, given the aggregate DIP-loan volume is $120 billion in constant 2017 dollars, our sample of 267 Chapter 11 firms pay $2.8 billion more in annual interest than their matching firms. Moreover, as DIP loans average 15% of debtor's prepetition assets, the excess spread of 235 bps means that the bankrupt firms in our sample incur an extra annual interest expense that averages 0.4% of the filing firms' prepetition assets. This comes on top of legal and professional fees paid in bankruptcy, which LoPucki and Doherty (2004) estimate to average 1.4% of prepetition assets.

Furthermore, Table 5 shows that on top of the excess loan spread, DIP loans come with fees that are also large compared to those of the matched leveraged loans. The average difference in upfront fees between DIP loans and matched leveraged loans is 50 bps, and the average difference in AISU is about 70 bps, resulting in a total difference of about 120 bps in fees. This despite the fact that the much shorter maturity of DIP loans virtually eliminates costly loan renegotiations, which ought to drive down fees relative to leveraged loans (Eckbo, Su, and Thorburn, 2019). The average fee premium on DIP loans translates into $600 million in extra upfront fees and $840 million in extra AISU for our sample firms. In sum, DIP-loan providers in our sample capture $4.2 billion ($2.8 billion+$600 million+$840 million) in extra interest and fees relative to providers of matched—but substantially more risky—leveraged loans.

5.5 Same-firm loan matching

The matching procedure reported in the previous section may suffer from unobservable heterogeneity between our sample Chapter 11 firms and the matched borrowers of leveraged loans. While unlikely to be correlated with DIP-loan default risk (which is close to zero), there is likely latent heterogeneity in the underlying risk of the borrowing firms' assets. To the extent that such heterogeneity *does* affect DIP-loan spreads, holding the borrowing firm constant in the comparison of spreads on DIP loans and leveraged

loans adds power to our test. In terms of loan matching, the analysis in this section is similar in its motivation to the comparables (non-DIP) loan pricing analysis in Murfin and Pratt (2019), as well as to the comparison of loans and bonds issued by the same (non-bankrupt) non-investment-grade firm in Schwert (2018).

Table 6 describes key characteristics of DIP-loan facilities and leverage loans obtained by the same bankrupt firm within three years (and one year) prior to Chapter 11 filing. The table is based on loan information in Dealscan. As expected, the leveraged loans are more likely to be term loans, and they have much longer maturities on average (nearly four years versus ten months for the DIP loans). More importantly, DIP-loan spreads are again substantially higher than that of the leveraged loans: The difference in LIBOR spread (AISD) averages 255 bps (277 bps) for loans taken out within three years prior to Chapter 11 filing, and the difference for loans taken out one year prior to filing is *lower* at 152 bps (173 bps). As to the latter, according to S&P ratings from Compustat—available for approximately 15% of our sample firms—many of the borrowers have an issuer credit rating of CCC or lower prior to bankruptcy filing. In other words, DIP-loan spreads on average exceed the loan spread paid by the *same* CCC-rated firm only one year earlier. Loan fees differ as well: The average difference in upfront fees is 69 bps (66 bps) between DIP loans and loans issued within three years (one year) prior to Chapter 11 filing, and the corresponding difference in terms of AISU is 78 bps (70 bps).

6 Cross-sectional analysis of DIP loan terms

In this section, we perform multivariate, cross-sectional analyses of potential determinants of DIP-loan spreads, lender type, and roll-ups.

6.1 The baseline loan-spread regression

The baseline OLS regression has the following specification:

$$Spread_i = \beta \mathbf{Contract_i} + \lambda \mathbf{Firm_i} + \alpha_{ind} + \alpha_{year} + \varepsilon_i, \tag{1}$$

where $Spread_i$ is either LIBOR spread or AISD on DIP-loan facility i. The explanatory variables include vectors $\mathbf{Contract_i}$ of loan contract characteristics and $\mathbf{Firm_i}$ of borrower characteristics, while β and λ

are vectors of parameters to be estimated. The regression also includes FF12 industry fixed effects α_{ind} and Chapter 11-filing-year fixed effects α_{year}. Standard errors are clustered at the year of Chapter 11 filing given the temporal variation in the supply of credit.

We estimate Eq. (1) for DIP-loans as well as for the matched leveraged loans issued by non-bankrupt firms reported in Table 5. We expect the cross-sectional variation in the leveraged-loan spreads to reflect asset-risk characteristics much as reported in the extant literature (Santos and Winton, 2008; Bharath, Dahiya, Saunders, and Srinivasan, 2011; Schwert, 2018). This is confirmed in columns (1) and (2) of Table 7. For example, in Panel A, revolvers on average carry spreads that are 131–137 bps lower than term-loan spreads (Berg, Saunders, and Steffen, 2016). Also, leveraged-loan spreads are negatively associated with maturity and, in Panel B, with the presence of significant lender control rights through financial covenants (Bradley and Roberts, 2015; Eckbo, Su, and Thorburn, 2019). Among the borrower characteristics in Panel C, leverage is the only significant regressor, and it is positively associated with loan spreads as expected.[15]

Next, we turn to the DIP loans in columns (3) and (4) of Table 7, where the variable *Secured* is excluded from Panel A since all DIP loans are secured. Given our evidence suggesting that DIP-loan spreads imply rent extraction, it is not clear that their cross-sectional variation ought to be a function of the same risk factors that drive leveraged-loan spreads in columns (1) and (2). On the other hand, letting DIP-loan spreads vary with borrower-asset risk factors may be one way for DIP-loan providers to convince unsuspecting borrowers (and perhaps also judges and judicial examiners) that DIP-loan risk is substantial. It is also possible that DIP-loan providers themselves wrongly believe—for whatever reason—that these loans are truly high risk.

Much as for the leveraged-loan spreads, the DIP-loan spreads in columns (3) and (4) are significantly lower for DIP-loans structured as revolvers—on average 156–235 bps lower than for term loans. *Maturity* is no longer statistically significant, reflecting low cross-sectional variation in the already very short DIP-loan maturity. On the other hand, the coefficient on loan size, *Log* ($facility\ amount$), is now negative and significant for LIBOR spreads. In Panel B, DIP-loan spreads are statistically independent of all of the contracting variables, confirming that DIP-loan providers do not pay for the strong contractual DIP-loan protection relative to leveraged loans.

[15]It is worth pointing out that there is a substantial difference in the coverage of covenants in this paper and in prior studies relying solely on Dealscan. While we have data on covenants for more than 90% of the DIP loans in our sample, this information is available for less than a quarter of loans in Dealscan (Chava, Livdan, and Purnanandam, 2009).

Finally, in Panel C of Table 7, the only significant variable is ROA: A one-standard-deviation increase in ROA (0.13) is associated with a drop in the DIP-loan spreads of 36–42 bps.[16] Again, since DIP loans historically have been fully repaid with only one single exception, it is unclear why DIP-loan spreads should vary with ROA. One possible explanation is that the DIP loan is over-collateralized to a greater extent in firms with a high ROA, which makes it marginally more difficult for the DIP-loan provider to claim that the loan is high risk.

6.2 Effect of DIP-lender type

In this section, we examine more closely whether DIP-loan spreads differ by lender type. Recall from Table 3 that 75% of DIP loans are provided by prepetition lead lenders. As discussed earlier, whenever securing a DIP-loan requires priming the collateral of existing lenders, those lenders must first give their consent. Existing lenders are unlikely to consent to being primed when they risk losing adequate protection. As a result, refusing consent drives out competition. Prepetition lenders also have a strong incentive to supply DIP loans themselves because it allows a beneficial roll-up of their existing loans into the DIP-loan package and protect their existing claims. This incentive may be reduced to some extent when prepetition loans are already over-collateralized, or when prepetition lenders for some other reasons agree to the DIP loan to be supplied by new lenders.[17] In these situations, competition among prospective DIP-loan suppliers likely increases.[18]

Since HFs and PE funds increasingly purchase heavily distressed debt before Chapter 11 filing (Jiang, Li, and Wang, 2012; Li and Wang, 2016), we make a distinction between prepetition and new HF/PE lenders.[19] We also separate traditional lenders into prepetition and new lenders. We then rerun the baseline specifications in Eq. (1) by including the indicator variables for prepetition HF/PE lenders, new traditional lenders, and new HF/PE lenders. Table 8 Panel A present the results (the baseline case is DIP loans by prepetition traditional lenders, not shown). The main message from Table 8 is

[16] In untabulated analysis, we include the full set of controls on covenants and milestones that are specific to the bankruptcy process and find that they are also largely insignificant in the DIP-loan spread regressions.

[17] This may occur due to regulatory risk-capital constraints, such as Basel III-type bank capital requirements. While we do not have information on the regulatory implications of DIP lending by banks in our sample, the cost to a bank of any regulatory risk-weighting is higher if DIP loans are (mis)classified by regulators as having a high default risk.

[18] HFs and PE funds that specialize in investing in distressed firms emerged as active participants in the DIP lending market since the late 1990s (Jiang, Li, and Wang, 2012; Li and Wang, 2016). There is also a parallel trend towards increased participation by institutional investors in the syndicated loan market (Ivashina and Sun, 2011; Demiroglu and James, 2015).

[19] Note that prepetition HF/PE lenders tend to hold a large stake of prepetition debt but are typically not lead lenders of prepetition debt. We identify whether HF/PE hold prepetition debt using motions and reorganization plans.

surprising: Spreads on DIP loans provided by new traditional lenders are no different from those provided by prepetition traditional lenders, whereas spreads on loans provided by prepetition HF/PE lenders are significantly higher than those on DIP loans provided by prepetition traditional lenders. Furthermore, new HF/PE lenders charge spreads that are significantly *higher* than those provided by all other types of lenders. These loans carry AISD that are almost 300 bps higher than those provided by prepetition traditional lenders. Note that this extra spread comes on top of what is already a very high average spread.

In Table 8 Panel B, we run a logit regression with the dependent variable taking the value of one when DIP loans are provided by prepetition traditional lenders, and zero otherwise. Overall, there seems to be no difference in characteristics of firms that they choose to lend. Put differently, prepetition traditional lenders tend to provide DIP loans to similar set of firms as other lenders. However, one important fact emerges: DIP-loan providers are more likely to be new lenders when the ratio of prepetition loan amount to book assets is low, i.e., when the prepetition lead lenders' claims are more highly over-collateralized. In other words, potential competition from new DIP-loan providers is more likely to occur when prepetition lead lenders do not have strong incentives to participate in DIP lending and the bankrupt firm has more assets to pledge as collateral.

In summary, Table 8 shows that the presence of new HF/PE lenders does result in higher DIP-loan spreads on average. This finding is surprising since it is precisely in this group of DIP-loan providers that one would expect competition among potential lenders to be the strongest. It suggests that new HF/PE lenders step in to provide a DIP loan when traditional lenders are unwilling to provide it themselves—as such these alternative lenders are effectively private lenders of last resort. Of course, while this may explain why borrowers are willing to pay exorbitant DIP-loan spreads, it cannot explain why competition among alternative lenders fails to bring down DIP-loan spreads to a level much more commensurable with the DIP-loan risk.

