Internet Appendix

Supplementary Material for:

When Flexibility Becomes Forbearance:
Payment-in-Kind in Private Credit

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IA.1 Data Appendix

IA.1.1 Sample construction

This appendix outlines the data cleaning steps applied to BDC Collateral's investment dataset, ensuring consistency, accuracy, and completeness. The process includes handling missing values, standardizing variable names, merging datasets, categorizing loan and investment types, and creating unique identifiers.

BDCs' SEC filings do not contain a unique loan-position identifier. Thus, we need to create one by ourselves using the observable loan characteristics. For Table 4 that compares the same loans held by multiple lenders we construct an identifier to track these observably identical loans co-held by different BDCs. We assign the same loan identifier to lenders' positions that are issued by the same borrower, same seniority (e.g. "First Lien Senior Secured"), same loan type (e.g. "Term loan", "Revolver", etc.) and same maturity date.[1] For the remaining loan-panel tests, we need to track exactly the same loan holding across time within the lender's portfolio. Thus, we need some position identifier that is constant across time. However, since maturity dates are frequently renegotiated this would treat every amended loan as a new one. For example, the example loan of Dynamic Energy Services International in Table 1 would not be one loan but three as there occurred two maturity extensions. To avoid these issues, we then further aggregate the holding data by creating a loan position identifier by dropping the maturity date from the list and using BDC-Borrower-Seniority-Loan Type tuple to identify a unique holding.

When constructing these loan datasets typically our tuples identify a single loan position in the lender's portfolio, but in the rare cases when we observe multiple observations with the same identifier in the same year-quarter, we group these loans by summing the $Fair$, Par, and $Cost$ values of affected loans and calculating other loan characteristics as the par-value-weighted average of the loan characteristics.[2] We also remove observations with a fair/par ratio below 0 or above 500% (190 observations), since these are most likely to be data errors.

[1] As there are some reporting differences across BDCs we classify maturity date at the maturity month-year accuracy.

[2] For example, for two loans (call them 1 and 2) with the same identifiers in the same period the new $Fair/Par$ ratio is calculated as $\frac{Fair}{Par} = \frac{Fair_1}{Par_1}\frac{Par_1}{Par_1+Par_2} + \frac{Fair_2}{Par_2}\frac{Par_2}{Par_1+Par_2}$. In most cases these loan characteristics within a tuple are typically identical or very similar anyway. For indicator variables, like PIK and Nonaccrual, we use the max function when aggregating, i.e. we assign the whole tuple as PIK or nonaccrual if any of the loan positions in that tuple has that status. However, since there are effectively no cases in the raw data where there are two loan positions of the same borrower with the same seniority and the same loan type within the same BDC's portfolio with different PIK or nonaccrual status, this aggregation rule does not affect the classification.

For seniority categorization, we rely on pre-existing BDC Collateral's `securitytype` classification. When creating a loan type categorization, we again mainly rely on the existing `securityclassnormalized` variable of BDC Collateral. However, due to a number of missing observations, for this category, we fill in the missing variables based on the textual information in the `securitytyperaw` variable in BDC Collateral. This variable often has textual information that helps to assign the missing observations to BDC Collateral's existing categories. For example, if the `securitytyperaw` variable contains the strings "Delay" and "Draw", we set the missing `securityclassnormalized` to "Delay Draw Term Loan". We do the same for term loans, revolvers, ABL loans, bonds, unitranche loans, and letters of credit.

Finally, since this `securityclassnormalized` has several categories with only a handful of observations, such as "Aircraft Loan" with only 19 observations, we group these miscellaneous items into a larger group called "Other".[3] After this step, we have four security class categories called "Delay Draw Term Loan", "Revolver", "Term Loan" and "Other". Unitranche loans and observations with no security class information available are allocated to "Term Loan" category, which represents most of the loans.[4]

BDC Collateral also typically passes through the reporting errors of the SEC filings without adjustment. This requires us to make several small corrections. We drop observations with PIK-spread or all-in-yield over 100%. We also manually check for rounding errors and other reporting errors for several investment-level variables. For example, when the interest rates have been reported as 500% typically the correct number is 5%. In cases when the base rate is not reported at all in the raw data, we set it to zero and assign the loan to be a fixed-rate loan, and our manual inspection verifies that the reported all-in-yield for these loans does not change between periods, even when typical reference rates like LIBOR experience shifts in levels, which supports this approach.[5] We also winsorize all the financial ratios (leverage, ROE, etc) at 1% and 99% level.

Since our main focus is on private credit, we drop three BDCs that do not fit this

[3]More precisely, some of the items that we include in this category are ABL Loan, Aircraft Loans, First Out Loans, Last Out Loans, Letters of Credit, Bonds, and Other. Even after pooling, this group remains small compared to other loan type categories.

[4]Due to missing observations and heterogeneous reporting approaches of BDCs (e.g., by separating unitranche loans and term loans as separate categories that are not necessarily mutually exclusive) these Loan Type categories are unlikely to perfectly reflect the underlying loan types and should be interpreted cautiously. However, the primary purpose of this classification is to help us track each unique loan within a BDC's portfolio, and as BDCs' distinct reporting approaches are common *within* each BDC's portfolio, this classification is sufficient for our purposes.

[5]The exception is some PIK toggles, where the borrower reports a floating rate before using PIK, but stops reporting this base rate (for the period of PIK use) and instead reports a single all-in-yield. These instances suggest that floating-rate loans often switch to fixed-rate loans when PIK is used. However, even with these loans, we can track these changes with our $Fixed\,rate\,loan$ indicator variable, which is allowed to change from period to period.

description. We drop MacKenzie Realty Inc and Terra Income Fund 6, whose business model focuses on providing commercial real estate loans, and Newtek Business Services, which, based on our analysis and web searches, specializes in providing SBA guaranteed microloans for small businesses. [6] Even at their largest, these companies covered less than 0.7% of the total market, so dropping them has little significance on the representativeness of the sample. After dropping these three, we are left with 215 BDCs.

We use industry information associated with each borrower in the LSEG BDC Collateral dataset. After unifying the writing format for the reported industries[7], there remain 30 unique industries, and they correspond closely to the standard industry classification used e.g. by credit rating agencies. For a close comparison of this industry list see e.g. Moody's, 2013. Industry information in BDC Collateral is reported for most firms—but not all of them, which is why sometimes the number of observations drops slightly when we add industry fixed effects in some of the regressions.

When calculating fund age, we rely primarily on information about the date of incorporation or founding date from Pitchbook and S&P Global. However, in the absence of information from these sources, we collect the BDC inception dates from SEC EDGAR or internet searches and use those.

IA.1.2 Pitchbook-based variables

We construct several variables using data from Pitchbook and then match them to BDC Collateral data. We can find a Pitchbook ID counterpart for 13201 firms out of 16562 unique borrower IDs in the BDC Collateral investment dataset.[8]

First, we control for borrowers' access to bank financing by tracking deals in Pitchbook where one of the lenders is classified as "Commercial Bank" or "Investment Bank". If the borrower has obtained a bank loan in the past five years, including the current quarter, then the variable "Bank financing" takes a value of one, and zero otherwise. We leverage the fact that our Pitchbook data extends well beyond 2012 in history, which allows us to construct

[6] Unlike most other BDCs that typically have approximately 100 borrowers in the portfolio, Newtek Business Services originates hundreds of tiny business loans, overwhelming the other loans in terms of number but not in economic importance. Including these loans would create unnecessary bias in any OLS estimate toward Newtek's portfolio.

[7] We make some very minor corrections to raw reporting. For example, we change the firm's industry from "Health Care" to "Healthcare" to match it with the reporting format of other firms.

[8] Manual inspection of the unmatched firm IDs in BDC Collateral indicates that, from the matches that fail, often the reason is that there exists no firm name in BDC Collateral to match against, or the ID is associated with a CLO or another fund vehicle, for which Pitchbook does not offer a match. This is reassuring since our main focus is on the nonfinancial borrowers within the BDC portfolios, for which we find a match with high probability.

the *Bank Financing* measure from the very beginning of our BDC Collateral sample.[9]

Second, we construct a variable "PE Sponsored" that tracks a borrower's status as a private equity-backed company. We construct this variable by using the 2024Q2 snapshot of all the firms in Pitchbook (both active and inactive ones) and then track past ownership changes using information about previous deals. We do this by first shrinking the number of potentially PE-backed firms to those firms that are assigned as "Formerly PE-backed" or "Private Equity-Backed" that is, those that are PE-backed at any point in the sample. Then we render those "Formerly PE-backed" firms as non-PE-backed from the date their ownership status changes to something else (either "Acquired/Merged", "Acquired/Merged (Operating Subsidiary)", "In IPO Registration", "Out of Business", "Privately Held (no backing)", or "Publicly Held").

[9]However, there might exist another concern that we are not capturing all the bank loans of each firm, thus underestimating the share of bank financing, because Pitchbook is not capturing all the bank deals. This is certainly likely, especially with borrowers that are not tracked by Pitchbook at all. However, this concern is mitigated for two reasons. First, *Bank financing* is only defined for the firms that we can match to Pitchbook, so for this variable we are effectively looking at the firms that are on Pitchbook's radar at least. Second, we find that close to half of our sample firms are "dual (bank-and-BDC) borrowers", which closely aligns with the findings of Haque, Mayer, and Stefanescu (2024) using confidential and more comprehensive Federal Reserve Y-14 data, suggesting that within our sample, the undercapture is unlikely to be severe.

IA.1.3 Constructing the loan origination sample

We construct the loan-origination level sample based on our self-constructed loan identifiers, where we identify a unique loan in our sample using *seniority* × *loan type* × *borrower* × *lender* combination. Since there are some rare cases where an existing loan is being reported with a different loan type or seniority, this might change and rename a loan identifier to that of a loan that has been issued earlier. To mitigate the concern that we assign an old loan as a new origination due to a change in reporting, and to show statistics for a sample that is representative of the sample in our main empirical tests, we additionally apply the following filters: i) A loan's Fair/Par (which should correspond to 1 minus original issue discount, OID at new issuances) at this initial date is required to be above 0.97, as most of the sample loans rarely have OID above 3%. ii) A loan cannot be at nonaccrual status at the origination date—as the opposite case would indicate that the loan is not really a new origination but an old loan that is now reported differently. iii) A loan is required to appear in the sample for at least four quarters after origination, since we want to eliminate potential reporting errors and we are mainly interested in longer-term loans rather than temporary bridge financing loans. iv) A loan is required to be originated after 2012Q1 (as we cannot observe the implied origination date for loans that appear in the sample at the earliest sample date at 2012Q1) and is required to have exited the sample before the end of the sample period. We exclude loans where observed exit of the loan coincides with the lender's exit from the sample because these loans are more likely to have simply transferred ownerships as a result of fund being acquired or terminated. The resulting sample contains 16,093 loans to 7,164 borrowers. We do not require the borrower to be matched to Pitchbook or to have Pitchbook information available. The Pitchbook-based variables $Bank\ financing$ and $PE\ Sponsored$ (Section IA.1.2) are therefore missing for part of the sample, either because the borrower cannot be matched to Pitchbook or because Pitchbook does not provide the relevant information (the bank deal history for the loan's origination quarter, or the borrower's financing status): $Bank\ financing$ is observed for 9,213 loans and $PE\ Sponsored$ for 12,774 loans. In Panel B of main-text Table 2 and in Table A3, the means of these two variables and their differences across loan types are calculated from the loans for which they are observed, while all other statistics use the full sample. In the loan-origination regressions that control for these variables, we likewise keep the loans with missing Pitchbook information, set the missing values to zero, and add indicators for missing information. The main results of this paper would be qualitatively similar without these filters.

Figure A1: Example of PIK restriction in bank credit line contract

Excerpt from the 8-K filing of Ares Capital Corporation of June 30, 2022, describing its credit facility with Wells Fargo and Bank of America. The PIK-related restriction is highlighted in yellow.

"Collateral Portfolio" means all right, title, and interest (whether now owned or hereafter acquired or arising, and wherever located) of the Borrower in the property identified below in clauses (i) through (v) and all accounts, cash and currency, chattel paper, tangible chattel paper, electronic chattel paper, copyrights, copyright licenses, equipment, fixtures, contract rights, general intangibles, instruments, certificates of deposit, certificated securities, uncertificated securities, financial assets, securities entitlements, commercial tort claims, deposit accounts, inventory, investment property, letter-of-credit rights, software, supporting obligations, accessions, or other property consisting of, arising out of, or related to any of the following (in each case excluding the Retained Interest and the Excluded Amounts):

(i) the Loan Assets, and all monies due or to become due in payment under such Loan Assets on and after the related Cut-Off Date, including, but not limited to, all Available Collections, but excluding any related Attached Equity;

Specific Hedged Loan Assets shall be considered Fixed Rate Loan Assets or Floating Rate Loan Assets, as applicable, as provided in the definition thereof;

(vi) the aggregate Adjusted Borrowing Value of all Eligible Loan Assets that pay interest in cash less frequently than quarterly shall not exceed 15% of the aggregate Adjusted Borrowing Value of all Eligible Loan Assets;

(vii) the aggregate Outstanding Balances and Exposure Amounts of all Eligible Loan Assets that are Revolving Loan Assets and the Exposure Amounts of Eligible Loan Assets that are Delayed Draw Loan Assets shall not exceed 10% of the aggregate Adjusted Borrowing Value of all Eligible Loan Assets;

(viii) the aggregate Adjusted Borrowing Value of all Eligible Loan Assets that are Partial PIK Loan Assets shall not exceed 10% of the aggregate Adjusted Borrowing Value of all Eligible Loan Assets; and

(ix) the aggregate Adjusted Borrowing Value of all Eligible Loan Assets that are Participation Interests shall not exceed (i) during the Acquisition Participation Elevation Period, 10.0% and (ii) thereafter, 0.0%.

IA.1.4 Collecting bank covenant-related information from SEC filings

BDCs' SEC 8-K filings often include information about the PIK-related covenants that banks impose on BDCs. The most ubiquitous are those that restrict the extent that collateral portfolio can contain assets that use PIK. Figure A1 gives an example of such a restriction in Ares Capital Corp's 8-K filing from June 30th, 2022, that discloses the terms of the credit line facility obtained from Wells Fargo and Bank of America. The PIK-related restriction is highlighted in yellow.

To evaluate how prevalent these PIK restrictions are we used an automated Python 3 pipeline to find and collect PIK references from SEC 8-K and 8-K/A filings for Business Development Companies (BDCs). The goal was to quickly scan large numbers of filings and identify any mention of PIK terms in loan or credit agreements.

1. **Data Collection:** The process starts with an input Excel or CSV file containing BDC names and their SEC CIK numbers. Using these identifiers, the script automatically connects to the SEC EDGAR database to find all BDCs' 8-K and 8-K/A filings. File downloads were handled by the requests library.

2. **Document Retrieval:** For each filing, the script downloads its index page and uses

BeautifulSoup (bs4) to find links to related exhibits such as agreements or reports.

3. **Text Extraction:** The script handles different file types: i) HTML and text files are decoded using charset-normalizer or chardet to fix encoding issues. ii) PDF files are read using pdfminer.six. If needed, pdf2image, Pillow (PIL), and pytesseract can perform OCR (optical character recognition) to extract text from image-based PDFs. All extracted text is cleaned to remove formatting and unreadable characters.

4. **Keyword and Context Search:** Clean text is searched with regular expressions (regex) for: i) Key 8-K phrases like "Entry into a Material Definitive Agreement." ii) PIK-related words such as "payment-in-kind," "PIK toggle," or "deferred interest." The script also looks for nearby financial terms like percentages, dollar amounts, or words indicating restrictions.

5. **Raw Output:** All findings are saved in structured tables using pandas, and results are exported to both Excel (.xlsx) and CSV formats with openpyxl. Each record includes the company name, CIK, filing date, document URL, detected phrase, and short text snippet for review.

6. **Identification of PIK restrictions:** From this raw data of population of 8-K filings, we drop the irrelevant filings by keeping only the filings that are associated with BDCs' credit agreements using the presence of the related keywords. From these relevant filings we identify those documents that contain discussion about PIK restrictions. Finally we read through the relevant parts (that discussed PIK) from this subset of filings to confirm the language referred to some type of covenant associated with PIK use. Based on this information, we calculate the share of BDCs with PIK restrictions in their credit agreements relative to all BDCs with credit agreements in the SEC Edgar database.

Of the 66 BDCs whose credit line outstanding we observe in CapitalIQ, we identify 56 with some type of credit agreements, of which 49—or 87.5%—include legal language that refers to PIK related covenant restrictions on borrowing base. This share counts any such language.

IA.1.5 Management fee structure of business development companies

Business development companies commonly use an externally managed structure under which an affiliated or third-party investment adviser receives both a recurring base management fee and performance-based incentive compensation. Although the precise terms vary across

firms, the resulting arrangement typically resembles the "two-part" compensation model used in private credit and private equity funds. Management fees are paid from the BDC's assets and therefore reduce the investment returns available to shareholders.

The base management fee is generally calculated as an annual percentage of the BDC's average gross assets and is paid quarterly in arrears. Gross assets usually include investments financed with debt, although cash and cash equivalents may be excluded under some advisory agreements. As a result, a gross-assets-based fee can increase when the BDC employs additional leverage, even when its net asset value does not increase proportionately. Publicly disclosed agreements frequently specify annual base fee rates in the range of approximately 1.0 to 2.0 percent, with some BDCs applying a lower rate to assets financed above a specified leverage threshold. For example, certain agreements provide for a standard rate of 1.5 percent of average gross assets and a reduced rate on assets financed with borrowing beyond a defined debt-to-equity level.

Performance-based compensation ordinarily consists of two separate incentive fees. The first is an income incentive fee, calculated with reference to pre-incentive-fee net investment income. This measure generally includes interest income, dividend income, fee income, and other operating income, less operating expenses, but before deduction of the incentive fee itself. The adviser typically receives no income incentive fee until the BDC's quarterly return exceeds a contractual hurdle rate. Once the hurdle is exceeded, a "catch-up" provision may allocate a substantial portion, and sometimes all, of the income immediately above the hurdle to the adviser until the agreed profit-sharing ratio is reached. Thereafter, the adviser commonly receives approximately 15 to 20 percent of qualifying net investment income. A representative agreement, for example, applies no fee below a quarterly hurdle of 2.0 percent and then uses a catch-up mechanism before applying the continuing incentive-fee percentage.

The second performance component is a capital-gains incentive fee. This fee is commonly equal to approximately 20 percent of cumulative realized capital gains, net of realized capital losses and unrealized capital depreciation, calculated from the commencement of the advisory agreement. Amounts previously paid are deducted to prevent duplicate compensation. Because the calculation is cumulative, the fee is intended to compensate the adviser for net value realization over time rather than for isolated profitable exits. Nevertheless, the treatment of unrealized appreciation and depreciation, the timing of accruals, and the absence or presence of a total-return requirement can materially affect both the reported expense and the adviser's economic incentives. In practice most of the incentive fees originate from the income incentive fee and not capital gain fee, partly due to the nature of debt contracts that occupy BDCs' portfolios.

Overall, the typical BDC compensation structure combines a scale-based fee tied to assets

under management with performance fees tied to investment income and realized capital gains. The structure rewards portfolio growth and investment performance, and it may also give the adviser incentives to increase leverage, expand the asset base, favor income-generating investments, or realize gains selectively.

IA.2 Empirical Appendix

IA.2.1 BDCs in the sample as of 2024Q3

Table A1: BDCs in the sample

BDC Name	Ticker	CIK	Status	Assets (USD mn)
Blackstone Private Credit Fund	P-BCRED	1803498	Private	64 674,45
Ares Capital Corporation	ARCC	1287750	Public	27 100,00
Blue Owl Credit Income Corp. f.k.a Owl Rock Core Income Corp.	P-OLRCIC	1812554	Private	25 834,05
FS KKR Capital Corp f.k.a FS Investment Corporation	FSK	1422183	Public	15 149,00
Blue Owl Capital Corporation f.k.a Owl Rock Capital Corporation (ORCC)	OBDC	1655888	Public	14 090,78
HPS Corporate Lending Fund	P-HPSCLF	1838126	Private	13 773,40
Apollo Debt Solutions BDC	P-ADSBDC	1837532	Private	13 673,77
Blackstone Secured Lending Fund	BXSL	1736035	Public	12 371,57
Golub Capital BDC, Inc	GBDC	1476765	Public	8 705,98
Ares Strategic Income Fund	P-ARSTIF	1918712	Private	7 691,45
Prospect Capital Corporation	PSEC	1287032	Public	7 592,71
Sixth Street Lending Partners	P-SIXSLP	1925309	Private	6 731,61
Blue Owl Technology Finance Corp. f.k.a Owl Rock Technology Finance Corp.	P-ORTFIC	1747777	Private	6 685,02
North Haven Private Income Fund LLC	P-NHPIFL	1851322	Private	6 017,37
Goldman Sachs Private Credit Corp.	P-GSPCCP	1920145	Private	5 624,54
Blue Owl Technology Finance Corp. II f.k.a Owl Rock Technology Finance Corp. II	P-ORTFII	1889668	Private	5 370,75
Oaktree Strategic Credit Fund	P-OAKSCF	1872371	Private	5 223,37
Blue Owl Technology Income Corp. f.k.a Owl Rock Technology Income Corp.	P-OWLRTI	1869453	Private	5 189,14
Main Street Capital Corporation	MAIN	1396440	Public	5 094,78
Blue Owl Capital Corporation III f.k.a Owl Rock Capital Corporation III	OBDE	1807427	Public	4 464,33
MSD Investment Corp	P-MSDINC	1849894	Private	4 445,24
Franklin BSP Capital Corporation f.k.a Franklin BSP Capital L.L.C.	P-FBSPCC	1825248	Private	4 035,43
Monroe Capital Income Plus Corporation	P-MCIPCO	1742313	Private	3 817,46
Morgan Stanley Direct Lending Fund	MSDL	1782524	Public	3 793,37
Hercules Capital, Inc.	HTGC	1280784	Public	3 656,36
Goldman Sachs BDC, Inc.	GSBD	1572694	Public	3 545,49
Sixth Street Specialty Lending, Inc. f.k.a TPG Specialty Lending, Inc.	TSLX	1508655	Public	3 529,86
Golub Capital Private Credit Fund	P-GBCPCF	1930087	Private	3 513,52
New Mountain Finance Corporation	NMFC	1496099	Public	3 414,26
MidCap Financial Investment Corporation f.k.a Apollo Investment Corporation	MFIC	1278752	Public	3 216,03
Oaktree Specialty Lending Corp f.k.a Fifth Street Finance Corp.	OCSL	1414932	Public	3 198,34
Barings Private Credit Corporation	P-BARPCC	1859919	Private	3 055,14
TPG Twin Brook Capital Income Fund f.k.a AG Twin Brook Capital Income Fund	P-ATBCIF	1913724	Private	2 926,31
Barings BDC, Inc. f.k.a. Triangle Capital Corporation	BBDC	1379785	Public	2 605,08
Stone Point Credit Corporation f.k.a Stone Point Capital Credit LLC	P-STPTCC	1825384	Private	2 582,53
Bain Capital Specialty Finance, Inc	BCSF	1655050	Public	2 543,68
SLR Investment Corp. f.k.a Solar Capital Ltd.	SLRC	1418076	Public	2 442,91
Goldman Sachs Private Middle Market Credit II LLC	P-GPMMII	1772704	Private	2 397,77
Nuveen Churchill Direct Lending Corp. f.k.a Nuveen Churchill BDC Inc.	NCDL	1737924	Public	2 140,11
Blue Owl Capital Corporation II f.k.a Owl Rock Capital Corporation II	P-OWLRII	1655887	Private	2 136,67
PennantPark Floating Rate Capital Ltd.	PFLT	1504619	Public	2 108,85
T Series Middle Market Loan Fund LLC	P-TSMMLF	1885968	Private	2 083,00
Blackrock TCP Capital Corp. f.k.a TCP Capital Corp.	TCPC	1370755	Public	2 047,70
T. Rowe Price OHA Select Private Credit Fund	P-TRPOSF	1901164	Private	2 035,07
Kayne Anderson BDC, Inc.	KBDC	1747172	Public	2 028,25
FS Specialty Lending Fund f.k.a FS Energy and Power Fund	P-FSEN	1501729	Private	1 986,32
CION Investment Corporation	CION	1534254	Public	1 915,62
Carlyle Secured Lending, Inc. f.k.a TCG BDC, Inc	CGBD	1544206	Public	1 816,93
Carlyle Credit Solutions, Inc. f.k.a TCG BDC II, Inc.	P-TCGIII	1702510	Private	1 778,41

Continued on next page

Table A1 (Continued)

BDC Name	Ticker	CIK	Status	Assets (USD mn)
Trinity Capital Inc	TRIN	1786108	Public	1 734,76
AB Private Credit Investors Corporation	P-ABPCIC	1634452	Private	1 662,55
Crescent Capital BDC, Inc	CCAP	1633336	Public	1 645,05
Antares Strategic Credit Fund	P-ANSCRF	1993402	Private	1 632,63
New Mountain Guardian III BDC, L.L.C.	P-NMGIII	1781870	Private	1 607,88
Capital Southwest Corporation	CSWC	17313	Public	1 604,50
NMF SLF I, Inc.	P-NMFSLI	1766037	Private	1 507,90
Fidelity Private Credit Co LLC f.k.a Fidelity Private Credit Central Fund LLC	P-FPCRCF	1899996	Private	1 493,64
New Mountain Guardian IV BDC, L.L.C.	P-NMGBIV	1925531	Private	1 450,29
Barings Capital Investment Corporation	P-BARCIC	1811972	Private	1 436,57
Palmer Square Capital BDC Inc	PSBD	1794776	Public	1 413,55
PennantPark Investment Corp	PNNT	1383414	Public	1 389,09
Golub Capital BDC 4, Inc.	P-GCBLIV	1901612	Private	1 367,68
StepStone Private Credit Fund LLC	P-SSPCFL	1950803	Private	1 242,35
MSC Income Fund, Inc. f.k.a HMS Income Fund, Inc.	MSIF	1535778	Public	1 227,28
Saratoga Investment Corp.	SAR	1377936	Public	1 214,70
Fidelity Private Credit Fund	P-FIPRCF	1920453	Private	1 169,28
Nuveen Churchill Private Capital Income Fund	P-NCPCIF	1911066	Private	1 168,57
Fidus Investment Corporation	FDUS	1513363	Public	1 161,05
TCW Direct Lending VII LLC	P-TCWVII	1715933	Private	1 135,20
Runway Growth Finance Corp.	RWAY	1653384	Public	1 075,58
Silver Point Specialty Lending Fund	P-SRPSLF	1646614	Private	1 010,47
TCW Direct Lending VIII LLC	P-TDVIII	1825265	Private	957,51
Stellus Capital Investment Corp	SCM	1551901	Public	957,07
Middle Market Apollo Institutional Private Lending	P-MMAIPL	2006758	Private	926,28
KKR FS Income Trust	P-KKRFSI	1930679	Private	877,47
Gladstone Investment Corporation	GAIN	1321741	Public	868,78
Goldman Sachs Middle Market Lending Corp. II	P-GSMMII	1865174	Private	867,72
Diameter Credit Co	P-DIACRC	1916099	Private	843,06
BlackRock Private Credit Fund	P-BRPCRF	1902649	Private	813,78
Gladstone Capital Corporation	GLAD	1143513	Public	812,47
Varagon Capital Corp	P-VARCCP	1784700	Private	802,72
Horizon Technology Finance Corporation	HRZN	1487428	Public	793,07
TCW Direct Lending LLC	P-TCWD	1603480	Private	792,02
Oaktree Gardens OLP, LLC	P-OGOLPL	1974793	Private	787,07
Brightwood Capital Corp I	P-BRCCRPI	1895316	Private	781,59
TriplePoint Venture Growth BDC Corp.	TPVG	1580345	Public	778,35
HPS Corporate Capital Solutions Fund	P-HPSCSF	1989817	Private	730,33
Golub Capital Direct Lending Corporation	P-GCDLCP	1868878	Private	719,51
Kennedy Lewis Capital Company	P-KLCCOM	1911321	Private	714,62
KKR Enhanced US Direct Lending Fund-L Inc.	P-KKREDL	2012839	Private	710,53
Lafayette Square USA, Inc. f.k.a Lafayette Square Empire BDC, Inc.	P-LSEBDC	1849089	Private	688,41
WhiteHorse Finance, Inc.	WHF	1552198	Public	683,58
Jefferies Credit Partners BDC Inc.	P-JCPBDC	1959604	Private	663,75
Commonwealth Credit Partners BDC I, Inc.	P-CCPBDC	1841514	Private	653,96
First Eagle Private Credit Fund	P-FEPCRF	1890107	Private	571,10
Nuveen Churchill Private Credit Fund	P-NCPCRF	2022625	Private	555,58
26North BDC, Inc.	P-26NBDC	1950976	Private	555,29
Onex Direct Lending BDC Fund f.k.a Onex Falcon Direct Lending BDC Fund	P-OFDLBF	1860424	Private	554,05
Franklin BSP Real Estate Debt BDC	P-FBSPRE	2018545	Private	538,56
Bain Capital Private Credit	P-BACPCR	1899017	Private	533,95
Overland Advantage	P-OLDADT	1965934	Private	532,71
Monroe Capital Corporation	MRCC	1512931	Public	501,86
Phillip Street Middle Market Lending Fund LLC	P-PSMMLF	1948368	Private	491,55
OHA Senior Private Lending Fund (U) LLC	P-OSPLFL	1955010	Private	486,94
WTI Fund X, Inc.	P-WTIFXI	1850938	Private	468,42
Portman Ridge Finance Corporation f.k.a KCAP Financial, Inc.	PTMN	1372807	Public	463,67
TriplePoint Private Venture Credit Inc.	P-TPGVCL	1792509	Private	444,99
Redwood Enhanced Income Corp.	P-REDEIC	1870267	Private	433,00
Great Elm Capital Corp.	GECC	1675033	Public	427,03
Audax Credit BDC Inc.	P-ACBDCI	1633858	Private	422,26
SCP Private Credit Income BDC LLC	P-SCPPCI	1743415	Private	422,16
OFS Capital Corporation	OFS	1487918	Public	418,54
Carlyle Secured Lending III	P-CSLIII	1851277	Private	412,44
Vista Credit Strategic Lending Corp	P-VCRSLC	1919369	Private	397,35
Ares Core Infrastructure Fund	P-ARCINF	2031750	Private	364,43
Star Mountain Lower Middle-Market Capital Corp.	P-SMLMMC	1786835	Private	358,70

