

Valuation, Liquidity, and Fund Structure in Private Credit*

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Private credit funds often report different values for the same loan. We study whether valuation incentives explain these disagreements. Higher reported values can attract capital and raise asset-based fees, but also increase payments when funds repurchase shares at net asset value (NAV). Among 4,655 loans held by multiple business development company (BDC) sponsors, sponsors with more assets in listed funds mark the same loan higher. The difference is larger for loans without dealer quotes and for sponsors with more payment-in-kind income. Within sponsors, nonpublic BDCs hold more liquid assets. Paying investors at NAV appears to constrain reported valuations.

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ABSTRACT

Private credit funds often report different values for the same loan. We study whether valuation incentives explain these disagreements. Higher reported values can attract capital and raise asset-based fees, but also increase payments when funds repurchase shares at net asset value (NAV). Among 4,655 loans held by multiple business development company (BDC) sponsors, sponsors with more assets in listed funds mark the same loan higher. The difference is larger for loans without dealer quotes and for sponsors with more payment-in-kind income. Within sponsors, nonpublic BDCs hold more liquid assets. Paying investors at NAV appears to constrain reported valuations.

JEL Codes: G23, G12, G28.

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1 Introduction

Loans held by private credit funds rarely trade, so their reported values are appraisals made by each fund's manager. As a result, different funds often report different values for the same loan. Some disagreement is inevitable when assets are difficult to value. We conjecture that differences in managers' valuation incentives also contribute to these disagreements.

Managers generally have incentives to report high values, since higher reported values can attract more capital (Kaplan and Schoar, 2005; Barber and Yasuda, 2017) and raise asset-based fees. But higher values can also be costly. Some funds allow investors to exit at reported net asset value (NAV), requiring the fund to pay departing investors based on the value it reports. A higher reported value therefore increases the amount paid to investors who leave, creating an offsetting incentive against reporting high values.

Our setting is business development companies (BDCs), the main vehicle through which individual investors hold private credit, with \$576 billion in assets in 2026:Q2. Investors in *listed* BDCs obtain liquidity by selling their shares on an exchange, without any payment from the fund. Investors in *nonpublic* BDCs instead rely on the fund itself, typically through periodic repurchases at NAV.¹ This difference in how investors exit allows us to test whether payments at NAV affect reported valuations.

We test this using a sample of 4,655 loans held by BDCs of more than one asset manager between 2018 and 2026, and 65,590 valuations of these loans by different managers on the same reporting date. Loan-by-date fixed effects absorb anything common to the loan on that date, including market conditions, so what remains is disagreement among managers valuing the same claim at the same time.

Figure 1 illustrates the comparison. Two BDCs managed by SLR report identical values for a loan to Pet Holdings, a pet retailer, in every quarter in which both hold it. Meanwhile, Guggenheim Credit Income Fund, run by a different manager, reports lower values. The difference peaked at 14.5 cents per dollar of par in 2020Q1, at the onset of the COVID-19 pandemic.

The example also illustrates a broader pattern in the data. Valuations are set by the asset manager, which we call the sponsor, rather than by the individual BDC. Across the sample, two BDCs of the same sponsor mark the same loan on the same date only 0.026 cents per dollar of par apart on average, compared with 0.987 cents for BDCs of different sponsors. We therefore treat each sponsor's mark as one valuation decision and measure the sponsor's exposure to repurchases at NAV by its *listed share*,

¹The nonpublic category includes evergreen as well as finite-life BDCs. Finite-life BDCs have also provided liquidity through interim share repurchases or terminal cash transactions priced at NAV. For interim liquidity, Guggenheim Credit Income Fund 2019, a finite-life BDC, repurchased shares at reported NAV in March 2019 (Guggenheim Credit Income Fund 2019, 2019a,b). For terminal liquidity, New Mountain Guardian III BDC offered investors cash at closing NAV or a rollover into New Mountain Private Credit Fund in connection with its December 2024 merger (New Mountain Guardian III BDC, L.L.C., 2024; New Mountain Private Credit Fund, 2024). Goldman Sachs Middle Market Lending Corp. II likewise completed an all-cash merger in October 2025 at a price equal to its pre-closing NAV (Goldman Sachs Middle Market Lending Corp. II, 2025). Both merger targets were finite-life nonpublic BDCs. The timing, capacity, and conditionality of liquidity differ across funds.

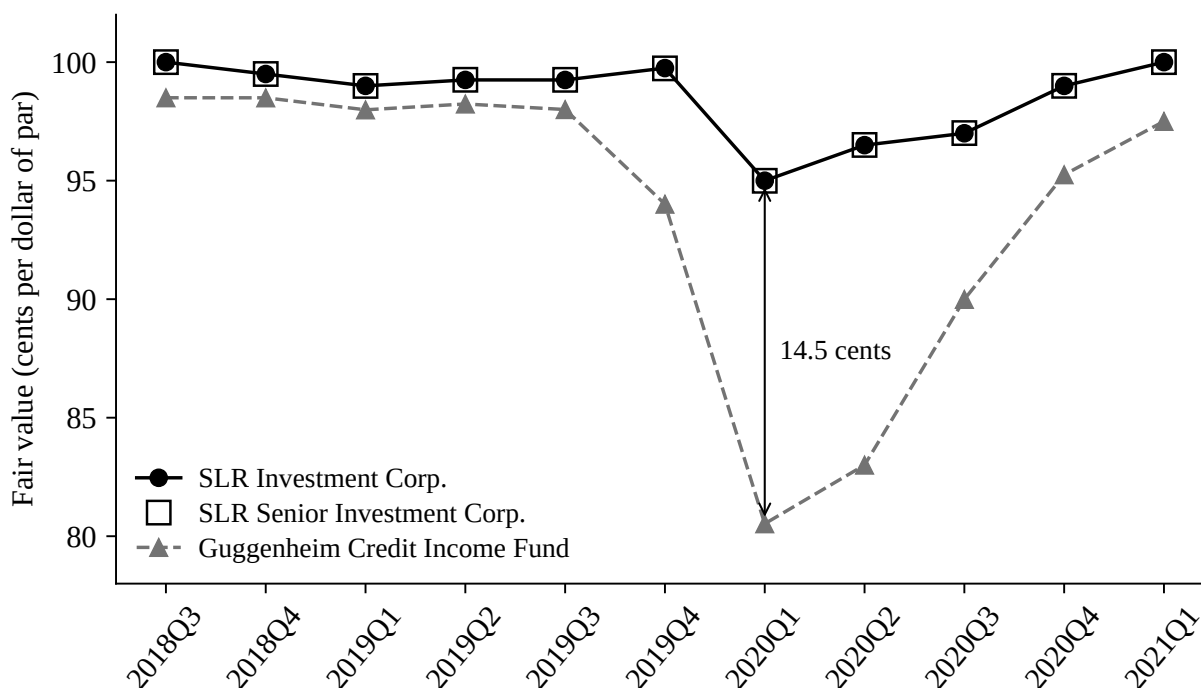


Figure 1: **The same loan, different sponsors.** The figure plots marks for the same loan held by SLR Investment Corp. and SLR Senior Investment Corp., two listed BDCs managed by the same sponsor, and Guggenheim Credit Income Fund, a nonpublic BDC managed by a different sponsor. Values are expressed in cents per dollar of par. The investment is a first-lien senior secured loan to Pet Holdings ULC (Pet Supermarket, Inc.), with a stated maturity of July 5, 2022, bearing interest at LIBOR plus 550 basis points, subject to a 1% LIBOR floor.

defined as the fraction of its BDC assets held in listed funds. Many sponsors manage both listed and nonpublic BDCs, so the listed share often falls between zero and one.

We have three main findings. First, sponsors with a higher listed share, and therefore less exposure to repurchases at NAV, mark the same loan higher. A sponsor whose BDC assets are all in listed funds marks a loan about 0.45 cents per dollar of par above one whose assets are all in nonpublic funds, or about 40 percent of the average disagreement among sponsors valuing the same loan. The estimate is similar, at 0.44 cents, when we add sponsor fixed effects, but it is then less precise.

Second, the gap is larger where valuations leave more room for managerial judgment. One indication is whether the loan has a dealer quote. Quoted loans are mostly broadly syndicated loans, whose dealer prices provide an outside check on a mark. The listed-share gap is essentially zero for quoted loans and about 0.7 cents for unquoted loans, a difference that is statistically significant without sponsor fixed effects and weaker with them. We also examine the sponsor's reliance on payment-in-kind (PIK) income. Under PIK, interest is added to the lender's claim rather than paid currently in cash. PIK can reflect financial weakness or a decision to preserve cash for growth, so the manager must judge what it

implies for eventual repayment. The listed-share gap widens with the share of a sponsor's investment income received in kind, by 1.3 cents per dollar of par for a ten-percentage-point increase in PIK share, or 0.8 cents with sponsor fixed effects. This sponsor-level relationship is strongest for loans that are themselves currently paying interest in kind and is concentrated among those without dealer quotes.

Third, nonpublic BDCs hold more liquid assets. Sponsors that manage both listed and nonpublic BDCs use essentially the same marks when the vehicles hold the same loan, but their portfolios can differ. Comparing BDCs of the same sponsor in the same quarter and controlling for balance-sheet characteristics, nonpublic BDCs hold 4.22 percentage points more of their assets in cash and quoted loans than their listed affiliates. The difference comes from quoted loans, at 4.35 percentage points, with no significant difference in cash. The difference is largest for evergreen funds, which offer standing quarterly repurchases, at 7.2 percentage points, compared with 2.1 percentage points for finite-life funds.

A simple model ties these results together. A fund manager chooses reported values and liquid holdings. Higher reported values attract new capital, but when investors can exit at NAV they also raise the fund's payments to departing investors and can make exit more attractive when reported values are high relative to expected loan payoffs. Paying out at NAV therefore imposes a cost on higher marks that a listed fund does not bear. Liquid assets make these payments easier to meet without selling illiquid loans at a discount, but they sacrifice the higher return on loans. The model predicts lower relative marks and more liquid holdings when funds provide investor liquidity at NAV, with larger valuation gaps where managers have more room for judgment.

The paper relates most directly to work on discretion in valuing illiquid assets. Prior studies document return smoothing and strategic marking in hedge funds, mutual funds, venture capital, and private equity (Getmansky et al., 2004; Agarwal et al., 2011; Cassar and Gerakos, 2011; Cici et al., 2011; Barber and Yasuda, 2017; Chakraborty and Ewens, 2018; Brown et al., 2019). Cici et al. (2011) also compare the values that different funds assign to the same security. We use similar within-security comparisons and ask whether the terms on which investors obtain liquidity limit the values managers report.

The paper also relates to work on fund liquidity and fragility (Diamond and Dybvig, 1983; Goldstein and Pauzner, 2005; Chen et al., 2010; Morris et al., 2017; Choi et al., 2022; Jin et al., 2022; Ma et al., 2022). That literature mostly takes reported NAV as given and studies how withdrawals affect investors and portfolios. We ask how the prospect of paying departing investors at NAV shapes the NAV itself.

Finally, recent work examines valuation and liquidity in private credit. Rintamaki and Steffen (2026) show that PIK is used largely as forbearance and predicts subsequent credit deterioration and greater disagreement among BDCs valuing the same loan, Pegoraro et al. (2026) study liquidity transformation in interval funds, and Fang et al. (2026) study fragility in semi-liquid private credit funds. Closest to our paper, Daniel et al. (2026) find larger loan markdowns during aggregate stress among BDCs with standing tender programs. We compare the same loan on the same date across sponsors in all periods,

first establishing that affiliated BDCs share a valuation policy, and relate the resulting differences to exposure to repurchases at NAV, PIK, and dealer quotes. We also compare liquidity holdings across listed and nonpublic BDCs of the same sponsor.

2 Model

A fund that repurchases shares at NAV must pay departing investors based on the values it reports. Higher reported values can attract new investors, but they also increase repurchase payments. The fund can meet these payments with liquid assets and new subscriptions. If those resources are insufficient, it must sell illiquid loans at a discount. The manager therefore chooses reported values and liquid holdings with the cost of investor exits in mind.

Managers also differ in how much room they have when valuing loans. We capture this with an appraisal range that expands with PIK exposure. A dealer quote limits this range by providing an outside reference for value. The sequence of decisions is shown in Figure 2. The model asks how repurchases at NAV affect reported values and liquid holdings, and whether the effect on reported values is larger when the appraisal range is wider.

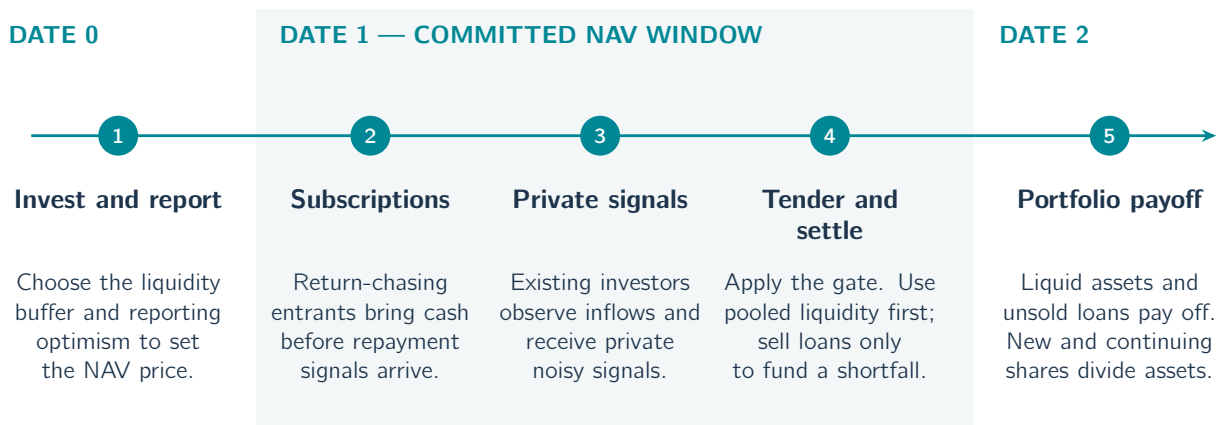


Figure 2: Timing of investment, reporting, and NAV-based transactions.

2.1 Date 0: investment and reporting

An unlevered fund has one dollar of original invested capital and one unit of original shares held by a continuum of existing investors. The manager values assets managed for existing and new investors equally.

At date 0, the manager holds $q \in [0, 1]$ in liquid assets and invests $1 - q$ in a representative illiquid loan portfolio. At date 2, liquid assets pay a gross return of one, whereas each dollar of illiquid loans

pays

$$\tilde{R} \sim U[\underline{R}, \bar{R}], \quad \mathbb{E}[\tilde{R}] = (\underline{R} + \bar{R})/2 > 1, \quad \underline{R} < 1.$$

Thus, initial liquidity sacrifices expected investment returns. The manager and existing investors know this distribution but have no private information about $\tilde{R}$ at date 0.

The manager also chooses a reporting parameter $b \in [0, 1]$, which we refer to as reporting optimism. The reported value per dollar of loan principal is

$$m = \mathbb{E}[\tilde{R}] + bd, \quad (1)$$

where $b = 0$ leaves the appraisal at the expected payoff and $b = 1$ uses the entire permitted upward increment d . The choices of q and b determine the reported NAV per original share

$$M = q + (1 - q)m. \quad (2)$$

This NAV fixes the price of date-1 subscriptions and repurchases. Since original capital and original shares both equal one, $M - 1$ is the reported gain relative to original capital.

PIK exposure enters by expanding the range of permissible appraisals. Let $p \in [0, \bar{p}]$, with $0 < \bar{p} \leq 1$, be the PIK share of loan principal, and assume

$$d = d(p), \quad d(0) > 0, \quad d'(p) > 0. \quad (3)$$

The positive intercept allows some appraisal latitude even without PIK. Equation (3) captures the greater appraisal range associated with PIK interest. Because PIK interest is capitalized into principal rather than paid in cash, the lender's promised claim grows without the cash payment that would test the borrower's ability to pay. PIK is also ambiguous news about the borrower. A borrower pays in kind when its opportunity cost of paying cash interest is high, which can reflect bad news about assets in place or good news about a growth opportunity. The manager must judge which applies.² The larger a sponsor's PIK exposure, the larger the part of its portfolios whose appraised value rests on such judgments rather than on cash received. We therefore assume that the range of appraisals available to a sponsor increases with its PIK exposure.

The distinction between quoted and unquoted loans provides a complementary dimension of appraisal latitude, because dealer quotes supply an external valuation reference that can limit the permitted upward

²There are two types of PIK provisions in loans. In a "toggle" PIK, the borrower chooses each period between either paying interest in cash at the lower cash rate or deferring it, and deferred interest accrues at a higher predefined rate. In a "fixed-split" PIK, the division of the coupon between cash interest and deferred interest is fixed at origination, and the total rate is higher than the rate on a comparable all-cash loan. A borrower too weak to pay an all-cash coupon reveals its weakness by missing a payment. Both PIK types lower the cash interest required to stay current, so a weak borrower does not miss a payment and its weakness stays hidden. The uncertainty about why the borrower pays in kind, which arises at each toggle election and at the origination of a fixed-split loan, is therefore not resolved by the borrower's payment record.

increment d , even at a given PIK exposure. A dealer quote therefore leaves less scope for repurchases at NAV to affect the reported value, motivating a smaller listed–nonpublic valuation gap on quoted than on unquoted loans.

2.2 Date 1: subscriptions, information, and repurchases

Before signals about $\tilde{R}$ arrive, return-chasing investors subscribe at the reported NAV. They contribute $a(M-1)$ dollars, where $a > 0$ measures the flow-performance sensitivity of new capital. In equation (6) later in the section, we restrict this sensitivity so that fundraising incentives do not overwhelm the reporting discipline imposed by NAV payments. Since each share costs M , subscribers receive

$$\text{new shares} = \frac{a(M-1)}{M}.$$

Cash from new subscriptions is pooled with the initial liquidity buffer. New shares cannot be tendered in the current window. Subscriptions are irrevocable and do not affect reported NAV per share:

$$\frac{M + a(M-1)}{1 + a(M-1)/M} = M.$$

Existing investor i observes $\tilde{R} + \tilde{u}_i$, where $\tilde{u}_i \stackrel{\text{iid}}{\sim} U[-\varepsilon, \varepsilon]$ is independent of $\tilde{R}$ and $\varepsilon > 0$. Existing investors are risk neutral. They know the portfolio, NAV report, subscription inflows, and contractual terms, but do not observe other investors' signals or repurchase requests. Existing investors understand how reported values are set, whereas new entrants respond to reported performance without adjusting for the reporting choice. This behavioral entry rule gives the manager an incentive to report optimistically, although the same incentive could arise from compensation tied to reported NAV.

Existing investors simultaneously request repurchase or stay, requesting when indifferent. This convention also applies at the all-liquid portfolio $q = 1$. If a mass $x \in [0, 1]$ of original shares requests repurchase, the number repurchased is

$$y(x) = \min\{x, g\}, \quad 0 < g < 1, \quad g(\mathbb{E}[\tilde{R}] + d) < 1 - h. \quad (4)$$

Requests are fully honored when $x \leq g$; otherwise, each requester has the fraction $y(x)/x = g/x$ repurchased and retains the rest. Total repurchase payments are $My(x)$.

Payments first use initial liquidity and subscriptions. Any shortfall requires costly sales of illiquid loans, which raise $1 - h$ per dollar of original principal, where $0 < h < 1$ and $1 - h < \underline{R}$. Selling therefore sacrifices terminal proceeds in every state, making it optimal to use liquid assets first. The last restriction in (4), maintained at every permitted PIK exposure, makes even the maximum payment feasible without subscription inflows. Repurchase proceeds earn a gross return of one outside the fund;

unfilled shares remain invested.

Maintained restriction on fundamentals and information. We assume

$$\frac{(\mathbb{E}[\tilde{R}] + d)(1 - g)(1 - h)}{1 - h - g(\mathbb{E}[\tilde{R}] + d)} < \bar{R} - 2\varepsilon. \quad (5)$$

Whenever the fund holds illiquid loans, this sufficient restriction ensures that sufficiently favorable signals make staying preferable even at the largest permitted appraisal, with no initial liquidity sleeve or subscription cash and with repurchases exhausting the gate. Under the uniform return distribution, it also ensures a region of sufficiently unfavorable signals in which requesting repurchase is preferable. The 2ε noise margin keeps the indifferent investor's posterior away from the boundaries of the return distribution.

Maintained restriction on subscriptions. The new subscription sensitivity a satisfies

$$0 < a < \frac{g(1 - h)[(2 - g)(\mathbb{E}[\tilde{R}] + d) - \underline{R}]}{\bar{R}[\bar{R} - \underline{R} + g(\mathbb{E}[\tilde{R}] + d)]}. \quad (6)$$

This sufficient restriction limits the strength of return chasing relative to the costs of paying investors at the reported NAV. Subscriptions help finance repurchases and reduce the buffer needed to avoid loan sales, but their fundraising benefit is not strong enough to make the maximum appraisal optimal.

Additional condition on the liquidation discount. We impose the following restriction on the liquidation discount at every permitted report $m \in [\mathbb{E}[\tilde{R}], \mathbb{E}[\tilde{R}] + d]$:

$$h \geq 1 - \frac{(m^2 - \underline{R}^2)[1 + (g - a)(m - 1)]}{(m^2 - \underline{R}^2) + (\bar{R} - m)[\bar{R} + m - 2 + 2a(m - 1)]}. \quad (7)$$

This condition makes increasing initial liquidity weakly beneficial while the gate is underfunded, even in a comparison that ignores additional withdrawals caused by anticipated loan sales. Once those withdrawals are taken into account, every underfunded portfolio is strictly dominated by the exactly funded portfolio at the same report. The manager consequently holds enough initial liquidity, together with subscriptions, to fund the gate. The condition is additional: the investor equilibrium and reporting restraint do not require it. We invoke it for uniqueness of the manager's choice. Appendix A.3.4 proves these results, and Appendix A.3.5 explains why an optimally underfunded portfolio and coordination-driven withdrawals can arise without the condition.

2.3 Date 2: portfolio payoff

Remaining liquid assets pay one and unsold loans pay the realization R of $\tilde{R}$. Total terminal assets are

$$A_2(R, y; q, M) = \underbrace{[q + a(M-1) - My]_+}_{\text{remaining liquid assets}} + R \underbrace{\left(1 - q - \frac{[My - q - a(M-1)]_+}{1-h}\right)}_{\text{payoff on unsold illiquid loans}}, \quad (8)$$

where $[z]_+ = \max\{z, 0\}$. Each continuing share receives

$$\frac{A_2(R, y; q, M)}{1 - y + \frac{a(M-1)}{M}}. \quad (9)$$

The denominator includes both unreurchased original shares and new shares. Subscription cash finances payments, but it is not a transfer accruing exclusively to existing investors, because entrants also acquire claims on terminal assets.

