Common Investors Across the Capital Structure: Private Debt Funds as Dual Holders

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This paper examines the dual role of Business Development Companies (BDCs) as both creditors and shareholders in funding middle-market firms. We find that dual-holder BDCs charge 45 basis points higher loan spreads than pure creditors, controlling for loan characteristics and unobserved time-varying heterogeneity in firm credit quality and lender funding conditions. We examine three mechanisms: enhanced monitoring, capital injections as "public good," and hold-up behavior by dual holders. Differentiating tests indicate that monitoring is the primary channel driving the loan pricing differential. Our study highlights the real economic impact of private credit, beyond merely filling gaps left by regulation-constrained banks.

Keywords: business development companies, direct lending, private debt, dualholders, dual-holding, nonbanks, delegated monitoring
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1 Introduction

Private credit as an emerging asset class has more than tripled in size during the past decade exceeding $1.8 trillion in 2024.[1] Though not formally defined, private credit commonly refers to nonbank direct lending, typically cash-flow based rather than asset-backed, to riskier small and mid-sized firms. Business Development Companies (BDCs) play a crucial role in this expansion, filling the gap left by traditional banks as increased banking regulation, especially after the 2007–2008 Financial Crisis, made these types of loans expensive for banks.[2] BDCs, alongside the rise of private equity, provide an alternative source of funding, allowing small and mid-sized market firms to grow and stay private longer.

Although they are primarily *debt* funds, BDCs may also invest in equity or equity-like securities, including common equity, preferred equity, and warrants. Our analysis reveals that a great majority — between 80% to 90% — of BDC-year observations in our sample includes these equity positions. This practice suggests that BDCs strategically combine debt and equity investments within the same portfolio firms to achieve a desired risk-reward profile. In this paper, we explore why lenders choose to become common investors across the capital structure, by investigating how holding both debt and equity in portfolio firms influences loan pricing and the financial outcomes for the borrowing firms. In addition, we document how these dual-held investments impact the dynamics of the financier-firm relationship that is distinct from that with banks or institutional investors.

This study is made feasible by a hand-collected database of investments that involve 69 BDCs and over 9,000 portfolio firms (previously used by Davydiuk, Marchuk, and Rosen, 2024). The key variable for our study, *Dual-Held Deal*, constructed at the BDC-portfolio firm-investment-quarter level, is defined as a debt

[1] Source: Pitchbook's "2024 Private Debt Report.".

[2] See Davydiuk, Marchuk, and Rosen (2024) for an extensive discussion on BDCs. See Chernenko, Erel, and Prilmeier (2022) for the role of bank regulation in the growth of nonbanks.

investment accompanied by a simultaneous equity investment from the same BDC in the same quarter. This practice highlights the strategic flexibility that BDCs enjoy and suggests that BDCs are able to reach the full capital table, thereby achieving a desired risk-reward profile. Unlike BDCs, banks face significant restrictions under the Bank Holding Company Act, which generally limits their ability to hold equity stakes in non-banking businesses unless these investments are made through affiliates.

Dual holding by BDCs differs fundamentally from the behavior of financial institutions that simultaneously participate in loan syndications and hold publicly traded equity in the same firm, as studied in Jiang, Li, and Shao (2010). First, the vast majority of BDC clients are too small to access syndicated loan markets, with approximately 90% being private companies without publicly traded shares. Second, institutional dual holders typically manage their loan (or bond) and equity positions in separate portfolios, whereas BDCs usually hold both debt and equity within the same investment vehicle. Third, BDCs—similar to private equity sponsors—provide not only capital but also operational support and exercise governance oversight. For these reasons, we expect BDC dual holders to play a more direct and influential role in both financing and monitoring their portfolio firms.

Given the prevalence of dual-holdings by BDCs, our first analysis examines the selection of dual holding at the firm level and the underlying rationale. We find that dual-held portfolio firms are typically smaller, less profitable, and possess fewer tangible assets, but exhibit higher asset growth. Most notably, firms with negative operating cash flows are 13–16 percentage points more likely to be dual held by BDCs than peers with positive EBITDA. These firms are generally not suitable candidates for bank loans, as they lack both the steady cash flows required to service debt and the physical assets typically used as collateral. As a result, dual-holding reflects the flexible financing model BDCs provide, allowing private credit to reach borrowers underserved by traditional financial institutions especially since 2010 when both Basel III and Dodd-Frank introduced stricter requirements and compliance burdens

in capital requirements and proprietary investments.[3]

Loan pricing is a central topic in credit research. Our granular data allow us to isolate the component of loan spread that can be specifically attributed to dual holding. In cross-sectional analysis, we find that dual-held loans are priced over 100 basis points higher, even after controlling for industry, firm, and loan characteristics. When we incorporate both BDC-time and firm-time fixed effects—thus controlling for time-varying credit supply conditions and borrower credit quality—we find that dual-held loans carry a 45 basis point spread premium, statistically significant at the 1% level. This result implies that when the same firm borrows from two different BDCs within the same quarter, the higher spread charged by the dual-holder BDC is unlikely to reflect unobserved differences in firm risk and is more likely driven by dual-holding status. The result is economically significant as well. Given the average loan deal size of $12 million, 45 basis points of a difference in spread translates into a $54,000 *bonus* interest payment to the dual-holder, a substantive yet moderate amount for the monitoring effort that is incentive compatible.

A priori, the relationship between dual holding and loan pricing (after controlling for credit quality and loan terms) differs between cross-firm and within-firm comparisons. Dual holders, by exercising creditor rights through covenants and reorganization, and shareholder rights through voting and board representation, have stronger monitoring incentives and better access to firm information. In the cross-section of firms, such enhanced monitoring should reduce borrower risk over time, and hence be associated with lower spreads (Jiang, Li, and Shao, 2010). In the within-firm setting, however, dual holders are likely to demand a "charge" for the monitoring services they provide that benefit all investors, resulting in higher spreads on their loans relative to those of other creditors. Our empirical analysis

[3]The Interagency Guidance on Leveraged Lending of 2013 also includes red flags for banks' lending to riskier firms with high leverage. Moreover, the Comptroller of the Currency (OCC) Handbook classifies loans to unprofitable firms as "substandard," resulting in larger loan loss reserves and lower risk ratings for these types of loans.

focuses on this latter *within-firm* context, which has not been previously examined.

We next explore multiple mechanisms behind the positive relation between loan spread and dual-holding. A straightforward explanation (which we call "Hypothesis 0") is that the loan spread simply reflects risk pricing. Because the key result of our study pertains to within firm-quarter variation, firm credit quality is effectively held constant. We nevertheless test the hypothesis using data on loan valuation at the deal level (with time fixed effects, deviation from par value mostly reflects credit risk) and find that, if anything, loans financed by dual-holders exhibit higher valuation, refuting the risk pricing channel.

The first main channel ("Hypothesis 1") attributes the loan spread to compensation for delegated monitoring. Dual holders, by exercising both creditor rights (through covenants and reorganization) and shareholder rights (via voting, shareholder engagement, and board representation), gain superior access to firm-specific information and governance levers. Monitoring in this context also involves mitigating conflicts of interest between creditors and shareholders, similar to strip financing structures, commonly observed in leveraged buyouts, where investors hold proportional strips of all securities and thus internalize conflicts among different classes of claimants (Jensen, 2024). Because junior debt is more sensitive to enterprise value, incentive to monitor is stronger when dual-holders serve as subordinated creditors.

The second main channel ("Hypothesis 2") involves a capital structure effect. When a dual-holder contributes equity capital alongside debt, all of the firm's debt becomes less risky compared to a counterfactual with debt-only financing, due to the additional equity cushion that enhances loss absorption. Because the equity injection acts as a "public good" for all other creditors, dual-holders may be entitled to some compensation. Since both monitoring and capital injection generate positive spillovers to other creditors, a differentiating test is necessary. We note that the public-

good component of the equity benefit is larger when the dual-holder's debt is senior and/or secured, as it is already well protected absent the additional equity cushion. Conversely, the monitoring incentive for dual-holders is stronger when they hold junior loans, which are more sensitive to firm performance.

Our empirical results show that the spread premium on dual-holders' loans is more pronounced when they provide junior debt, suggesting that monitoring dominates the capital structure channel. The monitoring effect is further supported by a decline in the borrower's overall cost of capital after being included in a dual-holder's portfolio, despite the higher spreads typically charged by dual-holders themselves. Specifically, firms potentially monitored by a dual-holder experience a reduction in spreads on their non-dual-held loans by 16–40 basis points, all else equal. This finding aligns with Jiang, Li, and Shao (2010) in the context of syndicated loans and reinforces the economic relevance of monitoring.

The third channel ("Hypothesis 3") relates to the potential for a hold-up problem (Rajan, 1992), in which dual-holders might restrict portfolio firms' outside financing options and extract higher loan spreads by leveraging their informational advantage over other prospective lenders. However, we find that following dual-holding deals, portfolio firms obtain more debt and receive additional financing. Notably, this increased financing comes disproportionately from the dual-holder BDCs. The combination of expanded funding to support firm growth and a lower overall cost of borrowing in the presence of dual-holders is inconsistent with the hold-up hypothesis and instead points to a strong, long-term relationship between portfolio firms and their dual-holders.

The private direct lending market remains relatively underexplored compared to bank lending, the bond market, and private equity. As the first study to examine dual holdings in this context, we highlight a key mechanism through which BDCs serve a market segment that is unattractive to traditional financiers such as banks

and loan syndicates, yet offers compelling returns relative to risk. BDCs achieve this by becoming better informed, facilitating both selection and evaluation, and engaging in more active monitoring. During periods of recession or liquidity stress, the equity stake also helps ensure that dual holders remain engaged as owners, thereby providing strong incentives for continued financing to promote stability and continuity. In this way, dual holders create value beyond the capital provision alone. BDCs, through these mechanisms, have contributed to strengthening the private market as a viable and competitive alternative to public markets for middle-market firms, both from the perspective of issuers and investors.

Finally, our study offers an explanation for the apparent puzzle that banks prefer lending to BDCs rather than directly to the firms that BDCs ultimately finance. This preference persists even though such intermediation, a priori, does not necessarily reduce the cost of capital for borrowers, as BDCs operate with significantly lower leverage and higher funding costs than banks. Chernenko, Ialenti, and Scharfstein (2024) argue that regulated and insured banks seek to exploit their low-cost funding advantage by focusing on high-volume loans that require minimal capital. Lending to BDCs (which are diversified portfolios) qualifies as lower risk than single-firm loans under regulatory standards, enabling banks to maximize leverage more efficiently. In this sense, BDCs serve as vehicles for risk transformation, allowing banks to apply their funding advantage through low-capital-intensity exposures. Importantly, our study shows that BDCs' risk transformation extends beyond diversification through loan pooling; it also reduces the risk of individual loans via more intensive monitoring.

This blending of creditor and equity-holder roles reflects a broader trend in private capital markets, where sophisticated investors increasingly craft hybrid and braided instruments that blur traditional boundaries between debt and equity. Such "chameleon capital" (Lalafaryan, 2025), i.e., financing structures that intentionally combine features of both debt and equity, allow private credit funds to unify

cash flow rights with governance influence. These structures go beyond enabling enhanced monitoring; as part of a broader continuum of capital shapeshifting, they reconfigure control rights and legal accountability dynamically especially for middle-market firms with both high growth potential and elevated downside risk (including insolvency). Dual holding, therefore, is not an anomaly but a salient manifestation of this structural evolution in private markets.

The remainder of the paper is organized as follows. Section 2 provides a review of the burgeoning field of private credit and BDCs, and the related literature . Section 3 lays out the data sources and provides a sample overview. Section 4 presents key empirical evidence on the nature and impact of dualholding. Section 5 explores potential mechanisms. Section 6 entertains cross-sectional variations and performs sensitivity checks. Finally, Section 7 concludes.

2 Institutional Background and Literature Review

2.1 Business Development Companies and Private Credit Market

A business development company (BDC) is a type of closed-end investment company established under the Small Business Investment Incentive Act of 1980. The primary objective of BDCs is to channel capital into small- and mid-sized private businesses. In compliance to their regulatory status, BDCs are required to allocate at least 70% of their capital to eligible assets,[4] adhere to a debt-to-equity ratios of below 2:1 (since 2018), and provide managerial assistance to their portfolio firms. As discussed by Tashjian (1981), their active monitoring activities include meaningful advice or support to help run the business, shape its goals, or guide its operations. This also applies when a BDC places one of its own people (like an officer or employee) on the

[4]Eligibility includes U.S. based private companies that are not investment companies themselves and public companies under $250 million market cap.

company's board to directly take part in managing it.

BDCs primarily focus on the "middle market." Despite the lack of an official definition, this segment generally refers to private firms with revenues between $10 million and $1 billion, and employee counts ranging from 100 to 2,000 (National Center for the Middle Market, 2024). Approximately two-thirds of BDC investment deals involve debt securities issued by portfolio firms, while the remainder consist of equity co-investments and hybrid or derivative instruments such as warrants. BDCs finance their investments by raising capital in both public and private markets. They are typically launched with private funding but often pursue an initial public offering (IPO) to raise equity capital. For debt financing, BDCs do not rely on short-term funding sources—such as deposits used by banks—and instead rely on long-term instruments like senior secured debt, convertible bonds, and other hybrid securities. BDCs also accept bank-provided senior credit lines, serving as a key source of liquidity to fund their portfolio investments. This strategic funding structure enables BDCs to support the long-term growth and development of their portfolio companies effectively. Additional details on BDC financing structures can be found in Davydiuk, Marchuk, and Rosen (2023).

2.2 Value Added of BDCs in a Competitive Financial Market

Traditionally, banks have played a central role in credit provision: global banks finance Fortune 500 firms, while community banks cater to local businesses. This makes it intriguing that banks would choose to lend to BDCs for the latter to serve middle-market firms, rather than lending directly to these ultimate borrowers. Moreover, in highly dynamic and efficient capital markets, the Modigliani and Miller (1958) theorem would have been a reasonable approximation of the real world, which suggests that cash flows from the fundamental business should be largely independent of how it is financed. Thus the question becomes more curious: what

value do BDCs add as an intermediary in a well-developed credit market?

Chernenko, Ialenti, and Scharfstein (2024) provide an illustrative calculation comparing the funding costs for banks under the Basel regulatory framework for the two alternative lending models. Both regulatory arbitrage and operational efficiency give BDCs a distinct advantage relative to banks' direct lending. When banks lend directly to middle-market firms, each loan carries a 100% risk weight under capital adequacy requirements. In contrast, the risk weight is 20% or lower when banks provide senior credit lines to BDCs, reflecting the much lower risk of a diversified portfolio. Because capital regulations assess risk at the individual deal level, rather than based on a loan's marginal contribution to the overall portfolio risk, BDCs emerge as an appealing risk transformation. Operating expenses are also significantly lower when banks lend through BDCs compared to lending directly (0.20% versus 1.38%). Based on the calibration in Chernenko, Ialenti, and Scharfstein (2024), the return on equity (ROE) for banks can be twice as high when lending through BDCs.

Our study highlights a complementary channel through which BDCs add value, one that is orthogonal to a regulatory arbitrage. Specifically, we examine the role of dual-holding BDCs, which simultaneously take positions across multiple layers of a firm's capital structure, including senior debt, junior debt, and equity. This flexibility allows them to internalize the frictions that typically arise among different claimholders and to exercise more effective monitoring, leveraging both their superior information access and governance rights.

