Private Debt versus Bank Debt in Corporate Borrowing

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Banks and Beyond

Hoover Institution, Stanford University

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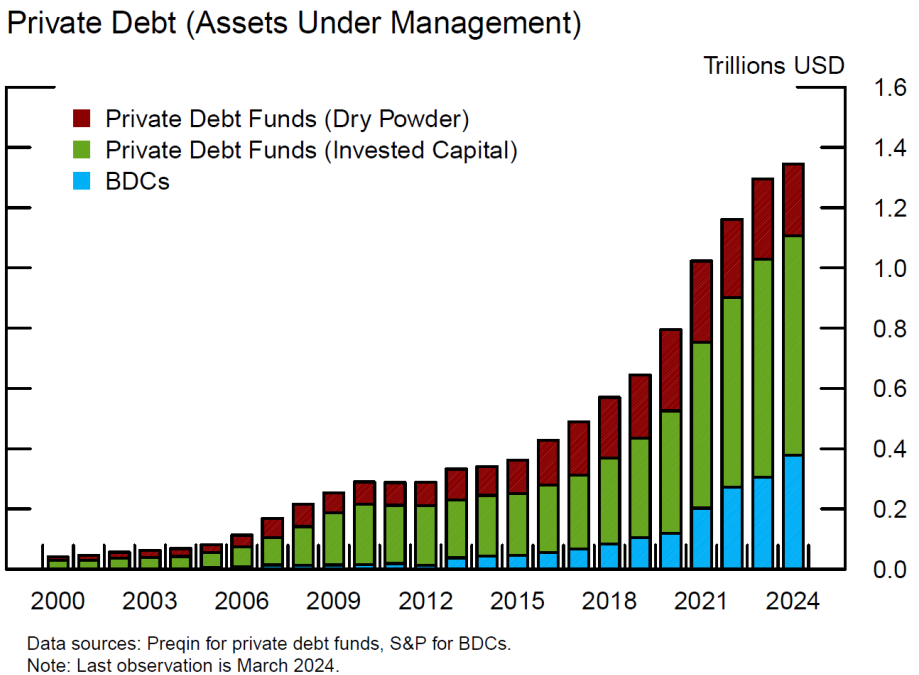
Motivation: The Rise of Private Debt



- As of March 2024:
  U.S Private Debt: \$1.1 tn
  (excluding dry powder)
- Private Debt (or Private Credit):
  Loans originated by non-bank lenders (PD funds/BDCs)

For comparison:
Institutional Leveraged Loans: \$1.4 tn, HY Bonds: \$1.2 tn, C&I Loans: \$1.3 tn

The Rise of Private Debt and the Implications for Banks

Concern echoed by the press, practitioners, and policymakers:

- Credit migrating from regulated banks to opaque private markets

Research questions:

1. How does private debt affect bank lending?
2. How do private debt and bank loans differ and interact with each other?
3. How does private debt affect real firm-level outcomes?

Key Results:

- ◇ Large share of private debt borrowers also borrow from banks (dual borrowers)
- ◇ Private debt substitutes (long-term) bank-originated loans but amplifies the role of banks as (short-term) liquidity providers through credit lines

Preview Results

1. Many PD borrowers are **dual borrowers**, i.e., also rely on bank debt
   - PD borrowers are more riskier, larger, fewer collateralizable assets
   - PD lenders provide long-term **term loans**, banks provide **credit lines**
   - PD features higher spreads *controlling for credit risk, seniority etc.*

     $\Longrightarrow$ PD and bank loans are **distinct** & **imperfectly substitutable**

2. Dynamics: Once a bank borrowers taps into private debt:
   - Obtain **additional** bank loans (mostly, credit lines) at **higher** cost
   - Total bank debt and share of credit lines in bank debt $\uparrow$
   - **Aggregate Liquidity Shock** $\Rightarrow$ Credit Line Drawdown $\uparrow$, probability of default $\uparrow$