Continued on next page

Table A1 (Continued)

BDC Name	Ticker	CIK	Status	Assets (USD mn)
Silver Capital Holdings LLC	P-GSPMMC	1674760	Private	326,50
Lord Abbett Private Credit Fund	P-LAPCRF	2008748	Private	320,24
Golub Capital Direct Lending Unlevered Corp	P-GCDLUC	1901606	Private	314,08
Oxford Square Capital Corp. f.k.a TICC Capital Corp.	OXSQ	1259429	Public	312,92
New Mountain Guardian IV Income Fund, L.L.C.	P-NMGIVI	1976719	Private	311,21
KKR FS Income Trust Select	P-KKRITS	1975736	Private	310,18
PhenixFIN Corp f.k.a Medley Capital Corporation	PFX	1490349	Public	302,75
AB Private Lending Fund	P-ABPRLF	1982701	Private	289,99
Senior Credit Investments, LLC	P-SNCRIL	1959568	Private	282,04
Crescent Private Credit Income Corp.	P-CPCRIC	1954360	Private	281,83
BlackRock Direct Lending Corp	P-BRDLCO	1834543	Private	274,94
Muzinich BDC, Inc.	P-MUNBDC	1779523	Private	263,57
Stellus Private Credit BDC	P-SPCBDC	1901037	Private	262,52
Kayne DL 2021, Inc.	P-KAYDLI	1850787	Private	254,85
North Haven Private Income Fund A LLC	P-NHPIFA	1973476	Private	244,04
LGAM Private Credit LLC	P-LGAMPC	1983514	Private	237,72
SuRo Capital Corp. f.k.a Sutter Rock Capital Corp.	SSSS	1509470	Public	233,78
PIMCO Capital Solutions BDC Corp.	P-PCSBDC	1905824	Private	213,06
Investcorp Credit Management BDC, Inc. f.k.a CM Finance Inc	ICMB	1578348	Public	203,02
Venture Lending & Leasing IX, Inc.	P-VLLIXI	1717310	Private	191,85
PGIM Private Credit Fund	P-PGIMPC	1923622	Private	188,40
Logan Ridge Finance Corporation f.k.a Capitala Finance Corp	LRFC	1571329	Public	186,71
Steele Creek Capital Corporation f.k.a MSC Capital LLC	P-STCRCC	1817825	Private	172,95
AMG Comvest Senior Lending Fund	P-AMGCSL	1987221	Private	170,77
TCW Star Direct Lending LLC	P-TCWSDL	1916608	Private	147,87
BC Partners Lending Corporation	P-BCPLCO	1726548	Private	147,18
Manulife Private Credit Fund	P-MLPCRF	1988280	Private	131,44
Prospect Floating Rate & Alternative Income Fund, Inc.	P-PSIFIN	1521945	Private	106,32
Andalusian Credit Company, LLC	P-ADLCRC	1979306	Private	101,26
Equus Total Return, Inc.	EQS	878932	Public	95,51
Chicago Atlantic BDC, Inc. f.k.a Silver Spike Investment Corp.	LIEN	1843162	Public	89,28
BIP Ventures Evergreen BDC	P-BIPVRE	1950572	Private	87,97
Rand Capital Corporation	RAND	81955	Public	79,80
Muzinich Corporate Lending Income Fund, Inc	P-MCLIFI	1985375	Private	78,39
SLR HC BDC LLC	P-SLRHBL	1832148	Private	75,84
Wellings Real Estate Income Fund	P-WLREIF	1922947	Private	73,27
NexPoint Capital, Inc.	P-NXPTCP	1588272	Private	51,42
Hancock Park Corporate Income, Inc.	P-HPCPIN	1661306	Private	40,92
SLR Private Credit BDC II LLC	P-SLRPCB	1932591	Private	39,69
WTI Fund XI, Inc.	P-WTIXII	1987731	Private	27,60
Princeton Capital Corporation	PIAC	845385	Public	23,39
Guggenheim Credit Income Fund f.k.a Carey Credit Income Fund	P-GGCINF	1618697	Private	12,14
West Bay BDC LLC	P-WBBDCL	2020354	Private	8,24
Firsthand Technology Value Fund, Inc.	SVVC	1495584	Public	2,21
			Total Assets:	**408 352,22**

IA.2.2 Additional variable definitions

Table A2: Additional variable definitions

Variable	Definition	Level	Source
BankDebt/Assets	Bank-debt-to-assets ratio$_t$=Bank debt$_t$/Total assets$_t$	Lender-level	LSEG
Equity	Share of portfolio fair value invested in equity$_t$=Fair value of equity investments$_t$/Total portfolio fair value$_t$	Lender-level	LSEG
First Lien	Share of portfolio fair value invested in first-lien debt$_t$=Fair value of first-lien debt$_t$/Total portfolio fair value$_t$	Lender-level	LSEG
Junior position	Indicator equal to one if the lender also holds a second-lien position in the same borrower at time t	Lender-Borrower	LSEG
ln(Credit)	Natural logarithm of total credit outstanding at par value	Lender-level	LSEG
ln(Credit^{PIK})	Natural logarithm of credit outstanding at par value to borrowers using PIK features	Lender-level	LSEG

$\ln(\text{Credit}^{nonPIK})$	Natural logarithm of credit outstanding at par value to borrowers not using PIK features	Lender-level	LSEG
ln(Fund size)	Natural logarithm of the lender's total assets at the end of quarter t	Lender-level	LSEG
ln(Investments)	Natural logarithm of total investments at cost	Lender-level	LSEG
ln(# Investees)	Natural logarithm of the number of portfolio companies	Lender-level	LSEG
ln(Inv/Investee)	Natural logarithm of average investment per portfolio company=Investments at cost/Number of portfolio companies	Lender-level	LSEG
PIK-income share	Share of PIK income in the lender's total investment income in quarter t	Lender-level	CapitalIQ
Position share (BDC)	Fair value of the lender's debt and equity positions in the borrower, in percent of the lender's total assets at time t, winsorized at the 1st and 99th percentiles	Lender-Borrower	LSEG
Realized performance	Lender's net investment income plus net realized gains in quarter t, divided by its net assets at the end of quarter $t-1$, winsorized at the 1st and 99th percentiles	Lender-level	CapitalIQ
Subordinated	Share of portfolio fair value invested in subordinated debt_t=Fair value of subordinated debt_t/Total portfolio fair value_t	Lender-level	LSEG

IA.2.3 PIK toggles: exercised at origination versus after origination

Table A3 splits the PIK-toggle loans of main-text Table 2 by *when* the borrower first exercises the PIK option. Of the 1,344 toggles in the origination sample, 263 (20%) already pay in kind in the origination quarter ("at origination"), while 1,081 (80%) switch PIK on only later ("post-origination"). The two groups are economically distinct. At-origination toggles resemble PIK notes on their *ex-ante* contract terms: half carry a fixed rate (53.2% versus 15.4% for post-origination toggles), they are richly priced (12.1% all-in-yield versus 9.0%), they are less often senior secured (68.1% versus 84.4%) and less often bank-financed (31.6% versus 41.8%), and the lender more often also holds equity in the borrower (35.7% versus 25.6%), consistent with an instrument designed for deferred payment from the outset. Post-origination toggles, by contrast, are ex ante almost indistinguishable from ordinary non-PIK loans: they are overwhelmingly first-lien (84.4%), floating-rate, priced close to non-PIK senior debt (9.0% versus 8.4% all-in-yield), and more frequently bank-financed than at-origination toggles. Their *ex-post* outcomes, however, are the worst in the sample: 27.5% exit below 80% of par and 24.8% are on non-accrual at exit—roughly two to three times the rates for at-origination toggles (12.6% and 12.6%) and for PIK notes (10.4% and 9.1%), and six-to-ten times the rates for loans that never use PIK (4.6% and 2.4%). Both toggle types extend maturity frequently (47–56%) and convert debt to equity at similar rates (11.0% and 8.7%). Only post-origination toggles combine origination terms similar to ordinary loans with worse terminal outcomes. At-origination PIK is thus a priced contract feature, while post-origination PIK is consistent with forbearance.

Table A3: PIK-type differences: PIK toggles exercised at versus after origination

This table reproduces the loan-origination summary of main-text Table 2, Panel B, on the same sample of exited loans, but splits the PIK-toggle group by when the borrower first exercises the PIK option: *PIK-toggle (at orig.)* loans already pay interest in kind in the loan's origination quarter, whereas *PIK-toggle (post-orig.)* loans switch PIK on only after origination. Columns *Diff No−PostToggle*, *Diff No−AnteToggle*, and *Diff No−Note* report the mean difference between the *No PIK Used* group and, respectively, the post-origination toggles, the at-origination toggles, and the PIK-notes. Standard errors, in parentheses, are clustered at the borrower level to account for correlation across a borrower's loans, including loans co-held by multiple BDC lenders. All variable definitions follow main-text Table 2. Significance levels: *(p<0.10), **(p<0.05), ***(p<0.01).

Variable	No PIK Used	PIK-toggle (post-orig.)	PIK-toggle (at orig.)	PIK-note	Diff No− PostToggle	Diff No− AnteToggle	Diff No− Note
Observations	14097	1081	263	652			
First Lien Senior Secured (%)	82.7	84.4	68.1	49.5	-1.7 (1.4)	14.6*** (3.9)	33.1*** (2.5)
Fixed rate (%)	12.8	15.4	53.2	67.5	-2.6* (1.4)	-40.4*** (4.6)	-54.7*** (2.4)
Par value ($ million)	13.59	20.61	21.85	15.97	-7.02*** (1.59)	-8.26** (3.61)	-2.37 (1.56)
Time-to-maturity (Months)	64.95	61.62	55.65	57.49	3.33*** (0.79)	9.30*** (1.62)	7.47*** (1.18)
All-in-yield (%)	8.4	9.0	12.1	12.4	-0.6*** (0.1)	-3.7*** (0.3)	-4.0*** (0.1)
Avg Cash Spread (%)	6.4	6.4	7.3	6.3	0.0 (0.1)	-0.9*** (0.3)	0.1 (0.2)
Avg PIK Spread (%)	0.0	1.7	2.6	5.0	-1.7*** (0.1)	-2.6*** (0.2)	-5.0*** (0.3)
Number of BDCs	3.57	3.23	3.86	2.14	0.34 (0.47)	-0.28 (0.97)	1.43*** (0.18)
Multiple BDCs (%)	68.0	61.7	55.5	41.7	6.3*** (2.0)	12.5*** (4.6)	26.3*** (2.8)
Bank financing (%)	59.2	41.8	31.6	31.8	17.4*** (2.8)	27.6*** (5.6)	27.4*** (3.3)
PE Sponsored (%)	81.9	80.8	79.0	71.3	1.1 (1.8)	2.9 (3.7)	10.6*** (2.7)
Dual Holding (%)	12.7	25.6	35.7	51.8	-13.0*** (1.7)	-23.1*** (3.8)	-39.2*** (2.6)
I(Fair/Par<80%) (at exit) (%)	4.6	27.5	12.6	10.4	-23.0*** (1.8)	-8.0*** (2.4)	-5.8*** (1.4)
Nonaccrual (at exit) (%)	2.4	24.8	12.6	9.1	-22.4*** (1.8)	-10.2*** (2.4)	-6.7*** (1.3)
Maturity extension (%)	22.1	47.5	56.3	20.2	-25.4*** (2.1)	-34.2*** (4.0)	1.8 (1.8)
Debt-to-Equity Swap (%)	1.5	11.0	8.7	6.0	-9.5*** (1.3)	-7.2*** (2.0)	-4.5*** (1.2)
Share of time using PIK (%)	0.0	38.5	59.9	100.0	-38.5*** (0.9)	-59.9*** (2.0)	-100.0*** (0.0)

IA.2.4 PIK usage among BDCs

Table A4 links BDC funding choices to the intensity of PIK usage. Panel B indicates systematic differences between low- and high-PIK BDCs. High-PIK BDCs are substantially larger: the 0.749 difference in log assets implies assets that are roughly twice as large as those of low-PIK peers ($= e^{0.749} = 2.1$). High-PIK BDCs also operate with higher leverage (0.430 vs. 0.389), yet do not exhibit statistically different ROE, suggesting that higher PIK usage is not associated with higher contemporaneous equity profitability in these unconditional comparisons. The most pronounced contrasts are in liability composition and liquidity: relative to low-PIK BDCs, high-PIK BDCs rely less on bank-intermediated funding (bank debt/assets lower by 0.057; drawn credit lines/assets lower by 0.061) and hold less cash (-0.033), while substituting toward bond financing (bonds/assets higher by 0.089). Undrawn credit line capacity is not significantly different across groups, implying that high-PIK BDCs do not offset lower cash holdings with greater unused bank commitments. Overall, the pattern is consistent with high PIK usage coexisting with a more market-based funding mix (greater bond reliance) and weaker on-balance-sheet liquidity. Finally, we show that BDCs with high PIK usage tend to have management fee contracts with higher fee rates.

IA.2.5 Robustness of the co-held loan valuation

Table A5 shows that the incentive-fee result of Table 4 of the main text is robust to alternative explanations for why a lender might mark a co-held PIK loan more generously, and reports every interaction with PIK that Table 4 summarizes. As in Table 4, all columns control for the size of the lender's holding and its tenure in the loan, and include loan-quarter and BDC-quarter fixed effects (but not the holding fixed effects of its columns (9)–(11)). The interaction of PIK with the incentive fee rate is positive and significant at the 10% level or better in every specification, ranging from 0.16 to 0.23 percentage points of par per standard deviation in Panel A and from 0.25 to 0.36 pp in Panel B. Neither the hurdle rate nor the base management fee interacts significantly with PIK status, so the effect is specific to the performance-sensitive component of compensation. Of the competing channels, lenders that also hold equity in the borrower mark PIK loans higher (1.4 pp in Panel A, 2.3 pp in Panel B, column 3), as do lenders with a larger share of the BDC holdings in the borrower (column 5) and lenders of borrowers whose bank-financing history is unobserved (column 2); none of them displaces the fee effect. We also interact PIK with fund-level results that have been shown to influence valuations: realized performance (Marei, 2026), the PIK income share of investment income (Dogaru, 2026) and fund size. None of them interacts significantly with PIK status (columns 7–9). When all interactions enter jointly (column 10), on the smaller

sample for which the PIK income share is observed, the incentive-fee coefficient is 0.21 pp ($p < 0.05$) in Panel A and 0.35 pp ($p < 0.01$) in Panel B, and dual holding and lender share are the only other interactions that remain significant in both panels.

Table A4: Descriptive statistics for BDCs

Panel A shows the descriptive statistics of BDC panel data. Panel B shows the mean difference between BDCs grouped based on above and below median PIK usage for each period for the full sample available for each variable. The sample period is 2012Q1-2024Q4. Standard errors are clustered at the BDC and year-quarter level. Significance levels: *(p<0.10), **(p<0.05), ***(p<0.01).

Panel A: BDC level descriptive statistics

Statistic	N	Mean	St. Dev.	Q1	Median	Q3
PIK usage share	3,981	0.13	0.18	0.002	0.08	0.18
Assets ($ billion)	4,465	1.60	3.83	0.25	0.59	1.62
Number of investees	4,465	84.71	74.65	32	63	119
Leverage ratio	4,465	0.40	0.17	0.33	0.44	0.51
Fund Age (in years)	4,465	9.04	11.54	3	6	11
ROE	3,495	0.06	0.17	0.02	0.09	0.14
Bank debt share	1,983	0.47	0.31	0.23	0.45	0.68
Credit line usage	1,887	0.51	0.27	0.32	0.54	0.71
Income incentive fee rate	3,644	0.18	0.04	0.15	0.20	0.20
Hurdle rate	3,511	0.07	0.02	0.06	0.07	0.08
Base mgmt fee rate	3,319	0.01	0.005	0.01	0.01	0.02

Panel B: Mean Differences in BDC characteristics by PIK Usage

	Group Means		
Variable	Low PIK	High PIK	Difference
Ln Total Assets	6.133	6.835	0.703***
			(0.162)
Leverage Ratio	0.394	0.427	0.033**
			(0.016)
Return on Equity	0.065	0.062	-0.003
			(0.012)
Bank Debt / Assets	0.233	0.176	-0.057***
			(0.022)
Cash / Assets	0.082	0.051	-0.03***
			(0.007)
Non-bank debt / Assets	0.206	0.295	0.089***
			(0.025)
Undrawn Credit Lines / Assets	0.167	0.156	-0.011
			(0.019)
Draw Credit Lines / Assets	0.223	0.163	-0.06***
			(0.022)
Incentive Fee Rate (pp)	16.385	18.554	2.169***
			(0.467)
Hurdle Rate (pp)	6.209	6.751	0.542***
			(0.17)
Base Fee Rate (pp)	1.346	1.502	0.156**
			(0.068)

Table A5: Marks of co-held PIK loans and the lender's incentive fee: robustness

Robustness of Table 4 of the main text. The sample (lender-loan-quarters of first lien senior secured term loans held by at least two BDCs in the same quarter, 2012Q1-2024Q4), the dependent variables, the fee terms, the controls ($Ln(Holding\,Size_{lkt})$ and $Tenure_{lkt}$, in every column), the fixed effects and the clustering are as in Table 4; all interactions with PIK are reported. Columns (1)–(6) repeat columns (3)–(8) of Table 4. Columns (7)–(9) instead interact PIK with the lender's $PIK\text{-}income\,share_{lt}$ (PIK income over total investment income in quarter t), $Realized\,performance_{lt}$ (net investment income plus net realized gains in quarter t over net assets at the end of quarter $t-1$, as a fraction, winsorized at the 1st and 99th percentiles) and $Ln(Assets)_{lt}$ (logarithm of the lender's total assets at the end of quarter t). The PIK-income share is unavailable for about one third of the lender-loan-quarters, which drop out of columns (7) and (10). Column (10) includes all of them jointly and is estimated on their common sample. The other variables are defined in the Appendix of the main text. Where the borrower's $Bank\,financing$ or $PE\,sponsored$ status is unobserved (NA), the indicator is set to zero and an NA indicator, interacted with PIK, is included. The main effects of the characteristics are included where not absorbed by the fixed effects but not reported. Standard errors are clustered at the loan, BDC, and year-quarter levels. Significance levels: *(p<0.10), **(p<0.05), ***(p<0.01).

Panel A: Fair/Par

Dependent Variable:	Fair/Par$_{lkt}$ (%)									
Model:	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Variables										
PIK$_{lkt}$ × Inc. fee rate$_{lt}$	0.23**	0.20**	0.17**	0.19**	0.19**	0.20**	0.18**	0.19**	0.16*	0.21**
	(0.09)	(0.08)	(0.08)	(0.08)	(0.09)	(0.08)	(0.07)	(0.08)	(0.08)	(0.09)
PIK$_{lkt}$ × Hurdle rate$_{lt}$	-0.01	-0.03	-0.07	-0.03	-0.09	-0.04	-0.07	-0.02	-0.05	-0.08
	(0.11)	(0.11)	(0.11)	(0.11)	(0.11)	(0.11)	(0.11)	(0.11)	(0.10)	(0.12)
PIK$_{lkt}$ × Base mgmt. fee$_{lt}$	-0.18	-0.21	-0.19	-0.21	-0.28	-0.20	-0.05	-0.19	-0.23	-0.11
	(0.22)	(0.22)	(0.22)	(0.22)	(0.23)	(0.22)	(0.17)	(0.21)	(0.23)	(0.16)
PIK$_{lkt}$ × Traded BDC$_{l}$	-0.18									-0.31
	(0.17)									(0.21)
PIK$_{lkt}$ × Bank financing$_{bt}$		0.19								-0.40
		(0.77)								(0.84)
PIK$_{lkt}$ × Bank financing NA$_{bt}$		1.50**								1.04
		(0.57)								(0.93)
PIK$_{lkt}$ × Dual holding$_{blt}$			1.40***							1.14**
			(0.51)							(0.48)
PIK$_{lkt}$ × PE sponsored$_{bt}$				-0.46						0.09
				(0.76)						(1.27)
PIK$_{lkt}$ × PE sponsored NA$_{bt}$				1.83						2.44
				(1.42)						(1.52)
PIK$_{lkt}$ × Lender share$_{lkt}$					1.43***					1.26**
					(0.54)					(0.61)
PIK$_{lkt}$ × Position share (BDC)$_{blt}$						0.06				-0.11
						(0.12)				(0.17)
PIK$_{lkt}$ × PIK-income share$_{lt}$							0.43			-0.25
							(2.15)			(1.85)
PIK$_{lkt}$ × Realized performance$_{lt}$								6.79		-1.72
								(10.89)		(9.72)
PIK$_{lkt}$ × Ln(Assets)$_{lt}$									0.16	0.06
									(0.11)	(0.17)
PIK$_{lkt}$	0.02	-0.50	-0.34	0.06	-0.47	-0.14	-0.07	-0.24	-1.27	-1.17
	(0.43)	(0.49)	(0.45)	(0.68)	(0.46)	(0.42)	(0.45)	(0.58)	(1.06)	(1.58)
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Fixed-effects										
YearQtr-Loan	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
YearQtr-BDC	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Fit statistics										
Observations	138,098	138,098	138,098	138,098	138,070	138,098	90,892	134,009	138,098	88,851
R^2	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Dependent variable mean	97.07	97.07	97.07	97.07	97.09	97.07	96.97	97.09	97.07	97.03

Panel B: Deviation from the co-lenders' valuation

Dependent Variable:	Deviation$_{lkt}$ (pp)									
Model:	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Variables										
PIK$_{lkt}$ × Inc. fee rate$_{lt}$	0.36***	0.32**	0.27**	0.31**	0.30**	0.32**	0.29***	0.31**	0.25**	0.35***
	(0.13)	(0.12)	(0.12)	(0.12)	(0.13)	(0.12)	(0.10)	(0.12)	(0.12)	(0.13)
PIK$_{lkt}$ × Hurdle rate$_{lt}$	-0.01	-0.04	-0.10	-0.04	-0.14	-0.05	-0.09	-0.03	-0.07	-0.10
	(0.17)	(0.17)	(0.17)	(0.17)	(0.17)	(0.17)	(0.17)	(0.17)	(0.16)	(0.19)
PIK$_{lkt}$ × Base mgmt. fee$_{lt}$	-0.28	-0.33	-0.31	-0.33	-0.46	-0.31	-0.13	-0.30	-0.36	-0.24
	(0.32)	(0.32)	(0.32)	(0.32)	(0.35)	(0.32)	(0.27)	(0.31)	(0.34)	(0.27)
PIK$_{lkt}$ × Traded BDC$_{l}$	-0.30									-0.56
	(0.27)									(0.34)
PIK$_{lkt}$ × Bank financing$_{bt}$		0.06								-0.75
		(1.07)								(1.18)
PIK$_{lkt}$ × Bank financing NA$_{bt}$		2.55***								1.80
		(0.95)								(1.41)
PIK$_{lkt}$ × Dual holding$_{blt}$			2.27***							1.70**
			(0.82)							(0.73)
PIK$_{lkt}$ × PE sponsored$_{bt}$				-0.71						0.40
				(1.31)						(1.86)
PIK$_{lkt}$ × PE sponsored NA$_{bt}$				3.32						4.14*
				(2.37)						(2.34)
PIK$_{lkt}$ × Lender share$_{lkt}$					2.55**					2.41**
					(0.97)					(1.05)
PIK$_{lkt}$ × Position share (BDC)$_{blt}$						0.09				-0.21
						(0.20)				(0.25)
PIK$_{lkt}$ × PIK-income share$_{lt}$							1.32			0.11
							(3.62)			(3.06)
PIK$_{lkt}$ × Realized performance$_{lt}$								9.41		-2.04
								(15.68)		(15.72)
PIK$_{lkt}$ × Ln(Assets)$_{lt}$									0.29	0.08
									(0.19)	(0.25)
PIK$_{lkt}$	0.27	-0.55	-0.33	0.27	-0.60	0.00	0.02	-0.14	-2.11	-1.79
	(0.64)	(0.74)	(0.65)	(1.25)	(0.69)	(0.61)	(0.66)	(0.84)	(1.78)	(2.37)
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Fixed-effects										
YearQtr-Loan	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
YearQtr-BDC	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Fit statistics										
Observations	138,098	138,098	138,098	138,098	138,070	138,098	90,892	134,009	138,098	88,851
R^2	0.12	0.12	0.13	0.12	0.13	0.13	0.16	0.13	0.12	0.17
Dependent variable mean	0.01	0.01	0.01	0.01	0.01	0.01	0.02	0.02	0.01	0.02

IA.2.6 Who recognizes non-accrual late among co-holders?

Table 4 of the main text compares the marks that different BDCs report for the same loan in the same quarter. Table A6 asks the same question of the non-accrual decision. We take every first lien senior secured term loan that a BDC first reports on non-accrual between 2012Q2 and 2023Q4 while at least two BDCs hold it; call that quarter T_0. Of the 5,751 first lien senior secured term loans that at least two BDCs hold in some quarter of 2012Q1–2024Q4, 238 meet this condition, with 668 BDC holdings at T_0. Their holders often disagree: in 122 of the 238 loans (51%) some holders report the loan on non-accrual at T_0 and others do not, and in 67 (28%) at least one holder never reports it on non-accrual while holding it. The regressions use the 165 loans with at least two holders that have all fee terms and controls (449 BDC-loans); in 94 of them the holders split at T_0, and in 60 at least one holder never reports the loan on non-accrual. The test is cross-sectional: each BDC holding the loan at T_0 is one observation, its fee terms and size are measured at $T_0 - 1$ and its holding characteristics at T_0, and the quarters after T_0 serve only to record whether and when it later reports the loan on non-accrual. Loan fixed effects compare BDCs that hold the same loan on the same date, so they absorb the loan's condition at T_0 as well as calendar time, and only lender and holding characteristics remain. A BDC with a one-standard-deviation higher incentive fee rate at $T_0 - 1$ is 7.7 to 9.8 percentage points more likely not to report the loan on non-accrual at T_0 (columns 1–2, significant at the 10% and 5% levels; 38% of the 449 holders in the regressions do not), and 4.2 to 7.2 pp more likely never to report it while holding it (columns 3–4; 23% of them never do), significantly so only with the controls (column 4, at the 10% level). The base management fee, which does not depend on reported income, enters with the opposite sign (columns 2 and 4: -6.0 and -6.8 pp, significant at the 5% level only in column 4). The sample is small, and the estimates are imprecise.