2.3 Literature Review

Our first contribution is to the literature on the increasing role of nonbanks in the credit markets, focusing on the characteristics and consequences of this growth for borrowers, lenders, and financial markets. A review paper by Erel and Inozemtsev (2024) documents the growth of nonbank financial institutions in the loan and bond

markets as credit providers, and discuss how their lending differs from bank lending with its implications for financial (in)stability. Another review paper by Block, Jang, Kaplan, and Schulze (2024) focuses on the growing role of private debt funds in the credit markets and provides insights from surveys conducted with general partners of some private funds in the U.S. and Europe. Authors show that private-debt funds lend to riskier firms, but they manage risk by including both financial and negative covenants in their contracts. Fristch, Lim, Montag, and Schmalz (2021) conduct a review of the European private debt funds.

Focusing on the reasons for the growth in nonbank lending, several papers have argued that it is due to the increased bank regulation, especially following the 2007–2008 Financial Crisis (see, e.g., Chen, Hanson, and Stein, 2017; Cortés, Demyanyk, Li, Loutskina, and Strahan, 2020; Chernenko, Erel, and Prilmeier, 2022; Gopal and Schnabl, 2022) or convenience/speed of nonbank financing solutions in comparison to bank loans (Buchak, Matvos, Piskorski, and Seru, 2018). Robinson and Wallskog (2025) argue that the growth of private debt funds, especially BDCs, is driven by the outgrowth of the private equity market. Acharya, Cetorelli, and Tuckman (2025) argue that, unlike the conventional belief of segmented markets, nonbanks and banks share businesses and risks that are tightly interwoven. Therefore, they suggest that regulators should consider nonbanks' risks in bank regulation. Using data from BDCs, Chernenko, Ialenti, and Scharfstein (2024) offer an explanation for this observation by arguing that the regulatory capital arbitrage for banks drives the growth of nonbank private credit. Authors show that banks might find it more attractive to lend to BDCs, which in turn lend to mid-sized firms, rather than lending directly to these firms, as the latter approach requires higher regulatory capital. There is also a growing literature on the risks that these interconnections between private debt funds and banks are creating for financial stability (see, e.g., Albuquerque and Zawadowski, 2024; Cai and Haque, 2024; IMF, 2024; Jang and Rosen, 2024).

Jang (2024) uses detailed data on loan contracts extended by private debt funds

in private equity buyouts and shows that direct lenders actively monitor and engage in loan restructurings similar to banks. This finding differs from Chernenko, Erel, and Prilmeier (2022), who analyze cash-flow-based direct loans to middle-market firms extended by a variety of nonbank financial institutions. The authors show that nonbank borrowers are more likely to be unprofitable and, thus, their loan contracts are less likely to include financial covenants but warrants. When they finance the same borrowers, Haque, Mayer, and Stefanescu (2024) show that nonbanks provide more junior and riskier term loans while banks focus on lines of credit. However, Acharya, Gopal, and Steffen (2025) find that reliance on nonbank funding makes borrowing firms more fragile in terms of the cost and maturity of their credit lines with the banks. Davydiuk, Marchuk, and Rosen (2024) focus on the growth of BDCs, showing that their loans and monitoring help mid-sized private firms grow their employment and increase patenting activity. We contribute to this literature by exploring a unique role of BDCs as common investors across the firm capital structure.

Second, we contribute to the literature on dual holders of equity and debt. Focusing on the syndicated loan market, Jiang, Li, and Shao (2010) document that syndicated loans with nonbank institutional dual holders are associated with lower loan yield spreads as compared to other loans funded by the similar types of lenders who do not hold equity of the borrower. They argue that the presence of dual holders mitigates the shareholder-creditor conflict of interest, thereby decreasing the borrowing cost. Further evidence on dual ownership reducing shareholder-creditor conflicts is provided by Chava, Wang, and Zou (2018), who also focus on syndicated loans with institutional ownership. Authors show that such ownership affects borrowers' investments through reductions in capital expenditure restrictions in loan contracts. Furthermore, Antón and Lin (2019) find that dual holder monitoring mitigates borrowers' underinvestment. Using mergers between syndicated-loan participants and equity holders of the same firm, Chu (2017) shows that payouts

of firms, especially distressed ones, are reduced with the reduced shareholder-creditor conflicts. All these papers focus on institutional participation in largely syndicated deals, where a typical loan is a large loan to a larger borrower and typically syndicated by a commercial bank as the lead arranger.[5] Our contribution is to examine on loans to smaller borrowers where a BDC acts as a direct lender similar to a local bank. We focus on a rather common yet unstudied dual-holding structure not available for banks by regulation.[6]

3 Data Sources and Overview

3.1 BDC Sample

Our sample of BDCs builds on the hand-collected deal-level, quarterly database of the BDC investments as described in Davydiuk, Marchuk, and Rosen (2024). The sample includes 69 BDCs, who provided funding to over 9,000 portfolio firms (out of which over 90% were private) over the period from 2004 through 2017. The sample is comprehensive as it includes all BDCs that were publicly listed, and hence filed the schedule of investments in their 10-K/10-Q regulatory filings, during the sample period.

Panel (a) of Figure 1 shows the steady growth in the number of BDCs, from fewer than 10 to approximately 60 over the sample period. Given the central focus of this study, dual-holders, we specifically track BDCs that simultaneously hold equity stakes in the firms to which they provide private credit. The chart indicates that about 80% of BDCs acted as dual holders in at least one deal in each year prior to 2014,

[5]Several studies have documented the increasing role of nonbank lenders in the syndicated loan market (see e.g., Ivashina and Sun, 2011; Massoud, Nandy, Saunders, and Song, 2011; Nadauld and Weisbach, 2012; Lim, Minton, and Weisbach, 2014; Berlin, Nini, and Yu, 2020; Biswas and Zhai, 2021; Irani, Iyer, Meisenzahl, and Peydro, 2021).

[6]See also Ferreira and Matos (2012) showing evidence on banks' governance role leading intertemporal smoothing of loan rates across business cycles for borrowers.

rising to around 90% thereafter. Switching the side to portfolio firms, we observe rapid growth in the number of firms receiving private credit as shown in Panel (b). Prior to 2010, BDCs funded fewer than 1,200 portfolio firms in a given quarter. Since then, that number has steadily increased, reaching approximately 4,000 by 2014. The number of dual-held firms grew proportionately over this period, rising from about 250 in 2010 to more than 750 by 2017, such that the share of dual-held portfolio firms remained at roughly around 20%. Finally, Panel (c) suggests that the expansion primarily occurs at the extensive margin, as the number of portfolio firms per BDC has grown only modestly. On average, a BDC funds between 60 and 100 portfolio firms per quarter, for about 20 of which they serve as dual-holders.

[Insert Figure 1 here.]

3.2 Deal and Portfolio Firm Data

Key information required for our analyses concerns deals (both debt and equity) made by the BDCs and firms they fund. For deal-level information, we collect the following variables: instrument type, principal amount, loan fair value, interest rate, and maturity date. For equity deals, we identify different types of equity investments such as common equity, preferred equity, warrants, and other equity (e.g., minority interest). All this information is recorded in the schedules of investments reported by BDCs within their SEC 10-K/10-Q regulatory filings.

For BDC-funded firms (most of which are private), we collect industry information at the NAICS 2-digit level and location data from N-2 Forms. For the common firm-level characteristics such as total assets, debt, tangible assets, sales, earnings, and age, we merge our list of BDC portfolio firms with Standard & Poor's Compustat database using a string-matching algorithm based on the combination of firm name and address. Around 1,200, or about 12% of BDC-funded firms are covered by Compustat. This minority subset enables for more enriched tests related to the

determinants and impacts of dual holding.

The variables of key interest are the loan spread and the loan valuation. Loan spread is calculated as the difference between the reported total rate and the three-month LIBOR rate. Loan valuation is defined as the ratio of the loan's fair value to its principal amount. This information is available because, by regulation, BDCs are required to disclose investment valuations at the deal level. Some reported valuations may appear too low to reflect plausible credit risk, but rather due to undrawn credit lines or unfunded commitments. Therefore, we censor loan valuations at 60%. This lower bound is justified by academic studies on distressed debt that typically assume a loss-given-default of 35%–40%, implying a lower bound for loan valuations of 60% (see, e.g., Sundaresan, Wang, and Yang, 2014). We also winsorize the right tail of the loan valuation distribution at the 1% extreme.

Because our unit of analysis is at the deal level, it pertains to BDC–portfolio firm pairings, which need to be interpreted in the context of the broader BDC portfolios as well as the funding structures of the portfolio firms. For the latter, private loans represent only one source of external financing. To provide a more complete picture, we incorporate data from the Refinitiv DealScan database on syndicated loans to complement information about firms' financing options. Specifically, we match the list of BDC-funded firms with DealScan borrowers using firm name and address. About 11,300 syndicated loans in DealScan, with origination dates between 2004 and 2017, were made to BDC portfolio firms, and in around 400 of those cases, BDCs also participated as syndicate members.

Table 1 presents summary statistics on loan terms, reported separately for the midpoint and end of the sample period. As of 2010:Q4, a typical (median) BDC loan was approximately $7 million in size, carried a 9% interest rate, and had a maturity of 5 years. BDCs employ a variety of pricing structures for their debt instruments, including a conventional spread over a base rate (e.g., LIBOR), a fixed cash rate, and

a "payment-in-kind" (PIK) rate that defers interest payments by issuing more debt (or sometimes equity) to the lender. The table highlights a shift in pricing practices over time which aligns with broader trends in leveraged lending markets. In 2010, fixed-rate loans were more prevalent, whereas by 2017, floating-rate structures had become the norm. PIK loans are especially attractive for firms managing large capital expenditures. However, this flexibility comes at a cost: PIK loans carry significantly higher rates than both fixed and floating alternatives.

[Insert Table 1 here.]

4 Dual-holding and Credit Structure: Empirical Evidence

4.1 Dual-holding: Overview and Determinants

As discussed in the previous section, 80%–90% of BDCs were dual-holders at some point, and around 20% of BDC-financed portfolio firms had at least one lender who simultaneously provided equity investment. Typical equity investment positions include common shares, preferred shares, and common stock warrants (often bundled with a debt security). Less common formats include preferred stock warrants and various forms of interest—such as membership interest, company interest, partnership interest, royalty interest, and trust interest. Warrants allow BDCs to participate automatically in the upside when a portfolio firm's equity appreciates. From a risk management perspective, warrants can also be used to secure a stake in the firm and gain control rights and a voice when a debt investment deteriorates in value. It is worth noting that warrants offer neither cash flow nor control rights prior to exercise—only the potential for future participation. In our baseline analyses, we distinguish between warrants and materialized equity holdings (including those

resulting from warrant exercises); however, the fact that warrants provide equity-like payoffs (i.e., residual claimant status) without governance rights enables us to conduct unique tests that aim to separate the two.

Our sample includes 6,744 debt deals that are accompanied by one or more forms of equity at origination. Of these, 5,052 deals involve materialized equity holdings and form the basis of our main regression analysis. Within this subset, 52% include a common equity position, 43% include preferred equity, and 15% feature a warrant alongside other forms of equity. The remaining 1,692 deals are paired exclusively with warrants.

We now formally define dual-holding at the deal and firm levels. $Dual\text{-}Held\ \ Deal_{k,i,j,t}$ is an indicator variable that equals one if a portfolio firm i receives a debt investment k with a simultaneous equity investment from a BDC j in an investment quarter t. The indicator is equal to zero if a portfolio firm i has *only debt* investment k. We refer to these debt deals as the *dual-held* deals or DH-deals. In nearly all of the dual-holding deals, portfolio firms receive equity investments that are concurrent (about 68%) or subsequent of debt investments (about 25%). Therefore, dual holders are primarily creditors who also hold equity instead of pre-existing equity holders who join credit deals.

Table 2 reports summary statistics on loan terms for dual-holder deals versus their complement subset, across the full sample and at the midpoint and end of the sample period. Comparing dual-held and non-dual-held debt deals, we find that dual-held loans have shorter maturities (by about 1.5 years in 2010 and 1 year in 2017), lower loan valuations (by approximately 2.5% in both 2010 and 2017), and higher loan spreads (roughly 1.3% higher in 2010 and 1.6% higher in 2017). Dual-held loans are also more likely to be subordinated and unsecured compared to their non-dual-held counterparts. Overall, the observable characteristics indicate that dual-held deals represent riskier positions, either due to lower firm credit quality or more junior

standing in the capital structure.

[Insert Table 2 here]

The summary statistics suggest that dual-held firms may differ substantially from portfolio firms with separate creditors and shareholders. Dual-holding is one channel through which private credit can fill the gap left by conventional bank financing, as banks are prohibited from holding equity stakes alongside their lending facilities. As discussed in the literature review, BDCs' dual-holding status may reflect a preference on firms typically avoided by banks or may offer borrowers advantages in terms of convenience and speed of funding. A determinant regression provides a first-step analysis based on observable firm characteristics.

For this purpose, we estimate the following regression at the firm (i)–quarter (t) level:

$$Dual\text{-}Held\ PF_{i,t} = \beta X_{i,t-1} + \alpha_t + \alpha_{NAICS2} + \epsilon_{i,t}. \quad (1)$$

The dependent variable $Dual\text{-}Held\ \ PF_{i,t}$ is an indicator equal to one if portfolio firm i receives simultaneous equity and debt investments from at least one BDC in investment quarter t, and zero otherwise. The regression includes time (quarter) and industry (two-digit NAICS) fixed effects. Because only a minority of firms receive repeated financing, including firm fixed effects is not feasible. The sample is restricted to BDC portfolio firms with available firm-level financial data from Compustat (which covers firms that are publicly listed, and, in some cases, private firms with some publicly traded debt securities). Since BDCs mostly invest in private middle-market companies and in mid- or small-cap public firms, the firms included in this analysis represent a subsample of larger BDC borrowers that are at the same time a subsample of relatively small Compustat firms. Table 3 reports the results.

[Insert Table 3 here.]

Table 3 indicates that dual-held portfolio firms are, on average, smaller in scale, less profitable (lower EBITDA/Sales), and less asset-intensive (lower net PP&E). They also exhibit a distinctive growth profile: higher asset growth accompanied by lower sales growth. Two firm archetypes are consistent with such a combination. The first group comprises early-stage or strategically scaling firms that expand their asset base aggressively via capital expenditures or acquisitions, while revenue growth lags. Such dynamics are particularly prevalent in capital-intensive or innovation-driven sectors, where substantial upfront investment precedes market penetration or product commercialization.

The second includes recently restructured firms, whether for strategic repositioning (restructuring for "good" reasons) or financial distress (restructuring for "bad" reasons). Chu, Diep-Nguyen, Wang, Wang, and Wang (2024) document that dual-holders have unique advantages in financing and facilitating out-of-court restructurings, thereby avoiding bankruptcy. Even in "good" restructurings, however, firms may remain some distance from generating positive cash flows, making pure-credit repayment difficult. Moreover, both types of firms align with the model of Rintamäki (2025), as they may prefer bilateral, relationship-based financing over market-based syndicated lending, given the former's greater flexibility in maturity and payment terms, albeit at higher interest rates.

Perhaps quite strikingly, having negative cash flows (i.e., $EBITDA/Sales < 0$) is the most powerful predictor of dual-holding: firms with negative operating cash flows are 13–16 percentage points more likely to be dual-held by BDCs compared to peers with positive EBITDA. On the asset side, a standard deviation increase in net PPE-to-sales ratio reduces the likelihood of BDC financing by 2–4 percentage points. These results hold whether we consider all forms of equity or common equity only.

