Private Debt versus Bank Debt in Corporate Borrowing

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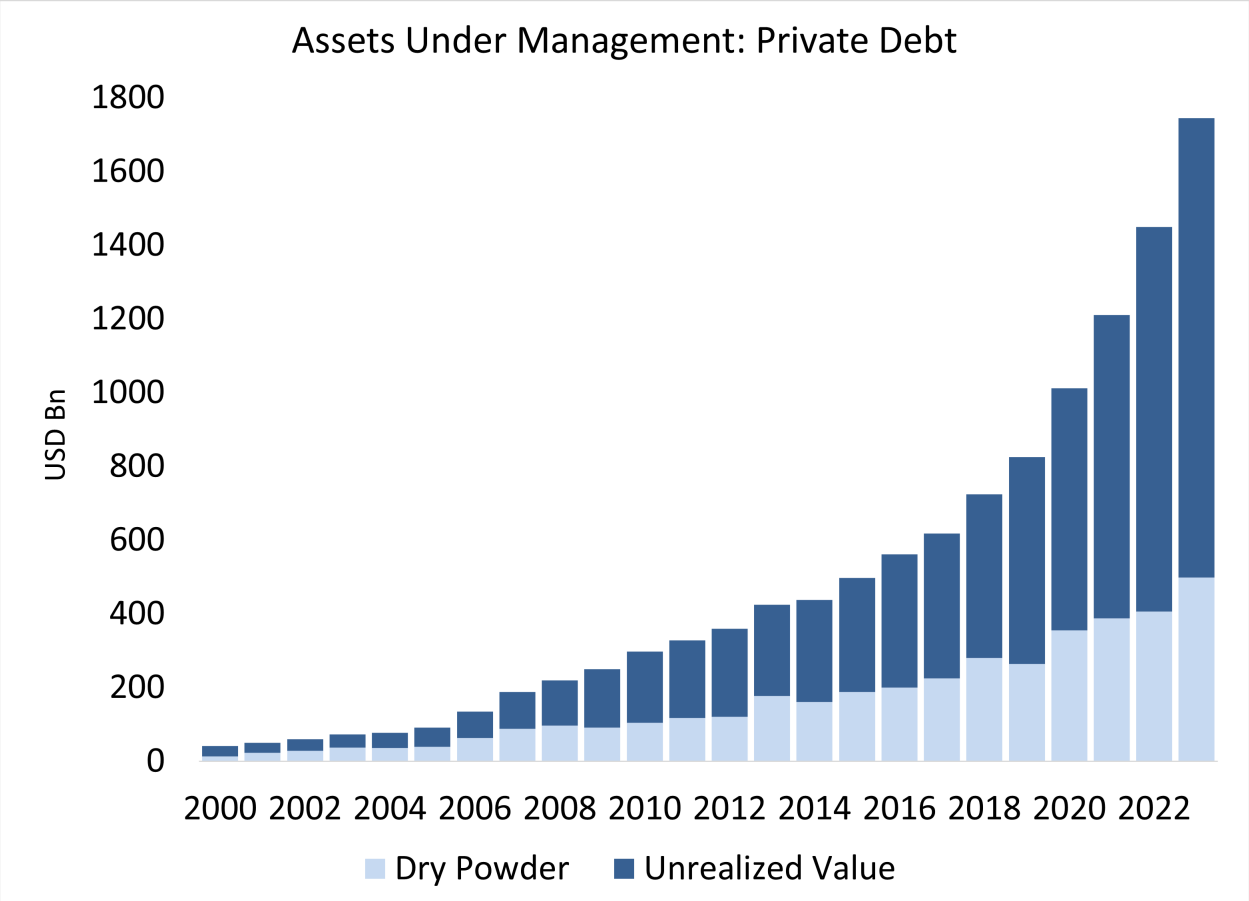
Motivation: The Rise of Private Debt



- Credit migrating from regulated banks to more opaque private markets (BoE, 2023)
- Increased competition between banks and private credit (IMF, FRB, 2024)

This Paper

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This Paper. Combine private credit data with regulatory bank loan data

1. How does private credit and bank loans interact in the capital structure?
2. How does the rise of private credit affect bank lending?
3. How does private credit affect firm-level outcomes (e.g. investment?)

