# Debtor-in-possession financing and bankruptcy resolution: Empirical evidence

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# INTRODUCTION

- **DIP(Debtor-in-possession):** a company that files for protection under Chapter 11 under the US Bankruptcy Code
- **DIP Financing:** the loans to DIPs for their successful reorganization with superior seniority and enhanced security that is not available outside the bankruptcy context
- **Negative side** on DIP Financing:
  - incentives for managers to undertake risky, possibly negative NPV projects (**the overinvestment problem**)
  - **transfer of wealth** from existing unsecured creditors to new secured creditors
- **Positive side** on DIP Financing:
  - allows the borrower to **undertake positive NPV projects** that might be passed up in the absence of senior and secured credit such as DIP financing

# INTRODUCTION

- What distinguishes firms that obtain DIP financing from firms that do not?
- How is DIP financing related to the probability and speed of bankruptcy resolution?
- Does it make a difference if the DIP financier is an existing creditor with a prior lending relationship with the firm?

# Analysis: Data and Sample selection

- Databases:
  - Bankruptcy DataSource – New Generation Research Inc.
  - Dealscan database – Loan Pricing Corporation
  - The Dow Jones News Retrieval system
  - The Lexis-Nexis business news
- The final sample
  - 538 firms that filed for Chapter 11 between Jan 1988 and Dec 1997
  - 165 firms that received DIP Financing within the same period

# Analysis: Data and Sample selection

Table 1
Calendar time distribution of date of chapter 11 filing. The sample consists of 538 nonfinancial companies filing for Chapter 11 between January 1, 1988 and December 31, 1997. The year of the filing is shown for 147 filings that were able to obtain debtor-in-possession (DIP) financing and 407 other filings that did not receive DIP financing.

| Year | Total filings | Firms obtained DIP financing | Firms not obtaining DIP financing | Percentage of total filing receiving DIP financing |
|---|---|---|---|---|
| 1988 | 27 | 2 | 25 | 7.41 |
| 1989 | 48 | 5 | 43 | 10.42 |
| 1990 | 58 | 16 | 42 | 27.59 |
| 1991 | 82 | 22 | 60 | 26.83 |
| 1992 | 64 | 16 | 48 | 25.00 |
| 1993 | 54 | 17 | 37 | 31.48 |
| 1994 | 47 | 14 | 33 | 29.79 |
| 1995 | 50 | 24 | 26 | 48.00 |
| 1996 | 56 | 27 | 29 | 48.21 |
| 1997 | 52 | 22 | 30 | 42.31 |
| Total | 538 | 165 | 373 | 30.67 |

# Analysis 1: Characteristics of firms obtaining DIP financing

- The Probit regression model

$$DIP_i = f(LOGASSET_i, LEVERAGE_i, PREPAK_i, POST1992_i, RETAIL, \frac{CA}{TA_i})$$

  - DIP: the dependent variable(1=the firm i optained DIP financing, 0=otherwise)
  - LOGASSET: the natural log of the book value of total assets
  - LEVERAGE: (the LT debt + Current Liab.)/Total Assets
  - PREPAK: a dummy variable (1=the filing was a prepackaged Ch 11, 0=otherwise)
  - POST1992: a dummy variable (1=the Ch 11 filing took place in 1992-97, 0=otherwise)
  - RETAIL: a dummy variable (1=the primary SIC code reported in the Chapter 11 filing is in the range 5200–5999, 0=otherwise)
  - CA/TA: Current Assets/Total Assets

# Analysis 1: Characteristics of firms obtaining DIP financing

| | DIP determinants (panel A) | | | Inside DIP determinants (panel B) | | |
|---|---|---|---|---|---|---|
| Variable | Coefficient | Change in probability for $+/-\sigma/2$ | $T$-ratio | Coefficient | Change in probability for $+/-\sigma/2$ | $T$-ratio |
| Intercept | −5.376 | | −11.77*** | 1.571 | | 1.87* |
| *LOGASSET* | 0.769 | 0.186 | 11.59*** | −0.219 | −0.110 | −2.26** |
| *PREPAK* | −0.412 | −0.052 | −1.74* | 0.792 | 0.266 | 2.44** |
| *LEVERAGE* | −0.238 | −0.022 | −1.39 | 0.335 | 0.053 | 0.96 |
| *RETAIL* | 0.686 | 0.162 | 4.20*** | 0.002 | 0.001 | 0.01 |
| *POST1992* | 0.8654 | 0.221 | 5.97*** | −0.043 | −0.017 | −0.19 |
| *CA/TA* | 1.677 | 0.064 | 4.82*** | −0.897 | −0.075 | −1.62* |
| Number of observations | 504 | | | 144 | | |
| Pseudo $R^2$ | 37.8% | | | 7.4% | | |

*Significant at 10%. **Significant at 5%. ***Significant at 1%.