This analysis, though restricted to larger firms with traded stocks or bonds, supports the hypothesis that BDC-financed firms are not natural or desired

candidates for bank loans as they lack both robust cash flows to service their debt and sizable physical assets to serve as collateral. This is consistent with BDC's focus on providing financing to middle-market firms in early growth stages or undergoing financial restructuring. These firms often rely on intangible assets, innovative business models, or intellectual property, which may not immediately translate into high revenue profitability. Such a business model or stage calls for flexible and risk-tolerant financing making BDCs a valuable funding source. Although prior literature (e.g., Chernenko, Erel, and Prilmeier, 2022) has shown that nonbank lenders typically serve riskier borrowers (such as negative EBITDA and higher leverage), our findings on characteristics of the dual holders' portfolio firms are new to the literature.

4.2 Dualholding and Loan Terms

A loan deal is characterized by many parameters; however, the loan spread is commonly viewed as the most important, as it directly affects the borrower's cost of capital. The previous section shows that BDC-financed and especially dual-held firms tend to be in weaker financial positions that make them less eligible for bank credit, which naturally raises concerns about credit risk. Our analysis, however, extends beyond the relation between credit risk and loan spread, but instead asks whether dual-holders are able to charge a higher spread, or, are content with a lower spread, conditional on the borrower's credit quality. Such an effect of dual-holding on loan spread is ambiguous a priori, as the spread reflects the role played by dual-holding, rather than merely the selection of portfolio firms based on observed or unobserved credit risk.

The granularity of our deal-level data—indexed by firm (i), BDC (j), loan deal (k), and quarter (t)—offers a unique setting to isolate the effects of dual-holding from confounding factors, particularly borrower risk and lender funding conditions.

Specifically, we estimate the following panel regression at the investment deal level:

$$Spread_{i,j,k,t} = \beta Dual\text{-}Held\ Deal_{i,j,k,t} + \gamma X_{i,j,k,t} + \alpha_{j,t} + \alpha_{i,t} + \epsilon_{i,j,k,t}. \quad (2)$$

In the above equation, the dependent variable *Spread* is the spread over three-month LIBOR of the loan deal. $X_{i,j,k,t}$ includes a set of controls, including *Loan Size* (the logarithm of loan principal amount), *Maturity* (the logarithm of loan duration in months), and a set of indicator variables for senior (versus subordinated), secured (versus unsecured), and first lien (versus lower liens). Since warrants do not require any equity capital injection at issuance nor grant the lending BDCs shareholder rights, they are not included in the regression (2) unless they are bundled with other forms of equity.[7] Firm-level characteristics are not featured as they are absorbed in the saturated fixed effects.

Critical to identification is the inclusion of a set of saturated fixed effects to absorb unobserved heterogeneity, most importantly, the BDC $\times$ time and portfolio firm $\times$ time fixed effects. The BDC $\times$ time fixed effect ($\alpha_{j,t}$) controls for all time-varying characteristics specific to each BDC, effectively holding constant lender-side factors such as funding conditions or credit supply. Similarly, the firm $\times$ time fixed effect ($\alpha_{i,t}$) captures all time-varying firm-level characteristics, thereby holding constant borrower-side credit quality, both observable and unobservable. In addition, the regression includes industry $\times$ time and county $\times$ time fixed effects to account for macroeconomic shocks at the sectoral and regional levels. The estimation results are reported in Table 4.

[Insert Table 4 here.]

Table 4 presents regression results with the progressive inclusion of control variables and fixed effects, allowing us to assess the sources of variation in loan

[7] In sensitivity checks, we further control for loan valuation (the ratio of loan fair value to loan principal amount), a proxy for firm credit quality. None of our results is affected by this addition. Because loan valuation is itself an outcome variable, we opt to exclude it in our baseline regressions.

spreads. The key coefficient of interest, associated with *Dual-Held Deals*, is statistically significant at the 1% level across all specifications. In the baseline model without any controls or fixed effects (column (1)), dual-held debt deals exhibit a 1.79% higher loan spread than non-dual-held deals—consistent with the summary statistics reported earlier (see Table 2). This initial estimate reflects a combination of the treatment effect and selection bias, as dual-held deals may not be randomly assigned and may be associated with unobserved borrower or lender characteristics and circumstances. As control variables and fixed effects are added, the coefficient declines in magnitude, indicating that part of the initial estimate driven by selection on observables is now accounted for by models and expansive controls.

With all controls included and both BDC $\times$ time and firm $\times$ time fixed effects accounted for, column (8) shows that the spread on a dual-held debt deal is 0.45% higher than that on non-dual-held deals. This specification relies solely on variation within fixed-effect clusters, reducing the effective sample size to approximately 40% of the full sample.[8,9] It provides the most stringent identification possible with the available data and can be interpreted as follows. Suppose a given portfolio firm receives two loans in the same quarter, and a BDC issues two loans during that quarter, all with identical observed contractual terms but only one of the loans involves dual-holding. The specification implies that the loan in which the BDC also contributes equity capital carries a 45-basis-point premium in spread relative to the other non-dual-held deal in the pairing. Because the fixed effects absorb all time-varying borrower and lender characteristics thus holding constant firm condition and lender-specific factors in the given quarter, the observed spread premium is most plausibly attributed to the dual-holding status itself.

[8] Appendix Figure A.1 shows the change in the number of portfolio firms in each quarter across the regression specifications (1) and (8).

[9] To account for differences in the sample size across the regression specifications, we additionally estimate the effect of dual holdings on the loan spread for the subsample of portfolio firms for which the firm-time fixed effects are well identified, that is, only with the portfolio firms in the regression specification (8). Table A.1 shows that the results continue to hold.

The coefficient increases to 1.18% in column (10), where firm-time fixed effects are replaced with industry-time and county-time fixed effects, while all other controls and fixed effects remain the same as in column (8). The difference in coefficient magnitude between the two specifications suggests that firms borrowing from dual-holders tend to be riskier, along dimensions not fully captured by the included control variables, relative to their industry and county peers making loan deals in the same quarter. However, only part of the spread premium is attributable to risk pricing; the remaining portion reflects the effect of dual-holding itself.

To affirm the point that dual-holder loan premium is not part of the risk pricing, we incorporate loan valuations conducted by BDCs as a regressor to account for differences in the loan risk profile. The loan valuation is defined as the ratio of the fair value of the loan to the principal amount. In these regressions with BDC and time fixed effects, the sample includes pairs of dual-held and non-dual-held loans matched on a specific BDC as the lender, an investment quarter, whether a loan is senior, secured, or first-lien. Across all these possible pairs of dual-held and non-dual-held loans, we select 75% closest matches based on the loan size, maturity, and valuation in columns (1) and (2) and 50% closest matches in columns (3) and (4). The difference in the loan spread between dual-held and non-dual-held debt deals ranges between 0.78% and 1.20% (see Table A.2).

We next explore potentially heterogeneous effects across subsamples as well as over time. First, the subsample of Compustat-covered portfolio firms allows us to directly control for firm characteristics instead of rely on firm $\times$ time fixed effects. Such an exploration also informs any potential heterogeneity between the smaller, early stage firms funded by BDC versus those more mature firms with public security issuance. The estimation results are reported in Table A.3 in the Appendix. The coefficients, ranging between 0.82% and 1.57%, are comparable with those in the full sample (Table Table 4). Second, Panel (a) of Figure 2 depicts the variation in the coefficient on *Dual-Held Deal* across time, estimated from the four-year rolling-

window regressions with imputed BDC and firm-time fixed effects. We can see the loan spread differential between dual-held and non-dual held debt deals is stable over time and is about 0.45%. Such consistency suggests that the relation represents a fundamental economic force that is not sensitive to macroeconomic conditions and business cycles.

[Insert Figure 2 here.]

In our sample, 68% of the dual-holders (at the deal level) contribute debt and equity capital concurrently (defined as within two quarters), 25% contribute equity more than two quarters post the loan deal, and the rest, a small fraction, have preexisting equity. If we apply regression specification (2) to these three types of dual holders separately classified, we find that concurrent deals (conforming to the strictest definition of dual-holding) entail the highest premium in loan spreads, 0.45%–1.21% with the firm-quarter fixed effects. Results are reported in Table A.4 in the Appendix.

In addition to loan spread, we also study whether dual-holding is associated with differences in other key loan-level characteristics, notably loan maturity and loan size. In Panel (a) of Table 5, we apply the same regression specification as in equation (2) except with the dependent variable being the loan maturity expressed in quarters. In the most strict specification with firm-time fixed effects and loan controls, we find no statistically significant difference in loan maturity between dual-held and non-dual-held loans. Analogously, Panel (b) of Table 5 examines loan size where the dependent variable is the natural logarithm of the loan principal amount. We find that that dual-held loans are of a larger size (0.28%–0.53%) than non-dual-held loans, suggesting that for BDC portfolio firms, equity and debt capital are complements rather than substitutes.

5 Loan Spread Premium for Dual-Holders: Potential Mechanisms

5.1 How Can Dual Holding Affect Loan Pricing?

Having established the prevalence of dual holdings by BDCs and the meaningfully higher credit spreads associated with such arrangements, we now turn to potential mechanisms underlying this finding which guide our empirical tests.

A straightforward, though perhaps trivial explanation is that dual holding reflects selection into riskier positions, where the borrower's full risk profile cannot be fully observed or controlled (**Hypothesis 0**). This hypothesis finds some support in Table 3, which shows that a lack of both cash flows (i.e., negative EBITDA) and collateral (i.e., low net PP&E) are strong predictors of a credit deal also involving an equity investment. However, this explanation does not account for our key results: the positive coefficient on dual holding in the loan spread regression remains robust and significant, at 45 basis points, even when controlling for firm-quarter fixed effects—suggesting that credit risk is already absorbed within these cohorts, as well as BDC-quarter fixed effects, as shown in column (8) of Table 4. Any remaining risk-based selection would therefore have to operate through other dimensions of the deal, such as non-price terms (e.g., covenants) or fine positioning in the capital structure (as the regression already controls for seniority and lien type).

Beyond a mere selection effect, dual-holding status may influence loan pricing through three distinct channels. The first is delegated monitoring (**Hypothesis 1**). Because dual holders can exercise both creditor rights—through covenants and reorganization (see, e.g., Nini, Smith, and Sufi, 2012)—and shareholder rights—via voting and board representation—they gain superior access to firm-specific information and governance levers. Loan deals inherently generate non-public

information, as they are governed by private agreements that provide creditors with access to detailed financial statements, covenant compliance updates, waiver requests, financial projections, and, in some cases, strategic plans such as acquisitions (see, e.g., Ivashina and Sun, 2011). Monitoring in the dual-holding context also involves mitigating the classic conflicts of interest between creditors and shareholders (Jensen and Meckling, 1976; Myers, 1977), analogous to strip financing structures (commonly observed in leveraged buyouts) where investors hold proportional strips of all securities and thus internalize conflicts among different classes of claimants, reducing agency costs in growth management and encouraging value-preserving actions in restructuring (Jensen, 2024).

The combination of privileged information, governance influence, and internalization of potential conflict of interest makes dual holders more effective monitors than either standalone creditors or outside shareholders. Since monitoring imposes private costs while generating benefits for all investors, both creditors and shareholders, a dual holder may "charge" for this service by demanding a modest premium in the loan spread. A natural question arises as to whether dual-holders could "charge" for their services by investing in equity at a price discounted from fair value. Such pricing is uncommon for two main reasons.

First, common equity typically makes up a single class, and offering a discount effectively reprices all outstanding shares. Such an action requires board-level approval. This could invite governance challenges regarding the board's compliance with its fiduciary duty to protect the rights of all shareholders, and provoke objections from other shareholders. Second, discounted equity sales require special disclosures for publicly listed firms and are difficult to keep confidential, even in private companies. The transaction could trigger valuation impairments or, at the very least, establish a low valuation benchmark for future financing rounds, an unattractive outcome for a growth-stage company. By contrast, debt naturally comes in multiple tranches and classes, making differential terms across creditors more common and

easier to justify without triggering comparable governance or disclosure concerns.

The second mechanism attributes the loan spread premium to compensation for the positive spillovers that dual holders create through their equity capital injection (**Hypothesis 2**). When a dual holder provides equity capital, the firm's overall debt becomes less risky due to the added capital cushion that can absorb potential losses, relative to the counterfactual of debt-only financing. This cushion is particularly valuable given the typically weak cash flow position of BDC-financed borrowers. Accordingly, dual-holders may be able to charge a higher loan spread, as the equity injection effectively serves as a public good benefiting all creditors. This public-good component is even more pronounced when the debt tranche of the dual holder is senior and/or secured, as the added capital cushion primarily benefits junior creditors while the dual holder's own debt is already the most protected claim.

The third mechanism is grounded in the "hold-up" theory (Rajan, 1992), which posits that a borrower may become dependent on a particular lender for financing, allowing the lender to exploit this dependency to their advantage (**Hypothesis 3**). This problem arises from relationship-specific investments made by both parties, resulting in the incumbent lender becoming differentially informed relative to prospective lenders. The resulting information asymmetry grants the existing lender unique bargaining power as prospective lenders discount potential adverse selection. In our setting, the hold-up problem is amplified for three reasons. First, dual-holders possess even greater bargaining power due to their enhanced information advantage and deeper financial involvement. Second, most BDC-financed firms maintain relationships with very few lenders in contrast to more mature firms that participate in loan syndicates. In our sample, the average dual-held portfolio firm is associated with 1.47 BDCs, compared to 1.76 BDCs for other portfolio firms. Finally, BDC-financed firms, particularly those with dual holdings, are often in a fledgling stage, making them reliant on continued access to external financing.

5.2 Testing Hypothesis 0: Evidence from Loan Valuation

Loan valuations are influenced by changes in general interest rates and the borrower's creditworthiness. Since the first factor is typically transparent and straightforward to control for, loan valuations can serve as an informative proxy for a borrower's or a loan position's dynamic credit quality, incorporating both observable and unobservable information. Our sample includes such an outcome variable, $Valuation_{i,j,k,t}$, defined as the ratio of the loan's fair value at initiation to its principal amount, based on underwriting and risk assessment processes. Lenders periodically reassess the fair value of their portfolios, primarily to evaluate their own capital adequacy. Because these assessments are mainly used at the aggregate BDC level, there is little incentive for the evaluation to be biased in a way that would distort cross-sectional variation.

The regression becomes:

$$Valuation_{i,j,k,t} = \beta Dual\text{-}Held\ Deal_{i,j,k,t} + \gamma X_{i,j,k,t} + \alpha_{j,t} + \alpha_{i,t} + \epsilon_{i,j,k,t}. \tag{3}$$

If the spread premium accrued to dual-holders' loan positions are compensation for risk, then the coefficient β should be negative. Results, reported in Table 6, do not support the risk compensation hypothesis. The key coefficient is positive throughout and is significant in most specifications including ones with the most stringent fixed effects. Dual-holding is associated with 0.70–1.53 percentage point higher valuation. Thus, yield premium for loans held by dual-holders relative to other loans from the same firm-quarter cannot be justified as compensation for taking risk. We want to note that this within-firm-quarter relation does not contradict the fact that dual-holding tends to involve inherently risky firms (e.g., early stage firms and firms in restructuring) such that relation between valuation and dual-holding could be reversed in the cross section of firms.

Similar to Panel (a) of Figure 2, Panel (b) plots the variation in the coefficient on *Dual-Held Deal* across time, estimated from the four-year rolling-window regressions with both BDC and firm-time fixed effects. The coefficients, which represent the difference in the loan valuation between dual-held and non-dual-held debt deals, are consistently above zero over time, fluctuating around 1.2%. Overall, the findings suggest that contribution to the full capital structure is associated with lower risk, inconsistent with Hypothesis 0.

