

Loans to Chapter 11 Firms: Contract Design and Pricing

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April 2022

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Abstract

Using a hand-collected data set of 545 debtor-in-possession (DIP) loan facilities from 2002 - 2019, we show that DIP loans are over-collateralized and contain a comprehensive set of restrictive covenants, mandatory prepayments, and restructuring milestones. We further show that despite a near-zero repayment risk, DIP-loan all-in spread drawn averages 658 basis points- - nearly twice that of matched high-risk leveraged loans. Textual analysis of court documents shows lack of outside lender participation in the loan solicitation process but spreads are lower when outside lender interest is high. Junior claimants often contest DIP-loan terms but to little avail.

Keywords: debtor-in-possession financing; Chapter 11; loan spreads; loan fees; default risk; leveraged loans; relationship lending

JEL Classifications: G14, G34

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Loans to Chapter 11 firms: Contract design and pricing^{*}

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April 5, 2022

Abstract

Using a hand-collected data set of 545 debtor-in-possession (DIP) loan facilities from 2002–2019, we show that DIP loans are over-collateralized and contain a comprehensive set of restrictive covenants, mandatory prepayments, and restructuring milestones. We further show that despite a near-zero repayment risk, DIP-loan all-in spread drawn averages 658 basis points—nearly twice that of matched high-risk leveraged loans. Textual analysis of court documents shows lack of outside lender participation in the loan solicitation process but spreads are lower when outside lender interest is high. Junior claimants often contest DIP-loan terms but to little avail.

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1 Introduction

A firm seeking bankruptcy protection under Chapter 11 of the U.S. Bankruptcy Code must be able to fund the process plus costs of continued operations. For this purpose, the debtor generally looks to internal cash and “debtor in possession” (DIP) financing as sources of operating capital. It has long been recognized that DIP financing is central to the preservation of the going-concern value of Chapter 11 firms, and that DIP-lenders play an important governance role.¹ However, little is known about how these loans are precisely structured so as to help control repayment risk and, ultimately, priced (spreads and fees). In this paper, we document and analyze in unprecedented detail (1) the nature of the control rights granted to DIP-loan providers through contracting, (2) the surprisingly low DIP-loan repayment risk that these control rights effectively help to support, and (3) whether DIP-loan pricing is commensurable with the low repayment risk. We find that, despite extraordinary lender control rights, DIP-loan spreads are surprisingly high relative to reasonable benchmarks.

At first blush, loans to Chapter 11 firms may seem highly risky to lenders. However, we show that *all* 545 DIP-loan facilities raised by the 359 large Chapter 11 firms in our sample period 2002–2019 received full repayment of both principal and interest. Our evidence on repayment risk extends Moody’s (2008), which documents only *a single* DIP loan with less than full repayment for the period back to the start of DIP financing in 1988 (Dahiya, John, Puri, and Ramirez, 2003). This evidence suggests that the repayment risk of DIP loans is no worse than investment grade loans.

We show that the surprisingly low DIP-loan repayment risk is the result of a contract design that helps insulate loan repayment risk from the debtor’s underlying asset risk. This risk separation is accomplished as DIP loans are over-collateralized, accounting for only a small fraction of a Chapter 11 firm’s book assets (on average 15% in our sample), and are perched at the top of the

¹See, for example, Dahiya, John, Puri, and Ramirez (2003), Chatterjee, Dhillon, and Ramírez (2004), Skeel (2004), Ayotte and Morrison (2009), Hotchkiss, John, Mooradian, and Thorburn (2008), Ayotte, Hotchkiss, and Thorburn (2013), Li and Wang (2016) and Eckbo, Thorburn, and Wang (2016). This point is also emphasized by filing firms: “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).

hierarchy of claims (super-priority). Moreover, these loans have a short maturity—on average ten months versus four years for loans outside of bankruptcy. Our hand-collected data show that they contain a uniquely large number of financial covenants, prepayment requirements, and milestones that are tied to liquidity, performance, capital expenditures, production, asset sales, restructuring outcomes, and even corporate governance. Also importantly, stringent disclosure requirements allow DIP lenders to react quickly if and when their borrowers' asset quality starts to deteriorate to the point of triggering covenant violations.

Because DIP loans are no more risky than investment-grade loans outside of bankruptcy, we use year, industry, and firm-size matched investment-grade loans (as well as leveraged loans) benchmarks for our pricing analysis. Surprisingly, while we expect loan spreads to increase with repayment risk, our evidence tells a different story: DIP-loan all-in spread drawn (AISD) in our sample averages 658 basis points (bps) over the London Interbank Offered Rate (LIBOR). This spread is almost *five times* the average spread on matched investment-grade loans, and almost double the average spread on matched leveraged loans issued by highly risky (non-bankrupt) firms. We also find that DIP-loan spreads are high in comparison with spreads on distressed loans issued by the same bankrupt firms within three years—and even one year—of their Chapter 11 filings.

Direct costs of originating, monitoring, and possibly renegotiating DIP loans, which are unobservable to the econometrician, are generally covered by various forms of upfront and periodic fees (Berg, Saunders, and Steffen, 2016; Eckbo, Su, and Thorburn, 2021). We show that DIP-loan fees are substantially higher than fees for our matched samples of investment-grade and leveraged loans. Specifically, upfront and annual fees are on average nearly three times higher than those associated with leveraged loans and six times those for investment-grade loans. Moreover, these fees come in addition to a cost-sharing arrangement in which debtors reimburse DIP-loan providers ex post for their regular out-of-pocket expenses throughout the restructuring process.² This fee evidence is important because it suggests that DIP-loan providers are amply reimbursed for their

²We thank David R. Seligman at Kirkland & Ellis LLP, a leading US law firm dealing with large Chapter 11 bankruptcies, for his help in understanding this often-used fees- and expense-related feature of DIP-loan contracting.

expenses. Hence, the central question is why DIP-loan spreads are so much higher than what is expected based on repayment risk.

To address this central question, we examine possible variation in loan spreads associated with the loan placement process and lender type. As to the loan placement process, we investigate debtors' efforts in creating competition among potential lenders by using textual analysis of DIP-loan motions filed by Chapter 11 firms to the court. We find that approximately seventy percent of the debtors indicate that they have approached prospective lenders. However, these debtors receive interest from more than one lending group (typically the prepetition lenders) in only a third of the cases, and in only a tenth of the cases, interested lenders proceed to a formal round of bidding. While there is little evidence that approaching prospective outside lenders results in lower spreads, spreads are 152 bps lower when the number of interested lenders is above the sample median of three. The evidence suggests that a more intensive search and bidding process may help lower DIP-loan spreads.

Turning to the potential effects of lender type on loan spreads, we show that prepetition secured lenders, who exert substantial control over the DIP-loan arrangement process, supply close to eighty percent of the DIP loans in our sample. Their control follows naturally from two effects: (1) Secured lenders may refuse new lenders to prime their liens on collateral, and (2) prior relationship lending produces an informational advantage over new lenders. Consistent with (1), we find that prepetition secured lenders are more likely to be DIP-loan providers when they hold large claims against the debtor. With large claims, the debtor most likely has exhausted its unencumbered assets to pledge as collateral for securing new DIP loans, which is precisely when prepetition secured lenders are in a blocking position against outside lenders. Moreover, consistent with (2), we find that over half of the DIP-loan facilities are provided by prepetition secured lenders who also have a strong prior lending relationship with the borrower. However, contrary to the extant literature that shows lending relationship outside of bankruptcy resulting in lower yields, spread differences between DIP loans provided by relationship prepetition lenders and those by non-relationship lenders are generally small.

Finally, we show that unsecured creditors file objections to DIP-loans in as much as sixty percent of the cases. Contested DIP loans carry spreads that are on average about 80 bps higher than non-contested DIP loans. While DIP loans help preserve the debtor's going-concern value, which benefits junior creditors, our finding raises the possibility of a conflict of interest between the prepetition secured lenders and junior creditors, who also bear the high DIP-loan cost. Nonetheless, courts routinely approve DIP loans, which raises issues of judicial oversight.

Our paper contributes to the literature on the financing of bankrupt firms on three fronts. First, our hand-collected data set allows us to document in unprecedented detail the exceptionally tight lender protections embedded in DIP-loan contracts and to compare them with those of matched loans outside of bankruptcy. This comparison shows how the loan-contract design enables lenders to separate DIP loans' default risk from debtors' underlying asset risk. Our evidence on this decoupling is new and unique in the loan contracting literature (Roberts and Sufi, 2009). Second, our large-sample evidence on DIP-loan repayment risk, which takes advantage of both financial and legal sources, is first in the bankruptcy literature. Third, relative the extant studies on DIP-loan spreads (e.g., Hasan, Ramirez, and Zhang, 2019), our use of court documents allows us to better understand the competitiveness of the loan-bidding process. Importantly, we also present new evidence on lender type, relationship lending, and junior creditor objections to DIP-loan terms. This granular evidence helps explain how frictions in DIP-loan solicitation may contribute to high spreads. Overall, our evidence suggests that strong lender control rights do not result in lower DIP-loan spreads.

2 The process of obtaining a DIP loan

2.1 DIP-loan motion and court approval

Under the U.S. 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 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. A Chapter 11 firm must file a motion to the court for DIP-loan approval, which is typically filed simultaneously with the bankruptcy filing itself. This motion (1) provides key information on type, amount, lead lenders, and important contractual requirements of a DIP loan; (2) describes a debtor's liquidity position and its need for DIP financing; (3) provides detailed background information on a debtor's business operations and prepetition capital structure, helping it to justify the need for DIP financing and identify prospective lenders; and (4) specifies a prenegotiated plan or a restructuring support agreement (RSA), if there is one.

Access to DIP financing must be approved by the judge through an interim order that is often immediately issued after a motion is filed (typically, within a few days after a Chapter 11 filing). This interim authorization is followed by public hearings in which key stakeholders are given the opportunity to file objections to proposed terms of the DIP loan. The debtor is required to demonstrate to the judge that it has searched, solicited, or surveyed interests of potential lenders and that the proposed loan package is considered the best option available. Debtors routinely argue that the terms are indeed competitive or "fair, reasonable and adequate" (quoted from Buffets Holdings' motion filed on 1/22/2008).³ After public hearings, the judge issues a final order approving the DIP loan or denies it altogether.⁴

2.2 The role of prepetition secured lenders

Under §364(d), a DIP loan may be secured by a "priming lien"—that is, by a senior or equal lien on property that is already subject to an existing lien by prepetition lenders. Although allowing priming prepetition lien encourages bids by new lenders, in practice, it is difficult, if not

³Online Appendix A presents four examples of debtors' motions justifying DIP financing.

⁴It is rare for judges to issue an order rejecting a DIP loan. In our sample, we find only three such cases. 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 financing on August 28, 2003. In two other cases, IT Group and BMC Industries, there was no interim order or final order issued after motions were filed. Even though news articles suggest that these two companies may have obtained DIP financing, we treat them as "Not Approved" as no final order can be located.

impossible, for them to prime prepetition secured lenders' security interest without the latter's consent (Bellucci and McCluskey, 2017). This is because prepetition lenders' security interest and rights to repossess collateral are governed by their credit agreements. Consent from secured lenders is required to modify or release collateral. By refusing consent to having their collateral primed, prepetition secured lenders are in a blocking position to prevent new lenders from providing secured DIP loans at more competitive terms. The position of prepetition lenders is further strengthened by their informational advantage relative to new lenders,⁵ and by the opportunity to roll up part of their existing loans into a DIP loan such that their existing claim acquires the same super-priority status as the DIP loan. In addition, prepetition secured lenders often package DIP loans with a RSA, which is critical to ensuring an expedited and smooth reorganization in bankruptcy.

The prospect of competition from potential outside DIP-loan providers is enhanced by the fact that the complex DIP-loan contract design is available to any potential lender. Because the restrictive contract terms themselves help insulate DIP-loan repayment risk from the debtor's underlying asset risk, outside loan providers may be willing to compete with a prepetition lender even when the latter has more precise knowledge of the debtor's asset risk. The prepetition lender may, however, ultimately win this competition by matching the terms offered by outside lenders but with a less restrictive DIP-loan contract, which according to the prepetition lender's private information has the same risk as the contract offered by outsiders. Moreover, debtors trying to run a competitive process for arranging a DIP loan under time pressure would likely have to be careful of the type and number of potential lenders to approach. Notwithstanding nondisclosure agreements, words about a potential bankruptcy filing travel fast and may create major public-relations risks with customers and suppliers and put downward pressure on security prices.

Below, when drawing inferences about the effect of competition on DIP-loan spreads, we follow the convention of treating the loan spread as compensation for repayment risk and various fees and contractual arrangements as compensation for loan origination and expected monitoring costs. In the literature on bank lending, this two-part pricing convention goes back to Thakor, Hong, and

⁵See, for example, Ayotte and Skeel (2006), Schenone (2010), Bharath, Dahiya, Saunders, and Srinivasan (2011), and Hasan, Ramirez, and Zhang (2019).

Greenbaum (1981), Thakor (1982) and others, and it is supported by empirical evidence on loan fees in credit lines and term loans (Berg, Saunders, and Steffen, 2016; Eckbo, Su, and Thorburn, 2021). The common practice of using ex post cost-sharing arrangements for regular out-of-pocket expenses incurred by DIP-loan providers throughout the restructuring process (see footnote 2 above) further supports this convention.

3 Data and sample description

3.1 Data sources and sample formation

We obtain all Chapter 11 filings by large U.S. public firms (with assets above \$100 million in constant 1980 dollars) over the period 2002–2019 from the UCLA–LoPucki Bankruptcy Research Database. We start our sample in 2002 as U.S. bankruptcy courts in all 94 districts started to maintain electronic case dockets on PACER in that year. Our sample ends just before the COVID-19 pandemic because loans issued during this period are not comparable to earlier periods due to unprecedented government interventions. We collect key characteristics of each case and 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 or liquidation, is cross-checked and verified using all abovementioned sources. This initial sampling results in a total of 592 Chapter 11 cases.