Table A6: Who recognizes non-accrual late? Co-held loans

Cross-sectional test built from the aggregated holdings panel (one row per BDC, loan and quarter). A loan is a borrower's first lien senior secured term loans. T_0 is the first quarter in which any BDC reports the loan on non-accrual (T_0 in 2012Q2–2023Q4); the loan must be held by at least two BDCs at T_0. Each BDC holding the loan at T_0 is one observation, so the sample is a cross-section, not a panel: the quarters after T_0 only define the outcomes. Loan fixed effects compare BDCs that hold the same loan at the same date, so they also absorb calendar time and the loan's condition at T_0. *Not flagged at* T_0 is 100 if the BDC does not report the loan on non-accrual at T_0 (it reports it later or never); *Never flagged* is 100 if it never reports it on non-accrual while holding it (it leaves the loan unflagged, or still holds it unflagged at the end of the data, 2024Q4). The fee terms are the BDC's income incentive fee rate, hurdle rate and base management fee at $T_0 - 1$, standardized over the BDC-quarters of the sample before loans with a single BDC are dropped. Controls: $Ln(Holding\ size)$, *Lender share*, *Dual holding* and $Traded\ BDC$ at T_0, and $Ln(Assets)$ at $T_0 - 1$. All columns include loan fixed effects and use the same sample (BDCs with all fee terms and controls; loans left with a single such BDC drop out); standard errors are clustered by loan and BDC. Linear probability models; coefficients in percentage points. *(p<0.10), **(p<0.05), ***(p<0.01).

Dependent Variables:	Not flagged at T_0 (%)		Never flagged (%)	
Model:	(1)	(2)	(3)	(4)
Variables				
Inc. fee rate$_{l,T_0-1}$	7.69*	9.81**	4.19	7.21*
	(4.42)	(4.67)	(4.44)	(4.17)
Hurdle rate$_{l,T_0-1}$		1.13		1.69
		(2.70)		(2.29)
Base mgmt. fee$_{l,T_0-1}$		-5.95		-6.80**
		(3.66)		(2.84)
Controls		Yes		Yes
Fixed-effects				
Loan	Yes	Yes	Yes	Yes
Fit statistics				
Observations	449	449	449	449
R^2	0.43	0.47	0.52	0.56
Dependent variable mean	38.31	38.31	22.94	22.94

IA.2.7 Event study around first PIK use: diagnostics and robustness

This section collects the material behind Section 6 of the main text that is not reported there: the construction of the event-study sample, alternative specifications of the first-stage hazard of Table 5, the overlap and balance diagnostics that the inverse probability weights are required to pass, the event-study coefficients plotted in Figure 3 in tabular form, and the sensitivity of the event study to the hazard specification, to the control rule and to the sample. Throughout, the baseline is the specification of column (2) of Table 5: a logit of first PIK use with the lender's incentive fee and hurdle terms, the mark at $t-1$ and its two further lagged levels, the loan, borrower and BDC controls, and fixed effects for loan age, calendar quarter, industry, seniority and loan type.

IA.2.7.1 Sample construction

Table A7 traces the sample from the loan-level panel to the estimation sample of the baseline hazard. Of the 55,464 positions of the window that are not PIK notes, 4,280 pay in kind at some point and 917 of them already do so in their first observed quarter; the latter have no untreated history and are excluded from both the treated cohorts and the control pool. The risk set of the hazard consists of position-quarters that have never used PIK before t and are observed at t and $t-1$ (315,735 rows, 3,215 events). The hazard uses the holding BDC's fee contract, so the analysis sample is the part held by externally managed BDCs with an observed incentive fee, hurdle and base fee at $t-1$; requiring a mark in each of the three quarters before t leaves 141,269 position-quarters and 1,486 activations in 49 quarterly cohorts (2012Q4–2024Q4), against 21,637 positions of 8,232 borrowers. Activation is concentrated in 2020 (282 events) and in 2022–2024 (187, 287 and 237 events).

IA.2.7.2 Alternative specifications of the first-stage hazard

Table A8 reports the baseline hazard of Table 5, column (2), next to six alternatives, all for the first PIK quarter: one lagged level of the mark instead of three (column (2); only one quarter of history is required, so the sample grows to 1,883 events); eight lagged levels (column (3); 749 events); loan and borrower controls only, without the fee terms and the BDC controls (column (4); 2,216 events, because the fee terms no longer restrict the sample to externally managed lenders with a fee record); complete cases on PE sponsorship and bank financing instead of missing-value indicators (column (5); 890 events); first-lien term loans only (column (6)); and the baseline estimated with the complementary log-log link of the survival-analysis tables (column (7)). The estimates are stable: the incentive-fee coefficient

Table A7: Construction of the event-study sample

This table traces the sample of the event study of Section 6 from the loan-level panel of BDC holdings (2012Q1–2024Q4) to the estimation sample of the baseline hazard (Table 5, column (2)). The unit is a loan position, one BDC's holding of one loan. The 'Other' loan type comprises instruments that are neither term loans, delayed-draw term loans nor revolvers. Positions that already pay in kind when first observed (PIK notes, toggles exercised at origination) have no untreated history and are excluded. The risk set contains the position-quarters at which a position has not used PIK before t and is observed at t and $t-1$; the fee terms restrict it to holdings of externally managed BDCs with a reported fee contract at $t-1$; the baseline additionally requires a reported fair value in each of the three quarters before t. Fixed-effect levels without an event (loan ages, industries) carry no information for the hazard and are dropped at estimation.

Step	Count
Loan positions in the master panel, 2012Q1–2024Q4	58,809
after dropping the 'Other' loan type	57,859
after dropping PIK notes	55,464
Positions ever paying PIK in the window	4,280
of which already PIK in their first observed quarter (dropped)	917
Analysis universe: positions / borrowers / BDCs	54,547 / 13,308 / 204
position-quarters	394,743
positions that activate PIK after entering the panel	3,363
Risk set (never PIK before t, observed at t and $t-1$): position-quarters	315,735
positions / events	46,012 / 3,215
Held by externally managed BDCs with observed fee terms at $t-1$: position-quarters / events	231,980 / 2,162
Baseline hazard sample (three Fair/Par lags, fee terms and all covariates): position-quarters	141,269
estimation sample after dropping fixed-effect levels without events	140,902
events (treated positions) / cohorts	1,486 / 49

is 0.39–0.44 log-odds per standard deviation and the fee × hurdle interaction 0.09–0.13 in every column that contains them, and the coefficient on Fair/Par_{t-1} is −3.3 to −4.3 per unit of the mark whenever the earlier path of the mark is held fixed. With a single lagged level (column (2)) the coefficient on the mark halves (−1.8), because the level then also carries the information of the recent change: in the baseline the coefficients on the additional lags are 0.0 at $t-2$ and +2.4 at $t-3$, so that what predicts activation is a mark that is low relative to where it stood three quarters earlier — a recent markdown — over and above its level. The complementary log-log link (column (7)) reproduces the logit coefficients within 0.01–0.03 (0.3 for the mark), as expected at a quarterly event rate of about 1%. Table A9 repeats Table 5 in full with the complementary log-log link, including the first-non-accrual columns; the fee coefficients are 0.24, 0.39 and 0.38 (0.25, 0.40 and 0.39 with the logit) and every qualitative statement of Section 6.5.1 carries over.

IA.2.7.3 Overlap, weights and effective sample size

The weights of equation (9) are $\hat{p}/(1-\hat{p})$ for controls, with $\hat{p}$ the fitted hazard of the baseline evaluated at the control's own covariates in the cohort's activation quarter, normalized to sum to one within each cohort-horizon cell. Panel A of Figure A2 plots the distribution of the

Table A8: The baseline hazard of first PIK use and six alternative specifications

This table reports discrete-time hazard estimates of the probability that a loan is reported as paying in kind for the first time in quarter t, given no PIK before t, for the baseline specification of Table 5, column (2), and six alternatives. All time-varying covariates are measured in $t-1$; the all-in spread at origination τ. Column (1) is the baseline: three lagged levels of Fair/Par (the levels in $t-2$ and $t-3$ are reported as additional loan controls), the incentive fee and hurdle terms, the loan, borrower and BDC controls, missing-value indicators for PE sponsorship and bank financing, and fixed effects for loan age in quarters, *YearQtr*, *Industry*, *Seniority* and *LoanType*. Column (2) uses one lagged level of Fair/Par and column (3) eight; column (4) drops the fee terms and the BDC controls (loan and borrower controls only), so that the sample is no longer restricted to externally managed BDCs with a reported fee contract; column (5) uses complete cases on PE sponsorship and bank financing instead of missing-value indicators; column (6) restricts the sample to first-lien term loans; column (7) is the baseline estimated with the complementary log-log link, $P(\text{event}_t \mid X_{t-1}) = 1 - \exp(-\exp(\cdot))$, whose coefficients are log hazard ratios. $Inc.\,fee\,rate_{l,t-1}$ (the lender's income incentive fee rate) and $Hurdle\,rate_{l,t-1}$ (the hurdle rate of that fee) are standardized over the BDC-quarters (2012Q1–2024Q3) of the BDCs in the estimation samples of Table 5 (one standard deviation = 4.1 and 1.5 percentage points); Fair/Par is in its own units. BDC controls: $Base\,mgmt.\,fee_{l,t-1}$ (standardized in the same way), BDC type, *Ln(Assets)*, *Leverage*, *ROE*, *Cash Share* and *Ln(Fund Age)*. Observations in fixed-effect cells without an event are dropped. *AUC* is the area under the ROC curve of the fitted hazard. All variables are defined in Appendix A. Standard errors clustered at the BDC, borrower and year-quarter level in parentheses. Significance levels: *(p<0.10), **(p<0.05), ***(p<0.01).

Dependent Variable:	Event in t						
Link:				logit			cloglog
Model:	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Variables							
Inc. fee rate$_{l,t-1}$	0.395***	0.386***	0.427***		0.439***	0.427***	0.387***
	(0.110)	(0.108)	(0.148)		(0.108)	(0.112)	(0.109)
Hurdle rate$_{l,t-1}$	0.184***	0.168***	0.096		0.233***	0.181***	0.182***
	(0.067)	(0.061)	(0.072)		(0.077)	(0.069)	(0.067)
Inc. fee rate$_{l,t-1}$ × Hurdle rate$_{l,t-1}$	0.095***	0.088***	0.132***		0.119***	0.101***	0.094***
	(0.032)	(0.032)	(0.045)		(0.032)	(0.034)	(0.032)
Fair/Par$_{lk,t-1}$	-3.573***	-1.823***	-4.321***	-3.562***	-3.345***	-4.201***	-3.294***
	(0.385)	(0.231)	(0.548)	(0.319)	(0.512)	(0.431)	(0.366)
Ln(Holding Size$_{lk,t-1}$)	0.081*	0.080*	0.064	0.118***	0.058	0.072	0.083*
	(0.048)	(0.042)	(0.065)	(0.034)	(0.046)	(0.049)	(0.048)
Ln(Time-to-Maturity$_{lk,t-1}$)	-0.179***	-0.212***	-0.256***	-0.086	-0.247***	-0.144*	-0.169***
	(0.062)	(0.054)	(0.089)	(0.054)	(0.068)	(0.081)	(0.062)
Effec. Base rate$_{lk,t-1}$	3.577	3.645	3.772	9.143**	10.541	4.182	3.608
	(5.761)	(5.105)	(7.500)	(4.633)	(8.170)	(7.312)	(5.688)
Fixed rate loan$_{lk,t-1}$	-0.134	0.026	0.372	-0.498**	0.154	-0.237	-0.118
	(0.241)	(0.254)	(0.273)	(0.225)	(0.253)	(0.295)	(0.238)
All-in-spread$_{lk\tau}$	14.622***	16.010***	8.079**	13.948***	13.971***	13.825***	14.061***
	(3.047)	(2.986)	(3.503)	(2.790)	(3.224)	(3.591)	(3.006)
Dual holding$_{bl,t-1}$	0.061	0.168	-0.109	0.143	-0.177	0.038	0.059
	(0.103)	(0.112)	(0.147)	(0.091)	(0.110)	(0.120)	(0.102)
PE Sponsored$_{b,t-1}$	0.089	0.104	0.267*	0.226*	0.075	0.020	0.091
	(0.134)	(0.120)	(0.143)	(0.122)	(0.186)	(0.156)	(0.131)
Ln(Number of BDCs)$_{b,t-1}$	-0.046	0.010	-0.057	-0.047	-0.099	0.010	-0.046
	(0.067)	(0.069)	(0.085)	(0.055)	(0.069)	(0.074)	(0.067)
Bank financing$_{b,t-1}$	-0.229**	-0.272***	-0.047	-0.265***	-0.203	-0.235**	-0.226**
	(0.113)	(0.102)	(0.133)	(0.089)	(0.130)	(0.114)	(0.112)
Additional loan controls	Yes		Yes	Yes	Yes	Yes	Yes
BDC controls	Yes	Yes	Yes		Yes	Yes	Yes
Missing-value indicators	Yes	Yes	Yes	Yes		Yes	Yes
Fair/Par lags (levels)	3	1	8	3	3	3	3
Sample	All	All	All	All	All	First-lien term loans	All
Events	1,486	1,883	749	2,216	890	1,153	1,486
Positions (BDC × loan)	21,637	27,245	10,209	29,121	12,771	15,941	21,637
AUC	0.748	0.736	0.759	0.735	0.770	0.740	0.747
Fixed-effects							
Loan age (quarters)	Yes	Yes	Yes	Yes	Yes	Yes	Yes
YearQtr	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Seniority	Yes	Yes	Yes	Yes	Yes	Yes	Yes
LoanType	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Fit statistics							
Observations	140,902	187,557	57,224	193,677	84,564	105,303	140,902
Pseudo R^2	0.073	0.064	0.085	0.067	0.090	0.070	0.072
Log-Likelihood	-7,639.0	-9,860.3	-3,650.8	-11,299.2	-4,495.2	-5,909.9	-7,644.4

Table A9: Discrete-time hazards of the first PIK or non-accrual quarter: complementary log-log link

This table repeats Table 5 of the main text with the complementary log-log link in place of the logit link: $P(\text{event}_t \mid X_{t-1}) = 1 - \exp(-\exp(\alpha_{\text{age}} + \gamma + X'_{t-1}\beta))$, the grouped-time version of a proportional-hazards model, whose coefficients are log hazard ratios directly comparable with Cox estimates. Columns (1)–(3) are the hazard of the first PIK quarter and columns (4)–(6) the hazard of the first non-accrual quarter; the specifications, samples, standardization, fixed effects and clustering are those of Table 5. Column (2) with the logit link is the baseline of the event study. Significance levels: *(p<0.10), **(p<0.05), ***(p<0.01).

Dependent Variable:	Event in t					
Hazard of:	First PIK quarter			First non-accrual quarter		
Model:	(1)	(2)	(3)	(4)	(5)	(6)
Variables						
Inc. fee rate$_{l,t-1}$	0.240**	0.387***	0.381***	-0.039	-0.031	-0.011
	(0.107)	(0.109)	(0.107)	(0.079)	(0.074)	(0.087)
Hurdle rate$_{l,t-1}$		0.182***	0.182***		-0.119*	-0.106
		(0.067)	(0.065)		(0.070)	(0.065)
Inc. fee rate$_{l,t-1}$ × Hurdle rate$_{l,t-1}$		0.094***	0.087***		0.001	0.002
		(0.032)	(0.031)		(0.032)	(0.039)
Fair/Par$_{lk,t-1}$	-3.296***	-3.294***	-3.319***	-8.029***	-8.022***	-9.768***
	(0.365)	(0.366)	(0.402)	(0.568)	(0.562)	(0.702)
Ln(Holding Size$_{lk,t-1}$)	0.097*	0.083*	0.076	0.176***	0.178***	0.153**
	(0.050)	(0.048)	(0.047)	(0.067)	(0.069)	(0.072)
Ln(Time-to-Maturity$_{lk,t-1}$)	-0.167***	-0.169***	-0.155**	-0.541***	-0.545***	-0.604***
	(0.064)	(0.062)	(0.068)	(0.084)	(0.086)	(0.081)
Effec. Base rate$_{lk,t-1}$	3.472	3.608	2.601	16.573**	17.991**	20.823**
	(5.886)	(5.688)	(5.967)	(7.359)	(7.742)	(9.385)
Fixed rate loan$_{lk,t-1}$	-0.185	-0.118	-0.143	0.284	0.305	0.461
	(0.246)	(0.238)	(0.247)	(0.258)	(0.272)	(0.291)
All-in-spread$_{lk\tau}$	13.288***	14.061***	14.861***	15.903***	15.826***	18.873***
	(2.938)	(3.006)	(2.967)	(2.726)	(2.672)	(2.754)
Dual holding$_{bl,t-1}$	0.075	0.059	0.077	-0.347***	-0.346***	-0.384***
	(0.099)	(0.102)	(0.101)	(0.132)	(0.129)	(0.128)
PE Sponsored$_{b,t-1}$	0.121	0.091	0.075	-0.170	-0.170	-0.091
	(0.138)	(0.131)	(0.134)	(0.158)	(0.154)	(0.151)
Ln(Number of BDCs)$_{b,t-1}$	-0.049	-0.046	-0.065	-0.019	-0.020	-0.016
	(0.068)	(0.067)	(0.067)	(0.088)	(0.089)	(0.087)
Bank financing$_{b,t-1}$	-0.238**	-0.226**	-0.244**	-0.037	-0.036	-0.111
	(0.111)	(0.112)	(0.112)	(0.136)	(0.137)	(0.145)
Additional loan controls	Yes	Yes	Yes	Yes	Yes	Yes
BDC controls	Yes	Yes	Yes	Yes	Yes	Yes
Missing-value indicators	Yes	Yes	Yes	Yes	Yes	Yes
Fair/Par lags (levels)	3	3	3	3	3	3
Events	1,487	1,486	1,485	960	960	958
Positions (BDC × loan)	21,646	21,637	19,694	21,883	21,874	19,304
AUC	0.743	0.747	0.774	0.900	0.900	0.911
Fixed-effects						
Loan age (quarters)	Yes	Yes	Yes	Yes	Yes	Yes
YearQtr	Yes	Yes		Yes	Yes	
Industry	Yes	Yes		Yes	Yes	
Seniority	Yes	Yes	Yes	Yes	Yes	Yes
LoanType	Yes	Yes	Yes	Yes	Yes	Yes
YearQtr-Industry			Yes			Yes
Fit statistics						
Observations	141,236	140,902	99,114	146,978	146,641	90,969
Pseudo R^2	0.069	0.072	0.105	0.249	0.250	0.315
Log-Likelihood	-7,679.2	-7,644.4	-6,903.0	-4,348.3	-4,341.2	-3,642.3

fitted hazard (on the logit scale) for treated positions in their activation quarter and for the not-yet-treated controls, pooled over cohorts. The treated distribution is shifted to the right but the two overlap almost everywhere: the 5th–95th percentile range of treated hazards is 0.4%–6.2%, and the share of controls whose hazard exceeds the largest treated hazard of their cohort is below 1% in 28 of the 49 cohorts and between 1% and 17% in the remaining, mostly small early cohorts. Panel B plots the normalized control weights. The median weight is 0.79, the 90th percentile 1.73 and the 99th percentile 4.3; the maximum is 275, a position marked at 16 cents on the dollar after a 28-point markdown and on non-accrual, with a fitted hazard of 0.74, and the ten largest weights all belong to positions marked near zero or on non-accrual. The top 1% of controls carry 10% of the total weight.

Table A10 summarizes the weights and the effective sample size of the controls, ESS $= (\sum_i w_i)^2 / \sum_i w_i^2$, summed over cohorts and divided by the number of control rows, for the baseline and for the alternative hazards. Weighting more than halves the effective number of controls (58,620 of 139,416, a ratio of 0.42; median cohort 0.38). The alternative hazards give ratios between 0.39 (eight lags, complete cases) and 0.48 (one lag); the quarter × industry version of Table 5, column (3), gives 0.34, because the treated hazards in cohort × industry cells with few events are large.

Table A10: Fitted hazards, control weights and effective sample size

This table summarizes the inverse probability weights of the event study for the baseline hazard (Table 5, column (2)), for columns (1) and (3) of Table 5 and for the alternative hazard specifications of Table A8 other than the first-lien sample. *Treated* is the number of positions activating PIK in the estimation sample and *Control rows* the number of not-yet-treated position-quarters at the treated cohorts' activation quarters. $\bar{p}_T$ and $\bar{p}_C$ are the mean fitted hazards of treated positions in their activation quarter and of the controls. w_{q90}, w_{q99} and $w_{\max}$ are the 90th percentile, the 99th percentile and the maximum of the control weights $\hat{p}/(1-\hat{p})$ normalized to a mean of one within cohort. ESS/N is the effective sample size of the controls, $(\sum_i w_i)^2 / \sum_i w_i^2$ summed over cohorts, divided by the number of control rows.

Hazard specification	Treated	Control rows	$\bar{p}_T$	$\bar{p}_C$	w_{q90}	w_{q99}	$w_{\max}$	ESS/N
Baseline	1,486	139,416	0.022	0.010	1.73	4.30	274.6	0.42
Column (1): no hurdle terms	1,487	139,749	0.022	0.010	1.71	4.14	244.5	0.44
Column (3): quarter × industry FE	1,485	97,629	0.044	0.015	1.97	5.99	272.6	0.34
One Fair/Par lag	1,883	185,674	0.019	0.010	1.76	4.22	53.1	0.48
Eight Fair/Par lags	749	56,475	0.031	0.013	1.71	4.85	268.4	0.39
Loan controls only (no BDC)	2,216	191,461	0.023	0.011	1.67	4.33	88.1	0.45
No missing-value indicators	890	83,674	0.027	0.010	1.81	4.72	157.0	0.39
Complementary log-log link	1,486	139,416	0.022	0.010	1.72	4.14	444.2	0.44

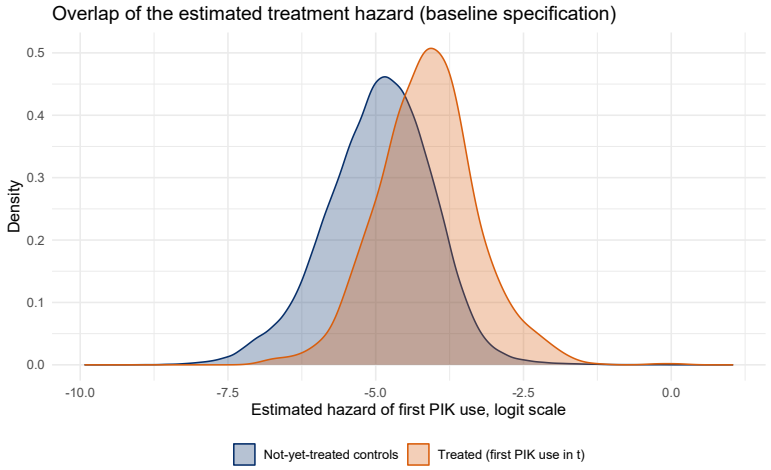
IA.2.7.4 Covariate balance

Table A11 and Figure A3 report, for every covariate of the baseline hazard, the mean among treated positions in their activation quarter, the mean among the not-yet-treated controls

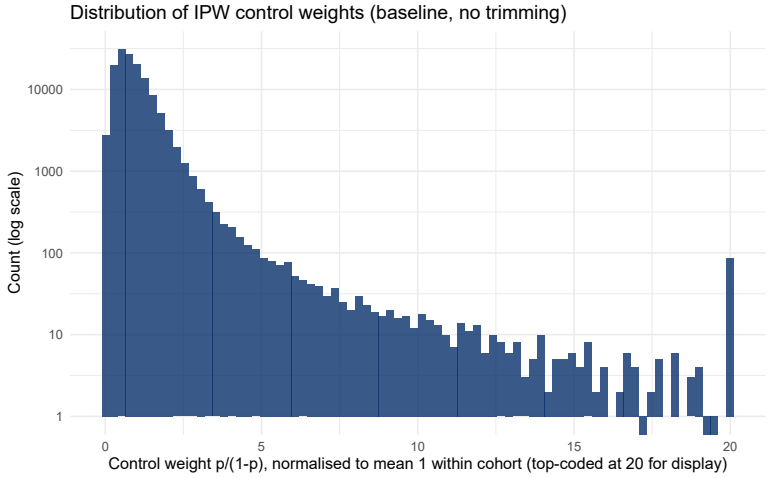
Figure A2: Overlap of the fitted hazards and distribution of the inverse probability weights

Panel A plots kernel densities of the fitted hazard of first PIK use from the baseline specification (Table 5, column (2)), on the logit scale, for treated positions in their activation quarter and for the not-yet-treated controls of the same cohorts, pooled over the 49 cohorts. Panel B plots the distribution of the control weights $\hat{p}/(1-\hat{p})$, normalized to a mean of one within cohort and top-coded at 20 for display, on a logarithmic count scale. Sample: the baseline estimation sample of Table A7 (1,486 treated positions, 139,416 control position-quarters).

Panel A – Fitted hazard of first PIK use, treated positions versus not-yet-treated controls



Panel B – Control weights $\hat{p}/(1-\hat{p})$, normalized to mean one within cohort



with equal weights and with the inverse probability weights, and the standardized mean difference (SMD), the difference in means divided by the pooled standard deviation of treated and unweighted controls, so that the before and after columns are comparable. The 31 rows are exactly the model's covariates: the fee terms and their interaction, the three lagged levels of the mark, the loan, borrower and BDC controls with the two missing-value indicators and the three BDC-type levels, and the seniority, loan-type and loan-age fixed effects as indicators. Before weighting, treated positions are marked 0.41 standard deviations lower than controls at $t-1$ (0.90 against 0.95) and 0.19 lower at $t-3$, are closer to maturity (-0.32), larger, riskier at origination ($+0.23$), older in the portfolio ($+0.20$), more often held together with equity, less often bank-financed (-0.17), and are held by lenders with higher incentive fees ($+0.24$) and hurdle rates ($+0.19$), by older ($+0.14$) and by publicly traded BDCs ($+0.19$). The mean absolute SMD across the 31 covariates is 0.128. After weighting it is 0.008: no covariate exceeds 0.06 in absolute value, the three lagged levels of the mark are within 0.06, 0.03 and 0.01, and the fee terms are balanced to the third decimal. Variables outside the model are also close to balanced: the two most recent changes of the mark go from SMDs of -0.30 and -0.27 to $+0.06$ and $+0.05$, lagged non-accrual status from $+0.26$ to -0.01, and the mark at $t-4$ from -0.13 to $+0.06$, the largest remaining imbalance and the subject of Section IA.2.7.5.

IA.2.7.5 Pre-treatment trajectories of the mark and of non-accrual

Figure A4 plots the level of Fair/Par and of the non-accrual rate in the eight quarters before activation for treated positions, unweighted controls and weighted controls. Two years before activation, treated positions are marked at 0.967, essentially the same as the average control (0.971). They decline gently to 0.951 at $k=-4$ and steeply in the last three quarters, to 0.899 at $k=-1$; unweighted controls drift from 0.971 to 0.955. The weighted controls match the treated over the three quarters the hazard conditions on (0.891 vs 0.899 at $k=-1$, 0.918 vs 0.922, 0.939 vs 0.940 at $k=-3$) but had been marked lower for longer: 0.945 vs 0.951 at $k=-4$ and 0.953 vs 0.967 at $k=-8$. The weighted controls, which match the treated positions over the three quarters before g, had been weaker credits for longer; the positions that activate reached the same mark from a higher level and over a shorter period. The non-accrual panel shows the same pattern: weighted controls rise gradually from 3.2% at $k=-8$ to 5.3% at $k=-2$ and meet the treated at $k=-1$ (7.1% vs 7.0%), whereas the treated go from 0.8% to 7.0% mostly in the last three quarters. This remaining difference shows up in the pre-activation coefficients of Figure 3, which is why the eight-lag hazard, which forces the weighted controls to match the whole two-year path of the mark, is reported as a sensitivity check in Section IA.2.7.7.

Table A11: Covariate balance before and after inverse probability weighting

This table reports, for each covariate of the baseline hazard (Table 5, column (2)), the mean among treated positions in their activation quarter g, the mean among not-yet-treated controls of the same cohorts with equal weights and with the inverse probability weights $\hat{p}/(1-\hat{p})$ normalized within cohort, and the standardized mean difference (SMD), treated minus controls divided by the pooled standard deviation of treated and unweighted controls, before and after weighting. Means and SMDs are pooled over cohorts with weights proportional to the number of treated positions. The fee terms are in percentage points and their interaction is the product of the standardized terms, as in the model; PE sponsorship and bank financing are coded as in the model (zero when unknown, with the unknown indicator); the BDC type enters through its three levels; seniority, loan type and loan age enter the hazard as fixed effects and are reported as indicators and as the level. Subscripts: l lender, k loan, b borrower, t quarter, τ origination. Sample: the baseline estimation sample of Table A7.