The manager chooses liquid holdings q and the reporting parameter b , which determines how far the loans are marked above their expected payoff, to maximize expected terminal assets (Chung et al., 2012).³ To isolate the effect of repurchases at NAV, first consider the same investment and reporting problem without payments to departing investors at NAV. Expected terminal assets are then $q + (1 - q)[\mathbb{E}[\tilde{R}] + a(m-1)]$, which fall in q and, for $q < 1$, rise in m . Without withdrawals at the reported NAV, there is no need for liquid assets with lower expected return and no cost of using the full appraisal range, so the manager chooses $q^* = 0$ and $b^* = 1$.⁴

Lemma 1 (The manager's problem without repurchases at NAV). *Consider an otherwise identical fund that does not offer date-1 repurchases, so that $y = 0$ in every state. Then the manager's unique optimal choices are*

$$q^* = 0, \quad b^* = 1.$$

The fund invests all original capital in illiquid loans and uses the maximum permitted appraisal.

Proof. See Appendix A.1.

2.4 The investors' problem

Fix $q < 1$ and b , and hence m , M , and subscriptions. An investor who chooses to stay receives (9). An investor who requests repurchase receives

³Compensation based on interim reported NAV would add a further incentive for optimistic reporting.

⁴The lemma holds all other primitives fixed and isolates the funding consequences of shareholder exits; it is the benchmark for listed BDCs in the empirical implications below. Our model abstracts from other constraints on reported values, including legal liability and reputational consequences. Thus, the $b^* = 1$ choice is not an unconditional prediction for listed BDCs. In principle, the statutory restriction on issuing shares below NAV could constrain listed BDCs when their market prices fall below reported NAV. In practice, however, many listed BDCs obtain shareholder authorization in advance to issue shares below NAV, and renew it annually even when no offering is planned.

$$\underbrace{\frac{y(x)}{x}M}_{\text{Repurchase proceeds}} + \underbrace{\left(1 - \frac{y(x)}{x}\right) \frac{A_2(R, y(x); q, M)}{1 - y(x) + \frac{a(M-1)}{M}}}_{\text{Payoff on remaining shares}}. \quad (10)$$

with $y(x)/x$ interpreted as one at $x = 0$. The departing investor receives M on the fraction $y(x)/x$ that is repurchased and the same continuation payoff as the staying investor on the fraction $1 - y(x)/x$ that remains invested.

The equilibrium is determined by the signal at which an investor is indifferent between staying (9) and requesting repurchase (10). Given its signal, an investor stays when the conditional expected gain from staying is positive, requests when it is negative, and is indifferent when

$$\mathbb{E} \left[\frac{y(x)}{x} \left\{ \frac{A_2(\tilde{R}, y(x); q, M)}{1 - y(x) + \frac{a(M-1)}{M}} - M \right\} \middle| \tilde{R} + \tilde{u}_i \right] = 0. \quad (11)$$

Both the fraction repurchased and the continuation payoff depend on other investors' repurchase requests, which the investor does not observe, so their product remains inside the expectation. In a symmetric threshold equilibrium, investors stay when their signals exceed a common cutoff and request repurchase otherwise. The marginal investor, whose signal equals the cutoff, must be indifferent, since otherwise investors with nearby signals would deviate. The condition (11) at the cutoff therefore pins down the threshold, which Proposition 1 characterizes in the vanishing-noise limit.

Proposition 1 (Unique symmetric threshold equilibrium). *Fix $q < 1$ and $b \in [0, 1]$. Under the maintained conditions, the positive-noise withdrawal game has a unique symmetric threshold equilibrium. Its vanishing-noise return threshold R^* is the unique solution to*

$$\int_0^1 \frac{y(x)}{x} \left[\frac{A_2(R^*, y(x); q, M)}{1 - y(x) + \frac{a(M-1)}{M}} - M \right] dx = 0. \quad (12)$$

In the limit, all original investors request repurchase when $R < R^$ and none request when $R > R^*$. If $q + a(M - 1) \geq gM$, then $R^* = m$; if $q + a(M - 1) < gM$, then $R^* > m$.*

Proof. See Appendix A.2.

The marginal investor is uncertain about its signal's rank relative to other investors' signals. In the vanishing-noise limit, this rank uncertainty produces the integral over requests in (12), following the global-games method of Goldstein and Pauzner (2005).

When initial liquid assets and new subscriptions cover the maximum permitted repurchase payment, $q + a(M - 1) \geq gM$, no loan sales are needed for any level of repurchase requests. In this case, the

economics is particularly clear:

$$\frac{A_2(R, y; q, M)}{1 - y + \frac{a(M-1)}{M}} - M = \frac{(1 - q)(R - m)}{1 - y + \frac{a(M-1)}{M}}. \quad (13)$$

New subscriptions add cash to the fund, but also create new shares entitled to its assets. Because these shares are issued at M , the cash received equals M times the number of new shares. Thus, when repurchases do not require illiquid loan sales, (13) shows that the payoff from staying exceeds the repurchase price precisely when $R > m$. In the vanishing-noise limit, investors therefore request repurchase when $R < m$: the fund pays them a price based on an appraisal that is higher than the loans' payoff. Having enough cash to meet all permitted repurchases eliminates forced sales, but not this incentive to withdraw.

When initial liquidity and subscriptions cannot cover the maximum permitted repurchase payment, investors face an additional concern that other investors' withdrawals can force costly loan sales and reduce the payoff from staying. Consequently, withdrawals occur in some states with $R > m$, even though investors would prefer to stay if nobody else withdrew. Anticipating the losses caused by others' withdrawals makes requesting repurchase individually optimal. This mechanism raises the withdrawal threshold from m to R^* . The interval $m < R < R^*$ therefore contains the additional withdrawal states caused by anticipated loan sales.

2.5 The manager's problem with repurchases at NAV

Proposition 1 shows that, in the vanishing-noise limit, all investors request to withdraw when $R < R^*$, and therefore exhaust the gate, leaving terminal assets $A_2(R, g; q, M)$. When $R > R^*$, no investors request repurchase, leaving terminal assets $A_2(R, 0; q, M)$. When no shares are repurchased, the initial liquidity buffer and subscription cash remain in the fund, and the entire loan portfolio is held to maturity. Assets under management at date 2 are therefore

$$A_2(R, 0; q, M) = q + a(M - 1) + (1 - q)R.$$

When shares are repurchased, terminal assets are instead given by (8), which accounts for repurchase payments and any loan sales needed to finance them.

The manager chooses (q, b) at date 0 to maximize expected terminal assets under management, anticipating the investor equilibrium in Proposition 1. The manager's objective is thus

$$\Pi(q, b) = \frac{1}{\bar{R} - \underline{R}} \left\{ \underbrace{\int_{\underline{R}}^{R^*} A_2(R, g; q, M) dR}_{\text{Repurchase states}} + \underbrace{\int_{R^*}^{\bar{R}} A_2(R, 0; q, M) dR}_{\text{No-repurchase states}} \right\}, \quad (14)$$

where $R^* = R^*(q, M)$ and m, M satisfy (1)–(2).

A higher reported value attracts subscriptions, but also raises the payment per repurchased share and can induce withdrawals in additional states. When repurchases would otherwise require loan sales, additional subscription cash also preserves terminal loan proceeds. Initial liquidity reduces the need for costly sales and may prevent withdrawals, but sacrifices the loan portfolio's higher expected return and lowers reported gains and subscription inflows. The manager jointly chooses liquidity and reporting to balance these effects.

Proposition 2 (Joint portfolio and reporting equilibrium). *The vanishing-noise problem has an equilibrium consisting of a manager's choice*

$$(q^*, b^*) \in \arg \max_{q \in [0,1], b \in [0,1]} \Pi(q, b)$$

and the investor equilibrium in Proposition 1. The optimal choice has $q^ < 1$ and $b^* < 1$: the reporting choice is strictly below the upper appraisal bound and may be zero. Under condition (7), the equilibrium is unique and $q^* > 0$.*

Proof. See Appendix A.3.

2.6 Empirical implications

Listed BDCs do not offer repurchases at NAV. Their shareholders obtain liquidity by selling shares to other investors in the secondary market, and these sales transfer ownership without payments from the fund. A listed BDC therefore corresponds to the fund in Lemma 1, an otherwise identical fund in which shareholder exits neither reduce assets under management nor require loan sales. A nonpublic BDC, which must pay departing investors at NAV, corresponds to the fund in Proposition 2. The corollaries below compare the two. The empirical implications are therefore relative differences between nonpublic and listed BDCs, not predictions about the absolute level of marks or liquidity in either group.

Corollary 1 (repurchases at NAV lower reported valuations). *In contrast to Lemma 1, with repurchases at NAV the manager chooses $b^* < 1$. The obligation to pay exiting investors at NAV therefore lowers the optimal loan appraisal.*

Proof. See Appendix A.4.1.

Under repurchases at NAV, a higher appraisal is a payment commitment as well as a fundraising benefit. The resulting discipline can therefore contribute to lower relative marks in vehicles offering investor liquidity at NAV.

Corollary 2 (repurchases at NAV motivate liquid holdings). *In contrast to Lemma 1, under condition (7) the manager holds a strictly positive liquidity buffer, $q^* > 0$.*

Proof. See Appendix A.4.2.

Condition (7) is sufficient, not necessary, for positive initial liquidity. The buffer preserves loan proceeds and can limit withdrawals, but sacrifices the loan premium and reduces subscriptions. Without the condition, either a positive or a zero buffer can be optimal, while reporting restraint survives. The empirical implication is a conditional demand for more marketable holdings when their funding benefits justify their costs.

Corollary 3 (Appraisal latitude widens the valuation gap associated with repurchases at NAV).

Consider two otherwise identical environments with appraisal latitude $0 < d_0 < d_1$, and suppose the maintained restrictions hold in both. With repurchases at NAV, the optimal appraisal–liquidity pair (m^, q^*) is the same in both environments; under condition (7) it is unique. Without repurchases at NAV, the optimal appraisal rises from $\mathbb{E}[\tilde{R}] + d_0$ to $\mathbb{E}[\tilde{R}] + d_1$. Thus, greater appraisal latitude widens the valuation gap associated with repurchases at NAV by $d_1 - d_0$. In particular, the gap is smaller for quoted than for unquoted loans, and widens with PIK exposure.*

Proof. See Appendix A.4.3.

Corollary 3 connects marking differences to two dimensions of appraisal latitude. Dealer quotes provide an external valuation reference that can narrow the range of defensible appraisals. When this range is narrow, there is less scope for repurchases at NAV to affect the reported value. PIK exposure works in the opposite direction by widening the appraisal range through equation (3). Without repurchases at NAV, the manager uses this additional latitude to report a higher loan value and attract more subscriptions. With repurchases, higher appraisals also increase payments to departing investors and make withdrawal attractive in more states. Under the corollary’s conditions, these costs leave the optimal appraisal and liquidity buffer unchanged as the permitted range expands. The valuation gap therefore increases with appraisal latitude, whether the additional latitude reflects the absence of dealer quotes or greater PIK exposure.

The corollaries compare environments that differ in one latitude d , whereas Sections 4.2 and 4.3 compare loans within the same portfolios: loans currently paying in kind and loans with dealer quotes. Appendix C assigns each loan its own latitude, narrowed by a dealer quote and widened by current PIK, with portfolio latitude their par-weighted average. Lemma 2 shows that the manager’s problem is unchanged, so Propositions 1 and 2 and Corollaries 1–3 hold as stated. When the sponsor applies the same reporting parameter to every loan, Corollary 4 shows that a fund without repurchases at NAV uses each loan’s full range while a fund with them reports a fixed increment on each loan, so the gap on a loan and its widening with PIK exposure are both proportional to the loan’s latitude. Appendix C maps this result into the coefficients of Tables 3 and 4: the listed-share coefficient at the mean PIK-income share is the loan’s gap, its interaction with PIK-income share is the loan’s widening rate, the standalone PIK slope is zero, and current PIK raises both coefficients while a dealer quote lowers them.

The corollaries motivate our empirical comparison of nonpublic and listed BDCs: lower relative loan marks among vehicles exposed to repurchases at NAV, greater liquid holdings when their funding benefits

outweigh their opportunity costs, and a wider listed–nonpublic marking gap where the manager has more room for judgment: at higher PIK exposure and on loans without dealer quotes. Reported NAV is both a signal that attracts capital and the price that the fund pays to provide investor liquidity. That payment obligation connects reporting choices, liquid-asset holdings, and the use of the extra room for judgment that PIK exposure creates.

3 Data

Loans held by BDCs rarely trade, so their reported values are appraisals. BDC boards have oversight duty over these appraisals, but SEC Rule 2a-5 allows them to delegate day-to-day valuation execution to the investment manager, so the value assigned to an untraded loan ultimately rests on the manager's judgment.

Our main data is from BDC Collateral. It contains loan portfolio data taken from the Schedule of Investments that BDCs file quarterly with the Securities and Exchange Commission. Each observation is one BDC, one loan, and one filing date. BDC Collateral's SecurityID links the same credit facility across BDCs and over time, allowing us to identify club lending. It can be challenging to match loans across BDCs directly from SEC filings. Schedules of investments carry no common loan identifier, and BDCs often name the same borrower differently: some report the legal borrower, often an acquisition vehicle, and others the operating company or its trade name.⁵ The data contains each loan's principal amount and the reported fair value, and we define the mark as 100 times fair value divided by principal, in cents per dollar of par. The data also includes loan characteristics, including maturity, seniority, interest rate, nonaccrual status, whether a given loan is on PIK status at a reporting date, and, for loans that trade in the secondary market, dealer quotes.

BDC Collateral takes these quotes from the LSTA/LSEG Mark-to-Market Pricing service. We use the dealer quotes to classify loans, not to benchmark marks. This is because BDC Collateral's quote data is intermittent: some quarters have no quotes for any loans, so marks cannot be continuously compared with quotes date by date. `Quoted` is a loan-level dummy equal to one if BDC Collateral reports a dealer quote for the loan on any reporting date in our sample, and zero otherwise. `Quoted` therefore identifies loans with a secondary market, and hence an external reference against which a mark can be checked, which is the property that the room for judgment in the model of Section 2 depends on. The quoted group consists predominantly of recognizable syndicated loans, including loans to Medline, Athenahealth, McAfee, and CoreLogic. Of the 4,655 loans in the valuation sample, 1,048 are quoted, accounting for 6,549 of the 24,180 loan–dates (27.1%).

⁵For example, Ares Capital Corporation and MSD Investment Corp. report a loan maturing in October 2028 to "LJ Perimeter Buyer, Inc.", while FS KKR Capital Corp. and KKR FS Income Trust report the same loan as "Lipari Foods LLC." A BDC may also rename a borrower over time: Blue Owl Capital Corporation reports a loan maturing in December 2027 to "AxiomSL Group, Inc." through 2022Q4 and to "Adenza Group, Inc." thereafter, while Ares Capital Corporation and FS KKR Capital Corp. keep the AxiomSL name.

BDC Collateral's SecurityID identifier is an umbrella classification defined at the broad credit facility level, and thus may include different credit instruments to the same borrower. To focus on term loans, we discard credit lines and other types of credit instruments. Within a given SecurityID, we further match term loans across BDCs using the loan's maturity, seniority, and interest rate. The match is designed to compare exactly the same contractual claim between BDCs on each reporting date, obviating the need to statistically control for loan heterogeneity. A loan enters our analysis when at least two BDCs hold it on the same reporting date, and the final loan valuation sample additionally requires at least two eligible sponsors on each loan-date, as discussed below.

3.1 Valuation at the sponsor level

Before turning to what moves marks, we examine the appropriate reporting unit. The full analysis is in Appendix B. Sponsors often hold the same loan in more than one BDC: in 54.4% of our loan-dates, at least one sponsor holds the loan through two or more vehicles. Appendix Table A.1 shows that between-sponsor differences account for 99.46% of total squared disagreement among BDC marks around their loan-date means. The mean absolute difference in marks between two affiliated BDCs holding the same loan on the same date is 0.026 cents per dollar of par, versus 0.987 cents between two unaffiliated BDCs. Affiliated BDCs report marks differing by less than one basis point of par in 76% of pairwise comparisons, versus 20% for unaffiliated BDCs. This tighter agreement remains pronounced in pairwise regressions absorbing loan $\times$ date fixed effects. We therefore aggregate to the sponsor valuation decision: one observation per sponsor, loan, and reporting date, with the mark defined as the par-weighted average across the sponsor's BDCs.⁶

3.2 BDC-level data

BDC Collateral provides aggregate quarterly data on each BDC's total assets, debt, cash, and the share of its investments on nonaccrual status. We measure leverage as debt divided by total assets and nonaccrual exposure as the share of the investment portfolio on nonaccrual measured at cost. These variables describe the BDC's whole balance sheet and portfolio, not only its shared loans. We classify vehicles as listed, nonpublic finite-life, or nonpublic perpetual-life (evergreen), using listing status at each reporting date. This is necessary because BDC Collateral's fixed classification is not point-in-time, but based on each BDC's latest listing status. We define a BDC's liquid asset sleeve each quarter as the sum of cash and par holdings of quoted loans. The latter is constructed from all loan holdings at each reporting date, including unshared loans.

The PIK-income measure used in the main analysis is PIK interest divided by total investment income. To complement BDC Collateral's BDC-level measure of PIK interest income, we extract data

⁶Appendix Table A.2 shows that a few BDCs changed sponsors during our sample period. We drop loan-date observations on reporting dates at which the sponsor changed.

from 10-Q, 10-K, and 10-KT BDC filings from 2018 to 2026. We parse each filing’s HTML looking for a list of labels for PIK income, with specific exclusion rules. A large language model returns the matched label, the three-month value where the statement reports one, the year-to-date value and its timeframe, and the statement in which it found the figure. We then reconcile to quarterly values within each fiscal year, using the three-month figure where a filing reports one and otherwise recovering it by subtracting the preceding cumulative figure.

3.3 Sponsor characteristics

Because valuations are set at the sponsor level, we aggregate across BDCs belonging to the same sponsor in our loan marking analysis. We map each BDC to its sponsor quarter by quarter. A BDC that changes sponsor is assigned to the responsible sponsor at the time, and we drop the switching quarter. Our main explanatory variable in the loan valuation analysis is the sponsor’s *listed share* (**Listed asset share** in the tables), defined as the fraction of a sponsor’s lagged BDC assets held in listed BDCs. The non-listed group includes both nonpublic finite-life and nonpublic perpetual-life (evergreen) vehicles. A listed share of 0 means that none of the sponsor’s affiliated BDCs is listed. A listed share of 1 means that all of them are. Values between 0 and 1 denote sponsors who have both listed and nonpublic BDCs.

We also aggregate across BDCs to define our second main explanatory variable in the loan valuation analysis. **PIK-income share** is the asset-weighted average of the BDCs’ quarterly PIK-interest-income-to-total-investment-income ratios, using ratios and asset weights from the prior quarter.⁷ Because this is an income share, it describes recognized PIK income across the sponsor’s whole BDC book, not the PIK status of the particular loan being valued. It reflects all term loans of the collection of affiliated BDCs, rather than just the BDCs holding a specific shared loan. Finally, we similarly aggregate across BDCs to define a sponsor’s total assets and leverage (debt over assets) for the loan valuation analysis. The liquid holdings analysis is done at the BDC-level, and there we use total assets and leverage defined at the BDC-quarter level.

Unlike **PIK-income share**, **Quoted** is a loan characteristic and does not aggregate to the sponsor level; Table 1, Panel C, reports only the share of each sponsor’s valuation decisions on quoted loans. It enters the valuation analysis by splitting the sample in Section 4.3.

Figure 3 illustrates the two main sponsor characteristics over time. The top panel shows the split of sponsor assets between listed and nonpublic BDCs, where sponsor assets are the total BDC assets of the sponsors in a given quarter. The listed share is 62% in 2018Q2, peaks near 76% in 2021Q1, and falls to 30% by 2026Q2, crossing 50% around 2022Q3.⁸ The decline reflects the growth of nonpublic vehicles, both at existing sponsors and through the entry of new sponsors. The bottom panel shows

⁷Our conclusions are unchanged when we aggregate BDC-level PIK-income ratios using lagged total investment income rather than lagged total assets as weights. The coefficient estimates in Tables 2 and 3 remain quantitatively very similar.

⁸This is an asset-weighted share; the equal-weighted mean across sponsor-quarters in Table 1 is 49.5%.

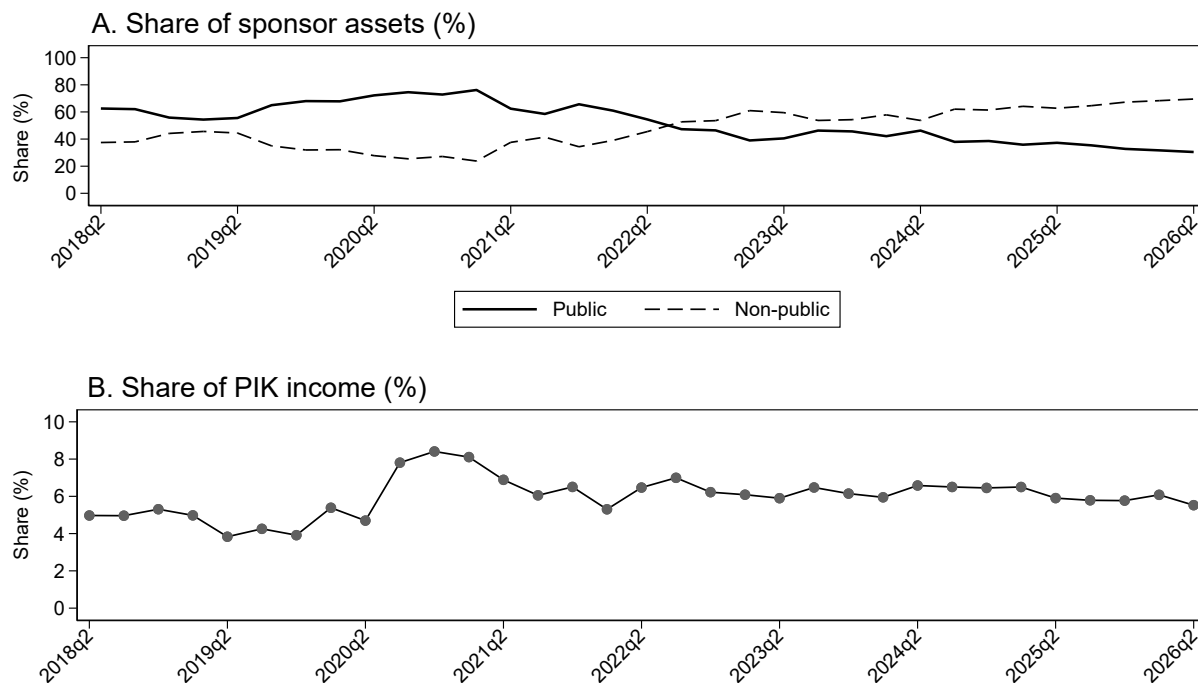


Figure 3: **Sponsor composition and PIK exposure.** Both panels use sponsors represented in the valuation sample in each reporting quarter. The top panel plots the shares of these sponsors' aggregate BDC assets held in listed and nonpublic vehicles. Listing status is measured at each reporting date; nonpublic vehicles include both finite-life and perpetual-life (evergreen) BDCs. The bottom panel plots an asset-weighted average of sponsor-level PIK income shares. Each sponsor's PIK-income share is an asset-weighted average of available BDC-level ratios of PIK interest income to total investment income.

the PIK income share. It is between 4% and 5.5% before 2020Q3, jumps to 8% right after COVID, and fluctuates between 5% and 7% thereafter.