To identify whether a Chapter 11 firm obtains a DIP loan, we manually search key phrases including “debtor-in-possession financing,” “DIP financing,” “post-petition financing,” and “secured financing” in the electronic court docket through PACER. We focus on the first/initial DIP-financing package that is typically obtained by the debtor at the time of a Chapter 11 filing, not subsequently amended packages or packages offered later in the bankruptcy process by different DIP lenders. This is because the first/initial package should reflect the asset risk of the debtor at the time of the Chapter 11 filing and is typically negotiated under time pressure, and

information on loan terms is more complete.⁶

We note that 373 of the 592 Chapter 11 cases received a final order for DIP financing from the judge. For each DIP loan, we download motion, interim order, objections to motion (if any), final order, and master credit agreement and fee letters (whenever available). We manually process close to 2,000 court documents (with multiple rounds of cross-checks) to determine not only the pricing terms but also non-pricing terms such as lender protection clauses and restructuring milestones, lender type, loan bidding process, and objections raised. Due to data availability, we obtain such information for 359 of these 373 cases. There are a total of 545 loan facilities within the 362 loan packages obtained by these 359 firms, as three of them have two packages each. Our rigorous sample formation process results in the most comprehensive data set on DIP-loan facilities in the literature to date.⁷

Figure 1 presents the frequency of sample firms with DIP loans over time and across industries. Panel A shows that the fraction of Chapter 11 firms with DIP financing started at a low of 50% in 2002 and peaked at 89% in 2018, and has stayed between 60% and 70% over the sample period. The sample average fraction of Chapter 11 firms with DIP financing is 66%, which is substantially higher than the average fraction of 30% reported in Dahiya, John, Puri, and Ramirez (2003) for the period 1988–1997. Panel B shows that the top three industries with the highest shares of DIP financing are manufacturing (88%), wholesale and retail (86%), and consumer nondurables (78%). The bottom three industries with the lowest shares of DIP financing are finance (29%), telecommunication (35%), and business equipment (49%). These industry patterns are consistent with the idea that industries with large working capital need and easy-to-value collateral are more

⁶Junior DIP loans, funded by either secured or unsecured debt holders and ranked lower in priority than the initial DIP-loan packages, are sometimes provided later in the Chapter 11 restructuring process and typically used as part of the loan-to-own strategy. These loans often carry even higher spreads than the initial DIP loans. 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 added ten months after the Chapter 11 filing at a spread of 1,250 bps above LIBOR (provided by UBS and hedge funds Centerbridge and GSO).

⁷With 545 DIP-loan facilities over the period 2002–2019, our sample is 50% more than the sample of 348 facilities over the period 1988–2012 in a recent study by Hasan, Ramirez, and Zhang (2019) using Dealscan data. For the overlapping period 2002–2012, Dealscan has pricing information for only 169 facilities out of our sample of 359 facilities. Online Appendix B provides a comparison of spreads from our hand-collected sample with that from Dealscan.

likely to get DIP loans.

3.2 Pre-filing firm characteristics and Chapter 11 outcomes

We retrieve firm financial information from Compustat, as of the last fiscal year before a sample firm's Chapter 11 filing. Detailed information on sample firms' debt structure—such as the amount of bank loans outstanding at the time of bankruptcy filing—is extracted from Capital IQ and firms' Securities and Exchange Commission (SEC) filings from Edgar. 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 of which 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/assets* (the ratio of amount of outstanding bank loans at the time of bankruptcy filing to book assets), which measures the level of collateralization of bank loans; and *Industry distress* (an indicator variable for whether the median sales growth of the two-digit SIC industry is below -5%), which accounts for potential industry-level distress (see Appendix Table 1 for more detailed variable definitions).

Table 1 compares firm and Chapter 11 case characteristics for the 359 firms with DIP financing and the 219 firms without. While untabulated, the differences shown in Table 1 are confirmed based on a standard probit analysis, and are consistent with results reported by Li and Wang (2016). First, the size of book assets of the two sets of firms are comparable across firms with and without DIP loans. Both the mean and median leverage ratios of firms with DIP financing are close to one, comparable to those of firms without. We also find that notwithstanding higher *ROA*, firms with DIP financing are more cash constrained but have a greater borrowing base for secured financing with more tangible assets than do firms without. Finally, the median firm with DIP loans has a slightly higher bank loans-to-assets ratio.

In Panel B, we find that about 70% of the cases with DIP financing are filed in the Delaware court or the court of the Southern District of New York (NYSD). About one-third of the cases are

either prepackaged or prenegotiated 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 one-fifth of the cases. The combination of higher emergence and lower liquidation rates of firms with DIP financing than firms without DIP financing partly reflects both the greater going-concern values of these firms and the role of DIP loans in relaxing their financial constraints. Finally, our sample of firms with DIP financing on average spend 12 months (median 9 months) in Chapter 11 (excluding the 20 cases that are dismissed or remain unresolved), comparable to those without DIP financing.

4 Contract design and repayment risk

In this section, we first describe DIP-loan contractual terms in unprecedented detail and examine the resulting repayment risk. To gain a perspective on the uniqueness of the DIP-loan design, we then compare the contract terms of DIP loans with those of loans issued by firms outside of bankruptcy.

4.1 DIP-loan contract terms

Table 2 describes DIP-loan terms at the package level. The mean (median) package is \$366 million (\$95 million), which corresponds to 15% (16%) of a debtor's book assets (liabilities). In 83% of the packages, there is a revolver, which often contains a letter of credit facility. Term loans are present in 48% of the packages and 41% contain multiple facilities.⁸ DIP-loan maturity averages 10 months (median 8 months), and in 71% of the cases, loan maturity is explicitly tied to plan confirmation or §363 asset sale. The combination of DIP loans being a small share of debtors' total liabilities and a relatively short maturity lowers DIP lenders' risk exposure.

All DIP loans have super-priority status, almost all have a first or second lien on a debtor's

⁸In untabulated analysis, we find that there are increasingly more term loans in DIP-loan packages over time, which coincides with the rise of term loans in the leveraged-loan market in general (Berlin, Nini, and Yu, 2020)

assets, and 82% have a priming lien. Note that the frequency of a priming lien in our sample is much higher than that reported for earlier sample periods (Skeel, 2004). We find that about 28% of the loans include a roll-up provision, which allows lenders to convert all or a portion of their prepetition debt into the DIP loan and to accrue interest at the DIP-loan rate. For the 86 cases with the roll-up amount available, the average amount of the roll-up represents 50% of the DIP-loan amount. The evidence shows that lenders typically pair the roll-up facility with the new money facility on a one-to-one basis in a package. Furthermore, while in 98% of the cases the stated purpose of the DIP loan is to finance working capital, in as many as 60% of the cases the DIP-loan proceeds are also used to pay prepetition debt expenses (both interest and principal). The combination of a roll-up and paying prepetition debt expenses out of DIP-loan proceeds allows DIP lenders who hold prepetition debt to reduce the risk exposure of their loan holdings. Perhaps not surprisingly, in untabulated analysis, we find that 83% of the DIP loans in our sample are provided by existing creditors and shareholders, and 79% are by prepetition secured lenders.

DIP loans make extensive use of covenants. Table 2 shows that almost all (99%) of the loans include affirmative or negative covenants, 87% have financial covenants, and 60% and 55% have liquidity-/cash-level and EBITDA-level covenants, respectively. The extensive covenant provisions in DIP loans are in stark contrast to the covenant-lite feature of leveraged loans (Becker and Ivashina, 2016; Billett, Elkamhi, Popov, and Pungaliya, 2016). In more than one-tenth of the packages, covenants are tied to management or governance changes. With these covenants in place, lenders can call default if a newly-hired turnaround CEO leaves the post, for example. Prepayment requirements, such as asset sale sweep that requires a debtor that sell assets in bankruptcy to use the proceeds to pay back the loan, are imposed in half of the packages.

DIP loans also impose a long list of milestones and events of default. The five most common provisions are Chapter 7 conversion or case dismissed (94% of our sample), appointment of trustee or examiner (84%), loss of automatic stay or exclusivity (74%), change of control (71%), and plan and disclosure statement filing and approval (66%). These requirements help control DIP lenders' exposure to risk associated with the expected change in the course of reorganization and

a debtor's loss of control of its business. Moreover, about one-fifth of the loans require the debtor to set up a bidding procedure for selling assets through §363 of the Bankruptcy Code, and about another one-fifth of the loans require the debtor to hire specific key personnel such as a chief restructuring officer. These provisions grant DIP lenders strong protection and influence in the business operations of the debtor (Ayotte and Elias, 2020).

In summary, DIP loans (1) represent a relatively small share of the overall liabilities of the debtor, (2) have short maturity, (3) are fully secured, (4) enjoy super-priority with multiple restrictive covenants, and (5) include mandatory prepayment clauses and milestones. In other words, DIP lenders enjoy extraordinarily strong protections of their super-priority debt claims. In our analysis below, we investigate whether these protections result in low payment default rates to lenders.

4.2 DIP-loan repayment risk

In our terminology, repayment risk refers to the likelihood that the lender receives less than 100% recovery of principal and accrued interest. To estimate the repayment risk of DIP loans, we combine three data sources. The first data source is within our sample of 545 facilities over the period 2002–2019. It involves manual checking of bankruptcy plans and disclosure statements to determine whether there is any mention of ‘default’ or ‘impairment’ of claims. We note that DIP loans require settlement in cash and are regarded as impaired in the reorganization plan if the payment is in some other form, e.g., new debt or equity of the emerged firm, and/or the payment is made late. While regarded as impaired, DIP lenders who exercise the loan-to-own strategy may well choose settlement in stock, even if the alternative of a cash settlement would also yield a 100% recovery. We find that seven packages have their claims treated as impaired by the reorganization/liquidation plan due to payment not in original form or late payment. Importantly, in all these cases, DIP lenders recover 100% of their principal and accrued interest, and we therefore classify these loans as fully repaid.⁹

⁹Online Appendix C provides a detailed discussion of these cases. Of the seven impaired cases in our sample, the DIP lenders received a combination of cash and newly issued equity as repayment, resulting in full recovery

Our second data source is Moody's (2008), which compiles all DIP loan defaults over the period 1988–2008. This report identifies only two defaults among the 297 cases examined: Marvel Entertainment (Chapter 11 petition filed on December 27, 1996) and Winstar Communication (filed on April 18, 2001).¹⁰ Even among these two reported defaults, Marvel's DIP loan in fact recovered 100%, leaving Winstar's DIP loan as the *only* DIP-loan without full recovery between 1988 and 2008.¹¹ Also surprising, during the recent financial crisis, not a single DIP-loan defaulted, a fact that extends to the population of DIP loans.¹² This observation stands in sharp contrast to the leveraged-loan default rate, which according to PIMCO was about 20% during the financial crisis (*Financial Times*, July 5, 2019.). PIMCO also assesses the default rate of leveraged loans after the 2000 “dot-com bust” at 25%.

Third, to estimate repayment risk, we also employ the number of DIP loans issued all the way back to 1988—when these loans first came into existence. According to Bankruptcydata.com and our manual data collection using court dockets through PACER, at least 800 U.S. public firms that filed for Chapter 11 over the period 1988–2010 received DIP financing. This is more than twice the number of cases reported in Moody's (2008) for a similar period. Moreover, we identify another 400 U.S. public firms that obtained DIP financing between 2011 and 2019. Since only *one* of these 1,200 DIP loans resulted in less than 100% recovery of both principal and interest, we estimate the DIP-loan repayment risk to be 0.08% (1/1200).

To place our repayment-risk estimate of 0.08% in broader perspective, we apply the major rating agencies' own systems for mapping loan-default rates into rating scores. Our estimate of a DIP-loan repayment risk of 0.08% implies a loan rating of Baa1 or better by Moody's (Exhibit

using trading prices of equity on the first day after reorganization. This evidence suggests that, even when receiving equity, DIP lenders fully recover their claims.

¹⁰It is important not to confuse payment default with technical default as the latter only signals a violation of a protective covenant or that a milestone is not reached. Under the loan contract, such violations permit the lender to either accelerate full loan repayment or renegotiate loans terms. For example, 94% of the DIP loans in our sample treat a conversion to Chapter 7 or a case dismissal as events of technical default. Hence, a technical default does not necessarily lead to a loss for the lender, and our evidence below shows that it almost never does.

¹¹In the case of Winstar, the loss amounted to about 75% on the \$300 million DIP loan. Winstar's bankruptcy was attributed to a failure of Lucent Technologies to honor a contract in the midst of the 2000 “dot-com bust.”

¹²“In the Great Recession default cycle, no DIPs defaulted”, David Keisman, Senior Vice President, Moody's Investors Service (*Reuters*, April 2016).

31 in Moody's (2018)) or BBB+ or better by S&P (Table 9 in S&P (2019)). In fact, during the 1990s, when DIP loans started to gain prominence, Fitch Investors Services rated these loans as investment grade (primarily A ratings) (Chatterjee, Dhillon, and Ramírez, 2004). In sum, the repayment risk of DIP loans is no higher than for investment-grade loans outside of bankruptcy. This finding indicates that the extraordinary DIP-loan design effectively helps lenders to separate repayment risk from the borrower's underlying asset risk.

4.3 Contract terms of matched loans outside of bankruptcy

In this section, we perform matched loan analysis to compare contract terms of DIP loans with those of investment-grade loans that share a similar (very low) payment default risk profile, leveraged loans that are used to finance highly risky companies (similar to bankrupt companies), and loans issued by the same Chapter 11 firms within a few years before their bankruptcy filings. This analysis helps compare DIP loan terms with relevant benchmarks to assess the comprehensiveness of lender protections in these contracts.

We first implement a contemporaneous loan-matching procedure by identifying an investment-grade loan issuer and a (non-bankrupt) leveraged-loan issuer in the year of Chapter 11 filing that matches a Chapter 11 firm on Fama-French-12 (FF12) industry and being closest in book assets.¹³ Information on syndicated loans is taken from Dealscan.¹⁴ The first three columns of Table 3 present borrower and loan-package characteristics of DIP loans and matched investment-grade loans and leveraged loans. As expected, DIP-loan borrowers have significantly worse operating performance (*ROA*), higher leverage, lower cash holdings, and higher asset tangibility, and are

¹³We classify a loan in Dealscan as a leveraged loan if "MarketSegment" specifies it as "Leveraged," "High Leveraged," or "LBO." Loan facilities of these three categories account for close to 30% of total facilities in Dealscan. Investment-grade loans are those that are not classified as leveraged loans in Dealscan. Because Dealscan does not provide loan-level credit ratings, it is likely the investment-grade loans that we include in the analysis may contain unrated loans, which carry higher spreads than investment-grade loans.

¹⁴To promote market liquidity, the highly competitive market for syndicated loans uses largely standardized contracts recommended by the Loan Syndication and Trading Association (LSTA). These contracts contain no bankruptcy-specific provisions that characterize DIP loans. As suggested by Becker and Ivashina (2016), the covenant-lite feature helps mitigate bargaining frictions among often a large number of syndicate members by reducing the likelihood of ex post loan negotiations triggered by covenant violations. In contrast, any bargaining frictions are likely lower for DIP loans due to their highly concentrated loan-ownership structure.

more likely to be in a financially distressed industry than their matched issuers of leveraged loans or investment-grade loans. All three sets of firms have similar size in terms of book assets, which supports the matching exercise.

DIP loans are smaller as a fraction of book assets than matched investment-grade loans and leveraged loans, which are twice as large. The loan types are comparable. Importantly, DIP loans have much shorter maturity and are much more likely to have financial covenants and prepayment sweeps than matched loans. Comparing the specific type of covenants among these three sets of loans, we find that DIP loans are ten times more likely to include covenants on liquidity and cash level and EBITDA level than matched loans. Restrictions on capital expenditure or production are also more likely to be included in DIP-loan contracts. However, leverage ratio and coverage ratio covenants are less likely to be imposed in DIP loans than matched loans. This finding is perhaps not surprising as such ratios are less relevant to a firm already in bankruptcy. Furthermore, DIP loans are more likely to contain mandatory prepayment clauses related to asset sales than both types of matched loans. However, leveraged loans are more likely to impose extra cash sweep than DIP loans. These two types of loans have comparable inclusion of debt issuance sweep. In comparison, a very low fraction of investment-grade loans contain prepayment clauses.