Preview Key Results

1. Large share of private debt borrowers are **dual borrowers**, i.e., also rely on bank debt $\approx$ 50%
    - Many borrowers in software/technology-focused/service-based sectors

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   - PD loans (i) are larger, have (ii) longer maturity, (iii) higher spreads, and (iv) junior to bank debt
   - **PD lenders** provide **term loans** and **banks** provide **credit lines**
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4. Firm-level Outcomes

   PD issuance $\rightarrow$ higher leverage, intangible assets, sales growth

Related Literature

- **Direct Lending and Private Credit**
  - Block, Jang, Kaplan and Schulze (2023); Erel, Flanagan and Weisbach (2024); Davyiduik, Marchuk and Rosen (2020a); Davydiuk, Marchuk and Rosen (2020b); Jang (2023)
  - Interaction of private credit and bank loans in capital structure
  - How private credit affects bank loan performance

- **Firms' choice between debt types**
  - Diamond (1991); Rajan (1992); Holmstrom and Tirole (1997); Becker and Ivashina (2014); Ma, Stice and Williams (2015)
  - We examine firms' choice between private credit and bank loans

- **Broadly Syndicated Loans and (indirect) Non-Bank Lenders**
  - Irani and Meisenzahl (2017), Bruche, Malherbe, Meisenzahl (2020), Irani et al. (2021), Cornett, McNutt, Strahan, and Tehranian (2011), Acharya and Mora (2015), Gianetti and Meisenzahl (2022)
  - We focus on non-bank direct-lenders

Data: Y-14 + Pitchbook from 2013-2023

- **Pitchbook.** PD loans (at origination): Loan size, loan type (e.g. credit line, term loan etc.), maturity, spreads, seniority, borrower name, deal purpose
  - $\approx$ 17,000 loans/5800 PD borrowers
    - For 80% of PD loans, borrower is backed by private equity sponsor
- **Y-14.** Regulatory data on U.S. bank loans and borrowers
  - Largest US Banks subject to Fed's Stress Tests ($50 Bn in Assets); $\approx$ 31-36
  - Covers 75 % of all corporate loans in US
  - **Loan & firm-level panel data**