3.4 Summary statistics

Table 1 has summary statistics for our sample. As discussed, we require at least two sponsors per loan-date. We restrict the sample by requiring the sponsor's PIK income ratio to be available. Panel A shows that our final sample has 65,590 sponsor-loan-date valuation decisions for 4,655 unique loans from 90 unique sponsors and 24,180 unique loan-dates spanning 2018Q2 to 2026Q2. Of these loan-dates, 27.1% are on quoted loans.

Figure 4 shows how the sample builds up over time. Loan-dates per quarter rise from about 200 in 2018 to about 1,800 in 2026Q2, and the number of independent sponsors with at least one valuation decision rises from below 30 to 76. A large fraction of the 65,590 valuation decisions come from 2024Q3 onward. The growth reflects both the entry of new sponsors, shown in the bottom panel, and more shared loans per sponsor.

Table 1 : Sample, sponsor characteristics, and loan valuations

Panel A. Sponsor-based sample							
Sample period			2018Q2–2026Q2 (33 quarters)				
Sponsor–loan–date decisions	65,590	Sponsors		90			
Loan–dates	24,180	Sponsor–quarters		1,379			
Distinct loans	4,655	Quoted loan–dates		6,549 (27.1%)			
Panel B. Loans, comparison sets, and sponsor valuations							
	N	Mean	SD	Median			
Peak combined loan par (\$ million)	4,655	104	182	48			
Spread over reference at entry (basis points)	4,611	524	158	509			
Remaining maturity at entry (years)	4,655	5.13	1.77	5.33			
Floating-rate loans (%)	4,655	98.6	11.9	100.00			
Independent sponsors per loan–date	24,180	2.71	1.35	2.00			
Sponsor loan holding (par, \$ million)	65,590	34	70	14			
Sponsor mark (cents per dollar of par)	65,590	96.91	8.53	99.25			
Current loan PIK (%)	65,590	5.54	22.87	0.00			
Panel C. Sponsor characteristics: one observation per sponsor–quarter							
	N	Mean	SD	Median			
Sponsor assets (\$ million)	1,379	5,239	11,481	1,744			
Listed asset share (%)	1,379	49.5	43.5	48.5			
Nonpublic asset share (%)	1,379	50.5	43.5	51.5			
Finite-life nonpublic asset share (%)	1,379	32.4	41.5	8.3			
Evergreen asset share (%)	1,379	18.1	32.9	0.00			
PIK-income share (%)	1,379	5.67	6.49	4.21			
Debt/assets (%)	1,379	45.9	13.7	47.8			
Nonaccrual share at cost (%)	1,379	2.71	3.87	1.51			
Quoted share of valuation decisions (%)	1,379	27.7	22.8	25.2			
Liquidity sleeve (% of assets)	1,379	13.35	11.14	10.05			
Cash / assets (%)	1,379	3.66	4.05	2.52			
Quoted loans / assets (%)	1,379	9.69	10.50	6.65			
Panel D. Cross-sponsor dispersion within loan–date (cents per dollar of par)							
	All	Mark ≥ 95	Mark 80–95	Mark < 80	Nonaccrual	Quoted	Unquoted
Mean SD	1.13	0.62	2.91	7.50	9.59	1.12	1.14
Median SD	0.39	0.35	1.27	3.21	4.74	0.23	0.49
Loan–dates	24,180	20,419	2,937	824	350	6,549	17,631

Notes: A valuation decision is one sponsor, one loan, and one reporting date. The loan sample requires at least two eligible sponsors per loan–date, observed sponsor controls, and no sponsor-switch quarter. All descriptive means give equal weight to the unit reported; SD denotes standard deviation. Panel B counts each loan once in its first four rows, each loan–date once in the fifth, and each sponsor–loan–date once in the last three. Entry is first sample appearance, not necessarily origination; peak combined par is the maximum sum held across sponsors. Sponsor marks consolidate affiliated holdings using par weights. Current loan PIK equals one if any holder reports a positive PIK rate on that loan and date. Panel C counts each sponsor–quarter once. Assets, PIK income, debt/assets, and nonaccrual are lagged; listed, finite-life nonpublic, and evergreen shares use lagged assets and reporting-date classifications. PIK income and ratio controls are asset-weighted across affiliated BDCs. PIK income is PIK interest divided by total investment income. The quoted decision share is count-based and covers the shared-loan sample. Liquidity instead uses current balances: cash and quoted-loan par are summed across each sponsor’s sample-eligible vehicles and divided by their combined total assets. Quoted par covers all loans, including unshared loans.

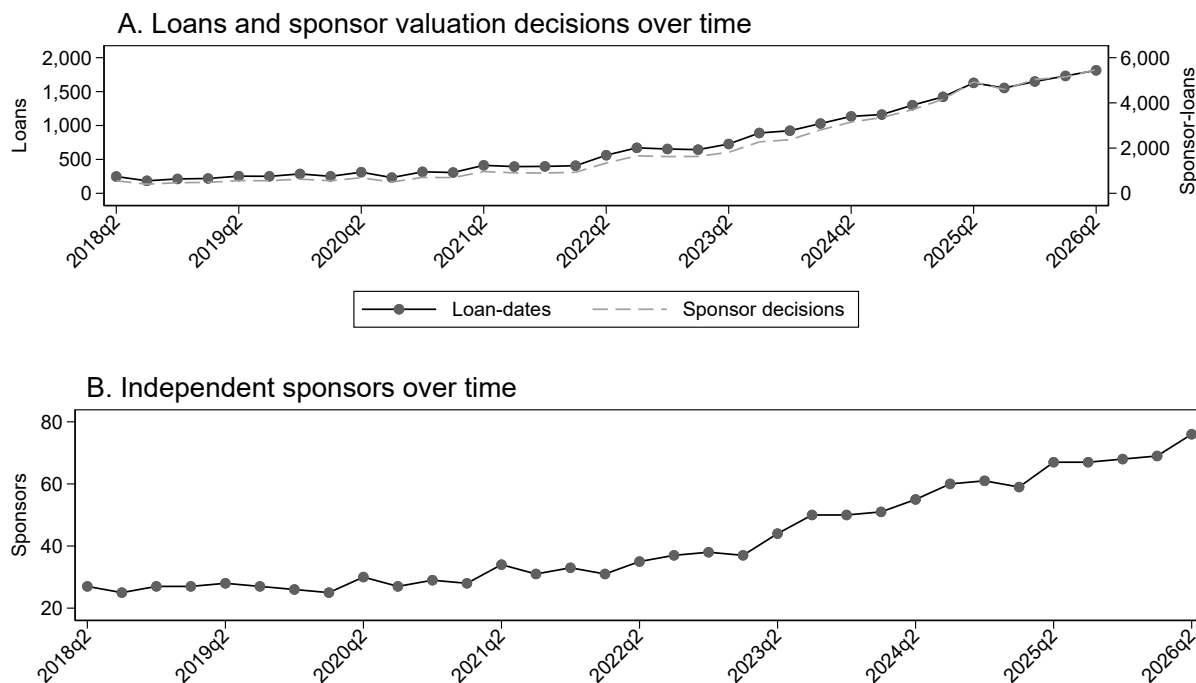


Figure 4: **Sample coverage through time.** The top panel plots the number of loan-dates (left axis) and sponsor-loan-date valuation decisions (right axis) by quarter. The bottom panel plots the number of sponsors with at least one valuation decision in the quarter. The sample spans 2018Q2 to 2026Q2.

Panel B describes the loans and their values: 98.6% of the loans are floating-rate. The mean spread over the stated reference rate is 524 basis points and the mean remaining maturity at the point a loan enters the sample is 5.13 years. For each loan, we take the peak par amount held across all sample sponsors; its mean is \$104 million and its median is \$48 million. On average, there are 2.71 sponsors per loan-date, with a median value of 2. The average mark is 96.91 cents on the dollar of par, with a median of 99.25. This implies that the average sponsor mark is less than par, but that most marks are near par. 5.54% of sponsor-loan-date observations are on PIK status.

Sponsor characteristics are summarized in Panel C, where each of the 1,379 sponsor-quarters is equally weighted. BDC assets average \$5.239 billion per sponsor, compared to a median of \$1.744 billion. Assets in listed BDCs average 49.5% of the total, and assets in nonpublic BDCs 50.5%. The latter can be subdivided into 32.4% in finite-life nonpublic BDCs and 18.1% in evergreen BDCs. These are averages of sponsor asset proportions, not the dollar-based aggregate proportions shown in Figure 3. The listed share varies widely across sponsors, with a standard deviation of 43.5 percentage points. The average PIK-income share of a sponsor is 5.67%, the median is 4.21%, and the standard deviation is 6.49%. The mean debt/assets and nonaccrual share (at cost) are 45.9% and 2.71%, respectively. The contemporaneous liquidity sleeve is 13.35% of assets: 3.66% in cash and 9.69% in quoted loans. Although quoted loans account for 27.1% of loan-dates in the valuation sample (Panel A), quoted-loan

holdings average only 9.69% of sponsor assets, reflecting in part the smaller positions BDCs hold in these loans.

Panel D measures valuation disagreement as the standard deviation of sponsor marks on the same loan on the same reporting date. Standard deviations average 1.13 cents per dollar of par across loan-dates, and the median is 0.39 cents. Figure 5 shows where loans are marked and how disagreement varies with the valuation level. Panel A shows that most loans are close to par, but a significant share are distressed, and disagreement increases as valuations decline. Conditional on the valuation level, quoted loans display lower dispersion than unquoted loans throughout the distribution. Without an external market price, unquoted loans leave more room for judgment and exhibit greater dispersion in marks. The unconditional means are nevertheless similar because quoted loans are more often marked at a discount. The small differences around par are offset by larger differences for low-priced and nonaccrual loans, and dealer quotes narrow but do not eliminate disagreement on discounted loans.

4 Results

We test the empirical implications of the model in Section 2. Sections 4.1 to 4.3 compare sponsors marking the same loan on the same reporting date. The dependent variable is the sponsor's mark in cents per dollar of par, consolidated across its affiliated BDCs. Loan-date fixed effects absorb loan characteristics and conditions common to sponsors on that date, including current PIK status, quote status, contractual terms, and market conditions. The coefficients are identified from disagreement among sponsors valuing the same claim at the same time. Section 4.4, at the BDC-quarter level, examines the size of the liquidity buffer that listed and nonpublic BDCs of the same sponsor hold.

4.1 Fund structure and the level of marks

We now examine whether fund structure is related to the level of marks reported. If repurchases at NAV restrain high marks, sponsors with a higher listed share should mark the same loan on the same date higher than sponsors whose BDC assets are mostly in nonpublic funds. Table 2 presents the results.

Column (1) includes the listed share without additional sponsor-level covariates. The coefficient on `Listed asset share` is the predicted difference between a sponsor holding all of its BDC assets in listed vehicles and one holding all of them in nonpublic vehicles. The listed-share coefficient is 0.31, with a t -statistic of 2.12. Because the estimate is identified within loan-date, it cannot reflect differences in the loans sponsors hold or the market conditions they face. It captures differences in what sponsors report the same claim to be worth.

Column (2) adds balance sheet controls at the sponsor-level: lagged debt/assets, log assets, and the nonaccrual share at cost. The listed-share coefficient increases to 0.60, with a t -statistic of 3.69. Controlling for these observable sponsor characteristics strengthens the listed-share association. Among

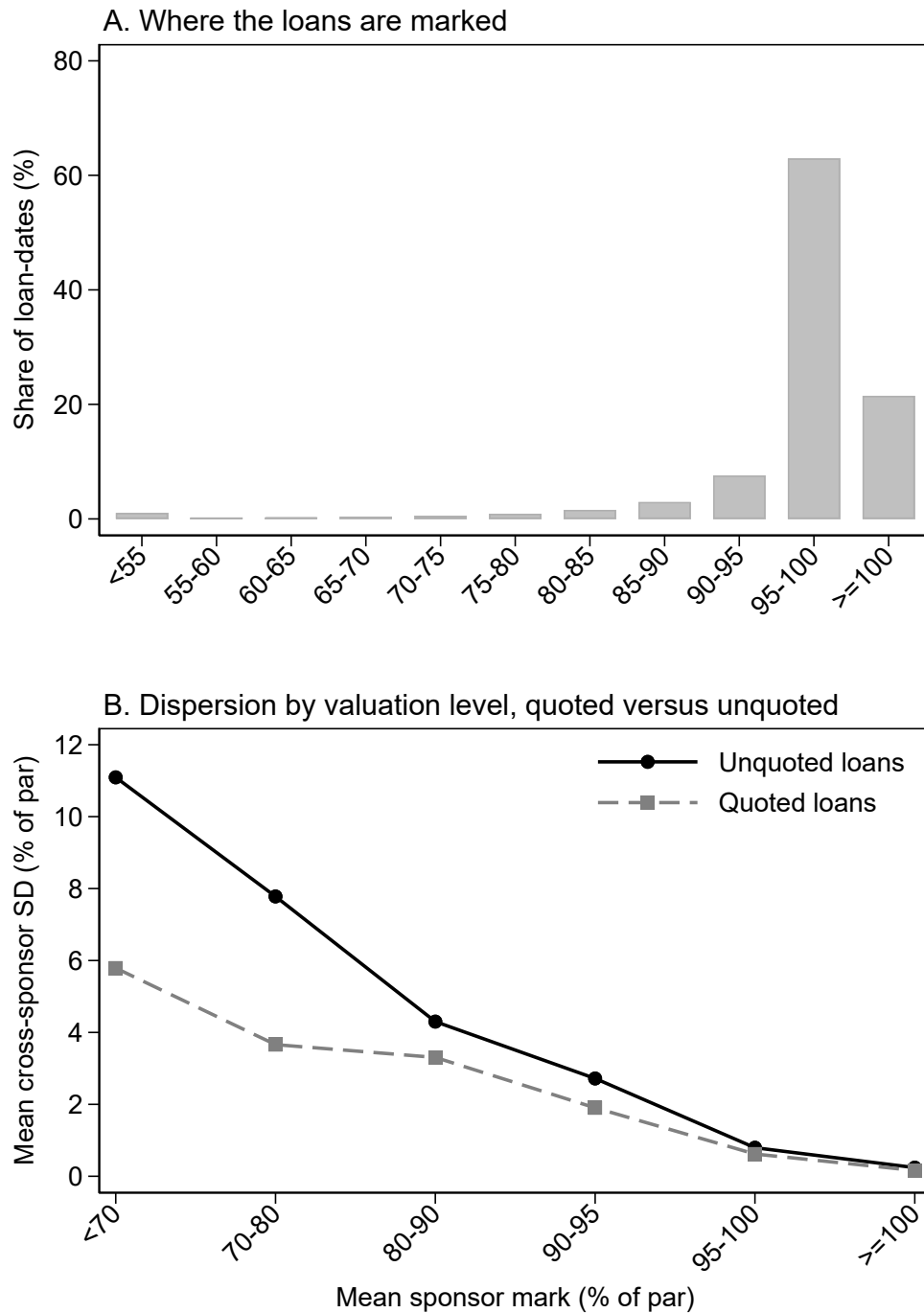


Figure 5: **Loan values and cross-sponsor disagreement.** Panel A plots the distribution of loan-dates by the mean sponsor mark, in cents per dollar of par. Panel B plots the mean cross-sponsor standard deviation by valuation bucket separately for quoted and unquoted loans.

Table 2 : Listed share and relative loan valuations

	(1)	(2)	(3)	(4)
<i>Dependent variable: sponsor mark (cents per dollar of par)</i>				
Listed asset share	0.31** (2.12)	0.60*** (3.69)	0.45*** (3.09)	0.44* (1.70)
PIK-income share			6.18*** (3.03)	4.65*** (3.06)
Sponsor debt/assets		-1.85** (-2.51)	-1.52* (-1.86)	0.23 (0.45)
Log sponsor assets		-0.07** (-2.26)	-0.10*** (-2.81)	-0.01 (-0.07)
Sponsor nonaccrual share		-4.73 (-1.26)	-7.37* (-1.87)	-4.23 (-1.03)
Loan $\times$ date fixed effects	Yes	Yes	Yes	Yes
Sponsor fixed effects	No	No	No	Yes
Observations	65,590	65,590	65,590	65,588
Loan-dates	24,180	24,180	24,180	24,179
Loan clusters	4,655	4,655	4,655	4,654
Sponsor clusters	90	90	90	89
Adjusted R^2	0.9070	0.9076	0.9083	0.9137
Within R^2	0.0016	0.0080	0.0159	0.0039

Notes: The dependent variable is the sponsor mark in cents per dollar of par, par-weighted across affiliated BDC positions in the same loan on the same date. The sample requires at least two different sponsors holding the same loan each date. All specifications include loan $\times$ date fixed effects. Listed asset share uses lagged BDC assets and listing status at the reporting date. PIK income is the lagged-asset-weighted mean of lagged quarterly BDC PIK interest divided by total investment income. Controls are lagged sponsor debt/assets, log aggregate lagged assets (USD millions), and lagged nonaccrual share at cost. Sponsor fixed-effects drop two singleton observations. Standard errors are clustered by loan and sponsor. The sample covers 2018Q2–2026Q2. Parentheses contain t -statistics; *, **, and *** denote $p < 0.10$, $p < 0.05$, and $p < 0.01$.

the controls, greater leverage and larger sponsor size are associated with lower relative marks, with both coefficients significant at the five-percent level. The nonaccrual coefficient is also negative but statistically insignificant.

Column (3) further includes the sponsor's lagged PIK-income share. The listed-share coefficient falls to 0.45 but remains significant at the one-percent level, with a t -statistic of 3.09. PIK-income share is also positively related to relative marks, with a coefficient of 6.18 ($t=3.03$). A ten-percentage-point increase in PIK-income share corresponds to a 0.62-cent higher mark, holding listed share and the balance-sheet controls constant.⁹ Quote status, the model's other source of room for judgment, is a loan characteristic absorbed by the loan $\times$ date fixed effects, so it cannot enter additively. Section 4.3 examines it by estimating the specifications separately for quoted and unquoted loans.

Column (4) adds sponsor fixed effects, absorbing persistent differences in sponsors' marking levels. The listed-share coefficient remains positive at 0.44, but its t -statistic falls to 1.70 and is no longer statistically significant at the 5% level. That is, relying on within-sponsor mark variation only barely moves the coefficient but substantially reduces the power. By contrast, the PIK-income coefficient remains positive at 4.65 and significant at the one-percent level. None of the three balance-sheet controls remains statistically significant in this specification.

Overall, the estimates are consistent with the model's prediction that exposure to payments at NAV restrains relative valuations, but the average listed-share association is not statistically conclusive once sponsor fixed effects are included. The PIK-income association survives that specification. Table 2 imposes a common PIK-income slope across sponsors. Section 4.2 asks whether this relationship is stronger at sponsors with a higher listed share, as the model predicts, and Section 4.3 asks whether the listed-share gap and its PIK sensitivity are smaller on quoted loans, where a dealer quote leaves less room for judgment and therefore less for payments at NAV to restrain.

4.2 PIK income, the listed share, and current loan PIK

The PIK-income specifications in Table 2 assume that the relation between PIK income and marks is the same at every listed share. However, the model suggests that this relation may depend on sponsors' exposure to repurchases at NAV. We therefore interact PIK-income share with listed share in Table 3 and then examine whether the relationship differs when the loan being valued is itself currently paying in kind.

To facilitate the interpretation of Table 3, we center `PIK-income share` by subtracting its pooled mean (5.689%) in every sponsor-loan-date observation. With an interaction, the standalone `Listed asset share` coefficient is evaluated where the PIK variable equals zero. Centering therefore makes this coefficient measure the listed-nonpublic valuation difference at the mean PIK-income share rather

⁹Section 4.5 separates evergreen and finite-life vehicles. Their marks differ without sponsor fixed effects but not with them, so we pool the two in the nonpublic category.

than at zero PIK income. We leave PIK income uncentered in Table 2 because it enters additively there, so subtracting its mean would only shift the intercept and leave all reported slope coefficients unchanged.

Table 3 : PIK income, listed share, and relative loan valuations

	(1)	(2)	(3)	(4)	(5)	(6)
<i>Dependent variable: sponsor mark (cents per dollar of par)</i>						
PIK-income share	0.77 (0.61)	0.89 (0.80)	-0.19 (-0.17)	0.23 (0.20)	0.62 (0.49)	1.02 (0.86)
PIK-income share × Listed asset share	13.16*** (3.69)	7.83** (2.56)	12.70*** (3.85)	7.43*** (2.65)	10.53*** (3.22)	5.62** (2.16)
Listed asset share	0.55*** (3.63)	0.48** (2.02)	0.53*** (4.12)	0.43* (1.92)	0.51*** (3.94)	0.39* (1.78)
Listed asset share × Current loan PIK			0.58 (0.66)	0.68 (0.84)	0.36 (0.42)	0.48 (0.61)
PIK-income share × Current loan PIK			20.63*** (2.88)	17.54** (2.52)	5.43 (0.84)	2.40 (0.36)
Listed asset share × PIK-income share × Current loan PIK					34.65* (1.94)	33.73* (1.92)
Sponsor debt/assets	-1.60** (-2.27)	0.04 (0.09)	-1.63** (-2.39)	0.03 (0.06)	-1.66** (-2.42)	0.01 (0.03)
Log sponsor assets	-0.09*** (-3.19)	0.04 (0.46)	-0.09*** (-3.30)	0.05 (0.59)	-0.09*** (-3.27)	0.05 (0.54)
Sponsor nonaccrual share	-7.40* (-1.97)	-3.72 (-0.92)	-7.41** (-2.07)	-3.62 (-0.92)	-6.94** (-2.01)	-3.25 (-0.87)
Loan × date fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Sponsor fixed effects	No	Yes	No	Yes	No	Yes
Observations	65,590	65,588	65,590	65,588	65,590	65,588
Loan-dates	24,180	24,179	24,180	24,179	24,180	24,179
Loan clusters	4,655	4,654	4,655	4,654	4,655	4,654
Sponsor clusters	90	89	90	89	90	89
Adjusted R^2	0.9091	0.9138	0.9096	0.9142	0.9099	0.9145
Within R^2	0.0239	0.0054	0.0298	0.0101	0.0330	0.0133

Notes: The dependent variable is the sponsor mark in cents per dollar of par, par-weighted across affiliated BDC positions in the same loan on the same date. The sample requires at least two different sponsors holding the same loan each date. All specifications include loan × date fixed effects. Listed asset share uses lagged BDC assets and listing status at the reporting date. PIK-income share is the lagged-asset-weighted mean of lagged quarterly BDC PIK interest divided by total investment income, and centered at its pooled sample mean. Current loan PIK is a dummy variable flagging loans in which any BDC holder reports the loan is on PIK status that quarter, and its standalone effect is absorbed by loan × date fixed effects. Controls are lagged sponsor debt/assets, log aggregate lagged assets (USD millions), and lagged nonaccrual share at cost. Sponsor fixed-effects drop two singleton observations. Standard errors are clustered by loan and sponsor. The sample covers 2018Q2–2026Q2. Parentheses contain t -statistics; *, **, and *** denote $p < 0.10$, $p < 0.05$, and $p < 0.01$.