Related Literature

1. **Direct Lending and Private Credit**
   - Block, Jang, Kaplan and Schulze (2023); Erel, Flanagan and Weisbach (2024); Davyiduik, Marchuk and Rosen (2020a,b); Jang (2023); Haque, Jang and Wang (2025)
   - Substitutibility of private credit and bank loans in capital structure
   - How private credit affects bank loan performance

2. **Bank Lending and Banks' Role as Liquidity Providers**
   - Diamond (1991); Rajan (1992); Holmstrom and Tirole (1997); Kashyap, Rajan and Stein (2002); Ma, Stice and Williams (2015); Greenwald et al. (2022)
   - How banks' liquidity provision interacts with private debt

3. **Bank's Competition and Interaction with Non-Bank Lenders**
   - Bruche, Malherbe, Meisenzahl (2020), Buchak et al. (2022), Jiang et al. (2023); Haque, Mayer, Wang (2023), Acharya et al (2024a)
   - Private lenders and banks: connected through dual borrowers

Data: Y-14 + Pitchbook from 2013-2023

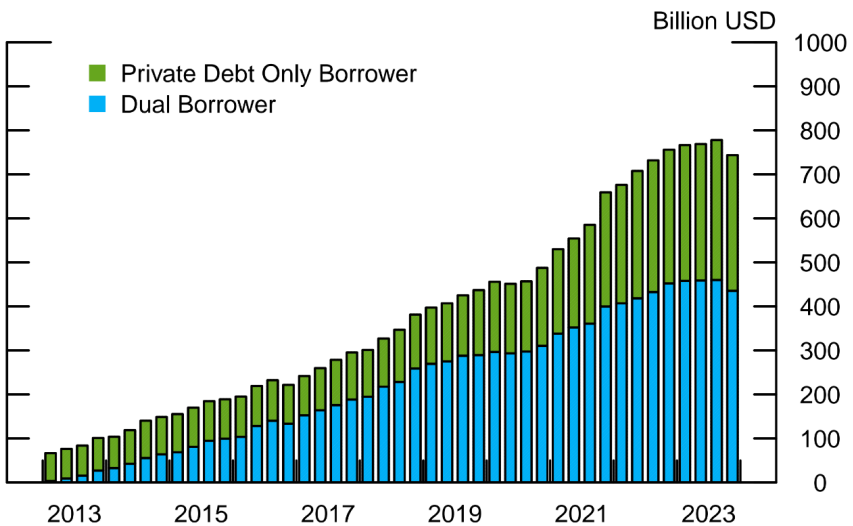
- **Pitchbook.** PD loans (at origination): Loan size, loan type (credit line or term loan), maturity, spread, seniority, borrower name, deal purpose
  - $\approx$ 17,000 loans/5,800 PD borrowers
  - Sample distribution comparable to Jang, 2023; Davydiuk et al., 2024
  - Private debt primarily used for LBOs, refinancing etc.
  - Our sample covers $\approx$ 70% of US private debt market as of 2023
- **Y-14.** Regulatory data on U.S. bank loans and borrowers
  - Largest US Banks subject to Fed's Stress Tests; $\approx$ 35
  - Minimum commitment of $ 1 Mn; covers 75 % of C&I loans in US
  - **Loan & firm-level panel data**
- Merge Pitchbook and Y14 borrowers, quarter-by-quarter
- 2,917 (out of 5,800) **dual borrowers**, relying on *both* bank debt and private debt

Importance of dual borrowers: 2013-2023

We focus on dual borrowers, which borrow from both banks and PD lenders:

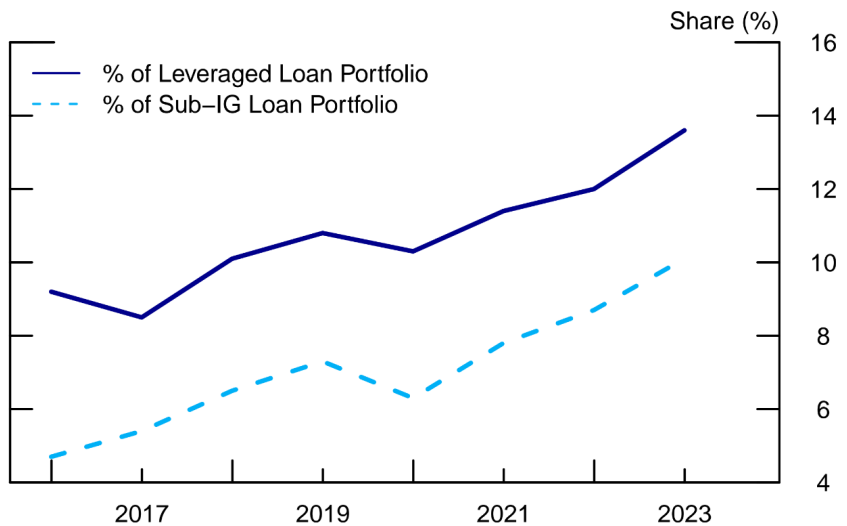
- They hold an important share of private debt (60%) and leveraged bank loans (14%).

Private Debt to Dual Borrowers



Data sources: Pitchbook for private credit loan data,
Y14 and Pitchbook deal data to identify dual borrowers.

Bank Commitments to Dual Borrowers



Sub–IG are Investment Grade firms in BB category or below.
Data sources: Y–14 for leveraged loans,
Y–14 and Pitchbook deal data to identify dual borrowers.

Selected Summary Stats — Borrower Level

Dual Borrowers have less collateral and higher default probability

Panel A: Dual Borrowers (N=2,917)	Mean	Median
Total Assets ($ Mn)	1700	326
Tangible Asset/Total Asset (%)	64	64
Probability of Default (%)	**3.7**	**2.3**
Bank Loan Spread (%)	**1.7**	**1.7**
Private Debt Loan Spread (%)	**6.3**	**5.3**
Panel B: Non-Dual Bank Borrowers (N=66,383)		
Total Assets ($ Mn)	1190	80
Tangible Asset/Total Asset (%)	86	96
Probability of Default (%)	**2.2**	**0.9**
Bank Loan Spread (%)	**1.3**	**1.2**

Dual borrowers mostly in software/tech/service-based industries

Selected Summary Statistics — Loan Level

PD loans are larger, more likely term loans, have higher spreads and maturity

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	-
Bank Loans to Dual Borrowers			
Loan Size	7,098	26.1	15.0
Spread	5,903	1.8	1.8
Maturity	7,098	4.0	5
Share of Credit Lines	3,458	0.49	-
Bank Loans to Bank-Only Borrowers			
Loan Size	362,078	16.1	4.3
Spread	282,114	1.3	1.2
Maturity	362,078	3.6	3
Share of Credit Lines	174,646	0.48	-

Comparing PD Loans and Bank Loans to Same Borrower

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

- $y_{l,t}$: loan size, spreads, loan type indicator (credit line/term loan/other), first lien senior secured, maturity
- $PD_l \in \{0, 1\}$ indicates whether loan l is originated by PD lender
- $\gamma_{i,t}$: **Firm x time** (Khwaja and Mian, 2008)

  Control for *any* time-varying borrower characteristic (e.g. credit risk)

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

Comparing PD Loans and Bank Loans to Same Borrower

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	Y	Y	Y	Y	Y	Y
N	126,854	95,799	126,856	121,978	126,854	126,854

- Higher spreads suggest supply frictions (e.g. market power) or non-traditional features (e.g. payment in kind option)
- (1)-(4) robust to *firm* $\times$ *time* $\times$ *loantype* FE
- All results robust to less stringent specification (larger sample)