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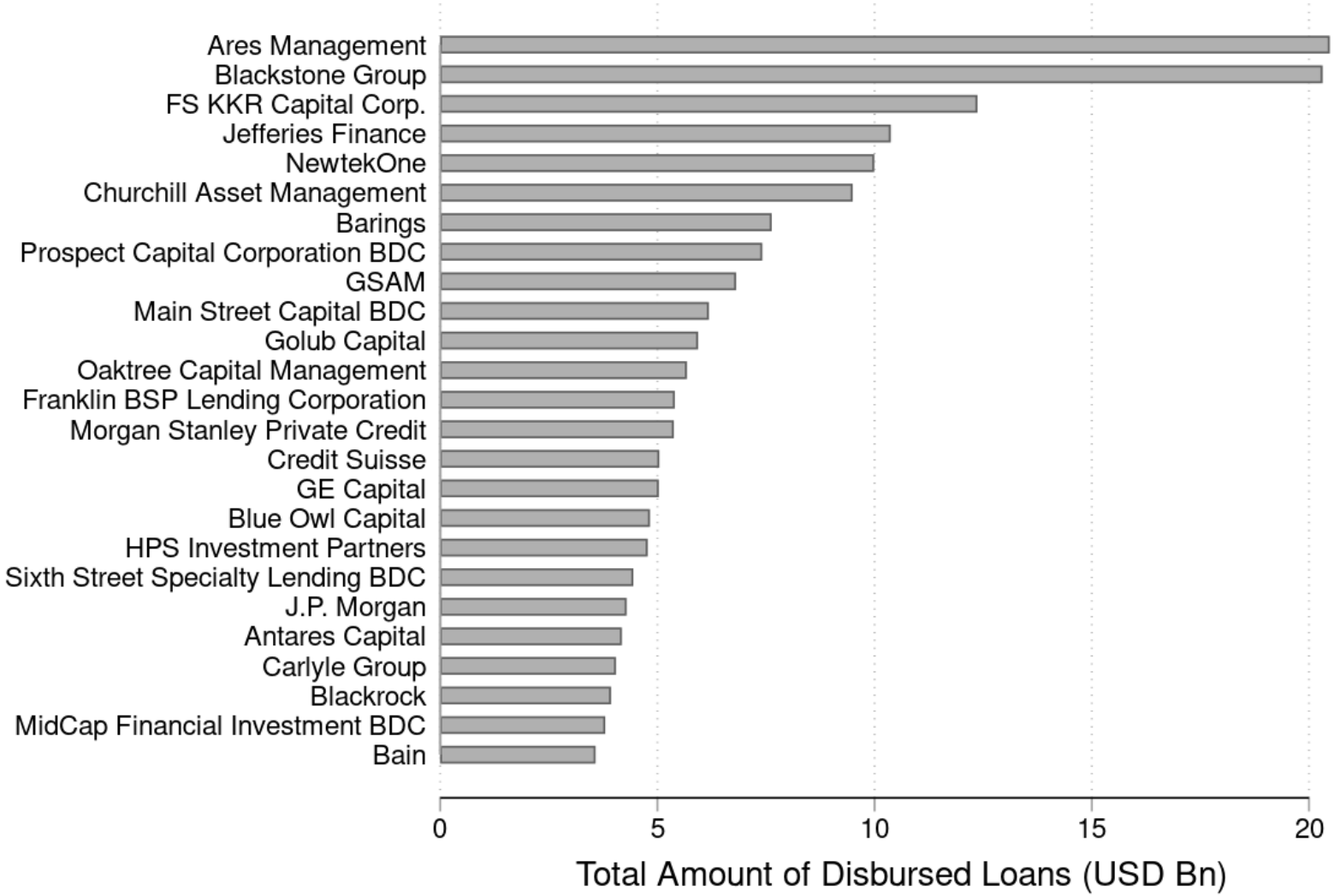
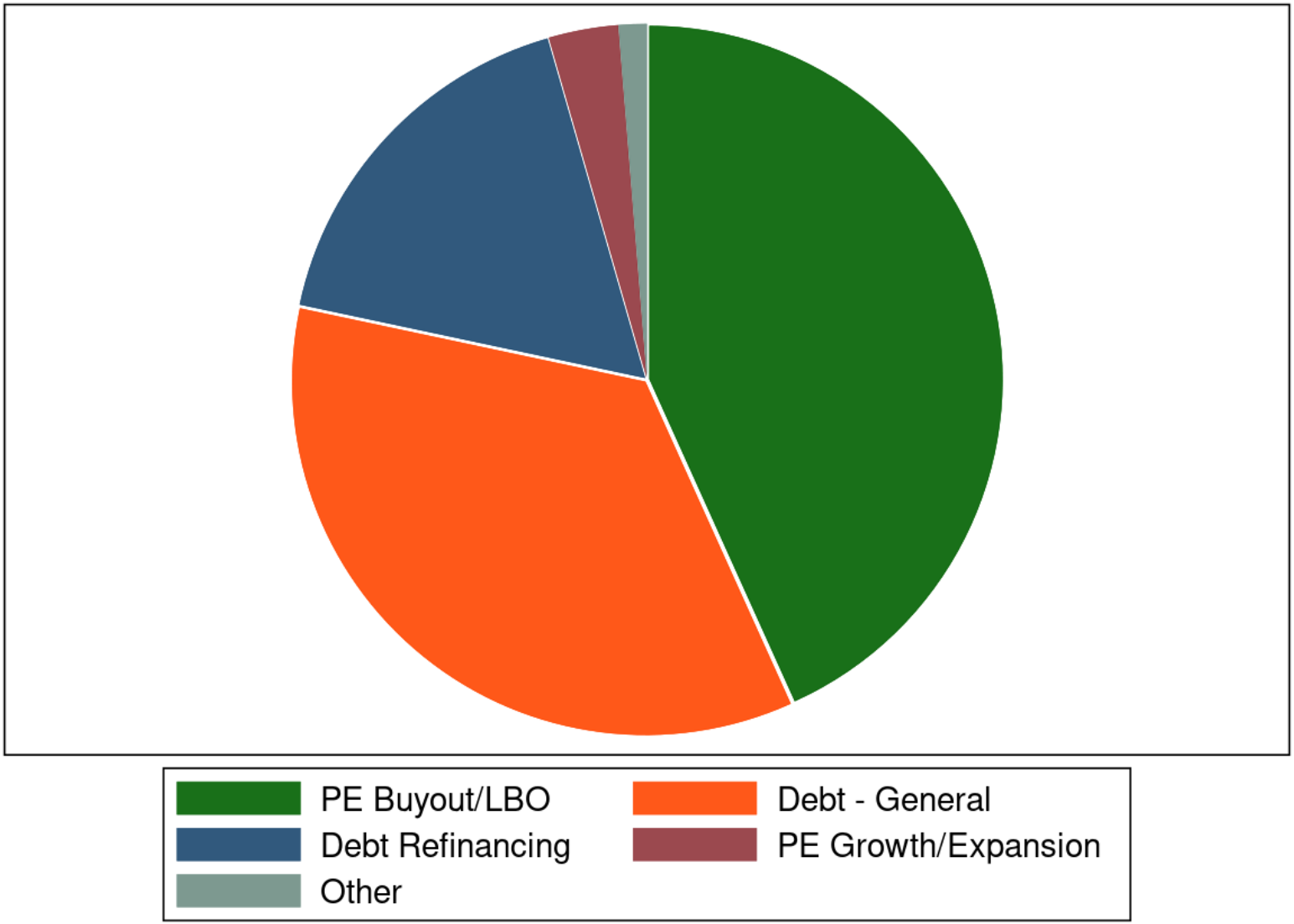
  - Covers 75 % of all corporate loans in US
  - **Loan & firm-level panel data**
- Merge Pitchbook and Y14 borrowers, quarter-by-quarter
- 2917 **dual borrowers**, relying on *both* bank debt and private debt
- $\approx$ 50% have both loan types
- Dual borrowers hold $>$50% of Private Debt