Columns (1) and (2) add the interaction **PIK-income share × Listed asset share** to the Table 2 specification, without sponsor fixed effects and with sponsor fixed effects, respectively. The specifications in the remaining columns are analogous, with sponsor fixed effects in columns (4) and (6) to absorb persistent differences in sponsors' average marking behavior. All specifications retain loan × date fixed effects and sponsor balance-sheet controls. The standalone **PIK-income share** coefficients are 0.77 and 0.89 in columns (1) and (2), respectively, both statistically insignificant. Thus, these

specifications detect no statistically significant PIK income–valuation relationship for a fully nonpublic sponsor. The interaction coefficients, however, are positive and significant: 13.16 ($t=3.69$) without sponsor fixed effects and 7.83 ($t=2.56$) with them.

Thus, a ten-percentage-point higher sponsor PIK-income share widens the fully listed–fully nonpublic marking difference by 1.32 cents per dollar of par in column (1) and 0.78 cents in column (2). The corresponding predicted increases in relative marks for a fully listed sponsor are 1.39 and 0.87 cents, found by adding the standalone PIK-income slope to the interaction coefficient and multiplying by 0.1. In other words, the interaction is the difference in PIK income slopes between listed and nonpublic sponsors. The interaction is consistent with the model. As PIK exposure increases, the difference in marks between sponsors with more and less exposure to repurchases at NAV becomes larger.

Current loan PIK.

Columns (3) and (4) distinguish between sponsor reliance on PIK income at the time of each loan valuation, and the current PIK status of the loan being valued. To that end, we interact current loan PIK status with both sponsor `Listed asset share` and `PIK-income share`. `Current loan PIK` is a dummy variable that equals one when any BDC holder reports a positive PIK rate for that loan on the reporting date, and zero otherwise. Note that the standalone effect of this variable is absorbed by the `loan × date` fixed effects because it is common to different holders of the same loan on the same date. The columns (3) and (4) specifications therefore examine how the associations between sponsor characteristics and relative marks vary with reported loan payment status, allowing us to investigate whether the PIK-related marking relationship is strongest among loans that are currently in PIK status.

The coefficients on the `PIK-income share × Listed asset share` interactions remain positive and significant at 12.70 ($t=3.85$) and 7.43 ($t=2.65$) in columns (3) and (4), respectively. The `Current loan PIK × PIK-income share` coefficients are also positive, at 20.63 ($t=2.88$) and 17.54 ($t=2.52$). Holding listed share fixed, a ten percentage point higher sponsor PIK-income share is thus associated with an increase in relative marks that is 2.06 and 1.75 cents larger, respectively, on loans reporting current PIK. In contrast, the `Current loan PIK × Listed asset share` coefficients are statistically insignificant in both columns, suggesting that, at any given PIK-income share, the listed–nonpublic marking difference is not larger when the loan is currently on PIK status. The specifications still require the additional PIK-income slope associated with current loan PIK to be the same at every listed share.

Columns (5) and (6) relax this restriction by adding the triple interaction among loan PIK status, sponsor PIK income, and the sponsor listed share. The estimates of the triple-interaction coefficients are 34.65 ($t=1.94$) and 33.73 ($t=1.92$), respectively. They measure how much larger the difference between the listed and nonpublic PIK-income slopes is for loans currently on PIK status. Both estimates are positive, economically large, and statistically different from zero at the 10-percent level, but not the 5-percent level. The estimates suggest that the PIK-income-related difference between listed and nonpublic sponsors is larger when the loan itself is currently paying in kind. Current PIK is one loan-level

indicator of greater valuation discretion. The absence of a dealer quote is another and is examined in Section 4.3.

Economic magnitudes.

The comparison that follows illustrates the economic magnitude of the results in columns (5) and (6). For loans that are not currently in PIK status, a ten-percentage-point increase in the sponsor PIK-income share widens the listed–nonpublic marking difference by 1.05 cents per dollar of par ($t=3.22$) in column (5) and 0.56 cents ($t=2.16$) in column (6). The PIK income-related differential is present even when the focal loan is not on PIK status.

For loans that are currently on PIK status, the relevant contrast includes both the `PIK-income share × Listed asset share` coefficient and the triple interaction. A 10-percentage-point increase in the sponsor PIK-income share increases the predicted listed–nonpublic marking difference by 4.52 cents ($t=2.58$) in column (5) and 3.93 cents ($t=2.26$) in column (6). These estimates are much larger than those for loans that are not currently in PIK status. These contrasts measure changes in the listed–nonpublic marking difference associated with higher sponsor PIK income, rather than unconditional listed–nonpublic valuation differences.

The difference between these two PIK income-related contrasts is 3.47 cents per dollar of par ($t=1.94$) in column (5) and 3.37 cents ($t=1.92$) in column (6). These differences equal one-tenth of the respective triple-interaction coefficients and directly test equality of the listed–nonpublic PIK-income slope differences across the two loan-status categories. For a ten-percentage-point increase in sponsor PIK-income share, the additional widening of the listed–nonpublic marking difference on currently PIK-reporting loans amounts to approximately 3.4 percent of loan par. In column (6), the estimated income-related marking contrast rises from 0.56 cents on loans without reported current PIK to 3.93 cents on PIK-reporting loans, approximately a sevenfold increase. Thus, the estimated amplification is substantial.

Table 3 shows that the relation between PIK exposure and marks varies with sponsors' exposure to repurchases at NAV, and the relation is more pronounced when the loan itself is currently paying in kind.

4.3 Loan valuations on quoted and unquoted loans

Tables 2 and 3 document the associations between the listed share, sponsor PIK income, and relative loan valuations. We next compare quoted and unquoted loans. Dealer quotes provide an outside valuation reference, leaving less room for differences in marks.

Table 4 presents both the group-specific estimates and direct tests of their differences. Columns (1)–(4) estimate the specifications separately for quoted and unquoted loans, allowing all slopes and, where included, sponsor fixed effects to differ across the two groups. Because `Quoted` is constant within loan, the split is by loan: every sponsor holding a given loan falls in the same group, so the within-loan–date

comparisons are the same as in Tables 2 and 3. Columns (5) and (6) report the corresponding quoted-minus-unquoted differences, without and with sponsor fixed effects. These differences are estimated in pooled regressions fully interacted with quote status; column (6) includes sponsor $\times$ quote-status fixed effects to match the separate sponsor effects in columns (2) and (4). All regressions have loan $\times$ date fixed effects, lagged sponsor PIK-income share, and the sponsor balance-sheet controls. Standard errors are clustered by loan and sponsor, and the difference tests account for dependence across the two groups arising from common sponsors.

Panel A reports the additive specification. The listed-share coefficient is approximately 0.03–0.04 cents per dollar of par and statistically insignificant for quoted loans, compared with 0.68 cents ($t=4.08$) without sponsor fixed effects and 0.70 cents ($t=2.59$) with them for unquoted loans. The quoted-minus-unquoted difference is -0.64 cents ($t=-2.73$) without sponsor fixed effects and -0.67 cents ($t=-1.69$) with them. Thus, the estimated listed–nonpublic marking gap is smaller among quoted loans, although the direct difference is significant only at the ten-percent level after controlling for sponsor fixed effects. The additive PIK-income coefficient is positive in both groups, but its quoted-minus-unquoted difference is not statistically significant.

Panel B allows the PIK-income share slope to vary with the listed share. The PIK-income share $\times$ Listed asset share coefficients are 11.67 ($t=2.11$) and 5.78 ($t=1.12$) for quoted loans, compared with 13.51 ($t=4.04$) and 10.68 ($t=3.31$) for unquoted loans, without and with sponsor fixed effects, respectively. With sponsor fixed effects, a ten-percentage-point higher PIK-income share is therefore associated with a widening of the fully listed–fully nonpublic marking gap of 0.58 cents for quoted loans and 1.07 cents for unquoted loans. However, the direct tests do not establish that this widening differs between the two groups, as the quoted-minus-unquoted interaction coefficients are -1.84 ($t=-0.34$) and -4.91 ($t=-0.91$). The relationship remains statistically detectable among unquoted loans after sponsor fixed effects, but the difference in significance across groups is not evidence of a significant difference in slopes. The listed-share level comparison at mean PIK income remains similar to Panel A: its quoted-minus-unquoted difference is -0.72 cents ($t=-1.71$) with sponsor fixed effects.

Panel C asks whether the income-related widening depends on the current PIK status of the particular loan. The reported contrasts measure the change in the fully listed–fully nonpublic marking gap associated with a ten-percentage-point increase in sponsor PIK-income share. With sponsor fixed effects, the gap among unquoted loans widens by 0.58 cents ($t=2.45$) when the loan does not report current PIK and by 6.29 cents ($t=3.09$) when it does. The additional widening associated with current loan PIK is therefore 5.71 cents ($t=2.81$). The corresponding quoted-loan estimates are 0.73 cents ($t=1.33$), -2.90 cents ($t=-1.28$), and -3.63 cents ($t=-1.58$), none statistically significant. In particular, the negative quoted-loan estimates do not establish that higher sponsor PIK income narrows the marking gap on these loans.

The direct comparisons in columns (5) and (6) show that the strongest quoted–unquoted difference

Table 4 : Loan valuations on quoted and unquoted loans

	Quoted loans		Unquoted loans		Quoted – unquoted	
	(1)	(2)	(3)	(4)	(5)	(6)
Dependent variable: sponsor mark (cents per dollar of par)						
<i>Panel A. Additive valuation specification: Table 2, columns (3)–(4)</i>						
Listed asset share	0.04 (0.16)	0.03 (0.08)	0.68*** (4.08)	0.70** (2.59)	−0.64*** (−2.73)	−0.67* (−1.69)
PIK-income share	4.65* (1.81)	3.96** (2.32)	7.09*** (3.49)	6.01** (2.62)	−2.44 (−1.14)	−2.05 (−0.78)
Adjusted R^2	0.9356	0.9444	0.8898	0.8952	—	—
<i>Panel B. PIK income and listed share: Table 3, columns (1)–(2)</i>						
Listed asset share (at mean PIK-income share)	0.13 (0.59)	0.05 (0.13)	0.77*** (4.36)	0.77*** (3.14)	−0.64*** (−2.77)	−0.72* (−1.71)
PIK-income share	−0.20 (−0.09)	1.04 (0.54)	1.54 (1.15)	1.17 (0.81)	−1.74 (−0.76)	−0.14 (−0.06)
PIK-income share × Listed asset share	11.67** (2.11)	5.78 (1.12)	13.51*** (4.04)	10.68*** (3.31)	−1.84 (−0.34)	−4.91 (−0.91)
Adjusted R^2	0.9362	0.9445	0.8905	0.8954	—	—
<i>Panel C. Triple-interaction contrasts: Table 3, columns (5)–(6)</i>						
No current loan PIK	1.30** (2.24)	0.73 (1.33)	0.81*** (2.74)	0.58** (2.45)	0.49 (0.84)	0.15 (0.27)
Current loan PIK	−2.72 (−1.02)	−2.90 (−1.28)	6.46*** (3.20)	6.29*** (3.09)	−9.18*** (−2.69)	−9.20*** (−2.85)
Current PIK minus no current PIK	−4.02 (−1.50)	−3.63 (−1.58)	5.64*** (2.73)	5.71*** (2.81)	−9.67*** (−2.75)	−9.35*** (−2.85)
Adjusted R^2	0.9365	0.9448	0.8927	0.8975	—	—
Loan × date fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Sponsor fixed effects	No	Yes	No	Yes	No	Yes
Observations	18,931	18,930	46,659	46,657	65,590	65,587
Loan–dates	6,549	6,549	17,631	17,630	24,180	24,179
Loan clusters	1,048	1,048	3,607	3,606	4,655	4,654
Sponsor clusters	76	75	90	89	90	89

Notes: Columns (1)–(4) estimate the indicated main-table specifications separately for quoted and unquoted loans. Columns (5) and (6) report quoted-minus-unquoted differences corresponding to columns (1) minus (3) and (2) minus (4), respectively. Their estimates and inference come from pooled regressions allowing all slopes, including those of the sponsor balance-sheet controls, to differ by quote status. Columns (2) and (4) include sponsor fixed effects; column (6) includes sponsor × quote-status fixed effects, matching the separate sponsor effects. Counts in columns (5)–(6) refer to the pooled estimation samples; coefficient contrasts have no separate R^2 . PIK-income share is centered at its pooled sample mean in Panels B and C. In Panel B, the listed-share coefficient is evaluated at that mean and the standalone PIK-income share coefficient is the slope for a fully nonpublic sponsor. In Panel C, columns (1)–(4) report changes in the fully listed-minus-fully nonpublic marking difference for a ten-percentage-point higher sponsor PIK-income share: $0.1\beta_{KP}$ without current loan PIK, $0.1(\beta_{KP} + \beta_{KPD})$ with current loan PIK, and $0.1\beta_{KPD}$ for their difference. Here β_{KP} is the PIK-income-share-by-listed-asset-share coefficient and β_{KPD} is the triple interaction. Columns (5)–(6) report the corresponding quoted-minus-unquoted contrasts. All identified lower-order terms are included. Standard errors are clustered by loan and sponsor; difference tests use the full pooled covariance matrix, including cross-group sponsor dependence. The sample covers 2018Q2–2026Q2. Parentheses contain t -statistics; *, **, and *** denote $p < 0.10$, $p < 0.05$, and $p < 0.01$.

is in loans reporting current PIK. With sponsor fixed effects, the difference in income-related widening is only 0.15 cents ($t=0.27$) for loans without reported current PIK, but -9.20 cents ($t=-2.85$) for loans reporting current PIK. The difference in the additional widening associated with current loan PIK is -9.35 cents ($t=-2.85$). Both current-PIK comparisons are significant at the one-percent level. The corresponding estimates without sponsor fixed effects are similar, at -9.18 cents ($t=-2.69$) and -9.67 cents ($t=-2.75$). Thus, the amplification associated with current loan PIK is significantly greater among unquoted loans, rather than merely significant in one subsample and insignificant in the other.¹⁰

The clearest quoted-unquoted difference is for loans currently paying in kind. The PIK-income-related widening is substantially larger among unquoted current-PIK loans, whereas the general PIK-income interaction does not differ significantly across quote categories.

4.4 The liquidity sleeve

While a sponsor runs one valuation policy across its BDCs, it need not run one balance sheet. Now we examine the size of the liquidity buffer that listed and nonpublic vehicles hold, and our unit of observation is BDC-quarter rather than loan-sponsor-quarter. Table 5 presents regressions of the sleeve and its components on a dummy variable `Nonpublic BDC` that is equal to one if the BDC is not publicly listed. Standard errors are clustered by sponsor.

Columns (1)–(3) include quarter fixed effects and no BDC-level balance-sheet controls. Nonpublic BDCs have a liquidity sleeve 3.59 percentage points larger ($t=2.50$). Cash accounts for 1.71 points ($t=3.33$) of the total difference, while quoted loans account for the remaining 1.88 points ($t=1.38$).

Columns (4)–(6) compare vehicles within the same sponsor and quarter, still without balance-sheet controls. With sponsor $\times$ quarter fixed effects, the estimated liquidity-sleeve difference rises to 6.22 percentage points of total assets ($t=5.38$): 2.20 points come from cash ($t=3.03$) and 4.02 from quoted loans ($t=5.09$). These regressions compare listed and nonpublic BDCs managed by the same sponsor in the same quarter, holding sponsor-wide conditions fixed. Sponsor-quarters with only one eligible BDC provide no such comparison, so 739 observations are dropped. The sample falls from 2,535 BDC-quarters across 90 sponsors to 1,796 across 42 sponsors.

Columns (7)–(9) retain sponsor $\times$ quarter fixed effects and add lagged BDC balance-sheet controls. The liquidity-sleeve difference remains 4.22 percentage points ($t=3.57$), significant at the one-percent level. The cash difference falls to -0.13 points and is statistically insignificant, while the quoted-loan difference is 4.35 points ($t=5.54$). After accounting for these balance-sheet differences, nonpublic BDCs allocate more of their assets to quoted loans, but we find no significant difference in cash holdings.

Together with the near-identity of sibling marks, these results suggest that sponsors set valuations

¹⁰The quoted/current-PIK category contains 321 sponsor-loan-date decisions on 124 loan-dates and 40 distinct loans, compared with 3,311 decisions on 1,363 loan-dates and 468 loans in the unquoted/current-PIK category. The quoted/current-PIK comparisons therefore draw on a relatively small set of loans.

Table 5 : Liquidity sleeves and their allocation across BDC vehicles

<i>Dependent variable</i>	Quarter fixed effects			Sponsor $\times$ quarter fixed effects					
	No controls			No controls			Balance-sheet controls		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	<i>Total</i>	<i>Cash</i>	<i>Quoted loans</i>	<i>Total</i>	<i>Cash</i>	<i>Quoted loans</i>	<i>Total</i>	<i>Cash</i>	<i>Quoted loans</i>
Nonpublic BDC	3.59** (2.50)	1.71*** (3.33)	1.88 (1.38)	6.22*** (5.38)	2.20*** (3.03)	4.02*** (5.09)	4.22*** (3.57)	−0.13 (−0.16)	4.35*** (5.54)
BDC debt/assets							−0.42 (−0.09)	−2.30 (−0.88)	1.88 (0.56)
Log BDC assets							−1.36** (−2.13)	−1.81*** (−5.70)	0.45 (0.99)
BDC nonaccrual share							−10.59 (−0.99)	9.44 (1.13)	−20.03** (−2.27)
BDC–quarters	2,535	2,535	2,535	1,796	1,796	1,796	1,796	1,796	1,796
Sponsor clusters	90	90	90	42	42	42	42	42	42
Adjusted R^2	0.1251	0.0362	0.1029	0.5079	0.2536	0.5385	0.5271	0.3498	0.5466
Within R^2	0.0235	0.0183	0.0088	0.1456	0.0365	0.1156	0.1811	0.1631	0.1334

Notes: Each observation is a BDC–quarter. All dependent variables are in percent of total assets. Total is the liquidity sleeve, 100(cash + quoted loan par)/total assets; Cash and Quoted loans are its two components. Quoted par includes unshared holdings. Nonpublic BDC is a dummy variable equal to one if the BDC is not listed. Columns (1)–(6) include no balance-sheet controls. Columns (7)–(9) include the individual BDC's balance sheet controls. Sponsor $\times$ quarter fixed effects absorb common sponsor–quarter characteristics and calendar–quarter effects. Samples differ across groups because of fixed-effect singleton removal. The sample covers 2018Q2–2026Q2. Standard errors are clustered by sponsor. Parentheses contain t -statistics; *, **, and *** denote two-sided $p < 0.10$, $p < 0.05$, and $p < 0.01$. Intercepts are not displayed.

centrally but leave liquidity choices to each BDC.

4.5 Evergreen and finite-life nonpublic BDCs

The analyses so far pool evergreen and finite-life vehicles in the nonpublic category. We now separate these two forms. The valuation tests distinguish the shares of sponsor assets held through each form, whereas the liquidity tests compare individual BDCs within the same sponsor and quarter. We note the first evergreen vehicles were launched in November 2020 (Owl Rock Core Income Corp.) and January 2021 (Blackstone Private Credit Fund). Thus the evergreen category is not represented in the earlier part of the sample period.

For loan valuations, we estimate columns (3) and (4) of Table 2 with loan $\times$ date fixed effects, lagged sponsor PIK-income share, and sponsor balance sheet controls. Specifically, we add the share of a sponsor's lagged BDC assets held through evergreen vehicles alongside its listed share, leaving the finite-life nonpublic share as the omitted category. Without sponsor fixed effects, the mark differences relative to a fully listed sponsor are −0.59 cents per dollar of par for a fully evergreen sponsor ($t = -3.91$) and −0.33 cents for a fully finite-life sponsor ($t = -1.95$). The direct evergreen–finite-life difference is thus −0.26 cents ($t = -2.01$). However, this difference disappears with sponsor fixed effects. The corresponding differences relative to a fully listed sponsor become −0.44 cents for evergreen ($t = -1.34$) and −0.43 cents for finite-life ($t = -1.59$). The evergreen–finite-life difference is then essentially zero.

Although neither difference is statistically significant with sponsor fixed effects, both differences relative to a fully listed sponsor remain approximately 0.44 cents per dollar of par as in column (4) of Table 2. The separate comparisons, when identified from within-sponsor changes in asset composition, are less precisely estimated.

For liquidity holdings, we separate the nonpublic indicator into evergreen and finite-life indicators in the controlled specification of Table 5. The regression remains at the BDC–quarter level, with sponsor $\times$ quarter fixed effects and BDC balance sheet controls. Relative to listed vehicles, the estimated liquidity-sleeve difference is 7.15 percentage points of total assets for evergreen vehicles ($t=5.50$) and 2.07 percentage points for finite-life vehicles ($t=1.35$). A direct test gives an evergreen–finite-life difference of 5.07 percentage points ($t=2.96$). These estimates indicate a larger allocation to the liquidity sleeve among evergreen vehicles within the same sponsor and quarter.

4.6 Robustness

We examine sensitivity to observation weighting, the exclusion of aggregate-stress periods, and time-varying sponsor-wide marking effects in the quoted–unquoted comparison. Table A.3 compares the specifications in Tables 2 and 3 with regressions that re-weight the observations to give each loan–date the same weight. That is, each sponsor–loan–date observation is weighted by the inverse of the number of sponsors holding it each date. With sponsor fixed effects, the $\text{PIK-income share} \times \text{Listed asset share}$ coefficient changes from 7.83 ($t=2.56$) to 8.46 ($t=2.49$). In the triple-interaction model, the listed–nonpublic valuation gap widens more with sponsor PIK income when the loan itself reports PIK. For a ten-percentage-point increase in sponsor PIK-income share, this extra widening is 3.37 cents per dollar of par ($t=1.92$) in the unweighted baseline and 3.85 cents ($t=2.05$) when each loan–date receives equal weight. In the additive model with sponsor fixed effects, the listed-share coefficient remains positive but imprecisely estimated under both weighting schemes, at 0.44 and 0.39 cents, respectively.

Table A.4 checks whether the results are confined to the stress periods defined by Daniel et al. (2026): 2020Q1–Q2 and 2022Q2–Q4. All regressions are unweighted. Excluding these periods changes little. With sponsor fixed effects, a ten-percentage-point increase in sponsor PIK-income share is associated with a widening of the listed–nonpublic valuation gap of 0.77 cents per dollar of par, compared with 0.78 cents in the full sample. Allowing the relationships of Listed asset share and PIK-income share with marks to differ across quarters gives an estimated widening of 1.31 cents outside stress ($t=4.11$). This estimate remains significant when standard errors also account for common shocks within quarters ($t=3.91$).