6.3 A credit supply shock

In this section, we examine whether DIP-loan spreads vary with lending market conditions. Prior research shows that negative shocks to aggregate credit supply, which result in traditional lenders becoming financially constrained, cause banks to not only reduce lending but also charge higher interest and impose

tighter terms.[20] Of particular relevance for this study, Ivashina and Scharfstein (2010) documents a regime shift in bank credit supply immediately after Lehman Brothers' bankruptcy on September 15, 2008. We therefore include, in Table 9, the indicator variable *Post-Lehman (1Y)*, which takes the value of one for the period from September 15, 2008 to September 15, 2009, and zero otherwise. The idea is that, as banks faced greater lending constraints during the financial crisis, bankrupt firms seeking DIP loans may to a greater extent have been forced to approach non-traditional lenders. This would have given non-traditional lenders greater bargaining power, which may have resulted in higher DIP-loan spreads.

Panel A of Table 9 shows the effect of including the variable *Post-Lehman (1Y)* in addition to the control variables in Eq. (1) in the DIP-loan spread regression. This regressions also includes FF 12-industry times year fixed effects to account for industry differences in their temporal exposure to the financial crisis. As shown, DIP-loan spreads are significantly higher during the one-year period after Lehman Brothers' bankruptcy: The LIBOR spread is 290 bps higher and AISD is 363 bps higher, than in other years—an 50% increase over the sample mean DIP-loan spread.[21]

To make sure that *Post-Lehman (1Y)* captures only lender constraints, we also check for differences in firms characteristics between borrowers that filed for Chapter 11 in the year after the Lehman bankruptcy versus those in other years. Panel B of Table 9 shows that there are no significant differences in book assets, number of employees, operating performance, leverage, cash holdings, and asset tangibility. However, firms filing Chapter 11 during the year following the Lehman's bankruptcy tend to be larger in terms of liabilities and sales, and their industries are more likely to be in distress than firms filing Chapter 11 in other years.

In summary, Table 9 shows that Chapter 11 firms pay more for DIP loans during periods when bank lenders are constrained and thus lending market competition is low, which is consistent with our rent extraction hypothesis.

[20] Leary (2009) shows that the 1966 Credit Crunch—an exogenous contraction in the availability of bank loans—reduces leverage ratios of bank-dependent firms. Chava and Purnanandam (2011) use the Russian crisis of Fall 1998 as a general negative shock to credit supply, and find that crisis-affected banks decrease the quantity of their lending and increase interest rates in the post-crisis period relative to unaffected banks. Lemmon and Roberts (2010) use the collapse of the investment bank Drexel Burham Lambert, Inc. as a shock to the supply of below-investment-grade credit after 1989.

[21] Similarly, Tung (2014) finds that DIP-loan spreads are 70 bps higher in a tight credit market, measured using credit reports by the Bank for International Settlements.

6.4 The likelihood of roll-ups

As explained in Section 3, prepetition lenders who agree to supply a bankrupt firm with a DIP loan may improve the priority of their existing (prepetition) claims by rolling some or all of them into the DIP loan itself. The roll-up provision allows prepetition lenders to ensure seniority in the capital structure and increase security of the rolled-up debt (via collateral that may have previously been unencumbered or where liens have been unperfected on a prepetition basis), as well as provides for super-priority administrative status and avoids the risk of cram-down. It also increases prepetition lenders' influence in the case as a DIP loan is required to be repaid in full upon emergence unless its providers agree to a different treatment.

Table 10 presents the results from a logit regression at the loan-package level (instead of the facility level) examining the determinants of roll-up in DIP financing.[22] We first note that the opportunity to extract rents via a roll-up provision is available to and used by prepetition HF/PE fund lenders rather than by traditional lenders. Moreover, DIP loans with asset sale sweep, firms with better operating performance, and firms with high leverage are positively associated with, whereas revolvers, short maturity, and DIP loans with debt issuance sweep are negatively associated with, the likelihood of a roll-up provision. We conclude that skilled alternative investors are able to not only charge higher spreads but also roll-up their prepetition debt, providing strong evidence on rent extraction by prepetition lenders' "breaking seniority" through a roll-up(Roe and Tung, 2013).[23]

7 Contested loans and judicial oversight

In this section, we provide new evidence on objections by various stakeholders to DIP-loan terms. This analysis, to the best of our knowledge, has not previously been documented in the DIP-loan literature and supplements the above empirical analysis showing rent extraction by DIP-loan providers. After all, the putative rent extraction is a zero-sum game between DIP-loan providers and other stakeholders, which

[22]It is worth noting that if we include year fixed effects, our main findings remain unchanged, but we lose over 40 observations because the 1/0 dependent variable is predicted perfectly in some years.

[23]The Lyondell Chemical's DIP financing case provides a vivid illustration. Lyondell filed for Chapter 11 bankruptcy in January, 2009, in the midst of the financial crisis and a tight credit market. PE funds led by Apollo Management and Cerberus Capital Management offered a $3.25 billion "New Money Facility" and roll up $3.25 billion prepetition loan while charging LIBOR plus 10% on the New Money Facility. The roll-up provision was objected by prepetition bank lenders including ABN Amro (see Harvard Business School case # 9-210-001, "Lyondell Chemical Company" by Stuart C. Gilson and Sarah L. Abbott, 2010).

may prompt these other stakeholders to object to the loan terms.[24]

7.1 Frequency and effect of DIP-loan objections

As discussed in Section 2, stakeholders of a Chapter 11 firm can raise objection to a proposed DIP loan package in a relatively short period—not much more than a couple of weeks—between Chapter 11 filing date (when a motion for DIP financing is submitted) and public hearing date. Examining the decision to contest is interesting as it directly shows how the proposed package is perceived by other stakeholders. It is reasonable to assume that when DIP-loan pricing is supra-competitive, objections arise precisely because these other constituencies effectively pay for the rent extraction.

To determine whether a motion for DIP financing is in fact contested, we manually search court dockets for objections filed between the motion date and the date of public hearing for each of our sample cases. We then record the identity of each party that files an objection, and group them into one of the following five groups: (i) unsecured creditors committee and suppliers, (ii) equity holders, (iii) US trustee, (iv) union, workers, pensioners, and Pension Benefit Guaranty Corp., and (v) other parties such as municipal government and asbestos claim holders.

Panel A of Table 11 shows that more than 60% of the proposed DIP loan packages receive objections from junior creditors and other stakeholders. The average number of parties that object a DIP loan package is 2.2. The bulk of objections comes from unsecured creditors committees and suppliers (54% of our sample). This surprisingly high fraction of contested cases provides strong and independent evidence that DIP-loan terms are perceived as excessive by the very constituencies that pay for them.

It is worth stressing that objections do not mean that these constituencies fail to see the benefit of DIP financing: It is most likely viewed by all parties as essential for survival under Chapter 11. Rather, as shown earlier, the more likely interpretation of these objections is that the DIP-loan terms are viewed excessive given the extremely low default risk of these loans documented in Section 4. Panel B of Table 11 provides strong support for this conjecture. Regardless of how spread is measured (LIBOR spread or AISD), contested DIP loans carry a 80–90 bps higher spread than non-contested ones.

A consistent explanation of the results in Panel B is that junior claimants use the size of DIP-loan spread and fees as a basis for their decision to raise objection to the proposed DIP financing. Since

[24] While a DIP loan likely improves the going-concern value of the borrower, rent extraction—the pricing of the DIP loan above the competitive risk-adjusted price—is by definition a zero-sum game.

the spread and fees are taken from the final order, one cannot infer from Panel B of Table 11 that a judge has modified the initially-proposed terms in response to objections. Anecdotal evidence suggests, however, that judges rarely ask debtors to revise the pricing terms after receiving objections and holding public hearings. What Panel B does show is that the spread and fees from the final order are higher in the presence of objections than those without. So, if the objections had the effect of lowering, say, the initially-proposed spread, the spread from the final order nevertheless remains higher than its counterpart without receiving any objection.

In summary, junior creditors and other stakeholders tend to contest proposed DIP-loan packages when spreads are high. Given that DIP lenders are one of the most senior claimants in bankruptcy, this is precisely what one would expect if DIP-loan terms are supra-competitive—effectively extracting rents from junior claimants of bankrupt firms.

7.2 Examining court and judge fixed effects

The bankruptcy judge is required to authorize decisions by the bankrupt firm made outside of the ordinary course of business, which includes approval of DIP loans. This raises the question of whether the high spread and fees on certain DIP loans may be attributed to particularly lax oversight by certain judges in certain courts. To address this question, we examine whether the cross-sectional variation in loan spreads and fees is driven by unobservable heterogeneity that varies by bankruptcy courts or differences in judge preferences and rulings (Eisenberg and LoPucki, 1999; LoPucki and Doherty, 2002; Ayotte and Skeel, 2004; Chang and Schoar, 2013).[25]

Table 12 runs F-tests for the joint significance of court (judge) fixed effects following Bertrand and Schoar (2003). In Panel A, we leave out control variables (other than industry and year fixed effects), while Panel B includes the full set of controls from Table 7. Our sample of 267 Chapter 11 cases were filed in 33 different bankruptcy courts and were overseen by 82 different judges. For each F-test we report the value of the F-statistic and, in parentheses, the p-value and the number of constraints in the F-test.

The results in Table 12 provide no basis for arguing that court- and judge-specific variation drive DIP-loan pricing. Specifically, when adding court fixed effects to the full regression model in Panel B, the

[25]Bankruptcy judges work in 94 US bankruptcy districts across the United States. A firm filing for bankruptcy may choose to file where it is (1) headquartered, (2) incorporated, or (3) does most of its business. Once a filing is made in a particular district court, judge assignment is random (Bernstein, Colonnelli, and Iverson, 2019; Iverson, Madsen, Wang, and Xu, 2019).

adjusted R^2 for LIBOR spread and AISD is 0.329 and 0.255, respectively, neither of which are greater than the adjusted R^2 without court fixed effects (0.340/0.275 in the first line). Similarly, the adjusted R^2 for LIBOR spread and AISD is 0.323 and 0.214, respectively, when judge fixed effects are included instead, again with the same empirical conclusion as for the court fixed effect regressions. Also, while not tabulated, the coefficients on other explanatory variables do not change after adding either court or judge fixed effects. Also untabulated, the indicator variables for Delaware (40% of the cases) and NYSD courts (26% of the cases)—and measures of judge judicial experience (Iverson, Madsen, Wang, and Xu, 2019)—have no effect on loan spreads when they are included in the regressions of Table 7. In sum, variations in courts and judges do not matter much for DIP-loan pricing.