5.3 Differentiating Hypotheses 1 and 2: Monitoring or Capital Cushion

5.3.1 Motivation to Monitor and Public Good of Capital Injection

The loan spread and valuation results shown in the previous section are consistent with both hypotheses attributing the premium to compensation for dual-holders' service in terms of monitoring or equity cushion provision. Under Hypotheses 1 and 2, monitoring and capital injection benefit all other creditors by making the firm financially stronger and all its debt safer, and hence warrant a premium in debt spread as compensation.

To separate the capital structure effect from delegated monitoring, we focus on how the public-good component of equity provision varies with the seniority of the dual-holder's debt. If the dual-holder's debt is senior and secured, then any benefit from an equity injection primarily accrues to more junior creditors, because senior claims are the last to be impaired. In contrast, if the dual-holder holds a junior tranche of debt, the benefit of equity injection is more self-serving, as their own position is directly at risk in the event of inadequate capitalization. Under this hypothesis, the load spread premium should be higher when the dual-holder's debt position is senior.

The dynamics are reversed concerning monitoring. Investors who have the highest motivation to monitor are the holders of the "fulcrum security." The fulcrum security, usually junior debt, represents the point in the capital structure where the firm's enterprise value just fails to cover fully, meaning that creditors above this point are likely to be repaid, while those below are expected to face significant losses or conversions to equity. Because their recovery in a distress or restructuring could be partial and is uncertain, dual-holders with junior deb positions are more credible monitors than those who are senior creditors (Jiang, Li, and Wang, 2012). Under this hypothesis, the load spread premium should be higher when the dual-holder's debt position is junior.

Based on the dichotomy, a test could be built by examining the relationship between loan spreads and dual-holdings, sorted on the seniority of the dual holder's debt positions.

5.3.2 Seniority of Dual-Holders' Debt

Our summary statistics suggest that dual-holder BDCs are more likely to originate subordinated rather than senior, and less likely to be secured than non-dual-holder BDCs. We test for these relationships more formally by estimating the following panel regressions at the investment level:

$$Seniority_{i,j,k,t} = \beta Dual\text{-}Held\ Deal_{i,j,k,t} + \gamma X_{i,j,k,t} + \alpha_{j,t} + \alpha_{i,t} + \epsilon_{i,j,k,t}, \tag{4}$$

where the dependent variable is the indicator variable for seniority status of debt position. More specifically, $Seniority_{i,j,k,t}$ equals one if loan k, originated by BDC j to portfolio firm i at time t, meets the following criteria: (i) senior, (ii) secured, and (iii) first lien.[10] Such loans, given their repayment priority from either cash flows or asset

[10] A debt investment is classified as secured if the investment description contains explicit terms such as "secured" or "collateralized." It is classified as first lien if no wording indicates otherwise (e.g., "second lien" or "third lien").

liquidation, are unlikely to be underwater; consequently, the marginal benefit from additional capital injections is minimal.

The results are presented in Table 7. Confirming the summary statistics, we find that dual-held loans are 13–15 percentage points less likely to be senior, 6–22 percentage points less likely to be secured, and 13–17 percentage points less likely to be first lien in the most restrictive regression specification with firm-time fixed effects.

[Insert Table 7 here.]

Loan seniority largely determines the priority of cash flow rights. Because senior lenders are typically repaid first, junior lenders may rely more on contractual features such as payment-in-kind (PIK) provisions, i.e, deferring interest payments by adding them to the loan's principal balance, to accommodate borrower liquidity constraints while preserving their eventual repayment claims (see, Rintamäki and Steffen, 2025). The last column of Table 7 examines the association between dual-held deals and the presence of a PIK option. The results indicate that dual-held deals are associated with a 5 percentage point higher likelihood of including a PIK option, relative to the sample average of 7%. Appendix Table A.5 further shows that controlling for the PIK feature does not alter our main results, implying that the observed loan spread differential for dual-held deals is not driven by the presence of a PIK option.

5.3.3 Evidence of Loan Spread Premium and Seniority

Though dual-held deals are more likely to involve junior and unsecured loans compared to non-dual-held loans, the both senior and junior loans are well represented in the full and dual-held sample (see Table 2). In our regression sample, slightly over half of the dual-held deals are either junior or not first-lien or unsecured. Such a variation allows us to carry out the empirical test sorted on loan seniority, in separating Hypotheses 1 and 2.

Specifically, we estimate the following investment-level panel regressions.

$$Spread_{i,j,k,t} = \beta_1 Dual\text{-}Held\ Deal_{i,j,k,t} + \beta_2 Senior_{k,i,j,t} + \beta_3 Dual\text{-}Held\ Deal_{k,i,j,t} \times Senior_{k,i,j,t} + \gamma X_{k,i,j,t} + \alpha_{j,t} + \alpha_{i,t} + \epsilon_{k,i,j,t}, \quad (5)$$

where the dependent variable is the spread over three-month LIBOR of a loan indexed by i, j, k, t. $Senior_{i,j,k,t}$ is an indicator variable equal to one if the loan is senior, and zero otherwise. The results, reported in Table 8, show that while dual holders' loans overall charge a higher spread, the relative premium is significantly reduced for senior loans both within the same firm-quarter cohort and in the cross section controlling for loan characteristics. A test for $\beta_1 + \beta_3 = 0$ (which represents the total effect of senior loans by dual-holders) rejects the null of zero effect and in favor of a positive value in three out of four specifications. In other words, those senior loans (which represent the majority of dual-held loans) still command a premium in spread, in the magnitude of 20–99 basis points, relative to senior loans held by non-dual holders within the same firm-quarter. But the premium is significantly higher for junior loans for the same comparison (around 186–203 basis points). The comparison of loan spread between senior and junior credit suggests that the monitoring mechanism dominates the capital-structure explanation.

[Insert Table 8 here.]

5.3.4 Loan Spread Premium and Size of Equity Stake

Among dual holders, the incentive to monitor may depend on the size of their equity stakes. In our data, we do not consistently observe the exact equity share of a portfolio firm held by a BDC. Under the 1940 Act, however, BDCs must disclose portfolio firms classified as "affiliated investments" (equity stake between 5% and 25%) and "controlled investments" (equity stake above 25% or with more than 50%

board representation). Using this classification, we identify roughly 40% of dual-held deals as involving "high" equity stakes (above 5%). It is worth noting that the presence of blockholding by dual-holders almost doubles the odds among publicly listed firms,[11] suggesting that BDC dual holders have substantial skin in the game of their portfolio firms.

Table 9 reports the spread regression, analogous to Table 4, but splits by deals with equity stakes below and above 5%. The results indicate that the loan spread premium exists across all equity stake levels, but is generally larger when stakes are higher, consistent with stronger governance oversight incentives and greater influence.

[Insert Table 9 here.]

We provide further supporting evidence that the loan spread premium increases with the degree of governance oversight by analyzing presence of BDC directors on boards of their portfolio firms. To this end, we leverage the LinkedIn data and manually collect information on board positions of BDC directors. We define an indicator $Board_{i,j}$ that equals one if a director of BDC j sits at the board of portfolio firm i and estimate a difference-in-differences specification

$$\begin{aligned} Spread_{k,i,j,t} = \beta_1 Dual\text{-}Held\ Deal_{k,i,j,t} + \beta_2 Board_{i,j} \\ + \beta_3 Dual\text{-}Held\ Deal_{k,i,j,t} \times Board_{i,j} + \gamma X_{k,i,j,t} + \epsilon_{k,i,j,t} \end{aligned} \tag{6}$$

The results in Table A.6 show that the presence of dual-holder BDC on board of its portfolio firm commands an additional loan spread premium of 1.45%–3.01% in line with the monitoring hypothesis.

[11] Lewellen and Lewellen (2025) document that roughly 10%–21% of U.S. public companies have at least one external institutional investor holding over 5% of equity from 2015 to 2021.

5.3.5 Subsequent Change in Loan Valuation

Effective monitoring should improve a borrower's credit quality, which is summarized in debt valuation, or the ratio of the loan's fair value to its principal amount.[12] For such a test, we change the dependent variable in equation (2) to be $Valuation_{k,i,j,t+4} - Valuation_{k,i,j,t}$, or the difference in loan valuation between initiation and four quarters afterwards. Results, reported in Table 10, support a positive outcome from monitoring: dual-held deals are associated with positive changes in loan valuation post initiation. In the specifications where both $BDC \times Time$ and $Firm \times Time$ fixed effects are incorporated, the magnitude, at 2.55 percentage points, is both economically and statistically significant.

[Insert Table 10 here.]

5.4 Testing Hypotheses 3: Evidence of Hold-up in Continuing Financing

5.4.1 Subsequent Financing

Under the hold-up hypothesis, a dual-holder's bargaining power would limit a portfolio firm's ability to obtain outside financing, resulting in higher loan spreads charged by the dual-holder. Our sample allows for a direct test of this prediction by examining firms' access to subsequent rounds of financing. To this end, we estimate the following regression at the firm-deal level at the vintage point of the first deal (in our sample) for each of the firms (and, therefore, there is no time t subscript):

$$Subsequent\ Financing_i = \beta Dual\text{-}Held\ PF_i + \epsilon_i, \tag{7}$$

[12] Once time period is controlled for so that macro-level variables, such as interest rates, term structure, and default premium are absorbed.

where the dependent variable *Subsequent Financing* adopts two forms: (i) the natural logarithm of one plus the number of debt deals of a portfolio firm i excluding the first debt deal, and (ii) the total loan amount of debt deals of a portfolio firm i excluding the first debt deal. In the regression, we focus on subsequent debt deals originated within the 3 years after the first debt deal. Results in Table 11 show that the dual-held portfolio firms secure 14% more debt deals and receive $10 millions more in funding relative to non-dual-held portfolio firms. Therefore, engaging dual-holders expands financing for the growth firms.

[Insert Table 11 here.]

At the same time, we note that this additional funding almost exclusively comes from BDCs that provided financing in the first debt deal (see columns "Own" in the table), suggesting the presence of stronger relationship between a borrower and a dual-holder lender in financing continuing growth.

5.4.2 Cost of Borrowing

While expanded financing is hardly a hallmark of a "hold-up," the captive financing by the same BDC over time does not rule out Hypothesis 3. To disentangle monitoring from hold-up, we note that hold-up should lead to higher cost of borrowing for the firm due to adverse selection concern by prospective financiers facing information asymmetry; in contrary, monitoring reduces risk which should allow the firm to enjoy lower cost of debt capital overall (especially from non-dual holder creditors). In this test, we separate loan deals into those issued by dual-holders ($Dual\text{-}Held\ Deal_{i,t}$), those issued by non-dual-holders with a dual-holder present at the time ($Dual\text{-}Held\ PF_{i,t}$), and those issued to firms without any dual-holder (and by construction, by non-dual-holder creditors, the baseline or omitted category).

We run the following panel regression:

$$Spread_{i,j,k,t} = \beta_1 Dual\text{-}Held\ PF_{i,t} + \beta_2 Dual\text{-}Held\ Deal_{i,j,k,t} + \gamma X_{i,j,k,t} + \alpha_{j,t} + \alpha_{i,t} + \epsilon_{k,i,j,t}. \quad (8)$$

In this regression, β_2 merely replicates our main results reported earlier but β_1 is the coefficient of interest. The estimation results are reported in Table 12. We find that for firms that are potentially monitored by a dual holder, their non-dual-held deals have a 0.16%–0.40% lower spreads relative to similar loans to firms without a dual-holder, suggesting reduced cost of capital at the firm level associated with dual-holding. Combined results lend support to the monitoring hypothesis, but are not consistent with a hold-up hypothesis.

[Insert Table 12 here]

6 Additional Empirical Evidence

6.1 Presence of Warrants in Dual-Held Deals

Dual-holder BDCs could either charge a higher loan spread on dual-held debt deals or accept a compensation in the form of a warrant or a combination of both. Therefore, in the presence of both materialized equity and warrant, we may observe a lower loan spread differential between dual-held and non-dual held deals since investors are sufficiently compensated for their monitoring services. To test this hypothesis, we re-estimate our main specification (2) partitioning our dual-held deals into two subgroups: (i) $Dual\text{-}Held\ Deal^{E}$ identifying debt deals bundled with the materialized equity position and (ii) $Dual\text{-}Held\ Deal^{EW}$ identifying debt deals bundled with the materialized equity and warrants. The estimation results are reported in Appendix Table A.7. In line with our hypothesis, only dual-held deals

featuring materialized equity exhibits a positive loan spread differential, while dual-held deals including a warrant "sweetener" do not require additional compensation in form of higher interest spread. By holding equity jointly with warrants, dual holders aim to achieve a higher upside potential through an increase in the value of equity and the warrant exercise.

6.2 Effect of Loan Size on Loan Spread between Dual-Held and Non-Dual-Held Deals

The rich dataset allows us to explore cross-sectional variations, which we start with loan size. We estimate the regression specification (2) by splitting the sample into the four groups based on the loan size quartiles. The estimation results are presented in Table A.8. For loans below the 25th percentile of the loan size distribution, the difference in loan spread between dual-held and non-dual-held debt deals is 1.03%–1.16%. This difference increases to 1.47% for loans above the 25th and below the 50th percentiles, and then drops to 1.14%–1.16% for loans above the 50th and below the 75th percentiles and further to 0.75%–0.80% in the top quartile of the loan size distribution. These estimates suggest a potential hump-shape relationship between the loan size and the degree of the hold-up problem.

To verify this hump-shape relationship between the loan size and the degree of the hold-up problem, we estimate the following investment-level panel regression:

$$\begin{aligned} Spread_{k,i,j,t} = {} & \beta_0 + \beta_1 Dual\text{-}Held\ Deal_{k,i,j,t} \\ & + \sum_{k=0}^{k=2} (\beta_{2+2k} Ln(Loan\ Size_{k,i,j,t})^k + \beta_{3+2k} Dual\text{-}Held\ Deal_{k,i,j,t} \times Ln(Loan\ Size_{k,i,j,t})^k) \\ & + \epsilon_{k,i,j,t}, \end{aligned}$$

where the dependent variable is the spread over 3 month LIBOR of a loan of type

k originated by a BDC j to a portfolio firm i at time t. $Loan\ Size_{k,i,j,t}$ is the principal of a loan of type k originated by a BDC j to a portfolio firm i at time t expressed in millions. In this regression, we do not include any controls or fixed effects. Based on the coefficient estimates, we depict the fitted value of the loan spread as a function of the natural logarithm of the loan size for dual-held and non-dual-held loans in the top panel of Figure A.2. The bottom panel of the Figure shows the differential loan spread between dual-held and non-dual-held loans as a function of the natural logarithm of the loan size. The red dotted vertical lines correspond to the 5th and 95th percentiles of the loan size distribution. The black dashed vertical lines correspond to the 25th, 50th, and 75th percentiles of the loan size distribution. In line with our regression estimates in Table A.8, we observe the hump-shape relationship between the loan size and the degree of the hold-up problem.

Given that the largest firms in our sample are still among the smallest of publicly listed firms, the hump-shape relationship cautions against extending the findings of this study to large public firms primarily financed by syndicated loans (as examined by Jiang, Li, and Shao, 2010). Instead, our analysis is specifically focused on the private credit market, targeting middle-market and predominantly private firms.