Covariate	Treated mean	Control mean	Weighted control mean	SMD before	SMD after
Inc. fee rate, $\text{pp}_{l,t-1}$	18.018	17.082	18.025	0.236	-0.002
Hurdle rate, $\text{pp}_{l,t-1}$	6.505	6.216	6.505	0.185	-0.000
Inc. fee rate (std) × Hurdle rate (std)$_{l,t-1}$	0.392	0.480	0.394	-0.039	-0.001
Fair/Par$_{lk,t-1}$	0.899	0.955	0.891	-0.413	0.056
Fair/Par$_{lk,t-2}$	0.922	0.958	0.918	-0.304	0.033
Fair/Par$_{lk,t-3}$	0.940	0.961	0.939	-0.191	0.008
All-in-spread$_{lk\tau}$	0.071	0.066	0.071	0.226	-0.015
Ln(Holding Size$_{lk,t-1}$)	2.159	1.989	2.142	0.117	0.012
Ln(Time-to-Maturity$_{lk,t-1}$)	3.595	3.801	3.577	-0.323	0.029
Effec. Base rate$_{lk,t-1}$	0.026	0.026	0.026	-0.007	0.003
Fixed rate loan$_{lk,t-1}$	0.110	0.091	0.112	0.059	-0.007
PE Sponsored$_{b,t-1}$	0.672	0.679	0.669	-0.016	0.006
PE sponsorship unknown$_{b}$	0.190	0.196	0.190	-0.015	0.002
Dual holding$_{bl,t-1}$	0.190	0.153	0.190	0.099	0.002
Bank financing$_{b,t-1}$	0.236	0.314	0.234	-0.175	0.004
Bank financing unknown$_{b}$	0.401	0.403	0.401	-0.003	0.001
Ln(Number of BDCs)$_{b,t-1}$	0.879	0.990	0.873	-0.135	0.007
Base mgmt. fee, $\text{pp}_{l,t-1}$	1.359	1.320	1.361	0.088	-0.004
BDC type: publicly traded$_{l,t-1}$	0.648	0.558	0.649	0.186	-0.002
BDC type: finite-life non-traded$_{l,t-1}$	0.277	0.332	0.276	-0.120	0.002
BDC type: perpetual non-traded$_{l,t-1}$	0.075	0.110	0.075	-0.127	0.000
Ln(BDC assets)$_{l,t-1}$	7.454	7.372	7.447	0.065	0.005
BDC leverage$_{l,t-1}$	0.472	0.458	0.473	0.120	-0.001
BDC ROE (TTM)$_{l,t-1}$	0.054	0.054	0.053	-0.001	0.004
BDC cash share$_{l,t-1}$	0.033	0.035	0.033	-0.058	-0.004
Ln(BDC age)$_{l,t-1}$	2.071	1.987	2.072	0.139	-0.001
Loan age (quarters)$_{lkt}$	9.624	8.490	9.668	0.197	-0.008
Second lien$_{lk}$	0.082	0.132	0.081	-0.160	0.004
Subordinated$_{lk}$	0.040	0.027	0.041	0.067	-0.005
Delayed-draw term loan$_{lk}$	0.046	0.042	0.045	0.018	0.002
Revolver$_{lk}$	0.057	0.040	0.059	0.083	-0.008

Figure A3: Standardized mean differences before and after weighting

The figure plots the standardized mean differences of Table A11, treated positions in their activation quarter minus not-yet-treated controls, for every covariate of the baseline hazard, with equal control weights (triangles) and with the inverse probability weights (circles). Dashed lines at ±0.1.

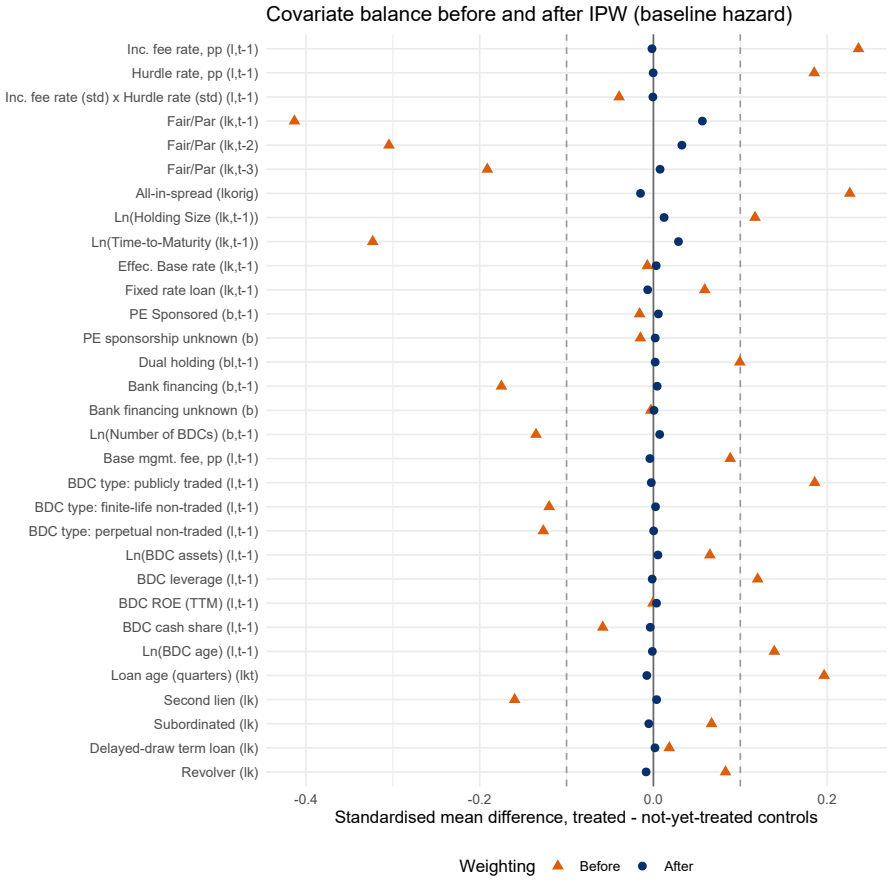
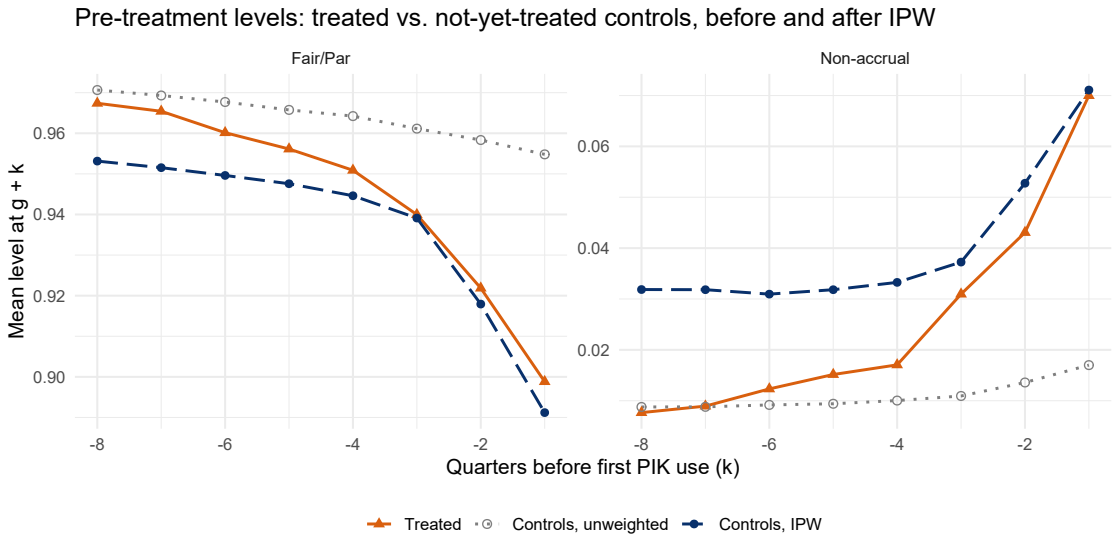


Figure A4: Pre-treatment levels of Fair/Par and of the non-accrual rate

The figure plots the mean of Fair/Par (left) and of the non-accrual indicator (right) at $g+k$, $k=-8,\ldots,-1$, for positions activating PIK in g (treated), for the not-yet-treated controls of the same cohorts with equal weights, and for the same controls with the inverse probability weights of the baseline hazard, pooled over cohorts with weights proportional to the number of treated positions. The hazard conditions on the mark at $k=-1,-2,-3$.



IA.2.7.6 Event-study coefficients

Tables A12 and A13 report the coefficients plotted in Figure 3 of the main text, for each event time $k=-8,\ldots,8$, unweighted and with the inverse probability weights, with bootstrap standard errors, together with the joint Wald test of the seven pre-treatment coefficients, their mean, and the mean of the nine post-treatment coefficients with its bootstrap standard error and percentile interval. Weighting reduces the mean pre-activation coefficient on the mark from $+4.8$ to $+0.3$ points and on non-accrual from -5.2 to -1.7 points; the joint pre-trend test no longer rejects for non-accrual ($p=0.32$) and still rejects for the mark ($p=0.001$), because the coefficients at $k=-3$ and -2 (-0.7 and -0.4 points) are very precisely estimated (standard errors of 0.2 and 0.1 points). The post-activation means are -3.4 points (standard error 0.7) on the mark and $+5.8$ points (1.2) on non-accrual, against -2.9 and $+6.0$ unweighted. Exit from the portfolio is zero in every pre-period by construction and -9.7 points on average after activation; maturity extensions show no pre-trend ($p=0.70$) and a mean post-activation effect of $+5.3$ points (1.4), of which 6.7 points arise in the activation quarter itself.

Table A12: Event-study coefficients around first PIK use: Fair/Par and non-accrual

This table reports the event-study coefficients $\widehat{\text{ATT}}_k$ of Figure 3 (top panels), $k = -8, \ldots, 8$, for fair value over par and for the non-accrual indicator: the change in the outcome from $g-1$ to $g+k$ among positions activating PIK in g minus the same change among positions that have not activated PIK by $g+k$, averaged over cohorts with weights proportional to the number of treated positions observed at $g+k$; $k=-1$ is the reference period. *Unweighted* gives every not-yet-treated control equal weight; *IPW* weights controls by $\hat{p}/(1-\hat{p})$ from the baseline hazard (Table 5, column (2)), normalized within cohort. Bootstrap standard errors in parentheses: a Bayesian bootstrap over borrowers with 500 draws (independent Exp(1) weights per borrower), in which the hazard is re-estimated and the weights recomputed in every draw. The pre-trend test is a Wald $\chi^2(7)$ test that $\text{ATT}_{-8}, \ldots, \text{ATT}_{-2}$ are jointly zero, using the bootstrap covariance; the mean pre and post ATT are the averages of the seven pre-treatment and of the nine post-treatment coefficients with their bootstrap standard errors, and the 95% interval is the percentile interval of the mean post ATT. Significance levels: *(p<0.10), **(p<0.05), ***(p<0.01).

	Fair value / par		Non-accrual status	
Event time k	Unweighted	IPW	Unweighted	IPW
-8	0.0665***	0.0077	-0.0746***	-0.0251**
	(0.0071)	(0.0064)	(0.0135)	(0.0125)
-7	0.0657***	0.0100*	-0.0697***	-0.0250**
	(0.0064)	(0.0056)	(0.0123)	(0.0113)
-6	0.0565***	0.0067	-0.0623***	-0.0222**
	(0.0055)	(0.0045)	(0.0107)	(0.0096)
-5	0.0526***	0.0054	-0.0555***	-0.0190**
	(0.0050)	(0.0038)	(0.0097)	(0.0088)
-4	0.0435***	-0.0012	-0.0470***	-0.0139*
	(0.0043)	(0.0031)	(0.0083)	(0.0076)
-3	0.0348***	-0.0068***	-0.0330***	-0.0052
	(0.0035)	(0.0022)	(0.0069)	(0.0062)
-2	0.0195***	-0.0037***	-0.0235***	-0.0086
	(0.0025)	(0.0014)	(0.0062)	(0.0056)
-1	0 (ref.)	0 (ref.)	0 (ref.)	0 (ref.)
0	0.0028	0.0021	-0.0101	-0.0147**
	(0.0037)	(0.0037)	(0.0068)	(0.0073)
1	-0.0120**	-0.0136***	0.0087	0.0047
	(0.0050)	(0.0050)	(0.0087)	(0.0089)
2	-0.0229***	-0.0259***	0.0360***	0.0346***
	(0.0057)	(0.0058)	(0.0107)	(0.0109)
3	-0.0346***	-0.0387***	0.0655***	0.0655***
	(0.0072)	(0.0075)	(0.0135)	(0.0138)
4	-0.0312***	-0.0351***	0.0656***	0.0645***
	(0.0078)	(0.0081)	(0.0149)	(0.0152)
5	-0.0340***	-0.0391***	0.0712***	0.0690***
	(0.0088)	(0.0091)	(0.0165)	(0.0166)
6	-0.0329***	-0.0387***	0.0839***	0.0831***
	(0.0093)	(0.0100)	(0.0178)	(0.0180)
7	-0.0482***	-0.0557***	0.1056***	0.1061***
	(0.0118)	(0.0126)	(0.0220)	(0.0224)
8	-0.0525***	-0.0627***	0.1109***	0.1135***
	(0.0144)	(0.0153)	(0.0239)	(0.0241)
Pre-trend Wald χ^2 ($k=-8..-2$)	124.17	24.21	35.75	8.16
p-value	0.000	0.001	0.000	0.318
Mean pre ATT ($k=-8..-2$)	0.0485 (0.0044)	0.0026 (0.0032)	-0.0522 (0.0089)	-0.0170 (0.0079)
Mean post ATT ($k=0..8$)	-0.0295*** (0.0062)	-0.0342*** (0.0066)	0.0597*** (0.0116)	0.0585*** (0.0119)
95% CI	[-0.0424, -0.0179]	[-0.0484, -0.0215]	[0.0351, 0.0828]	[0.0347, 0.0810]
Treated positions at $k=0$	1,479	1,479	1,486	1,486

Table A13: Event-study coefficients around first PIK use: exit from the portfolio and maturity extension

This table reports the event-study coefficients of Figure 3 (bottom panels) for cumulative exit from the BDC's portfolio and cumulative maturity extension; see the notes to Table A12. Exit is an indicator equal to one once the position has left the BDC's portfolio (repayment, refinancing, sale, restructuring or write-off), defined while the BDC still reports and zero in every pre-period by construction, so that the pre-trend test has no degrees of freedom; maturity extension is an indicator equal to one once the position's reported maturity has been extended. Significance levels: *(p<0.10), **(p<0.05), ***(p<0.01).

	Exited the BDC's portfolio (cumulative)		Maturity extended (cumulative)	
Event time k	Unweighted	IPW	Unweighted	IPW
-8	0.0000	0.0000	-0.0254	-0.0240
	(0.0000)	(0.0000)	(0.0196)	(0.0185)
-7	0.0000	0.0000	-0.0121	-0.0117
	(0.0000)	(0.0000)	(0.0170)	(0.0159)
-6	0.0000	0.0000	-0.0091	-0.0092
	(0.0000)	(0.0000)	(0.0141)	(0.0135)
-5	0.0000	0.0000	-0.0031	-0.0025
	(0.0000)	(0.0000)	(0.0117)	(0.0113)
-4	0.0000	0.0000	0.0008	0.0017
	(0.0000)	(0.0000)	(0.0100)	(0.0098)
-3	0.0000	0.0000	-0.0015	-0.0014
	(0.0000)	(0.0000)	(0.0078)	(0.0077)
-2	0.0000	0.0000	-0.0039	-0.0044
	(0.0000)	(0.0000)	(0.0063)	(0.0062)
-1	0 (ref.)	0 (ref.)	0 (ref.)	0 (ref.)
0	0.0000	0.0000	0.0729***	0.0666***
	(0.0000)	(0.0000)	(0.0100)	(0.0096)
1	-0.0368***	-0.0408***	0.0728***	0.0616***
	(0.0060)	(0.0063)	(0.0114)	(0.0110)
2	-0.0643***	-0.0706***	0.0691***	0.0538***
	(0.0090)	(0.0097)	(0.0124)	(0.0120)
3	-0.0899***	-0.0954***	0.0598***	0.0428***
	(0.0115)	(0.0119)	(0.0138)	(0.0136)
4	-0.1025***	-0.1099***	0.0693***	0.0512***
	(0.0132)	(0.0137)	(0.0167)	(0.0163)
5	-0.1192***	-0.1274***	0.0582***	0.0416**
	(0.0157)	(0.0161)	(0.0184)	(0.0182)
6	-0.1316***	-0.1407***	0.0629***	0.0453**
	(0.0178)	(0.0177)	(0.0211)	(0.0213)
7	-0.1316***	-0.1411***	0.0681***	0.0491**
	(0.0187)	(0.0190)	(0.0242)	(0.0243)
8	-0.1398***	-0.1485***	0.0831***	0.0650**
	(0.0206)	(0.0209)	(0.0285)	(0.0286)
Pre-trend Wald χ^2 ($k = -8..-2$)	0.00	0.00	4.24	4.68
p-value	1.000	1.000	0.752	0.699
Mean pre ATT ($k = -8..-2$)	0.0000 (0.0000)	0.0000 (0.0000)	-0.0078 (0.0110)	-0.0074 (0.0104)
Mean post ATT ($k = 0..8$)	-0.0906*** (0.0103)	-0.0972*** (0.0105)	0.0684*** (0.0146)	0.0530*** (0.0144)
95% CI	[-0.1106, -0.0700]	[-0.1178, -0.0771]	[0.0407, 0.0968]	[0.0250, 0.0793]
Treated positions at $k = 0$	1,486	1,486	1,486	1,486

IA.2.7.7 Sensitivity of the event study

Table A14 re-estimates the Fair/Par and non-accrual event studies under the six alternative hazard specifications of Table A8, each with the hazard re-estimated inside the bootstrap (200 draws), and under a "clean control" rule that requires controls to remain untreated through $g + 8$ so that the control set does not change composition across horizons. Figure A5 overlays the weighted coefficients under the alternative hazards against the baseline.

The post-activation deterioration is robust. The mean post-treatment effect on the mark lies between -2.9 and -3.6 points, and on non-accrual between $+4.9$ and $+6.7$ points, across every hazard specification but one and under the clean-control rule; the exception is the eight-lag hazard, -2.1 points (standard error 1.0) and $+4.2$ points on 746 treated positions, whose post-activation coefficients lie inside the baseline's confidence band at every horizon. For the mark, the unweighted post-effect is slightly smaller in absolute value than the weighted one in every row; for non-accrual the two are within 0.5 points of each other.

The pre-trends depend on the length of the mark history. With a single lagged level of the mark and nothing else about its path, the weighted pre-activation coefficients on the mark average $+2.2$ points ($p < 0.001$) and on non-accrual -3.0 points ($p = 0.025$): the marks of treated loans had been falling faster than those of controls with the same current mark, contract and lender. Three lagged levels (the baseline) bring the means to $+0.3$ and -1.7 points ($p = 0.32$ for non-accrual); eight lagged levels, which force the weighted controls to match the whole two-year path, give -1.0 points ($p = 0.12$) and -1.5 points ($p = 0.81$), at the cost of half the events and a smaller, less precise post-effect. Dropping the fee terms and the BDC controls altogether (loan and borrower controls only) leaves the pre-treatment means at $+0.3$ and -1.8 points and the post-effects at -3.5 and $+5.7$ points on 2,206 treated positions: the lender covariates restrict the sample to externally managed lenders with a fee record but change neither the balance nor the estimates. Complete cases on PE sponsorship and bank financing (887 treated) give $+0.7$ and -2.1 points before and -3.2 and $+6.7$ after, with standard errors about 50% larger; the missing-value indicators increase precision but do not change the estimates.

Link, control rule and sample. The complementary log-log link gives pre-treatment means of $+0.4$ and -1.9 points ($p = 0.018$ and 0.26) and the same post-effects (-3.4 and $+5.9$ against -3.4 and $+5.8$); the results do not depend on the choice of link. The clean-control rule gives estimates close to those of the not-yet-treated rule ($+0.3$ and -1.9 points before activation, -3.6 and $+6.0$ points after). On first-lien term loans only (1,150 treated) the

pre-treatment means are -0.6 and -0.7 points ($p = 0.11$ and 0.25) and the post-effects -3.2 and $+5.4$ points.

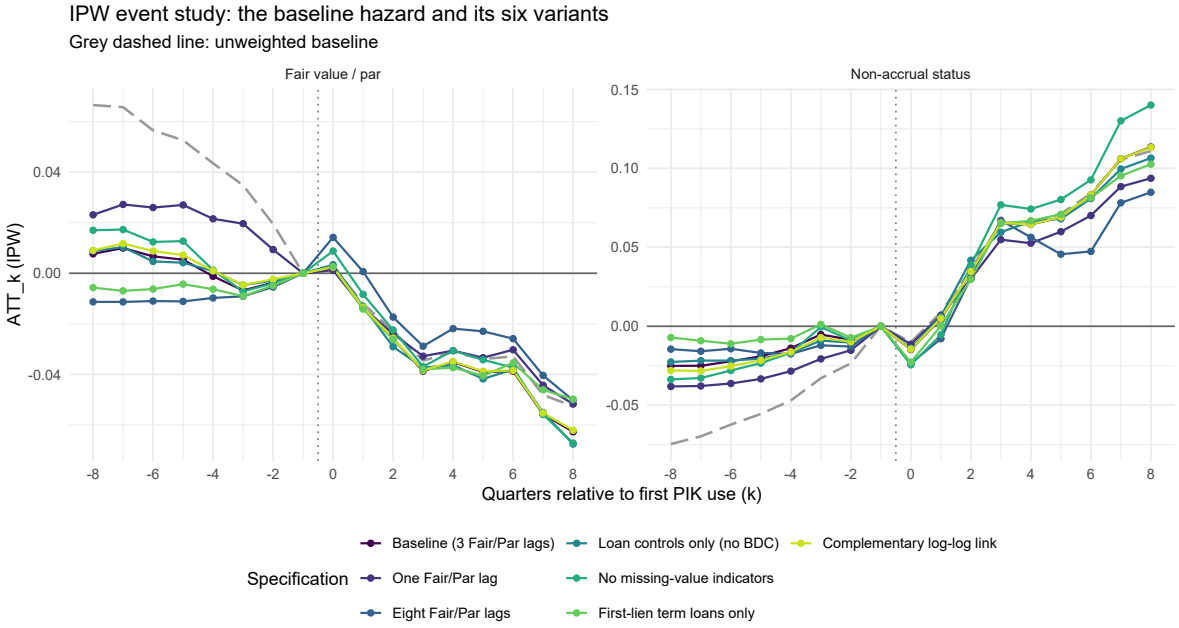
Table A14: Sensitivity of the event study to the hazard specification, control rule and sample

This table reports summary statistics of the Fair/Par and non-accrual event studies of Figure 3 under alternative first-stage hazards, control rules and samples. *Treated* is the number of treated positions at $k = 0$ and *ESS/N* the effective sample size of the weighted controls at $k = 0$ divided by their number. *Pre p* is the p-value of the joint Wald test that the seven IPW pre-activation coefficients $\mathrm{ATT}_{-8}, \ldots, \mathrm{ATT}_{-2}$ are zero and *Mean pre, IPW* their average; *Mean post* is the average of $\mathrm{ATT}_0, \ldots, \mathrm{ATT}_8$ with its bootstrap standard error, with the inverse probability weights and unweighted. Panel A re-estimates the hazard under the six alternative specifications of Table A8 and recomputes the weights, inside the bootstrap; Panel B keeps the baseline hazard and requires controls to remain untreated through $g + 8$ (clean controls); Panel C restricts the sample to first-lien term loans. The baseline row is the main run with 500 bootstrap draws; the other rows use 200 draws. Significance levels: *(p<0.10), **(p<0.05), ***(p<0.01).

			Fair value / par				Non-accrual			
Variant	Treated	ESS/N	Pre p	Mean pre, IPW	Mean post, IPW	Mean post, unw.	Pre p	Mean pre, IPW	Mean post, IPW	Mean post, unw.
Baseline										
Baseline (B = 500)	1,479	0.43	0.001	0.0026	-0.0342*** (0.0066)	-0.0295*** (0.0062)	0.318	-0.0170	0.0585*** (0.0119)	0.0597*** (0.0116)
A. Propensity specification										
One Fair/Par lag	1,868	0.49	0.000	0.0220	-0.0288*** (0.0058)	-0.0264*** (0.0055)	0.025	-0.0300	0.0495*** (0.0097)	0.0510*** (0.0097)
Eight Fair/Par lags	746	0.40	0.118	-0.0099	-0.0214** (0.0104)	-0.0153 (0.0099)	0.812	-0.0148	0.0421*** (0.0155)	0.0391** (0.0158)
Loan controls only (no BDC)	2,206	0.46	0.000	0.0030	-0.0350*** (0.0061)	-0.0295*** (0.0059)	0.551	-0.0175	0.0572*** (0.0116)	0.0602*** (0.0116)
No missing-value indicators	887	0.40	0.002	0.0071	-0.0316*** (0.0100)	-0.0283*** (0.0093)	0.187	-0.0206	0.0670*** (0.0174)	0.0715*** (0.0176)
Complementary log-log link	1,479	0.45	0.018	0.0044	-0.0338*** (0.0071)	-0.0295*** (0.0067)	0.264	-0.0195	0.0585*** (0.0118)	0.0597*** (0.0117)
B. Control rule										
Clean controls (untreated through $g + 8$)	1,479	0.42	0.003	0.0032	-0.0358*** (0.0071)	-0.0307*** (0.0067)	0.314	-0.0191	0.0602*** (0.0118)	0.0610*** (0.0117)
C. Sample										
First-lien term loans only	1,150	0.41	0.115	-0.0062	-0.0317*** (0.0069)	-0.0275*** (0.0070)	0.250	-0.0071	0.0544*** (0.0144)	0.0568*** (0.0145)

Figure A5: IPW event-study coefficients under alternative first-stage hazards

The figure plots the IPW event-study coefficients $\widehat{\text{ATT}}_k$ for Fair/Par (left) and non-accrual (right) under the baseline hazard (three lagged levels of the mark) and the six alternatives of Table A8: one and eight lagged levels of the mark, loan and borrower controls only, no missing-value indicators, first-lien term loans only, and the complementary log-log link. The gray dashed line is the unweighted baseline. Point estimates only; standard errors are in Table A14.



IA.2.8 When are the losses on PIK loans recognized? Timing of lifetime markdowns

This section asks at which point of a loan's life its eventual markdown is recognized, and whether that point comes later for loans that used a PIK toggle than for loans that never paid in kind. Figure A6 plots the answer and Table A15 reports the underlying numbers.

IA.2.8.1 Construction

Sample. The unit is a loan position, one BDC's holding of one loan, followed from its first appearance in the BDC's schedule of investments to its last. A position is an *exit* if its last reported quarter precedes the last quarter in which the BDC reports any position with a positive par amount, so that positions still held when the BDC's filings end are not treated as exits. For each exit we record the mark at origination, Fair/Par_0, the mark in the last quarter the position is reported, Fair/Par_T, and the life T in quarters. The *lifetime markdown* is $\text{Fair/Par}_0 - \text{Fair/Par}_T$; the sample keeps exits with a positive lifetime markdown and a life of at least one quarter. Positions are split by PIK status over their whole life: *Never PIK* positions never report PIK income, and *PIK toggle* positions are reported at some point as paying in kind through a toggle. Positions that report PIK income but are never identified as a toggle (PIK notes and similar instruments, whose PIK is a contractual feature rather than an election made after a deterioration) are excluded. Within each PIK group the exits are sorted into three buckets by the terminal mark: close to par ($\text{Fair/Par}_T \geq 0.80$; 5,893 Never-PIK and 378 PIK-toggle positions), slightly impaired ($0.50 \leq \text{Fair/Par}_T < 0.80$; 663 and 135) and deeply impaired ($\text{Fair/Par}_T < 0.50$; 697 and 353).

Allocation of the markdown to loan-life deciles. Loans differ in length, so calendar time is normalized: the life of each position is divided into ten equal deciles, 1/10 being the first tenth of the life after origination and 10/10 the final tenth before exit. Each quarter-to-quarter change in the mark, $\text{Fair/Par}_{t-1} - \text{Fair/Par}_t$, is assigned to the deciles that the interval $(t-1, t]$ overlaps, in proportion to the overlap; a quarter that straddles two deciles is split between them. Markups are assigned with a negative sign, so the allocation is net of within-life recoveries and the ten decile amounts sum to the lifetime markdown of the position exactly. For each PIK group and terminal bucket, the decile amounts are summed across positions and divided by the group's total lifetime markdown, and the running total of these shares is the *cumulative share of the final markdown* plotted in the top row of the figure. The aggregation weights each position by the size of its markdown; because it is net of recoveries, an intermediate cumulative share can exceed 100% when marks were written

down and partly recovered before exit. The share at 10/10 is 100% by construction.

