Liquid Claims on Illiquid Assets: The Economics of Retail Access to Private Markets

Preliminary and incomplete

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Abstract

Expanding retirement account access to alternative investments requires delivering illiquid returns to small-balance investors without compromising valuation integrity or liquidity. This paper studies the intermediation process using 110 registered interval and tender offer funds (>$100B AUM, 2015-2024) that offer periodic rather than daily repurchases. The performance gap between these vehicles and institutional drawdown peers averages approximately 130 basis points per quarter. A factor decomposition attributes roughly one-third of the gap to fees and a larger share to imperfect replication of the private-market return stream; liquidity buffers (8-15% of NAV) contribute at the margin. The funds hold an average of 76% illiquid assets, but valuations are frequently stale, with 40% of trading days recording zero NAV changes. Approximately 40% of interval funds face excess repurchase demand in a given quarter. Despite aggregate underperformance, retail-held assets generate comparable IRRs to same-vintage institutional peers while distributing significantly more cash, consistent with managers selecting liquid, distribution-friendly assets to satisfy repurchase obligations. The current equilibrium is one where regulatory frameworks permit access, but the structural costs of liquidity provision limit the transmission of the private equity premium to retail portfolios.

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Any outperformance of private market investments relative to public alternatives reflects, at least in part, features specific to drawdown fund structures: long-horizon committed capital, limited interim liquidity, and delegated manager discretion over valuation and distributions. If these features are necessary conditions for generating returns, then vehicles that relax them by providing liquidity and transparency may erode the very conditions that produce the returns they seek to deliver. Recent policy initiatives and market forces are opening access to these assets for retail investors, but the core question is empirical. The cost of packaging illiquid assets in liquid wrappers has two components: costs that may compress with scale and costs that appear inherent to the format. Whether the resulting tradeoff justifies expansion into retirement accounts depends on which component dominates. The setting is *registered interval and tender offer funds*, non-traded evergreen closed-end funds that offer periodic repurchase windows rather than daily redemptions.

The magnitude and nature of any performance gap between these vehicles and institutional drawdown funds determine the policy answer. One benchmark is participation: can retail investors invest in private assets at all, even at a higher cost? Another is replication: do net returns approximate those in drawdown funds? Neither benchmark alone is sufficient, because the answer depends on both whether a performance gap exists and what causes it. A fee-driven gap might narrow with scale and competition. A gap driven by liquidity buffers is a structural cost of providing redemptions, a price of access rather than a failure of design. A gap driven by adverse selection raises more difficult questions about what access delivers in practice.

The push to expand retail investor and retirement account access to private markets has accelerated. In November 2025, SEC Commissioner Mark Uyeda argued that excluding private investments from 401(k) plans creates a "diversification deficit" (Uyeda, 2025), and Executive Order 14330 directed agencies to broaden access to alternative investments for retirement participants (Executive Office of the President, 2025). The largest private equity and credit managers have responded by building dedicated wealth channels.[1] The SEC's Investor Advisory Committee identified registered funds as the "optimal" vehicle for retail access to private markets (SEC Investor Advisory Committee, 2025). Yet prior efforts to broaden participation

[1]Blackstone's private wealth channel manages over $270 billion and raised $11 billion in Q1 2025, up 40% year-over-year (see `https://www.blackstone.com/pws/`). KKR's K-Series wealth products grew from $3 billion to $29 billion in two years; a partnership with Capital Group launched interval funds with $1,000 minimums open to non-accredited investors (see `https://kseries.kkr.com`). Apollo built a dedicated wealth platform with model portfolios across credit, equity, and real assets, generating $5 billion in quarterly inflows (see `https://www.apollo.com/wealth/homepage`).

have fallen short: the SEC's Private Fund Statistics show U.S. individuals accounted for 11% of invested capital in traditional PE funds in 2015, falling to 9.7% by Q3 2024 (Figure 2; SEC, 2024), and two other expansion initiatives, equity crowdfunding and changes to Regulation A, saw declining activity after 2022 (Huang and Ivanov, 2025; Huang, 2025).

Five questions organize the empirical work. What does access cost? Can liquidity be managed at scale? Do these funds deliver genuine private market exposure? Do retail investors get the same deals as institutions? Are there structural advantages that offset any performance gap? These questions apply to any vehicle packaging illiquid assets for a broader investor base, and the answers determine whether the current policy momentum is likely to improve retail outcomes.

Interval funds must offer to repurchase at least 5% of shares each quarter, whereas tender offer funds may repurchase at the manager's discretion. Both are registered under the Investment Company Act of 1940, which imposes disclosure, governance, and valuation requirements absent from traditional drawdown vehicles. SEC filings provide position-level holdings, detailed expense breakdowns, repurchase offer outcomes, and investor-level flow data, making these funds observable in ways that drawdown funds are not. The sample covers 114 funds from 2015 to 2024, representing over $115 billion in assets under management by the end of the sample, drawn primarily from Form N-PORT (quarterly position-level holdings) and annual reports (expense breakdowns, repurchase outcomes, and investor flows by qualification status).

Registered retail vehicles underperform institutional drawdown benchmarks by roughly 130 basis points per quarter. This figure masks substantial heterogeneity across time and strategy: the gap is about 40 basis points excluding 2020–2021, and retail private credit and private equity funds underperform by about 16 and 111 basis points respectively. To identify the sources of this shortfall, the analysis estimates a factor model that decomposes returns into three components: a Treasury-bill return capturing the drag from liquid asset buffers, public market beta, and a drawdown private market benchmark. The benchmark is the appraisal-based MSCI private markets index for the corresponding strategy. The coefficient on the drawdown benchmark measures how well these wrappers replicate institutional returns. This model explains about 87% of excess return variation, with a drawdown loading of 0.44. Fees and a low alpha account for the largest share of underperformance, with cash holdings explaining a smaller share. The residual, after controlling for these exposures and adjusting for fees, is modest on average, but economically meaningful differences emerge in liquidity

management, valuation staleness, and distribution patterns across funds and over time.

The cost of access is substantial. Fees absorb roughly 70 basis points per quarter from investor returns. The time series provides evidence on compressibility: as aggregate NAV grew from under $10 billion in 2015 to over $115 billion by 2024, operating expenses declined across all categories. Administrative and servicing costs fell from 0.10% of NAV to under 0.02%. Management fees, which account for roughly half of total costs, have remained stable. Part of the fee wedge reflects the irreducible costs of maintaining an open-end wrapper around illiquid assets: transfer, custodian, offering, and compliance expenses are all significantly higher for interval funds with mandatory repurchase obligations.

On liquidity, these vehicles hold liquid asset buffers averaging 8–15% of NAV and largely meet repurchase requests, but approximately 40% of interval fund quarters exhibit excess repurchase demand. Net inflows remained positive in every sample year, providing organic liquidity that reduced the need for forced asset sales. The flow-performance relationship is weak overall and, contrary to practitioner concerns, weaker for funds open to retail investors than for funds restricted to qualified purchasers. A separate issue is valuation frequency. Forty percent of trading days record zero returns, the median fund experiences zero-return streaks of 7 consecutive days, and quarter-end months account for 42% of absolute return magnitude. These patterns indicate that valuations reflect periodic appraisals rather than continuous price discovery, complicating settings in which investors transact daily. The composition of holdings differs by fund type: interval funds invest 71% of their portfolios directly in companies, while tender offer funds allocate 75% to other funds, operating as fund-of-funds vehicles with an additional fee layer.

Beyond liquidity management, holdings and cash-flow behavior speak to selection. Fund IRRs are statistically indistinguishable from same-vintage peers, but distributions to paid-in capital are 10–14% higher per year. This pattern is consistent with selection on liquidity characteristics rather than total return, favoring funds that generate cash on predictable schedules to support periodic repurchase obligations. The 17d-1 exemption framework, which 35% of funds have obtained, allows co-investment alongside affiliated drawdown vehicles, providing access to the parent firm's deal pipeline. The evergreen structure also provides a deployment advantage: capital is invested immediately rather than drawn down over several years, and Brown and Volckmann (2025) estimates this "consistency premium" at roughly 80 basis points annualized. At current fee levels, however, this benefit does not offset the performance wedge. Registered fund governance provides a separate structural advantage:

the Investment Company Act requires independent board majorities and annual reviews of advisory contracts under Section 15(c), mechanisms absent from drawdown fund governance.

The policy question is whether illiquid assets can be packaged for retirement accounts without imposing costs that negate the diversification benefit. The analysis provides the empirical inputs for that calculation. The fee drag is meaningful, but operating expenses have declined as the industry has grown sixfold, and if defined-contribution plans channel even modest allocations to private markets, the resulting increase in assets under management (AUM) could compress the cost components that scale with size. On the liquidity side, the excess-demand frequency documented above establishes a baseline under the current investor composition; retirement-specific flows would stress different channels than discretionary retail redemptions, because layoffs, rollovers, and mandatory distributions are correlated across workers. NAV staleness complicates daily 401(k) transactions and will require pricing solutions that current funds have not yet developed. The factor model confirms that these structures deliver genuine private market returns, although the imperfect drawdown loading means that some institutional premium remains out of reach. On selection, evidence of liquidity-based rather than adverse selection is encouraging, and the bargaining power of large retirement platforms would likely improve fund access and terms (Sensoy, Wang, and Weisbach, 2014).