8 Why do DIP-loan providers earn rents?

Taken at face value, our evidence that DIP loans are nearly risk-free in terms of payment default—while spreads and fees substantially exceed even those in high-risk leveraged loans by the same companies prior to filing for bankruptcy—seems like *bona fide* evidence of rent extraction by the super-priority lenders. When a prepetition lender provides the DIP loan, it likely had the legal right to block competition from other potential providers—effectively locking the debtor in a bilateral monopoly situation where debtor survival is on the line. Hence, prepetition DIP-loan providers are in a particularly strong position to extract rents. The apparent exploitation of debtors by strong prepetition DIP-loan providers may also be rooted in their informational advantage relative to potential outside lenders (Schenone, 2010; Li, Lu, and Srinivasan, 2019).[26]

When a debtor obtains its DIP loan from new (outside) lenders, however, there is no such legal barrier to entry among potential DIP-loan providers. In this case, the prepetition lender either did not have the blocking right, or it has rescinded that right to permit the debtor to bring in outside lenders.[27] As the debtor works to encourage bids from new lenders, it is natural to expect that these lenders will be subject to competition. Hence, the evidence of rent extraction also by new lenders is much more difficult to explain. The high loan spreads charged by new lenders may be rooted in an agency problem—a failure of the bankrupt firm's management team to organize a *bona fide* auction among new potential lenders

[26] In Bharath, Dahiya, Saunders, and Srinivasan (2011), lenders instead use their informational advantage to preserve long-term lending relationships. This is unlikely in our setting where the lender's time horizon is cut short by bankruptcy.

[27] Some prepetition banks are excluded from providing DIP loans due to regulatory constraints on risk capital.

coupled with a willingness to accept supra-competitive loan terms. Alternatively, new lenders may earn a form of quasi-rents as compensation for their specialized skill to pick a debtor and structure the DIP-loan contract so that it effectively becomes nearly risk-free. We discuss these two alternative explanations next.

First, do CEOs of bankrupt firm aide DIP-loan providers by accepting supra-competitive spreads and fees? In other words, are the high spreads and fees a manifestation of an agency problem within the debtor—perhaps reflecting a CEO personal continuation bias? While this explanation cannot be ruled out, recent studies on enforcement of creditor rights makes it an unlikely explanation. These studies generally document a shift over the past two decades towards strong creditor control over the management of financially distressed firms. This shift is reflected in observations ranging from high CEO turnover around bankruptcy (Nini, Smith, and Sufi, 2012; Eckbo, Thorburn, and Wang, 2016) to improved corporate governance while in bankruptcy (Li and Wang, 2016). Also, Goyal and Wang (2017) show that incentive contracts offered to managers in bankruptcy tie their bonuses to creditors' recovery and asset sales, which may directly benefit creditors. These findings suggest that the interests of management and creditors tend to be aligned in bankruptcy.

Second, the high spreads and fees paid to new lenders may represent a return to certain DIP-loan providers' unique ability to control loan risk. While it is not possible to entirely rule out this explanation either, it does not seem likely. Recall that the standard design of the DIP-loan contract (super-priority, fully collateralized, milestones, etc.) effectively separates the risk of the borrower's assets from that of the DIP-loan contract. While the true value of the borrower's assets is uncertain, it is unclear how much skill is actually required to assess collateral value *ex ante*: The typical DIP-loan amount in our sample represents only about 15% of the bankrupt firms' book assets (median 11%, see Table 3). Hence, the downside risk facing a prospective DIP lender may be adequately curtailed by simply keeping the loan-to-assets ratio low based on observable balance sheet data—thus requiring little in the way of unique valuation skill to be willing to provide the loan.

Yet another type of skill may be to ensure full repayment of principal and interest *ex post*. Full repayment may require monitoring during the bankruptcy process and certain expertise in fending off potential legal challenges to the repayment itself. As to monitoring costs, recall that the DIP-loan spreads substantially exceed the spreads on the more risky leveraged loans obtained by the Chapter 11 firms three years prior to their bankruptcy. Monitoring costs, which increase with the term of the loan, are likely

much lower for DIP loans than for leveraged loans, both because of the short term (ten months on average versus five years for leveraged loans) and because DIP-loan providers receive monthly—and sometimes weekly—updates about budget and cash positions (Tung, 2014), in contrast to quarterly reporting by firms outside bankruptcy. A debtor is also required to notify its lender should specific negative events occur. Thus, it is difficult to justify the high spreads awarded to new lenders as compensation for monitoring costs.[28]

As to the ability of DIP-loan providers to enforce their contractual rights, there is evidence that high creditor-ownership concentration is associated with more efficient loan renegotiation outcomes (Demiroglu and James, 2015). Since DIP loan ownership is generally more highly concentrated than are leveraged loans (held by CLOs and mutual funds), DIP-loan providers likely face lower—not higher—costs of forcing loan recovery than do holders of leveraged loan.[29]

Finally, skilled new lenders may be able to detect and avoid particularly complex bankruptcy cases. One form of complexity is simply time pressure—little time for due diligence and closing the deal. We do not have data on the length of time given to new DIP lenders in our sample (anecdotal evidence suggests everything from several months to mere weeks). However, the Chapter 11 firms themselves tend to state the exact opposite in their motions for financing. Another source of complexity may arise from financial fraud committed by the debtor and from the number of claim classes. In untabulated analysis, we add two indicator variables constructed to reflect these two types of risk, constructed from Securities and Exchange Commission (SEC) Accounting Auditing Enforcement Releases and confirmed reorganization/liquidation plans, respectively. Inclusion of these two variables in our regressions in Panel B of Table 8 produces an interesting result: Bankrupt firms that committed financial fraud and that have a large number of claim classes are more likely to obtain DIP financing from prepetition traditional lenders than from new lenders. While this is evidence of selection by either prepetition or new lenders, it does not require unique selection skill as the information on fraud and claim classes is likely made readily available by the debtor when negotiating a DIP loan.

[28]Given their informational advantage, monitoring costs are likely smaller for prepetition DIP-loan providers than for new lenders. Consistent with this conjecture, in untabulated results we find that upfront fees in DIP-loans provided by new lenders 50–100 bps higher than for prepetition lenders. We also find that large loans call for more syndication effort and are positively associated with upfront fees.

[29]Appendix B provides a glimpse of the recovery process of six impaired cases in our sample. Three cases were converted to Chapter 7, constituting technical defaults, and DIP lenders were paid in full upon liquidation (In two of those cases, DIP lenders were to credit-bid the collateral). For another three cases, including General Motors (GM) where the government credit-bid the best assets out of the old GM to pay off DIP loans, and paid DIP lenders with stock not cash.

9 Conclusion

After filing for Chapter 11 bankruptcy, it takes large firms an average of sixteen months to restructure debt obligations and emerge as a going concern. With little cash at hand at filing, many firms need an infusion of new debt capital in order to fund the continued operations while in bankruptcy. The standard debt instrument for this purpose is a DIP loan. In this paper, we present new and striking evidence of rent extraction by DIP lenders.

With an unprecedented large sample of 269 DIP loan packages containing 393 facilities—and detailed information on debt-contract design—we show that DIP loans are fully collateralized, have super-priority, and often allow lenders to roll up their prepetition secured claims into the DIP loan. We then show that DIP loans are *nearly risk-free*, with only a *single* economic default (with less than full recovery of both principal and interest) going back to 1988 (a default rate of 0.13% or lower).

Notwithstanding the near-zero likelihood of less than full recovery, we show that DIP loans in our sample carry annual interest spreads and fees that substantially exceed *high-risk* unsecured leveraged loans by an average of 235 bps. The spread and fee premiums add $4.2 billion to the borrowing costs for the Chapter 11 firms. This evidence shows that DIP lenders—super-priority lenders of last resort—engage in a form of rent extraction not seen elsewhere in the US credit markets—and with court approval: Junior claimholders contest loan terms in 62% of our sample DIP loans, but to little avail.

While it comes as no surprise that borrowers desperate for working capital are willing to pay supra-competitive DIP-loan prices, a central question is why competition among lenders fails to bring down spreads. To answer this question, we split the DIP lenders into two groups. The first group consists of prepetition secured lenders (typically banks) who must consent to granting DIP lenders permission to prime existing collateral (that is, superimpose their loan on the already collateralized assets). Refusing to give consent leaves the firm with no DIP loan unless the prepetition lender provides the loan. Our evidence shows that prepetition DIP lenders, which in our sample supply 75% of the loans, exploit their power to block competition from new lenders by charging exorbitant spreads and fees given the low risk of default.

Even more surprising, the level of rent extraction is no lower when a firm obtains its DIP loan from new lenders, whether banks or HF/PE funds. New lenders may be brought in when collateralizing the DIP loan does not require priming of prepetition lenders, or when the prepetition lenders with blocking

power agree to let new lenders provide the DIP loan. In these cases, one would expect competition among prospective DIP-loan providers to lower spreads relative to DIP loans provided by prepetition lenders. Instead, we document the opposite: While there is no evidence that DIP loans provided by new lenders face a greater risk of default, loan spreads are no lower for new bank lenders, and significantly *higher* when the new lender is a HF or PE fund.

Finally, we discuss arguments suggesting that there may exist unobservable costs that justify exorbitant DIP-loan terms to *new* (outside) DIP-loan providers. For example, DIP-loan monitoring may be extraordinarily expensive. However, the opposite seems to be true as DIP loans explicitly facilitate frequent (monthly if not weekly) reporting, which lowers monitoring costs relative to the more risky leveraged loans. Also, it is possible that uniquely skilled new DIP-loan providers self-select their lending so as to make the loans look risk-free *ex post*. However, this argument cannot explain the fact that DIP-loan spreads charged by sophisticated financial institutions exceed those on high-risk leveraged loans provided to the same Chapter 11 firms just three years prior to their bankruptcy filing. We do, however, find that more complex DIP loans—measured using financial fraud and the number of claim classes are less likely to be provided by new DIP lenders.