Inference. Standard errors come from a loan-level bootstrap: within each group-by-bucket cell, positions are resampled with replacement 2,000 times and the cumulative-share profile is recomputed on each draw; the shaded bands in the top row are ±1 bootstrap standard error. The bottom row plots the PIK-toggle minus Never-PIK difference in the cumulative share at each decile with a 95% confidence interval, $\text{diff} \pm 1.96\sqrt{\text{se}^2_{\text{toggle}} + \text{se}^2_{\text{never}}}$; filled markers denote intervals that exclude zero. The difference at 10/10 is zero by construction.

IA.2.8.2 Results

First, for loans that exit impaired, the recognition of losses is back-loaded for all loans: in the deeply impaired bucket, Never-PIK positions have recognized 27% of their eventual markdown by mid-life, 46% by the end of the seventh decile and 78% by the end of the ninth, so that 22% of the terminal loss is taken in the final tenth of the life; the slightly impaired bucket has the same convex shape (30%, 50% and 78%). Second, the profile of PIK-toggle loans lies below that of Never-PIK loans at every decile in both impaired buckets and catches up only in the final one. In the deeply impaired bucket the toggle share is 1.6 to 3.8 percentage points lower in the first four deciles and 4.5 to 7.1 points lower in deciles 6/10 to 9/10, significant at 5% in seven of nine deciles (Table A15, Panel C); 29% of the eventual loss is taken in the final tenth against 22% for Never-PIK loans. In the slightly impaired bucket the gap is 5.5 to 8.5 points in every decile except 5/10, where it closes briefly, and 31% of the loss is taken in the final tenth against 22% (Panel B). The close-to-par bucket is different: its markdowns are small, the profiles overshoot 100% and fall back, which reflects temporary markdowns reversed when the loan is repaid or refinanced near par, and the toggle-minus-never difference is imprecise and mostly insignificant. Because the terminal mark is held fixed within each panel, the gaps in the impaired panels are differences in timing, not in the size of the loss: for a given eventual loss, a PIK-toggle loan is marked closer to par for a larger part of its life, and a larger share of the writedown is compressed into the final tenth of the life. This pattern is consistent with PIK delaying the recognition of losses.

Figure A6: Cumulative timing of lifetime Fair/Par markdowns, PIK toggle versus Never-PIK loans, by terminal mark

The sample is exited loan positions with a positive net markdown between origination and exit, split by PIK status over the life (Never PIK: black solid line, circles; PIK toggle: orange dashed line, triangles) and by the mark in the last reported quarter (panels: close to par, Fair/Par ≥ 0.80; slightly impaired, 0.50–0.80; deeply impaired, < 0.50). Each position's net markdown is allocated across ten equal deciles of its life (1/10 = first tenth after origination, 10/10 = final tenth before exit) in proportion to the change in the mark in each quarter, net of within-life recoveries. **Top row:** the markdown-weighted cumulative share of the group's total lifetime markdown recognized by the end of each decile, with ±1 standard-error bands from a 2,000-replication loan-level bootstrap; the share at 10/10 is 100% by construction. **Bottom row:** the PIK-toggle minus Never-PIK difference in the cumulative share, in percentage points, with 95% confidence intervals; filled markers denote intervals that exclude zero. Positions paying in kind from origination are excluded. Number of positions (Never PIK, PIK toggle): 5,893 and 378 close to par; 663 and 135 slightly impaired; 697 and 353 deeply impaired.

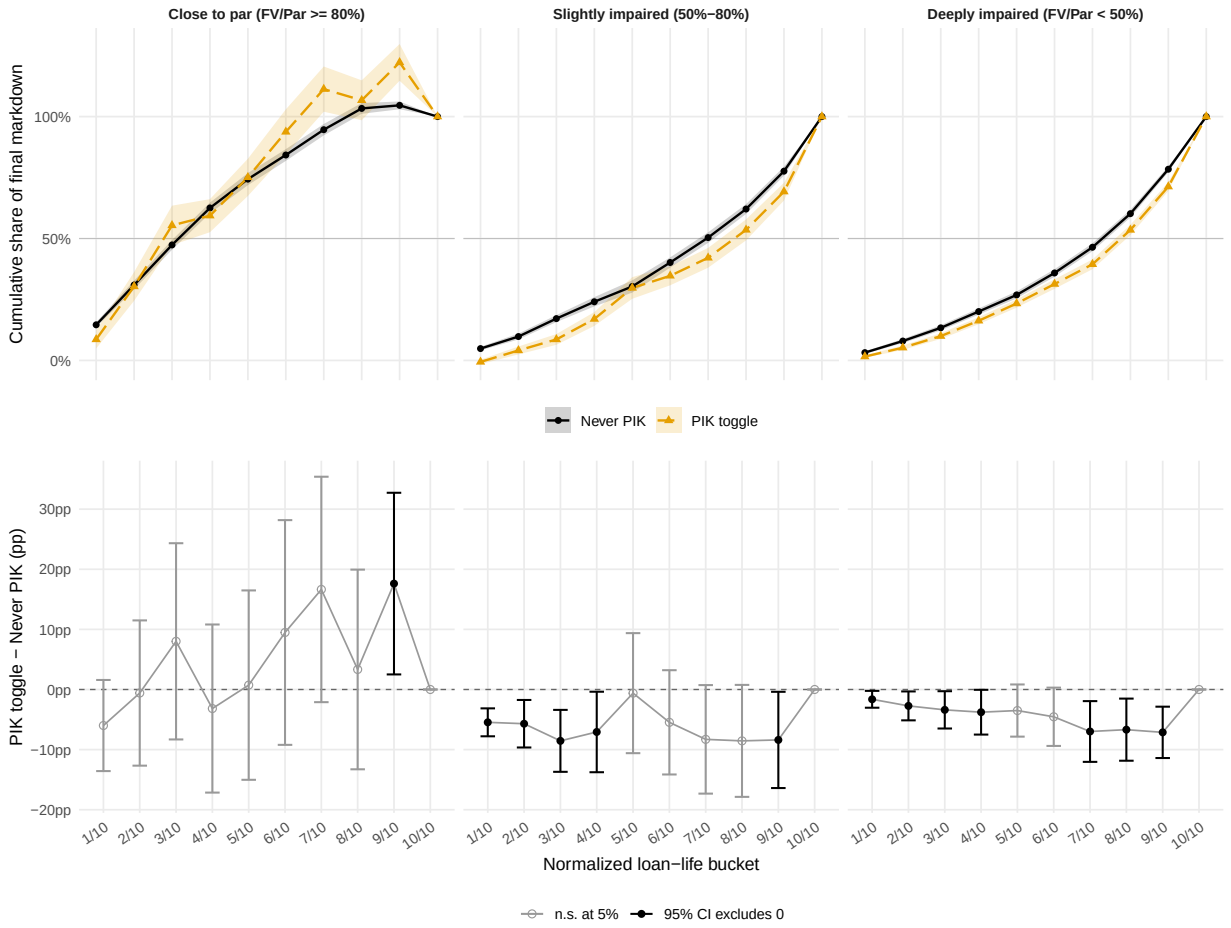


Table A15: Cumulative timing of lifetime Fair/Par markdowns, by PIK status and exit severity

Each cell is the aggregate (dollar-weighted) cumulative share of the group's total origination-to-exit Fair/Par markdown realized by the end of each normalized loan-life decile (10/10 is the final tenth before exit), in percentage points, with a 2,000-replication loan-level bootstrap standard error in parentheses. The final column is the PIK toggle minus Never PIK difference with standard error $\sqrt{\text{se}^2_{\text{toggle}} + \text{se}^2_{\text{never}}}$. Sample: exited loans with positive net lifetime markdown; non-toggle PIK loans are excluded. Shares are net of within-life recoveries, so an intermediate cumulative share can exceed 100%; the 10/10 share is 100% by construction, so its standard error and group difference are zero. *, **, *** denote $|t| > 1.645$, 1.96, 2.576.

	Never PIK		PIK toggle		PIK toggle − Never PIK
Life bucket	Share	(SE)	Share	(SE)	Diff (SE)
Panel A: Close to par (Fair/Par ≥ 80%) (Never PIK $N = 5,893$, PIK toggle $N = 378$)					
1/10	14.6	(1.03)	8.6	(3.73)	-6.0 (3.87)
2/10	30.9	(1.81)	30.3	(5.89)	-0.6 (6.16)
3/10	47.4	(1.98)	55.4	(8.09)	8.0 (8.33)
4/10	62.5	(2.20)	59.4	(6.79)	-3.2 (7.13)
5/10	74.4	(2.49)	75.1	(7.64)	0.7 (8.04)
6/10	84.2	(2.42)	93.7	(9.23)	9.5 (9.54)
7/10	94.6	(2.35)	111.3	(9.27)	16.6* (9.57)
8/10	103.4	(2.21)	106.7	(8.18)	3.3 (8.47)
9/10	104.6	(1.61)	122.2	(7.54)	17.6** (7.71)
10/10	100.0	(0.00)	100.0	(0.00)	0.0 (0.00)
Panel B: Slightly impaired (50%-80%) (Never PIK $N = 663$, PIK toggle $N = 135$)					
1/10	4.9	(0.75)	-0.6	(0.92)	-5.5*** (1.19)
2/10	9.8	(1.21)	4.1	(1.61)	-5.7*** (2.02)
3/10	17.2	(1.43)	8.6	(2.21)	-8.5*** (2.63)
4/10	24.1	(1.91)	17.0	(2.83)	-7.1** (3.42)
5/10	30.3	(2.51)	29.7	(4.43)	-0.6 (5.09)
6/10	40.2	(2.10)	34.7	(3.89)	-5.5 (4.43)
7/10	50.4	(2.17)	42.1	(4.07)	-8.3* (4.61)
8/10	62.1	(2.02)	53.5	(4.30)	-8.5* (4.75)
9/10	77.6	(1.84)	69.2	(3.64)	-8.4** (4.08)
10/10	100.0	(0.00)	100.0	(0.00)	0.0 (0.00)
Panel C: Deeply impaired (Fair/Par < 50%) (Never PIK $N = 697$, PIK toggle $N = 353$)					
1/10	3.2	(0.54)	1.6	(0.47)	-1.6** (0.71)
2/10	8.0	(0.84)	5.2	(0.89)	-2.7** (1.23)
3/10	13.4	(1.06)	10.0	(1.17)	-3.4** (1.58)
4/10	20.0	(1.26)	16.3	(1.42)	-3.8** (1.90)
5/10	26.9	(1.43)	23.4	(1.69)	-3.5 (2.21)
6/10	35.9	(1.53)	31.3	(1.94)	-4.5* (2.47)
7/10	46.4	(1.61)	39.4	(2.01)	-7.0*** (2.58)
8/10	60.2	(1.58)	53.5	(2.11)	-6.7** (2.64)
9/10	78.4	(1.21)	71.3	(1.81)	-7.1*** (2.18)
10/10	100.0	(0.00)	100.0	(0.00)	0.0 (0.00)

IA.2.9 Matched-sample estimates for Table 6

Table 6 of the main text compares the terminal outcomes of the three PIK classes with those of loans that never use PIK, conditioning on origination characteristics by regression. A natural concern is that the regression does not fully absorb ex-ante differences between PIK and never-PIK loans, which differ markedly at origination (Table 2, Panel B). Table A16 therefore re-estimates each comparison on matched samples, in which every PIK loan is compared only with never-PIK loans that were observably similar when the loan was originated.

Design. The sample is the loan-origination sample of Table 6 (all loan types). For each of the three PIK classes of the table—the PIK note, the toggle already paying in kind at origination and the toggle activated only after origination—and for a single indicator of PIK at origination (note or at-origination toggle, the only PIK information available when the loan is written), the treated loans are matched to loans that never use PIK. The matching covariates are the loan controls of Table 6, measured at origination: the log holding size, the log time to maturity, the all-in spread, the effective base rate, the fixed-rate indicator, PE sponsorship and bank financing in the preceding five years (each with its missing-status indicator), dual holding and the log number of BDC lenders, together with seniority, loan type, industry and the year of origination. Three estimators are used: (i) propensity-score matching (PSM), one-to-one nearest-neighbour matching without replacement on a logit propensity score with a caliper of 0.2 standard deviations of the score, exact within seniority and loan type; (ii) coarsened exact matching (CEM), with the holding size and the all-in spread coarsened into quartiles and the time to maturity, the base rate and the number of lenders into terciles, and exact on the fixed-rate and dual-holding indicators, seniority, loan type and three-year origination vintage; and (iii) exact matching within the same lender, origination year, seniority and loan type, the matched analog of the $YearQtr \times BDC$ fixed effects of Table 6. The effect on the treated is the matching-weighted difference in the terminal outcome between treated and matched never-PIK loans (Panel A); Panel B adds the matching covariates to that regression (regression-adjusted matching). Standard errors are clustered by borrower, because co-held loans of the same borrower appear once for each lender. Table A17 reports covariate balance for the post-origination toggles.

Results. The matched estimates are similar to the regression estimates of Table 6. Relative to observably similar never-PIK loans, toggles activated after origination are 21 to 23 percentage points more likely to exit on non-accrual and 22 to 24 points more likely to exit below 80% of par under every estimator, against 23 and 24 points in the regression (columns (1) and (5)); the regression-adjusted estimates are the same to within a point, and

more than 80% of the post-origination toggles find a match under every method. The PIK information available at origination carries little predictive content: at-origination toggles are 4 to 6 points more likely to exit on non-accrual (significant only under same-lender matching, and not after regression adjustment) and 2 to 4 points more likely to exit below 80% of par (never significant), PIK notes 1 to 4 and 0 to 3 points, and the single indicator of PIK at origination 3 to 5 points on non-accrual and at most 3 points below 80% of par, falling to 0 to 3 points and to zero after regression adjustment. Before matching, post-origination toggles are larger, more richly priced (standardized difference of 0.46 in the all-in spread), more often held together with equity (0.34) and less often bank-financed than never-PIK loans; propensity-score matching reduces every standardized difference below 0.05 in absolute value and CEM below 0.08. Same-lender matching balances the lender and vintage exactly but leaves some imbalance in the spread (0.23) and in dual holding (0.18), which the regression adjustment of Panel B removes without changing the estimates.

Table A16: Terminal loan outcomes by PIK class: matched-sample estimates

This table re-estimates the comparisons of main-text Table 6 on matched samples. Each row compares loans of one PIK class with loans that never use PIK: toggles activated after origination (post-orig.), toggles already paying in kind at origination (at orig.), PIK notes, and all loans with PIK at origination (notes and at-origination toggles; post-origination toggles are excluded from this comparison). $NonAccrual_{lk,T}$ is an indicator for the loan exiting the sample on non-accrual and $I(Fair/Par_{lk,T} < 0.8)$ for its last mark being below 80% of par. Columns (1) and (5) report the regression estimates of columns (3) and (7) of Table 6; the row for PIK at origination uses the same specification with a single PIK-at-origination indicator, on the sample without post-origination toggles. The other columns match treated loans to never-PIK loans on the origination characteristics of Table 6 (see Section IA.2.9): PSM is one-to-one nearest-neighbour propensity-score matching with a caliper of 0.2 standard deviations, exact within seniority and loan type; CEM is coarsened exact matching; *Same lender and vintage* is exact matching on lender, origination year, seniority and loan type. Panel A reports the matching-weighted difference in the outcome, treated minus matched never-PIK loans; Panel B adds the matching covariates as controls. *Treated loans (matched)* is the number of treated loans in the sample (column (1)) and the number that find a match (columns (2)–(4)). Standard errors clustered by borrower in parentheses (columns (1) and (5): as in Table 6). Significance levels: *(p<0.10), **(p<0.05), ***(p<0.01).

	NonAccrual$_{lk,T}$				I(Fair/Par$_{lk,T}$ < 0.8)			
	Regression (Table 6)	PSM	CEM	Same lender and vintage	Regression (Table 6)	PSM	CEM	Same lender and vintage
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Panel A: Matched difference, treated minus matched never-PIK loans								
Toggle, post-orig.	0.233***	0.209***	0.228***	0.225***	0.237***	0.225***	0.238***	0.230***
	(0.023)	(0.019)	(0.020)	(0.018)	(0.025)	(0.020)	(0.021)	(0.020)
Treated loans (matched)	1,060	1,046	864	1,003				
Toggle, at orig.	0.046	0.042	0.041	0.060**	0.021	0.028	0.018	0.037
	(0.028)	(0.028)	(0.026)	(0.026)	(0.035)	(0.030)	(0.028)	(0.027)
Treated loans (matched)	262	215	210	230				
PIK note	0.030*	0.014	0.042**	0.039*	0.004	0.008	0.003	0.026
	(0.016)	(0.019)	(0.020)	(0.024)	(0.018)	(0.020)	(0.025)	(0.024)
Treated loans (matched)	645	503	408	459				
PIK at origination (note or toggle)	0.027*	0.030*	0.041**	0.046**	0.001	0.004	0.008	0.030
	(0.015)	(0.017)	(0.017)	(0.019)	(0.018)	(0.019)	(0.021)	(0.019)
Treated loans (matched)	907	708	617	689				
Panel B: Regression-adjusted matched estimate (matching covariates as controls)								
Toggle, post-orig.		0.210***	0.226***	0.220***		0.226***	0.236***	0.224***
		(0.019)	(0.020)	(0.018)		(0.019)	(0.021)	(0.020)
Toggle, at orig.		0.042	0.026	0.027		0.033	-0.012	0.013
		(0.026)	(0.026)	(0.034)		(0.028)	(0.032)	(0.035)
PIK note		0.014	0.021	-0.010		0.009	-0.022	-0.026
		(0.018)	(0.022)	(0.044)		(0.020)	(0.030)	(0.044)
PIK at origination (note or toggle)		0.031*	0.020	0.004		0.006	-0.021	-0.013
		(0.016)	(0.018)	(0.033)		(0.018)	(0.026)	(0.034)

Table A17: Covariate balance of the matched samples: post-origination toggles versus never-PIK loans

Standardized mean differences between post-origination PIK toggles and never-PIK loans in the origination characteristics used for matching, before matching and in the three matched samples of Table A16: the difference in (matching-weighted) means divided by the pooled standard deviation of the two unmatched groups. Seniority and loan type are matched exactly under all three methods, and origination vintage exactly under CEM and same-lender matching.

	Before	After matching		
	matching	PSM	CEM	Same lender and vintage
Ln(Holding size)	0.282	-0.006	0.050	0.077
Ln(Time-to-maturity)	-0.126	-0.036	-0.057	-0.108
All-in-spread	0.461	-0.025	0.077	0.226
Effective base rate	-0.302	-0.010	-0.008	-0.003
Ln(Number of BDC lenders)	-0.164	-0.005	-0.018	-0.042
Fixed-rate loan	0.079	-0.033	0.000	0.059
PE sponsored	-0.038	-0.004	-0.048	-0.085
PE status unknown	0.028	0.040	0.056	0.059
Bank financing	-0.189	-0.006	-0.018	-0.090
Bank financing unknown	-0.061	0.006	0.000	-0.016
Dual holding	0.338	0.027	0.000	0.181

IA.2.10 How much PIK activation is forbearance? Marks and sensitivity

This section classifies every loan position that switches to PIK after entering the sample by its state when PIK starts and by what happens to it afterwards; Section 6.5.2 of the main text summarizes the result. The classification separates the forbearance band of the model—loans still accruing and marked at 80% of par or more when PIK starts that are later placed on non-accrual, marked below 80% of par, or exit below 80% of par—from benign activations, in which cash interest resumes and the loan exits at 95% of par or more. Below we show how the marks evolve in each group and how the shares depend on the thresholds that define them.

Marks around activation. Figure A7 plots the mean Fair/Par of the positions still held, by quarter relative to the first PIK quarter, for the activations followed for at least four years. Loans that end in the forbearance band are marked close to par two years before PIK starts (98.7% of par) and at 94.2% in the quarter before; benign activations are marked at 98.0% and 96.4%. The marks thus separate the two groups by only two points when PIK starts. Within a year the band is marked at 79.9% of par and after two years at 75.8%, while the marks of benign activations return to par. Activations that exit near par while still paying in kind follow the benign path. Activations on loans that are already impaired when PIK starts are marked at 64.3% of par in the quarter before and stay low.

Sensitivity. Table A18 recomputes the partition of the activations followed for at least four years under alternative definitions. Moving the impairment threshold between 75% and 85% of par, the par-exit threshold between 90% and 98%, the minimum follow-up between 12 and 20 quarters, or counting a mark below the threshold in the activation quarter itself as recognition (the strict definition) leaves the forbearance band at 24 to 32% of activations and benign activations at 12 to 15%. The band is 32 to 45% of the activations on unimpaired marks and accounts for 65 to 82% of the losses that the marks at activation did not reflect. A higher impairment threshold counts more activations as recognized when PIK starts but also more later impairments, so both shares rise with it; longer follow-up windows raise the band's share because more of the activations have been resolved.

Figure A7: Marks around the switch to PIK, by eventual outcome

Mean Fair/Par of the positions still held, by quarter relative to the first PIK quarter, for post-entry first-PIK activations followed for at least four years, in four outcome groups: the forbearance band (accruing and marked at 80% of par or more when PIK starts, later placed on non-accrual, marked below 80% of par or exited below 80% of par), benign activations (cash interest resumed and an exit at 95% of par or more), exits at 95% of par or more while still paying in kind, and activations on loans already on non-accrual or marked below 80% of par when PIK starts. Bands: ±1.96 standard errors of the mean.

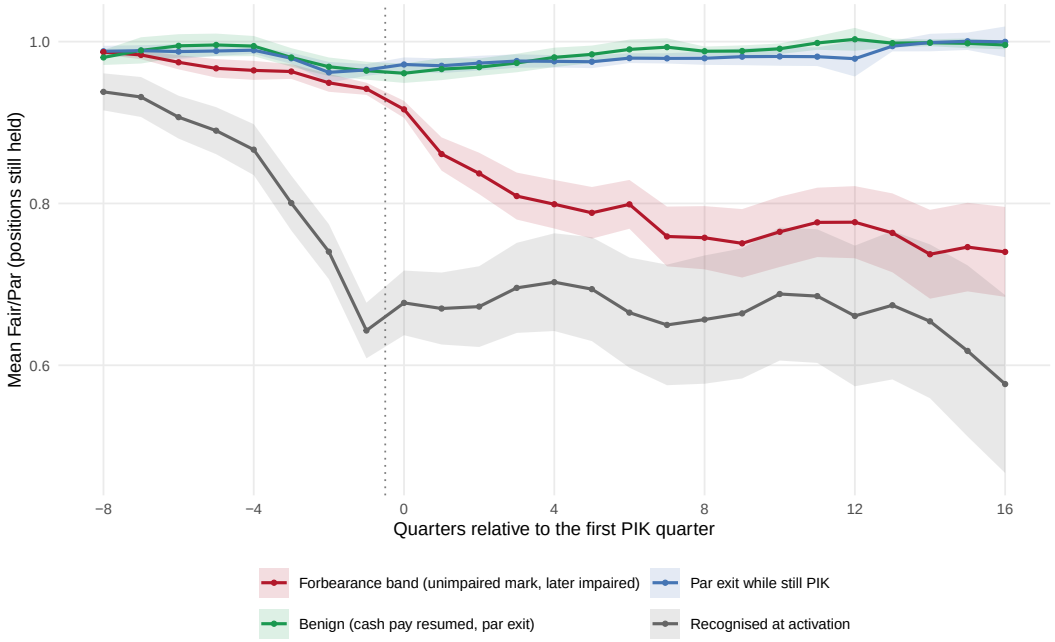


Table A18: How much PIK activation is forbearance? Sensitivity to the definitions

Partition of the post-entry first-PIK activations followed for at least the stated number of quarters (16 unless stated). *Recognized*: on non-accrual or marked below the impairment threshold when PIK starts. *Band*: accruing and marked at or above the threshold when PIK starts, later impaired (non-accrual, a mark below the threshold, or an exit below it). *Benign*: cash interest resumed and an exit at or above the par-exit threshold without impairment. *Par exit, PIK*: an exit at or above that threshold while still paying in kind. The remaining activations have no mark before PIK starts, exit between the two thresholds, or are still held without impairment. *Band share of unimpaired*: band activations as a share of the activations on unimpaired marks. *Band share of losses*: share of the losses not reflected in the mark at activation (par at activation times the fall from that mark to the last mark before exit) that arise on band activations. *Strict*: the mark of the activation quarter itself also has to be at or above the threshold, and losses are measured from that mark.

		Share of activations (%)				Band share of	Band share of
Variant	N	Recognized	Band	Benign	Par exit, PIK	unimpaired (%)	losses (%)
Baseline (impairment < 0.80, par $\geq$ 0.95, 16 quarters)	934	20.3	27.6	14.1	19.6	37.3	74.5
Impairment threshold 0.75	934	18.0	25.7	14.8	20.8	33.6	78.6
Impairment threshold 0.85	934	24.5	29.4	13.0	18.5	42.1	69.0
Par-exit threshold 0.90	934	20.3	27.6	15.1	20.4	37.3	74.5
Par-exit threshold 0.98	934	20.3	27.6	13.5	16.9	37.3	74.5
Follow-up at least 12 quarters	1,153	19.6	25.6	13.7	18.9	34.3	75.6
Follow-up at least 20 quarters	573	20.8	32.1	11.5	20.4	44.6	82.1
Strict: mark in activation quarter also counts	934	23.2	25.1	14.1	19.6	35.0	65.1
Strict and impairment threshold 0.75	934	19.9	24.0	14.8	20.8	32.1	78.1

IA.2.11 What happens to the borrower when a loan exits? Evidence from Pitchbook deals

Tables 6 and 7 of the main text measure a loan's outcome by its state in the last quarter T in which it appears in the BDC's schedule of investments: whether it is on non-accrual and how far below par it is marked. The schedule does not say how the position leaves it. This section follows the borrower through the exit using Pitchbook deal records and asks whether, within two quarters of T, the borrower (i) raises new debt, and whether the existing lender takes part; (ii) files for bankruptcy or goes out of business; or (iii) is bought out or acquired. It compares distressed exits, the two adverse terminal outcomes of Table 6, with all other exits.

Design. The sample is the loan-origination sample of Tables 6 and 7 (16,093 exited loan positions), restricted to borrowers matched to a Pitchbook company identifier (14,044 positions, 87%) and to exits whose event window lies inside the Pitchbook deal data, which end in 2026Q1. In the baseline window $[T-2, T+2]$ this leaves 13,395 exits from 2013Q1 to 2025Q3 by 5,850 borrowers. A *distressed* exit is on non-accrual or marked below 80% of par at T (951 positions: 603 on non-accrual and 882 below 80% of par), the outcomes $NonAccrual_{lk,T}$ and $I(Fair/Par_{lk,T} < 0.8)$ of Table 6. Every other exit with a terminal mark, that is, every accruing exit marked at 80% of par or more, is a *clean* exit (12,196 positions); the remaining 248 exits have no terminal mark. Two Pitchbook extracts supply the events. Debt deals are recorded at the deal × facility × lender level, with Pitchbook's identifier of each lender. A new deal has the *existing lender* participating if one of its lenders is the BDC holding the exiting position, the BDC's manager (its parent company in Pitchbook) or another fund or entity of the same parent, such as a sibling BDC; all other new deals are from *new lenders only*. The fund families come from Pitchbook's parent–subsidiary records, supplemented by a link for BDCs that carry their manager's name. They cover the BDCs that hold 80% of the exits; for the other BDCs only the BDC itself counts as the existing lender. Corporate events come from all completed Pitchbook deals of the borrower: Chapter 11 and Chapter 7 filings, out-of-business events and debtor-in-possession financings (pooled as bankruptcy), buyouts, and acquisitions in which the borrower is the target. The position disappears between T and $T+1$, so the window covers two quarters before the exit and two after it. Table A19 assigns every exit to one outcome, in the order bankruptcy, acquisition or buyout, new debt with the existing lender participating, new debt from new lenders only, any other deal, and no deal at all. Table A20 reports the underlying indicators, which are not mutually exclusive. Differences between distressed and clean exits are tested with standard errors clustered by borrower, because co-held positions of one borrower share its Pitchbook events.

Clean exits are refinancings and sales. More than half of the clean exits (54.2%) coincide with a new debt facility, and most of this new debt comes from new lenders only (42.3% of clean exits, against 12.0% with the existing lender participating; Table A20, Panel B). In the resolution of Table A19, 32.1% of clean exits are refinanced by new lenders only and a further 8.1% raise new debt with the existing lender. Another 22.4% coincide with a buyout or an acquisition of the borrower; secondary buyouts alone account for 9.9% of clean exits. Only 4.4% of clean exits occur within six months of the loan's contractual maturity, so most of these loans are refinanced before maturity rather than repaid at it. Bankruptcy is rare (0.7%).