A growing body of literature examines the performance of semi-liquid vehicles that provide retail access to alternative assets.[2] Harris, Jenkinson, and Kaplan (2014) establishes the institutional baseline, showing that buyout funds outperform the S&P 500 by more than 3% annually; the factor model in this paper takes that baseline as given and asks what fraction retail wrappers capture. Bates (2025) documents rapid growth in retail private funds and raises concerns about "volatility laundering" through smoothed NAV reporting and adverse selection, which channel higher-quality products to wealthier investors. The evidence of NAV staleness here is consistent with the volatility laundering hypothesis, and the selection analysis provides a direct test using holdings-level data. Riddiough and Wiley (2022) study unlisted REITs and find 6.5% annual underperformance, with most attributable to fees; the fee findings here are comparable in magnitude. Balloch, Mainardi, Oh, and Vokata (2025) examine high-net-worth individuals investing directly in PE funds and find a 6–10 percentage point PME gap between the most and least affluent investors, driven by advisor quality rather than fund access. Their sample comprises investors above the accredited threshold in drawdown

[2]Legal scholars have begun examining this shift; Baker and Sautter (2025) document how closed-end funds provide retail exposure to private company equity while raising questions about voting rights, liquidity, and the need for enhanced financial literacy as these structures proliferate.

funds; this paper studies registered wrappers serving investors below that threshold, for whom liquidity provision entails distinct costs. Pegoraro, Shive, and Wermers (2025) study interval funds across asset classes and find they outperform active ETFs in illiquid categories but underperform in equity. Their benchmark, actively managed ETFs, assesses the comparative advantage of the interval fund structure. The question here is different: whether retail vehicles replicate institutional drawdown returns, which is the comparison required by the current policy debate over 401(k) expansion.

1 Institutional Background

Historically, private equity has operated through drawdown funds structured as limited partnerships with finite 10-12 year lives. A different model has emerged: registered investment companies that hold private assets while offering periodic liquidity. These evergreen vehicles have no fixed maturity and accept capital continuously. We will refer to them as *registered private-asset wrappers* or *retail vehicles*. Table A1 summarizes the structural differences; Appendix C provides detailed background.[3]

Six dimensions distinguish these structures. The first is *information*. Drawdown funds are blind pools where investors commit capital before deals are identified, relying on GP track records and private quarterly letters. Registered wrappers file Form N-PORT with security-level holdings disclosure. An investor purchasing shares in an existing registered fund can observe the current portfolio before buying.

The second is *incentive alignment*. Drawdown funds follow the "2 and 20" model with GPs committing 1–5% of fund capital, tying manager wealth to absolute performance through carried interest. Registered wrappers charge asset-based fees, typically 1–2% of net assets, creating incentives to grow AUM. SEC rules restrict performance fees on capital gains to funds limited to qualified clients, with some flexibility for performance pay on distributions.

The third is *liquidity*. Drawdown investors receive distributions at GP discretion, and early liquidity requires secondary sales at negotiated discounts. Registered wrappers provide periodic liquidity through two mechanisms. Interval funds must offer quarterly repurchases of at least 5% of shares under Rule 23c-3. Tender offer funds provide liquidity at the fund man-

[3]The vehicles studied in this paper are not the only models for broadening access to private equity. An alternative approach sidesteps the Investment Company Act. KKR Private Equity Conglomerate LLC ("K-PEC"), launched in 2022, operates as a holding company that forms joint ventures with KKR's existing drawdown funds to co-invest in portfolio companies. See C for more details.

ager's discretion (Rule 13e-4), retaining the flexibility to forgo offers. This liquidity requirement shapes portfolio construction: managers must balance illiquid investment opportunities against repurchase capacity and hold a liquidity sleeve.

The fourth is *valuation*. Private drawdown funds typically determine NAV quarterly using GP valuation processes, with GAAP financial statements audited at least annually under the SEC's private fund audit requirements. Interval funds must calculate NAV at least weekly (daily during repurchase windows), whereas tender offer funds calculate NAV at a frequency established by the board.[4] SEC rules (Rule 2a-5) require boards (or their valuation designees) to establish, apply, and test documented fair value methodologies, maintain supporting records, and oversee how valuations are conducted. Appendix Table A2 examines whether this regulatory framework produces more accurate marks than GP-reported NAVs.

The fifth is *governance*. Registered funds operate under Investment Company Act requirements that at least 40% of the board consist of independent directors elected by shareholders. These directors hire and can terminate the fund's adviser, administrator, auditor, and legal counsel. Under Section 15(c), the adviser must periodically justify its continued management through a comparative analysis of fees, performance, and firm capabilities. The board can decline to renew the advisory contract and transfer portfolio management to a different firm.[5] The SEC provides additional oversight and can intervene when directors fail in their fiduciary duties.

Drawdown fund governance operates differently. Once the LPA is signed, limited partners have limited mechanisms to remove the general partner or renegotiate fees during the fund's life. Advisory committees, where they exist, have narrow authority, typically limited to conflict-of-interest waivers, and owe no fiduciary duty to thefull investor base. The registered fund model thus subjects the manager to ongoing competitive pressure that the drawdown model does not.

The final distinction is *capital deployment*. Drawdown investors commit at inception but fund capital via calls over 3–7 years, with uncalled capital sitting in outside options that may not match alternative asset returns. Registered wrappers can deploy capital immediately at subscription, only limited by investment opportunities.

[4]Typically, this is monthly or quarterly and in connection with sales and repurchase (tender) offers, rather than on a mandated weekly schedule.

[5]Laise (2012) provides a detailed treatment of the 15(c) process and the Gartenberg factors guiding board evaluation. In contrast, LP advisory committees in drawdown funds have authority limited to conflict-of-interest waivers and key-person events, and their members owe no fiduciary duty to the broader investor base (Morgan Lewis, 2014).

Investor eligibility varies across vehicles. Registered wrappers face limited regulatory barriers to retail distribution, though performance fees on capital gains trigger qualified client requirements. Distribution often occurs through a broker infrastructure (e.g., direct purchase, broker-dealers, or aggregation platforms) or the fund's website, which entails distribution expenses reflected in expense ratios (See Appendix C.).

These structural differences generate testable predictions. Registered wrappers offer liquidity and greater transparency but forgo some of the incentive alignment and benefits of long-term holdings in traditional alternative assets.

2 Data

We study registered funds that provide retail access to private markets outside of two established vehicle types: non-traded REITs and business development companies (BDCs). Both have been available to retail investors for decades and are well understood. The new challenge — and our focus — is to expand access to private equity, venture capital, and diversified private credit through interval and tender-offer fund structures. These mechanisms are generalizable: any illiquid asset class can, in principle, be packaged in a registered wrapper that provides periodic liquidity. Our sample captures this emerging market segment.

2.1 Sample Construction

Our data come primarily from SEC filings (N-PORT, Form D, 497-K, N23c-3a, and SC TO-I) and databases of public assets (Refinitiv, Compustat, CRSP, and TRACE). To construct the sample of funds, we first compute the private asset exposure of N-PORT filers between 2019 and 2025. Using N-PORT holdings data at the fund-quarter level, we compute the share of non-cash net asset value that is allocated to private equity, debt, real estate, infrastructure, or "other" assets excluding registered funds and hedge funds. We compute the maximum of this share across funds and define it as the fund's net private asset exposure. A fund is considered for our sample if it (1) is a closed-end fund, (2) has a net private asset exposure of at least 40%, and (3) is an interval fund, a tender offer fund, or has a net private asset exposure of at least 80%.[6]

[6]Funds are identified based on filings:
Closed-end fund: did not file Form 497-K, the summary prospectus for open-ended management investment companies pursuant to Rule 497(k).https://www.federalregister.gov/documents/2009/06/04/E9-12956/enhanced-disclosure-and-new-prospectus-delivery-option-for-registered-open-end-management-investment

To identify private assets in N-PORT, we first map holdings to public identifiers, including CUSIP, ISIN, and ticker. If a holding does not have any of these identifiers, we label it as a private asset. If a holding has at least one of these identifiers, we then classify it either by cross-checking its identifier against a plausible universe of public assets or by mapping its issuer/asset type directly to a private indicator. If the identifier cannot be found in a database of public assets (Compustat/Refinitiv for equity, TRACE/Refinitiv for debt, CRSP/Refinitiv for mutual funds), then we classify it as private. If the holding's issuer-asset type pair indicates that it is private or public we classify it accordingly (e.g., if the issuer is public and the asset type is direct equity, it is labeled as public). Table A3 in the appendix summarizes the mapping from N-PORT holdings to private assets.

Of the 1,063 CIKs that filed NPORT between 2019Q4 and 2025Q1 and did not file Form 497K, 284 CIKs met our sample restrictions. We hand-check these funds to construct the final sample of 114 retail private funds.

2.2 Summary Statistics

Table 1 reports fund-level summary statistics for the sample of retail vehicles. Fund sizes, measured by net asset value, are just over $1 billion on average, while the median fund has a NAV of about $200 million. NAVs range from under $1 million at the minimum to over $4 billion at the 95th percentile. The average fund charges management fees of approximately 1.1 percent of NAV, with 5 percent of funds reporting fees exceeding 2 percent. Net operating expenses are materially higher, averaging 3.3 percent, with 5 percent of funds reporting fees of nearly 9 percent. However, expense waivers or caps are common, appearing in roughly two-thirds of funds.

Approximately one-third of funds are open to any investor. Meanwhile, 44 percent and 17 percent restrict access to accredited and qualified investors, respectively. Minimum investment requirements are highly skewed, with a median of $25,000 but a mean exceeding $120,000. Taken together, these statistics suggest that funds do not uniformly expand access to private investments.

Structurally, roughly half of the funds operate as interval funds and 42 percent operate as tender-offer funds. These fund structures are fundamental in determining the fund's liquidity

Tender offer fund: filed form SC TO-I
Interval fund: filed N23c-3a (Repurchase offers by closed-end companies).`https://www.law.cornell.edu/cfr/text/17/270.23c-3`
Analysis of filings was supplemented by manual verification.

policies. Beyond structure, funds can also control the liquidity of their offerings with an early redemption fee, which is present in 35 percent of funds. The plurality of the sample (42 percent of funds) offers primarily private credit strategies, followed by private equity (18 percent) and venture capital (11 percent).