Private Debt and Bank Debt are distinct & **imperfectly substitutable**

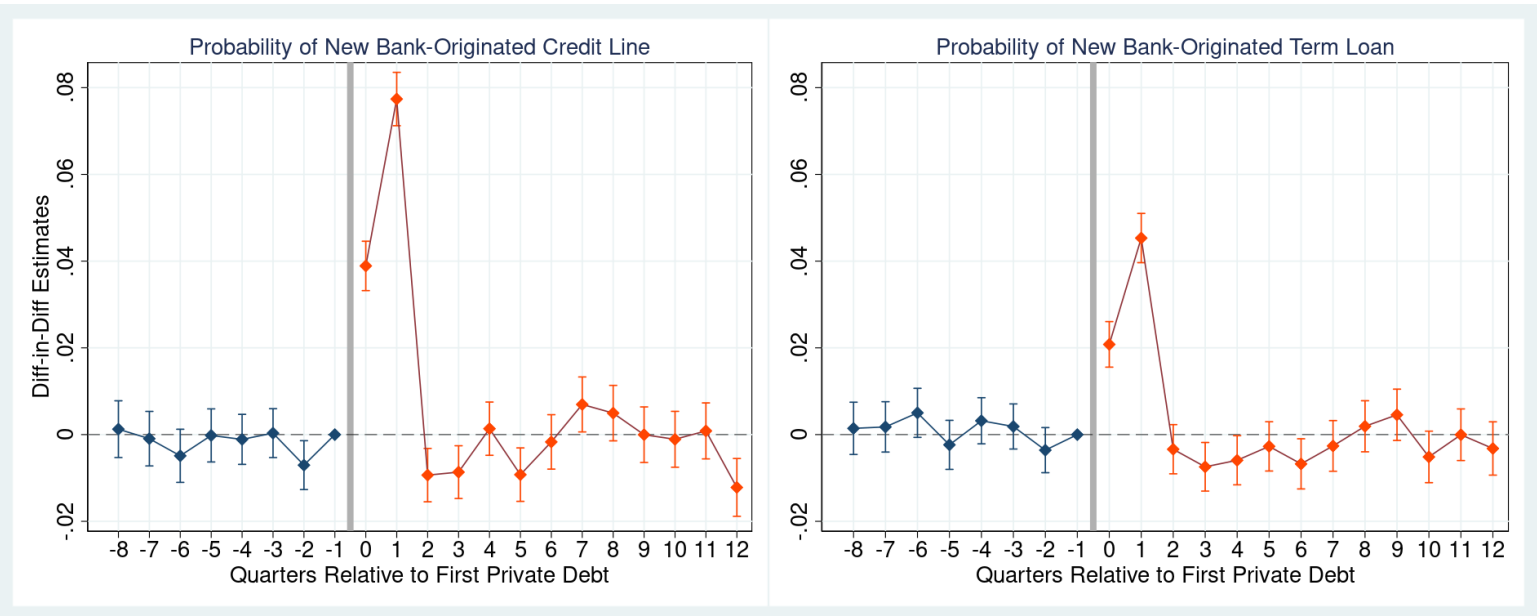
How Does Private Debt Affect Bank Lending?

Banks Provide Additional Credit After Borrowers issue Private Debt

New bank loan-level regressions

$$\mathbf{1} \cdot (New\_Bank\_CL_{l,i,t}) = \sum_{s=-8}^{12} \beta_s PD_{i,t+s} + X_{i,t-1} + \eta_i + \zeta_{j,t} + \epsilon_{l,t}, \quad (2)$$

- Control group restricted to 'leveraged-loan' borrowers (more comparable)



- Similar result looking at **loan amounts** (stronger effect for credit lines)

Banks Provide Additional Credit After Borrowers issue Private Debt

Existing Loan Limit Expansions

$$y_{l,t} = \beta PD_{i,t} + LoanControls_{l,t} + FirmControls_{i,t} + FEs + \epsilon_{l,t}, \qquad (3)$$

Loan FE: Compare same bank loan before/after borrower taps into private debt

$y_{l,t}$:	*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
Time FE	Y	Y	Y	Y
Loan FE	Y	Y	Y	Y
N	5.42e+05	5.42e+05	4.65e+05	4.65e+05

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

Why do banks offer access to new and larger credit lines?