The liquidity results are similarly stable. As in Table 5, the regressions have sponsor $\times$ quarter fixed effects and BDC balance-sheet controls. Nonpublic BDCs hold liquidity sleeves 4.23 percentage points larger than listed BDCs outside stress, almost identical to the full-sample difference of 4.22 points. The difference comes from quoted loans rather than cash. The valuation and liquidity relationships are

therefore not confined to these two aggregate-stress episodes.

An additional robustness check in Table A.5 adds sponsor $\times$ quarter fixed effects to the pooled quoted–unquoted specification, absorbing all sponsor-wide quarterly marking components. The results reinforce the concentration of the PIK-related valuation differential in unquoted loans. For loans without reported current PIK, the quoted–unquoted difference in the widening associated with a ten-percentage-point increase in sponsor PIK-income share is close to zero. For loans reporting current PIK, the widening is about 9.2 cents smaller among quoted loans than among unquoted loans, and the difference between the two loan-PIK states is about -9.5 cents ($t=-2.89$) when both sponsor $\times$ quarter and sponsor $\times$ quote-status fixed effects are included. The stronger PIK-income-related listed–nonpublic valuation differential on current-PIK loans is concentrated in unquoted loans even after absorbing time-varying sponsor-wide marking behavior.

5 Conclusion

Private credit managers often assign different values to the same loan. We find that these differences are related to the incentives managers face when setting their marks. Higher reported values can attract capital and raise asset-based fees, but they also increase what a fund pays when investors exit at NAV. Sponsors with more of their BDC assets in listed funds, and therefore less exposure to this cost, report higher values for the same loan on the same date.

The differences are larger where valuations leave more room for judgment. They are substantially larger for loans without dealer quotes, where managers lack an outside reference for value. They also widen as PIK accounts for more of a sponsor’s investment income. This PIK-related widening is particularly pronounced when the loan being valued is itself paying interest in kind. Nonpublic BDCs also hold more liquid portfolios than listed BDCs managed by the same sponsor, with the difference coming primarily from quoted loans.

The mechanism has become more relevant as nonpublic BDCs have grown. Among sponsors in our sample, the share of BDC assets held in listed funds fell from roughly 76 percent in 2021 to 30 percent in 2026. More BDC assets are now held in vehicles where reported values can also determine what the fund pays investors who leave. The growth of nonpublic BDCs connects how managers value illiquid assets with how funds provide liquidity to investors, two choices that are usually considered separately.

A Proofs

A.1 Proof of Lemma 1

Without date-1 repurchases, no payments are made to existing investors and no illiquid loans need to be sold. For any realized loan payoff R , terminal assets are therefore

$$A_2(R, 0; q, M) = q + a(M - 1) + (1 - q)R.$$

The manager maximizes total assets under management, including subscription proceeds, rather than assets per share.

Using

$$M - 1 = (1 - q)(\mathbb{E}[\tilde{R}] - 1 + bd),$$

expected terminal assets can be written as

$$\begin{aligned}\mathbb{E}[A_2] &= q + (1 - q)\mathbb{E}[\tilde{R}] + a(M - 1) \\ &= 1 + (1 - q) \left[(1 + a)(\mathbb{E}[\tilde{R}] - 1) + abd \right].\end{aligned}$$

Because $\mathbb{E}[\tilde{R}] > 1$ and $a > 0$, the expression in square brackets is strictly positive for every $b \in [0, 1]$. Expected terminal assets are consequently strictly decreasing in q , so every optimum has $q^* = 0$.

At $q = 0$, expected terminal assets are

$$\mathbb{E}[A_2] = \mathbb{E}[\tilde{R}] + a(\mathbb{E}[\tilde{R}] - 1 + bd),$$

which is strictly increasing in b because $ad > 0$. Hence $b^* = 1$. Both choices are unique, and substitution into the appraisal and NAV definitions gives $m^* = M^* = \mathbb{E}[\tilde{R}] + d$. $\square$

A.2 Proof of Proposition 1

A.2.1 Accounting, feasibility, and the conditional exit incentive

Let I denote the new subscription inflow at date 1, that is, $I = a(M - 1)$. Recall that I/M is the number of shares issued to new entrants. Define

$$\phi(x) = \begin{cases} 1, & 0 \leq x \leq g, \\ g/x, & g < x \leq 1, \end{cases} \quad C(y) = [q + I - My]_+,$$

$$L(y) = 1 - q - \frac{[My - q - I]_+}{1 - h}, \quad D(y) = 1 - y + \frac{I}{M}.$$

Thus $A_2 = C + RL$, D is the number of continuing shares, and $\phi(x) = y(x)/x$ for $x > 0$. When $q + I \geq gM$, liquid assets and subscription cash cover the maximum permitted repurchase payment, so no request mass requires loan sales. When $q + I < gM$, sufficiently large requests require sales.

For $q < 1$, feasibility implies $L(y) > 0$ at every $y \leq g$. In a sale state,

$$(1 - h)L(y) = (1 - q)(1 - h - ym) + q(1 - y) + I > 0,$$

since $ym \leq g(\mathbb{E}[\tilde{R}] + d) < 1 - h$. Without sales, $L(y) = 1 - q > 0$. Moreover, $D(y) \geq 1 - g > 0$.

The realized payoff advantage of staying over requesting is

$$v(R, x; q, M, I) = \phi(x) \left\{ \frac{C(y(x)) + RL(y(x))}{D(y(x))} - M \right\}.$$

For a fixed honored request mass y , the return making the investor indifferent is

$$r(y) = \begin{cases} m, & My \leq q + I, \\ \frac{(1 - h)[M(1 - y) + I]}{1 - h + hq + I - My}, & My > q + I, \end{cases} \quad m = \frac{M - q}{1 - q}. \quad (\text{A.1})$$

Accordingly, v has the sign of $R - r(y(x))$. The two expressions in (A.1) agree at cash exhaustion. In a sale state,

$$r_y = \frac{M(1 - h)[M - (1 - h + hq)]}{[1 - h + hq + I - My]^2} > 0, \quad (\text{A.2})$$

$$r_I = -\frac{(1 - h)[M - (1 - h + hq)]}{[1 - h + hq + I - My]^2} < 0. \quad (\text{A.3})$$

The numerator is positive because $M - (1 - h + hq) = (1 - q)[m - (1 - h)] > 0$. Therefore $r(y)$ is constant at m before cash exhaustion and increasing thereafter. In particular, $r(0) = m$, while $r(g) > m$ exactly when $q + I < gM$.

A.2.2 Implications of the maintained support restriction

The support margins used in Proposition 1 follow from (5) in the date-1 setup; no additional support assumption is required here. For the calculations in this subsection only, write $k = 1 - h$ and $m_1 = \mathbb{E}[\tilde{R}] + d(\bar{p})$. Feasibility gives $k - gm_1 > 0$, while $m_1 > k$. Consequently,

$$\frac{m_1(1 - g)k}{k - gm_1} - m_1 = \frac{gm_1(m_1 - k)}{k - gm_1} > 0.$$

The maintained upper bound therefore implies

$$\mathbb{E}[\tilde{R}] \leq m_1 < \frac{m_1(1-g)k}{k-gm_1} < \bar{R} - 2\varepsilon.$$

Because the uniform prior has $\bar{R} - \mathbb{E}[\tilde{R}] = \mathbb{E}[\tilde{R}] - \underline{R}$, it follows that

$$\underline{R} + 2\varepsilon < \mathbb{E}[\tilde{R}].$$

Thus the lower support margin is a consequence of the maintained upper restriction.

To verify that the upper bound covers every conditional indifference return, removing I weakly raises $r(g)$ by (A.3). With no subscription cash, the largest conditional indifference return is attained at $q = 0$ and the largest appraisal. Indeed, within the sale region one can write

$$r(g) = \frac{(1-h)(1-g)[m + q/(1-q)]}{1-h-gm + (1-g)q/(1-q)},$$

which is decreasing in $q/(1-q)$ and increasing in m . Its value at $q = 0$ and $m = m_1$ is the left side of (5). Where there are no sales, $r(g) = m$ and the same bound applies. Since $r(y)$ is nondecreasing and $r(0) = m \geq \mathbb{E}[\tilde{R}]$, the two margins give

$$\underline{R} + 2\varepsilon < \mathbb{E}[\tilde{R}] \leq r(y) \leq \frac{m_1(1-g)k}{k-gm_1} < \bar{R} - 2\varepsilon, \quad 0 \leq y \leq g.$$

This conclusion holds uniformly over $q < 1$, reports, permitted PIK exposures, and nonnegative subscription cash. It supplies a low-signal region where requesting is strictly preferred regardless of other investors' requests, and a high-signal region where staying is strictly preferred. The case $q = 1$, in which investors are indifferent, is treated separately in Appendix A.2.5.

The maintained restriction also implies $g < 1/2$. Dropping the positive noise margin from the upper bound yields

$$g < \frac{k(\bar{R} - m_1)}{m_1(\bar{R} - k)} < \frac{\underline{R}}{\underline{R} + \bar{R}} < \frac{1}{2},$$

where $k < \underline{R}$ and $m_1 \geq (\underline{R} + \bar{R})/2$ give the second inequality. This restriction is substantive: even as noise vanishes, the worst-case conditional indifference return must remain below $\bar{R}$. Increasing signal precision alone need not make it hold.

A.2.3 The positive-noise equilibrium

Suppose all other investors request when their signal is below s . The conditional request mass is

$$x(R; s) = \min \left\{ 1, \max \left\{ 0, \frac{s + \varepsilon - R}{2\varepsilon} \right\} \right\}.$$

At an interior signal s , the posterior for R is uniform on $[s - \varepsilon, s + \varepsilon]$. Under the change of variables $R = s + \varepsilon(1 - 2x)$, x is uniform on $[0, 1]$. Define the positive weight

$$w(x) = \frac{\phi(x)L(y(x))}{D(y(x))} > 0.$$

Expected staying advantage at the candidate threshold is

$$\int_0^1 w(x) [s + \varepsilon(1 - 2x) - r(y(x))] dx. \quad (\text{A.4})$$

It is linear in s , with strictly positive slope. Its unique zero is

$$R^* = \frac{\int_0^1 w(x)r(y(x)) dx}{\int_0^1 w(x) dx}, \quad s_\varepsilon^* = R^* - \varepsilon \frac{\int_0^1 w(x)(1 - 2x) dx}{\int_0^1 w(x) dx}. \quad (\text{A.5})$$

In particular, $|s_\varepsilon^* - R^*| \leq \varepsilon$. Since R^* is a positive-weight average of $r(y(x))$, the margins derived in Appendix A.2.2 imply

$$\underline{R} + 2\varepsilon < R^* < \bar{R} - 2\varepsilon, \quad [s_\varepsilon^* - \varepsilon, s_\varepsilon^* + \varepsilon] \subset (\underline{R}, \bar{R}).$$

The posterior at the candidate threshold is therefore not truncated: one ε allows for the signal cutoff's displacement from R^* , and the other for the posterior's half-width. Conversely, a threshold whose posterior touches a prior boundary cannot be an equilibrium. Near the lower boundary requesting is strictly preferred, and near the upper boundary staying is strictly preferred, by the same derived margins.

It remains to check best responses, rather than only indifference. For fixed s , $x(R; s)$ is nonincreasing in R , while $r(y)$ is nondecreasing in y . Consequently, $R - r(y(x(R; s)))$ is strictly increasing and crosses zero once. Realized staying advantage has this same sign, although its magnitude need not be monotone. Any sliding uniform posterior with zero expected advantage must straddle that sign change. Moving such a window upward removes a negative endpoint and adds a positive one, so its unnormalized expected advantage is strictly increasing at any zero. Posteriors entirely below or above the sign change have negative or positive advantage, respectively; the support margins supply the same dominance at truncated boundary posteriors. Conditional expected advantage therefore crosses zero once. Indifference at s_ε^* implies requesting below that signal and staying above it.

This proves existence and uniqueness within symmetric threshold strategies. Taking $\varepsilon \downarrow 0$ in (A.4) gives (12). Since (A.5) makes R^* a positive-weight average of $r(y(x))$, it equals m when $q + I \geq gM$ and satisfies $m < R^* < r(g)$ when $q + I < gM$. The inequalities are strict because request masses with $r(y(x)) > m$ and request masses with $r(y(x)) < r(g)$ each have positive measure when repurchases can require loan sales. For every $R \neq R^*$, requests converge to one below R^* and zero above it. This establishes Proposition 1.

A.2.4 Funding insurance and the report comparative static

The following calculations prove the comparisons stated after Proposition 1. Define $Z(y) = [My - q - I]_+$. Accounting gives

$$A_2(R, y; q, M) - MD(y) = (1 - q)(R - m) - \left(\frac{R}{1 - h} - 1 \right) Z(y).$$

When $q + I \geq gM$, $Z(y) = 0$ for every $y \leq g$, yielding (13). For the fixed-price funding comparison, let η be the weighted average of $Z(y(x))$ under normalized weights $\phi(x)/D(y(x))$. Dividing (12) by the sum of those weights gives

$$R^* = \frac{(1 - q)m - \eta}{1 - q - \eta/(1 - h)}.$$

The denominator is positive because it is the corresponding weighted average of $L(y)$. The ratio is strictly increasing in η .

At fixed q, M , raising I weakly lowers $Z(y)$, strictly in sale states. The logarithmic derivative of its weight is $-1/[MD(y)]$, which decreases in y . The covariance of this derivative with the increasing function $Z(y)$ is therefore nonpositive. Both the direct and reweighting effects weakly lower η , with a strict effect while sale states have positive measure. Thus extra subscription cash strictly lowers R^* until $q + I \geq gM$, where $R^* = m$. New shares continue to be issued at M in this comparison.

The subscription-response restriction (6), together with (5), implies

$$a < \frac{(1 - h)(1 - g)}{\bar{R}}. \quad (\text{A.6})$$

Indeed, for every supported appraisal m ,

$$\frac{g[(2 - g)m - \underline{R}]}{\bar{R} - \underline{R} + gm} < 1 - g.$$

This inequality is equivalent to $g(m - \underline{R}) < (1 - g)(\bar{R} - \underline{R})$, which follows from $m < \bar{R}$ and $g < 1/2$, as established in Appendix A.2.2. Apply it at $m = \mathbb{E}[\tilde{R}] + d$ in (6). Thus (A.6) follows from the two maintained restrictions; it is not an additional assumption.

The same restrictions imply that subscriptions never cover the maximum repurchase payment alone. Because $1 - h < \underline{R}$, $\mathbb{E}[\tilde{R}] + d < \bar{R}$ (Appendix A.2.2), and $g(\mathbb{E}[\tilde{R}] + d) > 0$, the right side of (6) is below $g\underline{R}(2\bar{R} - \underline{R})/[\bar{R}(\bar{R} - \underline{R})]$. Because $(\bar{R} - \underline{R})^2 > 0$ gives $\underline{R}(2\bar{R} - \underline{R}) < \bar{R}^2$,

$$a < \frac{g\underline{R}(2\bar{R} - \underline{R})}{\bar{R}(\bar{R} - \underline{R})} < \frac{g\bar{R}}{\bar{R} - \underline{R}}. \quad (\text{A.7})$$

Suppose that $a(m - 1) \geq gm$ at some permitted appraisal m . Since $1 < m < \bar{R}$ (Appendix A.2.2) and

$$\underline{R} < 1,$$

$$a \geq \frac{gm}{m-1} > \frac{g\bar{R}}{\bar{R}-1} > \frac{g\bar{R}}{\bar{R}-\underline{R}},$$

contradicting (A.7). Therefore

$$a(m-1) < gm \quad \text{for every } m \in [\mathbb{E}[\tilde{R}], \mathbb{E}[\tilde{R}] + d]. \quad (\text{A.8})$$

Hence $q + a(M-1) < gM$ at $q = 0$ for every report: a fund with no initial liquidity sells loans whenever repurchases exhaust the gate.

For a report change, impose $I = a(M-1)$ and hold q, R fixed. Away from cash exhaustion,

$$A_{2,M} = \begin{cases} a - y, & My < q + I, \\ \frac{R(a-y)}{1-h}, & My > q + I, \end{cases} \quad D_M = \frac{a}{M^2}.$$

Since $A_2 \geq 0$ and $D \geq 1 - g$,

$$v_M = \phi \left(\frac{A_{2,M}}{D} - \frac{A_2 a}{M^2 D^2} - 1 \right) \leq -\phi \left[1 - \frac{a\bar{R}}{(1-h)(1-g)} \right].$$

Also $0 < v_R = \phi L/D \leq \phi(1-q)/(1-g)$. Using (A.6), implicit differentiation of (12) yields

$$(1-q) \frac{dR^*}{dM} = \left. \frac{dR^*}{dm} \right|_q \geq 1 - g - \frac{a\bar{R}}{1-h} > 0. \quad (\text{A.9})$$

One-sided versions apply at funding boundaries. Unlike the fixed-price funding comparison, this derivative includes both the additional cash and the shares issued along the subscription schedule.

A.2.5 The vanishing-noise objective

For subsequent proofs define

$$A_0(R) = q + I + (1-q)R, \quad A_g(R) = A_2(R, g; q, M).$$

Because $|s_\varepsilon^* - R^*| \leq \varepsilon$, the finite-noise and limiting honored-request rules coincide outside $[R^* - 2\varepsilon, R^* + 2\varepsilon]$. Let Π_ε be expected terminal assets under the positive-noise equilibrium. The terminal-asset reduction from any honored request mass is between zero and $A_0 - A_g$, and these differences are uniformly bounded on the feasible domain. Therefore

$$\sup_{q < 1, b \in [0,1]} |\Pi_\varepsilon - \Pi| \leq \frac{4\varepsilon}{\bar{R} - \underline{R}} \sup_{R,q,b} \{A_0(R) - A_g(R)\} \longrightarrow 0.$$

At $q = 1$, $M = 1$ and $I = 0$, so incumbents are indifferent. Apply the request-at-indifference convention stated in the date-1 setup to both the finite-noise and limiting problems; then $y = g$ and $\Pi(1, b) = 1 - g$. Appendix A.3.1 shows that all joint limiting optima lie uniformly away from this endpoint, with a strict value margin that persists for sufficiently small noise. Uniform convergence therefore preserves optimized values, and every accumulation point of finite-noise maximizers is a maximizer of the limiting objective.

A.3 Proof of Proposition 2

A.3.1 Joint liquidity domination and existence

First suppose $q > 0$, $q + I > gM$, and $m > \mathbb{E}[\tilde{R}]$. Reduce q slightly and lower $m = (M - q)/(1 - q)$ so as to keep M fixed. This is a feasible joint portfolio–report adjustment: it leaves subscriptions and new shares unchanged, and nearby choices still require no loan sales for any request mass. In this region,

$$\Pi = q + I + (1 - q)\mathbb{E}[\tilde{R}] - gM \frac{(M - q)/(1 - q) - \underline{R}}{\bar{R} - \underline{R}}.$$

Its fixed- M derivative is

$$\left. \frac{\partial \Pi}{\partial q} \right|_M = 1 - \mathbb{E}[\tilde{R}] - \frac{gM(M - 1)}{(1 - q)^2(\bar{R} - \underline{R})} < 0.$$

Reducing liquidity therefore strictly improves the objective.

At the lower-report boundary, instead keep $b = 0$ while reducing q . Let $M_0(q) = q + (1 - q)\mathbb{E}[\tilde{R}]$. The withdrawal threshold equals the mean, so its probability is one-half whenever $q + I \geq gM$. Hence

$$\Pi(q, 0) = (1 + a - g/2)M_0(q) - a, \quad \frac{d\Pi(q, 0)}{dq} = -(\mathbb{E}[\tilde{R}] - 1)(1 + a - g/2) < 0.$$

Thus no joint optimum can hold positive initial liquidity in excess of the amount needed, together with subscriptions, to cover gM . The funding balance can be written as

$$q + a(M - 1) - gM = (1 - g)q - (1 - q)[gm - a(m - 1)].$$

By (A.8), $gm - a(m - 1) > 0$ at every permitted report. Define the initial liquidity buffer that, together with subscriptions, exactly funds the gate at report m as

$$\bar{q}(m) \equiv \frac{gm - a(m - 1)}{1 + (g - a)(m - 1)} = \frac{gm - a(m - 1)}{1 - g + gm - a(m - 1)} \in (0, 1).$$

This establishes the general liquidity bound

$$0 \leq q^* \leq \bar{q}(m^*) < 1. \tag{A.10}$$

For existence, recall that the all-cash endpoint gives $1 - g$. As $q \uparrow 1$, liquid resources uniformly exceed the maximum permitted repurchase payment and

$$\Pi(q, b) \longrightarrow 1 - g \frac{m - \underline{R}}{\bar{R} - \underline{R}} \leq 1 - g/2$$

uniformly over the compact report range. In contrast, choose $b = 0$ and hold exactly the initial cash needed after subscriptions. This choice has $q < 1$, $M_0 > 1$, and payoff

$$(1 + a - g/2)M_0 - a > 1 - g/2.$$

The endpoint and a neighborhood of it are uniformly dominated. On the remaining compact domain, the positive-weight formula for R^* and the asset accounting make Π continuous, including at cash-exhaustion boundaries. A maximizer exists by compactness and has $q^* < 1$. Together with Proposition 1, it constitutes a limiting equilibrium as defined in the body of the text. Existence does not require concavity or uniqueness of the manager's choice.

A.3.2 The manager's marginal tradeoffs

Let $t = R^*(q, M)$ and $Z_g = [gM - q - I]_+$. The cost of repurchasing g original shares relative to no repurchases is

$$A_0(R) - A_g(R) = gM + \left(\frac{R}{1 - h} - 1 \right) Z_g \geq gM. \quad (\text{A.11})$$

Besides the payment itself, the manager loses the maturity proceeds sacrificed by forced sales. Integrating this identity under the uniform prior gives a useful closed-form version of (14):

$$\begin{aligned} \Pi(q, b) = & q + I + (1 - q)\mathbb{E}[\tilde{R}] \\ & - \frac{t - \underline{R}}{\bar{R} - \underline{R}} \left[gM + Z_g \left(\frac{t + \underline{R}}{2(1 - h)} - 1 \right) \right]. \end{aligned} \quad (\text{A.12})$$

The expression is valid in both funding regimes; when $Z_g = 0$, $t = m$.

At fixed q , a smooth change in M along $I = a(M - 1)$ gives

$$\frac{d\Pi}{dM} = \frac{1}{\bar{R} - \underline{R}} \left\{ \int_{\underline{R}}^t A_{g,M}(R) dR + \int_t^{\bar{R}} a dR + [A_g(t) - A_0(t)] \frac{dt}{dM} \right\}. \quad (\text{A.13})$$

Here

$$A_{g,M}(R) = \begin{cases} a - g, & gM < q + I, \\ \frac{R(a - g)}{1 - h}, & gM > q + I. \end{cases}$$

The first two terms capture subscription benefits and payments at the existing withdrawal rule; the last

values the change in the withdrawal threshold. An inflow dollar can be worth $R/(1-h)$ in a sale state because it preserves loans, not merely one dollar of otherwise unused liquidity buffer.