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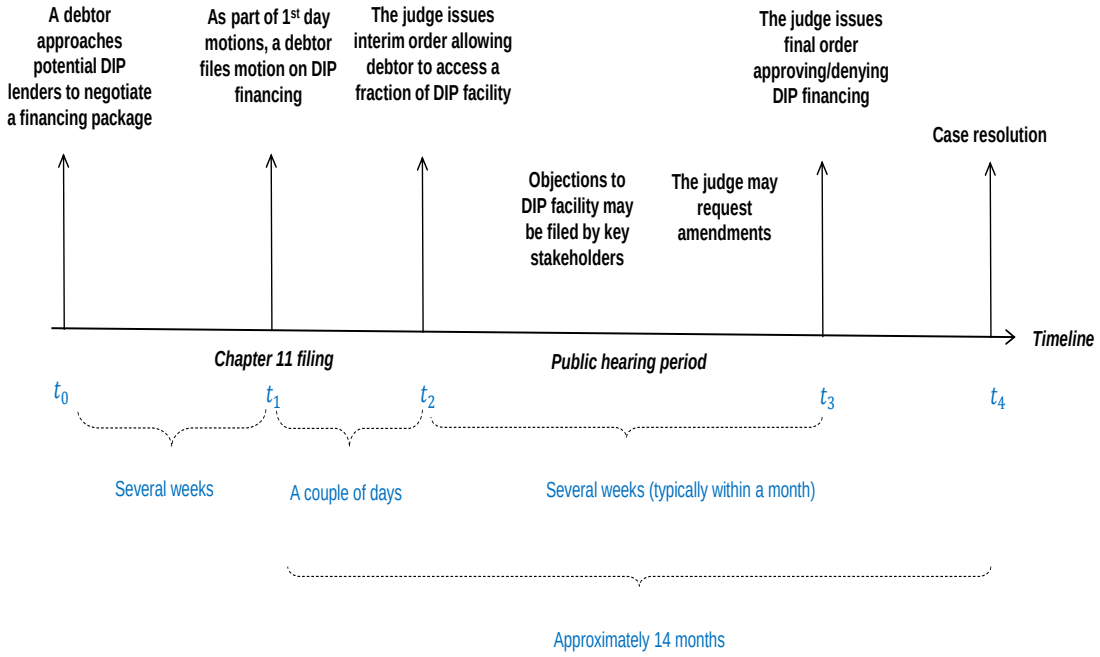
Figure 1: **Timeline of DIP loan approval process in Chapter 11**

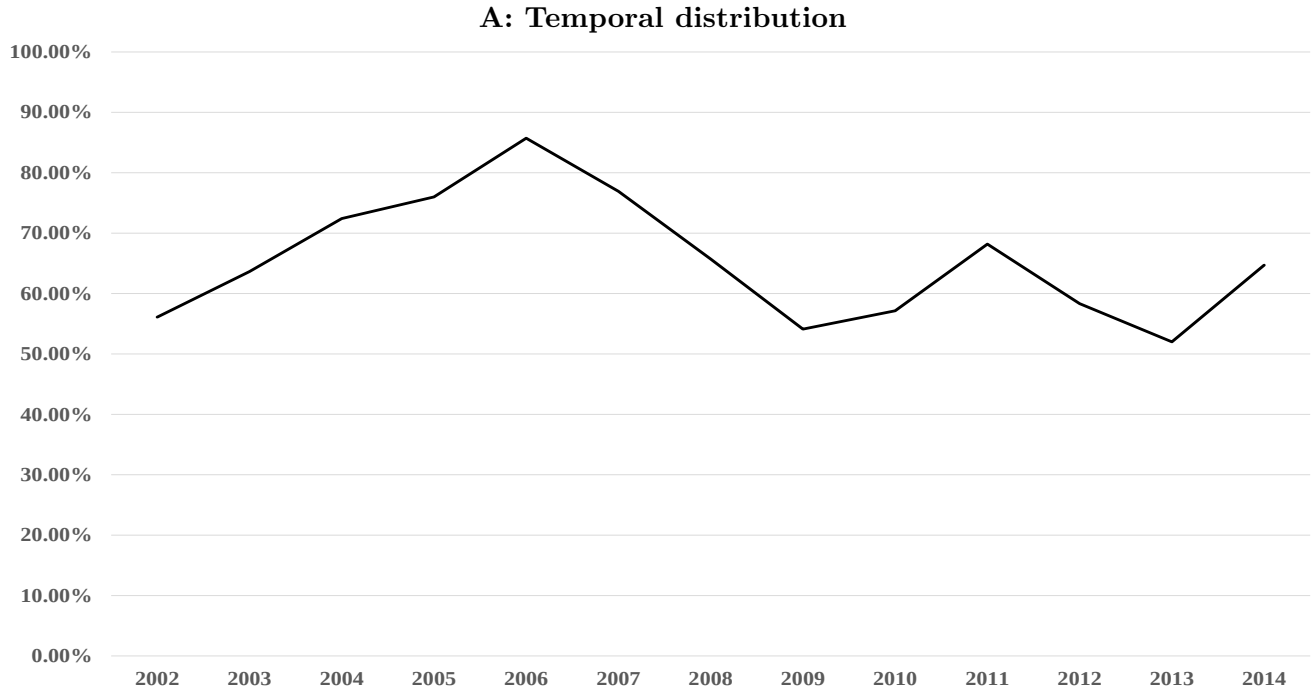
The debtor negotiates a DIP loan (between $t_0 - t_1$) and files a motion for court approval of the loan when filing for Chapter 11 bankruptcy (t_1). The judge issues an interim order (t_2) allowing time for objections before final order (t_3). DIP loans are typically fully repaid within ten months (between $t_1 - t_4$).



1

Figure 2: **Temporal and industry distribution of our sample firms**

This figure presents the temporal and Fama-French (FF) 12-industry distribution of the sample of 454 Chapter 11 firms with data on whether they obtain DIP financing, 2002–2014. Of the 454 firms, 281 obtained DIP loans and 173 firms did not. Panel A shows the annual percentage of the total sample that received DIP loans. Panel B shows the FF 12-industry frequency distribution of the firms with and without DIP loans.



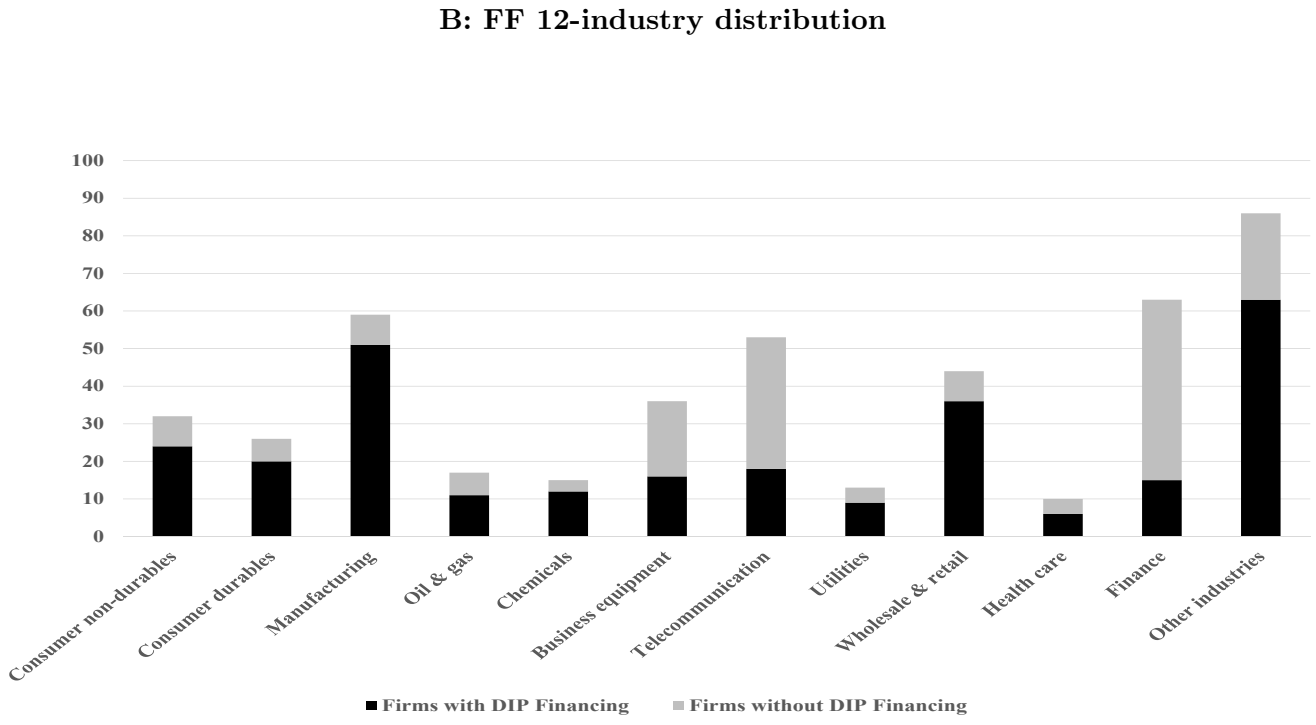


Figure 3: Annual average loan spreads for DIP loans and leveraged loans

The figure shows annual average LIBOR spreads and all-in spread drawn (AISD) for our sample of DIP loans, 2002–2014, and for leveraged loans in Dealscan over the same period. LIBOR spread is quoted as the spread over 3-month LIBOR. AISD is the sum of LIBOR spread and annual fee.