- *Demand-side view*: higher demand for credit lines as firms expand using PD
- *Supply-side view*: PD insures senior bank debt and certifies borrower's creditworthiness

Demand-Side Mechanism: Extra Bank Credit Comes at Higher Cost

Bank loan-level regressions

$$y_{l,t} = \beta PD_{i,t} + LoanControls_{l,t} + FirmControls_{i,t} + FEs + \epsilon_{l,t}, \quad (4)$$

$Y_{l,t}$: $Interest\ Rate_{l,t}$	(New Loans)	(New Loans)	(Existing)	(Existing)
$PD_{i,t}$	0.258***	0.272***	0.113***	0.125***
	(0.062)	(0.063)	(0.034)	(0.035)
$Default\ Probability_{l,t}$	3.559***	3.819***	2.923***	3.267***
	(0.385)	(0.383)	(0.150)	(0.152)
$LGD_{l,t}$	0.656***	0.663***	0.554***	0.546***
	(0.079)	(0.079)	(0.042)	(0.042)
R-squared	0.589	0.588	0.568	0.564
Firm FE	Y	Y	Y	Y
BankxTime FE	Y	Y	Y	Y
SectorxTime FE	Y	Y	Y	Y
Additional Controls	Y	N	Y	N
N	34,623	34,623	481,791	481,791

- Higher cost orthogonal to borrower risk
- Greater credit & interest rate premium consistent with demand-side mechanism

Supply-Side Mechanism: Certification and Insurance Effect

New Bank Loans and Heterogeneity within Private Debt Lenders

- *TopRated* : Dummy=1 if PD lender is one of the top 20 Private Debt Managers
- Bank loan-level regression: $PD_{i,t} \in \{0,1\}$: borrower i has private debt at t

$\mathbf{1}x(New\ Bank\ Loan)_{l,t}$	Credit Line	Term Loan	Credit Line	Term Loan
$PD_{it} \times TopRated$	0.040***	0.018**	0.051***	0.031***
	(0.011)	(0.008)	(0.013)	(0.009)
PD_{it}	0.012***	0.007***		
	(0.003)	(0.002)		
R-squared	0.072	0.078	0.106	0.107
Firm, Ind x Time FE	Y	Y	Y	Y
Bank x Time FE	Y	Y	Y	Y
Control Group	LL	LL	N	N
N	5.84e+05	5.84e+05	59083	59083