Distressed exits are resolved, not refinanced. Distressed exits look different. 20.8% coincide with a bankruptcy or out-of-business event, almost all of them Chapter 11 reorganizations (18.0%), against 0.7% of clean exits. The share is 23.9% for exits on non-accrual and 21.8% for exits marked below 80% of par. New lenders rarely refinance these loans. A new facility of any kind accompanies 35.1% of distressed exits and 54.2% of clean ones, and the whole difference comes from new lenders: 23.3% of distressed exits see new debt from new lenders only, against 42.3% of clean exits (Table A20, Panel B). The existing lender takes part in new debt of the borrower about as often in both groups (11.8% and 12.0%), and more often for exits on non-accrual (15.1%). In 4.3% of distressed and 2.8% of clean exits the exiting BDC itself is among the lenders; in the others it is the BDC's manager or a sibling fund. In the resolution of Table A19, only 13.0% of distressed exits are refinanced by new lenders only, against 32.1% of clean exits. Distressed borrowers are acquired more often than clean ones (10.5% against 7.3%) and bought out less often (9.6% against 15.3%), with few secondary buyouts (2.8%). In all, 14.2% of distressed exits end in an acquisition or buyout without a bankruptcy, that is, in a sale of the borrower rather than a refinancing of its debt.

Figure A8 shows the timing. Bankruptcy filings of distressed borrowers build up before the exit. The share of distressed positions whose borrower files in a given quarter rises from 0.9% three quarters before T to 4.0% in $T-1$ and 5.1% in T, and peaks at 8.2% in $T+1$, the quarter in which the position disappears. New debt from new lenders only, buyouts and acquisitions of both groups spike in $T+1$. The spike in new-lender debt is much larger for clean exits: 29.7% of clean exits raise new debt from new lenders only in $T+1$, against 11.8% of distressed exits. New debt with the existing lender behaves differently. It is most common three or more quarters before the exit, a period that contains the origination of the exiting loans themselves (every loan is held for at least four quarters). Between $T-2$ and $T+1$ it runs at 2.0 to 4.3% of exits per quarter in both groups, and after $T+1$ it is rare.

Exits without a Pitchbook deal. The most common single outcome of distressed exits is no Pitchbook deal at all (40.5%, against 30.5% of clean exits). For distressed loans this residual most plausibly consists of out-of-court restructurings, write-offs and sales of the position to other investors, none of which creates a deal record. It does not reflect borrowers that Pitchbook fails to cover: the borrowers of 95.3% of distressed exits have at least one Pitchbook deal at some point. Widening the window shrinks the residual (Table A22). Over ±8 quarters it falls to 15.7% of distressed and 11.4% of clean exits, and the bankruptcy share of distressed exits rises to 30.0%.

PIK class. Table A21 splits both groups into PIK notes, PIK toggles and loans that never use PIK; unlike Table 6, it pools toggles first used at and after origination, because the distressed cells are small. Among distressed exits, PIK notes are the least likely to be followed by new debt (18.6%, against 40.0% for toggles and 34.6% for loans that never use PIK) and the most likely to leave no Pitchbook record (47.1%). New debt of distressed toggle borrowers involves the existing lender more often than not (21.3% of exits, against 18.7% from new lenders only), whereas new debt of distressed borrowers that never use PIK comes mostly from new lenders (27.0%, against 7.6% with the existing lender). Bankruptcy shares are similar across the classes (17 to 22%), and there are only 70 distressed PIK notes. Among clean exits, PIK loans are refinanced by new lenders only less often than never-PIK loans (28.5% of notes and 32.5% of toggles, against 43.6%) and leave no Pitchbook record more often (38 to 40% against 30%).

Robustness. The conclusions do not depend on the unit of observation, on the Pitchbook match or on the most recent exits. Collapsing the positions of one borrower that exit in the same quarter (742 distressed and 8,143 clean borrower-quarters) gives bankruptcy shares of 18.5% and 0.8%, new debt from new lenders only for 21.6% and 38.8%, and new debt with the existing lender for 10.2% and 12.1%. Counting the positions whose borrower cannot be matched to Pitchbook as having no event gives 18.8% and 0.6% for bankruptcy and 21.1% and 37.0% for new debt from new lenders only. The share of exits without a Pitchbook event rises for the exits of 2024 and 2025, consistent with Pitchbook recording deals with a lag. Dropping the exits after 2023Q4 (leaving 723 distressed and 8,338 clean exits) gives bankruptcy shares of 22.1% and 0.9% and new debt from new lenders only for 24.5% and 41.5%, and raises the share with an acquisition or buyout to 25.7% and 28.8%. Restricting the sample to the BDCs with an identified fund family leaves the existing-lender share at 14.4% in both groups and the new-lender share at 23.2% and 40.9%.

Interpretation. The terminal states of Tables 6 and 7 coincide with events at the borrower. They do not reflect how a position happens to leave the schedule of investments. About one in five loans that exit on non-accrual or below 80% of par belongs to a borrower that is in bankruptcy within two quarters. Most of the others are sold, restructured or leave no record in the deal data, and new lenders refinance them far less often than they refinance clean exits. Clean exits, in contrast, are refinancings by new lenders and sales of healthy borrowers. Three caveats apply. First, Pitchbook records deals, not sales of loan positions: a position sold to a CLO or a distressed investor, an out-of-court restructuring without a new facility, or a write-off leaves no record. Second, for the BDCs without an identified fund family a deal of the manager or a sibling fund counts as new lenders only, so the existing-lender shares are lower bounds. Third, a deal with the existing lender before T can be an amendment of or an add-on to the loan that exits rather than new financing.

Table A19: What happens to the borrower when a loan exits? Mutually exclusive outcomes within two quarters of exit

The sample is the loan-origination sample of Tables 6 and 7 of the main text (one row per exited loan position; originated after 2012Q1, held at least four quarters, Fair/Par ≥ 0.97 and accruing at origination, and not exiting together with its BDC), restricted to borrowers matched to a Pitchbook company identifier and to exits whose window $[T-2, T+2]$ ends by 2026Q1, the end of the Pitchbook deal data (exits 2013Q1–2025Q3). T is the last quarter the position appears in the BDC's schedule of investments. Columns (1)–(3) are exits on non-accrual at T, marked below 80% of par at T, or either (*distressed*; the outcomes of Table 6); column (4) is every other exit, accruing and marked at 80% of par or more at T (*clean*); column (5) pools all exits, including those without a terminal mark. Each position is assigned to exactly one outcome, in the order listed: a bankruptcy or out-of-business deal (Chapter 11, Chapter 7, out of business, debtor-in-possession financing) takes precedence over an acquisition or buyout of the borrower, which takes precedence over new debt on which the existing lender participates, then new debt from new lenders only, then any other Pitchbook deal. The existing lender is the BDC holding the exiting position, its manager (the BDC's parent company in Pitchbook) or another fund or entity of the same parent; new debt from new lenders only has no lender from this family (see Table A20). Rows 1–6 sum to 100 within each column. Column (6) is the difference (3)−(4) in percentage points; significance from a regression of the outcome indicator on a distressed-exit indicator, with standard errors clustered by borrower. Significance levels: *(p<0.10), **(p<0.05), ***(p<0.01).

	Distressed exit: status at last quarter T					
	Non-accrual (1)	FV/Par < 0.8 (2)	Either (distressed) (3)	FV/Par ≥ 0.8 (clean) (4)	All exits (5)	Diff. (3)−(4) (6)
Number of loan positions	603	882	951	12,196	13,395	
1. Bankruptcy / out of business	23.9	21.8	20.8	0.7	2.1	20.1***
2. Acquired or LBO (no bankruptcy)	16.7	13.3	14.2	22.4	21.8	-8.2***
3. New debt with the existing lender participating	6.5	5.4	5.6	8.1	8.0	-2.5**
4. New debt from new lenders only	9.3	13.4	13.0	32.1	30.6	-19.0***
5. Other Pitchbook deal only (equity, recap, ...)	5.0	5.8	5.9	6.2	6.2	-0.3
6. No Pitchbook event in window	38.6	40.4	40.5	30.5	31.3	10.0***

Table A20: New debt and corporate events within two quarters of a loan's exit

Sample, columns and test as in Table A19. Entries other than counts are percentages of the column's positions; the indicators are not mutually exclusive. Panel A: *Exit within 6 months of maturity* uses the remaining contractual maturity at T; *BDC holds equity or subordinated debt of borrower at* T: the exiting BDC holds an equity stake or a subordinated debt claim in the borrower in quarter T; *PIK in use at exit*: the position pays interest in kind in quarter T (as in Table 7). Panel B uses Pitchbook debt deals of the borrower at the deal × facility × lender level; advisors and service providers are not lenders. *With the existing lender participating*: at least one new deal in the window has among its lenders the BDC holding the exiting position, the BDC's manager (its parent company in Pitchbook's parent–subsidiary records) or another fund or entity of the same parent, with nested parents rolled up to the ultimate parent. BDCs whose own Pitchbook identifier is not in these records are linked to a family when their name carries the manager's name. For the remaining BDCs (20% of exits) only the BDC itself counts. *From new lenders only*: new debt in the window, none of it with the existing lender; this includes the deals that list no lender (under 1% of exits). Panel C uses all completed Pitchbook deals of the borrower. Bankruptcy pools Chapter 11 (reorganization), Chapter 7 (liquidation), out of business and debtor-in-possession financing; LBO pools buyouts and management buyouts in which the borrower is the target; M&A pools mergers, acquisitions, reverse mergers and corporate asset purchases in which the borrower is the target; refinancing is Pitchbook's *Debt Refinancing* and *Debt Repayment* deal types; recapitalizations are dividend and leveraged recapitalizations; equity raises pool growth equity, venture rounds, PIPEs, IPOs and follow-on offerings.

	Distressed exit: status at last quarter T					
	Non-accrual (1)	FV/Par < 0.8 (2)	Either (distressed) (3)	FV/Par ≥ 0.8 (clean) (4)	All exits (5)	Diff. (3)−(4) (6)
Panel A: Sample and context						
Number of loan positions	603	882	951	12,196	13,395	
Number of distinct borrowers	419	608	660	5,402	5,850	
Borrower has any Pitchbook deal ever (%)	95.4	95.6	95.3	94.0	94.1	1.3
Exit within 6 months of maturity (%)	24.4	17.2	18.2	4.4	5.3	13.8***
BDC holds equity or sub. debt of borrower at T (%)	14.8	17.0	18.0	19.8	19.6	-1.7
PIK in use at exit (%)	38.5	28.6	28.9	7.6	9.2	21.3***
Panel B: New debt financing within ±2 quarters of exit (% of loans)						
Any new debt facility	35.5	35.5	35.1	54.2	52.7	-19.1***
with the existing lender participating	15.1	11.3	11.8	12.0	12.0	-0.2
from new lenders only	20.4	24.1	23.3	42.3	40.8	-18.9***
Panel C: Corporate events within ±2 quarters of exit (% of loans)						
Bankruptcy / out of business (any)	23.9	21.8	20.8	0.7	2.1	20.1***
Chapter 11 (reorganization)	20.7	18.7	18.0	0.5	1.8	17.4***
Chapter 7 (liquidation)	2.0	1.6	1.5	0.0	0.1	1.4***
Out of business	0.8	1.1	1.1	0.1	0.2	1.0***
Debt-to-equity conversion	1.3	1.7	1.6	0.1	0.2	1.5***
LBO / buyout (borrower is target)	11.9	9.5	9.6	15.3	14.9	-5.8***
of which secondary buyout	3.3	2.7	2.8	9.9	9.3	-7.1***
M&A (borrower acquired)	12.3	9.9	10.5	7.3	7.6	3.2**
Debt refinancing / repayment deal	5.5	7.5	7.6	22.2	21.1	-14.7***
Other debt deal (general, acquisition, mezzanine, PPP)	27.0	26.1	25.8	36.7	35.9	-11.0***
Dividend / leveraged recapitalization	1.3	1.1	1.3	5.5	5.2	-4.3***
Equity raise (PE growth, VC, PIPE, IPO)	9.0	8.5	8.9	9.3	9.3	-0.4
No Pitchbook deal of any kind in window	38.6	40.4	40.5	30.5	31.3	10.0***

Figure A8: Pitchbook events of the borrower by quarter relative to the loan's exit

Share of exited loan positions whose borrower has a Pitchbook event of the stated type in quarter k relative to the last quarter T in which the position appears in the BDC's schedule of investments, for the 746 distressed and 8,727 clean exits (as defined in Table A19) whose window $[T-8, T+8]$ ends by 2026Q1 (exits through 2024Q1). *New debt: existing lender participates*: a new debt deal in quarter k with the existing lender among its lenders; *New debt: new lenders only*: new debt deals in quarter k, none with the existing lender. Event definitions as in Table A20.

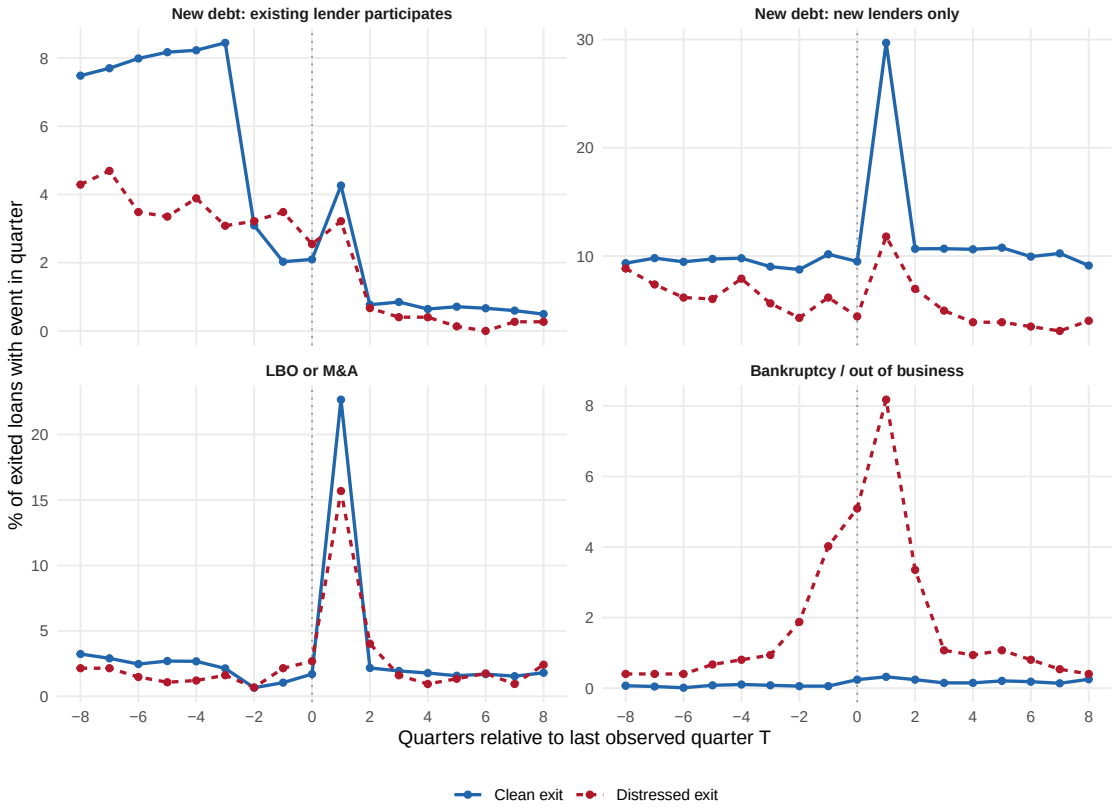


Table A21: Borrower outcomes after exit by PIK class

Distressed exits (non-accrual or Fair/Par < 0.8 at T, columns (1)–(3)) and clean exits (accruing, Fair/Par ≥ 0.8 at T, columns (4)–(6)) of Table A19, split by PIK class: *PIK Note* is a loan classified as a PIK note, *PIK Toggle* a loan that uses its PIK toggle at some point and is not a PIK note, *No PIK* a loan that never uses PIK. Unlike Table 6, the table pools toggles first used at origination and toggles first used after origination, because the distressed cells are small. Window $[T-2, T+2]$. Entries other than counts are percentages of the column's positions. New debt with the existing lender participating and from new lenders only as in Table A20. *No Pitchbook event*: no Pitchbook deal of any kind in the window. Other definitions as in Tables A19 and A20.

	Distressed exit			Clean exit		
	PIK Note (1)	PIK Toggle (2)	No PIK (3)	PIK Note (4)	PIK Toggle (5)	No PIK (6)
Number of loan positions	70	300	581	505	785	10,906
New debt financing in window						
Any new debt facility	18.6	40.0	34.6	39.8	41.7	55.8
with the existing lender participating	5.7	21.3	7.6	11.3	9.2	12.2
from new lenders only	12.9	18.7	27.0	28.5	32.5	43.6
Corporate events in window						
Bankruptcy / out of business	17.1	20.0	21.7	1.2	1.1	0.6
LBO or M&A	28.6	25.0	16.2	23.4	21.7	22.6
Debt refinancing deal	1.4	4.7	9.8	9.9	15.3	23.3
Equity raise or recapitalization	8.6	7.7	11.7	17.2	13.2	14.3
No Pitchbook event	47.1	40.0	39.9	37.8	40.0	29.5
Resolution (mutually exclusive)						
1. Bankruptcy / out of business	17.1	20.0	21.7	1.2	1.1	0.6
2. Acquired or LBO (no bankruptcy)	20.0	18.7	11.2	23.0	21.4	22.5
3. New debt with the existing lender participating	2.9	9.3	4.0	7.3	6.1	8.3
4. New debt from new lenders only	7.1	10.3	15.1	23.0	24.1	33.1
5. Other Pitchbook deal only (equity, recap, ...)	5.7	1.7	8.1	7.7	7.3	6.0
6. No Pitchbook event in window	47.1	40.0	39.9	37.8	40.0	29.5

Table A22: Borrower outcomes after exit: sensitivity to the event window

Each column recomputes indicators of Table A20 for distressed and clean exits over the symmetric window $[T-h, T+h]$, $h = 1, 2, 4, 8$ quarters. The sample shrinks with h because exits whose window ends after 2026Q1, the end of the Pitchbook deal data, are dropped. Entries other than counts are percentages of the column's positions. *No Pitchbook event*: no Pitchbook deal of any kind in the window. Definitions as in Table A20.

	Distressed exit				Clean exit			
Window (quarters)	±1	±2	±4	±8	±1	±2	±4	±8
Number of loan positions	986	951	879	746	12,804	12,196	10,871	8,727
Any new debt facility	27.2	35.1	44.8	59.7	46.3	54.2	65.3	77.2
with the existing lender participating	9.1	11.8	17.4	28.7	8.5	12.0	25.8	46.5
from new lenders only	18.1	23.3	27.4	31.0	37.9	42.3	39.6	30.8
Bankruptcy / out of business	16.0	20.8	24.5	30.0	0.5	0.7	1.1	2.2
LBO or M&A	15.7	19.9	26.1	41.4	19.4	22.6	31.0	49.1
Debt refinancing deal	5.7	7.6	9.9	18.1	18.6	22.2	28.3	35.7
No Pitchbook event in window	49.1	40.5	27.4	15.7	39.0	30.5	20.3	11.4

IA.2.12 PIK and the borrower's refinancings, sales and new financing

If PIK relief buys a borrower time, the borrower should use that time to refinance, recapitalize or be sold, and those events should become more frequent after PIK begins. If PIK instead signals that the borrower has lost access to financing, they should become less frequent. This section estimates, quarter by quarter, the hazard of the borrower's Pitchbook deals while its loans pay in kind.

Design. The unit is a borrower (a Pitchbook company) in a quarter, 2012Q1–2024Q4. The borrower's BDC-held term loans, delayed-draw term loans and revolvers (first lien, second lien and subordinated, excluding PIK notes) are aggregated over all BDC positions in the quarter. Borrowers already paying in kind in their first quarter in the panel are excluded. The treatment is $PIK_{b,t-1}$: at least one of the borrower's positions pays in kind. Table A23 reports discrete-time logit hazards of four outcomes: a Chapter 7 or 11 filing; a take-out (refinancing, buyout, acquisition, IPO, recapitalization or repayment); new debt financing; and new equity financing. Every hazard conditions on the borrower's par-weighted Fair/Par in the three previous quarters, its non-accrual status and its loan and borrower characteristics. It includes borrower-age, $YearQtr$ and $Industry$ fixed effects. The even columns replace the industry fixed effects with borrower fixed effects, which compare quarters of the same borrower with and without PIK. The sample has 97,616 borrower-quarters of 8,505 borrowers.

Results. Borrowers on PIK file for bankruptcy three times as often as other borrowers (0.73% against 0.23% per quarter). Given their marks and non-accrual status, however, PIK is unrelated to the filing hazard (coefficient 0.14, s.e. 0.21). The other outcomes behave differently. Given the same state of the loan, PIK lowers the hazard of a take-out by about 30% (hazard ratio 0.70; −1.6 percentage points per quarter on a base of 5.8%) and of new debt financing by 22%. The within-borrower estimates are similar: −0.25 (s.e. 0.12) for take-outs and −0.32 (0.09) for new debt. New equity financing is unaffected. Non-accrual goes the other way: holding the mark fixed, it raises the hazard of a filing and also of a take-out and of new debt. Compared with a borrower with the same mark, a borrower on PIK is therefore less likely to be taken out of its loans or to raise new debt, and it is not significantly more likely to file. These estimates do not indicate that PIK helps the borrower refinance, raise new financing or be sold.

Table A23: PIK and the hazard of bankruptcy, take-outs and new financing

Discrete-time logit hazards on a borrower (Pitchbook company) × quarter panel, 2012Q1–2024Q4: BDC-held term loans, delayed-draw term loans and revolvers (first lien, second lien, subordinated; no PIK notes), aggregated over all BDC positions of the borrower. At risk: previous quarter observed and no filing before t; borrowers on PIK in their first panel quarter are excluded. Sample: 97,616 borrower-quarters of 8,505 borrowers with complete controls. Subscripts as in the main text: b borrower, t quarter; loan-level variables are aggregated to the borrower over all its BDC positions. $PIK_{b,t-1}$: any position pays interest in kind. *Outcomes*: completed Pitchbook deals with a deal date through 2025Q4, counted in t or, if t is the borrower's last quarter in any BDC schedule, in $t+1,\ldots,t+4$. (1)–(2) First Chapter 11 ("Bankruptcy: Admin/Reorg") or Chapter 7 ("Bankruptcy: Liquidation") filing after the first BDC quarter; terminal. (3)–(4) *Take-out*: debt refinancing; buyout (including secondary and management buyouts); merger or acquisition of the borrower; IPO or reverse merger; dividend or leveraged recapitalization; debt repayment. Buyouts and acquisitions that Pitchbook sub-types as a debt conversion or distressed acquisition, or whose synopsis mentions a debt-for-equity swap, distress or bankruptcy, are excluded. (5)–(6) *New debt*: general debt (including acquisition financing), acquisition, merger and spin-off debt, mezzanine, convertible debt, project, working-capital, capital-spending, exit and general-corporate-purpose financing, sale-leasebacks; not refinancings, recapitalizations, repayments, debt conversions or PPP loans. (7)–(8) *New equity*: PE growth, VC, seed, angel and restart rounds, PIPEs, follow-on offerings, corporate and accelerator investments, capitalizations, crowdfunding. Outcomes (3)–(8) count only before the filing quarter, can recur, and can overlap within a borrower-quarter. *Controls* at $t-1$ unless stated: par-weighted Fair/Par at $t-1$, $t-2$, $t-3$; non-accrual; Ln(Loan Size), the logarithm of the par value held by BDCs; Ln(Time-to-Maturity), the par-weighted average of the logarithm of one plus remaining months to maturity; effective base rate; fixed-rate share; All-in-spread$_{b\tau}$, the par-weighted all-in spread at origination of the loans the borrower holds in its first panel quarter, winsorized at the 0.5th and 99.5th percentiles; junior (second lien plus subordinated) and revolver shares; Ln(Number of BDCs); dual holding; PE Sponsored and Bank financing, an indicator for a bank loan in the past five years (each with a missing-value indicator); Ln(Number of lenders). A subset is shown. Odd columns: borrower-age (quarters since the borrower's first BDC quarter), $YearQtr$ and $Industry$ fixed effects. Even columns: borrower, borrower-age and $YearQtr$ fixed effects (borrower effects absorb industry and the spread at origination), estimated on borrowers with at least one event of the type. Column (2) is not identified: every filing is the borrower's last observation. *Rows*: AME is the mean of $p(\text{PIK}=1)-p(\text{PIK}=0)$ over the estimation sample, in percentage points per quarter. Events (estimation sample) counts events in the observations each model uses; events (full sample) and the raw rates by $PIK_{b,t-1}$ use all 97,616 borrower-quarters. Standard errors clustered by borrower. Significance levels: *(p<0.10), **(p<0.05), ***(p<0.01).

	Ch. 7/11 filing		Any take-out		New debt financing		New equity financing	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
PIK$_{b,t-1}$ (any position)	0.140	not	-0.357***	-0.246**	-0.254***	-0.323***	-0.177	0.023
	(0.215)	identified	(0.069)	(0.123)	(0.063)	(0.088)	(0.118)	(0.164)
Fair/Par$_{b,t-1}$ (par-weighted)	-5.047***		2.377***	2.700***	0.604**	0.695*	0.592	0.466
	(0.514)		(0.413)	(0.613)	(0.302)	(0.365)	(0.427)	(0.469)
Fair/Par$_{b,t-2}$	1.023*		0.536	0.543	0.503	0.586	0.155	0.077
	(0.585)		(0.465)	(0.639)	(0.393)	(0.460)	(0.555)	(0.572)
Fair/Par$_{b,t-3}$	2.097***		0.030	0.556	-0.078	0.259	0.200	0.181
	(0.495)		(0.355)	(0.496)	(0.288)	(0.348)	(0.438)	(0.504)
Non-accrual$_{b,t-1}$	1.136***		0.661***	0.876***	0.275**	0.394***	-0.280	-0.098
	(0.315)		(0.117)	(0.217)	(0.107)	(0.149)	(0.217)	(0.271)
Ln(Loan Size$_{b,t-1}$)	0.134**		-0.040***	-0.062**	0.035***	-0.040	-0.026	-0.031
	(0.062)		(0.014)	(0.029)	(0.013)	(0.025)	(0.022)	(0.046)
Ln(Time-to-Maturity$_{b,t-1}$)	0.024		-0.163***	-1.347***	0.222***	-0.014	-0.202***	-0.216***
	(0.085)		(0.028)	(0.065)	(0.031)	(0.043)	(0.040)	(0.071)
All-in-spread$_{b\tau}$	-2.918		-8.712***		-5.181***		0.333	
	(3.053)		(0.889)		(0.808)		(1.204)	
Share junior (second lien + subordinated)$_{b,t-1}$	0.166		0.268***	0.286***	0.197***	0.143*	-0.118	0.068
	(0.198)		(0.049)	(0.110)	(0.047)	(0.077)	(0.089)	(0.190)
Ln(Number of BDCs)$_{b,t-1}$	-1.098**		0.309***	0.149	0.668***	-0.088	0.453**	0.293
	(0.548)		(0.117)	(0.169)	(0.111)	(0.134)	(0.206)	(0.309)
PE Sponsored$_{b,t-1}$	-0.826***		0.263***	1.193***	0.475***	0.507***	-0.922***	0.742**
	(0.165)		(0.051)	(0.203)	(0.045)	(0.183)	(0.058)	(0.344)
Bank financing$_{b,t-1}$	0.381**		0.347***	-0.330***	0.241***	-0.015	-0.045	-0.230*
	(0.186)		(0.039)	(0.107)	(0.036)	(0.069)	(0.057)	(0.133)
AME of PIK$_{b,t-1}$ (pp per quarter)	+0.038	–	-1.603	-1.861	-1.862	-3.422	-0.362	+0.176
Hazard ratio e^{β}	1.15	–	0.70	0.78	0.78	0.72	0.84	1.02
Loan and borrower controls	Yes	–	Yes	Yes	Yes	Yes	Yes	Yes
Borrower FE	No	Yes	No	Yes	No	Yes	No	Yes
Borrower age (quarters) FE, YearQtr FE	Yes	–	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	–	Yes	Absorbed	Yes	Absorbed	Yes	Absorbed
Observations	90,645	–	97,616	49,223	97,616	57,469	97,125	23,321
Borrowers	8,438	–	8,505	3,243	8,505	3,636	8,471	1,525
Events (estimation sample)	257	–	5,533	5,367	9,149	9,032	2,239	2,194
Pseudo R^2	0.261	–	0.087	0.195	0.091	0.137	0.091	0.118
Events (full sample)	257	257	5,533	5,533	9,149	9,149	2,239	2,239
Raw rate, no PIK$_{b,t-1}$ (% per qtr)	0.23	0.23	5.80	5.80	9.58	9.58	2.33	2.33
Raw rate, PIK$_{b,t-1}$ (% per qtr)	0.73	0.73	4.01	4.01	6.67	6.67	1.77	1.77

IA.2.13 Additional results on BDC capital structure

This section describes the capital structure of the BDC sector in the matched BDC Collateral–Capital IQ sample of Section 8.1 of the main text (66 BDCs, 2012Q1–2024Q4).