The contemporaneous matching procedure that we have implemented may suffer from unobservable heterogeneity between our Chapter 11 firms and the matched borrowers. While unlikely to be correlated with DIP-loan repayment risk (which is empirically close to zero), there is likely latent heterogeneity in the underlying asset risk of debtors. To the extent that such heterogeneity does affect loan terms, holding the borrower constant when comparing DIP-loan terms and terms of leveraged loans adds power to our test. Therefore, in the second procedure, we match a DIP-loan package to syndicated loan packages obtained by the bankrupt firm in either three years or one year prior to its Chapter 11 filing. The analysis is similar in its motivation to the comparable (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) firm in Schwert (2018).

The characteristics of pre-bankruptcy borrowers and loans are presented in columns (4) and (5)

of Table 3. We find that on average, Chapter 11 firms that obtain loans before their bankruptcy filings are larger than the same firms when getting DIP loans. Not surprisingly, these firms have better operating performance and lower leverage before bankruptcy than at the time of bankruptcy. Their asset tangibility is comparable but a Chapter 11 firm's industry is more likely in distress than a few years ago before its bankruptcy filing. Comparing terms of DIP loans with those of pre-bankruptcy loans, we find that DIP-loan size as a fraction of book assets is smaller than that of loans obtained within three years before bankruptcy but comparable to those obtained right before bankruptcy. Although revolvers are more likely to be included in a DIP-loan package, the use of term loan is comparable across these three sets of loans. Furthermore, DIP loans have much shorter maturity and are more likely to include financial covenants than pre-bankruptcy loans. Interestingly, despite more frequent use of prepayment sweep by DIP loans than pre-bankruptcy loans obtained three years prior to bankruptcy, the use of asset sale sweep of DIP loans is comparable to that of pre-bankruptcy loans obtained one year prior to bankruptcy. The evidence suggests that as a firm becomes deeply distressed and thus is likely to implement asset restructuring, lenders are more inclined to include prepayment clauses on asset sales.

To conclude, DIP loans represent a smaller share of the overall liabilities of the debtor, have shorter maturity, and are more likely to include restrictive covenants and mandatory prepayment clauses than the four sets of matched loans. This shows that, through contracting, DIP lenders are able to separate loan risk from borrower asset risk to a much greater degree than the case is for loans outside of bankruptcy.

5 DIP-loan pricing

The above empirical analysis shows that the highly restrictive contract design of DIP loans, coupled with over-collateralization of the loan, to a great extent insulates lenders from debtors' underlying asset risk. In this section, we document DIP-loan spreads and fees and compare them with those of matched loans outside of bankruptcy. The main purpose is to examine whether DIP-loan pricing

is commensurable with the low repayment risk documented above.

5.1 Spreads and fees in DIP loans

For each facility in a DIP-loan package, we collect information on the amount, interest, and fee from motions and master credit agreements. The interest charged on DIP facilities is typically expressed as a spread over one or several reference rates, with LIBOR, U.S. prime rate, and federal funds rate being the most common. At times, interest is expressed as a fixed rate.¹⁵

We retrieve monthly three-month LIBOR rates, U.S. prime rates, and federal funds rates from Bloomberg and determine the rates applicable in the month of the final approval of the DIP loan 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 rate is expressed as a spread over the prime rate or federal funds rate only, 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 information on loan interest.

DIP lenders also charge various fees. The upfront fee includes closing fee, issue discount, underwriting and arranger fee, structuring fee, agent fee, and monitoring fee. The annual 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. Besides these common types of fees, lenders can impose an extension fee (charged when extending the loan maturity), an exit fee (charged upon exit or termination of a facility), and a default fee (charged if default occurs). 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.

Before turning to the fee evidence, it is worth pointing out that, with 90% coverage, our sample

¹⁵Lenders 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.

has one of the most comprehensive coverage of loan fees in the literature (Berg, Saunders, and Steffen, 2016; Hasan, Ramirez, and Zhang, 2019). Dealscan's fee data miss the following (ex post) expense reimbursement: ordinary fees and out-of-pocket expenses incurred by DIP-loan providers in negotiating and drafting the loan agreement, as well as expenses in monitoring participants in the Chapter 11 case. Since this type of reimbursement arrangement is not available for loans outside of bankruptcy, it is far from clear that DIP loans should require higher upfront fees. In addition, the generally high creditor-ownership concentration of DIP-loans most likely enhances effective monitoring (Sufi, 2007) and lowers loan renegotiation costs (Demiroglu and James, 2015) relative to loans outside of bankruptcy. Also, while recent research shows that the upfront fee on many term loans to risky companies likely reflects the penalty-free option to renegotiate the spread (Eckbo, Su, and Thorburn, 2021), this option is of little value to DIP lenders given the very short maturity.

Table 4 provides the summary statistics for the 545 facilities in our sample. We find that 64% of the facilities are revolvers and the rest are term loans. The mean (median) amount of each facility (either revolver or term loan) is \$244 million (\$75 million), and the mean (median) ratio of facility amount to book assets is 0.101 (0.071). The mean (median) maturity is 10 (9) months, and 99.3% of the facilities are secured. The mean (median) LIBOR spread is 628 bps (587 bps). For a subsample of 75 loan facilities that quote fixed rates, both the mean and the median rates exceed 1,000 bps.¹⁶

To put DIP-loan spreads in perspective, we find that a loan spread of 628 bps is comparable to a leveraged loan rated single B (according to S&P Capital IQ Leveraged Commentary & Data), which has an average one-year default rate of 3.33% over the period 1981–2019 (Table 24 in S&P (2019)). However, consistent with the risk evidence in Section 4.2 above, competition among

¹⁶The average DIP-loan spread in our sample is much higher than what is documented in prior work. For example, Chatterjee et al. (2004) find that the median DIP spread is 460 bps for a sample of 106 DIP loans over the period 1988–1997. Daniels and Ramirez (2008), examining DIP loans over the period 1988–2004, document an average spread of 368 bps, and Hasan et al. (2019) show an average spread of 386 bps using a more recent sample. The difference in spreads can be attributed to (1) the limited coverage of DIP loans by Dealscan, from which all prior studies extract DIP-loan information; (2) prior studies' failure to differentiate between initial DIP loans at the time of a Chapter 11 filing and subsequent amendments; and (3) pricing errors in Dealscan, which we illustrate in Online Appendix B.

potential DIP-loan providers should drive loan spread to be no higher than matched investment-grade loans. In addition, the DIP-loan fees are also large relative to investment-grade loans outside of bankruptcy. The mean upfront, annual, and commitment fees are 104 bps, 35 bps, and 83 bps, respectively. The mean (median) AISD with spread and annual fee combined is 658 bps (605 bps). In addition, DIP-loan facilities charge, on average, 6 bps in extension fee, 60 bps in exit fee, and 219 bps in default fee.

To help assess the economic significance of the LIBOR spread and fees, we first calculate the dollar interest cost for our sample firms to be \$7.2 billion (in constant 2019 dollars). Given that DIP facilities average 10% of a debtor's prepetition assets, the spread of 628 bps means that our sample firms incur an interest expense that averages just over 0.6% of their 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 debtors' prepetition assets. We then calculate the total upfront and annual fees paid by our sample firms to be \$1.1 billion and \$229 million, respectively. In sum, DIP-loan providers to our sample firms capture \$8.5 billion (\$7.2 billion + \$1.1 billion million + \$229 million) in interest and fees.

Figure 2 plots the average LIBOR spread and AISD on DIP loans, leveraged loans, and investment-grade loans over the sample period. The average spread on DIP facilities in our sample is in the range of 400 bps to 600 bps before the financial crisis of 2008–2009. During the crisis, the average spread jumps to above 800 bps and remains high at 700 bps after. More importantly, Figure 2 shows a large and persistent difference in LIBOR spreads and AISD between DIP loans and leveraged loans (as well as between DIP loans and investment-grade loans). This difference starts out at about 200–400 bps at the beginning of the sample period (year 2002) and reaches about 400–600 bps with the onset of the financial crisis and thereafter. Interestingly, the post-crisis jump in the DIP-loan spreads relative to matched loans is not explained by our evidence on DIP-loan repayment risk, which remains low throughout the entire sample period.

5.2 DIP-loan pricing versus pricing of matched loans

To place DIP-loan spreads and fees in perspective, we compare DIP loans with the four types of matched loans from Section 4.3. Consistent with the evidence in Table 3, Table 5 shows that DIP-loan facility as a fraction of book assets is smaller than that of matched investment-grade loans, leveraged loans, and pre-bankruptcy loans obtained three years prior to bankruptcy filing but comparable to that of loans obtained within one-year of bankruptcy filing. DIP loans have much shorter maturity and almost all DIP-loan facilities are secured. Because of their smaller loan size, shorter maturity and higher collateralization, DIP loans should carry lower spreads than loans of comparable payment default risk.¹⁷

Surprisingly, we find that the mean differences in LIBOR spreads between DIP facilities and their matched investment-grade-loan and leveraged-loan facilities are 492 bps and 295 bps, respectively; the mean AISD differences are 520 bps and 317 bps, respectively. The average LIBOR-spread difference between DIP loans and leveraged loans is significant in economic terms: It represents approximately a 90% ($100 \times 295 / 333$) premium in annual interest expenses over and beyond those paid by the matched leveraged-loan borrowers. More strikingly, DIP borrowers pay interest that is almost five times that paid by borrowers of investment-grade loans.

Figure 3 shows the frequency distribution of LIBOR spreads of DIP loans (Panel A), matched leveraged loans (Panel B), and matched investment-grade loans (Panel C). In Panel A, the mass is centered around 600 bps with a fat right tail reaching 1,800+ bps. In Panel B, the mass is centered around 300 bps with much less fat right tail, and in Panel C the mass is centered around 100 bps with a short right tail. The figure shows that DIP-loan spreads are substantially higher than those on the matched loans. We emphasize that although the assets of the Chapter 11 firms in our sample are in worse shape (riskier) than those of the matched borrowers, the DIP loans nonetheless carry a much lower payment default risk. It is precisely because DIP-loan terms effectively isolate loan payment default risk from the risk of debtors' underlying assets that these loans ought to be priced at lower spreads.

¹⁷In fact, Benmelech et al. (2020) show that loan security helps lower the cost of financing for low quality firms.

We next present the terms of loan facilities obtained by the same bankrupt firm within the three-year or one-year period prior to Chapter 11 filing in columns (4) and (5) of Table 5. As expected, pre-bankruptcy loans are more likely to be term loans, and on average have much longer maturities (about four years versus ten months for DIP loans). More importantly, DIP-loan spreads are substantially higher than those on within-firm matched loans: The difference in LIBOR spreads (AISD) averages 273 bps (292 bps) for loans taken out within three years prior to Chapter 11 filing, and averages 171 bps (200 bps) for loans taken out within one year prior to filing. In the latter case, according to S&P's ratings from Compustat—available for a subset of our sample firms—many of those borrowers have an issuer credit rating of CCC or lower prior to their bankruptcy filings. In other words, DIP-loan spreads on average exceed spreads paid by the same CCC-rated borrower only one year earlier.

Table 5 further shows that DIP loans come with fees that are also large compared with those of the matched loans. The average difference in upfront fee between DIP loans and matched investment-grade and leveraged loans is 90 bps and 53 bps, respectively, and the average difference in the sum of annual and commitment fees is 95 bps and 81 bps, respectively.¹⁸ The average difference in total fees is 191 bps when investment-grade loans are used as benchmark and 140 bps when leveraged loans are used.¹⁹ That is, DIP loans charge upfront, annual, and commitment fees that on average six times those for investment-grade loans and nearly triple those associated with leveraged loans. Fees on DIP loans and those on pre-bankruptcy loans significantly differ as well: The average difference in upfront fee is 58 bps (74 bps) between DIP loans and loans issued within three years (one year) prior to Chapter 11 filing, and the corresponding difference in the sum of annual and commitment fees is 86 bps (81 bps).

In sum, our evidence suggests that both DIP-loan spreads and fees are high relative to what one would expect given their low repayment risk. To address this puzzle, we next provide new

¹⁸Due to differences in data coverage for LIBOR spread, annual fee, commitment fee, and AISD in Dealscan, the mean of the sum of LIBOR spread and annual fee does not add up to the mean of AISD.

¹⁹In Online Appendix Tables 1–3, we obtain matched leveraged loans using not only firm size, industry, and year of issuance but also facility type, security, and syndicate size. These refined matching procedures produce differences in spreads between DIP-loan facilities and matched leveraged-loan facilities that are similar to those presented in Table 5.

evidence on the DIP-loan placement process itself, which addresses the degree of competition (or lack thereof) in the market for DIP loans.

6 The DIP-loan placement process: A closer look

In this section, we use textual analysis of DIP-loan motions to highlight the DIP-loan solicitation process and the resulting lender type. Specifically, we distinguish between two types of prepetition secured lenders: relationship lenders and non-relationship lenders, where the latter includes lenders who may have purchased debtors' loans prior to bankruptcy for opportunistic reasons.

6.1 Lender solicitation

As emphasized in Section 2.2 above, debtors trying to run a competitive process for arranging a DIP loan worry that news of a potential bankruptcy filing may create public-relations risks and cause value declines. Nonetheless, many debtors are still willing to solicit bids from both prepetition lenders and other potential financiers known to be specialized players in the DIP-loan market. To measure variations in this solicitation process across our sample, we search DIP-loan motions for indications that the debtor “searched,” “solicited,” or “surveyed” potential lenders for DIP financing. We then use this information to determine the number of lenders approached, the number of lenders interested, and whether a formal bidding process is held after the debtor has received multiple interests. While evidence of a formal bidding process would provide the most direct indication of competition, a solicitation process that generates interest among potential lenders may also put pressure on, say, a prepetition secured lender who ultimately agrees to provide the DIP loan.

Panel A of Table 6 shows that in 70% or 253 of the 362 DIP-loan packages, the debtor indicates to the court that it has approached prospective lenders. In 136 of these 253 cases, the debtor also reports the number of actual number of potential lenders approached. In the remaining cases the debtor either states “many” (or uses similar wording) when referring to the number of lenders

surveyed—or omits this information altogether. Furthermore, in 184 of the 253 cases, the debtor reports the actual number of interested lenders, which averages 4.5 (median 3).²⁰ In 62 (one third) of the 184 cases, the debtor reports a single interested lender (or lending group), who is almost certain to be a prepetition lender. Overall, of the 362 loan packages, the debtor receives interests from more than one lender in 122 cases (one third). Most importantly, a formal round of bidding occurs in only 32 cases or a tenth of the total sample of 362 DIP-loan packages. The low level of formal bidding shows that the typical DIP-loan solicitation process lacks competition from potential outside lenders.

Next, we examine whether a debtor’s effort in seeking alternative lenders and drumming up competition results in lower loan spreads, using the following OLS regression:

$$Spread_i = \beta Solicitation_i + \gamma Contract_i + \lambda Firm_i + \alpha_{ind} + \alpha_{year} + \alpha_{loan\ type} + \varepsilon_i, \quad (1)$$

where $Spread_i$ is either LIBOR spread or AISD on loan facility i . The variable of interest, $Solicitation_i$, is an indicator variable taking three alternative forms (one at a time): (1) the debtor approaches prospective lenders, (2) the debtor approaches the median (12) number of lenders, and (3) the number of interested lenders is above the median of three. The control variables in this regression include the two vectors $Contract_i$ of loan contract features and $Firm_i$ of borrower characteristics. The regression also includes Fama-French (FF12) industry fixed effects (α_{ind}), year fixed effects (α_{year}), and loan type fixed effects ($\alpha_{loan\ type}$). Standard errors are clustered at the year level.