For liquidity, hold the appraisal m fixed and use $M(q) = q + (1-q)m$ and $I = a(M-1)$. At fixed y, R ,

$$A_{2,q} = \begin{cases} 1 - R + (y-a)(m-1), & My < q + I, \\ \frac{R[h + (y-a)(m-1)]}{1-h}, & My > q + I, \end{cases} \quad D_q = -\frac{a(m-1)}{M^2}.$$

The associated threshold derivative is

$$t_q = -\frac{\int_0^1 \phi(x) \left[\frac{A_{2,q}}{D} - \frac{A_2 D_q}{D^2} + (m-1) \right] dx}{\int_0^1 \frac{\phi(x)L}{D} dx},$$

with terms evaluated at $R = t$, $y = y(x)$. Therefore

$$\Pi_q = \frac{1}{\bar{R} - \underline{R}} \left\{ \int_{\underline{R}}^t A_{g,q}(R) dR + \int_t^{\bar{R}} [1 - R - a(m-1)] dR + [A_g(t) - A_0(t)] t_q \right\}.$$

The first two terms trade preserved loans against unused cash and lower fundraising; the last values the change in withdrawals. Holding b fixed is equivalent to holding m fixed at a given p .

For example, at a fixed $q < 1$ in a region where nearby reports leave the gate fully funded,

$$\Pi(q, b) = q + (1-q)\mathbb{E}[\tilde{R}] + a(M-1) - gM \frac{m - \underline{R}}{\bar{R} - \underline{R}}, \quad (\text{A.14})$$

$$\left. \frac{\partial \Pi}{\partial m} \right|_q = (1-q) \left[a - g \frac{2m - \underline{R} + q/(1-q)}{\bar{R} - \underline{R}} \right]. \quad (\text{A.15})$$

The marginal subscription gain is weighed against both a larger payment per repurchased share and a higher probability of making that payment. Within the fully funded regime these costs dominate: under (6), the bracket in (A.15) is negative at every permitted report, as verified below. This reporting tradeoff does not require coordination-driven withdrawals. When payments instead require loan sales, anticipated losses from others' withdrawals provide an additional reason to exit. The calculation holds liquidity fixed within the fully funded regime; the manager must also consider joint reporting–liquidity adjustments and underfunded alternatives.

On this branch,

$$\Pi_{bb} = -\frac{2g(1-q)d^2}{\bar{R} - \underline{R}} < 0.$$

This is strict concavity in reporting at fixed liquidity when nearby reports require no loan sales, not global concavity after liquidity adjustment. By (A.8), these formulas never apply at $q = 0$. By (A.7) and $2\mathbb{E}[\tilde{R}] - \underline{R} = \bar{R}$, the bracket in (A.15) is negative at every $m \geq \mathbb{E}[\tilde{R}]$, because $a < g\bar{R}/(\bar{R} - \underline{R}) \leq$

$g[2m - \underline{R} + q/(1 - q)]/(\bar{R} - \underline{R})$. For completeness, on the branch with strictly positive initial liquidity and $q + I = gM$, substitution gives

$$\Pi = \frac{(1 - g)\mathbb{E}[\tilde{R}] + \frac{g[m - a(m - 1)](\bar{R} - m)}{\bar{R} - \underline{R}}}{1 + (g - a)(m - 1)}. \quad (\text{A.16})$$

A.3.3 Reporting discipline under the subscription-response restriction

In either funding regime,

$$A_{g,M}(R) \leq \frac{a\bar{R}}{1 - h} - g, \quad A_{0,M} = a \leq \frac{a\bar{R}}{1 - h}.$$

Equation (A.6) follows from the maintained restrictions, as shown in Appendix A.2.4. Use (A.9), $t \geq m$, (A.11), and $M/(1 - q) \geq m$ in (A.13) to obtain

$$\begin{aligned} \frac{d\Pi}{dM} &\leq \frac{a\bar{R}}{1 - h} - g \frac{m - \underline{R}}{\bar{R} - \underline{R}} - \frac{gM}{(1 - q)(\bar{R} - \underline{R})} \left(1 - g - \frac{a\bar{R}}{1 - h}\right) \\ &\leq \frac{\frac{a\bar{R}}{1 - h}(\bar{R} - \underline{R} + gm) - g[(2 - g)m - \underline{R}]}{\bar{R} - \underline{R}}. \end{aligned} \quad (\text{A.17})$$

This bound allows subscription cash to prevent forced sales and is uniform across initial liquidity choices and funding regimes.

For this proof only, let $m_1 = \mathbb{E}[\tilde{R}] + d(p)$. The maintained restriction (6) makes the right side of (A.17) strictly negative at $m = m_1$. By continuity, the bound remains strictly negative in a neighborhood of m_1 . At any fixed $q < 1$, reducing a report at the cap therefore strictly increases the manager's objective.

This conclusion also covers a cap located at a funding boundary. The one-sided reporting derivatives satisfy the same strict bound, and the objective is continuous across the funding branches. A sufficiently small reduction in the report therefore improves the objective even when it changes whether repurchases require loan sales. Reoptimizing liquidity cannot make the maximum appraisal optimal: for every liquidity choice, a report at the cap can be improved while holding that liquidity choice fixed. Since Appendix A.3.1 excludes the all-cash endpoint, every joint optimum has $b^* < 1$. The general liquidity bound (A.10), with $0 < \bar{q}(m) < 1$, was established in Appendix A.3.1. None of these conclusions uses condition (7). Appendix A.3.4 establishes the stronger full-funding and uniqueness conclusions when that additional condition holds.

For comparisons across PIK exposures, the ratio

$$\frac{g[(2-g)m - \underline{R}]}{\bar{R} - \underline{R} + gm}$$

is strictly increasing in m . Thus the upper bound on a in (6) increases with $d(p)$, so maintaining the restriction over a range of PIK exposures requires checking the smallest appraisal cap in that range. Feasibility and (5) are instead checked at the largest cap. When the additional full-funding condition is invoked, (7) must hold over the entire report interval associated with the largest cap, not merely at its upper endpoint.

This establishes the general part of Proposition 2.

A.3.4 Full funding and uniqueness under the additional condition

We now impose condition (7). For this subsection, write $\mu = \mathbb{E}[\tilde{R}]$, $\Delta = \bar{R} - \underline{R}$, and $k = 1 - h$. Fix a permitted appraisal $m = \mu + bd$ and define

$$P = \frac{m - \underline{R}}{\Delta}, \quad Z = gm - a(m - 1), \quad H = 1 + (g - a)(m - 1) = 1 - g + Z.$$

By (A.8), $Z > 0$, so $H > 0$ and $\bar{q}(m) = Z/H \in (0, 1)$. For $0 \leq q \leq \bar{q}(m)$, the funding shortfall when the gate is exhausted is

$$Z_g = gM - q - a(M - 1) = Z - Hq, \quad M = q + (1 - q)m.$$

Thus M and Z_g are affine in q at a fixed appraisal.

Every underfunded portfolio is dominated. Replace the actual withdrawal threshold $t = R^*$ in (A.12) by m , but retain repurchase payments and all loan-sale losses in states below m . The resulting auxiliary objective is

$$\hat{\Pi}(q, b) = q + a(M - 1) + (1 - q)\mu - P \left[gM + (Z - Hq) \left(\frac{m + \underline{R}}{2k} - 1 \right) \right].$$

For $q < \bar{q}(m)$, Proposition 1 gives $t > m$. Equation (A.11) then implies

$$\hat{\Pi}(q, b) - \Pi(q, b) = \frac{1}{\Delta} \int_m^t \left[gM + \left(\frac{R}{k} - 1 \right) (Z - Hq) \right] dR > 0.$$

The inequality is strict because $t > m$, $gM > 0$, and $R > k$ in every state. At $q = \bar{q}(m)$, $t = m$ and $Z_g = 0$, so $\hat{\Pi}(\bar{q}(m), b) = \Pi(\bar{q}(m), b)$.

The auxiliary objective is affine in q , with derivative

$$K(m) \equiv \frac{\partial \hat{\Pi}}{\partial q} = PH \left(\frac{m + \underline{R}}{2k} - 1 \right) - (\mu - 1) - (a - gP)(m - 1).$$

The condition $K(m) \geq 0$ is equivalent to

$$k \leq \frac{PH(m + \underline{R})}{2[P + (\mu - 1) + a(1 - P)(m - 1)]}.$$

All quantities in the denominator are positive because $\mu > 1$, $m > 1$, and $0 < P < 1$. To recover condition (7), use

$$\begin{aligned} \Delta P(m + \underline{R}) &= m^2 - \underline{R}^2, \\ 2\Delta[P + (\mu - 1) + a(1 - P)(m - 1)] &= (m^2 - \underline{R}^2) + (\bar{R} - m)[\bar{R} + m - 2 + 2a(m - 1)]. \end{aligned}$$

Hence (7) makes $\hat{\Pi}$ nondecreasing in q at every permitted report. For every $q < \bar{q}(m)$,

$$\Pi(q, b) < \hat{\Pi}(q, b) \leq \hat{\Pi}(\bar{q}(m), b) = \Pi(\bar{q}(m), b).$$

Weak inequality in (7) suffices: even if $K(m) = 0$, eliminating the additional withdrawal states makes the actual improvement strict. Appendix A.3.1 excludes overfunded joint optima. Together, the two arguments establish

$$q^* = \bar{q}(m^*) > 0, \quad q^* + a(M^* - 1) = gM^*, \quad R^* = m^*.$$

No exogenous minimum liquidity requirement has been imposed.

The manager's choice is unique. Since every optimum exactly funds the gate, the manager need only maximize the objective in (A.16) over $m \in [\mu, \mu + d]$. View H as a function of m , define $B(m) = m - a(m - 1)$, and write

$$V(m) = \frac{(1 - g)\mu + gB(m)(\bar{R} - m)/\Delta}{H(m)}.$$

Differentiating gives

$$V'(m) = \frac{N(m)}{\Delta H(m)^2}, \quad N(m) = g(1 - g)(\bar{R} - m) - gB(m)H(m) - (g - a)(1 - g)\mu\Delta.$$

A second differentiation simplifies to

$$N'(m) = -2g(1 - a)H(m) < 0.$$

Indeed, (A.6) implies $a < (1 - h)(1 - g)/\bar{R} < 1$, and $H(m) > 0$. Thus V' can change sign at most once, from positive to negative, and V has a unique maximizer. Appendix A.3.3 excludes the upper cap. The optimum is $m^* = \mu$ if $N(\mu) \leq 0$; otherwise it is the unique zero of N in $(\mu, \mu + d)$. Since $d > 0$, $b^* = (m^* - \mu)/d$ is unique, as is $q^* = \bar{q}(m^*)$. This proves Proposition 2. $\square$

A.3.5 The role of the condition and fragility without full funding

Condition (7) is sufficient for full funding, not a condition for equilibrium existence or reporting discipline. It makes every underfunded choice worse than an exactly funded choice at the same appraisal. The proof deliberately understates the benefit of liquidity: $\hat{\Pi}$ removes the additional withdrawals in $m < R < R^*$ while retaining the losses on loan sales in states below m . Consequently, failure of the condition does not establish that full funding is suboptimal. It only removes this sufficient domination argument.

At $m = \mu = \mathbb{E}[\tilde{R}]$, the right side of (7) is

$$1 - \frac{(\mu + \underline{R})[1 + (g - a)(\mu - 1)]}{2[2\mu - 1 + a(\mu - 1)]}.$$

For small a and g , this is approximately $[(\mu - 1) + (\bar{R} - \underline{R})/4]/(2\mu - 1)$, relating the sufficient liquidation discount to the loan premium and payoff dispersion. The condition adds a restriction beyond $1 - h < \underline{R}$ only when its right side exceeds $1 - \underline{R}$ at some permitted report. It must be checked throughout the report interval. For example, with $\tilde{R} \sim U[0.80, 1.30]$, $g = 0.05$, $a = 0.04$, and $d = 0.03$, the maximum of its right side is approximately 0.160197. At $h = 0.25$, the maintained assumptions and the additional condition hold, and the unique limiting optimum has $m^* = 1.05$ and $q^* = \bar{q}(1.05) \simeq 0.050475$.

An optimally underfunded fund can be fragile. Without (7), the general conclusions remain $b^* < 1$ and $0 \leq q^* \leq \bar{q}(m^*)$. A manager may hold a positive buffer but leave part of the gate payment to be financed by loan sales, or choose no initial liquidity. Whenever the optimal portfolio is underfunded, Proposition 1 gives

$$q^* + a(M^* - 1) < gM^*, \quad R^* > m^*.$$

The fund then sells loans when repurchases exhaust the gate, and the interval $m^* < R < R^*$ has strictly positive probability $(R^* - m^*)/(\bar{R} - \underline{R})$. In those states an investor would prefer to stay in the absence of others' withdrawals, but anticipated loan-sale losses make requesting repurchase optimal. This is fragility following an optimally chosen portfolio, not merely an outcome following an imposed zero-liquidity allocation. It is also not a claim that a second withdrawal equilibrium coexists with the symmetric threshold equilibrium for the same portfolio.

For a numerical illustration, let

$$\tilde{R} \sim U[0.95, 1.25], \quad g = 0.05, \quad a = 0.10, \quad d = 0.03, \quad h = 0.10.$$

These values satisfy the maintained feasibility, support, and subscription restrictions. For instance, $\varepsilon = 0.01$ is admissible: the left side of (5) is $1.145406 < 1.23$, and the upper bound on a in (6) is $0.126581 > 0.10$. Condition (7) fails, since it requires $h \geq 0.157128$ at $m = 1.10$. Numerical maximization of the vanishing-noise objective (14), using the exact threshold in (A.5), gives

$$m^* = 1.10, \quad b^* = 0, \quad q^* \simeq 0.031265 < \bar{q}(1.10) \simeq 0.045226, \quad R^* \simeq 1.102537.$$

Thus the manager holds positive liquidity but optimally retains forced-sale risk and an additional withdrawal interval. Its probability is approximately 0.85%. With the same primitives except $h = 0.06$, the maintained restrictions still hold and numerical maximization instead gives $q^* = 0$, $b^* = 0$, and $R^* \simeq 1.106837 > m^* = 1.10$. Conversely, at $h = 0.12$ with all other primitives unchanged, the maintained restrictions still hold and the numerical optimum exactly funds the gate, even though (7) still fails. This illustrates that the condition is not necessary for full funding. The numerical choices in this subsection solve the limiting manager problem; $\varepsilon = 0.01$ verifies admissibility of the positive-noise games, and the support restriction also holds for smaller noise. It is admissible for the full-funding illustration above as well.

Under (7), by contrast, the manager eliminates the additional withdrawal interval and forced sales. Repurchase requests still occur below m^* , and the gate can still ration those requests. The liquidation discount does not appear in (A.16), so changes in h that preserve all the restrictions and this full-funding regime do not change the optimal appraisal or buffer, holding the other primitives fixed. The condition selects a regime in which precautionary liquidity prevents forced-sale amplification; it does not make that amplification necessary for payments at NAV to discipline reporting.

A.4 Proofs of the empirical corollaries

A.4.1 Proof of Corollary 1

Without fund-financed repurchases, substitute $M - 1 = (1 - q)(m - 1)$ into expected terminal assets to obtain

$$q + (1 - q)\mathbb{E}[\tilde{R}] + a(1 - q)(m - 1).$$

At fixed m , its cash derivative is $1 - \mathbb{E}[\tilde{R}] - a(m - 1) < 0$. At $q < 1$, its appraisal derivative is $a(1 - q) > 0$. With the positive appraisal latitude specified in the setup, the unique choices are therefore $q = 0$ and $b = 1$, with appraisal $\mathbb{E}[\tilde{R}] + d$.

Proposition 2 gives $b^* < 1$ with repurchases at NAV, even after joint liquidity adjustment. Its loan appraisal is therefore strictly lower. The argument changes only the repurchase obligation. It does not supply a public-market pricing equilibrium or show that all other determinants of actual listed and nonpublic BDC appraisals are identical. $\square$

A.4.2 Proof of Corollary 2

Lemma 1 gives $q^* = 0$ without repurchases at NAV. With repurchases and the additional condition (7), Appendix A.3.4 proves $q^* = \bar{q}(m^*) > 0$ and $q^* + a(M^* - 1) = gM^*$. No request mass then requires loan sales, so Proposition 1 gives $R^* = m^*$. This establishes the positive-liquidity and exact-funding conclusions. The condition is sufficient, not necessary, and Appendix A.3.5 shows that, without it, positive but insufficient liquidity or a zero buffer can be optimal. The general reporting-restraint result does not depend on this condition. $\square$

A.4.3 Proof of Corollary 3

Let $0 < d_0 < d_1$, hold all other primitives fixed, and suppose the maintained restrictions hold at both appraisal caps. For a given cap d , write $z = bd$, so that the appraisal is $\mathbb{E}[\tilde{R}] + z$. In coordinates (q, z) , appraisal latitude enters only through the constraint $0 \leq z \leq d$; the objective is otherwise unchanged. Feasibility and (5) at cap d_1 imply the same restrictions at cap d_0 , and (6) at cap d_0 implies (6) at cap d_1 , because its upper bound increases with the cap (Appendix A.3.3).

The right-hand side of (A.17) is strictly negative at a report m if and only if

$$a < \frac{g(1-h)[(2-g)m - \underline{R}]}{\bar{R}[\bar{R} - \underline{R} + gm]}.$$

Restriction (6) at cap d_0 imposes this inequality at $m = \mathbb{E}[\tilde{R}] + d_0$. The bound on a in this inequality is strictly increasing in m , so the inequality holds throughout $m \in [\mathbb{E}[\tilde{R}] + d_0, \mathbb{E}[\tilde{R}] + d_1]$. As in Appendix A.3.3, the one-sided reporting derivatives satisfy the same bound and the objective is continuous across the funding branches. Since $M = q + (1-q)(\mathbb{E}[\tilde{R}] + z)$ and $\partial M / \partial z = 1 - q > 0$ for $q < 1$, the objective at any fixed $q < 1$ is therefore strictly decreasing in z on $[d_0, d_1]$.

By the reporting-restraint part of Proposition 2 at cap d_0 (Appendix A.3.3), a choice with $z = d_0$ and $q < 1$ can be strictly improved by reducing the appraisal while holding liquidity fixed. Appendix A.3.1 establishes existence of an optimum and excludes the all-cash endpoint. Every choice with $z \in [d_0, d_1]$ is therefore strictly worse than the optimum at cap d_0 . Because the feasible choices with $z \leq d_0$ and their objective values are unchanged when the cap rises, the set of optimal (q, z) is the same at d_0 and d_1 . In particular, every optimum at cap d_1 has an appraisal strictly below $\mathbb{E}[\tilde{R}] + d_0$.

Since $m = \mathbb{E}[\tilde{R}] + z$, the set of optimal appraisal–liquidity pairs is also unchanged. If condition (7) additionally holds throughout $[\mathbb{E}[\tilde{R}], \mathbb{E}[\tilde{R}] + d_1]$, Appendix A.3.4 makes this common set a singleton, so the unique m^* and q^* are identical at both caps. Checking the additional condition over this entire report interval suffices for both caps. The normalized optimism choice need not be constant: for an unchanged optimal increment z^* , $b^*(d) = z^*/d$, which falls with d when $z^* > 0$.

Without repurchases at NAV, Lemma 1 gives the appraisal $\mathbb{E}[\tilde{R}] + d$. Its gap from any given member

of the unchanged optimal appraisal set with repurchases therefore rises by $d_1 - d_0 > 0$. Under the full-funding condition, define the unique valuation gap as

$$G(d) = \mathbb{E}[\tilde{R}] + d - m^*(d).$$

Because the optimal appraisal with repurchases is unchanged,

$$G(d_1) - G(d_0) = d_1 - d_0.$$

Consequently, $G'(d) = 1$ over any interval on which the restrictions continue to hold. Without uniqueness, the comparison applies to each fixed member of the common optimizer set; it does not impose a selection rule among its members.

The quoted–unquoted implication follows by setting $d_0 = d_Q(p)$ and $d_1 = d_U(p)$ at a common PIK exposure p , where $d_Q(p) < d_U(p)$ are the appraisal caps for quoted and unquoted loans, respectively. Holding all other primitives fixed and maintaining the restrictions at both caps, the valuation gap is smaller for quoted loans by $d_U(p) - d_Q(p) > 0$. The PIK implication follows by setting $d = d(p)$: under uniqueness,

$$\frac{d}{dp} G(d(p)) = d'(p) > 0$$

over any range on which the restrictions continue to hold. □

B The BDC sponsor as the valuation unit

This appendix examines whether BDC-level marks should be consolidated into a single sponsor-level mark. We use the individual BDC positions underlying the main valuation sample, retaining the same sample restrictions and requiring at least two eligible sponsors to hold the same loan on the same reporting date. Unlike the main analysis, we retain separate BDC marks to measure disagreement within and across sponsors. Table A.1 presents the unconsolidated data and the tests motivating aggregation.

Table A.1 : The sponsor as the valuation reporting unit

<i>Panel A. From BDC positions to sponsor valuation decisions</i>					
BDC-loan-date positions	97,000	Sponsor decisions	65,590		
Distinct BDCs	190	Distinct sponsors	90		
Distinct loans	4,655	Loan-dates	24,180		
Loan-dates with sibling holders	13,155	Share with siblings	54.40%		
<i>Panel B. Between- and within-sponsor shares of valuation disagreement</i>					
	Between (%)	Within (%)	Loan-dates	BDC positions	
All	99.46	0.54	24,180	97,000	
Mean mark ≥ 95	97.66	2.34	20,419	84,758	
Mean mark 80–95	99.46	0.54	2,937	9,750	
Mean mark < 80	99.98	0.02	824	2,492	
Nonaccrual	100.00	0.00	350	1,044	
Quoted	99.85	0.15	6,549	22,748	
Unquoted	99.32	0.68	17,631	74,252	
<i>Panel C. Absolute differences between BDC marks on the same loan and date</i>					
	Pairs	Mean	Median	90th percentile	Within 1 bp (%)
Same sponsor	49,012	0.0259	0.00	0.02	75.58
Different sponsors	201,824	0.9873	0.47	2.17	20.15
<i>Panel D. Same-sponsor coefficient conditional on loan $\times$ date effects</i>					
Outcome		Coefficient	t -statistic	Pairs	
Absolute mark difference		−1.05	(−31.6)	242,689	
Marks within 1 bp (0/1)		0.57	(80.4)	242,689	

Notes: The sample period is 2018Q2–2026Q2 and the data includes loans with at least two eligible sponsors per loan-date. Sponsor-quarters containing an exclusion-enabled first report under a new sponsor are excluded; the CCT and CCT II corrections do not activate this exclusion. Marks and absolute gaps are cents per dollar of par. Siblings are distinct BDCs of the same sponsor holding the same loan on the same reporting date. Panel B decomposes squared deviations from the loan-date mean using equally weighted BDC marks. A single-BDC sponsor group necessarily has no within-group variation; Panels C–D therefore examine actual sibling holdings. Mark bins use the mean sponsor mark; 80–95 excludes 95. Nonaccrual means any holder reports nonaccrual. Panel C uses all unordered BDC pairs; within 1 bp means an absolute gap below 0.01 cents. Panel D absorbs loan $\times$ date effects, clusters by loan, and drops single-pair groups. Parentheses contain t -statistics.