Table 2 reports the fund-quarter panel that underlies our analysis of holdings, flows, and liquidity. The average fund-quarter contains 368 positions, of which 314 are classified as private. Quarterly inflows average $77 million; outflows represent 3% of lagged NAV, with reinvestments adding 1%—likely reflecting the sample's tilt toward strategies where distributions are infrequent. The fair value composition confirms substantial illiquid exposure. Level 3 assets (unobservable inputs) account for 12% to 34% of holdings, and a large "N/A" category—which we treat as Level 3 given its illiquidity—represents the largest share. Holdings are split between direct positions (equity or loans) and fund investments. Finally, short-term investment vehicles average 7% of NAV, a figure examined further in Section 5.2.

2.3 Holdings Composition

Table 3 examines private holdings at the position-quarter level. The average private position is valued at $2.8 million. Position dynamics reveal active portfolio management. Some 48% of holding-quarters show a decline in position size, driven largely by interval funds whose private credit holdings mature or amortize. Position increases average $0.25 million per holding-quarter. On the extensive margin, 20% of position-quarters represent newly added holdings.

The composition of private holdings mirrors the sample's strategy tilt. Level 3 assets (unobservable inputs) are the most common fair value classification, and debt dominates asset types, consistent with private credit's prevalence among interval funds. The position-type breakdown shows that direct holdings—equity stakes or loans—are the most frequent, whereas fund positions account for a smaller share of total positions. This disparity reflects size differences: fund investments are substantially larger than individual direct positions, particularly direct debt, so fewer fund positions can represent a comparable share of NAV.

2.4 Fund Holdings and PitchBook Matching

N-PORT filings include an indicator distinguishing fund positions from direct holdings. A subset of the holdings data, therefore, consists of positions in other private funds—private equity, venture capital, and credit funds—rather than direct equity or debt investments. These

fund-level positions can be linked to external data on fund characteristics and performance.

The analysis merges fund holdings to PitchBook's Global Funds database using a combination of algorithmic name matching and manual review. Over 75% of fund positions in the holdings data successfully match to PitchBook records, yielding vintage year, fund size, strategy classification, and performance metrics for the matched funds. The selection analysis in Section 5.4 draws on this matched sample.

2.5 Operating Expenses

Expense data are not available in the SEC's structured filings. N-PORT and N-CEN report aggregate fee ratios but do not break out individual expense categories. We thus collected income statements from each fund's annual report, which vary in reporting. Some funds itemize expenses in detail; others report only broad categories. This variation required manual review to ensure we extracted data consistently across funds. We extracted line items including custodian fees, transfer agent costs, auditing and accounting fees, legal expenses, and distribution charges. We then grouped these items into standardized categories using keyword matching, supplemented by research on the expense disclosures required of registered investment companies under the Investment Company Act. The final dataset covers 562 fund-years.

2.6 Credit Lines

We extracted credit line data from fund annual reports by searching for terms including "credit line," "line of credit," and related phrases, then confirmed whether a credit facility appeared among balance sheet liabilities. The search covered all sample funds for which annual reports were available.

2.7 Repurchase Demand

Standard SEC filings report only realized repurchases, not underlying investor demand. When repurchase offers are oversubscribed, the realized amount understates how much investors sought to sell back. To capture this gap, we collected repurchase offers and tender data directly from regulatory filings. For interval funds, the primary sources are Form N-23C-3 (repurchase offer notices), N-Q (quarterly NAV), and N-CSR (shareholder reports). For tender offer funds, we processed more than 600 SC-TO-I filings across 49 funds, supplemented by N-Q

and N-CSR reports. From these documents, we extracted offer amounts, tendered amounts, and repurchased amounts, each measured in shares, dollars, and as a percentage of NAV. In some cases, funds did not report the total number of shares tendered. Here, we infer excess demand (share sale demand vs. offering) from the offering amount: if the sale was exactly the offering size, we assume the fund imposed a gate. The resulting panel covers 2015–2024 at the fund-quarter level.

3 The Performance Gap

3.1 Returns and fees

We measure retail fund returns as quarterly percentage changes in net asset value per share, adjusted for distributions. Funds report NAV net of management fees and operating expenses, so our return series reflect what investors actually receive. When aggregating across funds, we weight by beginning-of-quarter NAV; equal-weighted results are similar but noisier.

Fees in the sample average 1.3% of NAV annually for management fees and 2.6% for total expense ratios, which include operating expenses, distribution fees, and compliance costs. These levels are roughly twice the expense ratios of publicly traded equity funds but below the 2 and 20 fee structure typical of institutional drawdown vehicles. Section 5.1 documents how fees vary by fund structure and investor qualification.

Retail funds also hold cash and short-term investment vehicles to meet redemptions. Cash holdings average 7% of NAV across the sample, though the distribution is skewed: the median fund holds 3%, while funds at the 95th percentile hold 24%. The return decomposition in Section 4 uses this cash weight to separate mechanical cash drag from risk-adjusted performance, and Section 5.2 examines how liquid asset holdings vary by fund structure and investor qualification.

We benchmark retail returns against MSCI private markets indices matched by strategy: MSCI US Buyout for private equity, MSCI US Private Credit for credit funds, and MSCI US Venture Capital for venture funds.[7] MSCI constructs these indices by aggregating fund-level returns from institutional drawdown vehicles, weighted by committed capital, and reports them net of management fees and carried interest. This net-of-fee reporting makes the indices directly comparable to our retail return series. The sample overlap runs from 2019Q3 to

[7] See `https://www.msci.com/our-solutions/private-capital/private-capital-indexes` for index methodology and construction details.

2024Q4, yielding 22 quarterly observations.

3.2 The retail–benchmark gap

Figure 3 compares registered retail vehicles to traditional drawdown private-market funds. Panel A reports the average difference in quarterly net returns between retail funds and the corresponding MSCI private markets index ($r_t^R - r_t^D$) for all funds and by strategy (private credit, private equity, and venture capital). For context, it also shows the average MSCI excess return relative to the risk-free rate and the average excess market return. Retail vehicles underperform their MSCI benchmark on average by about 130 bps. However, this shortfall is highly heterogeneous across strategies. The gap for private credit is 16 bps while the gaps for private equity and venture capital are 111 bps and 138 bps—perhaps reflecting challenges in matching equity versus fixed income cash flows, or institutional obstacles such as deal access. These magnitudes are consistent with the net-of-fee return differences between top- and bottom-quartile institutional funds documented in Harris, Jenkinson, and Kaplan (2014).

The cross-sectional average does not identify why retail underperforms, because several distinct mechanisms can produce the same mean gap. The gap could reflect time-invariant frictions inherent to an investible wrapper (management fees, operating expenses, distribution and compliance costs). It could reflect systematic differences in exposures driven by structural constraints: retail vehicles must manage subscriptions and redemptions, which generate cash drag and encourage allocation to liquid public-market instruments. Alternatively, the gap could reflect differences in what is actually held, including selection across deals, vintages, and managers, rather than in the pricing of the same underlying assets. The time series offers sharper identification.

Panel B plots quarterly NAV-weighted retail returns against their MSCI counterparts from 2019Q3 to 2024Q4 for the combined sample and for each strategy. The retail–MSCI difference is time-varying: retail sometimes tracks the benchmark closely and sometimes diverges sharply, most visibly in venture capital during 2020–2021. Excluding these years cuts the performance gap for all strategies by about two-thirds to 40 bps. Indeed, the time-series median of the shortfall is 18 bps, suggesting skewness in underperformance over the period. These patterns are inconsistent with a purely fee-based explanation, since fees are smooth at the quarterly frequency. The time variation points to changing exposures and implementation constraints, including cash management and liquidity provision, that widen or narrow the

performance gap over the cycle (see Robinson and Sensoy, 2016, for evidence on how cash flow timing affects measured PE performance).

Figure 4 splits the sample by investor qualification, comparing NAV-weighted returns for funds open to any investor versus funds restricted to accredited or higher-qualified investors. The "any investor" subset is particularly relevant because the industry's long-run trajectory is toward broader eligibility: these funds represent the frontier of retail access. In most years, funds open to any investor earn lower average returns than accredited investor-only funds. This pattern suggests that underperformance is not purely a benchmark artifact but varies systematically with the constraints embedded in product design and target investor base.

The time-varying gaps in Figure 3 and the qualification-based differences in Figure 4 point to multiple channels beyond fees. Section 1 described the tension these vehicles face, offering periodic redemptions while holding assets that may take years to liquidate. Managers can respond by holding cash buffers, allocating to liquid public-market instruments, or selecting assets with shorter duration and faster distributions. Each response carries costs, and the relative importance of each may shift with market conditions and investor composition.

Three facts characterize the retail performance gap: retail vehicles underperform drawdown benchmarks by approximately 130 basis points per quarter on average; this difference varies over time; and it is larger for funds open to less-qualified investors. A given average shortfall could arise from higher fees, from systematic differences in liquid versus illiquid exposures induced by redemption management, or from selection and implementation effects. The time variation suggests these channels operate with different intensity across market states. A return decomposition model disentangles these explanations and estimates their relative contributions.

4 Model

Registered private-asset wrappers must accommodate subscriptions and redemptions, operate under diversification and liquidity constraints, and maintain operational cash buffers. In practice, they may also hold liquid public instruments to manage flows or warehouse exposure. Each of these design features can generate persistent gaps relative to drawdown-style benchmarks: cash drag from liquidity buffers, benchmark-mismatched public-market exposure, and implementation frictions distinct from underlying deal selection or manager skill. The evergreen structure—perpetual capital with ongoing subscriptions and redemptions—

creates frictions absent from traditional drawdown funds, where capital is locked until the GP distributes.

The model imposes sufficient structure to separate these channels in the data, allowing us to quantify the extent to which the performance of these registered wrappers is attributable to each component. The decomposition follows the spirit of Wermers (2000), who separates mutual fund returns into stock-picking, style, transactions costs, and expenses.