6.3 Comparing BDC Loans with Syndicated Loans

Our sample restricts our view to BDC financing, while their portfolio firms may receive loans originated outside the BDC space. Because of data availability, we are able to trace out syndicated loans by our sample portfolio firms. Though syndicated loans are typically issued to large firms, they cover a small subset of our middle-market portfolio firms. Figure A.3 depicts the number of syndicated loans and loans originated by BDCs over time. For this sample of portfolio firms that receive both forms of loans, we are able to compare loan pricing (loan spread over the three-month

LIBOR) with the following regression:

$$Spread_{i,k,t} = \beta Dealscan\ Loan_{i,k,t} + \gamma X_{i,k,t} + \alpha_{i,t} + \epsilon_{i,k,t}, \tag{9}$$

where $Dealscan\ \ Loan_{k,i,t}$ is an indicator variable that equals one if a loan k is a syndicated loan, and zero of a loan is originated by a BDC. The regression sample without controls and fixed effects includes approximately 7,500 BDC deals and 10,900 syndicated market loans. Table A.9 presents the estimation results. The final column shows that BDCs charge spreads that are 192 basis points higher—a striking difference given that both types of loans are extended to the same firm-quarter cohorts and that loan characteristics such as size, maturity, and seniority are controlled for. These results are consistent with BDCs pricing in the value of their "high-touch" lending model, which involves more intensive monitoring and assistance to their portfolio firms.[13]

7 Conclusion

Dual holders represent a unique and increasingly important phenomenon in the private credit landscape, particularly for small and mid-sized firms. By holding both debt and equity positions in the same portfolio firms, dual-holders offer a blend of capital that provides financing flexibility and enables closer monitoring. This dual engagement influences loan pricing, with dual-held loans typically carrying a premium to reflect the additional monitoring and stronger alignment of interests. Despite higher loan spreads, firms included in dual-holder portfolios often benefit from a lower overall cost of capital and expanded financing opportunities, especially from the dual-holder BDCs themselves. Ultimately, BDC loans are not purely commodity credit; they bundle capital, monitoring, flexibility, and relationship value,

[13] According to Gustafson, Ivanov, and Meisenzahl (2021), only about 20% of syndicated loans involve active monitoring.

features that borrowers highly value.

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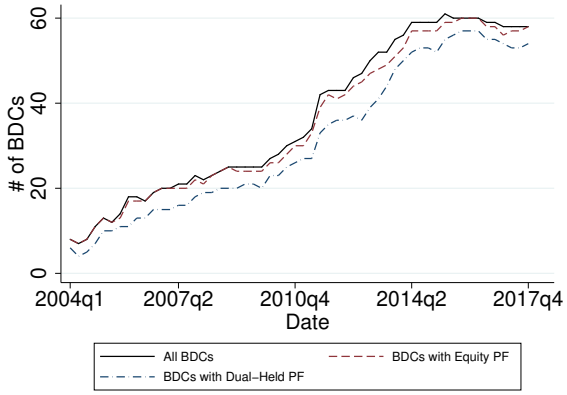
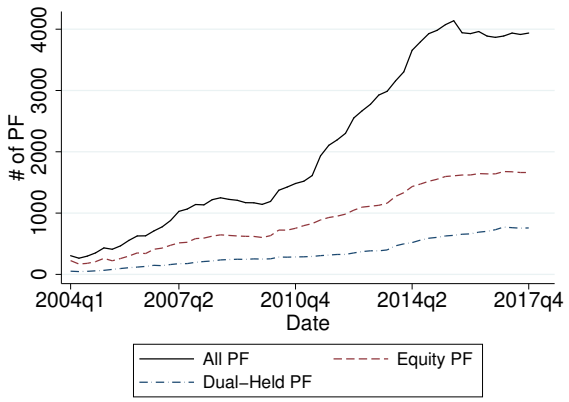
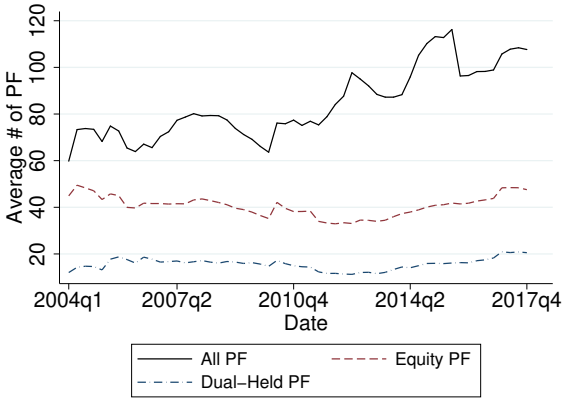
Figures



Panel (a): Number of BDCs



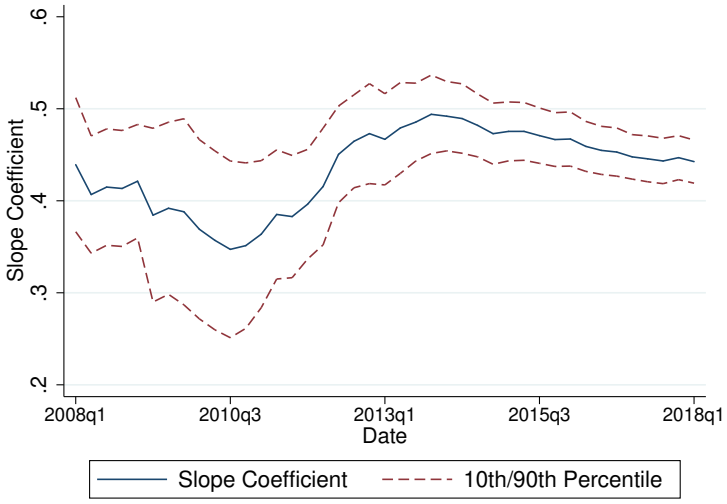
Panel (b): Aggregate Number of PFs



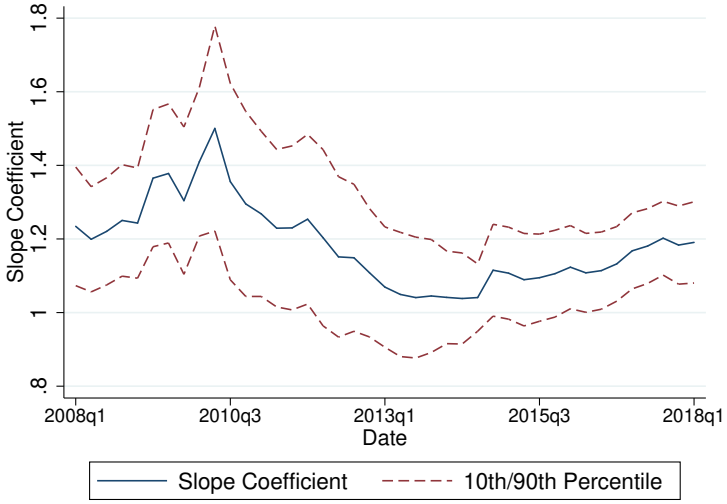
Panel (c): Average Number of PFs per a BDC

Fig. 1: Presence of Dual Holding in the BDC Space

This figure presents the descriptive statistics on dual holdings in the BDC investment space. Panel (a) depicts the number of BDCs in each quarter (black solid line), as well as the number of BDCs with portfolio firms with an outstanding equity investment (dashed red), and with a simultaneous equity and debt investment (dash-dotted blue). Panel (b) depicts the aggregate number of portfolio firms in each quarter across all BDCs (black dolid line), as well as the number of portfolio firms with an outstanding equity investment (dashed red), with a simultaneous equity and debt investment (dash-dotted blue). Panel (c) depicts the cross-sectional average number of portfolio firms per a BDC in each quarter (black solid line), as well as the cross-sectional average number of portfolio firms with an outstanding equity investment (dashed red), and with a simultaneous equity and debt investment (dash-dotted blue). The data are quarterly observations from 2004:Q1 to 2017:Q4.



Panel (a): Loan Spread



Panel (b): Loan Valuation

Fig. 2: Loan Spread between DH and NDH Firms over Time

The figure plots the estimated coefficient β from the 16-quarter rolling-window investment-level panel regressions:

$$y_{k,i,j,t} = \beta Dual\text{-}Held\ Deal_{k,i,j,t} + \gamma X_{k,i,j,t} + \epsilon_{k,i,j,t},$$

where the dependent variable is (i) the spread over 3 month LIBOR of a loan of type k originated by a BDC j to a portfolio firm i at time t in Panel (a) and (ii) the ratio of the fair value over the principal amount of a loan of type k originated by a BDC j to a portfolio firm i at time t in Panel (b). $Dual\text{-}Held\ Deal_{k,i,j,t}$ is an indicator variable that equals to one if a portfolio firm i has a debt investment k and a simultaneous equity investment from a BDC j in a quarter t, and zero otherwise. We include the imputed BDC and firm-time fixed effects from the full sample regression estimation. The data are quarterly observations from 2004:Q1 to 2017:Q4.

Tables

Table 1: Summary Statistics on Loan Terms

Panel (a): 2010:Q4

	Count	Mean	St.Dev.	Median	10%	25%	75%	90%
Loan Size, $ Millions	272	11.39	15.00	7.48	1.77	3.37	13.12	24.74
Loan Maturity, Years	296	4.63	1.86	5.00	1.83	3.33	5.92	6.83
Fair Value/Principal, %	272	98.06	5.97	100.00	94.21	98.00	100.26	101.17
Loan Rate, %	290	9.51	3.38	9.25	5.50	6.75	12.00	14.00
Rate: Cash Only, %	109	10.35	3.44	10.50	5.80	7.75	13.00	14.50
Rate: Base + Spread, %	152	8.22	2.73	7.30	5.50	6.25	10.25	12.00
Rate: Includes PIK, %	21	14.36	1.56	14.00	13.00	14.00	15.00	16.50
Loan Spread, %	289	9.24	3.34	8.95	5.20	6.45	11.70	13.70
Senior	306	0.79	0.41	1.00	0.00	1.00	1.00	1.00
Secured	306	0.50	0.50	0.00	0.00	0.00	1.00	1.00
First Lien	306	0.93	0.25	1.00	1.00	1.00	1.00	1.00
Dual-Held Deal	275	0.25	0.44	0.00	0.00	0.00	1.00	1.00
Controlled Dual-Held Deal	275	0.06	0.24	0.00	0.00	0.00	0.00	0.00
Affiliated Dual-Held Deal	275	0.04	0.19	0.00	0.00	0.00	0.00	0.00

Panel (b): 2017:Q4

	Count	Mean	St.Dev.	Median	10%	25%	75%	90%
Loan Size, $ Millions	793	12.99	28.47	6.92	0.70	2.57	14.77	27.50
Loan Maturity, Years	812	4.69	1.86	4.88	2.00	3.58	5.92	7.00
Fair Value/Principal, %	790	96.47	9.98	99.57	94.09	98.04	100.00	100.50
Loan Rate, %	800	8.78	2.32	8.70	6.13	7.24	10.01	11.74
Rate: Cash Only, %	86	9.26	3.09	9.32	5.00	8.00	12.00	12.00
Rate: Base + Spread, %	687	8.59	1.97	8.55	6.16	7.13	9.75	10.98
Rate: Includes PIK, %	53	10.86	3.98	11.06	4.60	9.00	13.00	15.00
Loan Spread, %	798	7.28	2.29	7.19	4.64	5.76	8.50	10.23
Senior	829	0.87	0.33	1.00	0.00	1.00	1.00	1.00
Secured	829	0.62	0.49	1.00	0.00	0.00	1.00	1.00
First Lien	829	0.85	0.36	1.00	0.00	1.00	1.00	1.00
Dual-Held Deal	775	0.23	0.42	0.00	0.00	0.00	0.00	1.00
Controlled Dual-Held Deal	775	0.02	0.14	0.00	0.00	0.00	0.00	0.00
Affiliated Dual-Held Deal	775	0.05	0.21	0.00	0.00	0.00	0.00	0.00

This tables report the cross-sectional statistics on loan terms across BDC debt deals. The data on loan size are expressed in millions of December 2017 dollars. The summary statistics are reported as of 2010:Q4 in Panel (a) and 2017:Q4 in Panel (b).

Table 2: Loan Terms: Dual-Held vs Non-Dual-Held Debt Deals

Panel (a): 2004:Q1–2017:Q4

	Dual-Held			Non-Dual-Held			
	N	Mean	St.Dev.	N	Mean	St.Dev.	Difference
Loan Size, $ Millions	4560	18.10	33.92	13950	13.62	19.94	4.484***
Loan Maturity, Years	4450	4.02	1.95	14696	5.10	1.75	−1.079***
Fair Value/Principal, %	4491	95.78	10.82	13926	97.75	7.26	−1.966***
Loan Spread, %	4711	9.31	3.47	14619	7.52	2.73	1.787***
Senior	5052	0.69	0.46	15062	0.84	0.37	−0.141***
Secured	5052	0.43	0.50	15062	0.63	0.48	−0.195***
First Lien	5052	0.94	0.24	15062	0.85	0.35	0.086***

Panel (b): 2010:Q4

	Dual-Held			Non-Dual-Held			
	N	Mean	St.Dev.	N	Mean	St.Dev.	Difference
Loan Size, $ Millions	53	11.88	14.19	188	11.87	16.20	0.011
Loan Maturity, Years	64	3.66	2.22	201	5.14	1.58	−1.473***
Fair Value/Principal, %	53	96.51	7.46	188	99.09	4.79	−2.577***
Loan Spread, %	64	9.87	3.71	194	8.55	3.04	1.325***
Senior	70	0.66	0.48	205	0.84	0.36	−0.187***
Secured	70	0.23	0.42	205	0.60	0.49	−0.371***
First Lien	70	0.97	0.17	205	0.91	0.29	0.064*

Panel (c): 2017:Q4

	Dual-Held			Non-Dual-Held			
	N	Mean	St.Dev.	N	Mean	St.Dev.	Difference
Loan Size, $ Millions	174	13.35	39.09	567	13.52	25.66	−0.164
Loan Maturity, Years	180	4.04	1.81	579	5.00	1.85	−0.959***
Fair Value/Principal, %	173	94.65	12.38	565	97.13	9.01	−2.476***
Loan Spread, %	171	8.43	2.43	574	6.78	1.99	1.644***
Senior	181	0.78	0.41	594	0.89	0.31	−0.108***
Secured	181	0.43	0.50	594	0.69	0.46	−0.263***
First Lien	181	0.84	0.37	594	0.84	0.37	0.001

This tables report the cross-sectional statistics on loan terms across BDC dual-held and non-dual-held debt deals. Dual-held debt deals are new loans to portfolio firms that have a simultaneous equity investment from a BDC in a given quarter. The data on loan size are expressed in millions of December 2017 dollars. The summary statistics are reported over the sample period between 2004:Q1 and 2017:Q4 in Panel (a), as of 2010:Q4 in Panel (b), and as of 2017:Q4 in Panel (c).