Panel A describes the data. The sample contains 97,000 BDC-loan-date observations across 190 BDCs and 90 sponsors, corresponding to 65,590 sponsor-loan-date decisions. Multiple affiliated BDCs hold the same loan on 54.4% of loan-dates. Aggregation therefore matters for avoiding additional weight on sponsors that hold a loan through several BDCs.

Panel B decomposes disagreement among BDC marks into differences between sponsors and differences among vehicles of the same sponsor. Let $m_{b\ell t}$ denote BDC b 's mark on loan ℓ at date t ,

expressed in cents per dollar of par. For this diagnostic, let $\bar{m}_{\ell t}$ be the average across all observed BDC holders and $\bar{m}_{s\ell t}$ the average across observed affiliated holders, with $n_{s\ell t}$ such holders. Summing over loan–dates and sponsors gives

$$\begin{aligned} SS_{\text{total}} &= \sum_{\ell, t} \sum_s \sum_{b \in s} (m_{b\ell t} - \bar{m}_{\ell t})^2 \\ &= \underbrace{\sum_{\ell, t} \sum_s n_{s\ell t} (\bar{m}_{s\ell t} - \bar{m}_{\ell t})^2}_{SS_{\text{between}}} + \underbrace{\sum_{\ell, t} \sum_s \sum_{b \in s} (m_{b\ell t} - \bar{m}_{s\ell t})^2}_{SS_{\text{within}}}. \end{aligned}$$

The sums over $b \in s$ include the observed BDCs of sponsor s that hold loan ℓ at date t . Panel B reports each component as a share of total squared variation around the loan–date means, SS_{total} . Almost all this variation is between sponsors (99.46%), with only 0.54% among BDCs managed by the same sponsor. This also holds for loans marked well below par: the between-sponsor share is 99.46% when the average sponsor mark for a loan–date is at least 80 but below 95 cents per dollar of par, and 99.98% when it is below 80. The share is also high for both quoted and unquoted loans. The calculation gives each BDC mark equal weight and uses simple averages. When a sponsor has only one observed BDC holding a loan on a given date, its within-sponsor variation is automatically zero. We therefore also compare marks directly between BDCs managed by the same sponsor and between BDCs managed by different sponsors.

Panel C compares pairs of BDCs holding the same loan on the same reporting date. Among the 49,012 pairs managed by the same sponsor, marks differ by just 0.026 cents per dollar of par on average and are within 0.01 cents of each other in 76% of cases. For pairs managed by different sponsors, the average difference is 0.987 cents, and marks are within 0.01 cents of each other in only 20% of cases.

Panel D checks whether BDCs of the same sponsor agree more closely simply because they hold different loans or report on different dates than unrelated BDCs. We estimate

$$Y_{b\ell t} = \alpha_{\ell t} + \beta \mathbf{1}\{s(b, t) = s(c, t)\} + \varepsilon_{b\ell t},$$

where $s(b, t)$ is BDC b 's sponsor at date t . The outcome $Y_{b\ell t}$ is either the absolute difference between the two BDCs' marks, $|m_{b\ell t} - m_{c\ell t}|$, or an indicator that this difference is below 0.01 cents per dollar of par. Loan $\times$ date fixed effects ensure that we compare same-sponsor and different-sponsor pairs holding the same loan on the same reporting date. Standard errors are clustered by loan. Pairs managed by the same sponsor have valuation gaps 1.05 cents smaller ($t=-31.6$) and a 57-percentage-point higher probability of reporting marks less than 0.01 cents apart ($t=80.4$). Their closer agreement therefore cannot be explained simply by differences in the loans or reporting dates represented in the two groups.

Overall, these results support using the sponsor as the reporting unit for the loan-valuation analysis. Aggregating BDCs from the sponsor limits repeated counting of closely aligned marks while retaining

comparisons across sponsors, where nearly all valuation disagreement occurs. The next table contains the BDC-sponsor map.

Table A.2 : BDC–sponsor mapping

<i>Panel A. Sponsor assignments in the final sample</i>					
Sponsor	BDC CIKs	Sponsor	BDC CIKs		
26North	1950976	Hercules	1280784		
5C	1998387	HPS	1838126, 1989817		
Advanced Flower	1822523	Investcorp	1578348, 1948565		
AGL	2011498	Jefferies	1959568, 1959604		
Alcentra (BNY)	1578620	Kayne Anderson	1747172, 1850787		
AllianceBernstein	1634452, 1982701	KCAP	1372807		
Andalusian	1979306	Kennedy Lewis	1911321		
Angelo Gordon	1666384, 1913721	LAGO	2043759		
Antares	1976336, 1993402, 2065397	Lord Abbett	2008748, 2041841		
Apollo	1278752, 1837532, 2006758, 2052152, 2052153	Main Street	1396440, 1535778		
Ares	1287750, 1581934, 1918712, 2031750	Medley	1490349, 1523526		
Audax	1633858, 2033362	Monroe	1487428, 1512931, 1742313, 2061670		
Bain	1655050, 1899017	Morgan Stanley	1782524, 1825590, 1851322, 1885968, 1973476, 1983514, 2028686		
Barings	1379785, 1811972, 1859919	Muzinich	1985375		
BC Partners	1372807, 1571329, 1653384, 1726548	New Mountain	1496099, 1766037, 1781870, 1925531, 1976719, 2037804		
BDT & MSD	1849894	NexPoint	1588272		
BlackRock	1326003, 1370755, 1834543, 1902649	Oaktree	1414932, 1577791, 1744179, 1872371, 1974793		
Blackstone	1736035, 1803498	OFS	1487918, 1661306		
Blue Owl	1655887, 1655888, 1747777, 1807427, 1812554, 1869453, 1889668	OHA	1297704, 1901164, 1955010, 2083477		
Brightwood	1895316	Onex	1860424		
Capital Southwest	17313	Oxford Square	1259429		
Carlyle	1544206, 1702510, 1851277	Palmer Square	1794776		
Centerbridge	1965934	Partners Group	1938649		
Chicago Atlantic	1843162	PennantPark	1383414, 1504619, 2089126		
Churchill (Nuveen)	1737924, 1844684, 1911066, 2071136	PGIM	1923622		
CION	1534254	PhenixFIN	1490349		
CM Finance	1578348	PIMCO	1905824		
Comvest	1841514, 1987221	Prospect	1287032, 1521945		
Crescent	1633336, 1954360, 2017636	Redwood	1870267		
Crestline	2035713	Remora	2045370		
Diameter	1916099	Runway	1653384		
Fidelity	1899996, 1920453	Silver Point	1646614, 2033382		
Fidus	1513363	Sixth Street	1508655, 1925309		
First Eagle	1464963, 1890107	SLR	1418076, 1508171, 1743415, 1832148, 1932591		
Fortress	2012139	Star Mountain	1786835		
Franklin BSP	1490927, 1825248	Steele Creek (Moelis)	1817825		
FS KKR	1422183, 1494538, 1501729, 1525759, 1579412, 1617896, 1637417, 1930679, 1975736	Stellus	1551901, 1901037		
Garrison	1509892	StepStone	1950803		
Goldman Sachs	1572694, 1674760, 1683074, 1772704, 1865174, 1920145, 1948368, 2020354	Stone Point	1825384, 2031283		
Golub	1476765, 1627515, 1715268, 1868878, 1901606, 1901612, 1930087, 2082557, 2082559	TCW	1603480, 1715933, 1825265, 1916608, 2043133		
Great Elm	1675033	THL	1464963		
Guggenheim	1618697	TPG	1913724		
H.I.G. (WhiteHorse)	1552198	Triangle	1379785		
		Trinity	1786108		
		Varagon	1784700		
		Vista	1919369		
		Willow Tree	1944831		
<i>Panel B. Sponsor changes for BDCs with two sample assignments</i>					
BDC CIK	Prior sponsor	Switch date	BDC CIK	Prior sponsor	Switch date
1379785	Triangle	2018-09-30	1464963	THL	2020-03-31
1372807	KCAP	2019-06-30	1490349	Medley	2021-03-31
1578348	CM Finance	2019-09-30	1653384	Runway	2025-03-31

Notes: The 2018Q2–2026Q2 final sample contains 90 sponsor identities and 190 distinct BDCs. Panel A lists each BDC under the sponsors associated with its sample observations. Panel B reports the first reporting date under the new sponsor for the six BDCs represented under two sponsors; both assignments appear in Panel A. From the June 30, 2018 reporting date, CCT (1494538) and CCT II (1617896) are assigned to FS KKR; their prior KKR (CNL) assignments precede the displayed sample. These two corrections do not create switch-quarter exclusions. FSEP (1501729) retains the FS KKR group throughout.

C From portfolio-level to loan-level appraisal latitude

This Appendix bridges the representative-loan model in Section 2 to the loan-level heterogeneity used in the empirical tests. The Section 2 model summarizes the portfolio with a single appraisal-latitude d , while Sections 4.2 and 4.3 compare loans that differ in current PIK status and dealer-quote coverage. Here we allow individual loans to have different appraisal latitudes. The extension has two purposes. First, we show that aggregating these loan-level latitudes leaves the manager's fund-level problem unchanged, so the results of Section 2 continue to apply. Second, we derive the loan-level valuation gaps and comparative statics that correspond to the current-PIK and quoted-loan interactions estimated in Tables 3 and 4.

C.1 Setup

The illiquid portfolio consists of loan types $j = 1, \dots, J$ with principal weights $\omega_j > 0$, $\sum_j \omega_j = 1$. All types pay $\tilde{R}$ per dollar of principal at date 2 and sell at $1 - h$ per dollar of principal at date 1. They differ only in the range of defensible appraisals. Type j 's permitted upward increment is

$$d_j(p) = \delta_j \theta(p), \quad \delta_j \geq 0, \quad \theta(0) = 1, \quad \theta'(p) > 0, \quad (\text{C.1})$$

where δ_j is the loan's own latitude and θ is a sponsor-level multiplier. Latitude is a primitive here, as $d(p)$ is in Section 2. We read δ_j as the width of the range of appraisals a manager can defend. A dealer quote narrows it, because the mark can be compared with the quote. Current PIK widens it, because whether the borrower pays in kind from weakness or from a growth option is a judgment. Near par the payment record fixes the value and the range is narrow for every holder. Portfolio latitude is

$$d(p) = \sum_j \omega_j d_j(p) = \bar{\delta} \theta(p), \quad \bar{\delta} = \sum_j \omega_j \delta_j > 0, \quad (\text{C.2})$$

which satisfies (3). The latitude of Section 2 is thus the principal-weighted average of loan-level latitudes, and the maintained restrictions, all stated in terms of $d(p)$, are unchanged. The PIK channel is inherited from (3), which the body assumes: NAV-based repurchases determine $z^* < d(p)$ and its invariance in p (Corollary 3), and PIK enters only through the latitude assumption. The extension does not introduce a new economic mechanism; it only decomposes the baseline appraisal-latitude parameter into loan-specific and sponsor-level components so that the model can speak directly to the cross-loan tests in Tables 3 and 4.

The manager chooses q and increments $z_j \in [0, d_j(p)]$. The reported value per dollar of loan principal

is

$$m = E[\tilde{R}] + z, \quad z = \sum_j \omega_j z_j, \quad (\text{C.3})$$

and reported NAV is $M = q + (1 - q)m$ as in (2). Setting $z_j = b d_j(p)$ for every j recovers (1) with $z = b d(p)$.

C.2 Reduction

Investors observe the portfolio and the report and transact at M . Subscriptions, repurchase payments, loan sales, and terminal assets in (8) depend on the increments (z_j) only through M , and hence only through z .

Lemma 2 (Reduction to the representative-loan problem). *Under (C.1)–(C.3), the manager's expected terminal assets at $(q, z_1, \dots, z_J)$ equal $\Pi(q, b)$ in (14) evaluated at $b = z/d(p)$, and the set of feasible z is $[0, d(p)]$. The manager's problem is therefore that of Section 2. Lemma 1, Propositions 1 and 2, and Corollaries 1–3 hold with $z = b d(p)$. In particular, the set of optimal pairs (q, z) is the same at every PIK exposure in a range on which the maintained restrictions hold, and it is a unique (q^*, z^*) under condition (7).*

Proof. The investors' problem and the objective in (8)–(14) are functions of (q, M) and the primitives. By (C.3) and (2), $M = q + (1 - q)(E[\tilde{R}] + z)$, which is the NAV of Section 2 at $b = z/d(p) \in [0, 1]$. Since $\{\sum_j \omega_j z_j : z_j \in [0, d_j(p)]\} = [0, d(p)]$ by (C.2), the feasible sets coincide. The last statement is Corollary 3, proved in Appendix A.4.3 in the coordinates (q, z) . $\square$

The reduction holds because all loan types share the payoff $\tilde{R}$ and the liquidation price $1 - h$. Allowing quoted loans a smaller discount would change which loans the fund sells first and the withdrawal threshold of Proposition 1. That margin is the liquidity sleeve of Section 4.4 and is not modeled here.

C.3 Allocation across loans

Every allocation (z_j) with $\sum_j \omega_j z_j = z^*$ attains the optimum, so the fund-level results require no selection but loan-level predictions do. We use the common-fraction rule

$$z_j = b d_j(p), \quad j = 1, \dots, J, \quad (\text{C.4})$$

which applies the reporting parameter b of (1) loan by loan and extends to loans the assumption of Section 2 that a sponsor chooses the same reporting parameter for all of its BDCs. Under (C.4), $b^*(p) = z^*/d(p)$ and

$$z_j^* = b^*(p) d_j(p) = z^* \frac{\delta_j}{\delta}, \quad (\text{C.5})$$

which does not depend on p : a fund that pays at NAV uses a fixed increment on each loan, and a higher PIK exposure lowers the fraction of every loan's range that it uses.

Reporting costs and the common fraction. A small reporting cost selects the rule. Suppose using a fraction of a loan's appraisal range on a type with $\delta_j > 0$ entails the reporting cost $c \omega_j d_j(p) \psi(z_j/d_j(p))$, with $c > 0$, ψ strictly convex, and $\psi(0) = 0$: the expected penalty on a loan is proportional to the dollar width of its defensible range and convex in how far into that range the mark sits. Allocating a given z at least cost requires $\psi'(z_j/d_j(p))$ to be equal across types, so every loan uses the fraction $z/d(p)$ and the minimized cost is $c d(p) \psi(z/d(p))$. The cost is a selection device, not part of the model: for every $c > 0$ the allocation is (C.4), the manager's problem differs from that of Section 2 by the cost term, and as $c \rightarrow 0$ every limit of the manager's optimal (q, z) is an optimum of Section 2, unique under condition (7). The rule is needed for the cross-loan pattern of levels in Corollary 4; the widening rate there holds without it.

C.4 Loan-level valuation gaps

Corollary 4 (Loan-level gaps are proportional to loan-level latitude). *Let the maintained restrictions hold on a range of PIK exposures and fix an optimal pair (q^*, z^*) , unique under condition (7). Under (C.4), a fund without NAV-based repurchases reports $E[\tilde{R}] + \delta_j \theta(p)$ on type j , and a fund with NAV-based repurchases reports $E[\tilde{R}] + z^* \delta_j / \bar{\delta}$, which does not depend on p . The valuation gap on type j is*

$$G_j(p) = \frac{\delta_j}{\bar{\delta}} [d(p) - z^*] \geq 0, \quad \frac{\partial G_j(p)}{\partial p} = \frac{\delta_j}{\bar{\delta}} d'(p) \geq 0, \quad (\text{C.6})$$

with strict inequalities when $\delta_j > 0$. For any two types with positive latitude, $G_j/G_k = (\partial G_j/\partial p)/(\partial G_k/\partial p) = \delta_j/\delta_k$, and $\sum_j \omega_j G_j(p) = d(p) - z^*$ is the gap of Corollary 3. The rate $\partial G_j/\partial p$ holds under any allocation of z^* across types that does not vary with p .

Proof. Without repurchases, Lemma 1 gives $b = 1$, so $z_j = d_j(p) = \delta_j \theta(p)$. With repurchases, Proposition 2 and Corollary 3 give $z^* < d(p)$ at every exposure in the range, and (C.5) gives $z_j^* = z^* \delta_j / \bar{\delta}$. Subtracting and using $d(p) = \bar{\delta} \theta(p)$ gives (C.6); the sign follows from $z^* < d(p)$ and $d'(p) > 0$. The ratio and aggregation statements follow from (C.6) and $\sum_j \omega_j \delta_j = \bar{\delta}$. For the last statement, let (z_j) be any allocation with $\sum_j \omega_j z_j = z^*$ and $\partial z_j / \partial p = 0$. Then $G_j = \delta_j \theta(p) - z_j$ and $\partial G_j / \partial p = \delta_j \theta'(p) = (\delta_j / \bar{\delta}) d'(p)$. $\square$

The gap of Corollary 3 is distributed across the sponsor's loans in proportion to their latitude. Two features carry the empirical content. The widening in p comes entirely from the fund without repurchases; the fund that pays at NAV reports a fixed increment on each loan. And both the level and the widening scale with δ_j , so a loan on which appraisal is tightly constrained shows a small gap and

a small widening at any PIK exposure. As in Lemma 1, the fund without repurchases uses the entire range; footnote 5 applies.

Composition. Under a general $d_j(p)$ and (C.4), $z_j^* = z^* d_j(p)/d(p)$ and

$$\frac{\partial G_j}{\partial p} = d'_j(p) \left[1 - \frac{z^*}{d(p)} \right] + d_j(p) \frac{z^* d'(p)}{d(p)^2}.$$

Under (C.1) the two terms sum to $(\delta_j/\bar{\delta}) d'(p)$. The polar alternative is composition: each δ_j fixed and $d(p)$ rising only because higher exposure shifts the weights ω_j toward high-latitude loans. Then $d'_j = 0$, the fund without repurchases reports $E[\tilde{R}] + \delta_j$ on every loan at every p , and the fund with repurchases reports $E[\tilde{R}] + z^* \delta_j/d(p)$, which falls with p . The two forms assign the widening to different funds. Under (C.1) the fund without repurchases has a positive PIK slope and the fund with them a zero slope; under composition the fund without repurchases has a zero slope and the fund with them a slope equal to minus the widening. The forms therefore differ on two quantities that the specification of Table 3 reports: the standalone PIK-income share coefficient, the slope of a fully nonpublic sponsor, is zero under (C.1) and negative under composition; and the sum of that coefficient and its interaction with Listed asset share, the slope of a fully listed sponsor, is positive under (C.1) and zero under composition. A mixture of the two forms places both slopes between these values.

C.5 Empirical implications

Regression coefficients. Let P_s denote sponsor s 's Listed asset share and write $\kappa = z^*/\bar{\delta}$. The model's two funds are $P_s = 1$ and $P_s = 0$. A sponsor with both vehicle types and one reporting policy is neither; as in Section 4, we interpolate linearly between the two, so that by Corollary 4 sponsor s 's mark on loan j at date t is

$$E[\tilde{R}_{jt}] + \delta_j \kappa + \delta_j [\theta(p_s) - \kappa] P_s. \quad (\text{C.7})$$

The interpolation is exact at the two pure forms and is an assumption between them. A model of the mixed sponsor, for instance one that maximizes the P_s -weighted sum of the two funds' objectives, would determine the shape of that response; we leave it for future work. Expanding θ around the centered exposure $\bar{p}$ of Table 3,

$$\text{mark}_{s jt} = (E[\tilde{R}_{jt}] + \delta_j \kappa) + \delta_j [\theta(\bar{p}) - \kappa] P_s + \delta_j \theta'(\bar{p}) P_s (p_s - \bar{p}) + 0 \cdot (p_s - \bar{p}). \quad (\text{C.8})$$

The loan $\times$ date effect absorbs the first term, which is common to every holder. The Listed asset share coefficient at centered PIK-income share is $G_j(\bar{p})$; the coefficient on PIK-income share $\times$ Listed asset share is $(\delta_j/\bar{\delta}) d'(\bar{p})$; the standalone PIK-income share slope is zero. Heterogeneity in κ across sponsors enters as $\delta_j \kappa_s$, a marking style scaled by loan latitude. Sponsor effects, as in Appendix E, absorb it on

average across a sponsor's loans; sponsor effects estimated within a loan type, as in the quoted and unquoted columns of Table 4, absorb it exactly.

Moderators. A loan attribute that changes δ_j changes every coefficient in (C.8) in proportion. Current loan PIK raises δ_j from δ_0 to δ_1 , so in the specification of Table 3 the coefficients on Listed asset share $\times$ Current loan PIK and on PIK-income share $\times$ Listed asset share $\times$ Current loan PIK are $(\delta_1 - \delta_0)[\theta(\bar{p}) - \kappa]$ and $(\delta_1 - \delta_0)\theta'(\bar{p})$, both positive, and the coefficient on PIK-income share $\times$ Current loan PIK is zero because the standalone PIK slope is zero for every type. A dealer quote lowers δ_j from δ_u to δ_q , so the quoted-minus-unquoted differences that Table 4 tests are $(\delta_q - \delta_u)[\theta(\bar{p}) - \kappa]$ for the Listed asset share coefficient, $(\delta_q - \delta_u)\theta'(\bar{p})$ for the PIK-income share $\times$ Listed asset share coefficient, and $\theta'(\bar{p})[(\delta_{1q} - \delta_{0q}) - (\delta_{1u} - \delta_{0u})]$ for the triple interaction, the last negative if a quote removes the latitude that current PIK adds. The main effects of both attributes are loan-date characteristics and are absorbed by the loan $\times$ date effects.

Measuring δ_j . By (C.7), the deviation of a holder's mark from the loan-date mean is δ_j times a term that depends only on the holder, so the cross-sponsor standard deviation of marks on a loan is proportional to δ_j up to a factor that depends on who holds it. Dispersion by loan type and valuation level therefore orders loan-level latitude (Figure 5, Panel B). The predictions of Corollary 4 for quoted loans are accordingly conditional: where a quote leaves the range unchanged, (C.6) predicts the same gap and the same widening as on unquoted loans; where it narrows the range, a smaller gap and a smaller widening. The comparison of quoted and unquoted loans by current PIK status in Table 4 is the form of this conditional prediction that the paper tests, current PIK being where latitude is largest in the absence of a quote.

The zero-latitude limit. A loan with $\delta_j = 0$ is reported at $E[\tilde{R}]$ by every fund, as the liquid buffer q is reported at one. A quoted loan whose quote binds is that case for valuation, and Section 4.4 treats the same loans as the liquid sleeve. Marketability supplies both the liquidity that funds with NAV-based repurchases hold and the benchmark that removes the valuation gap.