# Analysis 1: Characteristics of firms obtaining DIP financing

**Panel A:DIP determinants**

- Negative intercept: the typical firm does not emerge from Chapter 11.
- The larger firms are more likely to obtain DIP financing.
- Prepackaged filings are less likely to obtain DIP financing.
- A firm's ability to obtain DIP financing is positively related to CA/TA.
  - DIP lenders prefer to lend against liquid collateral.
  - working capital intensive firms have higher demand for DIP financing.

**Panel B: Inside DIP determinants**

- Prepackaged filings that receive DIP financing are likely to receive it from their existing lenders.
- The coefficient for LOGASSET is negative and significant, as is the coefficient for CA/TA.
  - The most advantageous or cheapest source of financing for smaller firms is their preexisting lenders.
  - Insiders lend more frequently to small firms for which they are at an informational advantage.

# Analysis 2: Relationship between DIP financing and bankruptcy outcomes

- The Probit Model

$$EMERGE_i = f(LOGASSET_i, LEVERAGE_i, RETAIL_i, \frac{CA}{TA_i}, DIP_i)$$

  - EMERGE: the dependent variable (1=the firm i either emerged or was acquired by or merged with another firm, 0=otherwise)

# Analysis 2: Relationship between DIP financing and bankruptcy outcomes

| Variable | Coefficient | Change in probability from $-\sigma/2$ to $+\sigma/2$ | $T$-ratio |
|---|---|---|---|
| Intercept | −0.663 | | −2.16** |
| *LOGASSET* | 0.221 | 0.126 | 3.84*** |
| *LEVERAGE* | 0.189 | 0.043 | 1.76* |
| *RETAIL* | −0.067 | −0.026 | −0.45 |
| *CA/TA* | −0.814 | −0.077 | −3.04*** |
| *DIP* | 0.343 | 0.133 | 1.99** |
| *DIPLAMDA* | | | |
| Number of observations | 440 | | |
| Pseudo $R^2$ | 9.6% | | |

*Significant at 10%.
**Significant at 5%.
***Significant at 1%.

# Analysis 2: Relationship between DIP financing and bankruptcy outcomes

- Larger firms are more likely to emerge successfully.
- Leverage shows up as positive and marginally significant.
- The coefficient for current assets is negative and significant.
  - A larger proportion of current total assets implies that the liquidation value of such a firm is likely to be higher, as current assets have lower liquidity costs as compared with fixed assets.
  - current assets are easier to divert for other purposes as compared with fixed assets.
- **Firms that obtain DIP financing are more likely to emerge successfully.**

# Analysis 3: Relationship between DIP financing and speed of bankruptcy resolution

- The Probit Model

$$RESOLPRD_i = f(LOGASSET_i, LEVERAGE_i, RETAIL_i, \frac{CA}{TA_i}, DIP_i)$$

  - RESOLPRD: the resolution period, defined as the number of days from the date of the Chapter 11 filing to the date on which the firm's plan of reorganization is confirmed by the court or the date on which the court approved a plan of liquidation or a major asset sale.

# Analysis 3: Relationship between DIP financing and speed of bankruptcy resolution

| | Panel A | | Panel B | |
|---|---|---|---|---|
| Variable | Coefficient | *T*-ratio | Coefficient | *T*-ratio |
| Intercept | 871.198 | 3.97*** | 1049.166 | 5.15*** |
| *LOGASSET* | −2.633 | −0.07 | −49.025 | −1.61* |
| *LEVERAGE* | −114.522 | −1.49 | −106.428 | −1.38 |
| *RETAIL* | −29.393 | −0.29 | −71.743 | −0.71 |
| *CA/TA* | 103.442 | 0.53 | 2.037 | 0.01 |
| *DIP* | −248.331 | −2.11** | | |
| *DIPLAMDA* | | | −117.118 | −1.63* |
| Number of observations | 268 | | 268 | |
| $R^2$ | 0.2% | | 0.2% | |

- The coefficient for DIP is negative and significant.
  - DIP lending helps identify or facilitate a faster resolution.