Table 3: Selection of Dual-Held Portfolio Firms

	Equity				Common			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Ln(Assets)	−4.10***	−3.21***	−3.93***	−3.12***	−2.88***	−2.22***	−2.71***	−2.17***
	(0.56)	(0.59)	(0.63)	(0.65)	(0.47)	(0.49)	(0.52)	(0.54)
EBITDA/Sales	−0.13**		−0.11*		−0.16***		−0.13***	
	(0.06)		(0.06)		(0.05)		(0.05)	
EBITDA<0		16.27***		15.25***		14.82***		12.51***
		(3.15)		(3.48)		(2.64)		(2.87)
Leverage	−0.29	0.23	0.70	1.02	−1.89	−1.52	−1.85	−1.63
	(1.47)	(1.45)	(1.73)	(1.71)	(1.21)	(1.20)	(1.42)	(1.41)
PPENT/Assets	−7.04**	−8.24***	−13.05**	−10.89*	−6.81***	−7.78***	−9.82*	−8.47*
	(3.18)	(3.14)	(6.25)	(6.20)	(2.63)	(2.59)	(5.04)	(5.01)
Ln(Firm Age)	−0.86	−0.80	−0.69	−0.55	0.28	0.38	0.48	0.62
	(1.20)	(1.18)	(1.29)	(1.28)	(0.99)	(0.98)	(1.06)	(1.05)
Asset Growth	6.91***	6.87***	6.71**	6.92***	6.02***	6.40***	5.54**	5.98***
	(2.56)	(2.50)	(2.66)	(2.61)	(2.14)	(2.10)	(2.20)	(2.17)
Sales Growth	−5.88**	−6.11***	−5.90**	−6.02***	−2.37	−2.72	−2.07	−2.25
	(2.32)	(2.26)	(2.37)	(2.31)	(2.02)	(1.98)	(2.05)	(2.02)
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	No	No	Yes	Yes	No	No	Yes	Yes
R^2	0.14	0.16	0.19	0.20	0.13	0.15	0.19	0.20
N	867	867	863	863	840	840	836	836

This table reports the estimated coefficients from firm-level regressions using OLS:

$$Dual\text{-}Held\ PF_{i,t} = \beta X_{i,t-1} + \epsilon_{i,t},$$

where the dependent variable is an indicator variable that equals to one hundred if a portfolio firm i has a simultaneous equity and debt investment from any BDC in an investment year t, and zero otherwise. The matrix X includes firm-level characteristics measured one year prior to the investment date. The sample includes only portfolio firms in Compustat. The data are annual observations from 2004 to 2017.

Table 4: Loan Spread: Dual-Held Debt Deals

Panel (a) Equity

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Dual-Held Deal	1.79***	1.40***	1.20***	1.12***	1.16***	0.50***	1.18***	0.45***	1.20***	1.18***
	(0.10)	(0.09)	(0.09)	(0.09)	(0.22)	(0.16)	(0.19)	(0.14)	(0.12)	(0.11)
Ln(Loan Size)		0.40***		0.31***		0.15***		0.14***		0.28***
		(0.02)		(0.03)		(0.02)		(0.03)		(0.03)
Ln(Loan Maturity)		−0.72***		−0.35***		0.39***		0.71***		−0.43***
		(0.08)		(0.10)		(0.14)		(0.21)		(0.11)
Loan Controls	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes
BDC-Time FE	No	No	Yes	Yes	No	No	Yes	Yes	Yes	Yes
Firm-Time FE	No	No	No	No	Yes	Yes	Yes	Yes	No	No
Industry-Time FE	No	No	No	No	No	No	No	No	Yes	Yes
County-Time FE	No	No	No	No	No	No	No	No	Yes	Yes
R^2	0.06	0.22	0.48	0.55	0.71	0.82	0.75	0.85	0.68	0.73
N	19330	17586	19159	17447	8892	7878	8621	7603	13648	12421

This table reports the estimated coefficients from investment-level panel regressions using OLS:

$$Spread_{k,i,j,t} = \beta Dual\text{-}Held\ Deal_{k,i,j,t} + \gamma X_{k,i,j,t} + \epsilon_{k,i,j,t},$$

where the dependent variable is the spread over 3 month LIBOR of a loan of type k originated by a BDC j to a portfolio firm i at time t. $Dual\text{-}Held\ Deal_{k,i,j,t}$ is an indicator variable that equals to one if a portfolio firm i has a debt investment k and a simultaneous equity investment of the corresponding type from a BDC j in a quarter t, and zero otherwise. The data are quarterly observations from 2004:Q1 to 2017:Q4.

Table 4: Loan Spread: Dual-Held Debt Deals

Panel (b) Common

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Dual-Held Deal	1.85***	1.33***	1.04***	0.95***	1.24***	0.64***	0.84***	0.37**	1.11***	1.09***
	(0.14)	(0.13)	(0.13)	(0.12)	(0.27)	(0.21)	(0.23)	(0.18)	(0.18)	(0.17)
Ln(Loan Size)		0.41***		0.34***		0.16***		0.14***		0.30***
		(0.02)		(0.03)		(0.02)		(0.03)		(0.03)
Ln(Loan Maturity)		−0.81***		−0.39***		0.45***		1.01***		−0.45***
		(0.08)		(0.11)		(0.13)		(0.18)		(0.13)
Loan Controls	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes
BDC-Time FE	No	No	Yes	Yes	No	No	Yes	Yes	Yes	Yes
Firm-Time FE	No	No	No	No	Yes	Yes	Yes	Yes	No	No
Industry-Time FE	No	No	No	No	No	No	No	No	Yes	Yes
County-Time FE	No	No	No	No	No	No	No	No	Yes	Yes
R^2	0.05	0.22	0.49	0.56	0.71	0.82	0.76	0.86	0.68	0.73
N	17067	15564	16864	15393	7934	7058	7645	6768	11842	10818

This table reports the estimated coefficients from investment-level panel regressions using OLS:

$$Spread_{k,i,j,t} = \beta Dual\text{-}Held\ Deal_{k,i,j,t} + \gamma X_{k,i,j,t} + \epsilon_{k,i,j,t},$$

where the dependent variable is the spread over 3 month LIBOR of a loan of type k originated by a BDC j to a portfolio firm i at time t. $Dual\text{-}Held\ Deal_{k,i,j,t}$ is an indicator variable that equals to one if a portfolio firm i has a debt investment k and a simultaneous equity investment of the corresponding type from a BDC j in a quarter t, and zero otherwise. The data are quarterly observations from 2004:Q1 to 2017:Q4.

Table 5: Loan Maturity and Size: Dual-Held Debt Deals

Panel (a) Maturity

	Equity				Common			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Dual-Held Deal	0.56***	−0.06	0.77***	0.04	0.71***	0.14	0.46	−0.05
	(0.19)	(0.18)	(0.26)	(0.25)	(0.26)	(0.26)	(0.34)	(0.34)
Ln(Loan Size)		0.34***		0.38***		0.33***		0.37***
		(0.04)		(0.05)		(0.04)		(0.05)
Loan Controls	No	Yes	No	Yes	No	Yes	No	Yes
BDC-Time FE	No	No	Yes	Yes	No	No	Yes	Yes
Firm-Time FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R^2	0.88	0.90	0.91	0.92	0.89	0.90	0.91	0.93
N	8958	8209	8687	7938	8015	7332	7727	7043

Panel (b) Size

	Equity				Common			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Dual-Held Deal	0.34**	0.30**	0.53***	0.44***	0.39**	0.36**	0.34**	0.28*
	(0.15)	(0.13)	(0.13)	(0.13)	(0.19)	(0.18)	(0.15)	(0.15)
Ln(Loan Maturity)		0.60***		0.76***		0.57***		0.77***
		(0.07)		(0.09)		(0.07)		(0.11)
Loan Controls	No	Yes	No	Yes	No	Yes	No	Yes
BDC-Time FE	No	No	Yes	Yes	No	No	Yes	Yes
Firm-Time FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R^2	0.58	0.59	0.70	0.70	0.57	0.58	0.70	0.71
N	8449	8209	8183	7938	7504	7332	7218	7043

This table reports the estimated coefficients from investment-level panel regressions using OLS:

$$y_{k,i,j,t} = \beta Dual\text{-}Held\ Deal_{k,i,j,t} + \gamma X_{k,i,j,t} + \epsilon_{k,i,j,t},$$

where the dependent variable is (i) the maturity (expressed in quarters) and (ii) the natural logarithm of the principal amount of a loan of type k originated by a BDC j to a portfolio firm i at time t. $Dual\text{-}Held\ Deal_{k,i,j,t}$ is an indicator variable that equals to one if a portfolio firm i has a debt investment k and a simultaneous equity investment of the corresponding type from a BDC j in a quarter t, and zero otherwise. The data are quarterly observations from 2004:Q1 to 2017:Q4.

Table 6: Loan Valuation: Dual-Held Debt Deals

	All Equity				Common Equity Only			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Dual-Held Deal	0.83	0.70	1.37**	1.10*	1.41**	1.25*	1.53*	1.40*
	(0.66)	(0.67)	(0.57)	(0.59)	(0.64)	(0.65)	(0.81)	(0.81)
Ln(Loan Size)		0.52***		0.76***		0.51***		0.77***
		(0.09)		(0.12)		(0.09)		(0.13)
Ln(Loan Maturity)		0.25		−0.08		0.49		0.23
		(0.67)		(0.98)		(0.78)		(1.31)
Loan Controls	No	Yes	No	Yes	No	Yes	No	Yes
BDC-Time FE	No	No	Yes	Yes	No	No	Yes	Yes
Firm-Time FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R^2	0.65	0.65	0.67	0.67	0.66	0.66	0.68	0.68
N	8383	8150	8116	7879	7439	7274	7152	6985

This table reports the estimated coefficients from investment-level panel regressions using OLS:

$$Valuation_{k,i,j,t} = \beta Dual\text{-}Held\ Deal_{k,i,j,t} + \gamma X_{k,i,j,t} + \epsilon_{k,i,j,t},$$

where the dependent variable is the ratio of the fair value over principal amount of a loan of type k originated by a BDC j to a portfolio firm i at time t. $Dual\text{-}Held\ Deal_{k,i,j,t}$ is an indicator variable that equals to one if a portfolio firm i has a debt investment k and a simultaneous equity investment of the corresponding type from a BDC j in a quarter t, and zero otherwise. The data are quarterly observations from 2004:Q1 to 2017:Q4.

Table 7: Loan Characteristics: Dual-Held Debt Deals

	Senior		Secured		First Lien		PIK	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Dual-Held Deal	-0.15^{***}	-0.13^{***}	-0.22^{***}	-0.06^{**}	-0.13^{***}	-0.17^{***}	0.05^{***}	0.05^{***}
	(0.03)	(0.04)	(0.03)	(0.03)	(0.02)	(0.03)	(0.01)	(0.02)
BDC-Time FE	No	Yes	No	Yes	No	Yes	No	Yes
Firm-Time FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R^2	0.59	0.72	0.69	0.92	0.63	0.76	0.71	0.74
N	9387	9124	9387	9124	9387	9124	9387	9124

This table reports the estimated coefficients from investment-level panel regressions using OLS:

$$Seniority_{k,i,j,t} = \beta Dual\text{-}Held\ Deal_{k,i,j,t} + \gamma X_{k,i,j,t} + \epsilon_{k,i,j,t},$$

where the dependent variable is the indicator variable that equals to one if a loan k originated by a BDC j to a portfolio firm i at time t is senior in columns (1)–(2), secured in columns (3)–(4), first lien in columns (5)–(6), or has a PIK option in columns (7)–(8). $Dual\text{-}Held\ Deal_{k,i,j,t}$ is an indicator variable that equals to one if a portfolio firm i has a debt investment k and a simultaneous equity investment from a BDC j in a quarter t, and zero otherwise. The data are quarterly observations from 2004:Q1 to 2017:Q4.

Table 8: Loan Spread: Dual-Held Senior and Subordinated Debt Deals

	(1)	(2)	(3)	(4)
Dual-Held Deal	1.86***	2.03***	2.02***	2.03***
	(0.30)	(0.37)	(0.25)	(0.28)
Senior	−3.29***	−1.74***	−1.86***	−1.06***
	(0.13)	(0.18)	(0.11)	(0.14)
Dual-Held Deal × Senior	−1.33***	−1.84***	−1.09***	−1.04***
	(0.28)	(0.39)	(0.26)	(0.29)
Ln(Loan Size)		0.13***		0.28***
		(0.03)		(0.03)
Ln(Loan Maturity)		0.67***		−0.43***
		(0.21)		(0.11)
$\beta_1 + \beta_3$	0.54***	0.20	0.94***	0.99***
	(0.18)	(0.15)	(0.12)	(0.12)
Loan Controls	No	Yes	No	Yes
BDC-Time FE	Yes	Yes	Yes	Yes
Firm-Time FE	Yes	Yes	No	No
Industry-Time FE	No	No	Yes	Yes
County-Time FE	No	No	Yes	Yes
R^2	0.83	0.85	0.71	0.73
N	8621	7603	13648	12421

This table reports the estimated coefficients from investment-level panel regressions using OLS:

$$Spread_{k,i,j,t} = \beta_1 Dual\text{-}Held\ Deal_{k,i,j,t} + \beta_2 Senior_{k,i,j,t} + \beta_3 Dual\text{-}Held\ Deal_{k,i,j,t} \times Senior_{k,i,j,t} + \gamma X_{k,i,j,t} + \epsilon_{k,i,j,t},$$

where the dependent variable is the spread over 3 month LIBOR of a loan of type k originated by a BDC j to a portfolio firm i at time t. $Dual\text{-}Held\ Deal_{k,i,j,t}$ is an indicator variable that equals to one if a portfolio firm i has a debt investment k and a simultaneous equity investment from a BDC j in a quarter t, and zero otherwise. $Senior_{k,i,j,t}$ is an indicator variable that equal to one if a debt investment k of a portfolio firm i from a BDC j in a quarter t is senior, and zero otherwise. The data are quarterly observations from 2004:Q1 to 2017:Q4.

Table 9: Loan Spread: Size of Equity Stake

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Dual-Held Deal	1.78***			1.20***			1.18***			1.20***		
	(0.10)			(0.09)			(0.19)			(0.12)		
Low Equity Stake		1.42***	1.07***		0.90***	0.87***		1.18***	0.45***		0.95***	0.96***
		(0.10)	(0.10)		(0.10)	(0.09)		(0.19)	(0.14)		(0.11)	(0.11)
High Equity Stake		2.39***	2.05***		1.70***	1.57***		1.03***	0.26		1.77***	1.71***
		(0.18)	(0.18)		(0.16)	(0.16)		(0.28)	(0.25)		(0.23)	(0.24)
Loan Controls	No	No	Yes	No	No	Yes	No	No	Yes	No	No	Yes
BDC-Time FE	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes	No	No	No
Firm-Time FE	No	No	No	No	No	No	Yes	Yes	Yes	No	No	No
Industry-Time FE	No	No	No	No	No	No	No	No	No	Yes	Yes	Yes
County-Time FE	No	No	No	No	No	No	No	No	No	Yes	Yes	Yes
R^2	0.06	0.07	0.23	0.48	0.48	0.55	0.75	0.75	0.85	0.68	0.68	0.73
N	19410	19410	17586	19235	19235	17447	8634	8634	7603	13655	13655	12421

This table reports the estimated coefficients from investment-level panel regressions using OLS:

$$Spread_{k,i,j,t} = \beta Dual\text{-}Held\ Deal_{k,i,j,t} + \gamma X_{k,i,j,t} + \epsilon_{k,i,j,t},$$

where the dependent variable is the spread over 3 month LIBOR of a loan of type k originated by a BDC j to a portfolio firm i at time t. $Dual\text{-}Held\ Deal_{k,i,j,t}$ is an indicator variable that equals to one if a portfolio firm i has a debt investment k and a simultaneous equity investment of the corresponding type from a BDC j in a quarter t, and zero otherwise. $Low\ Equity\ Stake_{k,i,j,t}$ s an indicator variable that equals to one for dual-held deals in which less that 5% of the voting securities are owned by dual holder BDC. $High\ Equity\ Stake_{k,i,j,t}$ s an indicator variable that equals to one for dual-held deals in which more that 5% of the voting securities are owned by dual holder BDC. The data are quarterly observations from 2004:Q1 to 2017:Q4.