4.1 Basic factor structure

The standard single-factor benchmark, the CAPM, regresses excess returns of registered wrappers on the market excess return:

$$r_t^R - r_t^f = \alpha + \beta_1 \left(R_t^{Mkt} - r_t^f \right) + \varepsilon_t.$$

Table 4, Column 1 reports the estimates. The market beta β_1 is positive and statistically significant, and this specification explains roughly 65% of quarterly variation in registered wrapper returns.[8] These vehicles carry systematic risk and are exposed to broad market conditions, but a single public-market factor leaves substantial variation unexplained.

Registered wrappers are marketed as a way to access private-market returns (see Appendix Figure A1), not simply public equity beta. To capture this, we augment the CAPM with a drawdown/private-market factor based on the relevant MSCI private markets index r^D:

$$r_t^R - r_t^f = \alpha + \beta_1 \left(R_t^{Mkt} - r_t^f \right) + \beta_2 \left(r_t^D - r_t^f \right) + \varepsilon_t. \tag{1}$$

We compute quarterly drawdown returns net of fees r^D as the asset-weighted average net return on three MSCI indices: US Buyout, US Private Credit, and US Venture Capital. In regressions focusing on a particular strategy, r^D corresponds to the return only on the relevant index. The returns of these indices are based on LP-sourced cash flows for closed-end, drawdown-style funds with complete cash flow and valuation histories . Such funds operate on a vintage structure with locked capital—investors commit at inception and cannot redeem until the GP distributes. Evergreen registered wrappers, by contrast, face continuous deployment pressure from new subscriptions and continuous liquidity demand from redemptions.

The coefficient on the MSCI drawdown factor β_2 is statistically significant and larger than

[8] Adjusted R^2 is between 50% and 65% when split by strategy in unreported regressions.

the magnitude of the public market beta (Table 4, Column 2). Including the drawdown factor also substantially reduces the role of the public market factor: β_1 shrinks by about two-thirds and becomes statistically insignificant. This result suggests that, to the extent that retail vehicles co-move with public markets, much of that co-movement is mediated through their exposure to private markets, which themselves are correlated with public equities. Including the drawdown factor increases the R^2 to approximately 87%, indicating that the augmented model captures the primary drivers of time-series variation in retail returns.

Columns 3–5 report estimates by strategy. Private credit vehicles load heavily on the drawdown factor ($\beta_2 = 0.76$) with negligible public market exposure. Private equity shows moderate drawdown exposure ($\beta_2 = 0.60$) while venture capital vehicles, by contrast, load primarily on public markets ($\beta_1 = 0.36$) with a small and statistically insignificant drawdown coefficient—suggesting these vehicles do not closely track institutional VC returns.

4.2 Cash holdings and fees

Equation 3 provides a simple accounting of excess retail returns but does not explicitly incorporate key institutional features of our setting. Investors in drawdown funds sacrifice liquidity such that the fund can deploy committed capital over the investment period and provide distributions only as exits are realized. Registered wrappers, by contrast, hold cash or near-cash instruments to manage subscriptions, redemptions, and operational buffers perpetually. This cash dilutes exposure to risky assets such that the evergreen fund can never fully deploy into illiquid assets. Retail vehicles also charge fees as a share of NAV. In principle, we aim to apply the factor model to the portion of returns that is not already explicitly explained by these channels.

Let w^c denote the share of NAV in cash holdings and f^R the fees as a share of NAV. We observe both w^c and f^R from N-PORT. We then net out the mechanical impact of liquidity on retail returns by decomposing retail returns net of fees into the gross non-cash exposure, the cash exposure, and retail fees:

$$r_t^R = \underbrace{(1 - w^c)\tilde{R}_t^R}_{\substack{\text{Non-cash} \\ \text{(gross of fees)}}} + \underbrace{w^c r_t^c}_{\text{Cash}} - \underbrace{f^R}_{\text{Retail fees}}$$

In terms of excess returns, this decomposition yields:

$$r_t^R - r_t^f = (1 - w^c)\left(\tilde{R}_t^R - r_t^f\right) + w^c\left(r_t^c - r_t^f\right) - f^R \tag{2}$$

All objects in Equation 2 are observed except $\tilde{R}_t^R$, so the series $\tilde{R}_t^R$ can be derived with simple algebra. We can then decompose this series of non-cash retail returns gross of fees by applying the factor model to excess returns:

$$\tilde{R}_t^R - r_t^f = \alpha + \beta_1\left(R_t^{Mkt} - r_t^f\right) + \beta_2\left(r_t^D - r_t^f\right) + \varepsilon_t. \tag{3}$$

Drawdown fees are also observable from Preqin. We use these data to separate drawdown returns, analogously to retail returns, into gross returns minus a fee: $r_t^D = R_t^D - f^D$. For simplicity, we assume that fees are not time-varying. This yields:

$$\tilde{R}_t^R - r_t^f = \alpha + \beta_1\left(R_t^{Mkt} - r_t^f\right) + \beta_2\left(R_t^D - f^D - r_t^f\right) + \varepsilon_t.$$

Rearranging gives a decomposition with direct economic interpretation that can be estimated with OLS:

$$\tilde{R}_t^R - r_t^f = \underbrace{\hat{\alpha}}_{\substack{\text{Alpha}\\(\text{gross of fees})}} + \underbrace{\hat{\beta}_1\left(r_t^{Mkt} - r_t^f\right)}_{\text{Public market}} + \underbrace{\hat{\beta}_2\left(R_t^D - r_t^f - f^D\right)}_{\substack{\text{Drawdown}\\(\text{net of fees})}} + \underbrace{\hat{\varepsilon}_t}_{\text{Residual}}. \tag{4}$$

Substituting Equation 4 into Equation 2 provides the full decomposition of excess retail returns net of fees:

$$r_t^R - r_t^f = (1 - w^c)\underbrace{\left[\underbrace{\hat{\alpha}}_{\substack{\text{Alpha}\\(\text{gross of fees})}} + \hat{\beta}_1\underbrace{\left(R_t^{Mkt} - r_t^f\right)}_{\text{Public market}} + \hat{\beta}_2\underbrace{\left(R_t^D - f^D - r_t^f\right)}_{\substack{\text{Drawdown}\\(\text{net of fees})}} + \underbrace{\hat{\varepsilon}_t}_{\text{Residual}}\right]}_{\text{Non-cash sleeve}} + w^c\underbrace{\left(\underbrace{r_t^c - r_t^f}_{\text{Excess cash return}}\right)}_{\text{Cash sleeve}} - \underbrace{f^R}_{\text{Retail fees}}. \tag{5}$$

Equation 5 shows that excess retail returns can be explained by six types of variation: (i) retail alpha (gross of fees), (ii) public markets exposure, (iii) drawdown fund exposure (and associated fees), (iv) the residual component, (v) cash holdings for liquidity management, and (vi) retail fees. This structure disentangles how much exposure retail vehicles provide to

drawdown-style returns and how much of the performance wedge each driver explains.

4.3 Decomposing net retail returns

We take the model to the data by fixing the average share of NAV in cash holdings $w^c = 5.6\%$, quarterly drawdown fees $f^D = 45$ bps, and quarterly retail fees $f^R = 67$ bps.[9] We then estimate Equation 4 via OLS which yields $\hat{\alpha} = 0.007$, $\hat{\beta}_1 = 0.118$, $\hat{\beta}_2 = 0.456$ and adjusted R^2 of 87%. Figure 5 implements the decomposition by averaging each component over time and stacking them in a waterfall. Blue bars represent positive contributions: liquid public-market exposure (38 bps), MSCI/drawdown exposure (146 bps), and the gross retail alpha, $(1-w^c)\hat{\alpha}$ (67 bps).[10] Red bars represent negative contributions from fees: -67 bps for retail fees and -20 bps for the imputed drawdown fee. The cash contribution to average net retail excess returns is zero since we set $r_t^c = r_t^f$—that is, cash earns the risk-free rate. By construction, the bars sum to the sample average net retail excess return of 164 bps per quarter.

Two findings emerge from this decomposition. First, retail vehicles deliver substantial private-market exposure. The drawdown/MSCI sleeve, the largest positive component, contributes an average of 146 bps per quarter. This factor accounts for about 90% of the average net retail excess return and about 63% of the average retail excess return gross of retail fees. This is consistent with the private markets exposure of these funds, as indicated by the holdings data.

Second, the economics of the retail wrapper are first-order. Although the retail premium gross-of-fees accounts for 67 bps, its net contribution is essentially zero. This is consistent with the point estimate for $\hat{\alpha}$ in Table 4. We also find that the majority of fees (75%) are attributable to non-drawdown fees under our assumptions. This in part reflects the fact that total fees for these vehicles are larger on average than drawdown fees–so the non-drawdown component must be positive even with perfect drawdown exposure–and that the vehicles are not perfectly exposed to drawdown returns–so the vehicle is not paying drawdown fees on all of its holdings.

We can similarly use the factor structure to decompose the retail performance gap, $\mathbb{E}[r_t^R - r_t^D]$, which was estimated earlier as approximately -130 basis points.[11] Figure 6 decomposes this gap across the retail return components. Each bar reports the contribution of each

[9] Values are computed as the asset-weighted average fees and cash holdings across funds in our sample. Drawdown fees are as of 2025 from Preqin.

[10] By assumption, $\mathbb{E}[\varepsilon_t] = 0$ so the average contribution of the residual to returns is zero.

[11] See Section K in the appendix for details on this decomposition.

component net of drawdown returns to the performance gap. For example, the gross retail premium contributes about -110 bps to the performance gap because r_t^D outperforms the gross retail premium, and the gross retail premium accounts for a meaningful portion of the non-cash retail portfolio. Meanwhile, the public markets and drawdown components contribute about 20 bps and 40 bps to the performance gap respectively.

The decomposition highlights that, although fees are the explicit cost to investing in the retail vehicle, they are not the only cost to access. To the extent that investors purchase shares in these vehicles for drawdown-style exposure, any negative bar is a cost in the sense that it represents a loading on non-drawdown exposure at the expense of drawdown exposure. Fees are one aspect of this cost. So too are cash holdings and the retail premium which proportionately return less than drawdown funds on average. These "drags" may reflect structural costs, such as the role of cash drag in liquidity provision. However, quantitatively, the gap is primarily explained by exposure to the gross retail premium and retail fees.