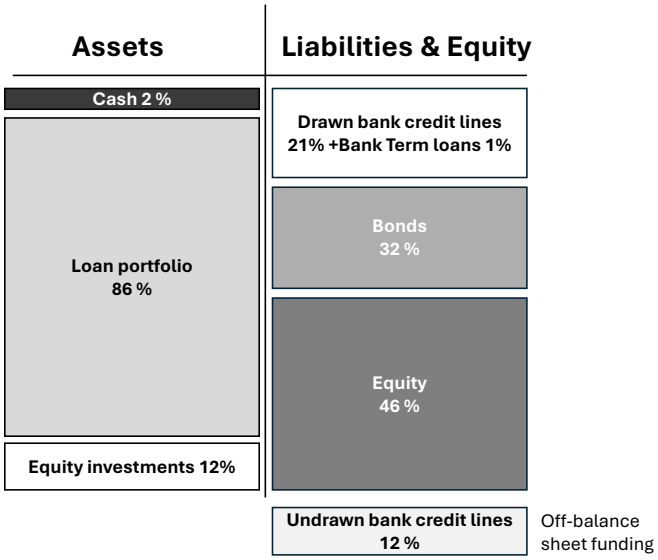
Figure A9, Panel A summarizes the aggregate BDC sector balance sheet in 2022Q4. Three features of the balance sheet matter for the model's funding predictions. (i) BDC assets are almost entirely direct loans (86%) and equity investments (12%), with negligible cash holdings (2%): With no internal cash buffer, a BDC that defers cash interest through PIK must absorb the resulting shortfall through external funding. (ii) The funding mix is roughly half equity (46%), one-third non-bank debt (32%, mainly bonds), and one-fifth bank debt, of which drawn credit lines dominate (21% drawn vs. 1% term loans). Because the bank-debt component is overwhelmingly committed credit lines rather than term debt, it is governed by borrowing-base eligibility rules. (iii) Off-balance-sheet undrawn bank credit lines (12% of assets) provide the principal contingent liquidity buffer, given the minimal cash reserves; whether BDCs can actually draw on this buffer as PIK exposure rises depends on the covenants set on the borrowing base (Prediction 6 of the main text).

Panel B of Figure A9 traces the funding mix of the typical BDC from 2012Q1 to 2024Q4. The dominant trend is a steady decline in the equity share, replaced mainly by an expansion of non-bank debt and, to a lesser extent, of bank debt. Table A24 reports the liability structure of BDCs relative to total assets (Panel A) and the banks that arranged BDC credit facilities in 2023 (Panel B).

Figure A9: BDC capital structure

Panel A shows the aggregated BDC sector's balance sheet components (all relative to total assets) as of 2022Q4 for a subset of 66 BDCs identified in Capital IQ. Panel B shows the average share of different debt structure items relative to total assets across all BDCs' balance sheets over the 2012Q1 to 2024Q4 period.

Panel A - Balance sheet of the BDC sector in 2022Q4



Panel B - BDC debt capital structure

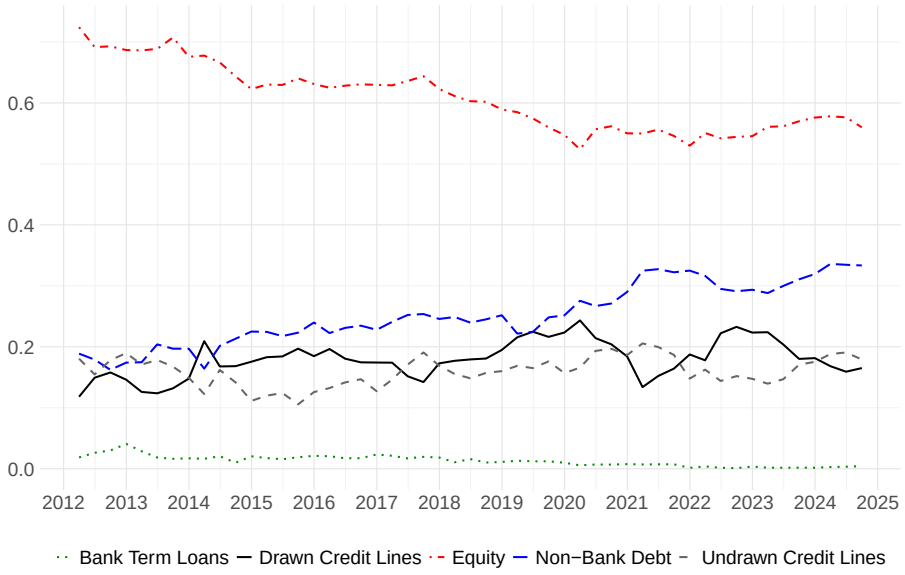


Table A24: BDC liability structure and bank debt

This table shows the liability structure of BDCs (Panel A) and a league table with the aggregate amount arranged as lead banks to BDCs in 2023 (Panel B). Panel A is restricted to a sample where we observe the debt structure.

Panel A: BDC Liability Structure (% Total Assets)

Statistic	N	Mean	St. Dev.	Pctl(25)	Median	Pctl(75)
Bank Loans						
Drawn credit lines	1,878	0.19	0.13	0.09	0.19	0.28
Term loans	1,878	0.01	0.04	0.00	0.00	0.00
Non bank debt	1,880	0.27	0.15	0.16	0.27	0.38
Equity	1,881	0.51	0.09	0.45	0.51	0.56
Off-balance sheet						
Undrawn credit lines	1,830	0.16	0.12	0.08	0.13	0.20

Panel B: Lead Arranger in 2023

Lender	Amount (USD mn)
JP Morgan	17,161
Truist Financial	10,865
Sumitomo Mitsui Banking Corp	3,935
ING Bank	2,250
Citibank NA	2,180
Bank of America NA	1,000
PNC Bank NA	545
Canadian Imperial Bank of Commerce	500
Keybank NA	500
BNP Paribas SA	200
Wells Fargo Bank NA	175
City National Bank	25
Total	39,336

IA.2.14 PIK usage and BDC portfolio allocation

Table A25 examines whether BDCs with greater PIK usage subsequently differ in their investment activity, lending composition, portfolio choice, and capital structure. The baseline specification regresses each outcome measured at $t+1$ on the lagged $PIK\ usage\ share_{l,t}$. The regressions are estimated at the BDC-quarter level using OLS and include calendar-quarter fixed effects in all specifications. The even-numbered columns additionally include BDC fixed effects, so the interpretation of estimates in those columns is relative to the within-BDC means. The controls are *Ln(Assets)*, *Leverage*, *ROE*, *Cash Share*, *Ln(Fund Age)* and the *Non accrual share*, all measured at time t. Any remaining details about the specifications are found in the table caption.

Panel A studies investment activity. We use three dependent variables: the logarithm of total investments, which includes both lending and other equity and securities investments in cost value, the logarithm of the number of portfolio firms (investees), and the logarithm of the average investment per investee. The coefficient on PIK usage is small and statistically insignificant when the dependent variable is total investments (columns (1)–(2)), suggesting that higher PIK usage is not associated with a meaningful change in the overall size of BDC investments. However, PIK usage is negatively associated with the number of portfolio companies (columns (3)–(4)). In the specification with BDC fixed effects, the coefficient on ln(#Investees) is -0.32 and statistically significant at the 5 percent level. At the same time, PIK usage is positively associated with average investment per portfolio company (columns (5)–(6)): the coefficient on ln(Inv/Investee) is 0.29 with BDC fixed effects and is also statistically significant at the 5 percent level. Taken together, Panel A suggests that greater PIK usage increases the concentration in a BDC's investment portfolio, with fewer investees and larger average exposure per investee.

Panel B focuses specifically on lending outcomes, by first examining total lending, and then decomposing the effect into lending to PIK-using loans and then to non-PIK-using loans. The results show no statistically significant association between PIK usage and the natural logarithm of total credit outstanding (columns (1)–(2)). The coefficients on ln(Credit) are positive but small relative to their standard errors. In contrast, PIK usage is strongly positively associated with credit outstanding to PIK-using borrowers. The coefficient on $\ln(\text{Credit}^{PIK})$ is 4.05 without BDC fixed effects and 3.85 with BDC fixed effects, both significant at the 1 percent level. Conversely, PIK usage is negatively associated with credit outstanding to non-PIK borrowers. The coefficient on $\ln(\text{Credit}^{nonPIK})$ is -1.66 in the BDC fixed-effects specification and is statistically significant at the 1 percent level. These results indicate that higher PIK usage mainly reflects a shift in the composition of credit exposure toward PIK borrowers rather than an expansion of total lending, which is consistent with

Table A25: PIK usage, investments, portfolio choice and capital structure

This table reports OLS regressions of BDC-level investment, lending, portfolio composition, and capital structure variables on $PIK\ usage\ share_{l,t}$ and control variables. ln(Investments) is the log of total investments at cost value. ln(#Investees) is the log number of portfolio companies. ln(Inv/Investee) is the log average investment per portfolio company. ln(Credit) is the log par value of total credit outstanding. ln(Credit^{PIK}) is the log par value of credit outstanding to borrowers using PIK features. ln(Credit^{nonPIK}) is the log par value of credit outstanding to borrowers not using PIK features. First Lien, Subordinated, and Equity are the fair value shares of first-lien debt, subordinated debt, and equity in the portfolio, respectively. (Debt/Assets), (BankDebt/Assets), and (Cash/Assets) are balance sheet ratios. The sample consists of BDC-quarter observations. $PIK\ usage\ share_{l,t}$ is the par-value-weighted share of portfolio companies paying any portion of interest in kind. All specifications include the following BDC level controls: *Ln(Assets)*, *Leverage*, profitability (*ROE*), *Cash Share*, *Ln(Fund Age)*, *Non accrual share* all measured at t. As exceptions, Columns (1)–(2) of Panel D exclude lagged leverage, and Columns (5)–(6) of Panel D exclude lagged cash share, i.e. the lagged dependent variables. All regressions include YearQtr fixed effects; columns (2), (4), and (6) additionally include BDC fixed effects. Standard errors are clustered at the BDC and year-quarter levels. Significance levels: *(p<0.10), **(p<0.05), ***(p<0.01).

Panel A: Investments

Dependent Variables:	ln(Investments)$_{l,t+1}$		ln(#Investees)$_{l,t+1}$		ln(Inv/Investee)$_{l,t+1}$	
Model:	(1)	(2)	(3)	(4)	(5)	(6)
Variables						
PIK usage share$_{lt}$	-0.13	-0.11	-0.82***	-0.42***	0.69***	0.31**
	(0.10)	(0.14)	(0.30)	(0.13)	(0.24)	(0.13)
BDC controls	Yes	Yes	Yes	Yes	Yes	Yes
Fixed-effects						
YearQtr	Yes	Yes	Yes	Yes	Yes	Yes
BDC		Yes		Yes		Yes
Fit statistics						
Observations	4,038	4,035	4,038	4,035	4,038	4,035
R^2	0.96	0.98	0.60	0.94	0.67	0.94
Dependent variable mean	6.58	6.59	4.28	4.28	2.30	2.30

Panel B: Lending

Dependent Variables:	ln(Credit)$_{l,t+1}$		ln(Credit^{PIK})$_{l,t+1}$		ln(Credit^{nonPIK})$_{l,t+1}$	
Model:	(1)	(2)	(3)	(4)	(5)	(6)
Variables						
PIK usage share$_{lt}$	-0.08	-0.01	3.88***	3.75***	-1.70***	-1.91***
	(0.40)	(0.27)	(0.46)	(0.37)	(0.45)	(0.35)
BDC controls	Yes	Yes	Yes	Yes	Yes	Yes
Fixed-effects						
YearQtr	Yes	Yes	Yes	Yes	Yes	Yes
BDC		Yes		Yes		Yes
Fit statistics						
Observations	3,990	3,987	3,179	3,177	3,977	3,974
R^2	0.87	0.97	0.81	0.90	0.86	0.97
Dependent variable mean	6.36	6.36	4.53	4.54	6.17	6.18

Panel C: Portfolio choice

Dependent Variables:	First Lien$_{l,t+1}$		Subordinated$_{l,t+1}$		Equity$_{l,t+1}$	
Model:	(1)	(2)	(3)	(4)	(5)	(6)
Variables						
PIK usage share$_{lt}$	-0.36***	-0.33***	0.21**	0.32***	0.09	0.05
	(0.10)	(0.08)	(0.09)	(0.10)	(0.08)	(0.05)
BDC controls	Yes	Yes	Yes	Yes	Yes	Yes
Fixed-effects						
YearQtr	Yes	Yes	Yes	Yes	Yes	Yes
BDC		Yes		Yes		Yes
Fit statistics						
Observations	4,038	4,035	4,038	4,035	4,038	4,035
R^2	0.47	0.91	0.27	0.71	0.34	0.85
Dependent variable mean	0.69	0.69	0.06	0.06	0.12	0.12

Panel D: Capital structure

Dependent Variables:	(Debt/Assets)$_{l,t+1}$		(BankDebt/Assets)$_{l,t+1}$		(Cash/Assets)$_{l,t+1}$	
Model:	(1)	(2)	(3)	(4)	(5)	(6)
Variables						
PIK usage share$_{lt}$	-0.03	-0.03	-0.26***	-0.23***	0.00	0.00
	(0.05)	(0.06)	(0.06)	(0.05)	(0.01)	(0.01)
BDC controls	Yes	Yes	Yes	Yes	Yes	Yes
Fixed-effects						
YearQtr	Yes	Yes	Yes	Yes	Yes	Yes
BDC		Yes		Yes		Yes
Fit statistics						
Observations	4,038	4,035	1,702	1,701	4,038	4,035
R^2	0.19	0.77	0.20	0.68	0.70	0.73
Dependent variable mean	0.42	0.42	0.20	0.20	0.05	0.05

forbearance.

Panel C examines portfolio choice across asset classes. Higher PIK usage is associated with a lower share of first-lien loans. The coefficient is -0.36 and -0.34 in the two specifications and significant at the 1 percent level. At the same time, PIK usage is positively associated with the subordinated debt share. The coefficient rises from 0.25 without BDC fixed effects to 0.36 with BDC fixed effects, and both estimates are statistically significant. By contrast, the coefficients on the equity share are small and statistically insignificant. Thus, the portfolio-composition results suggest that higher PIK usage is associated with a move away from first-lien debt and toward subordinated debt, rather than toward equity investments.

Panel D considers capital structure. PIK usage is not significantly related to the overall debt-to-assets ratio. The estimated coefficients are negative but statistically insignificant. The cash-to-assets ratio is also essentially unrelated to PIK usage, with coefficients close to zero and not statistically significant. The only significant result in Panel D concerns bank debt, consistent with Table 8. Higher PIK usage is associated with a lower bank-debt-to-assets ratio: the coefficient is -0.25 without BDC fixed effects and -0.23 with BDC fixed effects, both significant at the 1 percent level. This suggests that BDCs with greater PIK exposure do not appear to increase overall leverage, but they do rely less on bank debt as a share of assets.

In sum, PIK usage is not associated with larger balance sheets or higher aggregate investment. Instead, higher PIK usage predicts changes in composition: fewer portfolio companies, larger average exposures, more credit to PIK borrowers, less credit to non-PIK borrowers, a lower first-lien share, and a higher subordinated debt share. On the financing side, the main association is a lower reliance on bank debt, while overall leverage and cash holdings remain largely unchanged. The evidence is therefore consistent with PIK usage being linked to portfolio concentration and riskier credit composition rather than simply greater investment scale.

IA.2.15 Robustness of stock market pricing results

Table A26 shows the robustness of stock market pricing results that were presented in the main body of the paper. Decomposing PIK toggle usage into post-origination and at-origination toggles shows that the negative effect comes primarily from post-origination toggle usage, consistent with the model and the other empirical results.

Table A26: PIK usage and BDC stock market valuation

This table shows the results from OLS regressions of BDC's market-value-to-book-value on the components of *PIK usage share*. *Price/NAV* (columns 1-2) is the BDC's stock market value relative to net asset value i.e. market-to-book ratio of equity. *MVA/BVA* (columns 3-4) is the BDC's market value of assets (MVA) relative to book value of assets (BVA). MVA is approximated as the sum of market value of equity and book value of debt. *Post-orig. PIK Toggle usage share* is the value-weighted number of loans in which borrowers use the PIK option after origination, relative to all loans in a given quarter, *At orig. PIK Toggle usage share* is the value-weighted number of loans in which borrowers use the PIK option at origination, relative to all loans in a given quarter, while *PIK Note usage share* is the value-weighted number of PIK Note loans relative to all loans in a given quarter. Columns (2) and (4) include the following BDC level controls: *Ln(Assets)*, *Leverage*, profitability (*ROE*), and *Ln(Fund Age)* and *Non accrual share* all measured at t. All columns include year-quarter fixed effects. $YearQtr$ refers to the calendar quarter e.g. 2022Q4. Standard errors are clustered at the BDC and year-quarter level. Significance levels: *(p<0.10), **(p<0.05), ***(p<0.01).

Dependent Variables:	Price/NAV$_{l,t+1}$		MVA/BVA$_{l,t+1}$	
Model:	(1)	(2)	(3)	(4)
Variables				
Post orig. PIK Toggle usage share$_{lt}$	-0.59***	-0.46**	-0.31**	-0.26**
	(0.19)	(0.17)	(0.14)	(0.11)
At orig. PIK Toggle usage share$_{lt}$	0.00	-0.44	0.07	-0.24
	(0.44)	(0.43)	(0.26)	(0.24)
PIK Note usage share$_{lt}$	0.20	0.34	0.10	0.21*
	(0.24)	(0.22)	(0.15)	(0.12)
BDC controls		Yes		Yes
Fixed-effects				
YearQtr	Yes	Yes	Yes	Yes
Fit statistics				
Observations	2,332	1,933	2,332	1,933
Adjusted R^2	0.12	0.24	0.07	0.29
Dependent variable mean	0.90	0.90	0.93	0.93

IA.3 Model Appendix

IA.3.1 Supplementary results for the baseline model

This section collects the derivations that the main text relocates to the appendix. Throughout, the notation is that of the main text: at $t = 1$ the borrower is in a healthy state H or a low (distress) state L, with probabilities π_{H} and π_{L}; in the low state a distressed loan has continuation recovery $W \sim G$ (with density g) on $[0, (1+c)^2]$, the restructuring (recognition) value is $R \in (0,1)$, and the manager earns a private non-recognition benefit $B \geq 0$ on any performing loan.

IA.3.1.1 Endogenous over-marking: pinning down $\widehat{V}$

In the baseline model a distressed loan is kept performing (PIK'd) rather than recognized iff its recovery clears the forbearance cutoff,

$$W > \widehat{w} \;\equiv\; R - B, \tag{A.1}$$

and a forborne loan (recovery $\widehat{w} < W < R$) is carried at a performing over-mark $\widehat{V} \in (R, (1+c)^2]$ that exceeds its true recovery W. The baseline leaves $\widehat{V}$ indeterminate; we endogenize it through a trade-off between reporting benefit and detection. The manager's benefit from carrying a forborne loan at mark $m > R$ rises with the reported value, $b(m) = \eta\,(m - R)$ with $\eta > 0$, but a larger over-mark is more likely to be exposed. The over-mark is caught at $t = 2$ with probability increasing in the gap $m - W$, an expected penalty $\frac{\kappa}{2}(m - W)^2$ with $\kappa > 0$ (convex, so gross misstatements are caught nearly surely). The manager chooses $m \in (R, (1+c)^2]$ to maximize $\eta(m - R) - \frac{\kappa}{2}(m - W)^2$.[10]

Proposition 1 (Optimal over-mark)**.** *The optimal forbearance mark is*

$$\widehat{V}(W) = \min\left\{(1+c)^2,\; W + \tfrac{\eta}{\kappa}\right\},$$

so the over-mark $\widehat{V} - W = \eta/\kappa$ is constant across forborne loans until the par cap binds: increasing in the marginal reporting benefit η and decreasing in the detection-cost curvature κ. Opacity (low κ: lender-produced marks in private credit) yields a large over-mark; market-referenced marks (high κ) shrink it toward zero. The induced reduced-form forbearance benefit—the maximized agency value entering the cutoff $\widehat{w} = R - B$ of (A.1)—is $B = \eta^2/\big(2\kappa(1+\eta)\big)$.

[10] As the penalty can also be interpreted as the cost of the increased BDC stock-price discount that results from over-marking, this allows the fund's stock-market pricing to feed back into the BDC's loan reporting.

Proof. $\eta(m-R)-\frac{\kappa}{2}(m-W)^2$ is strictly concave with first-order condition $\eta-\kappa(m-W)=0$, giving $m^*=W+\eta/\kappa$, capped at $(1+c)^2$. The forborne payoff is then $W+\eta(m^*-R)-\frac{\kappa}{2}(m^*-W)^2=W(1+\eta)-\eta R+\eta^2/(2\kappa)$; setting it above the recognition value R yields $W>R-\eta^2/\Big(2\kappa(1+\eta)\Big)$, i.e. the cutoff $\widehat{w}=R-B$ with $B=\eta^2/\Big(2\kappa(1+\eta)\Big)$.[11] □

IA.3.1.2 Notes versus toggles (Prediction 4)

Prediction 4 compares the terminal outcomes of loans that pay in kind under a PIK note with those of loans that pay in kind under an activated toggle. The empirical test classifies a loan by its origination contract—a note (PIK from $t=0$) or a toggle (a PIK option exercised later)—and, restricting the sample to loans observed paying in kind at $t=1$, asks how the $t=0$ label predicts outcomes. The comparison rests on a single difference: when the PIK decision is taken, and hence what observing PIK at $t=1$ reveals about the state.

At origination PIK is a $t=0$ object, whereas the post-origination activation of a PIK toggle is a $t=1$ signal. A note capitalizes in every state, so seeing a note pay in kind at $t=1$ conveys no news: a PIK'ing note is still the ex-ante loan, healthy with probability π_{H} and distressed with probability π_{L}. A toggle instead capitalizes only on a coupon shortfall, which arises only in the low state, so a toggle activating at $t=1$ is an information event that reveals L. A toggle that already pays in kind at origination is, for this purpose, a $t=0$ object like a note, because its PIK status is set before the state is drawn. This is why the main text treats toggles already active at origination, like notes, as PIK information available at origination (Table 6, columns (4) and (8)).

Let $\bar{W}_{\mathsf{L}}\equiv\mathbb{E}[W\mid \mathsf{L},\,W>\widehat{w}]$ be the average recovery of a distressed loan that is kept alive, and let

$$\omega_{\mathsf{H}}\;\equiv\;\Pr(\mathsf{H}\mid \text{PIK},\text{note})\;=\;\frac{\pi_{\mathsf{H}}}{\pi_{\mathsf{H}}+\pi_{\mathsf{L}}\Big[1-G(\widehat{w})\Big]}$$

be the share of healthy loans among PIK'ing notes. The pool of PIK'ing toggles has mass $\Pi^{\text{tog}}=\pi_{\mathsf{L}}[1-G(\widehat{w})]$ and the pool of PIK'ing notes $\Pi^{\text{note}}=\pi_{\mathsf{H}}+\pi_{\mathsf{L}}[1-G(\widehat{w})]$.

Proposition 2 (Notes versus toggles)**.** *Restrict to loans paying in kind at $t=1$ and classify them by their $t=0$ contract.*

(i) Expected recoveries satisfy

$$\mathbb{E}[\,\textit{recovery}\mid \textit{PIK},\textit{toggle}\,]=\bar{W}_{\mathsf{L}}\;\le\;\mathbb{E}[\,\textit{recovery}\mid \textit{PIK},\textit{note}\,]=\omega_{\mathsf{H}}\,(1+c)^2+(1-\omega_{\mathsf{H}})\,\bar{W}_{\mathsf{L}},$$

[11] The constant over-mark $\widehat{V}-W=\eta/\kappa$ makes the predictable post-PIK markdown equal to the over-mark η/κ scaled by the forborne share of the PIK pool.

and the gap $\omega_{\mathsf{H}}\left[(1+c)^2 - \bar{W}_{\mathsf{L}}\right]$ *is strictly positive whenever the continued distressed loans do not all recover in full,* $\bar{W}_{\mathsf{L}} < (1+c)^2$.

(ii) The gap is positive also without forbearance ($B = 0$, $\widehat{w} = R$*). A worse terminal outcome of toggles than of notes therefore does not by itself indicate forbearance.*

(iii) Under forbearance the over-marked band is a larger share of the toggle pool than of the note pool, so the predictable decline of Prediction 3 is larger for toggles: $\mathbb{E}[m_2 - m_1 \mid \textit{toggle}] = -\pi_{\mathsf{L}} \int_{\widehat{w}}^{R} (\widehat{V} - W)\, dG(W)/\Pi^{\text{tog}} < \mathbb{E}[m_2 - m_1 \mid \textit{note}] < 0$.

(iv) The effect of B *on the gap in (i) has no general sign. A larger* B *lowers* $\widehat{w}$ *and adds low-recovery loans to both pools, which lowers* $\bar{W}_{\mathsf{L}}$ *and widens the gap, but it also lowers the healthy share* ω_{H} *of the note pool, which narrows it.*

Proof. (i) A toggle pays in kind only in L and only if the loan is continued, $W > \widehat{w}$, so its expected recovery is $\bar{W}_{\mathsf{L}}$. A note pays in kind in H (mass π_{H}, recovery $(1+c)^2$) and in L when continued (mass $\pi_{\mathsf{L}}[1-G(\widehat{w})]$, mean recovery $\bar{W}_{\mathsf{L}}$); Bayes' rule gives the weights ω_{H} and $1-\omega_{\mathsf{H}}$. Since G is supported on $[0,(1+c)^2]$, $\bar{W}_{\mathsf{L}} \leq (1+c)^2$, and the gap follows. (ii) Set $\widehat{w} = R$ in (i). (iii) By Prediction 3 (Appendix B.3 of the main text), the expected revision of a pool is $-\pi_{\mathsf{L}} \int_{\widehat{w}}^{R} (\widehat{V} - W)\, dG/\Pi_{\text{pool}}$, the same numerator for both pools, and $\Pi^{\text{note}} = \Pi^{\text{tog}} + \pi_{\mathsf{H}} > \Pi^{\text{tog}}$. (iv) $\bar{W}_{\mathsf{L}}$ is a mean truncated from below at $\widehat{w}$ and is non-decreasing in $\widehat{w}$; ω_{H} is increasing in $\widehat{w}$ because $1 - G(\widehat{w})$ is decreasing; $\widehat{w} = R - B$ falls with B. □

Part (ii) is the reason Table 3 of the main text lists Prediction 4 as holding with and without forbearance. In the data (Table 6 of the main text), post-origination toggles are 21 to 23 percentage points more likely to exit on non-accrual than never-PIK loans, whereas with the full set of controls the coefficients on notes (3 points, significant only at the 10% level) and on toggles already active at origination (5 points, insignificant) are much smaller (column (3)), and both are essentially zero (0.00 and 0.01) once post-origination toggles are pooled with never-PIK loans (column (4)). Part (i) implies this ordering in either regime. Part (iii) is a forbearance-specific implication that the main text does not test separately, because the event study of Section 6 excludes notes.

IA.3.1.3 Deferral versus conversion (Prediction 5)

The lender's action set also admits the following interpretation. Action P is the *deferral bundle*: the unpaid coupon capitalizes into the claim and resolution is postponed—PIK defers the coupon, and the accompanying maturity extension defers the principal; both keep the debt claim alive and the loan performing. Action N is *conversion*: the debt claim is exchanged

for a restructured position worth R—the debt-to-equity swap is its empirical form—and the loss is recognized. Relabeling the $t = 1$ choice in state L as deferral versus conversion changes nothing in the analysis: payoffs are $W + B$ and R, and the cutoff remains $\widehat{w} = R - B$.