Table 10: Change in Loan Valuation: Dual-Held Debt Deals

	(1)	(2)	(3)	(4)
Dual-Held Deal	0.97	1.10	2.56***	2.55**
	(0.72)	(0.71)	(0.99)	(1.01)
Ln(Loan Size)		−0.06		0.04**
		(0.06)		(0.02)
Ln(Loan Maturity)		0.01		−0.06
		(0.14)		(0.09)
Loan Controls	No	Yes	No	Yes
BDC-Time FE	No	No	Yes	Yes
Firm-Time FE	Yes	Yes	Yes	Yes
R^2	0.95	0.95	0.98	0.98
N	5176	4785	4930	4527

This table reports the estimated coefficients from investment-level panel regressions using OLS:

$$Valuation_{k,i,j,t+4} - Valuation_{k,i,j,t} = \beta Dual\text{-}Held\ Deal_{k,i,j,t} + \gamma X_{k,i,j,t} + \epsilon_{k,i,j,t},$$

where the dependent variable is the 4-quarter change in the ratio of the fair value over principal amount of a loan of type k originated by a BDC j to a portfolio firm i at time t. $Dual\text{-}Held\ Deal_{k,i,j,t}$ is an indicator variable that equals to one if a portfolio firm i has a debt investment k and a simultaneous equity investment of the corresponding type from a BDC j in a quarter t, and zero otherwise. The data are quarterly observations from 2004:Q1 to 2017:Q4.

Table 11: Subsequent Financing for Dual-Held Portfolio Firms

	Log(1+#Debt Deals)			Debt Loan Amount, Millions		
	All	Own	Other	All	Own	Other
Dual-Held PF	0.14^{***}	0.18^{***}	-0.04^{***}	10.07^{***}	9.54^{***}	0.53
	(0.02)	(0.02)	(0.01)	(1.71)	(1.59)	(0.55)
First-Loan-Time FE	Yes	Yes	Yes	Yes	Yes	Yes
R^2	0.07	0.07	0.06	0.03	0.03	0.03
N	6509	6509	6509	6509	6509	6509

This table reports the estimated coefficients from firm-level regressions using OLS:

$$Subsequent\ Financing_i = \beta Dual\text{-}Held\ PF_i + \epsilon_i,$$

where the dependent variable is (i) the natural logarithm of one plus the number of debt deals of a portfolio firm i excluding the first debt deal, and (ii) the total loan amount of debt deals of a portfolio firm i excluding the first debt deal. We focus on subsequent debt deals originated within the 3 years after the first debt deal. In columns *Own*, we focus on deals and loan amounts by BDCs which provided funding in the first debt deal. In columns *Other*, we focus on deals and loan amounts by BDCs which provided funding after the first debt deal. $Dual\text{-}Held\ PF_i$ is an indicator variable that equals to one if a portfolio firm i has a simultaneous equity and debt investment from at least one BDC in any quarter, and zero otherwise. The data are quarterly observations from 2004:Q1 to 2017:Q4.

Table 12: Loan Spread: Dual-Held Deals vs Dual-Held Firms

	Equity		Common	
	(1)	(2)	(3)	(4)
Dual-Held PF	−0.30*	−0.16	−0.40**	−0.18
	(0.16)	(0.15)	(0.19)	(0.18)
Dual-Held Deal	0.85***	0.53***	0.66***	0.39**
	(0.16)	(0.13)	(0.18)	(0.16)
Ln(Loan Size)		0.20***		0.21***
		(0.02)		(0.02)
Ln(Loan Maturity)		0.11		0.18***
		(0.07)		(0.07)
Loan Controls	No	Yes	No	Yes
BDC-Time FE	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes
R^2	0.75	0.82	0.75	0.82
N	17042	15406	14863	13457

This table reports the estimated coefficients from investment-level panel regressions using OLS:

$$Spread_{k,i,j,t} = \beta_1 Dual\text{-}Held\ PF_{i,t} + \beta_2 Dual\text{-}Held\ Deal_{k,i,j,t} + \gamma X_{k,i,j,t} + \epsilon_{k,i,j,t},$$

where the dependent variable is the spread over 3 month LIBOR, of a loan of type k originated by a BDC j to a portfolio firm i at time t. $Dual\text{-}Held\ PF_{i,t}$ is an indicator variable that equals to one if a portfolio firm i has a simultaneous equity of a corresponding type and debt investment from any BDC in an investment quarter t and zero otherwise. $Dual\text{-}Held\ Deal_{k,i,j,t}$ is an indicator variable that equals to one if a portfolio firm i has a debt investment k and a simultaneous equity investment of a corresponding type from a BDC j in a quarter t, and zero otherwise. The data are quarterly observations from 2004:Q1 to 2017:Q4.

Appendix

A Additional Figures

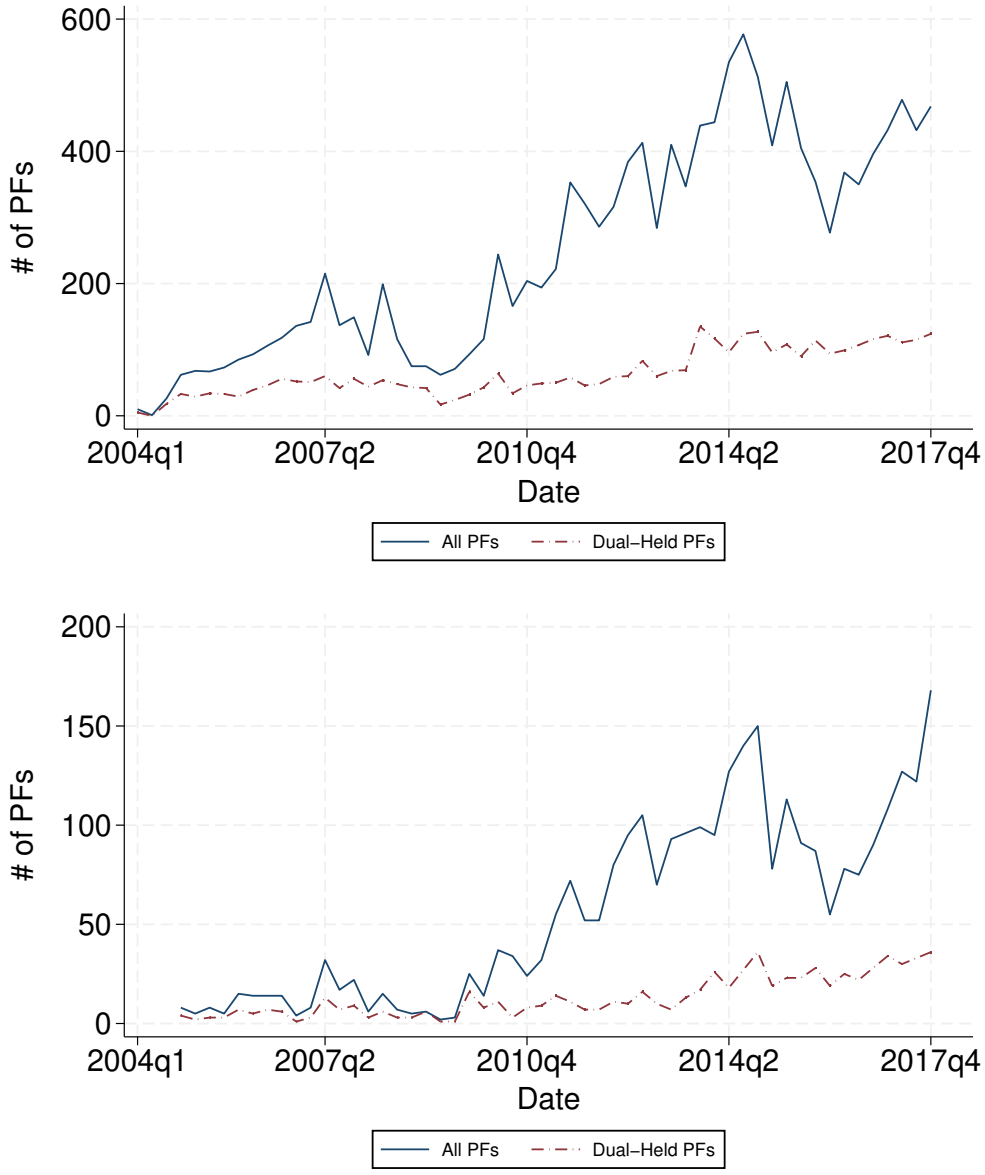


Fig. A.1: Number of Dual-Held Portfolio Firms Over Time

The top panel of this figure depicts the number of portfolio firms receiving a new loan vs the number of portfolio firms receiving a new loan and equity investment simultaneously (the sample as in regression specification (1) from Table 4). The bottom panel of this figure reports similar statistics for a sample of firms with investment links with multiple BDCs in the same quarter (the sample as in regression specification (8) from Table 4). The data are quarterly observations from 2004:Q1 to 2017:Q4.

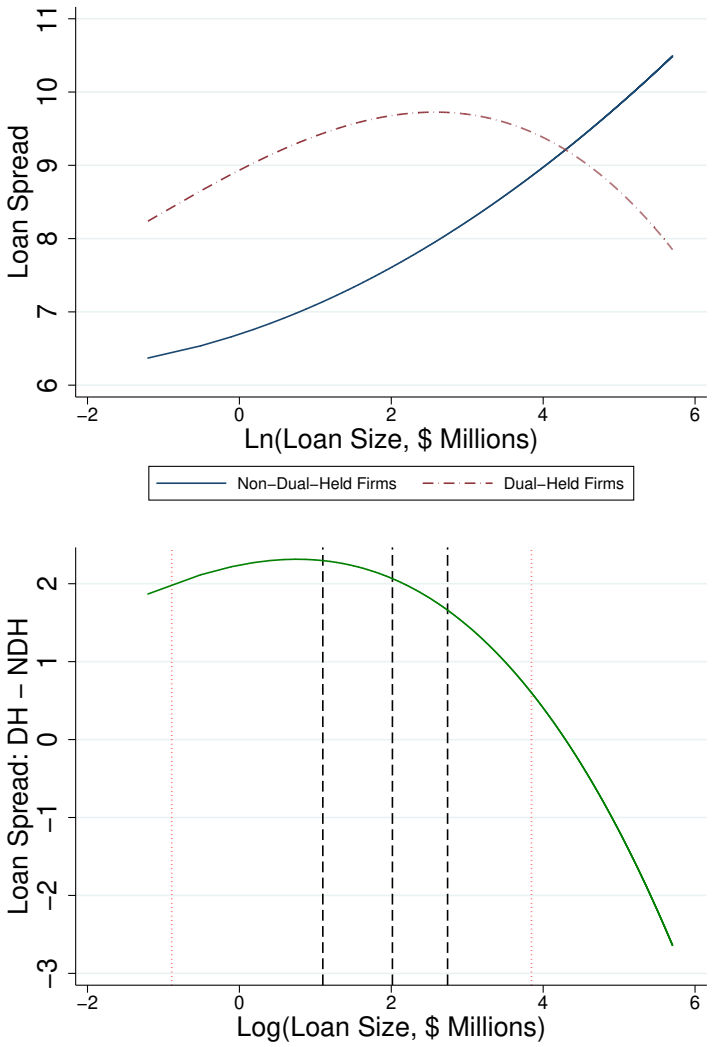


Fig. A.2: Loan Spread as Function of Loan Size: DH- vs NDH-Debt Deals

The top panel of this figure depicts the fitted value of the loan spread as a function of the natural logarithm of the loan size for dual-held and non-dual-held firms based on the estimation of the following investment-level panel regression:

$$y_{k,i,j,t} = \beta_0 + \beta_1 Dual\text{-}Held\ Deal_{k,i,j,t} + \sum_{k=0}^{k=2} (\beta_{2+2k} Ln(Loan\ Size_{k,i,j,t})^k + \beta_{3+2k} Dual\text{-}Held\ Deal_{k,i,j,t} \times Ln(Loan\ Size_{k,i,j,t})^k) + \epsilon_{k,i,j,t},$$

where the dependent variable is the spread over 3 month LIBOR of a loan of type k originated by a BDC j to a portfolio firm i at time t. $Dual\text{-}Held\ Deal_{k,i,j,t}$ is an indicator variable that equals to one if a portfolio firm i has a debt investment k and a simultaneous equity investment of the corresponding type from a BDC j in a quarter t, and zero otherwise. $Loan\ Size_{k,i,j,t}$ is the principal of a loan of type k originated by a BDC j to a portfolio firm i at time t expressed in millions. The data are quarterly observations from 2004:Q1 to 2017:Q4.

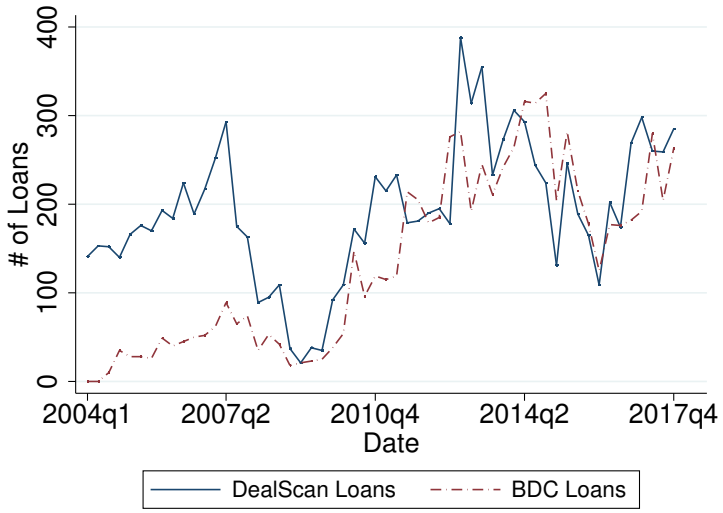


Fig. A.3: Number of Syndicated and BDC-Originated Loans Over Time

The figure depicts the number of syndicated loans and loans originated by BDCs (the sample as in regression specification (1) from Appendix Table A.9). The data are quarterly observations from 2004:Q1 to 2017:Q4.

B Additional Tables

Table A.1: Loan Spread: Dual-Held Debt Deals
Subsample Analysis

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Dual-Held Deal	1.43***	1.26***	1.15***	1.21***	1.04***	0.40**	1.25***	0.45***	1.00***	1.05***
	(0.14)	(0.14)	(0.13)	(0.13)	(0.21)	(0.16)	(0.19)	(0.14)	(0.19)	(0.18)
Ln(Loan Size)		0.31***		0.21***		0.14***		0.13***		0.17***
		(0.03)		(0.02)		(0.02)		(0.03)		(0.03)
Ln(Loan Maturity)		−0.65***		−0.15		0.79***		0.73***		0.26
		(0.12)		(0.12)		(0.21)		(0.23)		(0.18)
Loan Controls	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes
BDC-Time FE	No	No	Yes	Yes	No	No	Yes	Yes	Yes	Yes
Firm-Time FE	No	No	No	No	Yes	Yes	Yes	Yes	No	No
Industry-Time FE	No	No	No	No	No	No	No	No	Yes	Yes
County-Time FE	No	No	No	No	No	No	No	No	Yes	Yes
R^2	0.05	0.22	0.47	0.56	0.71	0.81	0.76	0.85	0.72	0.80
N	7548	7548	7548	7548	7548	7548	7548	7548	6740	6740

This table reports the estimated coefficients from investment-level panel regressions using OLS:

$$Spread_{k,i,j,t} = \beta Dual\text{-}Held\ Deal_{k,i,j,t} + \gamma X_{k,i,j,t} + \epsilon_{k,i,j,t},$$

where the dependent variable is the spread over 3 month LIBOR of a loan of type k originated by a BDC j to a portfolio firm i at time t. $Dual\text{-}Held\ Deal_{k,i,j,t}$ is an indicator variable that equals to one if a portfolio firm i has a debt investment k and a simultaneous equity investment from a BDC j in a quarter t, and zero otherwise. The regression sample is selected by the specification (8) and held constant across all specifications. The data are quarterly observations from 2004:Q1 to 2017:Q4.