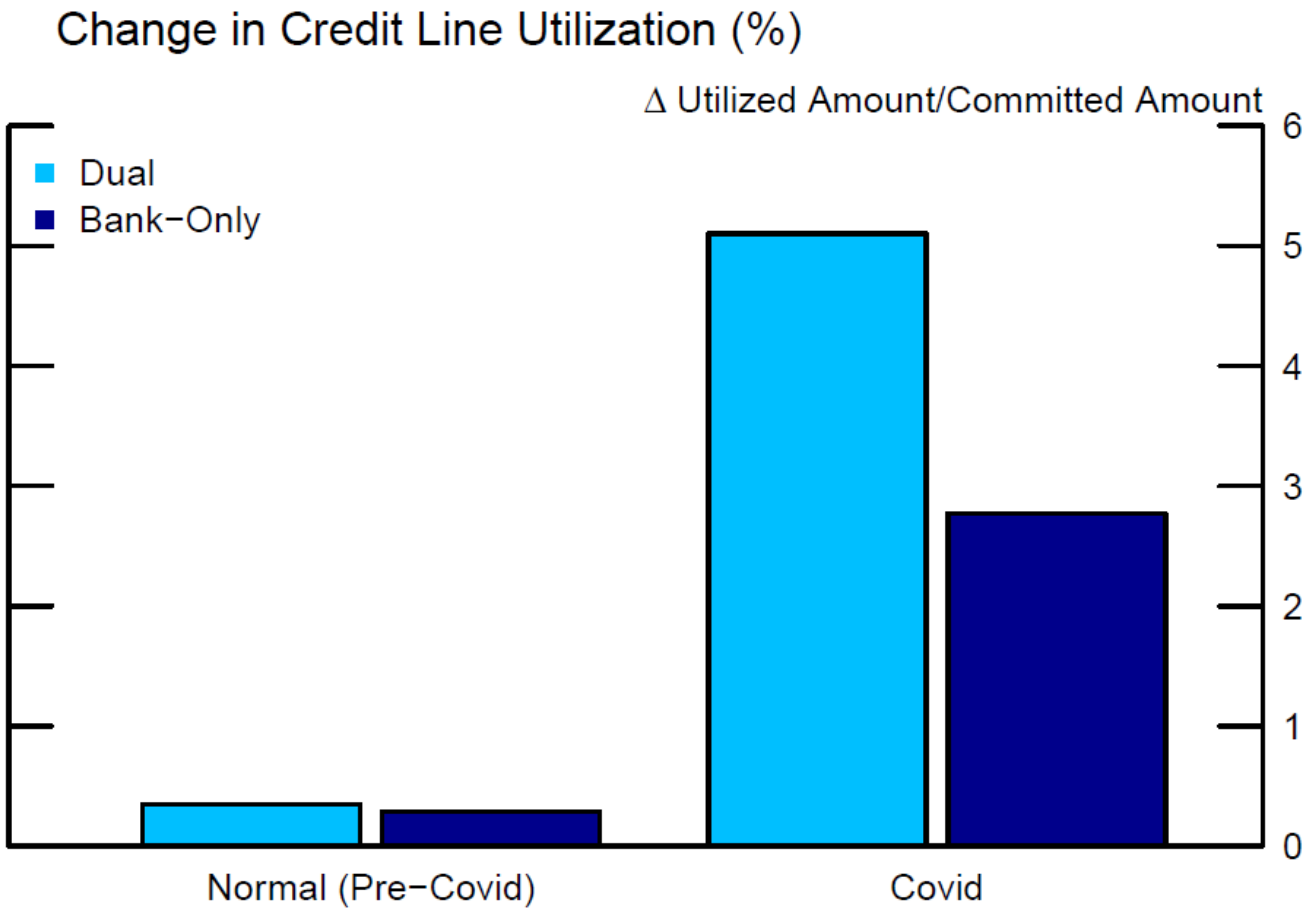
* $p < .10$, ** $p < .05$, *** $p < .01$

- **Additional Result.** Loan amount as dependent variable (intensive margin)

Liquidity Shocks and Credit Line Utilization

Reliance on Private Debt and Credit Line Drawdown

- Use Covid as a liquidity shock (Strahan et al., 2020)
- Dual Borrowers drew down more of their unused credit lines



Pre−Covid sample refers to 2018Q1−2019Q4.

Dual Borrowers and Credit Line Drawdown

Does Reliance on Private Debt Affect Bank Loan Performance?

	Utilization	Utilization	Default Probability	Default Probability	Loan Gaurantee	Loan Gaurantee
	(1)	(2)	(3)	(4)	(5)	(6)
$PD_{it} \times Covid_t$	0.0211***	0.0379***	0.002	0.004**	0.0195**	0.0161**
	(0.01)	(0.01)	(0.002)	(0.002)	(0.01)	(0.01)
PD_{it}	-0.00115	-0.00503	0.003	0.003	0.0213*	0.0189
	(0.01)	(0.01)	(0.002)	(0.003)	(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
- 40 bps average *additional* default probability of bank loans to dual borrowers
- Loan guarantees can come from PE sponsors, parent/affiliated company etc.

Firm-level Effects of Private Debt

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. Higher sales growth
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
- 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

Private debt substitutes for long-term bank-originated debt, but amplifies banks' role as liquidity providers through credit lines