Top PD Lenders in Pitchbook



PD Deal Purpose (reported in Pitchbook)



Selected Summary Statistics — Firm Level

Panel A: Dual Borrowers	N	Mean	Median
Total Assets ($ Mn)	2,917	1,700	326
Total Debt (% of Assets)	2,917	42.9	43.1
Tangible Assets (%)	2,917	64.5	63.8
Probability of Default (%)	2,646	3.7	2.3
Panel B: Bank-Only Borrowers			
Total Assets	66,838	1,190	80.1
Total Debt	66,838	37.5	35.0
Tangible Assets	66,838	86.3	96.3
Probability of Default	66,838	2.2	0.9

- Relative to bank-only borrowers: Dual borrowers are (i) larger, (ii) riskier, (iii) more levered, and (iv) have less tangible assets
  - Among bank borrowers, PD lenders extend credit to those that are larger and have higher default likelihood
- Dual-borrowers mostly in software/tech/service-based industries Sectoral Distribution

Selected Summary Statistics — Loan Level

Panel A: PD Loans	N	Mean	Median
Loan Size ($ Mn)	16,894	64.8	13.5
Spread (%)	16,894	6.28	5.8
Maturity (Years)	16,894	5.4	5.25
Share of Credit Lines	1,688	0.1	-
Share of Term Loans	12,670	0.75	-
Panel B: Bank Loans to Dual Borrowers			
Loan Size	6,814	23.5	14.0
Spread	6,814	1.7	1.7
Maturity	6,814	4.3	5
Share of Credit Lines	3,247	0.48	-
Panel c: Bank Loans to Bank-Only Borrowers			
Loan Size	167,103	18.7	5.3
Spread	167,103	1.3	1.2
Maturity	167,103	3.7	4
Share of Credit Lines	75,330	0.45	-