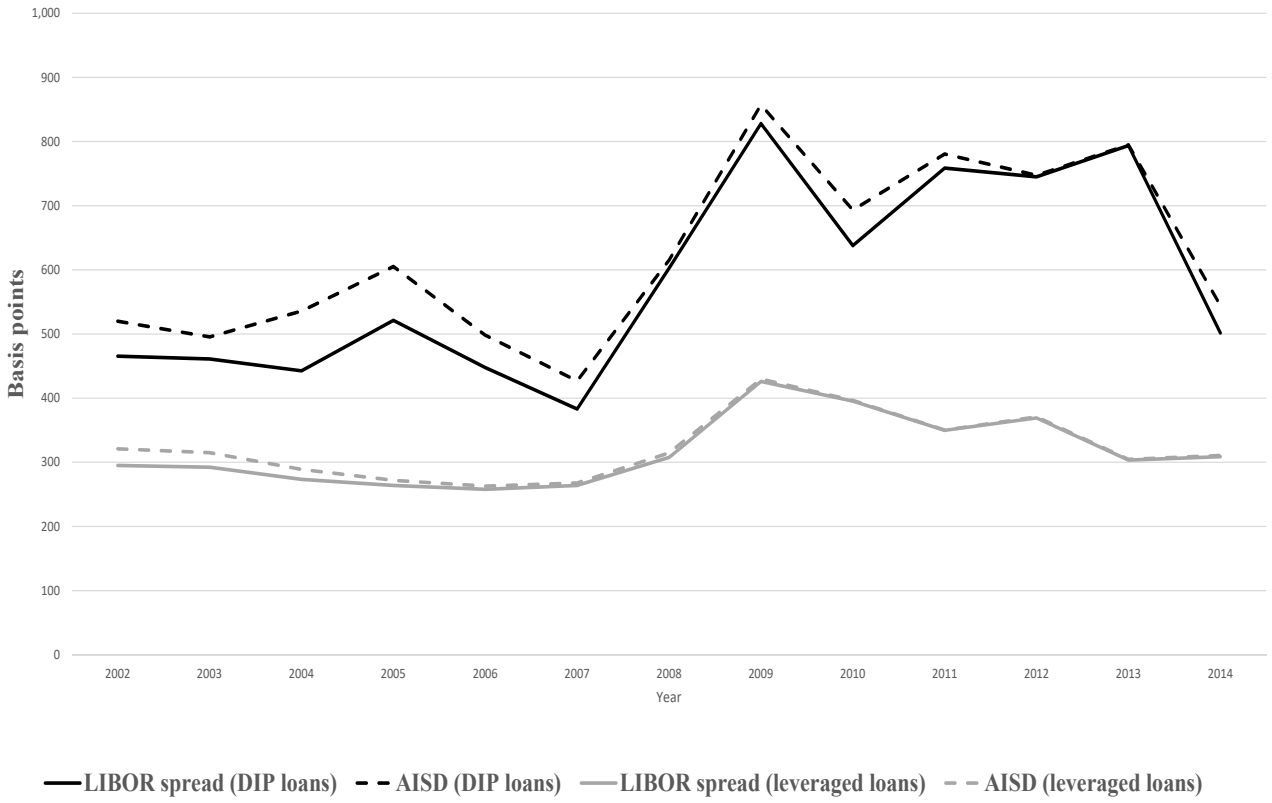
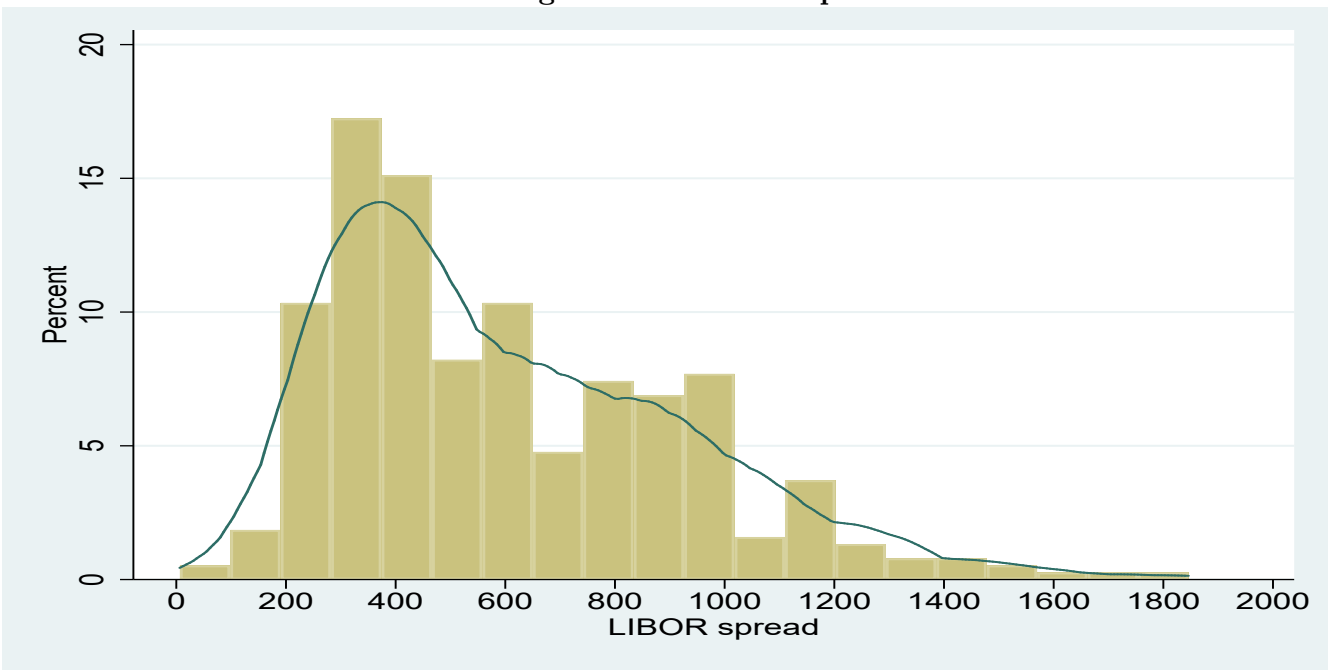


Figure 4: **Frequency distribution of loan spreads for DIP loans and matched leveraged loans**

This figure shows the frequency distributions of LIBOR spreads in the sample of DIP loans (Panel A), and for industry- and size-matched leveraged loans in Dealscan (Panel B).

A: Histogram of DIP-loan spreads



B: Histogram of matched leveraged-loan spreads

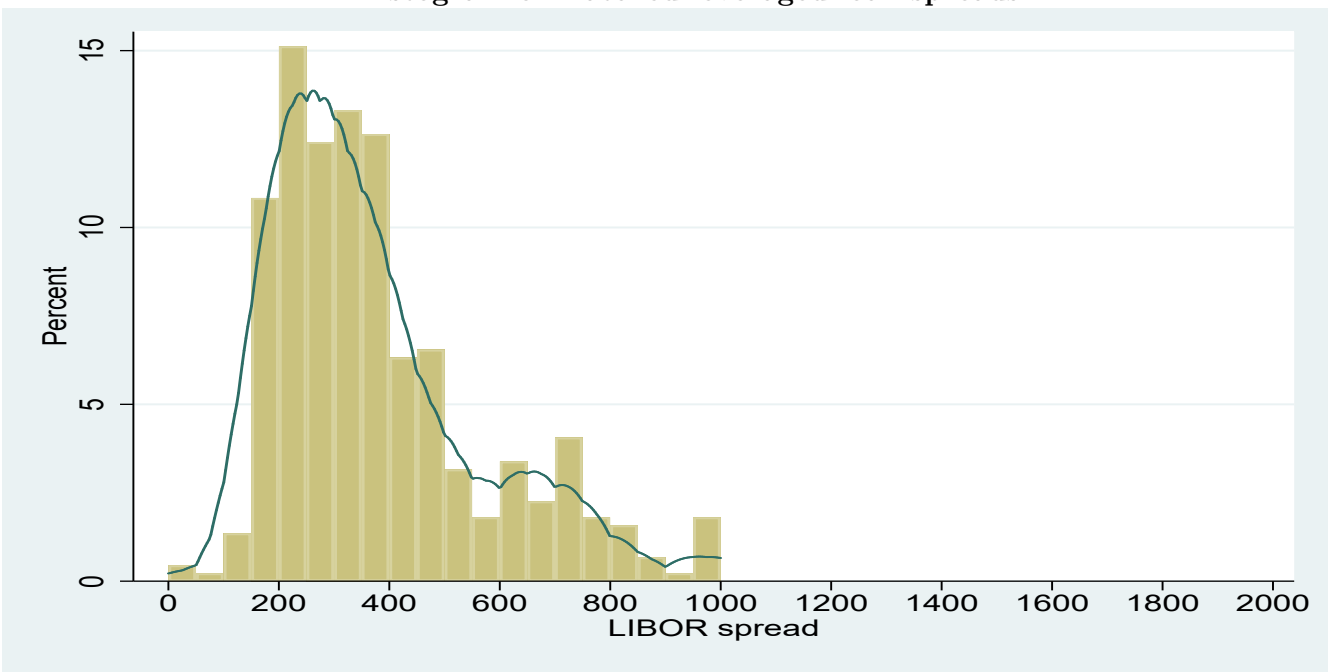


Table 1: **Variable definitions**

Variable name	Definition
A: Firm characteristics	
Assets ($m)	Book assets measured as of the last fiscal year before Chapter 11 filing
Size	Log (assets)
Liabilities ($m)	Book liabilities measured as of the last fiscal year before Chapter 11 filing
Sales ($m)	Sales in millions of dollars measured as of the last fiscal year before Chapter 11 filing
Employees	Number of employees measured as of the last fiscal year before Chapter 11 filing
ROA	EBITDA/assets
Leverage	Liabilities/assets
Cash	Cash and short-term investments/assets
Tangibility	net PP&E/assets
Industry distress	Indicates whether median sales growth of 2-digit SIC industry peers is $< -5\%$
Post-Lehman (1Y)	Indicates whether Chapter 11 filing is between 08/15/2008 and 08/15/2009
Bank loan	Amount of outstanding bank loans at bankrupt filing scaled by book assets
B: Chapter 11 characteristics	
Delaware	Indicates whether case is filed in Delaware
NYSD	Indicates whether case is filed in Southern District of New York
Prepack	Indicates whether case is prepackaged
Emergence	Indicates emerged from Chapter 11
Liquidation/conversion	Indicates Chapter 11 liquidation or Chapter 7 conversion
Acquisition	Indicates whether Chapter 11 firm is sold as a whole
Pending/dismissed	Indicates whether case is pending as of March 31, 2016 or dismissed
Months in bankruptcy	Number of months from date of filing to date of plan confirmation
C: Package size	
DIP amount (interim) ($m)	Amount of DIP loan package approved by interim order
DIP amount (final) ($m)	Amount of DIP loan package approved by final order
DIP amount (interim)/DIP amount (final)	Amount of DIP loan package approved by interim order/amount of DIP loan package approved by final order
DIP amount (final)/assets	Amount of DIP loan package approved by final order/assets
DIP amount (final)/liabilities	Amount of DIP loan package approved by final order/liabilities
D: Facility type	
Multiple facility	Indicates whether DIP loan package includes multiple facilities
Revolver (including LOC)	Indicates whether revolver facility is included in the package
Term loan	Indicates whether term loan facility is included in the package
E: Loan maturity	
Maturity	Maturity in number of months
Maturity tied to plan confirmation or asset sale	Indicates whether DIP loan matures upon plan confirmation or sale of substantially all assets through Section 363
F: Seniority	
Super-priority (364c(1))	Indicates whether DIP loan carries super-priority (Section 364c(1))
First/second lien (364c(2)(3))	Indicates whether DIP loan is given first lien on unencumbered collateral or junior lien on encumbered assets (Section 364c(2) & 364c(3))

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Variable name	Definition
Priming lien (364(d))	Indicates whether DIP loan has a first lien on encumbered assets (Section 364d)
G: Roll-up	
Roll-up	Indicates whether DIP loan package includes at least one roll-up facility. Roll-ups allow DIP lenders to convert all or a portion of their existing prepetition secured debt into post-petition DIP loans
Roll-up amount ($m)	Amount of roll-up facility in millions of dollars
Roll-up amount/DIP amount (final)	Roll-up amount/DIP amount (final order)
H: Use of proceeds (UoP)	
UoP–Working capital	Indicates whether use of proceeds includes working capital
UoP–Prepetition	Indicates whether use of proceeds includes paying pre-petition debt (interest or principal), expenses that occurred before filing (e.g. property tax, employee wages, etc.), and other types of payment such as repurchase of receivables sold to third parties
UoP–Postpetition	Indicator on whether use of proceeds includes paying post-petition debt expenses, professional fees, and other bankruptcy related expenses
I: Covenants	
Affirmative or negative covenants	Indicates whether DIP loan has affirmative or negative covenants
Financial covenants	Indicates whether DIP loan has financial covenants
Liquidity/cash	Indicates whether DIP loan has covenants tied to liquidity/cash condition
EBITDA level	Indicates whether DIP loan has financial covenants tied to EBITDA level
Debt/EBITDA	Indicates whether DIP loan has financial covenants tied to Debt/EBITDA
Coverage ratio	Indicates whether DIP loan has financial covenants tied to interest coverage
Capex or production	Indicates whether DIP loan has covenants tied to Capex or production level
Plan confirmation	Indicates whether DIP loan has covenants tied to plan confirmation
Governance or management	Indicates whether DIP loan has covenants tied to governance or management
J: Mandatory prepayment	
Asset sale sweep	Indicates whether prepayment is required if there is asset sale
Debt issuance sweep	Indicates whether prepayment is required if there is new debt issuance
Extra cash sweep	Indicates whether prepayment is required if there is extra cash on balance sheet
K: Milestones	
Loss of automatic stay or exclusivity	Indicates whether it is an event of default to have automatic stay lifted or lose exclusivity of filing a plan
Appointment of trustee or examiner	Indicates whether it is an event of default to have a trustee or examiner appointed by court
363 bidding procedure and sale approval	Indicates whether the debtor is required to have order approving the bidding procedure for a sale of substantially all of debtor's assets and order approving the sale entered by certain dates
Plan and disclosure statement filing and approval	Indicates whether the debtor is required to have plan and disclosure statement filed and approved by certain date
Chapter 7 conversion or case dismissal	Indicates whether it is an event of default when case is converted to Chapter 7 or dismissed
Change of control	Indicates whether it is an event of default when there is a change of control (except for change by plan)
Appointment of key personnel	Indicates whether DIP contract requires debtor to hire specific key personnel such as chief restructuring officers