Proposition 3 (Impaired exits carry deferral, not conversion)**.** *(i) Without forbearance ($B = 0$), every distressed loan with $W < R$ is converted at $t = 1$ and resolves at R; terminal values are bounded below by R, and deferral appears only on efficiently continued loans ($W > R$), which resolve above R.*

(ii) Under forbearance ($B > 0$), every loan in the band $(\widehat{w}, R)$ carries the deferral bundle, is never converted, and resolves at $W < R$; exits below R have mass $\pi_{\mathsf{L}}\Big[G(R) - G(\widehat{w})\Big] > 0$, and every one of them exhibits deferral and no conversion.

(iii) Deferred band loans resolve at $t = 2$ while converted loans resolve at $t = 1$: under forbearance, eventually-impaired loans remain outstanding strictly longer than a recognizing lender would allow.

(iv) Among deferred distressed loans, the share that exits below R is

$$\Pr\Big(\textit{exit below } R \mid \textit{deferral}, \mathsf{L}\Big) = \frac{G(R) - G(\widehat{w})}{1 - G(\widehat{w})},$$

which is zero without forbearance and increasing in B.

Proof. The continuation set is $\{W > \widehat{w}\}$ (the cutoff of the main text); conversion delivers R at $t = 1$. (i) With $B = 0$ the continuation set is $\{W > R\}$, so any loan resolving below R would have to be a continued loan with $W < R$, of which there are none; converted loans resolve at exactly R. (ii) With $B > 0$ the band is continued—deferred, not converted—and resolves at $W \in (\widehat{w}, R)$. (iii) Timing is by construction. (iv) The deferred distressed loans are those with $W > \widehat{w}$; the ones among them that resolve below R are the band. Differentiating, $\partial\Big[(G(R) - G(\widehat{w}))/(1 - G(\widehat{w}))\Big]/\partial\widehat{w} = -g(\widehat{w})\,[1 - G(R)]/[1 - G(\widehat{w})]^2 \leq 0$, and $\widehat{w} = R - B$ falls with B. □

Empirical counterparts. The deferral bundle corresponds to PIK and maturity extensions and conversion to debt-to-equity swaps; exits below R correspond to the impaired buckets of Table 7 of the main text (Fair/Par at exit below 0.5, and between 0.5 and 0.8). Part (ii) predicts that impaired exits carry deferral, and part (iii) that they stay outstanding longer. In Table 7, maturity extensions occur in 42.6% of severely impaired exits against 23.5% of par exits, and severely impaired loans remain in the sample for 1.15 times their original time to maturity against 0.56 times for par exits. In the two-date model a deferred loan is never

converted, because there is only one decision date. In the data, debt-to-equity swaps on loans that also used PIK come 16 to 18 months after the first PIK quarter (Table 7). With several decision dates, the timing would arise if the lender defers at the first sign of distress and converts only after further losses.

IA.3.1.4 PIK collateral and the bank-borrowing margin (Prediction 6)

Appendix B.3 of the main text states the mechanism behind Prediction 6; this section derives it. The BDC funds its portfolio with bank debt, drawn against a borrowing base, and with non-bank debt (unsecured notes, securitizations) and equity. Hold fixed the size of the portfolio and the BDC's total debt D, which the asset-coverage requirement ties to its equity, and split the eligible portfolio A into cash-pay collateral E and performing-PIK collateral P, $A = E + P$; recognized (non-accrual) loans are ineligible and are held fixed. The bank lends against the borrowing base

$$D_b \;=\; a_N\, E + \int_0^P a_P(x)\, dx, \qquad 0 \le a_P(x) \le a_N, \tag{A.2}$$

where a_N is the advance rate on cash-pay collateral and $a_P(x)$ the advance rate on the x-th unit of PIK collateral. Credit agreements push a_P below a_N through three kinds of clause: a concentration limit, which sets the advance rate on PIK collateral above a share Q of the base to zero, $a_P(x) = a_N \mathbf{1}\{x \le QA\}$; exclusion of capitalized interest from the collateral value, which lowers the effective advance rate on every PIK loan; and lower advance rates on PIK assets. The bank writes these terms on the observable class—whether a loan pays in kind—because, like the financier F, it does not observe W. PIK collateral is weaker collateral in either regime: it pays no cash interest to service the facility, an activated toggle has revealed state L (Appendix B.3 of the main text), and a note's larger claim $(1+c)^2$ is paid only at $t = 2$. Under forbearance the class also contains the over-marked band, which the bank cannot tell apart from efficiently continued loans. Bank debt is the cheapest source, so the BDC draws the full base and funds the remainder, $D_n = D - D_b$, with non-bank debt.

Proposition 4 (Borrowing-base transmission)**.** *Shifting a unit of the eligible portfolio from cash-pay to performing-PIK collateral, holding A and D fixed, changes bank debt, non-bank debt and the bank-funded share of debt $s_b \equiv D_b/D$ by*

$$\frac{\partial D_b}{\partial P} = -\big[a_N - a_P(P)\big] \le 0, \qquad \frac{\partial D_n}{\partial P} = a_N - a_P(P) \ge 0, \qquad \frac{\partial s_b}{\partial P} = -\frac{a_N - a_P(P)}{D} \le 0,$$

strictly wherever $a_P(P) < a_N$. Hence

(i) bank borrowing falls as PIK exposure rises and the lost capacity is refinanced one-for-one with non-bank debt; total debt does not change;

(ii) the shape of the relation follows from the contract terms: a proportional haircut, $a_P = \theta a_N$ with $\theta < 1$, gives a constant slope $-(1-\theta)a_N/D$; a single concentration limit gives a slope of zero below the BDC's own limit and $-a_N/D$ above it, a kink at $P = QA$; several facilities with different limits, or the exclusion of capitalized interest, give a slope that is negative at every exposure level;

(iii) the schedule $s_b(P)$ is the same with and without forbearance, since it depends on (a_N, a_P) and not on B. Forbearance moves the BDC along it: the performing-PIK pool, $\pi_{\mathsf{L}}[1 - G(R-B)]$ for toggles (plus π_{H} for notes), exceeds its no-forbearance level by the band $\pi_{\mathsf{L}}[G(R) - G(R-B)]$, so a forbearing BDC funds a smaller share of its debt from banks;

(iv) because the terms apply to the observable class, the response is the same for notes and toggles, and for PIK in place since origination and PIK activated later.

Proof. With A fixed, $E = A - P$, so differentiating (A.2) gives $\partial D_b/\partial P = -a_N + a_P(P)$. With D fixed, $D_n = D - D_b$ and $s_b = D_b/D$ give the other two derivatives. Under a single limit, $a_P(P) = a_N$ for $P \leq QA$ and 0 above; under a proportional haircut, $a_P = \theta a_N$ at every P; with facilities j whose limits Q_j differ, $a_P(P)$ is the weighted average of the facility-level rates and falls in steps across the limits. Part (iii): B enters none of the terms of (A.2); it changes P through the cutoff $\widehat{w} = R - B$ of the main text. Part (iv): notes, toggles and the timing of PIK use are all in the class that the terms apply to, so a_P is the same for all of them. □

Figure A10 shows the advance-rate schedule of the borrowing base in a senior secured credit agreement of Ares Capital Corporation filed with the SEC, for the case in which the BDC's asset coverage ratio is at least 2.00:1 (the agreement cuts most rates further at lower coverage ratios). For high-yield securities and mezzanine investments, the non-cash-pay classes receive an advance rate ten percentage points below their cash-pay counterparts—60% against 70% for quoted high-yield securities and 55% against 65% for quoted mezzanine investments—so that $a_P < a_N$ in (A.2). This is the haircut of part (ii) of Proposition 4, which lowers bank borrowing at every level of PIK exposure rather than only above a concentration limit such as the one in Figure A1.

Figure A10: Example of lower advance rates on non-cash-pay collateral in a bank credit agreement

Advance rates on the BDC's portfolio investments in the borrowing base of an Ares Capital Corporation senior secured credit facility, filed as an exhibit to an 8-K, when the BDC's relevant asset coverage ratio is at least 2.00:1. *Quoted* and *Unquoted*: investments with and without market quotations. *Non-Cash Pay*: securities that pay part or all of their interest in kind. The agreement's schedules for coverage ratios between 1.75:1 and 2.00:1 and between 1.50:1 and 1.75:1, which set lower rates, are omitted.

Portfolio Investment[1]	Relevant Asset Coverage Ratio ≥ 2.00:1:00	
	Quoted	Unquoted
Cash, Cash Equivalents and Short-Term U.S. Government Securities	100%	n.a.
Long-Term U.S. Government Securities	95%	n.a.
Performing First Lien Bank Loans	85%	75%
Performing First Lien Unitranche Bank Loans	85%	75%
Performing First Lien Last Out Bank Loans	80%	70%
Performing Second Lien Bank Loans	75%	65%
Performing Cash Pay High Yield Securities	70%	60%
Performing Cash Pay Mezzanine Investments	65%	55%
Performing Non-Cash Pay High Yield Securities	60%	50%
Performing Non-Cash Pay Mezzanine Investments	55%	45%
Performing Preferred Equity	55%	45%
Non-Performing First Lien Bank Loans	45%	45%
Non-Performing First Lien Unitranche Bank Loans	45%	45%
Non-Performing First Lien Last Out Bank Loans	40%	35%
Non-Performing Second Lien Bank Loans	40%	30%
Non-Performing High Yield Securities	30%	30%
Non-Performing Mezzanine Investments	30%	25%
Performing Common Equity*	30%	20%
Non-Performing Preferred Equity	0%	0%
Non-Performing Common Equity	0%	0%

IA.3.2 Model extension: heterogeneous discounting

This extension replaces the baseline "no discounting" assumption ($\beta = 1$) with agent-specific discount factors: a lender factor β_L and an outside-financier factor β_F with $0 < \beta_L < \beta_F \leq 1$. The lender therefore attaches a larger shadow cost to postponed cash flows. A current-pay loan delivers a coupon immediately, whereas a permanent PIK note capitalizes it into the next-period claim, so the outside financier values a note more favorably relative to the lender than it values a current-pay loan. An activated toggle also postpones cash, but activation reveals the low state and may carry the forbearance over-mark. The extension supplies a positive note-share channel while preserving every baseline prediction.

IA.3.2.1 Environment

The timing and cash flows follow the baseline two-state model. At the $t = 1$ valuation date, a healthy current-pay loan delivers coupon c immediately and principal plus coupon $1 + c$ at $t = 2$. A permanent PIK note delivers no current coupon and pays the capitalized claim $(1 + c)^2$ at $t = 2$. In the low state, continuation produces terminal recovery $W \sim G$, recognition produces R, and the lender receives private non-recognition benefit B at $t = 1$.

The extension introduces heterogeneous effective discount factors:

$$0 < \beta_L < \beta_F \leq 1. \tag{A.3}$$

The lender's factor β_L includes its shadow cost of illiquidity: PIK income is accrued but not received in cash, while the BDC must finance operations, service liabilities, and make distributions. The outside financier is more patient at this margin and discounts promised loan cash flows with β_F. The assumption does not require different beliefs about W; the agents can agree about expected cash flows and disagree only about their timing value.

IA.3.2.2 The lender's continuation decision

The BDC chooses treatment, so its discount factor determines the continuation cutoff. In state L, PIK gives the lender $\beta_L W + B$ and recognition gives $\beta_L R$.

Proposition 5 (Lender impatience and forbearance)**.** *The lender continues with PIK iff*

$$\beta_L W + B \geq \beta_L R \quad \Longleftrightarrow \quad W \geq \widehat{w}_L \equiv R - \frac{B}{\beta_L}. \tag{A.4}$$

The outside financier, who does not receive B, would continue iff $\beta_F W \geq \beta_F R$, or $W \geq R$. Therefore the forbearance band is

$$\mathcal{F}_L = \left(R - \frac{B}{\beta_L}, R \right). \tag{A.5}$$

For fixed B, $\beta_L < \beta_F$ makes the lender's band wider than the band obtained by applying the financier's discount factor to the lender's decision problem.

IA.3.2.3 Complete loan valuation

Values at the decision date Let $\widehat{V}' > R$ denote the terminal-equivalent performing mark assigned to a forborne loan. The lender reports its $t = 1$ present value as $\widehat{V}_L = \beta_L \widehat{V}'$. The following table gives the state-contingent valuation kernels:

Loan state and action	Lender/reporting	Financier's true-value
Healthy, current pay	$c + \beta_L(1+c)$	$c + \beta_F(1+c)$
Healthy, PIK note	$\beta_L(1+c)^2$	$\beta_F(1+c)^2$
Low, efficient continuation: $W \geq R$	$\beta_L W$	$\beta_F W$
Low, recognition: $W \leq \widehat{w}_L$	$\beta_L R$	$\beta_F R$
Low, forbearance: $\widehat{w}_L < W < R$	$\beta_L \widehat{V}'$	$\beta_F W$

Note that the outside financier does not observe the realization of W for an individual loan. Thus the right-hand column is the kernel that the financier integrates against its

posterior distribution after observing contract type and PIK status. For a truthful future payoff x, the two kernels have relative value

$$\frac{\beta_F x}{\beta_L x} = r \equiv \frac{\beta_F}{\beta_L} > 1. \tag{A.6}$$

For a latent realization in the forbearance band, the corresponding state-contingent ratio is

$$q_F(W) = \frac{\beta_F W}{\beta_L \widehat{V}'} = r \frac{W}{\widehat{V}'}. \tag{A.7}$$

The financier does not observe this ratio; it enters only inside the expectation. The actual valuation of a performing-PIK loan is obtained by integrating over G conditional on the observed PIK action, as derived in the predictions below.

Origination prices At $t = 0$, $t = 1$ cash flows receive factor β_i and $t = 2$ cash flows receive β_i^2 for agent $i \in \{L, F\}$. Let

$$V_L^{\text{PIK}} = \int_{\widehat{w}_L}^{(1+c)^2} W \, dG(W) + R\, G(\widehat{w}_L) \tag{A.8}$$

be the actual expected terminal recovery in L under the lender's continuation policy. The subscript records that the action cutoff is chosen using β_L; both agents agree on the resulting cash-flow distribution.

The value assigned by agent i to cash, toggle, and note contracts at origination is

$$P_i^C = \pi_{\mathsf{H}}\Big[\beta_i c + \beta_i^2(1+c)\Big] + \pi_{\mathsf{L}}\beta_i^2 R, \tag{A.9}$$

$$P_i^T = \pi_{\mathsf{H}}\Big[\beta_i c + \beta_i^2(1+c)\Big] + \pi_{\mathsf{L}}\beta_i^2 V_L^{\text{PIK}}, \tag{A.10}$$

$$P_i^N = \beta_i^2\left[\pi_{\mathsf{H}}(1+c)^2 + \pi_{\mathsf{L}} V_L^{\text{PIK}}\right]. \tag{A.11}$$

These expressions separate the two economic margins:

$$P_i^N - P_i^T = \pi_{\mathsf{H}}\beta_i c\Big[\beta_i(1+c) - 1\Big], \tag{A.12}$$

$$P_i^T - P_i^C = \pi_{\mathsf{L}}\beta_i^2\left(V_L^{\text{PIK}} - R\right). \tag{A.13}$$

Equation (A.12) reflects only cash-flow timing: note and toggle have the same low-state payoff, but only the note capitalizes a healthy borrower's coupon. Equation (A.13) is the net value of the low-state continuation option. It combines efficient gains on $W > R$ with losses from lender-induced continuation on $\widehat{w}_L < W < R$.

The outside financier values note timing more favorably when

$$\left(P_F^N - P_F^T\right) - \left(P_L^N - P_L^T\right) = \pi_{\mathsf{H}} c\left[\beta_F\{\beta_F(1+c)-1\} - \beta_L\{\beta_L(1+c)-1\}\right] > 0. \quad \text{(A.14)}$$

This expression is positive whenever both discount factors exceed $1/[2(1+c)]$; the sharper opposite-ranking condition is given below.

Reported book and market value Let μ_j be true terminal-equivalent value and Δ_j the hidden-loss wedge for portfolio bucket j. At $t = 1$,

$$\text{BVA}_j = \beta_L(\mu_j + \Delta_j), \qquad \text{MVA}_j = \beta_F \mu_j. \quad \text{(A.15)}$$

Therefore

$$\frac{\text{MVA}_j}{\text{BVA}_j} = r(1 - d_j), \qquad d_j \equiv \frac{\Delta_j}{\mu_j + \Delta_j}. \quad \text{(A.16)}$$

Unlike the common-β model, discounting no longer cancels mechanically from MVA/BVA. The ratio contains a positive patience component r and a negative hidden-loss component d_j. The portfolio-valuation predictions below use this decomposition.

IA.3.2.4 Notes versus current-pay loans

At $t = 1$, agent $i \in \{L, F\}$ assigns the following values to a healthy current-pay loan and a healthy PIK note:

$$V_i^C = c + \beta_i(1+c), \quad \text{(A.17)}$$

$$V_i^N = \beta_i(1+c)^2. \quad \text{(A.18)}$$

The note-minus-cash valuation is

$$V_i^N - V_i^C = c\Big[\beta_i(1+c) - 1\Big]. \quad \text{(A.19)}$$

Corollary 1 (Opposite rankings of a PIK note)**.** *If*

$$\beta_L < \frac{1}{1+c} < \beta_F, \quad \text{(A.20)}$$

then

$$V_L^N < V_L^C, \qquad V_F^N > V_F^C. \quad \text{(A.21)}$$

The lender dislikes capitalizing the coupon because the delayed payment is too heavily discounted,

while the more patient outside financier prefers the larger capitalized claim.

Condition (A.20) gives the case in which the two agents rank the note and the current-pay loan in opposite order, but a relative valuation wedge does not require opposite rankings. Define the financier-to-lender valuation ratio for bucket j as

$$q_j \equiv \frac{V_F^j}{V_L^j},$$

and let $r \equiv \beta_F/\beta_L > 1$. From equations (A.17)–(A.18),

$$q_N = r, \tag{A.22}$$

$$q_C = \frac{c + \beta_F(1+c)}{c + \beta_L(1+c)} = \alpha + (1-\alpha)r, \qquad \alpha \equiv \frac{c}{c + \beta_L(1+c)} \in (0,1). \tag{A.23}$$

Proposition 6 (The note duration premium)**.** *Whenever $\beta_F > \beta_L$,*

$$1 < q_C < q_N = r, \tag{A.24}$$

and the note's relative valuation premium is

$$q_N - q_C = \alpha(r-1) > 0. \tag{A.25}$$

The premium is increasing in the disagreement $r-1$ and in α, the share of the lender's current-pay value delivered by the immediate coupon.

Proof. Equation (A.23) writes q_C as a strict convex combination of 1, the relative valuation of an immediate dollar, and r, the relative valuation of a next-period dollar. A note moves the immediate coupon into the next-period payoff, so its entire value receives the larger relative weight r. □

IA.3.2.5 Implications for the model predictions

P1: over-marking and private benefits Over-marking is unchanged in character under discounting: a forborne loan (recovery $\widehat{w}_L < W < R$) is carried at the performing present value $\beta_L \widehat{V}' > \beta_L W$, above its true discounted recovery, whereas a lender with $B = 0$ applies the efficient cutoff and never over-marks. The over-marked share of the PIK pool, $[G(R) - G(\widehat{w}_L)]/[1 - G(\widehat{w}_L)]$, is increasing in B—and in impatience, since $\widehat{w}_L = R - B/\beta_L$ falls as β_L falls—so over-marking is more prevalent among BDCs with larger private benefits. Discounting rescales the mark by β_L but leaves the sign and the comparative static in B

unchanged.

P2: performing PIK and private benefits Prediction 2 follows analogously to the baseline model. In state L the lender defers (PIKs) rather than recognizes iff the discounted deferral payoff beats recognition, $\beta_L W + B > \beta_L R$, i.e. $W > \widehat{w}_L \equiv R - B/\beta_L$. Hence

$$\Pr(\mathrm{P} \mid \mathsf{L}) = 1 - G\Big(R - \tfrac{B}{\beta_L}\Big), \qquad \frac{\partial \Pr(\mathrm{P} \mid \mathsf{L})}{\partial B} = \frac{1}{\beta_L}\, g\Big(R - \tfrac{B}{\beta_L}\Big) > 0.$$

The private-benefit comparative static keeps its sign: a larger B lowers the cutoff and moves distressed loans from non-accrual into performing PIK. Only the cutoff is future-valued, $B \mapsto B/\beta_L$, and the financier's patience β_F never enters, since the prediction concerns the lender's recognition margin alone. Impatience amplifies the effect—a less patient lender (smaller β_L) applies a lower cutoff and a larger sensitivity $1/\beta_L$. The baseline $1 - G(R - B)$ is the $\beta_L = 1$ case.

P3: mark dynamics net of discount accretion Prediction 3 is similar to the baseline case, except that the lender now demands a premium for holding the loan, which adds a discount-accretion term to the benchmark. A truthfully marked terminal payoff W rises mechanically from $\beta_L W$ at $t = 1$ to W at $t = 2$. Its benchmark change is

$$W - \beta_L W = (1 - \beta_L) W > 0. \tag{A.26}$$

A forborne loan instead moves from $\beta_L \widehat{V}'$ to W. Its raw change is $W - \beta_L \widehat{V}'$, which need not be negative when discount accretion is large. Relative to the truthful accretion benchmark, however, the excess change is

$$\Big[W - \beta_L \widehat{V}'\Big] - \Big[W - \beta_L W\Big] = -\beta_L (\widehat{V}' - W) < 0. \tag{A.27}$$

The testable prediction is therefore an abnormal Fair/Par decline relative to comparable loans with the same remaining maturity and discount-rate exposure.

P4: notes, toggle activations, and terminal outcomes Discount-factor disagreement does not overturn the information-event result. Conditional on PIK, an activated toggle reveals L, while a note pools healthy and low-state borrowers. Let

$$\bar{W}_{\mathsf{L}} \equiv \mathbb{E}[W \mid \mathsf{L},\ W > \widehat{w}_L]$$

be expected recovery among continued low-state loans. Then

$$\mathbb{E}[\text{recovery} \mid \text{PIK}, T] = \bar{W}_{\mathsf{L}}, \tag{A.28}$$

$$\mathbb{E}[\text{recovery} \mid \text{PIK}, N] = \frac{\pi_{\mathsf{H}}(1+c)^2 + \pi_{\mathsf{L}}[1 - G(\widehat{w}_L)]\bar{W}_{\mathsf{L}}}{\pi_{\mathsf{H}} + \pi_{\mathsf{L}}[1 - G(\widehat{w}_L)]}. \tag{A.29}$$

The note recovery exceeds the toggle recovery whenever $(1+c)^2 > \bar{W}_{\mathsf{L}}$. Multiplication by either agent's discount factor preserves this ordering because both payoffs arrive at the same terminal date. Heterogeneous discounting adds a separate valuation implication: the outside financier values the note's postponed healthy-state payoff more favorably relative to the lender.

P5: deferral versus conversion Prediction 5 follows analogously to the baseline model. To see this, relabel action P as the deferral bundle (PIK plus the accompanying maturity extension) and action N as conversion (a debt-to-equity swap that recognizes the loss at R). The $t = 1$ comparison in state L is $\beta_L W + B$ (defer) against $\beta_L R$ (convert), so the choice is governed by the extension's own cutoff $\widehat{w}_L = R - B/\beta_L$ and β_F does not enter. The impaired-exit result then holds exactly as before: with $B = 0$ ($\widehat{w}_L = R$) every distressed loan with $W < R$ is converted and deferral appears only on efficiently continued loans ($W > R$); with $B > 0$ the band $(\widehat{w}_L, R)$ is deferred, never converted, and resolves at $W < R$ with mass $\pi_{\mathsf{L}}\Big[G(R) - G(R - B/\beta_L)\Big] > 0$; and deferred band loans remain outstanding to $t = 2$ while converted loans are recognized earlier, so eventually-impaired credits outlive the recognizing benchmark. Impatience only widens the deferral band ($R - B/\beta_L$ falls as β_L falls), assigning still more impaired loans to deferral. The baseline is the $\beta_L = 1$ case.

P6: borrowing-base transmission The borrowing-base schedule of Proposition 4 depends only on the contract terms (a_N, a_P), not on B or on the discount factors, so it carries over unchanged: shifting a unit of the eligible portfolio from cash-pay to performing-PIK collateral changes the bank-funded share of debt by $ds_b/dP = -[a_N - a_P(P)]/D \leq 0$. Discounting affects Prediction 6 only through the size of the performing-PIK pool. The lender continues distressed loans with $W > \widehat{w}_L = R - B/\beta_L$, so the pool exceeds its no-forbearance level by $\pi_{\mathsf{L}}[G(R) - G(R - B/\beta_L)]$, which grows as β_L falls. An impatient lender therefore sits further along the same schedule and funds a smaller share of its debt from banks. As in the baseline, the slope is the same with and without forbearance, so the prediction identifies funding transmission, not forbearance.

P7: market-to-book ratio and PIK usage The heterogeneous-discounting extension reproduces Table 9's negative toggle and positive note coefficients. It also explains why total PIK exposure can have a coefficient near zero. To see how, note that the discount-factor disagreement makes notes relatively attractive to the financier, but it does not by itself make activated toggles unattractive. Both notes and toggles postpone cash. The negative toggle coefficient additionally requires toggle activation to reveal L and expose the portfolio to inefficient continuation and over-marking.

For PIK bucket $j \in \{N, T\}$, let $\mu_j > 0$ be its expected true terminal payoff and let $\Delta_j \geq 0$ be its terminal-equivalent hidden-loss wedge. Thus the lender's reported present value and the financier's market value are

$$\text{BVA}_j = \beta_L(\mu_j + \Delta_j), \qquad \text{MVA}_j = \beta_F \mu_j. \tag{A.30}$$

The corresponding market-to-reported-value ratio is

$$q_j = r\frac{\mu_j}{\mu_j + \Delta_j} = r(1 - d_j), \qquad d_j \equiv \frac{\Delta_j}{\mu_j + \Delta_j} \in [0, 1). \tag{A.31}$$

The hidden-loss share d_j includes both the economic loss from inefficient continuation and the amount by which the performing mark exceeds true discounted recovery.

An activated toggle is known to be in L. Its hidden wedge is generated by the forbearance band:

$$\Delta_T = \mathbb{E}\left[(\widehat{V}' - W)\mathbf{1}\left\{R - \frac{B}{\beta_L} < W < R\right\} \middle| T \text{ activated}\right], \tag{A.32}$$

where $\widehat{V}'$ is the terminal-equivalent performing mark. A note PIKs in both H and L, so its corresponding wedge is diluted by honestly valued healthy loans. Under common conditional low-state recovery and marking,

$$0 \leq d_N < d_T \tag{A.33}$$

whenever the note pool contains positive healthy mass.

Proposition 7 (Joint sign condition for Table 9)**.** *Let the omitted non-PIK bucket be the healthy current-pay portfolio with relative valuation q_C from equation (A.23). Define the duration threshold*

$$\tau \equiv 1 - \frac{q_C}{r} = \alpha\left(1 - \frac{1}{r}\right) > 0. \tag{A.34}$$

Then

$$q_N > q_C \iff d_N < \tau, \tag{A.35}$$

$$q_T < q_C \iff d_T > \tau. \tag{A.36}$$

Consequently, if

$$d_N < \tau < d_T, \tag{A.37}$$

the model produces

$$q_T < q_C < q_N. \tag{A.38}$$

Proof. For either PIK bucket, equation (A.31) gives $q_j = r(1-d_j)$. Comparing this expression with q_C and rearranging yields $q_j > q_C$ iff $d_j < 1 - q_C/r = \tau$. Reversing the inequality gives the toggle condition. □

The threshold τ comes from discounting and the shares d_N and d_T come from forbearance. Any deferred-payment claim with a small enough hidden-loss share earns the duration benefit. Healthy-state dilution keeps d_N below τ, while low-state revelation and over-marking push d_T above it.

At full deployment, let $s_C + s_T + s_N = 1$ denote current-pay, activated-toggle, and PIK-note portfolio shares. A linear portfolio valuation is

$$\text{MVA/BVA} = s_C q_C + s_T q_T + s_N q_N. \tag{A.39}$$

Substituting $s_C = 1 - s_T - s_N$ gives

$$\text{MVA/BVA} = q_C + (q_T - q_C)s_T + (q_N - q_C)s_N. \tag{A.40}$$

Under condition (A.37), the population coefficients satisfy

$$\beta_T = q_T - q_C < 0, \qquad \beta_N = q_N - q_C > 0, \qquad \beta_T - \beta_N < 0. \tag{A.41}$$

This reproduces Table 9's negative toggle and positive note coefficients and explains why total PIK exposure can have a coefficient near zero: aggregating notes and toggles combines a positive duration component with a negative revealed-distress component.

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