Panel B of Table 6 presents the results. In columns (1) and (2), we do not find any significant association between the indicator variable for a debtor approaching prospective lenders and loan spreads. In columns (3) and (4), when limiting to a sample of debtors who provide the number of prospective lenders approached, we still find no significant association between the indicator variable for a debtor approaching the above-median number of lenders and loan spreads. However, in columns (5) and (6), we limit the sample to debtors who provide the number of interested

²⁰Often a group of interested lenders form a syndicate and submit only one bid, which we treat as one lender.

lenders and examine whether loan spreads are lower when the reported number of interested lenders exceeds the median of three. Here, the estimated parameter β is negative and statistically significant at the 1% level. The parameter value indicates that, when the number of interested lenders exceeds the sample median, DIP loans are associated with 152 bps (or 24%) lower spreads (whether using LIBOR spreads or AISD).

Among the control variables, we find that facility size and firm leverage are negatively and significantly associated with spreads at the 1% level. Although *Leverage* is statistically significant in explaining spreads, its economic significance is small. Using the coefficient on *Leverage* in column (1), an interquartile change in *Leverage* in our sample (from 0.81 to 1.20) results in a drop in spreads by 25 bps, a tiny change relative to the average spread of 628 bps. Importantly, we do not find that lender protections including covenants and prepayment clauses, or other borrower characteristics, are associated with spreads as reported in the extant literature.²¹

These results show that, while debtors to some degree solicit the interest of potential DIP-loan suppliers, the process of obtaining DIP loans is far from competitive. Having said that, when debtors do receive competing bids (measured according to our best effort), DIP-loan spreads are lowered by 152 bps. This suggests that debtors who are particularly active in soliciting bids obtain lower DIP-loan spread, possibly because such solicitation helps debtors bargain with prepetition secured lenders in setting the spread. To examine this issue further, we next analyze the type of debtors that is likely to be financed by prepetition secured lenders.

6.2 Prepetition secured lenders

As discussed in Section 2.1, when securing a DIP loan requires priming the collateral of prepetition secured lenders, those lenders must first give their consent—or otherwise provide the DIP-loan themselves. Prepetition secured lenders may have a particularly strong incentive to supply the

²¹In untabulated analysis, we find that loan security, financial covenants, firm size, ROA, and leverage have strong explanatory power for the spreads of matched investment-grade and leveraged-loan facilities. The economic significance of these variables is also large. For example, we find that investment-grade and leveraged-loan facilities with financial covenants have spreads that are 29 bps and 44 bps (or 21% and 13% of the mean) lower than those without such covenants, respectively. The evidence suggests that leveraged loans are priced to reflect both creditor control and borrower risk, in stark contrast to DIP loans.

DIP loan themselves when it allows a roll-up of their prepetition secured debt into the DIP loan. On the other hand, the incentive to provide the DIP loan may be weaker when their prepetition loans are already over-collateralized, or when prepetition lenders for other reasons agree to a DIP loan supplied by new lenders. To sort out these incentives, we estimate the determinants of the likelihood that prepetition secured lenders provide DIP financing as a function of firm characteristics.

Using hand-collected information in DIP loans and master credit agreements, we identify the name and institutional type of lead lenders of DIP loans such as book runner, agent bank, syndication agent, and so on; the type of a debtor's prepetition debt; as well as the identity of lead prepetition lenders at the time of bankruptcy filing. We also resort to Capital IQ, debtors' SEC filings immediately before bankruptcy, and Dealscan for such information.²² This comprehensive approach is superior to using lender identities at loan initiation from Dealscan (as prior studies have done) because it allows us to capture all secured lenders immediately before bankruptcy filing, including those entering the scene through distressed loan trading. Our data sources allow us to determine whether a DIP lender is a prepetition secured creditor, an unsecured creditor, or a major shareholder, including being the parent company. We find that 83% of the DIP loans are provided by prepetition creditors and shareholders, and 79% are provided by prepetition secured lenders who mostly hold secured bank loans.

We use the logit regression reported in Table 7 to identify the firm characteristics that are associated with debtors obtaining DIP loans from prepetition secured lenders. The differences in characteristics of debtors who borrow from prepetition secured lenders (versus those who do not) are as follows. First, debtors with low cash holdings, a marker for short-term financial constraints and liquidity needs, are more likely to borrow from prepetition secured lenders. Second, debtors in prepackaged and prenegotiated cases are more likely to borrow from prepetition secured lenders.

²²Note that the background section of motions for DIP financing does not list all the lenders of prepetition loans and nor do other sources such as debtors' 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 are also lead lenders of a DIP loan as disclosed in motions. We can identify whether DIP lenders hold prepetition debt in a non-leading role only if such information is disclosed. This does not rule out the possibility that a DIP lender can be a non-lead prepetition lender, but motions do not provide such information (and as a result, we fail to capture it).

This is as expected given that prepetition lenders are often sponsors of RSAs (Ayotte and Elias, 2020).²³ Third, when a debtor's ratio of bank loan to assets is high—suggesting that prepetition lenders' claims are large and hence more highly under-collateralized—they are also more likely to obtain DIP financing from prepetition secured lenders.

The results in Table 7 point to some of the frictions likely facing a Chapter 11 firm when considering raising DIP financing from outside lenders: a lack of unencumbered assets available to pledge for the new financing coupled with a dire short-term liquidity constraint. These frictions enhance prepetition secured lenders' power to block outside lenders while at the same time enhancing their power to demand high spreads and fees—notwithstanding the extraordinary repayment protection provided by the DIP-loan contract itself.²⁴ Having said that, bargaining power likely differs within the group of prepetition secured lenders underlying Table 7. Specifically, some of these lenders are relationship lenders with superior information about the debtor, while others purchased the secured debt just prior to bankruptcy. Hence, we next examine whether there are significant differences in loan spreads between DIP loans provided by these two types of prepetition secured lenders.

6.3 Relationship lending

We classify a prepetition lender as having a lending relationship with the debtor based on information extracted from both court motions and Dealscan. As per our definition in Appendix Table 1, a lending relationship exists if a DIP lender provides at least one loan to the debtor over the five-year period preceding Chapter 11 filing. With this definition, prepetition lenders have a lending relationship with the debtor in 54% of the 545 facilities in our sample. Moreover, loans provided by relationship lenders account for 44% of the total number (and 46% of the value) of

²³RSA is typically negotiated between a debtor and some of its lead lenders before bankruptcy filing. While RSA helps speed up the restructuring and voting process, prepetition secured lenders often package DIP loans into RSA and make a combined offer that a debtor finds hard to reject.

²⁴In untabulated analysis, using the number of claim classes (in natural logarithm) listed in the confirmed reorganization and liquidation plan, we find that firms with a larger number of claim classes are also more likely to obtain DIP financing from prepetition secured lenders. This is intuitive as new lenders tend to shy away from complex cases whose restructuring involves large uncertainty. It suggests that case complexity may also constitute a source of friction for bankrupt firms when it comes to soliciting bids from outside lenders.

loans obtained by the debtor during the five-year period prior to bankruptcy filing. Overall, as 79% of our DIP loans are supplied by prepetition lenders, 68% (54%/79%) of the DIP loans are provided by prepetition secured lenders with a lending relationship. The remaining prepetition lenders likely have purchased their debt claims shortly prior to the bankruptcy filing.²⁵

We are interested in whether DIP-loan spreads charged by prepetition secured lenders tend to differ between relationship lenders and non-relationship lenders. On the one hand, the extant literature suggests that, outside of bankruptcy, relationship lenders' superior information about a borrower allows them to lend at lower spreads (see, for example, Bharath, Dahiya, Saunders, and Srinivasan (2011)). On the other hand, using a sample of 348 DIP loans over the period 1988–2012, Hasan, Ramirez, and Zhang (2019) find support for a lock-in effect of relationship lending on spreads whereby prior lending relationship is associated with higher DIP-loan spreads. With our unprecedented DIP-loan sample and hand-collected information on lead lenders, we revisit the implication of relationship lending for DIP-loan spreads.

In Table 8, we employ the same regression specification as Eq. (1) but replace *Solicitation_i* with the following three measures of lending relationship (one at a time): (1) *Dprior*, a binary variable indicating whether a relationship lender provides the DIP loan, (2) *Relationship lender(number)*, the number of loans provided to the debtor over the past five years, and (3) *Relationship lender(amount)*, the amount of loans provided to the debtor over the past five years. The dependent variable is again either LIBOR spread or AISD, while the regression is performed on the subsample of DIP loans that are provided by prepetition secured lenders.

In columns (1) and (2) of the table, the two coefficient estimates on *Dprior* are negative but statistically insignificant. This evidence suggests that, notwithstanding their relative informational advantage, prepetition secured relationship lenders do not charge lower loan spreads than prepetition secured but non-relationship lenders. Columns (3)–(6) show that spreads decline as the

²⁵Note that our 79% share of DIP-loan providers being prepetition lenders is substantially higher than what has been reported in previous studies. In particular, Hasan, Ramirez, and Zhang (2019) report this share to be only 36%. The main reason for this difference is that, while we determine prepetition lenders using court motions and master credit agreements, prior studies use Dealscan for this determination. Among other things, Dealscan tends to miss prepetition lenders emerging via secondary market loan trading in during the runup to a debtor's Chapter 11 filing.

lending relationship strengthens, with the coefficient estimates for *Relationship lender(amount)* in columns (5) and (6) being significant at the 5% level. Note, however, that the economic magnitude is small: A one-standard-deviation change in *Relationship lender(number)* (*Relationship lender(amount)*) is associated with a 37–41 bps (45–47 bps) reduction in loan spreads, representing about a 7% drop in the mean DIP-loan spreads. This evidence suggests that, while relationship lenders exploit their informational advantage and charge spreads that are slightly lower than otherwise similar loans provided by outsiders, the spreads remain high compared with a risk-adjusted benchmark based on investment-grade and leveraged loans outside of bankruptcy.²⁶

7 Contested loans and judicial oversight

Key stakeholders of a Chapter 11 firm can raise objections to a proposed DIP-loan package between the time when motions for DIP financing are submitted and when public hearings are held. Examining the decision to contest is interesting as it helps reveal how the proposed package is perceived by stakeholders who are junior in priority to secured lenders. To determine whether motions for DIP financing are contested, we manually search court dockets for objections filed for each of our sample cases. We identify the parties that file an objection and categorize them into one of the following five groups: (i) unsecured creditors committees and suppliers; (ii) equity holders; (iii) U.S. trustee; (iv) union, workers, pensioners, and Pension Benefit Guaranty Corp.; and (v) other parties such as municipal governments, asbestos claim holders, etc.

Panel A of Table 9 shows that more than 60% of the proposed DIP-loan packages receive objections from junior creditors and other stakeholders. The average number of parties objecting to a DIP-loan package is 2.1. The bulk of objections comes from unsecured creditors committees

²⁶We also explore whether unobservable heterogeneity across lead lenders helps explain the cross-sectional variation in DIP-loan spreads by including lead-lender fixed effects in our spread regressions. There are 259 unique financial institutions that provided DIP financing to our sample of Chapter 11 firms, and the top ten institutions financed more than two-thirds of the DIP-loan packages in our sample. In the lead-lender fixed effects regressions, if a DIP loan is provided by more than one lead lender, we keep the most active lead lender in each deal. Online Appendix Table 4 shows that F-tests for the joint significance of lead lender fixed effects strongly reject the null that lead-lender fixed effects are jointly equal to zero, and that adding these fixed effects to the full regression model increases the adjusted R^2 by 18% for AISD. This shows that lending institution heterogeneity has some statistical power in explaining the cross-sectional variation in DIP-loan spreads.

and suppliers (53% of our sample). This surprisingly large fraction of contested cases provides strong and independent evidence that DIP-loan terms are perceived as excessive by the very constituencies who pay for them. The objections do not, of course, mean that the junior claimants fail to see the DIP financing as highly beneficial for the debtor. Rather, a more likely interpretation of these objections is that DIP-loan terms are viewed as excessive in light of the extraordinary contractual protections that our evidence shows produce payment default rates on par with or better than matched investment grade loans.

The regression estimates in Panel B of Table 9 provide strong support for this interpretation. Columns (1) and (2) show that contested DIP loans carry a spread that is approximately 82 bps higher than that of non-contested ones. In columns (3) and (4), we use the number of objections as the key explanatory variable and confirm that there is again a positive and significant association between the number of objections raised and DIP-loan spreads. Also, as shown in columns (5) and (6), the negative and significant association between the number of objections and DIP-loan spreads remain when we limit the sample to DIP loans with objections. In sum, junior creditors and other stakeholders often contest proposed DIP-loan packages when spreads are high.²⁷

The bankruptcy judge is required to authorize debtors' decisions made outside of the ordinary course of business, which includes the approval of DIP loans. Since the spread and fees are taken from the final DIP-loan order, Panel B of Table 9 shows that the pricing terms are higher with objections than without—even after asking the bankruptcy judge to modify the initially proposed terms. This raises the question of whether the high spread and fees on DIP loans may be attributed to 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,

²⁷In Online Appendix 5, we examine the relation between objections to DIP loans and creditors' recovery to shed light on why unsecured creditors contest DIP loans. We find that unsecured creditors' recovery is 14.2 percentage points lower in contested cases than in uncontested cases. We also examine the relation between roll-up, a DIP-loan feature to increase the priority and security of the rolled-up debt (via collateral that may have previously been unencumbered or where a lien has been unperfected on a prepetition basis), and spreads, and find a positive association (see Online Appendix 6).

1999; LoPucki and Doherty, 2002; Ayotte and Skeel, 2004; Chang and Schoar, 2013).²⁸

We employ the same sample as in our main empirical analysis. The 429 facilities for which we have the full set of control variables were approved in 32 different bankruptcy courts by 80 different judges. In Online Appendix Table 4, we run F-tests for the joint significance of court (judge) fixed effects following Bertrand and Schoar (2003). Our results show no basis for the argument that court- and judge-specific variations drive DIP-loan pricing. Specifically, F-tests do not reject the null that court fixed effects or judge fixed effects are not jointly equal to zero. In addition, adding court fixed effects or judge fixed effects to the full regression model does not increase the adjusted R^2 for LIBOR spread and AISD.²⁹ This evidence is consistent with what we have learned from conversations with a bankruptcy judge: Even when objections are filed, judges often find it difficult to deny the loan or make judgment to request amendments of the contract. A judge caught between approving a motion with questionable terms or denying a loan that may be needed to keep the debtor afloat may understandably choose to err on the side of caution and approve the motion.