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Variable name	Definition
Releases	Indicates whether DIP contract requires debtor to release any claims that it may have against DIP lenders
L: DIP lender	
Prepetition traditional lenders	Indicates whether DIP financing is provided by prepetition lead loan lenders, secured debtholders, bond holders that are not hedge funds or private equity funds
Prepetition HF/PE lenders	Indicates whether DIP financing is provided by prepetition lead loan lenders, secured debtholders, bond holders that are also hedge funds or private equity funds
New traditional lenders	Indicates whether DIP financing is provided by non-prepetition lead lenders that are not hedge funds or private equity funds
New HF/PE lenders	Indicates whether DIP financing is provided by non-prepetition lead lenders that are hedge funds or private equity funds
M: Spreads and fees	
LIBOR spread	Interest charged on a facility as a spread over the London Interbank Offered Rate (LIBOR) in basis points. When interest is expressed as a spread over a different reference rate other than LIBOR such as US Prime rate or Federal Funds rate, the spread is converted to LIBOR spread using the difference between three-month LIBOR rate and the quoted reference rate in the month of final approval of DIP financing
Fixed rate	Fixed rate charged on a facility, reported for those facilities whose interest rates are quoted as a fixed rate
Upfront fee	Fee charged upon closing of a loan in basis points. Upfront fee can include various components such as closing fee, underwriting fee, arranger fee, agent fee, issue discount, etc. Following Dealscan definition and practice, if an upfront fee is assessed for a multi-facility package, then the fee is expressed on each part of the package as a fee on the percentage of borrowings allowed. However, if an upfront fee is charged on the entire amount available, we put the fee only on revolving credit (not on term loan)
Annual/facility fee	Annual charge against entire commitment amount, whether used or unused
Commitment fee	Fee charged on commitment amount that is unused
All-in spread drawn (AISD)	Sum of LIBOR spread and annual fee
All-in spread undrawn (AISU)	Sum of annual fee and commitment fee

Table 2: Summary statistics of Chapter 11 firms with and without DIP loans

This table compares firm and case characteristics of the 267 Chapter 11 firms with and the 173 Chapter 11 firms without DIP financing. The Chapter 11 cases are retrieved from the UCLA-LoPucki Bankruptcy Research Database, 2002–2014. p-values from a t-test of the difference in the mean and a ranksum test of the difference in the median are presented. Variable definitions are in Table 1.

	Firms with DIP loans			**Firms without DIP loans**			**p-value for differences**	
	N	Mean	Median	N	Mean	Median	in means	in medians
A: Firm characteristics								
Assets ($m)	267	3,713	686	173	9,063	869	0.144	0.440
Liabilities ($m)	267	3,823	779	173	8,857	935	0.158	0.189
Sales ($m)	252	2,941	828	164	1,826	410	0.253	0.000
Employees	258	10,474	3,327	170	4,043	1,359	0.003	0.000
ROA	250	0.043	0.054	162	-0.011	0.016	0.002	0.001
Leverage	250	1.059	0.961	164	1.102	0.966	0.462	0.880
Cash	252	0.054	0.031	164	0.128	0.077	0.000	0.000
Tangibility	250	0.370	0.336	162	0.295	0.207	0.005	0.001
Industry distress	267	0.187	0.000	173	0.150	0.000	0.317	0.317
Post-Lehman (1Y)	267	0.172	0.000	173	0.220	0.000	0.219	0.217
Bank loan	267	0.270	0.186	173	0.246	0.104	0.489	0.003
B: Chapter 11 characteristics and outcome								
Delaware	267	0.427	0.000	173	0.364	0.000	0.190	0.190
NYSD	267	0.277	0.000	173	0.225	0.000	0.195	0.195
Prepack	267	0.281	0.000	173	0.254	0.000	0.541	0.541
Emergence	267	0.659	1.000	173	0.509	1.000	0.002	0.002
Liquidation/conversion	267	0.225	0.000	173	0.405	0.000	0.000	0.000
Acquisition	267	0.082	0.000	173	0.052	0.000	0.225	0.225
Pending/dismissed	267	0.037	0.000	173	0.064	0.000	0.210	0.209
Months in bankruptcy	257	13.582	10.267	167	12.573	10.200	0.295	0.330

Table 3: Summary statistics of DIP-loan packages in our sample

This table presents summary statistics of the initial 269 DIP-loan packages issued to the 267 Chapter 11 firms in our sample, 2002–2014. Variable definitions are in Table 1.

Variable	N	Mean	std	25th	Median	75th
A: Package size						
DIP amount (interim) ($m)	229	231	1,162	15	40	125
DIP amount (final) ($m)	269	377	2,114	35	80	225
DIP amount (interim)/DIP amount (final)	229	0.535	0.297	0.292	0.500	0.782
DIP amount (final)/assets	269	0.147	0.140	0.048	0.105	0.199
DIP amount (final)/liabilities	269	0.153	0.156	0.049	0.105	0.193
B: Loan type						
Multiple facility	269	0.368	0.483	0	0	1
Revolver	269	0.888	0.315	1	1	1
Term loan	269	0.383	0.487	0	0	1
C: Loan maturity						
Maturity	250	10.114	6.704	6	9	12
Maturity tied to plan confirmation or asset sale	269	0.636	0.482	0	1	1
D: Seniority						
Super-priority (364c(1))	268	1.000	0.000	1	1	1
First/second lien (364c(2)(3))	268	0.993	0.086	1	1	1
Priming lien (364(d))	268	0.828	0.378	1	1	1
E: Roll-up						
Roll-up	267	0.221	0.416	0	0	0
Roll-up amount ($m)	50	208.912	467.700	30	86	200
Roll-up amount/DIP amount (final)	50	0.480	0.230	0.311	0.500	0.610
F: Use of proceeds (UoP)						
UoP-Working capital	264	0.981	0.137	1	1	1
UoP-Prepetition	264	0.580	0.495	0	1	1
UoP-Postpetition	264	0.492	0.501	0	0	1
G: Covenants						
Affirmative or negative covenants	248	0.984	0.126	1	1	1
Financial covenants	243	0.848	0.360	1	1	1
Liquidity/cash	243	0.527	0.500	0	1	1
EBITDA level	243	0.547	0.499	0	1	1
Debt/EBITDA	243	0.095	0.293	0	0	0
Coverage ratio	243	0.156	0.364	0	0	0
Capex and production	243	0.539	0.499	0	1	1
Plan confirmation	243	0.058	0.233	0	0	0
Governance and management	243	0.070	0.256	0	0	0
H: Mandatory prepayment						
Asset sale sweep	254	0.406	0.492	0	0	1
Debt issuance sweep	254	0.165	0.372	0	0	0
Extra cash sweep	254	0.051	0.221	0	0	0
I: Milestones						
Loss of automatic stay or exclusivity	247	0.713	0.453	0	1	1
Appointment of trustee or examiner	247	0.826	0.380	1	1	1
363 bidding procedure and sale approval	247	0.130	0.336	0	0	0
Plan and disclosure statement filing and approval	247	0.664	0.473	0	1	1
Chapter 7 conversion or case dismissed	247	0.931	0.254	1	1	1
Change of control	247	0.684	0.466	0	1	1
Appointment of key personnel	247	0.178	0.383	0	0	0
Releases	247	0.162	0.369	0	0	0
J: DIP lender						
Prepetition taditional lenders	269	0.580	0.494	0	1	1
Prepetition HF/PE lenders	269	0.171	0.377	0	0	0
New traditional lenders	269	0.197	0.398	0	0	0
New HF/PE lenders	269	0.052	0.223	0	0	0

Table 4: **Summary statistics of DIP-loan facilities in our sample**

This table presents summary statistics of the 393 DIP-loan facilities within the initial 269 DIP-loan packages issued to the 267 Chapter 11 firms in our sample, 2002–2014. Variable definitions are in Table 1.

	N	Mean	SD	Min	25th	Median	75th	Max
A: Facility type								
Revolver	393	0.690	0.463	0	0	1	1	1
Term loan	393	0.308	0.462	0	0	0	1	1
B: Facility size								
Facility amount ($m)	390	259.959	1729.621	0.700	30.000	65.000	175.000	33300.000
Facility amount/assets	390	0.102	0.102	0.000	0.032	0.072	0.133	0.610
C: Spreads								
LIBOR spread	377	604.094	319.963	6.400	350.000	526.200	800.000	1845.800
Fixed rate	52	1023.769	429.933	350.000	662.500	1050.000	1294.000	2000.000
D: Fees								
Upfront fee	352	99.897	137.765	0.000	0.000	25.000	188.384	1071.429
Annual fee	352	43.013	109.268	0.000	0.000	0.000	5.000	850.000
Commitment fee	352	84.043	132.464	0.000	0.000	50.000	100.000	1000.000
All-in spread drawn (AISD)	340	639.927	325.830	50.000	366.250	562.450	850.000	1845.800
All-in spread undrawn (AISU)	352	127.055	171.060	0.000	0.000	50.000	199.206	1000.000

Table 5: Comparing DIP loans with industry- and size-matched leveraged loans

This table compares the DIP loans in our sample and their industry- and size-matched leveraged loans in Dealscan. For each Chapter 11 firm in our sample, we find a non-bankrupt leveraged loan borrower in the year of bankruptcy filing that is in the same FF 12-industry and has the closest book assets. There are 267 matched leveraged loan borrowers for 267 DIP loan borrowers. The top part of the table compares firm characteristics of the two sets of firms and presents p-values from a t-test of the difference in the mean and a ranksum test of the difference in the median. The bottom part of the table compares key characteristics of the 393 DIP-loan facilities to the 267 DIP loan borrowers in our sample with those of the 481 facilities to the matched 267 leveraged loan borrowers. Variable definitions are in Table 1.