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Problem: Patterns could just be driven by differences in borrower segments

Differences between Bank and Private Debt

$$y_{l,t} = \beta_0 PD_l + FE_{l,i,t} + Loan\ Controls_{l,t} + \epsilon_{l,t}, \quad (1)$$

- $y_{l,t}$: loan size, spreads, loan type (credit line/term loan/Other) indicator, first lien senior secured, maturity
- $PD_l \in \{0, 1\}$ indicates whether loan l is originated by PD lender
- $FE_{l,i,t}$: **Firm-time** (Khwaja and Mian (2008))
  - Control for *any* time-varying borrower characteristics including PE-backing
  - Include **firm-time-loan type** fixed effects

Identification: Compare loans originated to same borrower in the same year-quarter, differing by whether lender is bank or PD lender

Results: Substitutibility

Y_l	Amount	Spread	Maturity	Seniority	Term Loan	Credit Line
PD_l	0.426***	3.516***	0.734***	-0.306***	0.561***	-0.415***
	(0.071)	(0.137)	(0.061)	(0.030)	(0.021)	(0.022)
R-squared	0.732	0.863	0.689	0.804	0.545	0.546
Firm x YearQtr FE	Y	Y	Y	Y	Y	Y
Loan Controls	N	N	N	N	Y	Y
N	126,854	95,799	126,856	121,978	126,854	126,854

- For buyouts: spreads even higher, even more likely term loans
- (1)-(4) robust to *firm* $\times$ *time* $\times$ *loantype* FE
- All results robust to dropping *firm* $\times$ *time* FE (larger sample)

Private Debt and Bank Debt are distinct & **imperfectly substitutable**, even for the same borrower

Implications for Bank Lending

How Does Private Debt Affect Borrowing from Banks?

Credit Line Expansions

$$y_{l,t} = \beta PD_{i,t} + LoanControls_{l,t} + FirmControls_{i,t} + FEs + \epsilon_{l,t}, \quad (2)$$

- Bank loan-level regression: $PD_{i,t} \in \{0, 1\}$: borrower i has private debt at t
- Include loan fixed effects: Compare same bank loan before and after borrower taps into private debt
- Control group restricted to 'leveraged loans'