8 Conclusion

This paper presents the first systematic, large-sample analysis of whether DIP loans are priced competitively, i.e., with loan spreads that are commensurate with their payment default risk. We begin by documenting that these super-priority loans are short-term, highly over-collateralized, and have a large number of restrictive covenants and milestones relative to matched loans outside of bankruptcy. It appears that this extraordinary level of control rights effectively separates loan repayment risk from the debtor's underlying asset risk: During our sample period 2002–2019, all of our 545 DIP-loan facilities received full repayment. Moreover, building on Moody's records

²⁸Judges work in 94 bankruptcy districts across the United States. A firm filing for bankruptcy may choose to file where it (1) is headquartered, (2) is incorporated, or (3) does most of its business. Once a filing is made, judge assignment is random (Bernstein, Colonnelli, and Iverson, 2019).

²⁹While untabulated, we note that the coefficients on other explanatory variables do not change after adding either court or judge fixed effects, and that the indicator variables for Delaware (43% of the cases) and NYSD courts (25% 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.

on DIP-loan defaults back to 1988, we find that their repayment risk profile is similar to that of investment-grade loans.

Turning to DIP-loan pricing, we find that DIP lenders charge all-in drawn spreads that on average are five times higher than spreads of investment-grade loans and twice the average spreads of matched leveraged-loans, where the latter loan type has a far higher repayment risk. Moreover, DIP-loan providers receive compensation for loan origination and monitoring costs through fees that average six times those on investment-grade loans. This despite the fact that DIP-loan terms average only ten months (versus four years for the matched investment-grade loans), and have high ownership concentration and frequency of information disclosures during the Chapter 11 process.

We show that the market for DIP loans is far from competitive. Since prepetition secured lenders must grant consent to new DIP lenders priming their lien on the collateral, these lenders have substantial control over the DIP-loan placement process and become the de facto lenders to bankrupt firms (in nearly eighty percent of our sample). Perhaps for this reason, we find that there is a lack of participation of new lenders in the DIP loan bidding process. We do, however, find that some debtors try to introduce competition among potential lenders and that spreads are lower when this happens. On the other hand, we show that relationship lenders appear to exploit their informational advantage to charge spreads that are significantly higher than what would have been based on expected repayment risk. We end the paper by showing that in more than half of our sample cases, junior claimants raise objections to DIP-loan teams—and those contested loans carry higher spreads.

Overall, our evidence suggests that to promote competitive pricing of DIP loans, policies and institutional practices should aim to resolve the collateral constraints and information problems faced by Chapter 11 firms even before their bankruptcy filing. It is also important to strengthen judicial oversight to ensure a competitive DIP-loan bidding process. While not pursued in this paper, an interesting question for future research is whether the increased likelihood of firm survival aligns the incentives of secured creditors and the debtor's self-interested management to accept high DIP-loan spreads.

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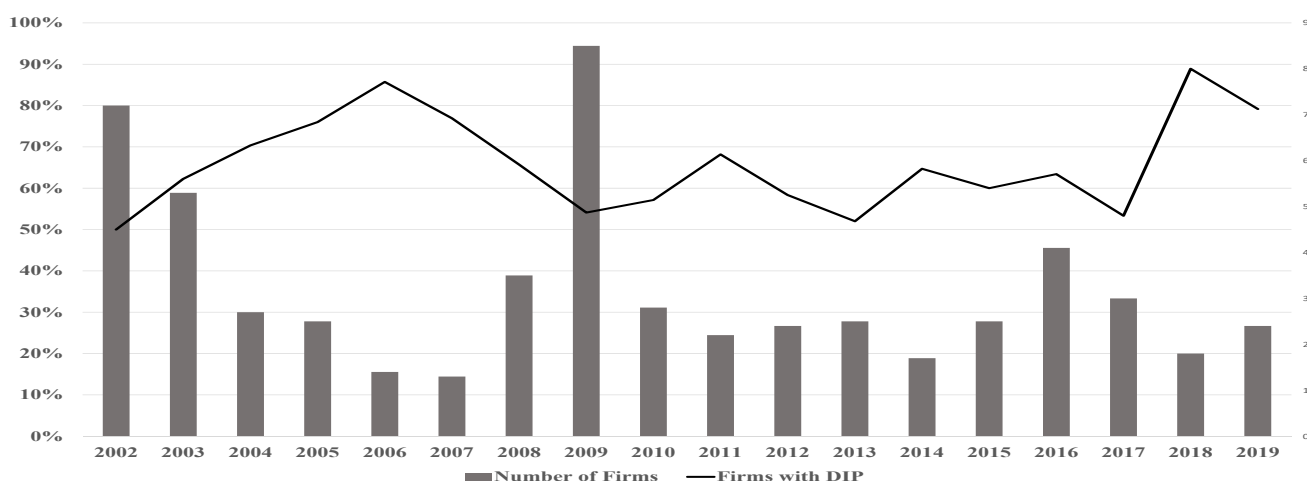
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Figure 1: Temporal and industry distributions of our sample firms

This figure presents the temporal and Fama-French (FF) 12-industry distributions of the sample of 578 Chapter 11 firms with data on whether or not they obtain DIP financing over the period 2002–2019. Of the 578 firms, 359 obtained DIP loans and 219 firms did not. Panel A shows the annual frequency of firms with DIP loans (solid line) and the number of Chapter 11 filings each year (bar). Panel B shows the number of firms with DIP loans and the number of firms without across the 12 Fama-French industries.

A: Temporal distribution



B: Industry distribution

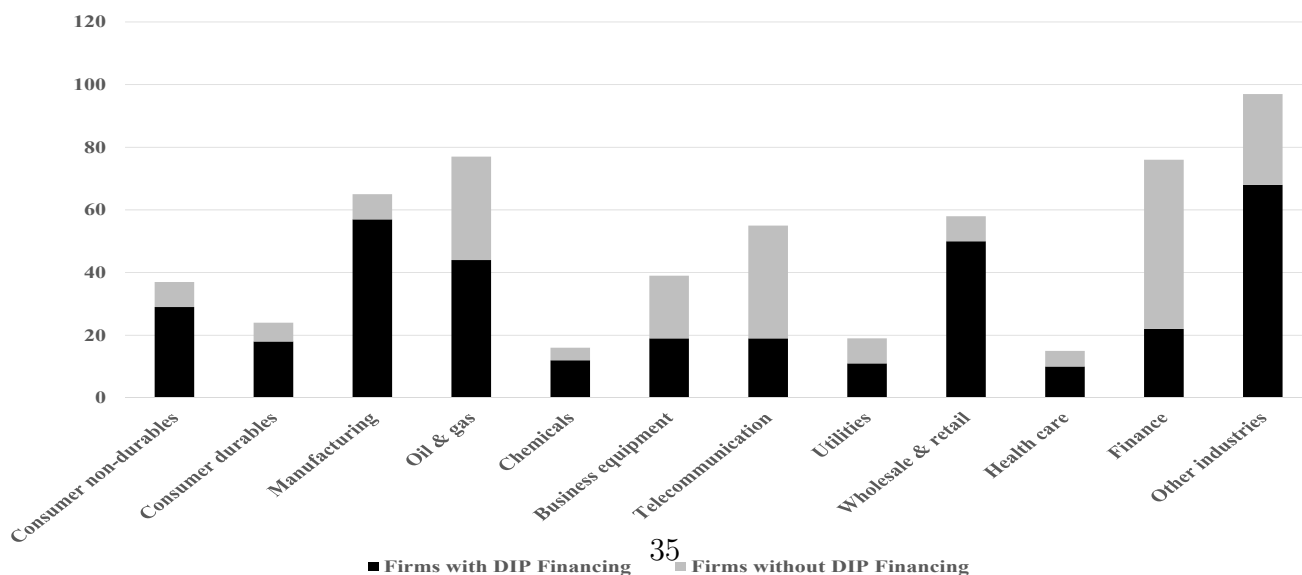


Figure 2: Loan spreads on DIP loans, leveraged loans, and investment-grade loans over time

The figure shows the annual average LIBOR spread and all-in spread drawn (AISD) on DIP loans in our sample, and on leveraged loans and investment-grade loans in Dealscan over the period 2002–2019. LIBOR spread is quoted as the spread over the three-month LIBOR. AISD is the sum of LIBOR spread and annual fee.

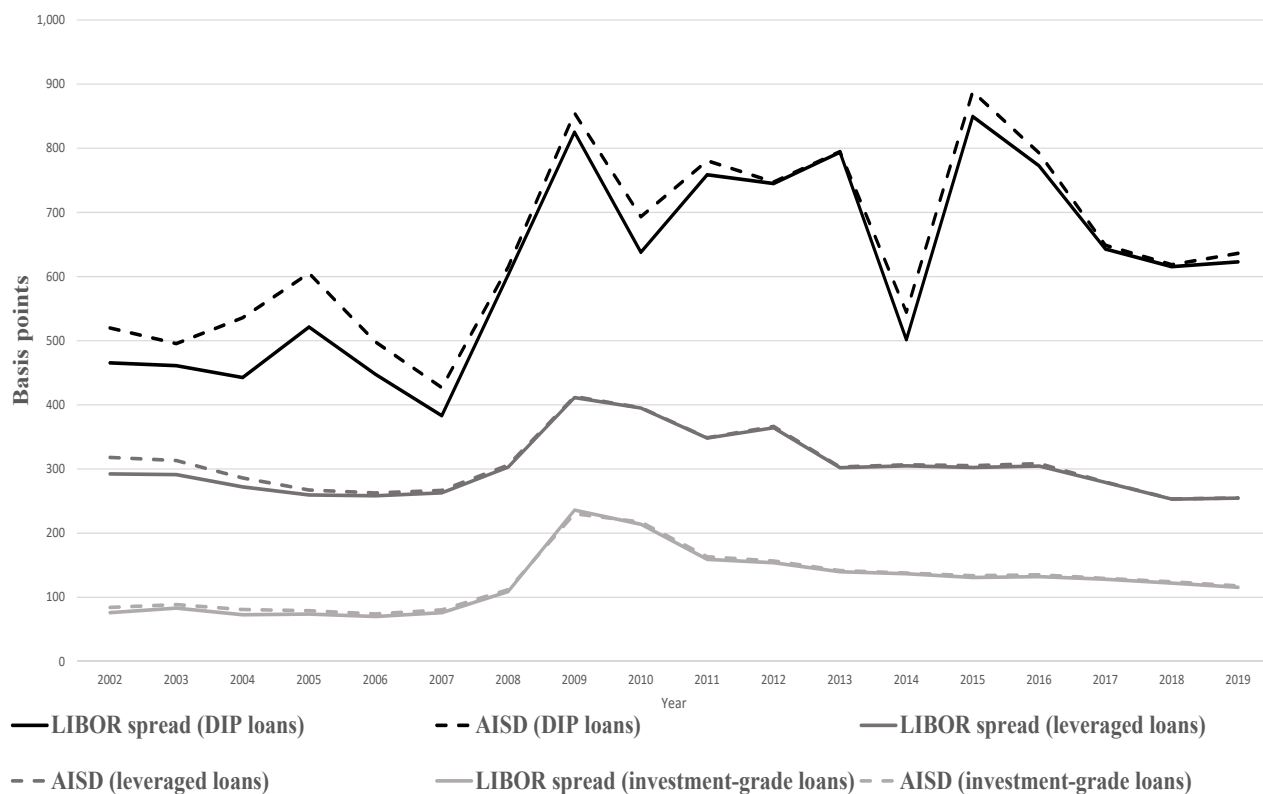
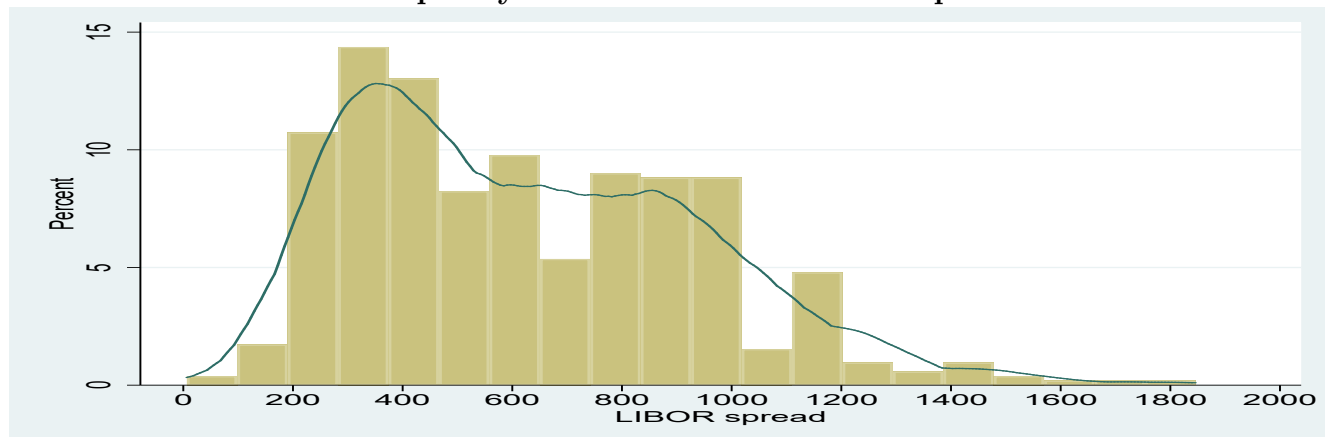


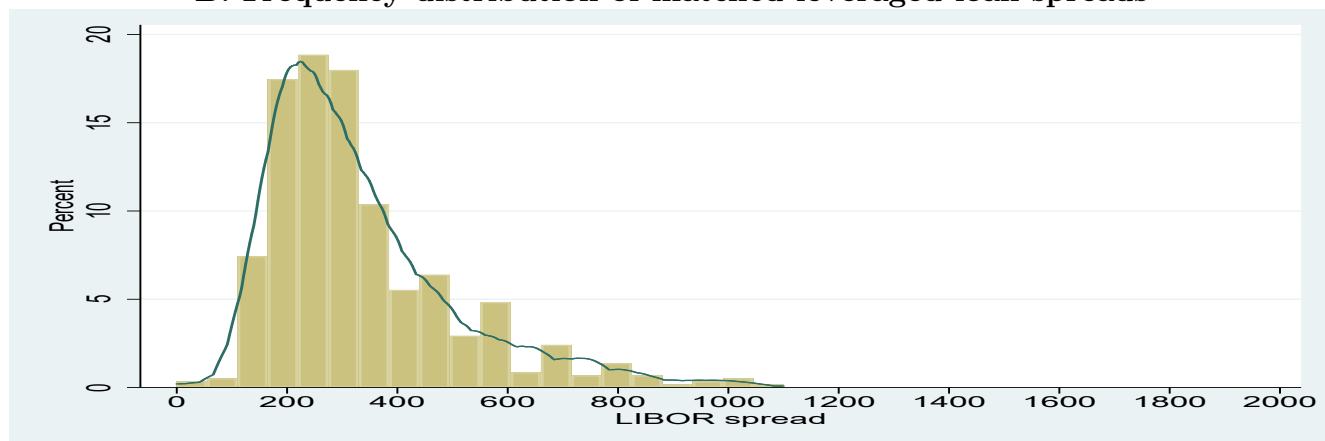
Figure 3: Frequency distribution of loan spreads on DIP loans and on matched leveraged loans and investment-grade loans