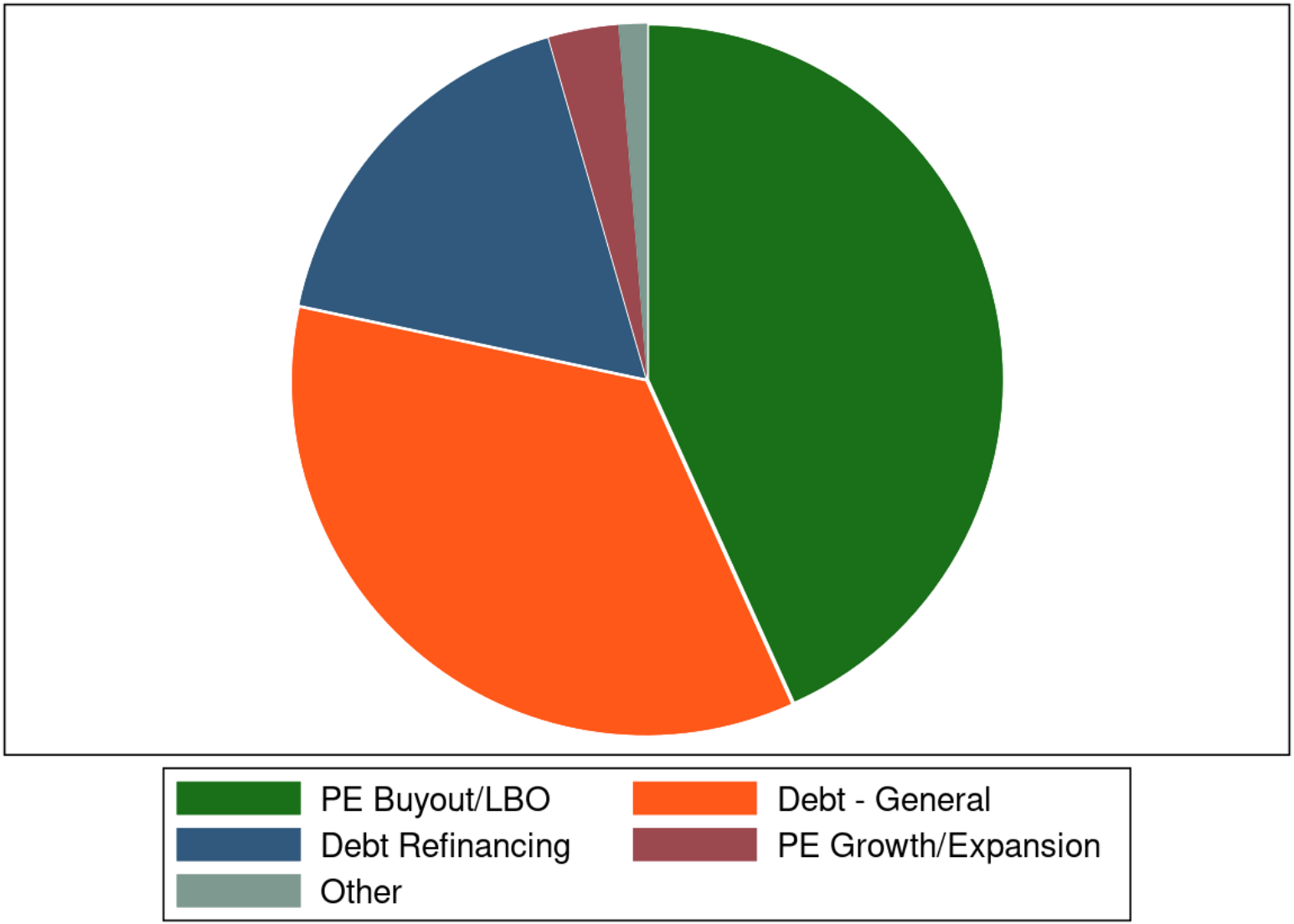
Appendix

Sectoral Distribution - Private Credit Borrowers

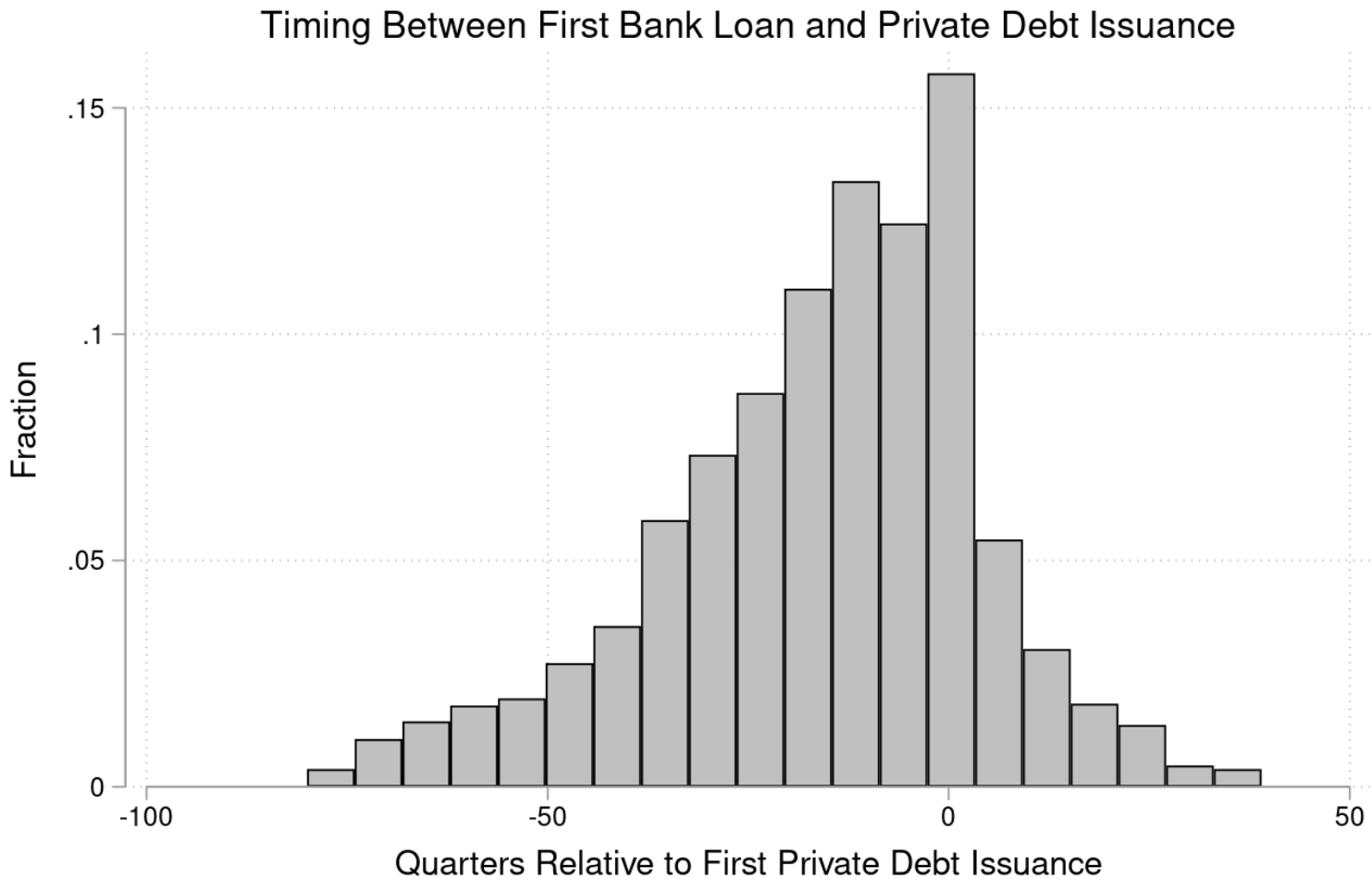
Industry	Share of Private Debt
Software	16.7%
Commercial Services	14.2%
Commercial Products	10.7%
Healthcare Services	6.4%
Insurance	4.4%
IT Services	4.3%
Retail	3.5%
Restaurants, Hotels and Leisure	3.1%
Other Financial Services	3.0%
Computer Hardware	2.8%
Exploration, Production and Refining	2.7%
Containers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

- Private Credit borrowers mostly in tech/software/service-based sectors
- Nearly identical for dual vs pd-only

PD Deal Purpose



Timing: Which Loan Type do Borrowers First Obtain?



Default Risk