D Robustness tables

Table A.3 : Alternative observation weighting in the loan-valuation regressions

Main-table column and reported quantity	Sponsor FE	Unweighted	Loan-date weight	<i>N</i>
<i>Panel A. Table 2: additive specifications</i>				
(1) Listed asset share	No	0.31** (2.12)	0.34** (2.12)	65,590
(2) Listed asset share	No	0.60*** (3.69)	0.67*** (3.69)	65,590
(3) Listed asset share	No	0.45*** (3.09)	0.51*** (3.07)	65,590
(4) Listed asset share	Yes	0.44* (1.70)	0.39 (1.49)	65,588
(3) PIK-income share	No	6.18*** (3.03)	7.36*** (3.49)	65,590
(4) PIK-income share	Yes	4.65*** (3.06)	5.28*** (2.81)	65,588
<i>Panel B. Table 3: PIK-income share × Listed asset share</i>				
(1) PIK-income share × Listed asset share	No	13.16*** (3.69)	13.10*** (3.31)	65,590
(2) PIK-income share × Listed asset share	Yes	7.83** (2.56)	8.46** (2.49)	65,588
(3) PIK-income share × Listed asset share	No	12.70*** (3.85)	12.78*** (3.52)	65,590
(4) PIK-income share × Listed asset share	Yes	7.43*** (2.65)	8.12** (2.60)	65,588
<i>Panel C. Table 3: income-related marking contrasts</i>				
(5) No current loan PIK	No	1.05*** (3.22)	0.98*** (2.76)	65,590
(5) Current loan PIK	No	4.52** (2.58)	4.95*** (2.68)	65,590
(5) Current PIK minus no-PIK	No	3.47* (1.94)	3.97** (2.09)	65,590
(6) No current loan PIK	Yes	0.56** (2.16)	0.57* (1.95)	65,588
(6) Current loan PIK	Yes	3.93** (2.26)	4.42** (2.40)	65,588
(6) Current PIK minus no-PIK	Yes	3.37* (1.92)	3.85** (2.05)	65,588

Notes: Each row compares the same main-table specification on identical observations; the two estimates differ only in regression weighting. The baseline gives equal weight to each sponsor-loan-date decision. The alternative uses analytic weights equal to the inverse number of sponsors in each loan-date. All specifications have loan × date effects. Balance-sheet control coefficients are suppressed. Panel C reports changes in the fully listed-minus-fully nonpublic marking difference for a ten-percentage-point increase in sponsor PIK-income share: $0.1\beta_{KP}$ when current loan PIK is zero, $0.1(\beta_{KP} + \beta_{KPD})$ when it is one, and $0.1\beta_{KPD}$ for their difference. Here β_{KP} is the PIK-income share × Listed asset share coefficient and β_{KPD} is the triple interaction. Standard errors are clustered by loan and sponsor. The sample covers 2018Q2–2026Q2. Parentheses contain *t*-statistics; *, **, and *** denote $p < 0.10$, $p < 0.05$, and $p < 0.01$.

Table A.4 : Valuation and liquidity outside aggregate-stress windows

Sample / specification	Without sponsor effects		With sponsor effects	
	Estimate	N [sponsors]	Estimate	N [sponsors]
<i>Panel A. Basic PIK-income share × Listed asset share interaction</i>				
Full sample	1.32*** (3.69)	65,590 [90]	0.78** (2.56)	65,588 [89]
Exclude 2020Q1–Q2	1.26*** (3.59)	64,346 [90]	0.80** (2.56)	64,344 [89]
Exclude 2022Q2–Q4	1.25*** (3.43)	60,963 [90]	0.76** (2.43)	60,961 [89]
Exclude both stress windows	1.18*** (3.32)	59,719 [90]	0.77** (2.41)	59,717 [89]
Also exclude lag-source stress	1.15*** (3.16)	57,586 [90]	0.74** (2.33)	57,584 [89]
Also exclude stress-sourced PIK carry	1.13*** (3.11)	57,563 [90]	0.72** (2.30)	57,561 [89]
2023Q1 onward	1.75*** (4.43)	50,453 [82]	0.91*** (2.78)	50,451 [81]
<i>Panel B. Quarter-specific Listed asset share and PIK-income share slopes</i>				
Full sample	1.72*** (4.95)	65,590 [90]	1.19*** (4.06)	65,588 [89]
Outside stress windows	1.62*** (4.49)	59,719 [90]	1.31*** (4.11)	59,717 [89]
Outside stress; three-way clustering	1.62*** (4.58)	59,719 [90]	1.31*** (3.91)	59,717 [89]
<i>Panel C. Liquidity: sponsor × quarter effects and balance-sheet controls</i>				
	Full sample		Outside stress windows	
Total liquidity sleeve	4.22*** (3.57)	1,795 [42]	4.23*** (3.58)	1,585 [41]
Cash component	−0.13 (−0.16)	1,795 [42]	−0.03 (−0.04)	1,585 [41]
Quoted-loan component	4.35*** (5.54)	1,795 [42]	4.26*** (5.50)	1,585 [41]

Notes: The aggregate-stress windows are 2020Q1–Q2 and 2022Q2–Q4. Panels A–B report 0.1 times the PIK-income share × Listed asset share coefficient: the widening of the fully listed-minus-fully nonpublic mark contrast for a ten-percentage-point PIK-income increase, in cents per dollar of par. All valuation specifications retain loan × date effects, the three sponsor balance-sheet controls, and the original PIK center. Full-sample Panel A reproduces columns (1)–(2) of Table 3. Panel A excludes each stress window and then both, followed by valuations whose lagged PIK measurement quarter is in stress and stress-origin carry-forward values; its last row uses 2023Q1 onward. Panel B adds separate Listed asset share and standalone PIK-income share slopes for every quarter. Its last row also clusters by quarter. Panel C reports nonpublic-minus-listed differences in percentage points of total assets. These regressions include sponsor × quarter effects and all three lagged BDC balance-sheet controls. The full-sample estimates reproduce columns (7)–(9) of Table 5. Within each sample, all three outcomes use identical complete-control observations after singleton removal; cash and quoted loan par coefficients sum to the total-sleeve coefficient before rounding. Quoted par covers all cleaned loan holdings, including unshared loans. In a separate fully interacted stress model, the two-sided p -values for equality of the PIK-listed-share interaction inside and outside stress are 0.090 without sponsor effects and 0.334 with them. Panel C clusters by sponsor. Parentheses contain t -statistics. *, **, and *** denote two-sided $p < 0.10$, $p < 0.05$, and $p < 0.01$, respectively. Standard errors are clustered by loan and sponsor unless otherwise stated.

Table A.5 : Loan-type valuation differences with sponsor–quarter fixed effects

	Pooled reference (1)	Sponsor–quarter FE (2)	Both sponsor effects (3)
Dependent variable: sponsor mark (cents per dollar of par)			
<i>Panel A. Listed-share effect: quoted minus unquoted</i>			
No current loan PIK	−0.45 (−1.07)	−0.58*** (−2.74)	−0.53 (−1.39)
Current loan PIK	−2.75** (−2.16)	−2.82** (−2.46)	−2.80** (−2.36)
<i>Panel B. PIK-income-related widening: quoted minus unquoted</i>			
No current loan PIK	0.15 (0.27)	0.17 (0.29)	0.28 (0.50)
Current loan PIK	−9.20*** (−2.85)	−9.39*** (−2.81)	−9.21*** (−2.71)
Current PIK minus no current PIK	−9.35*** (−2.85)	−9.57*** (−2.90)	−9.50*** (−2.89)
Loan × date fixed effects	Yes	Yes	Yes
Sponsor × quote-status fixed effects	Yes	No	Yes
Sponsor × quarter fixed effects	No	Yes	Yes
Observations	65,587	65,504	65,503
Loan–dates	24,179	24,143	24,143
Sponsor–quarters	1,378	1,330	1,330
Loan clusters	4,654	4,650	4,650
Sponsor clusters	89	87	87
Adjusted R^2	0.9170	0.9207	0.9223
Within R^2	0.0244	0.0170	0.0175

Notes: Entries in Panels A and B are quoted-minus-unquoted differences in the indicated marking relationships. Column (1) reuses the fully interacted pooled model underlying Table 4, Panel C, column (6); the three contrasts in Panel B, column (1), are identical to those reported there. Column (2) replaces sponsor × quote-status fixed effects with sponsor × quarter fixed effects. Column (3) includes both. Thus columns (1) and (3) compare adding sponsor–quarter effects while retaining sponsor–quote-status effects. Panel A reports differences in the fully listed-minus-fully nonpublic marking gap at the original mean sponsor PIK-income share, separately for loans without and with reported current PIK. Panel B reports differences in how that gap changes with a ten-percentage-point increase in sponsor PIK-income share. Its last row subtracts the no-reported-current-PIK contrast from the reported-current-PIK contrast. All entries are in cents per dollar of par. Negative entries indicate smaller listed-share effects or less PIK-income-related widening for quoted than for unquoted loans; they do not indicate lower unconditional marks on quoted loans. The sample covers 2018Q2–2026Q2. Parentheses contain t -statistics. Standard errors are clustered by loan and sponsor, and contrasts use each model’s full covariance matrix, including the estimator’s covariance adjustment where applied. Significance stars use the unrounded two-sided p -values: *, **, and *** denote $p < 0.10$, $p < 0.05$, and $p < 0.01$.

E Sponsor fixed effects

Section 3.1 and Appendix B show that the vehicles of the same sponsor report nearly identical marks for the same loan. This appendix examines how much sponsors differ from one another, using the sponsor fixed effects that Section 4 includes as controls. Each effect measures a sponsor's control-adjusted marking style: its tendency to report higher or lower marks on the same loans and dates, after accounting for the sponsor characteristics.

We obtain the sponsor fixed effects from the specification in Table 3, column (6). The specification includes loan $\times$ date fixed effects, the listed-share and PIK interactions, and the sponsor controls. Throughout this appendix, a decision is one sponsor's mark on one loan at one reporting date, the unit of observation in the loan valuation regressions. That specification has 65,588 decisions, the 65,590 in the sample less the two singletons the sponsor fixed effects drop; the largest connected comparison set contains 87 sponsors and 65,566 of them. Most pairs of sponsors seldom hold the same loan at the same time, so the model compares them through the other sponsors with whom each shares loans. This requires the 87 sponsors to form a single connected comparison set, which they do. We omit the two remaining sponsors that share loans only with each other.

Table A.6 reports the estimates. The table includes only sponsors with at least 100 decisions on at least 20 distinct loans. This excludes some sponsors and valuation decisions but retains 98.5 percent of the sample. The screen matters because the excluded estimates rest on very few observations. Figure 6 displays the estimates in Table A.6 relative to the average valuation decision, with confidence intervals. We label the ten sponsors whose effects are significant at the 1% level under both reference points.

Each estimate is measured relative to a reference point, and we use two. The first sets the equal-weighted average across the 87 sponsors to zero, so the reference is the average sponsor. The second weights each sponsor's effect by its number of decisions and sets that average to zero, so the reference is the average decision and a sponsor with more decisions counts more. The two sets of estimates differ by a constant of 0.304 cents. Thus, the ranking and the difference between any two sponsors are identical under both, and only the tests of individual estimates differ. We prefer the decision-weighted reference. The estimates are right-skewed, and a few small sponsors with few comparisons lie far above the rest. Under the equal-weighted reference, these sponsors raise the benchmark, even though several of them are excluded from the table.

Table A.6 shows that sponsors differ substantially in how they mark. Relative to the average decision, the estimates for the 64 sponsors range from -2.551 to $+2.119$ cents, with a standard deviation of 0.82 and a tenth-to-ninetieth percentile range from -0.635 to $+1.154$. For a scale comparison, the mean within-loan-date cross-sponsor standard deviation of marks is 1.13 cents (Table 1). For perspective, the dispersion in estimated sponsor effects is comparable in magnitude to average within-loan-date disagreement, though this is a descriptive comparison rather than a decomposition of that disagreement.

Table A.6 : Sponsor marking style under two reference points

Sponsor	vs. average decision			vs. average sponsor			Dec.	Loans	Qtrs.
	Est.	<i>p</i>	Sig. 1%	Est.	<i>p</i>	Sig. 1%			
SLR	+2.119	< 0.001	Yes	+1.815	< 0.001	Yes	589	134	25
Prospect	+1.959	0.0062	Yes	+1.655	0.0247		532	69	19
Audax	+1.839	< 0.001	Yes	+1.536	< 0.001	Yes	1,344	232	26
Investcorp	+1.718	0.1467		+1.414	0.1923		403	88	25
Kayne Anderson	+1.493	< 0.001	Yes	+1.189	< 0.001	Yes	700	135	20
CION	+1.456	< 0.001	Yes	+1.152	0.0020	Yes	1,466	275	32
TPG	+1.154	0.0331		+0.850	0.1062		282	75	8
TCW	+1.151	0.0571		+0.847	0.1252		241	58	28
Brightwood	+0.955	0.0023	Yes	+0.651	0.0117		213	37	13
Sixth Street	+0.862	0.0035	Yes	+0.558	0.0994		428	75	32
PIMCO	+0.714	0.1786		+0.411	0.4041		272	60	15
OFS	+0.679	0.3033		+0.376	0.5440		430	90	33
Willow Tree	+0.665	0.0081	Yes	+0.361	0.0635		178	58	5
Vista	+0.612	0.0245		+0.308	0.1731		129	48	9
H.I.G. (WhiteHorse)	+0.608	0.1402		+0.305	0.3799		205	49	13
Onex	+0.485	0.2559		+0.181	0.5934		334	93	14
Monroe	+0.481	< 0.001	Yes	+0.178	0.2313		1,278	246	31
Varagon	+0.464	0.0712		+0.160	0.4113		513	134	13
Diameter	+0.434	0.00997	Yes	+0.130	0.3451		270	65	9
Franklin BSP	+0.413	0.0126		+0.110	0.5359		1,669	293	32
PennantPark	+0.406	0.0503		+0.102	0.6482		769	184	14
AGL	+0.388	0.1038		+0.084	0.6471		124	43	4
OHA	+0.286	0.0204		-0.018	0.8964		709	197	15
Jefferies	+0.263	0.1354		-0.040	0.7806		524	133	8
Comvest	+0.257	0.4708		-0.047	0.8744		254	56	12
Churchill (Nuveen)	+0.189	0.0975		-0.115	0.4137		1,378	336	19
Guggenheim	+0.149	0.6972		-0.155	0.6367		147	50	15
New Mountain	+0.140	0.1385		-0.164	0.3604		1,780	354	19
26North	+0.103	0.6388		-0.201	0.2439		210	48	8
Antares	+0.072	0.5369		-0.231	0.1042		1,540	448	7
Fidelity	+0.068	0.6526		-0.236	0.1631		320	87	7
FS KKR	+0.023	0.9101		-0.281	0.3240		1,711	391	31
Golub	-0.012	0.9192		-0.316	0.1805		1,701	375	29
HPS	-0.016	0.9038		-0.320	0.1682		2,375	459	16
First Eagle	-0.050	0.8965		-0.354	0.2828		432	149	16
StepStone	-0.073	0.6586		-0.377	0.0147		1,338	327	9
Crescent	-0.118	0.5240		-0.421	0.0226		1,358	341	31
Kennedy Lewis	-0.131	0.5730		-0.434	0.0139		448	143	13
PhenixFIN	-0.137	0.8140		-0.441	0.3707		153	28	19
AllianceBernstein	-0.179	0.3464		-0.482	0.0061	Yes	1,198	186	28
Silver Point	-0.220	0.5049		-0.524	0.0562		418	103	11
Blackstone	-0.228	0.3250		-0.532	0.1346		4,108	791	24
Bain	-0.245	0.1128		-0.549	0.0067	Yes	588	150	12
Oaktree	-0.251	0.0083	Yes	-0.555	0.0015	Yes	1,879	356	30
Palmer Square	-0.268	0.3188		-0.571	0.0180		1,159	291	9
Apollo	-0.272	0.0405		-0.576	0.0163		3,350	753	30
Fortress	-0.295	0.1548		-0.599	< 0.001	Yes	122	55	3
Blue Owl	-0.301	0.1916		-0.605	0.0888		3,721	711	28
Morgan Stanley	-0.317	< 0.001	Yes	-0.621	0.0020	Yes	2,904	565	16
Ares	-0.321	0.1183		-0.625	0.0531		4,880	1,119	31
Stellus	-0.362	0.6346		-0.666	0.3632		383	64	32
BDT & MSD	-0.394	0.0023	Yes	-0.698	< 0.001	Yes	442	86	17
BlackRock	-0.422	0.0231		-0.726	< 0.001	Yes	1,722	409	14
Carlyle	-0.456	< 0.001	Yes	-0.760	< 0.001	Yes	1,722	300	32
BC Partners	-0.590	0.1028		-0.894	0.0098	Yes	845	191	24
Goldman Sachs	-0.601	< 0.001	Yes	-0.905	< 0.001	Yes	2,724	621	23
Redwood	-0.627	0.3518		-0.930	0.1475		144	36	10
Steele Creek (Moelis)	-0.635	0.3527		-0.938	0.1483		177	52	18
Great Elm	-0.666	0.0698		-0.970	0.0015	Yes	306	64	30
Barings	-0.785	< 0.001	Yes	-1.088	< 0.001	Yes	1,363	364	29
Capital Southwest	-0.926	0.2350		-1.230	0.1020		496	95	18
Main Street	-0.984	0.0287		-1.288	0.0030	Yes	739	144	19
Oxford Square	-1.954	0.0107		-2.258	0.0020	Yes	159	46	11
Medley	-2.551	0.0373		-2.855	0.0237		265	59	14

Notes. Effects are from Table 3, column (6), in cents per dollar of par. Of 89 sponsors and 65,588 marking decisions, 87 sponsors with 65,566 decisions form the largest connected component. The 64 displayed sponsors have at least 100 marking decisions on at least 20 loans; their decisions cover 98.5% of the sample. The other data remain in estimation. Both references use all 87 sponsors: mark-decision-count weights (left) and equal weights (right), differing by 0.304 cents. The *p*-values are based on standard errors double-clustered by loan and sponsor and include reference-mean uncertainty. Sig. 1% flags $p < 0.01$. Dec. denotes decisions; Qtrs. denotes quarters. Positive effects indicate higher relative marks, not overvaluation.

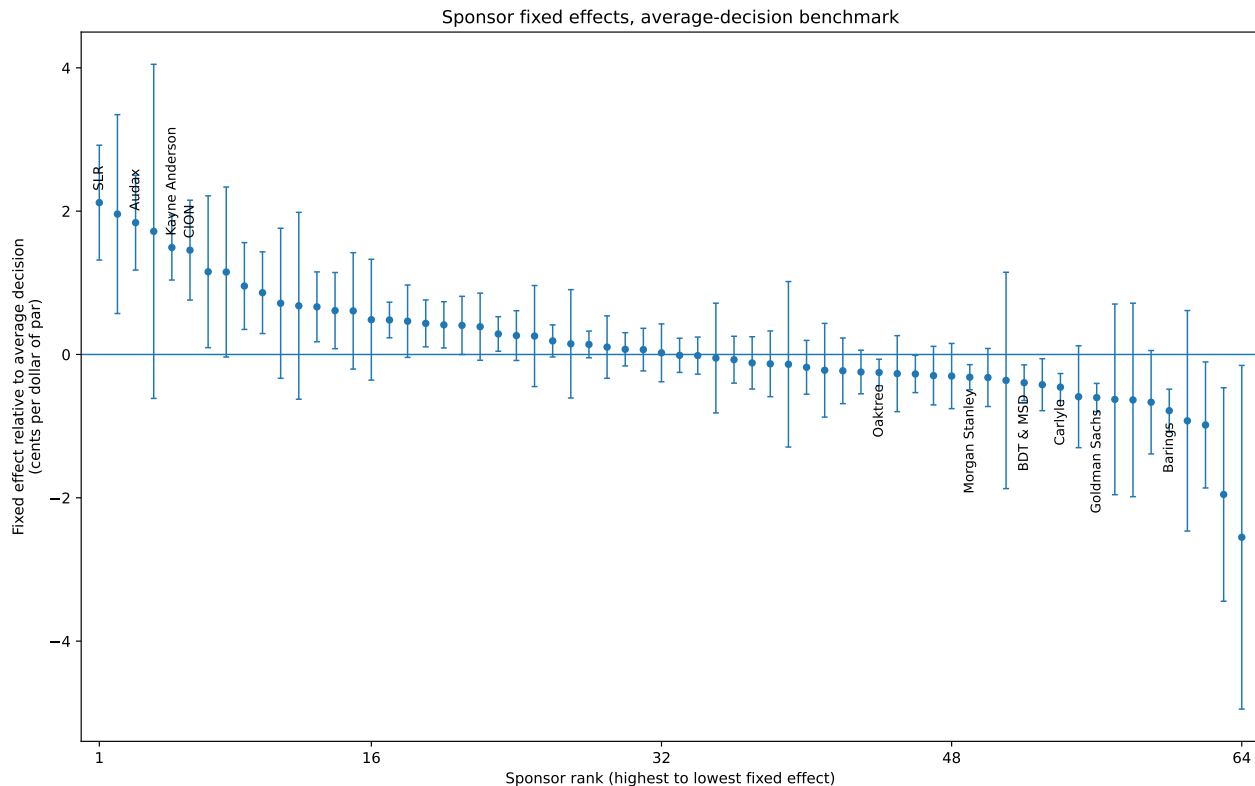


Figure 6: **Sponsor marking style relative to the average decision.** The figure plots the sponsor fixed effects from Table 3, column (6), for the 64 sponsors with at least 100 valuation decisions on at least 20 distinct loans, ranked from highest to lowest. Effects are measured in cents per dollar of par relative to the decision-weighted mean of sponsor effects across all 87 sponsors in the largest connected comparison set. Points represent estimates, and vertical bars represent 95% confidence intervals based on two-way clustering by loan and sponsor, including uncertainty in the reference mean. Names identify the ten displayed sponsors whose effects are significant at the 1% level under both the average-decision and average-sponsor references. Positive effects indicate higher relative marks, not necessarily overvaluation.

We find that many of the estimates differ significantly from the reference. Relative to the average sponsor-loan decision, 16 of the 64 effects are significant at the one percent level, ten positive and six negative. Relative to the average sponsor, 18 are significant at one percent: four positive and 14 negative. Ten sponsors are significant under both references: SLR, Audax, Kayne Anderson, and CION above, and Oaktree, Morgan Stanley, BDT & MSD, Carlyle, Goldman Sachs, and Barings below. Two of these sponsors illustrate the magnitudes. Audax and Goldman Sachs hold the same loan on the same date on 72 occasions, covering 17 distinct loans. Audax reports the higher mark on 65 occasions, or 90.3%; two comparisons are tied. The control-adjusted difference between their sponsor effects is 2.441 cents ($t=6.60$). This comparison comes from the full regression data, not from a smaller regression restricted to those 72 bilateral comparisons.

It is important to emphasize that a positive estimate indicates that the sponsor reports higher values than other holders of the same loans on the same dates, not that those values are wrong. Because we

compare reported values with one another and have no external benchmark that can be used as a gold standard, the estimates measure disagreement and not error. The data cannot tell whether sponsors at the top mark too high or sponsors at the bottom mark too low.

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