# Analysis 3: Relationship between DIP financing and speed of bankruptcy resolution

- How DIP financing relates to time to liquidation
  - Examine only those firms for which the outcome was liquidation, conversion to Chapter 7, or substantial asset sales.

# Analysis 3: Relationship between DIP financing and speed of bankruptcy resolution

| Variable | Coefficient | *T*-ratio |
|---|---|---|
| Intercept | 119.761 | 0.67 |
| *LOGASSET* | 108.736 | 2.64*** |
| *LEVERAGE* | 60.335 | 0.82 |
| *RETAIL* | 35.948 | 0.54 |
| *CA/TA* | 27.958 | 0.17 |
| *DIP* | −343.952 | −3.97*** |
| *DIPLAMDA* | | |
| Number of observations | 168 | |
| $R^2$ | 9.01% | |

*Significant at 10%. **Significant at 5%. ***Significant at 1%.

- Larger firms take longer to liquidate, perhaps because of coordination problems.
- DIP financing is associated with a statistically significant shorter time to liquidation.

# Analysis 3: Relationship between DIP financing and speed of bankruptcy resolution

**Interpretations:**

- DIP financing is value-creating because if the investment does not do well, the DIP financier facilitates a fast liquidation and prevents further value loss (caused by asset deterioration and other direct and indirect costs of financial distress).
- The faster liquidation result suggests a monitoring role of the DIP lender as opposed to a pure screening role alone.

# Analysis 4: Insiders versus outsiders

- Sample: firms that received DIP financing and did not file a prepackaged Chapter 11.
- The Probit Model

$$RESOLPRD_i = f(LOGASSET_i, LEVERAGE_i, RETAIL_i, \frac{CA}{TA_i}, SAME_i)$$

  - SAME: the dummy variable (1=the DIP financing was provided by the existing lender, 0=otherwise)

# Analysis 4: Insiders versus outsiders

| | Panel A | | Panel C | |
|---|---|---|---|---|
| Variable | Coefficient | *T*-ratio | Coefficient | *T*-ratio |
| Intercept | 246.21 | 1.28 | 291.426 | 0.84 |
| *LOGASSET* | 87.756 | 3.48*** | 72.887 | 1.41 |
| *LEVERAGE* | −134.884 | −3.67*** | 0.930 | 0.01 |
| *RETAIL* | 36.820 | 0.60 | 59.374 | 0.59 |
| *CA/TA* | −108.582 | −0.71 | −253.878 | −1.05 |
| *SAME* | −100.334 | −1.64* | −221.115 | −1.64* |
| *SAMELAMDA* | | | | |
| Number of observations | 89 | | 33 | |
| $R^2$ | 24.5% | | 28.3% | |

*Significant at 10%. **Significant at 5%. ***Significant at 1%.

- Inside DIP financiers identify or facilitate reduced time in bankruptcy for both successful emergences and liquidations.

# THANK YOU !

THANK
YOU
GRACIAS
ARIGATO
SHUKURIA
DANKSCHEEN
JUSPAXAR
GOZAIMASHITA
EFCHARISTO
TASHAKKUR ATU
YAQHANYELAY
SUKSAMA
EKHMET
MEHRBANI
GRAZIE
KOMAPSUMNIDA
MAAKE
PALDIES
BOLZÏN
MERCI
BÏYAN
SHUKRIA
TINGKI
SPASSIBO
SNACHALHUYA
NUHUN
CHALTU
WABEEJA
MAITEKA
HUI
GUI
HATUR
EKOJU
SIKOMO
MAKETAI
MINMONCHAR
SPASIBO
DENKAUJA
HENACHALHYA
MIRSI
UNALCHÉESH
ATTO
AHNA
SHAHYABAD
MERASTAWHY
GAEJTHO
LAH
AGUYJE
FAKAAUE
SAINCO
TAVTAPUCH
MEDAWAGSE
RAINKA