A simple benchmark to consider is the case where excess retail returns loaded perfectly on the MSCI index such that $\beta_2 = 1$ and $\alpha = \beta_1 = 0$. Then, there would still be a performance gap but it would come entirely from retail fees and cash holdings—that is, the institutional constraints on the retail vehicle.

The decomposition identifies a set of concrete, measurable levers that drive retail returns: fees, cash drag and liquidity management, public-market exposure, drawdown exposure, a retail premium, and a residual component. The loading on drawdown returns explains the majority of net retail excess returns, while differences from the drawdown benchmark are driven primarily from fees, cash holdings, and the retail premium which comes in part from imperfect drawdown exposure.

The remaining sections examine each of these levers within the institutional details of registered retail vehicles.

5 Results

5.1 Fees

The return decomposition in Section 4.3 showed that fees absorb roughly one-third of gross performance in registered retail vehicles, subtracting about 70 basis points per quarter from

investor returns.[12] Whether this wedge is compressible or structural matters for the persistence of the retail performance gap: if scale economies or competition drive fees down, the gap may shrink; if fees reflect the irreducible costs of an open-end wrapper around illiquid assets, the gap is likely permanent.

Figure 7 reports total fees and expenses over time, split into net operating expenses and management fees. The figure plots NAV-weighted average fees from 2019 to 2024, constructed from annual N-PORT filings. Total fees average approximately 2.5% of NAV, split roughly evenly between management fees and operating expenses.[13]

Figure 8 examines fee variation across fund structures and investor types, with Table 5 providing regression evidence. Panel A compares interval funds (periodic repurchases) to tender offer funds (liquidity at the manager's discretion). Interval funds charge higher management fees on average, but the difference is not statistically significant after controlling for fund size (Table 5); operating expenses are similar. Panel B compares funds open to any investor versus those restricted to accredited investors. Although individual investors pay higher fees for several years, Table 5 finds no statistically significant differences in management fees or operating expenses. Broadly marketed funds thus do not appear to charge a premium for expanded access, contrasting with mutual funds where institutional share classes obtain meaningfully lower fees (Evans and Fahlenbrach, 2012), though broader access may raise distribution and compliance costs (Table 6).

Table 5 also tests investment minimums and scale. Funds with higher minimum investments charge lower management fees: a one-log-unit increase in the minimum (roughly a factor of 2.7) is associated with a 4.6 basis point reduction. The effect on total fees is similar but not statistically significant. Fund size reveals an asymmetry: log net assets enters positively and significantly for management fees (larger funds charge higher, not lower, management fees), in contrast to mutual funds where Malhotra and McLeod (1997) find robust economies of scale, while the coefficient on total fees is smaller and statistically insignificant. This sign reversal suggests operating expenses decline with scale while management fees do not, consistent with fixed administrative costs spreading over a larger base; the expense-level analysis below tests

[12] This echoes patterns in mutual funds, where Barber, Odean, and Zheng (2005) show that investors attend to salient upfront costs while ignoring ongoing expenses, in direct PE investment, where Balloch, Mainardi, Oh, and Vokata (2025) find that advisory fees absorb most of the PE premium for less affluent investors, and in non-traded REITs, where Riddiough and Wiley (2022) document a 5% annual fee drag that accounts for most of the underperformance.

[13] These figures reflect fees after waivers and expense caps. Appendix Figure A2 shows that waivers decline with fund age.

this channel directly.[14] Cross-sectional patterns alone cannot cleanly separate structural costs from temporary frictions; the time series is more informative, since fee declines with aggregate AUM would indicate scale economies that could compress the gap.

Figure 9 uses the granular expense data described in Section 2.5 to test whether operating costs have declined as the industry has grown. As aggregate NAV rose from under $50 billion in 2015 to over $300 billion by 2024 (Figure 1), all four operating expense categories—administrative, transfer/custodian, legal/audit, and distribution—declined. The steepest drops were in administrative and servicing costs, from approximately 0.10% of NAV in 2015 to under 0.02% by 2024. These trends contrast with Table 5, where larger funds did not charge lower fees, suggesting scale economies at the industry (not fund) level as the infrastructure for registered private-asset wrappers became more efficient. Declining operating expenses imply that the wedge may narrow further, although management fees (roughly half of total costs) have remained stable.

Table 6 identifies the expense categories behind differences between interval and tender offer funds. Because operating statements report expenses before waivers and caps, the analysis reveals underlying costs that net fee comparisons can obscure. Interval funds face operational demands from mandatory quarterly repurchases—regular valuations, administration of share sales, and investor communication—and the table regresses each expense category (as a percentage of NAV) on an interval-fund indicator with year fixed effects. Transfer/custodian, offering, and compliance costs are significantly higher for interval funds.[15] These differences help explain higher management fees (Table 5) and suggest that part of the retail fee wedge reflects irreducible liquidity-provision costs (consistent with the liquidity-based theory of closed-end fund pricing in Cherkes, Sagi, and Stanton, 2009).

5.2 Liquidity

The return decomposition in Section 4.3 isolates a liquidity sleeve component, the portion of fund returns attributable to liquid assets that earn the risk-free rate rather than private market returns. This cash drag contributes to the retail–institutional performance gap. Similar liquidity transformation occurs in mutual funds, where Chernenko and Sunderam (2016)

[14] When excluding funds with active fee waivers or expense caps, the interval fund coefficient on total fees increases fivefold (from 0.11 to 0.72), suggesting larger underlying differences between structures that waivers obscure.

[15] Transfer and custodian expenses are 9 basis points higher for interval funds, offering costs are 29 basis points higher, and compliance costs are 5 basis points higher.

document that equity funds buffer 23 cents of every flow dollar with cash.

The first way to summarize the liquidity of these fund positions is to consider the cost of sale over time. Some 35% of funds charge an early redemption fee—typically 2% of the repurchase amount if shares are sold within one year of purchase—dampening effective liquidity for new investors. Next, Table 1 shows that 75% of funds default investors into dividend reinvestment plans, limiting any offset to illiquidity from distributions. Suppose that an investor seeks to liquidate their position. As described in Section 1 there are limits to selling depending on the total tender demand of all shareholders: offering caps. Interval funds cluster at the regulatory minimum: 82% of fund-quarter observations offer exactly 5% of shares for repurchase, with smaller fractions at 7.5% (4%) and 10% (6%). Some 84% of tender offer funds with an active offer in a fund-quarter offer 5% of shares, while 9% offer 2.5%. These patterns indicate that both structures typically provide minimal liquidity — just enough to satisfy regulatory requirements or investor expectations — rather than competing on repurchase generosity.

Liquid Asset Holdings. Figure 11 documents the share of fund assets held in cash and short-term investment vehicles. The first panel reports NAV-weighted averages by fund structure over time. Tender offer funds hold substantially more liquid assets than interval funds: approximately 15% of NAV compared to 8% for interval funds in recent years. Part of this difference reflects the composition of strategies. As Section 5.3 documents, tender offer funds operate primarily as fund-of-funds, whereas interval funds tilt toward private credit with direct lending. The underlying fund positions held by tender offer vehicles may themselves provide liquidity, reducing the need for a separate cash buffer.

The second panel reports equal-weighted averages, which reverses the pattern: equal-weighted liquid holdings are substantially higher, indicating that the largest interval funds hold relatively small liquidity buffers. Scale appears to provide flexibility to meet repurchases through credit facilities, public equities, or maturing positions rather than cash.

The third panel examines whether investor qualification predicts liquidity holdings within interval funds. Funds open to any investor hold meaningfully more liquid assets than funds restricted to accredited or qualified purchasers—a gap of 3–5 percentage points in most years. This pattern is consistent with retail investors exhibiting greater sensitivity to liquidity shocks and shorter investment horizons than wealthier, more sophisticated counterparties. The relationship holds throughout the sample period, except in 2019 and early 2020, when the gap narrowed. Table 7 formalizes these patterns and confirms that the investor qualification effect

persists after controlling for fund size, age, and strategy.

Beyond holding liquid assets, funds can manage repurchase risk through credit facilities. Approximately 46% of funds have used a credit line at some point, with interval funds drawing more heavily than tender offer funds—consistent with their mandatory repurchase requirements and direct investment in illiquid assets.[16]

Net Inflows as a Liquidity Source. Funds also benefit from organic liquidity: new investor capital that offsets repurchases without requiring asset sales. Figure 12 reports net inflows by strategy and investor qualification. Private credit dominates. Panel A shows inflows concentrated in credit strategies, consistent with the interval fund segment's tilt toward direct lending. Private equity, starting from a smaller base, has accelerated sharply over the past three years.

Panel B reveals an asymmetry in the composition of investors in these flows. Qualified purchasers—institutions and the ultra-wealthy—remain the largest capital source. Accredited investors have surged as a growth segment. But the broadest access tier, funds open to any investor, has stagnated. Inflows to this category have not meaningfully increased over five years. The stagnation could reflect supply constraints — fewer funds choosing to serve unaccredited investors — or it may indicate that retail appetite for illiquid alternatives is weaker than the industry anticipates.

5.2.1 Performance-Flow Sensitivity

Concerns about liquidity in these vehicles hinge on how investors respond to fund performance. If shareholders flee underperforming funds, repurchase pressure will concentrate precisely when portfolio liquidity is most strained. This concern extends to any expansion through retirement accounts: the behavioral response of a broader, less sophisticated investor base could amplify flow-performance sensitivity and increase the frequency of liquidity stress events.[17] A

[16] Among interval funds, 53% have drawn on credit facilities versus 33% of tender offer funds. The average credit line represents 17.5% of NAV for interval funds versus 6.0% for tender offer funds.