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

A: Frequency distribution of DIP-loan spreads



B: Frequency distribution of matched leveraged-loan spreads



C: Frequency distribution of matched investment-grade-loan spreads

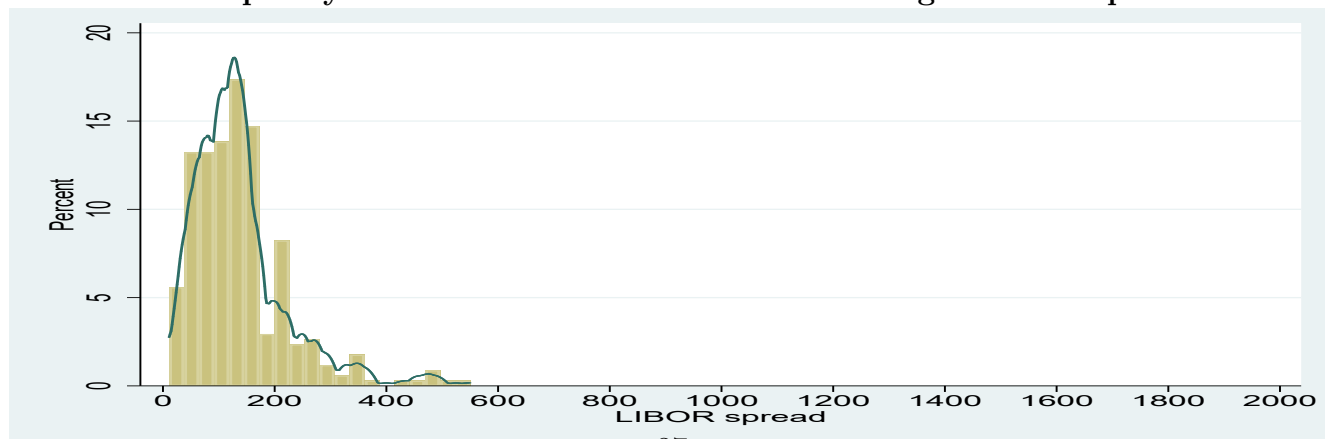


Table 1: Summary statistics of Chapter 11 firms with and without DIP loans

This table compares firm and case characteristics of the 359 Chapter 11 firms with DIP financing and the 219 Chapter 11 firms without. The Chapter 11 cases are retrieved from the UCLA–LoPucki Bankruptcy Research Database over the period 2002–2019. p-values from a t-test of the difference in the mean and a ranksum test of the difference in the median are presented in the last two columns. Variable definitions are provided in Appendix 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	359	3,575	799	219	7,664	959	0.148	0.208
ROA	341	0.024	0.051	208	-0.071	0.015	0.001	0.000
Leverage	342	1.064	0.965	210	1.117	0.968	0.277	0.706
Cash	344	0.054	0.031	210	0.125	0.086	0.000	0.000
Tangibility	342	0.393	0.357	208	0.354	0.344	0.117	0.042
Industry distress	351	0.208		213	0.216		0.822	
Bank loan/assets	359	0.271	0.193	219	0.242	0.120	0.289	0.001
B: Chapter 11 characteristics and outcome								
Delaware	359	0.432		219	0.374		0.175	
NYSD	359	0.253		219	0.201		0.148	
Prepack	359	0.334		219	0.315		0.634	
Emergence	359	0.663		219	0.534		0.002	
Liquidation/conversion	359	0.206		219	0.361		0.000	
Acquisition	267	0.086		173	0.058		0.271	
Dismissed/unresolved	359	0.056		219	0.068		0.533	
Months in bankruptcy	344	12.494	9.133	212	12.017	8.783	0.678	0.436

Table 2: Summary statistics of DIP-loan packages in our sample

This table presents the summary statistics of the 362 DIP-loan packages issued to the 359 Chapter 11 firms in our sample over the period 2002–2019. Variable definitions are provided in Appendix Table 1.

Variable	N	Mean	SD	25th	Median	75th
A: Package size						
Package amount	362	365.975	1,855.408	40.000	94.745	250.000
Package amount/assets	362	0.152	0.150	0.048	0.105	0.206
B: Loan type						
Multiple facility	362	0.412	0.493	0	0	1
Revolver	362	0.829	0.377	1	1	1
Term loan	362	0.478	0.500	0	0	1
C: Loan maturity						
Maturity	336	9.669	6.247	6	8	12
Maturity tied to plan confirmation or asset sale	362	0.707	0.456	0	1	1
D: Seniority						
Super-priority	361	1.000	0.000	1	1	1
First/second lien	361	0.994	0.074	1	1	1
Priming lien	361	0.817	0.387	1	1	1
E: Roll-up						
Roll-up	362	0.282	0.450	0	0	1
Roll-up amount	86	170.516	364.931	30	86	190
Roll-up amount/DIP amount	86	0.497	0.227	0.320	0.500	0.667
F: Use of proceeds						
UoP-Working capital	357	0.980	0.139	1	1	1
UoP-Prepetition	357	0.602	0.490	0	1	1
UoP-Postpetition	357	0.625	0.485	0	1	1
G: Covenants						
Affirmative or negative covenants	341	0.988	0.108	1	1	1
Financial covenants	336	0.869	0.338	1	1	1
Liquidity/cash level	336	0.595	0.492	0	1	1
EBITDA level	336	0.551	0.498	0	1	1
Debt/EBITDA or leverage ratio	336	0.220	0.415	0	0	0
Coverage ratio	335	0.122	0.328	0	0	0
Capex or production	336	0.542	0.499	0	1	1
Governance and management	336	0.122	0.328	0	0	0
Plan confirmation	335	0.113	0.318	0	0	0
H: Mandatory prepayment						
Prepayment sweep	347	0.513	0.501	0	1	1
Asset sale sweep	347	0.504	0.501	0	1	1
Debt issuance sweep	347	0.262	0.440	0	0	1
Extra cash sweep	347	0.058	0.233	0	0	0
I: Milestones and events of default						
Any milestones and events of default	340	0.997	0.054	1	1	1
Chapter 7 conversion or case dismissal	340	0.944	0.230	1	1	1
Appointment of trustee or examiner	340	0.838	0.369	1	1	1
Loss of automatic stay or exclusivity	340	0.744	0.437	0	1	1
Change of control	340	0.712	0.454	0	1	1
Plan and disclosure statement filing and approval timeline	340	0.659	0.475	0	1	1
§363 bidding procedure and sale approval	340	0.185	0.389	0	0	0
Appointment of key personnel	340	0.176	0.382	0	0	0

Table 3: Comparing DIP-loan packages with matched loan packages

This table compares DIP-loan packages in our sample and their industry- and size-matched investment-grade and leveraged-loan packages as well as loan packages issued to the same bankrupt firms within the three-year period or one-year period prior to Chapter 11 filing in Dealscan. To determine industry- and size-matched borrowers, we find a non-bankrupt investment-grade (leveraged) loan issuer in the year of bankruptcy filing that is in the same FF 12-industry and has the closest book assets to Chapter 11 firms. Panel A compares firm characteristics of the five sets of loan issuers. p-values from a t-test of the difference in the mean are presented in the last four columns. Panel B compares key characteristics of the 362 DIP-loan packages in our sample with those of loans issued to the industry- and size-matched investment-grade and leveraged-loan issuers and loans to the same bankrupt firms prior to Chapter 11 filing. p-values from a t-test of the difference in the mean are presented in the last four columns. Variable definitions are provided in Appendix Table 1.

	DIP loan packages (1) Mean	Industry/size matched investment-grade loans (2) Mean	Industry/size matched leveraged loans (3) Mean	Loans within three years before Chapter 11 (4) Mean	Loans within one year before Chapter 11 (5) Mean	Diff (1) - (2) p-value	Diff (1) - (3) p-value	Diff (1) - (4) p-value	Diff (1) - (5) p-value
A: Firm characteristics									
Assets	3,575	3,615	3,271	10,004	8,248	0.960	0.691	0.004	0.004
ROA	0.024	0.151	0.098	0.080	0.054	0.000	0.000	0.000	0.240
Leverage	1.064	0.542	0.753	0.858	0.920	0.000	0.000	0.000	0.029
Cash	0.054	0.107	0.095	0.053	0.058	0.000	0.000	0.814	0.642
Tangibility	0.393	0.340	0.346	0.400	0.435	0.010	0.020	0.735	0.240
Industry distress	0.208	0.000	0.075	0.060	0.088	0.002	0.000	0.000	0.021
N	359	359	359	302	68				
B: Package characteristics									
Package amount	365.975	578.519	429.970	567.328	558.087	0.128	0.526	0.066	0.370
Package amount/assets	0.152	0.329	0.294	0.207	0.151	0.000	0.000	0.015	0.975
Revolver	0.829	0.859	0.762	0.723	0.713	0.255	0.022	0.000	0.014
Term loan	0.478	0.245	0.512	0.523	0.494	0.000	0.343	0.217	0.785
Maturity	9.669	45.558	49.592	45.665	39.661	0.000	0.000	0.000	0.000
Financial covenants	0.869	0.535	0.538	0.553	0.540	0.000	0.000	0.000	0.000
Liquidity/cash level	0.595	0.039	0.046	0.043	0.023	0.000	0.000	0.000	0.000
EBITDA level	0.551	0.016	0.077	0.127	0.195	0.000	0.000	0.000	0.000
Debt/EBITDA or leverage ratio	0.220	0.499	0.416	0.388	0.287	0.000	0.000	0.000	0.188
Coverage ratio	0.122	0.423	0.406	0.398	0.356	0.000	0.000	0.008	0.000
Capex or production	0.542	0.078	0.204	0.269	0.253	0.000	0.000	0.000	0.000
Prepayment sweep	0.513	0.084	0.358	0.416	0.460	0.000	0.000	0.000	0.376
Asset sale sweep	0.504	0.076	0.349	0.398	0.448	0.000	0.000	0.004	0.351
Debt issuance sweep	0.262	0.052	0.269	0.266	0.264	0.000	0.828	0.896	0.968
Extra cash sweep	0.058	0.018	0.159	0.155	0.161	0.005	0.000	0.000	0.001
N	362	383	416	394	87				

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

This table presents the summary statistics of the 545 DIP-loan facilities within the 362 DIP-loan packages issued to the 359 Chapter 11 firms in our sample over the period 2002–2019. Variable definitions are provided in Appendix Table 1.

	N	Mean	SD	Min	25th	Median	75th	Max
A: Facility characteristics								
Revolver	545	0.635	0.482	0	0	1	1	1
Term loan	545	0.365	0.482	0	0	0	1	1
Facility amount	543	244.008	1480.215	0.700	30.000	75.000	175.000	33300.000
Facility amount/assets	543	0.101	0.103	0.000	0.031	0.071	0.133	0.747
Maturity	517	10.121	6.331	1.000	6.000	9.000	12.000	36.000
First/second lien	543	0.993	0.086	0.000	1.000	1.000	1.000	1.000
B: Interest and fee								
LIBOR spread	522	627.891	316.112	6.400	350.000	586.550	850.000	1845.800
Fixed rate	75	1033.533	381.977	350.000	800.000	1100.000	1200.000	2000.000
AISD	522	658.208	322.978	6.400	385.000	605.000	892.300	1845.800
Upfront fee	496	104.289	165.645	0.000	0.000	25.000	175.000	1904.762
Annual fee	496	35.028	97.788	0.000	0.000	0.000	0.000	850.000
Commitment fee	496	83.000	130.954	0.000	0.000	50.000	100.000	1000.000
Extension fee	496	6.331	28.670	0.000	0.000	0.000	0.000	250.000
Exit fee	496	59.769	145.640	0.000	0.000	0.000	32.083	1350.000
Default fee	491	218.788	89.283	0.000	200.000	200.000	200.000	1200.000

Table 5: Comparing DIP-loan facilities with matched loan facilities

This table compares key characteristics of the 545 DIP-loan facilities in our sample with those of facilities issued to the industry- and size-matched investment-grade and leveraged-loan issuers and facilities issued to the same bankrupt firms within the three-year period or one-year period prior to Chapter 11 filing. p-values from a t-test of the difference in the mean are presented in the last four columns. Variable definitions are provided in Appendix Table 1.

	DIP loan facilities (1) Mean	Industry/size matched investment-grade loans (2) Mean		Industry/size matched leveraged loans (3) Mean		Loans within three years before Chapter 11 (4) Mean		Loans within one year before Chapter 11 (5) Mean		Diff (1) - (2) p-value		Diff (1) - (3) p-value		Diff (1) - (4) p-value		Diff (1) - (5) p-value	
A: Facility characteristics																	
Revolver	0.635		0.785		0.552		0.548		0.562		0.004		0.000		0.003		0.008
Term loan	0.365		0.215		0.448		0.452		0.438		0.004		0.000		0.003		0.006
Facility amount	244.008		442.567		288.496		377.828		400.290		0.480		0.055		0.060		0.366
Facility amount/assets	0.101		0.210		0.198		0.129		0.105		0.000		0.000		0.001		0.339
Maturity	10.121		45.407		50.694		48.116		40.942		0.000		0.000		0.000		0.000
First/second lien	0.993		0.310		0.789		0.770		0.860		0.000		0.000		0.000		0.000
B: Interest and fee																	
LIBOR spread	627.891		136.124		332.684		354.622		457.223		0.000		0.000		0.000		0.000
AISD	658.208		138.128		340.805		365.894		457.946		0.000		0.000		0.000		0.000
Upfront fee	104.289		14.684		50.864		46.387		30.396		0.000		0.000		0.000		0.000
Annual fee	35.028		6.441		5.694		3.041		0.962		0.000		0.000		0.000		0.000
Commitment fee	83.000		16.507		30.880		29.222		36.136		0.000		0.000		0.000		0.001
Extension fee	6.331		0.532		1.460		0.863		0.137		0.002		0.001		0.000		0.047
Exit fee	59.769		2.660		26.357		53.522		79.121		0.000		0.000		0.491		0.369
Default fee	218.788		206.992		217.059		211.773		215.244		0.758		0.055		0.160		0.634
N	545		452		620		575		121								

Table 6: DIP-loan solicitation

This table examines the determinants of DIP-loan spreads focusing on loan search and solicitation. Panel A presents the summary statistics on loan search and bidding at the loan package level. Panel B regresses DIP-loan spreads at the facility level on different measures of loan search and solicitation, with LIBOR spread as the dependent variable in columns (1), (3), and (5), and AISD in columns (2), (4), and (6). Columns (3)-(4) employ a sample of debtors who provide the number of lenders approached. Columns (5)-(6) employ a sample of debtors who provide the number of lenders interested. Above-median number of lenders approached is an indicator variable that takes the value of one if the number of lenders approached is above the median of 12, and zero otherwise. Above-median number of lenders interested is an indicator variable that takes the value of one if the number of lenders interested is above the median of three, and zero otherwise. Variable definitions are provided in Appendix Table 1. All regressions include FF12-industry fixed effects, year fixed effects, and loan type fixed effects. Robust standard errors clustered at the year level are in brackets. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