	DIP loans		**Matched leveraged loans**		**Difference**	
	Mean (1)	Median (2)	Mean (3)	Median (4)	p-value (1)-(3)	p-value (2)-(4)
A: Firm characteristics	**N = 267**		**N = 267**			
Assets	3712.904	686.321	3630.891	677.056	0.933	0.984
Log (assets)	6.969	6.533	6.965	6.519	0.974	0.984
ROA	0.043	0.054	0.108	0.103	0.000	0.000
Leverage	1.059	0.961	0.797	0.711	0.000	0.000
Cash	0.054	0.031	0.091	0.047	0.000	0.002
Tangibility	0.370	0.336	0.334	0.306	0.097	0.102
Industry distress	0.187	0.000	0.056	0.000	0.000	0.000
B: Facility characteristics	**N = 393**		**N = 481**			
Revolver	0.690	1.000	0.549	1.000	0.000	0.000
Term loan	0.308	0.000	0.455	0.000	0.000	0.000
Facility amount	259.959	65.000	246.744	105.000	0.873	0.000
Facility amount/assets	0.102	0.072	0.171	0.101	0.000	0.000
Maturity	10.623	9.000	44.427	48.000	0.000	0.000
C: Spreads and fees						
LIBOR spread	604.094	526.200	368.607	325.000	0.000	0.000
Upfront fee	99.897	25.000	49.841	0.000	0.000	0.000
Annual fee	43.013	0.000	6.261	0.000	0.000	0.000
Commitment fee	84.043	50.000	36.683	37.500	0.000	0.000
AISD	639.927	562.450	382.761	325.000	0.000	0.000
AISU	127.055	50.000	60.888	50.000	0.000	0.081

Table 6: **Comparing DIP loans with loans by the same firm before Chapter 11 filing**

This table compares key characteristics of the 393 DIP-loan facilities in our sample with those of facilities issued to the same bankrupt firm within three years of Chapter 11 filing (454 facilities) and those of facilities issued within one year of Chapter 11 filing (124 facilities). p-values from a t-test of the difference in the mean and a ranksum test of the difference in the median are presented. Variable definitions are provided in Table 1.

	DIP facilities	**Facilities within three years before Chapter 11 filing**	**Facilities within one year before Chapter 11 filing**		
	N = 393	**N = 454**	**N = 124**	**p-value**	**p-value**
	(1)	(2)	(3)	(1)-(2)	(1)-(3)
A: Mean values					
Revolver	0.690	0.548	0.540	0.000	0.002
Term loan	0.308	0.456	0.460	0.000	0.002
Facility amount	259.959	372.827	389.444	0.224	0.442
Facility amount/assets	0.102	0.129	0.103	0.002	0.889
Maturity	10.623	46.317	42.067	0.000	0.000
Spreads and fees:					
LIBOR spread	604.094	349.014	452.245	0.000	0.000
Upfront fee	99.897	31.054	34.083	0.000	0.000
Annual fee	43.013	3.660	1.222	0.000	0.000
Commitment fee	84.043	30.248	34.215	0.000	0.000
AISD	639.927	363.102	467.105	0.000	0.000
AISU	127.055	48.813	57.369	0.000	0.003
B: Median values					
Facility amount	65.000	150.000	130.000	0.000	0.000
Facility amount/assets	0.072	0.075	0.063	0.067	0.925
Maturity	9.000	48.000	37.000	0.000	0.000
Spreads and fees:					
LIBOR spread	526.200	275.000	400.000	0.000	0.000
Upfront fee	25.000	0.000	0.000	0.000	0.000
Annual fee	0.000	0.000	0.000	0.000	0.000
Commitment fee	50.000	25.000	30.000	0.000	0.006
AISD	562.450	290.000	400.000	0.000	0.000
AISU	50.000	50.000	50.000	0.003	0.343

Table 7: Regressions of DIP-loan spreads on loan facility and borrower characteristics

This table examines the determinants of spreads on industry- and size-matched leveraged loans and on DIP loans focusing on loan facility and borrower characteristics. Columns (1)-(2) report the OLS regression results for matched leveraged loans, and columns (3)-(4) report the OLS regression results for DIP loans. Columns (1) and (3) use LIBOR spread as the dependent variable, and columns (2) and (4) use AISD as the dependent variable. All regressions include FF12-industry fixed effects and year fixed effects. Variable definitions are in Table 1. Robust standard errors clustered at the year level are in brackets. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

	Matched leveraged loans		**DIP loans**	
	LIBOR spread	**AISD**	**LIBOR spread**	**AISD**
	(1)	(2)	(3)	(4)
A: Loan characteristics				
Log (facility amount)	-4.769	-10.411	-43.736***	-31.244
	[10.962]	[10.301]	[14.036]	[19.136]
Revolver	-131.257***	-137.050***	-234.619***	-155.773***
	[17.927]	[21.255]	[43.422]	[42.966]
Maturity	-1.852**	-2.050**	-3.200	-5.025
	[0.673]	[0.715]	[3.584]	[3.334]
Secured	59.900*	40.076	-	-
	[32.397]	[36.131]	-	-
B: Covenants				
Financial covenants	-40.400**	-44.039**	-44.731	-98.354*
	[17.300]	[18.145]	[57.687]	[48.518]
Asset sale sweep	-25.231	-7.545	-3.796	14.797
	[26.181]	[20.201]	[37.524]	[46.055]
Debt issuance sweep	27.334	21.985	42.516	36.886
	[19.170]	[19.040]	[56.875]	[55.128]
Extra cash sweep	22.512	31.808	16.666	68.762
	[27.122]	[25.982]	[97.924]	[101.082]
C: Firm characteristics				
Size	-0.488	1.751	-4.180	-13.582
	[11.102]	[11.848]	[15.962]	[21.068]
ROA	-174.601	-110.969	-279.877**	-322.246***
	[144.781]	[141.130]	[93.085]	[91.997]
Leverage	75.599***	88.808***	-26.232	-18.845
	[23.931]	[23.602]	[17.857]	[19.100]
Cash	-62.404	-70.440	-93.134	-14.700
	[102.464]	[111.231]	[391.709]	[425.497]
Tangibility	17.956	-1.098	-56.214	9.263
	[50.015]	[46.641]	[101.558]	[125.297]
Industry distress	54.666	42.723	15.671	73.202
	[51.788]	[43.835]	[49.667]	[50.902]
FF-12 fixed effects	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes
Observations	421	438	299	272
Adjusted R-squared	0.391	0.379	0.340	0.275

Table 8: **Regressions of DIP-loan spreads on lender types**

Panel A regresses DIP-loan spreads on all lender types, with LIBOR spread as the dependent variable in column (1) and AISD in column (2). The baseline case is prepetition traditional lenders. Both regressions include facility- and firm-level controls as in Table 7, FF12-industry fixed effects, and year fixed effects. Panel B reports logit-estimates that prepetition traditional (bank) lenders provide DIP financing. Variable definitions are in Table 1. Robust standard errors clustered at the year level are in brackets. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

A: All lender types		
	LIBOR spread	AISD
	(1)	(2)
Prepetition HF/PE lenders	103.008***	89.485**
	[45.632]	[38.276]
New traditional lenders	2.376	-19.719
	[75.984]	[69.167]
New HF/PE lenders	224.162***	297.201***
	[87.888]	[107.083]
p-values from F-test		
Prepetition HF/PE lenders = New traditional lenders	0.277	0.196
Prepetition HF/PE lenders = New HF/PE lenders	0.208	0.042
New traditional lenders = New HF/PE lenders	0.135	0.059
Facility- and firm-level controls	Yes	Yes
FF-12 and year fixed effects	Yes	Yes
Observations	299	272
Adjusted R-squared	0.361	0.307

B: Likelihood of prepetition traditional lenders providing the DIP loan	
	Prepetition traditional lenders
	(1)
Size	0.149
	[0.125]
Leverage	-0.114
	[0.243]
ROA	0.269
	[0.961]
Cash	-2.467
	[2.265]
Tangibility	0.272
	[0.653]
Industry distress	0.224
	[0.361]
Bank loan	0.910**
	[0.383]
FF-12 and year fixed effects	Yes
Observations	250
Pseudo R-squared	0.143

Table 9: Effect of a credit supply shock (Lehman Brothers bankruptcy) on DIP-loan spreads

Panel A examines the effect of the Lehman Brothers bankruptcy (on September 15, 2008) on DIP-loan spreads over the year following the bankruptcy. The dependent variable is LIBOR spread in column (1) and AISD in column (2). Both regressions include facility- and firm-level controls as in Table 7, and FF12-industry and year interacted fixed effects. Panel B compares firm characteristics of sample firms filing for bankruptcy in the year following the Lehman-bankruptcy and those of firms filing in other years. Variable definitions are in Table 1. Robust standard errors clustered at the year level are in brackets. ***, **, and * indicate significance at the 1%, 5%, and 10% levels. p-values are from a t-test of the difference in the means in columns (1) and (2).

A: DIP-loan spread regressions

	LIBOR spread	AISD
	(1)	(2)
Post-Lehman (1Y)	290.411***	363.215***
	[52.927]	[40.320]
Facility- and firm-level controls	Yes	Yes
FF-12×year fixed effects	Yes	Yes
Observations	299	272
Adjusted R-squared	0.433	0.343

B: Chapter 11 cases filed within one-year after Lehman bankruptcy versus those filed in other years

	Post-Lehman (1Y)	**Other years**	**p-value**
	(1)	(2)	(1)-(2)
	N = 46	**N = 221**	
Assets ($m)	5,074	3,430	0.374
Liabilities ($m)	7,099	3,142	0.068
Sales ($m)	7,026	2,124	0.009
Employee	13,637	9,788	0.386
ROA	0.019	0.048	0.226
Leverage	1.123	1.047	0.377
Cash	0.051	0.054	0.735
Tangibility	0.397	0.365	0.449
Industry distress	0.435	0.136	0.000

Table 10: **Determinants of the likelihood that DIP loans include roll-up provisions**

This table reports logit-estimates that DIP loans include roll-up provisions. Variable definitions are in Table 1. Robust standard errors clustered at the year level are in brackets. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

	(1) Coefficients	(2) Marginal effects
Prepetition HF/PE lenders	1.324***	0.295
	[0.481]	
Log (facility amount)	0.182	0.035
	[0.195]	
Revolver	-0.405**	-0.081
	[0.204]	
Maturity	-0.081*	-0.016
	[0.044]	
Financial covenants	0.241	0.045
	[0.490]	
Asset sale sweep	0.521*	0.102
	[0.278]	
Debt issuance sweep	-1.500*	-0.222
	[0.788]	
Extra cash sweep	1.480	0.345
	[1.356]	
Size	0.474	0.092
	[0.330]	
ROA	3.593*	0.699
	[2.086]	
Leverage	0.689*	0.134
	[0.358]	
Cash	-0.166	-0.032
	[4.577]	
Tangibility	-1.436	-0.279
	[0.894]	
Industry distress	0.471	0.098
	[0.465]	
FF-12 fixed effects	Yes	
Observations	276	
Pesudo R-squared	0.196	

Table 11: **Objections to DIP-loan terms and their effect on loan spreads**

This table examines objections to DIP-loan terms. Panel A presents the frequency of objections and the identity of the party that raises the objection. Panel B presents the OLS regressions of DIP-loan spreads on the occurrence of DIP objections. Columns (1) and (2) use LIBOR spread, and columns (3) and (4) use AISD, as the dependent variable. DIP objections (Yes/No) is an indicator variable that takes the value of one if at least one party files formal objections on DIP-loan terms to the court, and zero otherwise. Columns (1) and (3) do not include facility- and firm-level controls, and columns (2) and (4) include facility- and firm-level controls as in Table 7. All regressions include FF12-industry fixed effects and year fixed effects. Variable definitions are in Table 1. Robust standard errors clustered at the year level are in brackets.***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