[17] A large literature documents investors' sensitivity to past performance. In mutual funds, Chevalier and Ellison (1997) and Sirri and Tufano (1998) establish the convex flow-performance relationship; Berk and Green (2004) shows that performance-chasing is rational when investors learn about manager skill; and Goldstein, Jiang, and Ng (2017) extend these findings to bond funds, where illiquidity amplifies fragility. In private equity, Kaplan and Schoar (2005) documents that past performance predicts future fund size, and Brown, Gredil, and Kaplan (2019) shows that GPs inflate interim NAVs during fundraising periods to attract LP commitments. In our retail fund setting, the concern differs: rather than NAV manipulation for fundraising, high performance-flow sensitivity could stress liquidity by concentrating repurchase demand following poor returns. In retirement settings, Benartzi and Thaler (2007) document only 17% of 401(k) participants reallocate existing balances in

complete picture would also examine macro-level responsiveness — whether aggregate flows to the asset class respond to market conditions — but our sample period is too short to reliably identify such effects.

Table 8 studies the relationship between past fund performance and net inflows. The specification follows the mutual fund literature on performance-flow sensitivity (Chevalier and Ellison, 1997; Sirri and Tufano, 1998), adapted to our quarterly data structure.[18] The dependent variable is net inflows scaled by lagged NAV; returns are annualized, compounded quarterly. Appendix Figure A4 visualizes the relationship and tests for convexity.

Panel A reports results for the full sample and by fund structure. Column 1 includes only the first lag of returns and shows no significant relationship — past-quarter performance does not predict next-quarter flows. Column 2 adds lags at $t-2$ and $t-3$, and significance emerges. The coefficient on $t-2$ returns is larger and more significant than $t-1$, consistent with the information disclosure regime: Form N-PORT filings are due 60 days after quarter-end, so when investors receive repurchase notices, the most recent quarter's official return data has not yet been released. Appendix E develops this timing channel in detail. Column 3 replaces continuous returns with a negative return indicator. Both positive and negative returns drive the relationship, suggesting investors respond symmetrically to performance signals.

Columns 4–6 split by fund structure. Interval funds show no performance-flow relationship. Tender offer funds exhibit modest positive sensitivity—investors appear to chase returns—though the magnitudes are economically small. A one standard deviation increase in $t-2$ returns (18.4 percentage points) predicts a 1.7 percentage point increase in net inflows as a share of NAV, representing about 19% of the mean quarterly inflow rate.

Appendix Figure A4 summarizes the regression results visually, plotting mean net inflows by decile of lagged quarterly returns. The pattern replicates findings from the mutual fund literature (Chevalier and Ellison, 1997): flows increase monotonically with past performance, though the slope is modest.

Panel B asks whether funds open to retail investors exhibit different flow dynamics. A limitation of this analysis is that investor qualification requirements do not reveal the actual composition of the investor base; funds permitting any investor may still be held primarily by accredited individuals. With that caveat, the results are striking. Funds open to

a given year, suggesting that performance-driven redemption pressure may be weaker than in retail vehicles where investors actively choose to participate.

[18] Note that risk-adjusted flow-performance relationships – not estimated here – may differ from raw estimates (Spiegel and Zhang, 2013).

any investor show weaker performance-flow sensitivity than funds restricted to accredited or qualified purchasers. Qualified-purchaser funds—serving the wealthiest, most sophisticated investors—exhibit the strongest sensitivity to past returns. The pattern holds for both continuous returns (columns 1–3) and negative return indicators (columns 4–6).

This finding runs counter to practitioner concerns that retail investors are fickle and performance-sensitive. The low sensitivity is consistent with high participation costs in these vehicles (Huang, Wei, and Yan, 2007). One interpretation is selection: retail investors who allocate to illiquid interval funds may be a patient subset, while qualified purchasers may work with advisors who actively monitor performance and recommend reallocation. A mechanical alternative is that NAV smoothing attenuates the variation in measured returns for certain strategies, reducing estimated flow sensitivity (see Getmansky, Lo, and Makarov, 2004, for a framework); Appendix Table A2 examines the prevalence of stale pricing in the sample.

5.2.2 Excess Repurchase Demand

The liquidity offered to investors in these vehicles is beneficial, but it entails real risks. Shareholders may "run" on these funds, forcing sales of illiquid assets at a discount, a concern familiar from hedge funds where share restrictions and redemption gates serve as a safety valve (Aragon, 2007; Chen, Goldstein, and Jiang, 2010).[19] We construct an excess demand indicator—flagging fund-quarters where repurchase requests exceed shares offered for repurchase—to assess these stresses.[20]

Panel A of Figure 13 plots the raw net inflows and repurchase requests as a share of lagged NAV as reported in N-PORT filings. This figure clearly shows that even when excess demand is high, net inflows are positive in all years. More simply, inflows or distributions could fill any excess demand pressures. To explore whether investors are indeed seeking more shares that are on offer, Panel B reports the percentage of funds with excess demand. Approximately 40% of interval funds over the last four years experienced a quarter in which shareholders demanded more shares than were on offer. This compares to only 15% of tender offer funds that offered shares in that quarter (though tender offer managers can adjust offer size in anticipation of demand, which may suppress measured excess demand relative to interval funds; Appendix

[19]The experience of Blackstone Real Estate Income Trust (BREIT) in late 2022, when repurchase requests exceeded repurchase limits for several consecutive quarters, illustrates this tension.

[20]Excess demand is identified using a hierarchical approach: comparing tendered dollars to offered dollars; if unavailable, tendered shares to offered shares; and finally, tendered percentages to offered percentages. A fund-quarter is flagged if the ratio exceeds 0.99. If sales equal exactly the offering amount with no demand disclosure, we assume excess demand.

Figure A3 shows that roughly 60offer funds extend an offer in any given quarter).[21]

Several factors likely contribute to this gap: interval funds serve more retail investors with shorter horizons; their mandatory repurchase windows create focal points for exits; and their tilt toward income-generating private credit may attract investors seeking liquidity when yields compress.

While roughly a third of funds face repurchase demand exceeding their offering amount in a given quarter, funds have largely accommodated this pressure. In non-excess-demand quarters, the median interval fund repurchases 2.5% of NAV, well below the typical 5% offer. In excess-demand quarters, the median rises to 6% of NAV, modestly exceeding the offer.[22]

Aggregating across all interval funds, total quarterly repurchase volume averages 4.3% of aggregate NAV, indicating meaningful selling pressure in every quarter. Of that total, 2.4 percentage points originate from fund-quarters experiencing excess demand, while the remaining 1.9 percentage points reflect routine repurchases that fall within offering limits. The gateable portion, 2.4% of market NAV, is relatively small, but it concentrates in periods of stress: the ratio peaked at 11 percentage points in early 2021 and exceeded 6 percentage points during the COVID-19 selloff in 2020. A "gating gap," defined as the difference between shares tendered and shares repurchased, expressed as a percentage of NAV, quantifies whether investors fail to sell what they request.[23] Within the available subsample, the gap is negligible: the median is zero, and the mean is 0.10 percentage points. Funds have repurchased nearly everything that investors tendered. This outcome reflects the multiple liquidity sources documented above: liquid asset buffers averaging 8–15% of NAV, credit facilities available to 46% of funds, and positive net inflows in every sample year (Panel A of Figure 13). The absence of meaningful gating to date, however, reflects a period dominated by net inflows into the asset class. In an environment where poor performance triggers simultaneous repurchase demand and subscription declines, funds would lack the liquidity buffer that has so far prevented rationing, and forced asset sales could follow (e.g., Choi, Hoseinzade, Shin, and Tehranian, 2020).

The time series in Panel B shows spikes that coincide with market stress. Excess demand

[21] Appendix Figure A5 provides a more detailed view of excess demand patterns, including the lifecycle of tender offer fund liquidity provision.

[22] The mean repurchase rate in excess-demand quarters is substantially higher (14.6% of NAV, NAV-weighted) because a small number of fund-quarters involve repurchases of 80–90% of NAV, likely reflecting fund liquidations or wind-downs rather than routine repurchase activity.

[23] Data limitations constrain this calculation. Only 45 interval fund quarters report both tendered and repurchased amounts, all of which are quarters with excess demand. Many filings disclose repurchase outcomes but do not report the total shares tendered, and the offering percentage is systematically missing for these observations.

rose sharply in early 2020 during the COVID-19 market dislocation and again in late 2022 amid rising interest rates and high-profile liquidity events at non-traded REITs. These patterns suggest that repurchase pressure intensifies precisely when selling illiquid assets is most costly, underscoring the tension between offering liquidity and maintaining portfolio integrity. The demand dynamics documented here — particularly in interval funds serving retail investors — provide a baseline for understanding what a broader expansion of private market access through retirement accounts might entail. Section 6 explores these implications.

Positive net inflows require the fund manager to deploy capital. For example, young funds must increase private exposure over time, and the pace of deployment affects both liquidity management and return profiles. Figure 10 documents asset composition by fund age, using fair value levels as a proxy for liquidity: Level 1 assets (quoted prices) are most liquid, Level 3 (unobservable inputs) are illiquid private positions. We see that interval funds ramp up Level 3 holdings more slowly than tender offer funds; by year 5, both structures reach similar Level 3 fractions (∼80%). The slower deployment of interval funds may reflect their direct investment model—sourcing and underwriting individual loans take time. Tender offer funds, which invest through other funds, can deploy capital more quickly by committing larger checks to those funds.

5.3 Holdings

We now examine the structure of the private sleeve. The average registered retail vehicle in our sample allocates 76% to illiquid positions (median 85%). Within the private sleeve, holdings are evenly split between direct positions and other funds, although this aggregate split masks substantial heterogeneity.

Interval and tender offer funds pursue different models. Interval funds invest directly (71% direct, 22% fund), whereas tender offer funds operate as fund-of-funds (16% direct, 75% fund). This difference is statistically and economically large.