A: Summary statistics for the DIP-loan solicitation process						
	N	Mean	SD	25th	Median	75th
Sample reporting that prospective lenders were approached	253 of 362	0.699	0.459	0	1	1
Sample reporting the actual number of lenders approached	136 of 253	17.728	20.115	8	12	20
Sample reporting the number of lenders interested	184 of 253	4.467	7.572	1	3	5
Sample reporting a formal round of bidding for the DIP loan	32 of 362	0.088	0.284	0	0	0

Continued on next page

DIP-loan solicitation (cont. page 2 of 2)

B: DIP-loan solicitation and spreads						
	LIBOR spread (1) Full sample	AISD (2) Full sample	LIBOR spread (3) Cond. sample	AISD (4) Cond. sample	LIBOR spread (5) Cond. sample	AISD (6) Cond. sample
Prospective lenders approached	36.418 [35.960]	42.01 [36.427]				
Above-median number of approached lenders			75.36 [51.753]	70.103 [52.945]		
Above-median number of interested lenders					-151.992*** [49.091]	-151.973** [53.702]
Log(facility amount)	-46.158*** [9.720]	-50.276*** [10.528]	-48.230** [22.717]	-59.299** [21.638]	-66.996** [23.231]	-76.260*** [19.838]
Maturity	-5.261 [3.449]	-4.353 [3.381]	4.516 [7.413]	5.972 [7.511]	-2.482 [3.537]	0.079 [3.667]
Financial covenants	-9.179 [51.707]	6.854 [49.840]	12.119 [144.233]	31.389 [143.167]	-48.278 [112.082]	-42.456 [112.956]
Prepayment sweep	26.77 [29.046]	41.001 [31.359]	-55.703 [52.064]	-28.642 [51.964]	-5.68 [60.008]	-0.905 [65.110]
Size	-13.709 [11.879]	-21.204 [13.730]	-21.01 [20.189]	-22.55 [19.758]	-11.896 [23.219]	-16.492 [21.876]
ROA	-74.222 [93.722]	-53.869 [100.171]	8.879 [66.264]	35.802 [57.446]	-50.244 [131.949]	-16.343 [119.066]
Leverage	-66.293*** [20.522]	-62.248** [22.008]	-154.703*** [31.422]	-149.384*** [33.409]	-25.346 [31.983]	-13.806 [34.852]
Cash	201.302 [235.374]	189.235 [250.462]	248.956 [291.125]	259.286 [299.408]	79.455 [269.393]	85.805 [283.023]
Tangibility	-23.268 [77.375]	-17.644 [87.679]	-96.458 [114.478]	-75.797 [119.690]	9.696 [89.569]	29.096 [93.473]
Industry distress	-11.841 [51.543]	7.833 [58.122]	-43.108 [76.800]	-37.78 [77.602]	-43.674 [54.552]	-36.796 [56.072]
Prepack	-32.939 [32.569]	-36.898 [34.439]	-54.211 [51.445]	-43.577 [49.959]	-77.785* [39.621]	-74.098* [35.748]
FF-12, year, and loan type FE	Yes	Yes	Yes	Yes	Yes	Yes
Observations	429	429	174	174	242	242
Adjusted R ²	0.365	0.315	0.445	0.417	0.443	0.417

Table 7: Explaining prepetition secured lenders providing DIP loans

This table examines the determinants of the likelihood that prepetition secured lenders provide DIP financing at the loan package level using a logit regression. Variable definitions are provided in Appendix Table 1. Robust standard errors clustered at the year level are in brackets. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

	Logit Prepetition secured (1)
Size	0.002 [0.129]
ROA	-0.16 [1.039]
Leverage	-0.09 [0.353]
Cash	-6.491** [2.861]
Tangibility	-0.303 [0.765]
Industry distress	0.224 [0.472]
Prepack	0.734** [0.360]
Bank loan/assets	1.416** [0.686]
FF-12 and year fixed effects	Yes
N	312
Pseudo R ²	0.167

Table 8: Relationship lending and DIP-loan spreads

This table examines the determinants of DIP-loan spreads focusing on relationship lending. The sample comprises 349 DIP loans provided by prepetition secured lenders over the period 2002–2019. The regressions are run at the facility level, with LIBOR spread as the dependent variable in columns (1), (3), and (5), and AISD in columns (2), (4), and (6). Variable definitions are provided in Appendix Table 1. All regressions include FF12-industry fixed effects, year fixed effects, and loan type fixed effects. Robust standard errors clustered at the year level are in brackets.***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

	LIBOR spread (1)	AISD (2)	LIBOR spread (3)	AISD (4)	LIBOR spread (5)	AISD (6)
DPrior	-60.865 [40.735]	-51.757 [42.185]				
Relationship lender(number)			-88.550* [46.259]	-81.965* [45.536]		
Relationship lender(amount)					-101.479** [45.350]	-96.842** [45.202]
Log(facility amount)	-56.207*** [15.281]	-60.788*** [15.316]	-55.950*** [15.111]	-60.489*** [15.323]	-56.281*** [14.976]	-60.774*** [15.160]
Maturity	-2.182 [4.526]	-1.664 [4.698]	-2.07 [4.435]	-1.535 [4.611]	-2.087 [4.397]	-1.538 [4.567]
Financial covenants	17.66 [59.113]	27.992 [59.505]	16.366 [57.116]	27.66 [56.841]	20.305 [56.994]	31.711 [56.734]
Prepayment sweep	73.122* [37.917]	80.092* [38.601]	77.161** [36.544]	84.010** [37.264]	78.583** [37.153]	85.552** [37.944]
Size	1.551 [12.992]	-5.457 [14.886]	2.598 [12.955]	-4.216 [14.384]	4.038 [12.807]	-2.708 [14.114]
ROA	-37.285 [76.496]	-7.816 [82.105]	-30.401 [74.378]	-1.383 [79.385]	-31.924 [74.348]	-2.616 [79.293]
Leverage	-39.083 [22.685]	-38.469 [24.534]	-38.288 [22.378]	-37.194 [24.616]	-35.99 [22.130]	-34.773 [24.140]
Cash	211.553 [249.081]	210.371 [247.896]	199.057 [254.030]	195.218 [254.921]	178.952 [259.761]	174.308 [259.844]
Tangibility	-79.779 [85.632]	-83.177 [101.659]	-95.542 [82.466]	-99.058 [99.777]	-102.608 [82.294]	-106.744 [99.063]
Industry distress	-18.432 [64.032]	9.192 [69.033]	-18.264 [60.508]	9.844 [65.587]	-18.633 [59.368]	9.686 [64.219]
Prepack	-62.184 [36.848]	-71.227 [42.067]	-65.176* [36.436]	-74.159* [42.110]	-67.090* [36.800]	-76.133* [42.406]
FF-12, year, and loan type FE	Yes	Yes	Yes	Yes	Yes	Yes
N	349	349	349	349	349	349
Adjusted R ²	0.390	0.344	0.396	0.349	0.400	0.354

Table 9: Contested DIP loans

This table examines objections to DIP-loan terms. Panel A presents the frequency of objections at the loan package level and the identity of the party that raises the objection. Panel B presents the OLS regressions of DIP-loan spreads at the facility level on the occurrence and frequency of DIP objections. Columns (1), (3), and (5) use LIBOR spread as the dependent variable, and columns (2), (4), and (6) use AISD as the dependent variable. Columns (5) and (6) employ a sample of DIP loans that have received objections. DIP objections is an indicator variable that takes the value of one if at least one party files formal objections to the court, and zero otherwise. Variable definitions are provided in Appendix Table 1. All regressions include FF12-industry fixed effects, year fixed effects, and loan type fixed effects. 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	
DIP objections	0.599
# of objections (# of parties objecting)	2.146
Unsecured creditors committees and suppliers	0.533
Equity holders	0.028
US trustee	0.033
Union, workers, pensioners, Pension Benefit Guaranty Corp.	0.017
Other (e.g., municipal governments, asbestos claimants)	0.169
N	362

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Contested DIP loans (cont. page 2 of 2)

B: Objections and DIP-loan spreads						
	LIBOR spread (1)	AISD (2)	LIBOR spread (3)	AISD (4)	LIBOR spread (5)	AISD (6)
	Full sample	Full sample	Full sample	Full sample	Cond. sample	Cond. sample
DIP objections	81.628*** [23.902]	83.432*** [27.792]				
Log(1+# of objections)			59.818*** [14.447]	64.133*** [16.701]	72.639** [29.702]	88.742** [35.493]
Log (facility amount)	-47.635*** [11.438]	-51.518*** [13.246]	-48.719*** [11.805]	-52.855*** [13.293]	-51.091*** [16.542]	-58.576*** [18.407]
Maturity	-5.152 [3.742]	-4.196 [3.724]	-5.336 [3.573]	-4.405 [3.542]	-3.738 [6.316]	-2.996 [6.446]
Financial covenants	-9.571 [52.960]	6.352 [52.573]	-20.713 [53.703]	-5.575 [53.575]	-85.684 [66.445]	-64.519 [68.242]
Prepayment sweep	19.67 [32.178]	33.646 [34.262]	17.161 [31.134]	30.638 [33.760]	-35.766 [52.682]	-29.014 [60.167]
Size	-16.381 [10.737]	-23.934* [12.648]	-21.646* [11.268]	-29.713** [13.130]	-34.466 [21.282]	-39.173 [26.206]
ROA	-77.948 [79.376]	-57.937 [84.037]	-77.8 [81.346]	-57.865 [85.652]	-67.149 [114.469]	-119.478 [100.095]
Leverage	-67.836*** [20.871]	-63.079** [22.799]	-66.884*** [22.829]	-62.420** [24.623]	-64.776*** [21.987]	-51.538* [25.950]
Cash	178.845 [230.327]	165.369 [242.070]	187.911 [230.787]	174.313 [241.654]	164.023 [324.820]	101.967 [358.435]
Tangibility	-12.71 [81.382]	-6.236 [89.122]	-13.359 [79.017]	-6.638 [86.172]	153.582 [93.252]	135.255 [93.548]
Industry distress	-21.541 [50.599]	-2.152 [57.685]	-14.812 [51.079]	4.604 [57.573]	63.949 [40.843]	98.517** [46.113]
Prepack	-9.805 [35.572]	-13.142 [36.428]	-8.354 [35.382]	-10.471 [36.574]	17.289 [40.573]	23.262 [45.806]
FF-12, year, and loan type FE	Yes	Yes	Yes	Yes	Yes	Yes
Observations	429	429	429	429	276	276
Adjusted R ²	0.376	0.325	0.380	0.331	0.393	0.340

Appendix Table 1: Variable definitions

Variable name	Definition
A: Firm characteristics	
Assets	Book assets measured in millions of dollars as of the last fiscal year before Chapter 11 filing
Size	Log (assets)
ROA	EBITDA/assets
Leverage	Liabilities/assets
Cash	Cash and short-term investments/assets
Tangibility	net PP&E/assets
Industry distress	Indicates whether industry median sales growth (based on two-digit SIC industry code) is below -5%
Bank loan/assets	Amount of outstanding bank loans at the time of bankruptcy 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
Dismissed/unresolved	Indicates whether case is dismissed or unresolved as of May 2020
Months in bankruptcy	Number of months from date of filing to date of plan confirmation
C: Package size	
DIP amount	Amount of DIP loan package in millions of dollars approved in the final order
DIP amount/assets	Amount of DIP loan package approved in the final order scaled by book assets
DIP amount/liabilities	Amount of DIP loan package approved in the final order scaled by book liabilities
D: Facility type	
Multiple facility	Indicates whether DIP loan package includes multiple facilities
Revolver	Indicates whether revolver facility (including Letter of Credit) 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	Indicates whether DIP loan carries super-priority (Section 364c(1))
First/second lien	Indicates whether DIP loan is given first lien on unencumbered collateral or junior lien on encumbered assets (Section 364c(2) & 364c(3))
Priming lien	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 DIP loans

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Variable name	Definition
Roll-up amount	Amount of roll-up facility in millions of dollars
Roll-up amount/DIP amount	Amount of roll-up facility scaled by DIP amount
H: Use of proceeds	
UoP–Working capital	Indicates whether DIP is used to support working capital
UoP–Prepetition	Indicates whether use of proceeds includes paying prepetition 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	Indicates whether use of proceeds includes paying postpetition 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 level	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 or leverage ratio	Indicates whether DIP loan has financial covenants tied to Debt/EBITDA or leverage ratio
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	
Prepayment sweep	Indicates whether prepayment is required if there is asset sale, new debt issuance, or extra cash on balance sheet
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 and events of default	
Milestones and events of default	Indicates whether any milestone or event of default is specified in the DIP loan credit agreement
Chapter 7 conversion or case dismissal	Indicates whether it is an event of default when case is converted to Chapter 7 or dismissed
Appointment of trustee or examiner	Indicates whether it is an event of default to have a trustee or examiner appointed by court
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
Change of control	Indicates whether it is an event of default when there is a change of control (except for change by plan)
Plan and disclosure statement filing and approval	Indicates whether debtor is required to have plan and disclosure statement filed and approved by certain date
Appointment of key personnel	Indicates whether DIP contract requires debtor to hire specific key personnel such as chief restructuring officers
§363 bidding procedure and sale approval	Indicates whether debtor is required to have order approving the bidding procedure for a sale of substantially all of its assets and order approving the sale entered by certain dates

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Variable name	Definition
M: Facility size	
Facility amount	Amount of DIP-loan facility in millions of dollars
Facility amount/assets	Amount of DIP-loan facility scaled by book assets
N: Interest and fee	
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 U.S. prime rate or federal funds rate, the spread is converted to LIBOR spread using the difference between the 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
AISD	All-in spread drawn, measured as the sum of LIBOR spread and annual fee. We use LIBOR spread for 45 facilities that have missing annual fee.
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 fee	Annual charge against entire commitment amount of a facility, whether used or unused
Commitment fee	Fee charged on commitment amount of a facility that is unused
Extension fee	Fee charged for extending maturity of a facility
Exit fee	Fee charged on facility exit or early termination of a facility
Default fee	Fee charged upon default on a facility, defined in the “Events of Default” section of credit agreement
O: DIP-loan bidding	
Prospective lenders approached	Indicates whether debtor has solicited or surveyed interests of prospective lenders in providing DIP financing as documented in its motion
Number of lenders approached	Number of lenders whom debtor has approached, conditional on it approaching prospective lenders
Number of lenders interested	Number of lenders who have shown interest in providing DIP financing, conditional on debtor approaching prospective lenders
Bidding on DIP loans	Indicates whether debtor holds a formal bidding process after receiving interests from multiple lenders
L: Lender type and relationship lending	
Prepetition secured	Indicates whether DIP financing is provided by prepetition secured lenders
Dprior	Indicates whether DIP financing is provided by lenders who have prepetition lending relationships with debtor (i.e., DIP lenders provide at least one loan over the five-year period preceding Chapter 11 filing)
Relationship lender(number)	Strength of the lending relationship based on the number of loans provided to debtor over the five-year period preceding Chapter 11 filing (i.e., the number of loans provided by DIP lenders scaled by the total number of loans taken out by debtor in the last five years)

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Variable name	Definition
Relationship lender(amount)	Strength of the lending relationship based on the amount of loans provided to debtor over the five-year period preceding Chapter 11 filing (i.e., the amount of loans provided by DIP lenders scaled by the total amount of loans taken out by debtor in the last five years)

Online Appendix
“Loans to Chapter 11 firms: Contract design and pricing”

CONTENT:

A: Excerpts from four DIP motions

B: Comparing manually-collected DIP loans in our sample with DIP loans in Dealscan over the period 2002–2012

C: Seven “impaired” DIP loans with full recovery (principal+interest)

D: Additional empirical analysis

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 Comparing manually-collected DIP loans in our sample with DIP loans in Dealscan over the period 2002–2012

Below, we illustrate the steps taken to merge and verify the DIP-loan facilities that we manually extracted from court dockets with those in Dealscan from 2002–2012.