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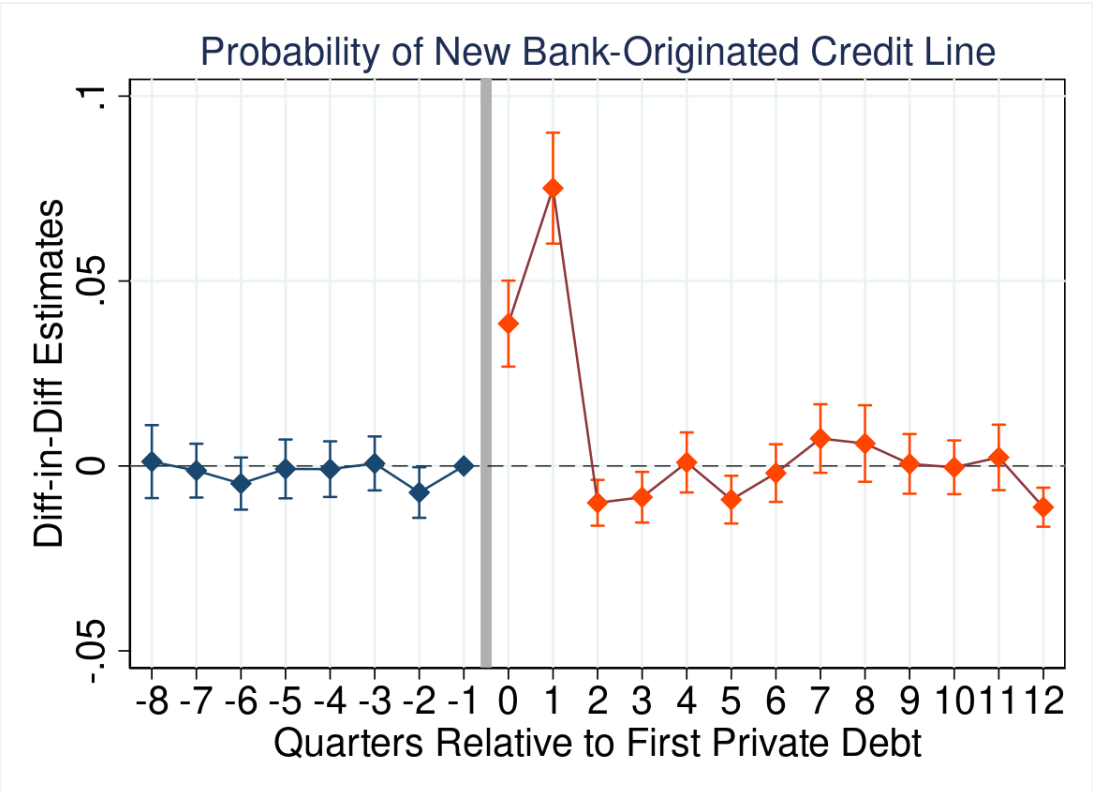
$y_{l,t}$:	*Log (Comm.)*	*Log (Comm.)*	Δ(*Comm.*)	Δ(*Comm.*)
$PD_{i,t}$	0.030**	0.035**	0.018***	0.019***
	(0.014)	(0.014)	(0.006)	(0.006)
Loan Controls	Y	Y	Y	Y
Firm Controls	Y	N	Y	N
SectorxTime FE	Y	Y	Y	Y
Loan FE	Y	Y	Y	Y
N	5.42e+05	5.42e+05	4.65e+05	4.65e+05