Investment strategy drives part of this divergence. Private credit funds, which dominate the interval segment, lend directly (averaging 74% direct positions). Conversely, non-credit funds hold only 27% direct, relying on the fund-of-funds model for diversified exposure.

However, structure also shapes strategy. Within private credit, interval funds hold 81% direct versus 31% for tender offer funds; within non-credit strategies, the split is 52% versus 14%. This persistent gap suggests interval funds' quarterly repurchase obligations favor direct positions, whereas tender offer funds' lack of constraints accommodates illiquid fund

investments.

This distinction implies that retail expansion into private equity will likely rely on tender offer fund-of-funds structures. These vehicles impose an additional layer of fees and provide less frequent, discretionary liquidity. Consequently, the interval model that dominates private credit may not generalize to broader markets. This is particularly relevant following ADI 2025-16 (SEC, August 2025), which removed the 15% limit on private fund holdings for non-accredited investors.

Finally, these structural differences affect the return decomposition in Section 4.3. The fund-of-funds model introduces a double fee layer (compounding the wedge in Section 5.1) and may alter effective drawdown exposure (β_2 in the model). Liquidity management of intermediary funds, vintage timing, and strategy drift could attenuate the returns flowing to retail investors. The composition of private holdings also affects the measurement of returns. Monthly return autocorrelation is more than twice as large for funds with above-median Level 3 asset shares (0.127 vs. 0.058, Appendix Table A2), consistent with less frequently appraised positions generating smoother reported returns.

5.4 Selection

A concern with retail access to private markets is adverse selection: will retail vehicles receive the same deal flow as institutional drawdown funds, or will they be allocated inferior opportunities? One regulatory mechanism addresses this directly. Section 17(d) of the Investment Company Act restricts transactions between a registered fund and its affiliates, which would otherwise prevent a retail vehicle from co-investing alongside drawdown funds managed by the same advisor. The SEC grants Rule 17d-1 exemptions that permit such co-investment, subject to conditions designed to ensure the registered fund's fair treatment.

Table 1 reports that 35% of funds in the sample have obtained a 17d-1 exemption.[24] For a large private equity or credit manager operating both drawdown vehicles and a retail fund, the exemption allows the retail fund to invest in the same opportunities or to take positions in the manager's other funds. In principle, this provides retail investors with pro rata access to the parent firm's deal flow. For standalone retail vehicles not affiliated with a larger platform, no such mechanism exists; these funds must source deals independently, potentially facing

[24]These exemptions are relatively straightforward to secure: the application follows a standardized template, with Partners Group among the early filers in 2017 (`https://www.sec.gov/Archives/edgar/data/1447247/000139834417005843/fp0025290_40app.htm`), and the SEC approves many of the requests in our sample.

worse terms or limited access. The selection friction is not intrinsic to the retail channel. It is a consequence of regulatory architecture. Models that operate outside the 1940 Act eliminate the co-investment constraint entirely (e.g., KKR's K-PEC).[25] In April 2025, the SEC substantially liberalized the co-investment framework, which will likely only increase affiliated funds' access to the advisor's investments.[26]

Table 9 examines whether retail vehicles access the same funds as institutional investors or face adverse selection. The analysis considers only holdings that are private funds and can be matched to PitchBook data on vintage year, fund size, and category. This approach speaks indirectly to selection across all holding types; direct equity and debt positions cannot be benchmarked in the same way.

The empirical design asks how a fund holding's characteristics compare with those of all other funds raised in the same vintage year and asset category. Panel A of Table 9 examines fund characteristics observable at close. Each triplet of columns varies the specification: Column 1 includes vintage-year-by-category fixed effects, with categories defined as private equity, private credit, and venture capital. Column 2 adds investor fixed effects, comparing funds held by a given retail vehicle to other funds managed by the same GP. Column 3 is restricted to primary-market acquisitions, excluding those acquired in the secondary market.

Columns 1–3 use log fund size as the dependent variable. Retail vehicles hold larger funds than the typical fund in the same vintage and category. The relationship persists in Column 2, controlling for investor fixed effects, indicating that even within a single manager's fund family, retail vehicles tend to favor larger offerings. The Column 2 estimate implies an almost 80% difference in fund size. Column 3, which excludes secondary acquisitions to better match characteristics at the time of investment, yields a similar estimate. One explanation is that retail vehicles prefer larger, more established funds with longer track records and more predictable distribution patterns. Larger funds also tend to have deeper secondary markets, which may appeal to vehicles that value liquidity in their underlying holdings.

Columns 4–6 examine whether retail vehicles invest in funds run by first-time managers. Such funds carry more uncertainty and are often difficult for any limited partner to access.

[25] KKR Private Equity Conglomerate (K-PEC), described in Appendix H, forms joint ventures that invest alongside KKR's drawdown funds, providing investors with access to the institutional deal pipeline. The approach requires accepting accredited-investor restrictions and forgoing 1940 Act protections, but it demonstrates that, conditional on affiliation with a single GP platform, the deal access problem has a structural solution. The 17d-1 exemption yields a similar outcome within the registered fund framework, although approval is subject to conditions that may be difficult for some managers to satisfy.

[26] See Appendix I for details on the modernized co-investment exemptive relief.

The results are mixed. Column 4 shows a negative coefficient, suggesting retail vehicles avoid emerging managers when comparing across all funds in a vintage-category cell. The column 5 estimate with investor fixed effects is not statistically significant. Column 6, excluding secondary market transactions, flips positive.

Columns 7–9 use log time-to-close as a proxy for fund quality at inception. This variable measures the number of years between a fund's initial filing and its final close. Longer fundraising periods typically signal that a manager struggled to attract capital. In Column 7, the coefficient is negative: within vintage and category, retail vehicles hold funds that closed more quickly, consistent with positive selection on observable quality. The pattern reverses in Columns 8 and 9. With investor fixed effects and excluding secondary acquisitions, the coefficient becomes positive, indicating that retail vehicles hold funds from the same manager whose offerings close more slowly than the manager's other offerings. Column 8 implies a 15% longer time to close, equivalent to roughly two months relative to the sample mean.

Panels B and C shift from ex-ante characteristics to ex-post performance, examining whether retail vehicles' holdings generate returns that differ from those of comparable funds outside these structures. Panel B examines the internal rate of return (IRR) measured at years 3, 4, and 5 of the fund's life; Panel C examines distributions to paid-in capital (DPI) at the same horizons. The sample period limits analysis to year 5 at most.

Panel B yields no statistically significant results across most specifications. The coefficients in the investor fixed-effects specifications are positive, suggesting that, on average, these retail vehicles hold funds with somewhat higher IRRs; however, the estimates lack precision. This null result on fund quality echoes Balloch, Mainardi, Oh, and Vokata (2025), who find no evidence that funds available to individuals underperform in direct PE investments. The difference lies in mechanism: their wealth gradient reflects advisors' skill in fund selection; ours reflects structural selection toward distribution-friendly assets to meet liquidity needs.

Panel C tells a different story. Columns 1–3 examine DPI at year 3, and Columns 7–9 examine DPI at year 5. In both cases, funds held by retail vehicles yield higher cash returns than invested capital. The magnitudes are economically significant: DPI is roughly 10–14% higher per year compared to the sample mean.

Taken together, Panels B and C provide no evidence for a selection story in which retail vehicles hold systematically underperforming funds. Ex-post performance of funds inside these vehicles is comparable to, and by some measures better than, the alternatives available in the same vintage and category.

5.4.1 Selection on Liquidity

The contrast between Panel B and Panel C suggests a more nuanced form of selection. IRR differences are negligible, but DPI differences are positive and meaningful. One interpretation is that retail vehicles select funds based on liquidity characteristics rather than expected total return. For a retail vehicle that must maintain a liquidity buffer and cannot risk holding an illiquid position without distributions for extended periods, selecting funds with faster cash generation is a rational response to structural constraints. Panel C may therefore reveal less about manager skill or deal access and more about how liquidity requirements shape portfolio construction.[27]

This selection pattern helps explain why the estimated drawdown factor loading (β_2) in Section 4.3 falls short of one: incomplete exposure to the full opportunity set contributes to the residual retail discount (α) that remains after controlling for public market exposure, cash drag, and fees.

5.5 Benefits beyond liquidity: compounding and governance

The analysis so far has focused on the costs of retail access. Beyond the liquidity these vehicles offer, there are other potential benefits: richer information disclosure and the opportunity to deploy capital immediately. A unique feature of retail wrappers compared to drawdown funds is that capital is immediately put to work and has the opportunity to compound (see Gourier, Phalippou, and Westerfield, 2024, for a model of the welfare cost of capital commitment). While retail vehicles may underperform on a period-by-period basis, they could benefit from immediate compounding that drawdown investors forgo while waiting for capital calls.

Brown and Volckmann (2025) formalize this intuition through a simulation comparing evergreen and drawdown structures over a 12-year holding period. The results reveal what they term a "consistency premium": the evergreen fund achieves the highest mean annualized return at 13.5%, compared to 12.7% for a rolling drawdown series—an 80 basis point advantage. The difference arises because evergreen funds maintain stable exposure to the asset class over time, while drawdown investors experience substantial variation in percent invested (see Jansen, Phalippou, and Braun, 2023, for evidence on endowments).

These findings complement our empirical analysis. The 10–20% liquid asset buffer in their

[27] Higher interim DPI does not mechanically imply higher IRR. IRR is a rate; holding it fixed, earlier distributions reduce the capital remaining to compound, requiring lower terminal value to achieve the same discount rate. Appendix J provides a numerical illustration.

calibration is somewhat higher than cash holdings documented in Section 5.2, though closer when including public equity positions. However, their simulation assumes perfect deployment of new capital into private assets, whereas our data suggest deployment takes time. The performance wedge documented in Section 4—roughly 4% per annum—exceeds the consistency premium, implying that compounding benefits alone do not offset the costs of retail access. For policymakers considering 401(k) expansion, the implication is that the documented costs of retail access persist even after accounting for deployment timing advantages.