Step 1: We extract all loan facilities with either primary or secondary loan purpose as debtor-in-possession financing taken out by U.S. public companies over the period 2002–2012 in Dealscan. There are 459 facilities (by 252 unique Chapter 11 firms) that satisfy the initial screening with 385 (327) having non-missing AISD (LIBOR spread). The mean and median AISD (LIBOR spread) are 498 bps and 400 bps (472 bps and 400 bps), respectively.

Step 2: We manually match Dealscan’s facilities with the DIP-loan facilities in our sample using borrower company name, gvkey, facility start date, facility type, facility amount, and maturity. We find 169 facilities (by 107 unique borrowers) in Dealscan that are also in our sample. The mean and median AISD (LIBOR spread) of the 169 facilities in both Dealscan and our dataset are 560 bps and 491 bps (518 and 492 bps), respectively, slightly higher than those for the whole population of facilities in Dealscan identified in Step 1.

Step 3: We compare spreads on the 169 facilities in both samples and find that for 42 facilities, Dealscan has incorrect spreads (e.g., in year 2005, the correct spread for Anchor Glass Container Corpor’s DIP loan is 700 bps, while the spread from Dealscan is 325 bps). Most errors occur when the reference rate is not LIBOR. For example, when U.S. prime rates or other base rates are referenced, Dealscan records the spread over those rates instead of LIBOR. We correct those using LIBOR rates consistently. Moreover, we compare AISD in both samples and find that for 68 facilities, there are different AISDs. Figure 1 in the Online Appendix shows the average AISD of the two overlapping samples over time. The differences are particularly large (about 100 bps) before 2008 but become negligible after that. We find that Dealscan often under-reports the amount of annual fees, and for those with annual fees missing, Dealscan sets AISD equal to LIBOR spread.

To summarize:

- (1) Even though Dealscan has more facilities over the period 2002–2012 than our dataset, it does not include the universe of DIP-loan facilities of large U.S. public firms as just over 40% of our sample facilities are covered by Dealscan.
- (2) Dealscan, at times, records a DIP loan that is approved by the interim order as a separate loan from that reported by the final order, creating duplicates of the same DIP loan.
- (3) Dealscan contains large pricing errors for facilities in earlier years of our sample period (2002–2012) when the reference rate is not LIBOR and/or because it fails to capture annual fees correctly.

C Seven “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 attorney’s 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 New Common Stock to be issued by the 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.

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DIP amount	Impairment	Final DIP payment
(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.
(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.

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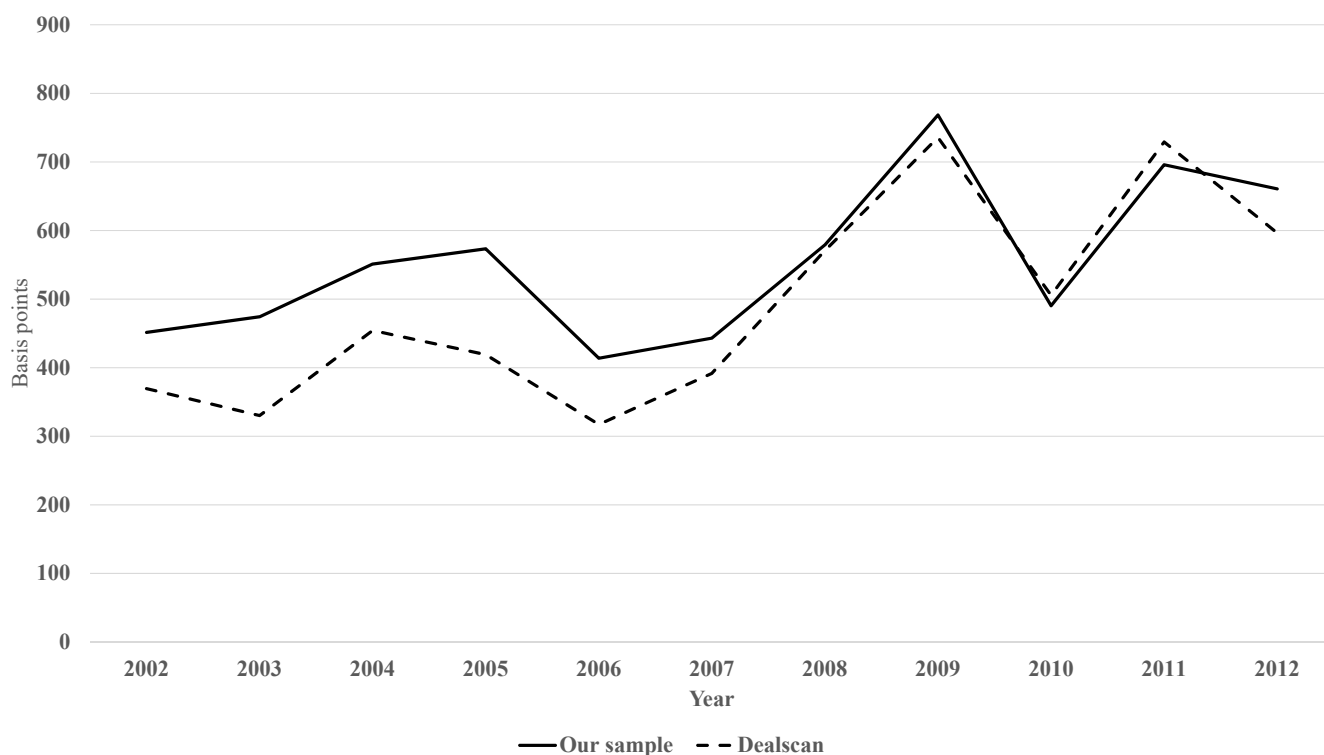
DIP amount	Impairment	Final DIP payment
(6) ATP Oil & Gas Corporation 08/17/2012; converted to Ch. 7; recovery 100%		
\$617.6m total principal including \$250m term loan facility and \$367.6m revolving facility (used to pay off prepetition loan, effectively a roll-up facility). Approved by the judge 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.
(7) Black Elk Energy 8/11/2015; Liquidated in Ch. 11; recovery 100%		
The package includes \$15m new money DIP facility and \$15m roll-up of term loan facility provided by AQR Capital Management, LLC and Phoneix Investment Adviser LLC; approved by the judge on March 18, 2016.	The DIP claim is treated as impaired because of liquidation.	Under the Third Amended Plan of Liquidation, DIP lenders are paid with liquidation proceeds, which are estimated to provide DIP lenders full recovery.

Note: We do not consider loan defaults that took place during the COVID-19 pandemic. One such case is Sanchez Energy Corp. Its DIP loan was approved by the judge on January 22, 2020. DIP lenders later called a default as the company did not meet a milestone. A plan of reorganization that distributed 20% of reorganized equity to DIP lenders (and reserved the rest 80% for prepetition lenders) was confirmed on April 30, 2020. Even though considered impaired, the DIP term loans were trading around par as of the June 30 effective date and Fidelity, as a DIP lender, generated 345% return on the financing in just ten months. (See "Sanchez Energy Corporation - Ownership of 80% of Sanchez Energy Reorg Equity Remains Disputed as Commodity Prices Rise; Year-Plus Allocation Litigation Headed to Mediation," by Reorg Research, July 20, 2021, and "DTC Adversary Complaint Details Undisclosed Financings by DIP Lenders, Indicates Sanchez Debtors Considering Sale of Certain Assets Represented by Challenged Leases" by Reorg Research, August 16, 2021.)

D Additional empirical analysis

Online Appendix Figure 1: AISD on DIP-loan facilities in our sample and on the same facilities in Dealscan before correction

This figure presents all-in spread drawn (AISD) on the 169 DIP-loan facilities that are in both our sample and Dealscan over the period 2002–2012, before errors in Dealscan are corrected.



Online Appendix Table 1: Comparing DIP loans with industry, size, and facility-type matched leveraged loans

This table compares the DIP loans in our sample and their industry, size, and facility-type (revolver/term loan) matched leveraged loans in Dealscan. Variable definitions are provided in Table 1.

	DIP facilities	Matched facilities	Difference
	Mean	Mean	p-value
	(1)	(2)	(1)-(2)
A: Facility characteristics			
Revolver	0.740	0.665	0.017
Term loan	0.260	0.335	0.017
Facility amount	260.926	339.348	0.356
Facility amount/assets	0.104	0.198	0.000
Maturity	10.124	49.494	0.000
Security	0.989	0.780	0.000
b: Interest and fee			
LIBOR spread	587.233	303.178	0.000
AISD	619.099	308.730	0.000
Upfront fee	93.459	35.213	0.000
Annual fee	37.388	6.446	0.000
Commitment fee	87.602	33.984	0.000
Extension fee	6.222	2.692	0.041
Exit fee	55.108	17.147	0.000
Default fee	219.552	218.798	0.911
N	381	481	

Online Appendix Table 2: Comparing DIP loans with industry, size, and security-type matched leveraged loans

This table compares the DIP loans in our sample and their industry, size, and loan-security matched leveraged loans in Dealscan. Variable definitions are provided in Table 1.

	DIP facilities	Matched facilities	Difference
	Mean	Mean	p-value
	(1)	(2)	(1)-(2)
A: Facility characteristics			
Revolver	0.655	0.544	0.000
Term loan	0.345	0.456	0.000
Facility amount	261.208	287.580	0.729
Facility amount/assets	0.105	0.209	0.000
Maturity	10.435	52.685	0.000
Security	0.991	1.000	0.040
b: Interest and fee			
LIBOR spread	612.586	340.146	0.000
AI SD	643.305	347.333	0.000
Upfront fee	99.916	58.512	0.001
Annual fee	35.124	1.122	0.000
Commitment fee	80.000	31.379	0.000
Extension fee	7.020	1.471	0.002
Exit fee	60.111	30.341	0.001
Default fee	218.481	218.750	0.963
N	466	489	

Online Appendix Table 3: Comparing DIP loans with industry, size, and syndicate-size matched leveraged loans

This table compares the DIP loans in our sample and their industry, size, and syndicate-size matched leveraged loans in Dealscan. We require the difference in syndicate size for the DIP loan and its matched leveraged loan is no greater than one. Variable definitions are provided in Table 1.

	DIP facilities	Matched facilities	Difference
	Mean	Mean	p-value
	(1)	(2)	(1)-(2)
A: Facility characteristics			
Revolver	0.655	0.539	0.004
Term loan	0.345	0.461	0.004
Facility amount	246.830	199.283	0.685
Facility amount/assets	0.109	0.174	0.000
Maturity	10.143	48.564	0.000
Security	0.986	0.832	0.000
b: Interest and fee			
LIBOR spread	619.720	354.277	0.000
AISD	659.081	364.120	0.000
Upfront fee	101.621	36.654	0.000
Annual fee	42.665	1.905	0.000
Commitment fee	82.014	32.824	0.000
Extension fee	6.248	0.743	0.004
Exit fee	63.429	30.811	0.006
Default fee	220.771	226.006	0.572
N	284	297	

Online Appendix Table 4: Court, judge, and lead lender fixed effects and DIP-loan spreads

This table reports F-tests for the joint significance of court fixed effects, judge fixed effects, and lead lender fixed effects in regressions of DIP-loan spreads. The sample comprises 429 DIP-loan facilities provided by 75 unique lead lenders in 281 Chapter 11 sample cases that were filed in 32 different bankruptcy courts and overseen by 80 different judges over the period 2002–2019. All regressions include facility- and firm-level controls as in Table ??, FF12-industry fixed effects, year fixed effects, and loan type fixed effects. Numbers in parentheses are the p-value of an F-test for the joint significance of court (judge, lead lender) fixed effects and the number of constraints in the F-test.

		Court FE	Judge FE	Lead Lender FE	N	Adj. R ²
LIBOR Spread	Controls, industry, and year fixed effects				429	0.366
	Controls, industry, year, and lead lender fixed effects	1.52 (0.008, 314)			429	0.423
	Controls, industry, year, and court fixed effects		0.85 (0.700, 357)		429	0.358
	Controls, industry, year, and judge fixed effects			1.02 (0.440, 309)	429	0.366
AISD	Controls, industry, and year fixed effects				429	0.316
	Controls, industry, year, and lead lender fixed effects	1.38 (0.033, 314)			429	0.362
	Controls, industry, year, and court fixed effects		0.87 (0.676, 357)		429	0.308
	Controls, industry, year, and judge fixed effects			1.01 (0.456, 309)	429	0.318

Online Appendix Table 5: Objections to DIP loans and creditor recovery

This table examines the relation between objections to DIP loans and creditor recovery. DIP objections is an indicator variable that takes the value of one if at least one party files formal objections to the court, and zero otherwise. Secured (Unsecured) recovery is the mean recovery rate of secured (unsecured) debt. Information on recovery is retrieved from reorganization/liquidation plans confirmed by the court (Jiang, Li, and Wang, 2012). Variable definitions are provided in Table 1. All regressions include facility- and firm-level controls as in Table 6, FF12-industry fixed effects, year fixed effects, and loan type fixed effects. Robust standard errors clustered at the year level are in brackets. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

	Secured recovery (1)	Unsecured recovery (2)
DIP objections	0.054 [0.051]	-0.142*** [0.034]
N	133	133
Adjusted R ²	0.070	0.06

Online Appendix Table 6: Roll-up and DIP-loan spreads

This table examines the determinants of DIP-loan spreads focusing on the roll-up provision. Variable definitions are provided in Table 1. All regressions include FF12-industry fixed effects, year fixed effects, and loan type fixed effects. Robust standard errors clustered at the year level are in brackets. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

	LIBOR spread (1)	AISD (2)
Roll-up	63.989* [35.496]	67.037 [38.973]
Log(facility amount)	-45.844*** [10.600]	-49.731*** [11.926]
Maturity	-4.693 [3.451]	-3.720 [3.455]
Financial covenants	-16.102 [53.690]	-0.480 [53.268]
Prepayment sweep	21.111 [31.027]	34.994 [33.674]
Size	-12.699 [11.134]	-20.145 [13.173]
ROA	-93.166 [93.757]	-73.924 [98.898]
Leverage	-60.493*** [19.638]	-55.571** [22.392]
Cash	196.233 [228.383]	183.190 [242.295]
Tangibility	-15.440 [75.627]	-8.946 [85.712]
Industry distress	-8.615 [47.448]	11.156 [53.570]
Prepack	-22.477 [34.637]	-25.849 [37.113]
FF-12, year, and loan type FE	Yes	Yes
N	429	429
Pseudo R ²	0.432	0.386

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