Event Study on New Bank Loans

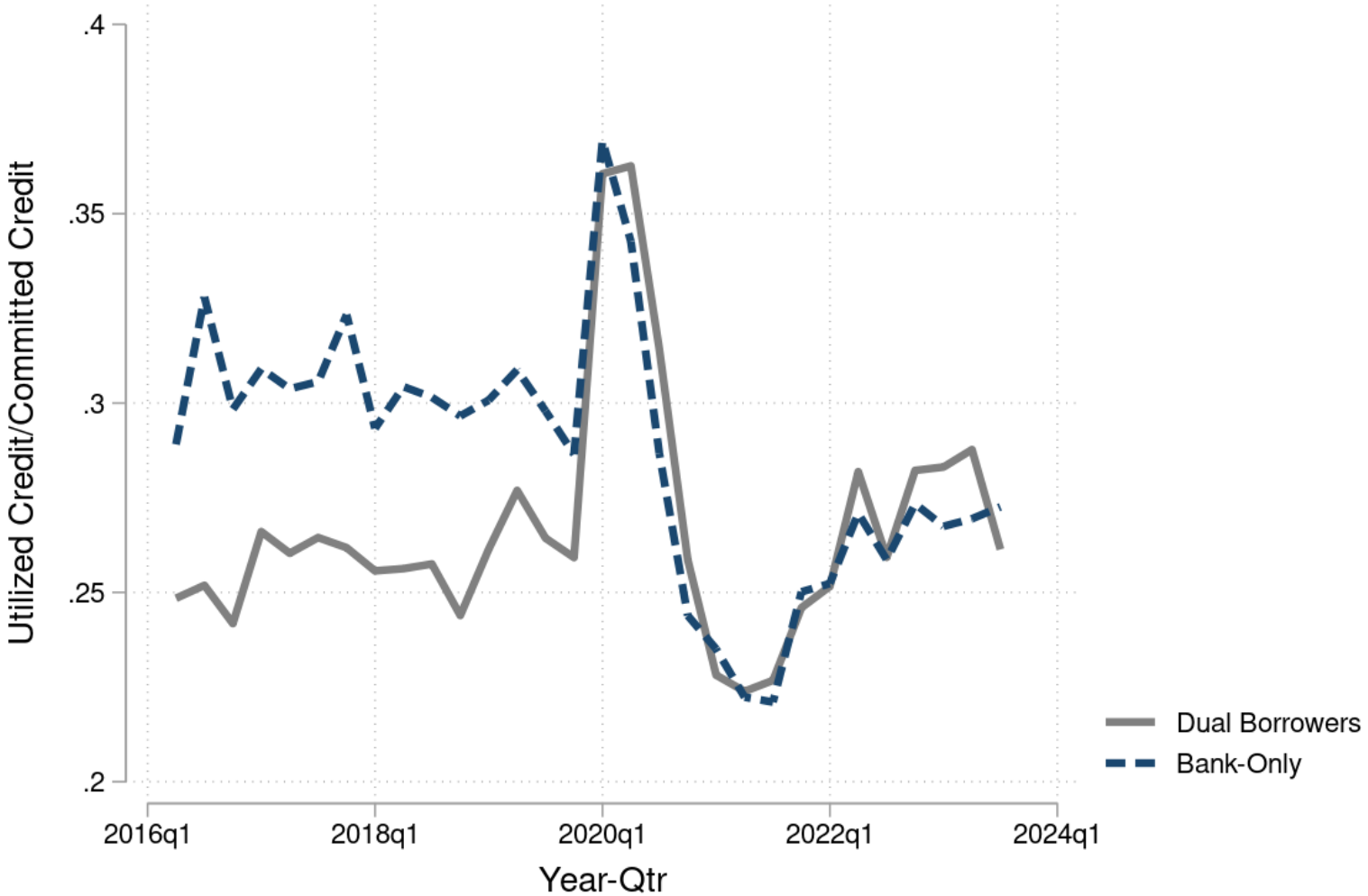
- Estimate quarter-specific coefficients of new bank loan probability relative to first PD issuance



- Once a bank borrower taps into private debt, it often obtains new bank loans in the form of credit lines
- Additional credit have higher spreads Loan Spreads

Reliance on Private Debt and Credit Line Drawdown

- Credit Lines typically used to meet liquidity shortfalls (Acharya et al., 2023)
- Dual Borrowers drew down more of their unused capacity during stress



Dual Borrowers and Bank Loan Performance

Does Reliance on Private Debt Affect Bank Loan Performance?

	Drawdown	Drawdown	Default Probability	Default Probability	Loan Gaurantee	Loan Gaurantee
	(1)	(2)	(3)	(4)	(5)	(6)
$PD_{it} \times Covid_t$	0.0211***	0.0379***	0.228	0.367**	0.0195**	0.0161**
	(0.01)	(0.01)	(0.17)	(0.19)	(0.01)	(0.01)
PD_{it}	-0.00115	-0.00503	0.272	0.334	0.0213*	0.0189
	(0.01)	(0.01)	(0.22)	(0.31)	(0.01)	(0.01)
R-squared	0.923	0.836	0.822	0.822	0.911	0.908
Loan FE	Y	Y	Y	Y	Y	Y
Time FE	Y	Y	Y	Y	Y	Y
Controls	Y	Y	Y	Y	Y	Y
Sample	Full	Credit Line	Full	Credit Line	Full	Credit Line
N	206,413	125,181	196,162	120,455	225,768	125,181

- 3.8 percent average *additional* drawdown of bank loans by dual borrowers
- 0.4 percent average *additional* default probability of bank loans to dual borrowers
- Loan gaurantees can come from PE sponsors, parent/affiliated company etc.