Table A.2: Loan Spread: Dual-Held Debt Deals
Matched Sample of Loans

	(1)	(2)	(3)	(4)	(5)	(6)
Dual-Held Deal	1.20***	1.14***	0.89***	0.87***	0.81***	0.78***
	(0.02)	(0.02)	(0.04)	(0.04)	(0.11)	(0.11)
Ln(Loan Size)		0.20***		0.21***		0.30***
		(0.01)		(0.02)		(0.08)
Ln(Loan Maturity)		−0.65***		−0.46***		−0.63***
		(0.04)		(0.09)		(0.16)
Loan Controls	No	Yes	No	Yes	No	Yes
BDC-Time FE	Yes	Yes	Yes	Yes	Yes	Yes
R^2	0.55	0.60	0.62	0.66	0.57	0.62
N	24796	24796	7908	7908	2064	1968

This table reports the estimated coefficients from investment-level panel regressions using OLS:

$$Spread_{k,i,j,t} = \beta Dual\text{-}Held\ Deal_{k,i,j,t} + \gamma X_{k,i,j,t} + \epsilon_{k,i,j,t},$$

where the dependent variable is the spread over 3 month LIBOR of a loan of type k originated by a BDC j to a portfolio firm i at time t. $Dual\text{-}Held\ Deal_{k,i,j,t}$ is an indicator variable that equals to one if a portfolio firm i has a debt investment k and a simultaneous equity investment from a BDC j in a quarter t, and zero otherwise. The sample includes pairs of dual-held and non-dual-held loans matched on a BDC, an investment quarter, whether a loan is senior, secured, or first-lien. Across all these possible pairs of dual-held and non-dual-held loans, we select 75% closest matches based on the loan size, maturity, and valuation in columns (1) and (2), 50% closest matches in columns (3) and (4), and the closest match in columns (5) and (6). The data are quarterly observations from 2004:Q1 to 2017:Q4.

Table A.3: Loan Spread: Dual-Held Debt Deals Compustat Firms

	(1)	(2)	(3)	(4)
Dual-Held Deal	1.57***	0.98***	1.45***	0.82**
	(0.36)	(0.31)	(0.40)	(0.35)
Ln(Loan Size)		0.31***		0.27***
		(0.05)		(0.05)
Ln(Loan Maturity)		0.58***		0.61***
		(0.12)		(0.13)
Firm Controls	No	No	Yes	Yes
Loan Controls	No	Yes	No	Yes
BDC FE	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes
R^2	0.72	0.79	0.72	0.80
N	1560	1513	1403	1366

This table reports the estimated coefficients from investment-level panel regressions using OLS:

$$Spread_{k,i,j,t} = \beta Dual\text{-}Held\ Deal_{k,i,j,t} + \gamma X_{k,i,j,t} + \epsilon_{k,i,j,t},$$

where the dependent variable is the spread over 3 month LIBOR of a loan of type k originated by a BDC j to a portfolio firm i at time t. $Dual\text{-}Held\ Deal_{k,i,j,t}$ is an indicator variable that equals to one if a portfolio firm i has a debt investment k and a simultaneous equity investment from a BDC j in a quarter t, and zero otherwise. The sample includes only portfolio firms in Compustat. The data are quarterly observations from 2004:Q1 to 2017:Q4.

Table A.4: Loan Spread: Dual-Held Debt Deals
Timing of Equity Investment

	(1)	(2)	(3)	(4)
Concurrent Debt/Equity	1.21***	0.60***	1.34***	0.45**
	(0.22)	(0.18)	(0.24)	(0.21)
Preexisting Equity	1.01***	0.49**	0.76***	0.38*
	(0.29)	(0.20)	(0.25)	(0.21)
Preexisting Debt	1.01***	0.47**	0.74***	0.53***
	(0.25)	(0.21)	(0.23)	(0.19)
Ln(Loan Size)		0.15***		0.14***
		(0.02)		(0.03)
Ln(Loan Maturity)		0.43***		0.72***
		(0.13)		(0.20)
Loan Controls	No	Yes	No	Yes
BDC-Time FE	No	No	Yes	Yes
Firm-Time FE	Yes	Yes	Yes	Yes
R^2	0.71	0.81	0.75	0.84
N	9031	7982	8763	7706

This table reports the estimated coefficients from investment-level panel regressions using OLS:

$$Spread_{k,i,j,t} = \beta_1 Concurrent\ Debt/Equity_{\ k,i,j,t} + \beta_2 Preexisting\ Equity_{\ k,i,j,t} + \beta_3 Preexisting\ Debt_{\ k,i,j,t} + \gamma X_{k,i,j,t} + \epsilon_{k,i,j,t},$$

where the dependent variable is the spread over 3 month LIBOR of a loan of type k originated by a BDC j to a portfolio firm i at time t. $Concurrent\ Debt/Equity_{k,i,j,t}$ is an indicator variable that equals to one if a portfolio firm i has a debt investment k originated within ± 2 quarters of the first equity investment of the corresponding type from a BDC j in a quarter t, and zero otherwise. $Preexisting\ Equity_{\ k,i,j,t}$ is an indicator variable that equals to one if a portfolio firm i has a debt investment k originated more than 2 quarters after the first equity investment of the corresponding type from a BDC j in a quarter t, and zero otherwise. $Preexisting\ Debt_{\ k,i,j,t}$ is an indicator variable that equals to one if a portfolio firm i has a debt investment k originated more than 2 quarters before the first equity investment of the corresponding type from a BDC j in a quarter t, and zero otherwise. The data are quarterly observations from 2004:Q1 to 2017:Q4.

Table A.5: Loan Spread: Dual-Held Debt Deals and PIK

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Dual-Held Deal	1.79***	1.15***	1.20***	0.94***	1.16***	0.38***	1.18***	0.37***	1.20***	1.00***
	(0.10)	(0.09)	(0.09)	(0.09)	(0.22)	(0.14)	(0.19)	(0.13)	(0.12)	(0.11)
Ln(Loan Size)		0.37***		0.29***		0.14***		0.13***		0.26***
		(0.02)		(0.02)		(0.02)		(0.02)		(0.03)
Ln(Loan Maturity)		−0.62***		−0.26***		0.31**		0.58***		−0.31***
		(0.07)		(0.09)		(0.13)		(0.22)		(0.10)
Loan Controls	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes
BDC-Time FE	No	No	Yes	Yes	No	No	Yes	Yes	Yes	Yes
Firm-Time FE	No	No	No	No	Yes	Yes	Yes	Yes	No	No
Industry-Time FE	No	No	No	No	No	No	No	No	Yes	Yes
County-Time FE	No	No	No	No	No	No	No	No	Yes	Yes
R^2	0.06	0.27	0.48	0.57	0.71	0.83	0.75	0.86	0.68	0.74
N	19330	17586	19159	17447	8892	7878	8621	7603	13648	12421

This table reports the estimated coefficients from investment-level panel regressions using OLS:

$$Spread_{k,i,j,t} = \beta Dual\text{-}Held\ Deal_{k,i,j,t} + \gamma X_{k,i,j,t} + \epsilon_{k,i,j,t},$$

where the dependent variable is the spread over 3 month LIBOR of a loan of type k originated by a BDC j to a portfolio firm i at time t. $Dual\text{-}Held\ Deal_{k,i,j,t}$ is an indicator variable that equals to one if a portfolio firm i has a debt investment k and a simultaneous equity investment of the corresponding type from a BDC j in a quarter t, and zero otherwise. *Loan Controls* include indicators whether a loan is senior, secured, first lien, or has a PIK option. The data are quarterly observations from 2004:Q1 to 2017:Q4.

Table A.6: Loan Spread: Dual-Held Debt Deals and BDC Board Representation

	(1)	(2)	(3)	(4)	(5)	(6)
Dual-Held Deal	1.78***	1.39***	1.18***	1.09***	1.17***	1.15***
	(0.10)	(0.09)	(0.09)	(0.09)	(0.12)	(0.11)
Board	−2.01***	−2.40***	−0.72*	−0.76***	−0.39	−0.84**
	(0.46)	(0.35)	(0.41)	(0.29)	(0.57)	(0.34)
Dual-Held Deal × Board	1.95***	2.73***	1.45***	1.90***	2.26***	3.01***
	(0.59)	(0.58)	(0.52)	(0.49)	(0.78)	(0.64)
Loan Controls	No	No	No	Yes	No	Yes
BDC-Time FE	No	No	Yes	Yes	Yes	Yes
Industry-Time FE	No	No	No	No	Yes	Yes
County-Time FE	No	No	No	No	Yes	Yes
R^2	0.07	0.22	0.48	0.55	0.68	0.73
N	19330	17586	19159	17447	13648	12421

This table reports the estimated coefficients from investment-level panel regressions:

$$\begin{aligned} Spread_{k,i,j,t} = {} & \beta_1 Dual\text{-}Held\ Deal_{k,i,j,t} + \beta_2 Board_{i,j} \\ & + \beta_3 Dual\text{-}Held\ Deal_{k,i,j,t} \times Board_{i,j} + \gamma X_{k,i,j,t} + \epsilon_{k,i,j,t}, \end{aligned}$$

where the dependent variable is the spread over 3 month LIBOR of a loan of type k originated by a BDC j to a portfolio firm i at time t. $Dual\text{-}Held\ Deal_{k,i,j,t}$ is an indicator variable that equals to one if a portfolio firm i has a debt investment k and a simultaneous equity investment of the corresponding type from a BDC j in a quarter t, and zero otherwise. $Board_{i,j}$ is an indicator variable that equals to one for dual-held deals in which BDC j had board representation in company i. The data are quarterly observations from 2004:Q1 to 2017:Q4.

Table A.7: Loan Spread: Effect of Warrant Inclusion

	(1)	(2)	(3)	(4)
Dual-Held Deal^{E}	1.21***	0.58***	1.22***	0.49***
	(0.22)	(0.16)	(0.19)	(0.15)
Dual-Held Deal^{EW}	0.25	−0.81	0.04	−0.59
	(0.76)	(0.77)	(0.73)	(0.53)
Ln(Loan Size)		0.15***		0.14***
		(0.02)		(0.03)
Ln(Loan Maturity)		0.39***		0.71***
		(0.14)		(0.21)
Loan Controls	No	Yes	No	Yes
BDC-Time FE	No	No	Yes	Yes
Firm-Time FE	Yes	Yes	Yes	Yes
R^2	0.71	0.82	0.75	0.85
N	8892	7878	8621	7603

This table reports the estimated coefficients from investment-level panel regressions using OLS:

$$Spread_{k,i,j,t} = \beta_1 Dual\text{-}Held\ Deal^{E}_{k,i,j,t} + \beta_2 Dual\text{-}Held\ Deal^{EW}_{k,i,j,t} + \gamma X_{k,i,j,t} + \epsilon_{k,i,j,t},$$

where the dependent variable is the spread over 3 month LIBOR of a loan of type k originated by a BDC j to a portfolio firm i at time t. $Dual\text{-}Held\ Deal^{E}_{k,i,j,t}$ is an indicator variable that equals to one if a portfolio firm i has a debt investment k and a simultaneous *materialized* equity investment from a BDC j in a quarter t, and zero if it has only a debt investment. $Dual\text{-}Held\ Deal^{EW}_{k,i,j,t}$ is an indicator variable that equals to one if a portfolio firm i has a debt investment k and a simultaneous *materialized* equity investment bundled with a warrant from a BDC j in a quarter t, and zero if it has only a debt investment. The data are quarterly observations from 2004:Q1 to 2017:Q4.

Table A.8: Loan Spread & Loan Size: Dual-Held Debt Deals

	Loan Size $\leq$ 25%		25% $<$ Loan Size $\leq$ 50%		50% $<$ Loan Size $\leq$ 75%		Loan Size $>$ 75%	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Dual-Held Deal	1.16***	1.03***	1.47***	1.47***	1.16***	1.14***	0.80***	0.75***
	(0.19)	(0.20)	(0.18)	(0.18)	(0.14)	(0.13)	(0.14)	(0.13)
Ln(Loan Size)		0.09**		0.31**		0.51***		0.18
		(0.04)		(0.15)		(0.16)		(0.11)
Ln(Loan Maturity)		−0.23**		−0.36***		−0.29***		−0.67**
		(0.11)		(0.13)		(0.11)		(0.34)
Loan Controls	No	Yes	No	Yes	No	Yes	No	Yes
BDC-Time FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R^2	0.51	0.55	0.58	0.63	0.63	0.68	0.48	0.54
N	4016	3884	4012	3985	4307	4254	4424	4224

This table reports the estimated coefficients from investment-level panel regressions using OLS:

$$Spread_{k,i,j,t} = \beta Dual\text{-}Held\ Deal_{k,i,j,t} + \gamma X_{k,i,j,t} + \epsilon_{k,i,j,t},$$

where the dependent variable is the spread over 3 month LIBOR of a loan of type k originated by a BDC j to a portfolio firm i at time t. $Dual\text{-}Held\ Deal_{k,i,j,t}$ is an indicator variable that equals to one if a portfolio firm i has a debt investment k and a simultaneous equity investment from a BDC j in a quarter t, and zero otherwise. The data are quarterly observations from 2004:Q1 to 2017:Q4.

Table A.9: Loan Spread: BDC versus Dealscan Loans

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Dealscan Loan	−3.42***	−2.92***	−3.21***	−2.57***	−2.80***	−2.77***	−2.22***	−1.92***
	(0.06)	(0.07)	(0.06)	(0.07)	(0.06)	(0.07)	(0.06)	(0.08)
Ln(Loan Size)		−0.03*		−0.05***		0.19***		0.13***
		(0.02)		(0.02)		(0.01)		(0.01)
Ln(Loan Maturity)		0.02		0.07		0.24***		0.86***
		(0.07)		(0.07)		(0.06)		(0.12)
Constant	7.48***	9.67***	7.36***	9.54***	7.11***	8.60***	6.83***	7.51***
	(0.06)	(0.17)	(0.06)	(0.16)	(0.03)	(0.13)	(0.04)	(0.23)
Loan Controls	No	Yes	No	Yes	No	Yes	No	Yes
Time FE	No	No	Yes	Yes	Yes	Yes	No	No
Firm FE	No	No	No	No	Yes	Yes	No	No
Firm-Time FE	No	No	No	No	No	No	Yes	Yes
R^2	0.36	0.44	0.41	0.48	0.59	0.67	0.73	0.78
N	18246	17588	18246	17588	18205	17537	13663	13106

This table reports the estimated coefficients from investment-level panel regressions using OLS:

$$Spread_{k,i,t} = \beta Dealscan\ Loan_{k,i,t} + \gamma X_{k,i,t} + \epsilon_{k,i,t},$$

where the dependent variable is the spread over 3 month LIBOR of a BDC loan of type k or the all-in-drawn spread of a syndicated loan of type k originated at time t to a portfolio firm i. $Dealscan\ Loan_{k,i,t}$ is an indicator variable that equals to one if a loan k is a syndicated loan, and zero of a loan is originated by a BDC. The data are quarterly observations from 2004:Q1 to 2017:Q4.