A: The frequency of objections by different parties (N = 269)

DIP objections (Yes/No)	0.617
DIP objections (# of parties)	2.175
Unsecured creditors committees and suppliers	0.539
Equity holders	0.033
US trustee	0.037
Union, workers, pensioners, Pension Benefit Guaranty Corp.	0.019
Other (e.g., municipal government, asbestos claimants)	0.175

B: OLS regressions of DIP loan spreads on objections

	LIBOR spread (1)	LIBOR spread (2)	AISD (3)	AISD (4)
DIP objections (Yes/No)	82.604**	87.005**	90.533**	83.848**
	[32.022]	[32.201]	[35.225]	[37.609]
Facility- and firm-level controls	No	Yes	No	Yes
FF-12 fixed effects	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes
Observations	377	299	340	272
Adjusted R-squared	0.240	0.353	0.206	0.285

Table 12: **Regressions of DIP-loan spreads with court and judge fixed effects**

This table reports F-tests for the joint significance of court (judge) fixed effects (FE) in regressions of DIP-loan spreads. The sample of 267 Chapter 11 cases were filed in 33 different bankruptcy courts and were overseen by 82 different judges. Panel A includes the different fixed effects without control variables, while Panel B also includes the facility- and firm-level controls in Table 7. Numbers in parentheses are the p-value of an F-test for the significance of the court/judge fixed effects and the number of constraints in the F-test, respectively.

	Court and judge fixed effects				
		Court FE	**Judge FE**	**N**	**Adj. R^2**
Panel A: Without controls					
LIBOR Spread	Industry and year fixed effects			377	0.228
	Industry, year, and court fixed effects	0.69 (0.8928, 322)		377	0.206
	Industry, year, and judge fixed effects		0.96 (0.5739, 275)	377	0.181
AISD	Industry and year fixed effects			340	0.192
	Industry, year, and court fixed effects	0.86 (0.6833, 286)		340	0.181
	Industry, year, and judge fixed effects		0.78 (0.4956, 244)	340	0.191
Panel B: With controls					
LIBOR Spread	Industry and year fixed effects			299	0.340
	Industry, year, and court fixed effects	0.89 (0.7111, 235)		299	0.329
	Industry, year, and judge fixed effects		0.93 (0.6903, 197)	299	0.323
AISD	Industry and year fixed effects			272	0.275
	Industry, year, and court fixed effects	0.93 (0.7994, 209)		272	0.255
	Industry, year, and judge fixed effects		0.78 (0.9412, 173)	272	0.214

Appendix

A Excerpts from four DIP motions

Here are some quotes from randomly-selected debtors' motions in recent years as illustrative examples of their need for postpetition financing and justification of DIP-loan requests.

In *Buffets Holdings, Inc*'s motion (filed on January 22, 2008), the company states "Without postpetition financing, the Debtors would be unable to operate their businesses as a going concern, which would significantly impair the value of the Debtors' assets to the detriment of all creditor constituencies.... The Debtors have concluded that adequate alternative financing on terms more favorable than those being provided by the DIP lenders under the DIP Credit Agreement is currently unobtainable. Moreover, the Prepetition Secured Lenders advised the Debtors that they would not consent to the granting of senior or pari passu liens to a new third party debtor-in-possession lender. In the days and weeks prior to the commencement of these cases, the Debtors' financial advisors contacted a number of potential lenders with the capability of providing a facility of the size required. None of the parties contacted were interested in providing such financing. Additionally, no potential lender contacted by the Debtors' investment banker was interested in providing an adequate standalone debtor-in-possession financing facility unless it would be able to prime the liens of the Prepetition Secured Lenders...the terms of DIP Facility are fair, reasonable and adequate."
—*This DIP facility was priced at a LIBOR spread of 725 bps.*

In *Pliant Corp*'s motion (filed on February 11, 2009), the company states "Without the additional financing to be provided by the DIP Facility, the Debtors will not have sufficient liquidity available to ensure the continued operation of their businesses...to maintain business relationships with vendors, suppliers, and customers, to make payroll, to make capital expenditure and to satisfy other working capital and operational needs.... After carefully considering the limited alternatives that were available, the Debtors concluded that the First Lien DIP Facility was the best alternative for the Debtors because...(v) has pricing, in the opinion of the debtors' financial advisors, that is at market."
—*This DIP facility was priced at a LIBOR spread of 1,200 bps.*

In *Trico Marine Services, Inc*'s motion (filed on August 25, 2010), the company states "The ability to obtain sufficient working capital and liquidity through the DIP facility is vital to the preservation and maximization of the value of the Debtors' estates. As a result of, among other things, the Debtors' financial condition and prepetition capital structure, the Debtors have been unable to obtain alternative sources of cash or credit in the form of unsecured credit allowable under Bankruptcy Code §503(b)(1)...prior to the Petition Date, the Debtors and the Debtors' Financial Advisor, Evercore Partners, contacted 23 lending institutions and received eight initial proposals to provide debtor-in-possession financing. Of the proposals made to the Debtors, the DIP Financing Agreement offered by Tennenbaum offers the Debtors the least onerous terms, conditions, and milestones and therefore the greatest degree of flexibility to pursue restructuring alternatives."

—*This DIP facility was priced at a LIBOR spread of 1,150 bps.*

In *School Specialty, Inc*'s motion (filed on January 28, 2013), the company states "...as of the Petition Date, absent the liquidity solution offered by the DIP Facilities proposed by the agents under the debtors' prepetition secured credit facilities, the Debtors would have been required to commence an immediate shut down of their operations and liquidation of their assets to the detriment of their vendors, employees, and all other stakeholders. Instead, the DIP Facilities...permit the Debtors to run a competitive sale process designed to maximize value for their creditors..., the Company logically identified the Prepetition Secured Lenders as the most likely sources of postpetition financing within the time period imposed by the Forbearance Agreements and the Company's rapidly dwindling liquidity position, particularly given the Prepetition Secured Lenders' respective liens on substantially all of the Company's assets, history with the Company, and involvement over the past several months with the Company's restructuring efforts.... Nonetheless, the Company and its advisors approached third parties to ascertain whether or not such third parties would be willing to provide postpetition financing."
—*This DIP facility was priced at a LIBOR spread of 1,400 bps.*

B Six "impaired" DIP loans with full recovery (principal+interest)

DIP amount	Impairment	Final DIP payment
(1) American Business Financial Services 01/21/2005; converted to Chapter 7; recovery 100%+		
$500m credit facility provided by Greenwich Capital Financial Products and other lenders; approved by the judge on March 9, 2005	On April 4, 2005, the debtor publicly announced that a reorganization was not possible. On the same day, the court approved the terms and conditions of a sale of the debtor's fee-producing future servicing rights to Ocwen Loan Servicing, LLC for approximately $21m. On May 13, 2005, Greenwich declared a default on the DIP loan. The bankruptcy case was converted to Ch. 7 in May.	On August 5th, 2008, the judge denied Greenwich Capital's motion for trustee to turn over funds constituting cash collateral to fulfill payment to DIP lenders. DIP lenders had to engage in collection effort involving litigation. Ultimately DIP lenders got paid in full, plus interest and attorneys fees
(2) Hayes Lemmerz International 05/11/2009; Reorganized; recovery 100%+		
$200m in aggregate principal, including two facilities: $100m new money priority term loans (including incremental amount) and $100m roll-up loans, provided by Deutsche Bank AG New York Branch; approved by the judge on June 15, 2009	The DIP claim is treated as impaired but not in default	Under the Plan, the DIP facility will be converted into a secured term loan in the principal amount equal to the outstanding amount and the roll-up facility will be converted into 84.5% of the total amount of all New Common Stock to be issued by Reorganized. All fees and expenses of the DIP agents and DIP lenders, all accrued and unpaid costs and charges on the DIP financing facility, and all unpaid interest on the DIP financing facility will be paid in full in cash.
(3) ION Media Networks 05/19/2009; reorganized; recovery 100%+		
$150m term loan facility provided by Avenue International Master fund and affiliates, Black Diamond and BDCM Opportunity Fund, Canyon Capital Advisors, and Trilogy Portfolio Co.; approved by the judge on July 6, 2009	The DIP claim is treated as impaired but not in default	Upon consummation, the debtor's $150m DIP financing facility will convert into 62.5% of the New Common Stock of Reorganized ION. Based on the projected enterprise (equity) value between approximately $310m to $445m provided by the reorganization plan as of December 31, 2009, the recovery is more than 100% for the DIP loan.

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DIP amount	Impairment	Final DIP payment
(4) General Motors Corporation 06/01/2009; reorganized; recovery 100%+		
$33b term loan provided by US Dept of Treasury and Export Development Canada; approved by the judge on June 25, 2009. As part of the package, the debtor is required to close Section 363 asset sale of majority of its assets by September 15, 2009.	US Treasury and Export Development Canada credit bid assets sold through Section 363 and formed the New GM. The credit bid will also allow the government to retire more than $19b TARP. US Treasury and Export Development Canada owned 60% of New GM on a fully diluted basis.	The first day trading price of New GM stock was $34.26 on November 19, 2010, suggesting a market cap about $50b. This yields 100% recovery for the DIP loan.
(5) Blockbuster 10/27/2010; converted to Ch. 7; recovery 100%+		
The package includes $125m revolving facility and $125m roll-up senior secured notes, provided by senior secured noteholders, including Monarch Alternative Capital LP, Owl Creek Asset Management LP, Stonehill Capital Management, LLC and Varde Partners, Inc.; approved by the judge on October 27, 2010.	Blockbuster has defaulted on its DIP financing facility, which has resulted in the occurrence of both a "Termination Event" and a "Roll-Up Event" under those agreements and the court's order approving the DIP facility. As a result, Blockbuster's DIP lenders have terminated Blockbuster's DIP financing on February 22, 2011	Blockbuster entered into an asset sale process and secured noteholders were identified as stalking horse for a credit bid. The proposed agreement provides for a purchase price of $265m or $290m.
(6) ATP Oil & Gas Corporation 08/17/2012; converted to Ch. 7; recovery 100%+		
$617.6m total principal including $250m term loan facility and $367.6m revolving facility (used to pay off prepetition loan, effectively a roll-up facility). Approved by the judge on October 25, 2012	The Deepwater pipeline construction project in the Gulf of Mexico took longer than expected. ATP was unable to adhere to the timeline agreed to under the DIP facility and breached certain covenants. DIP lenders required ATP to start a sale process for substantially all of its assets within less than three months of filing.	In May 2013, DIP lenders credit bid $650m on the assets (close to the DIP loan amount) through a Section 363 sale of the assets. ATP negotiated with the DIP Lenders regarding the wind-down of the estate and the structure of such a sale transaction of substantially all of ATP's assets to the DIP lenders.