Firm-level Effects of Private Debt

Private Debt Access and Capital Structure

	Debt/Assets	Bank Debt (log)	Bank Debt (% of Total Debt)	ICR
	(1)	(3)	(5)	(4)
PD_it	0.0275***	0.166***	-0.0694***	-2.854***
	(0.01)	(0.04)	(0.02)	(0.57)
R-squared	0.829	0.686	0.723	0.879
Firm FE	Y	Y	Y	Y
Firm Controls	Y	Y	Y	Y
SectorxYear	Y	Y	Y	Y
N	46,620	45,955	45,638	46,620

Private Debt Access and Firm Outcomes

	Sales Growth	Capex	Fixed Asset	Intangible Assets	Cash
	(1)	(2)	(3)	(4)	(5)
PD_it	0.0268**	0.000867	-0.0121***	0.0272***	-0.0112***
	(0.012)	(0.001)	(0.003)	(0.005)	(0.003)
R-squared	0.451	0.619	0.943	0.936	0.826
Firm FE	Y	Y	Y	Y	Y
SectorxYear FE	Y	Y	Y	Y	Y
Firm Controls	Y	Y	Y	Y	Y
N	46,120	45,936	46,620	46,620	46,620

1. Reduced Interest Coverage, i.e., increased interest expenses
2. Increase in intangible assets
3. No significant effect on capital expenditures

Conclusion

- About 50% of PD borrowers also rely on bank debt
- When banks and PD lenders extend credit to the same borrowers
  - PD lenders provide relatively junior term loans; banks provide relatively senior credit lines
  - PD loans are larger and have higher spreads and longer maturities, relative bank loans

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- Once a bank borrower taps into private debt, banks grant additional credit, primarily credit lines, but at higher spreads
- Reliance on private debt amplifies bank loan drawdown and defaults during stress
- Bank debt and private debt distinct and imperfectly substitutable financing instruments

Appendix - Sectoral Distribution

Table: Sectoral Distribution of Private Debt Raised by Dual Borrowers

Industry	**Share of Private Debt**
Software	16.7%
Commercial Services	14.2%
Commercial Products	10.7%
Healthcare Services	6.4%
Insurance	4.4%
IT Services	4.3%
Retail	3.5%
Restaurants, Hotels and Leisure	3.1%
Other Financial Services	3.0%
Computer Hardware	2.8%
Exploration, Production and Refining	2.7%
Containers and Packaging	2.5%
Healthcare Technology Systems	2.3%
Communications and Networking	2.2%
Services (Non-Financial)	2.1%

Ret.

Appendix - New Bank Loans: Cross-Sectional Tests

$y_{l,t}$	New Term Loan	New Credit Line	Spreads	Spreads
$PD_{i,t}$	0.007***	0.013***	0.226***	0.123***
	(0.002)	(0.002)	(0.055)	(0.027)
Firm FE	Y	Y	Y	Y
Bank×time	Y	Y	Y	Y
Sector ×time	Y	Y	Y	Y
Sample	Full	Full	New Loans	Full
N	5.82e+05	5.82e+05	27507	5.82e+05

- Bank loan-level regression: $PD_{i,t} \in \{0, 1\}$ indicates whether borrower i has borrowed from PD lenders at t

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Drawdowns and defaults

	$\mathbf{1} \times$ *Default* (Days Past Due>90)		$\mathbf{1} \times$ *Default* (Loan Chargeoff>0)	
	(1)	(2)	(3)	(4)
$PD_{it} \times Drawdown_t$	0.554**	0.296**	0.892*	0.555**
	(0.300)	(0.100)	(0.500)	(0.300)
PD_{it}	-0.237*	-0.143*	-0.491	-0.306
	(0.100)	(0.100)	(0.300)	(0.200)
$Drawdown_t$	0.500***	0.196***	-0.192	0.283***
	(0.100)	(0.000)	(0.200)	(0.100)
R-squared	0.408	0.256	0.618	0.405
Loan FE	Y	N	Y	N
Bank x Yr-Qtr FE	N	Y	N	Y
Sector x Yr-Qtr FE	Y	Y	Y	Y
Firm FE	N	Y	N	Y
Loan and Firm Controls	Y	Y	Y	Y
N	570,868	583,737	411,662	421,256