Registered fund governance provides a second, less appreciated advantage over the drawdown model. The Investment Company Act requires that a majority of each fund's board consist of independent directors who are elected by shareholders and owe fiduciary duties to them. The board hires and can terminate the adviser, administrator, auditor, and legal counsel; every year or two the adviser must justify its continued management through the Section 15(c) process, which includes a comparative fee analysis. If the board concludes the adviser is not acting in shareholder interest, it can remove the adviser and transfer the portfolio to a different manager (see Wu, Wermers, and Zechner, 2016, for a model of this disciplining mechanism). The SEC provides an additional layer of oversight and can intervene when independent directors fail in their duties. Drawdown fund governance offers no comparable mechanism. Once a limited partner signs the LPA, removing the general partner is difficult, and fees and expenses are difficult to contest. The contrast is sharpest on fees: registered fund boards benchmark management fees against peers annually, while drawdown fund fee schedules are fixed at inception. To the extent that governance quality compounds over time through lower fees and better-aligned manager behavior, this structural difference may be as consequential as the deployment timing advantage discussed above.

5.6 Manager Incentives

Section 1 described how incentive compensation differs between retail vehicles and drawdown funds. Drawdown funds nearly universally rely on carried interest, while registered retail vehicles face tighter constraints on performance fees and more commonly charge flat management fees, raising questions about alignment.

Across 577 fund-years with expense data, only 16.6% report incentive compensation (77 observations). Conditional on paying any incentive compensation, the average payment is 1.51% of NAV (median 0.94%). When present, incentive pay is a large component of operating expenses (mean 59.7%, median 48.4%), but the unconditional mean across all fund-years is

only 0.20% of NAV. These figures confirm that performance-linked compensation exists but is far less prevalent than in the drawdown market. Whether weaker explicit incentives translate into weaker performance is difficult to test directly (e.g., for hedge funds, Agarwal, Daniel, and Naik, 2009).

Incentive compensation is not the only source of alignment. Registered funds must disclose dollar ranges for each portfolio manager's beneficial ownership, which we collected from annual report footnotes using manual review and large-language-model-assisted search. Figure 14 reports the results. About 35% of funds have at least one portfolio manager with a personal stake in the fund, and the magnitude has increased over time, from less than 0.5% of NAV early in the sample to roughly 2.5% by the end. Conditional on positive ownership, the average stake is 3.9% of NAV (median 0.5%), corresponding to $1.6 million (median $1 million). For comparison, Ma, Tang, and Gomez (2019) reports that the average open-ended mutual fund manager holds $573,500 (2024 dollars) with a median of zero, implying substantially higher ownership rates and magnitudes in these private-asset retail vehicles. Consistent with ownership providing meaningful alignment, Chen, Goldstein, and Jiang (2008) find that director ownership in mutual funds is associated with better performance and lower fees. At the same time, Ma, Tang, and Gomez (2019) finds only weak evidence that ownership substitutes for explicit incentive contracts in the mutual fund setting; our patterns are consistent with a similar dynamic.

These ownership figures are a lower bound on true alignment. Many funds are managed by large private equity and private credit firms, and portfolio managers may hold GP stakes in underlying assets through their affiliation with the sponsor. Such indirect exposure is not reflected in registered fund ownership disclosures but can still link manager wealth to performance.

Unreported regressions provide suggestive evidence of substitution between direct ownership and sponsor affiliation. Funds with sub-advisor relationships—identified via 17d-1 exemption filings or by matching the adviser to a known private equity or credit platform—shows lower probabilities of direct portfolio-manager ownership in the retail vehicle, consistent with managers already having alignment through the parent firm.

6 Implications for 401(k) Expansion

The policy debate over access to private markets for retirement accounts has intensified. In November 2025, SEC Commissioner Mark Uyeda argued that excluding private investments from 401(k) plans creates a "diversification deficit" (Uyeda, 2025). This policy momentum, including Executive Order 14330 on democratizing access to alternative investments for 401(k) participants (Executive Office of the President, 2025), makes the costs and benefits documented here directly relevant.

The registered funds in this study represent the closest existing analogs to what 401(k) private-market vehicles would look like. Indeed, the SEC's Investor Advisory Committee has identified registered funds as the "optimal" channel for retail access to private markets (SEC Investor Advisory Committee, 2025). Five questions central to the expansion debate organize the discussion; a final subsection considers implications for institutional investors and market structure.

6.1 What Are the Costs of Access?

Fees absorb roughly one-third of gross performance in registered retail vehicles, subtracting approximately 85 basis points per quarter from investor returns (Section 5.1). The time-series evidence on expenses and the relationship between fund size and expenses suggests that the fee wedge may be narrowing. Moreover, funds with higher investment minimums charge lower management fees, consistent with economies in distribution and investor servicing. These patterns indicate that some portion of current fees reflects the fixed costs of operating at a sub-institutional scale. Any further expansion through retirement accounts will benefit from these phenomena. If defined-contribution plans channel even a modest allocation to private markets, AUM in these structures could increase by an order of magnitude, thereby dwarfing the current retail market. However, management fees, which account for roughly half of total costs, have remained stable over the sample period. ERISA's fiduciary requirements on fee reasonableness may add additional pressure, along with increased competition from the emergence of more managers running these funds and related types.

6.2 What Do Current Funds Reveal About Liquidity Risk?

Retirement accounts generate capital flows that differ from those of current retail fund investors. Job changes trigger distributions and rollovers, layoffs produce hardship withdrawals,

retirees draw down balances on predictable schedules, and target-date funds rebalance mechanically as participants age. These events are correlated across workers: recessions simultaneously reduce portfolio values, raise unemployment, and accelerate withdrawals. The question is whether semi-liquid private market vehicles introduced in retirement plans can absorb these flows without forced sales of illiquid assets or wealth transfers between entering and exiting participants.

Data from current retail funds provide baseline parameters for these risks. Four findings are relevant. First, a meaningful share of funds experiences excess redemption demand yet accommodates rather than imposes gates, suggesting that liquidity buffers, credit facilities, and maturing positions often suffice to absorb demand above the regulatory minimum. The key caveat is that, outside the COVID-19 episode, much of this pressure occurred during a relatively healthy equity market and economy, so these patterns define capacity under benign conditions; the policy question is whether retirement-specific flow drivers would exceed that capacity.

Second, excess demand is common but concentrated. Approximately 40% of interval fund quarters exhibit excess demand, with spikes in early 2020 and late 2022 (Section 5.2.2). This frequency provides a baseline stress rate under the current investor composition. Because current investors self-selected into illiquid structures, they may be more patient than retirement participants defaulted into these vehicles; any model predicting retirement-driven excess demand below 40% must explain why defaulted participants generate less redemption pressure than self-selected retail investors.

Third, retail investors exhibit weaker performance-flow sensitivity than qualified purchasers (Table 8), bounding one instability channel: discretionary flight from underperformers is not the primary threat to fund stability. Retirement plans amplify choice frictions through auto-enrollment, defaults, and limited menus. Benartzi and Thaler (2007) find that only 17% of 401(k) participants reallocate existing balances in a given year, consistent with even weaker performance-flow sensitivity among defaulted retirement investors. The remaining concern is mandatory withdrawals triggered by macroeconomic shocks (e.g., layoffs or hardship withdrawals) that coincide with poor performance; stress tests should focus on this channel rather than performance-chasing behavior. One additional possibility is that NAV staleness limits the information available to retail investors, while qualified purchasers may access timelier signals that prompt reallocation.

Policymakers have flagged structural problems in private credit markets (U.S. Senate

Committee on Banking, Housing, and Urban Affairs, 2025), and NAV staleness can exacerbate these concerns by obscuring the timing and magnitude of losses. In retirement settings, the issue is concrete: daily 401(k) transactions require accurate NAVs, and transacting on stale prices can transfer wealth between exiting and remaining shareholders, a concern also flagged by the SEC's Investor Advisory Committee (SEC Investor Advisory Committee, 2025). In our sample, NAV staleness is substantial. Table A2 shows that 40% of trading days record zero returns, the median fund has zero-return streaks of 7 consecutive days, and quarter-end months account for 42% of absolute return magnitude. Return autocorrelation at the daily frequency is nearly three times larger for tender offer funds than for interval funds, suggesting that mandatory repurchase obligations impose some valuation discipline. These patterns collectively indicate appraisal-based valuation rather than continuous price discovery.

These findings do not resolve whether retirement vehicles can manage liquidity at scale, but they pin down inputs for stress testing: accommodation capacity (e.g., the 6.4% accommodation rate), the 40% excess-demand frequency, flow-performance elasticities, and staleness magnitudes. The policy question is how these parameters shift as investor composition moves from self-selected retail to defaulted retirement participants, as withdrawal triggers become more mandatory than discretionary, and as flows become more correlated across plans under common macro shocks. Current data provide the baseline, and retirement-specific modeling requires assumptions that this sample cannot identify.

6.3 Do These Vehicles Provide Genuine Private Market Diversification?

The sample is constructed to include funds with substantial private market allocations, so the high illiquid holdings (76% average, 85% median) are by design rather than a finding. The more informative test is whether these allocations translate into genuine private market exposure in returns. The factor model in Section 4.3 addresses this question directly. The loading on MSCI drawdown benchmarks is meaningful but falls below one, consistent with imperfect replication. The model explains 87–90% of return variation, indicating that registered funds track private markets far more closely than BDCs, SPACs, or other publicly traded alternatives.

These funds provide genuine private market exposure, but the composition of that access carries implications. Private credit dominates the current registered fund market, with interval funds accounting for the majority of assets. Expansion into private equity and multi-asset strategies would likely occur through tender offer fund-of-funds structures, which impose an

additional fee layer and provide liquidity less frequently. The diversification benefit that Uyeda envisions, including low correlation with public equities and exposure to sectors absent from public indices, appears achievable through these vehicles. The question is whether the cost of that access, documented in the preceding sections, is justified by the diversification gains.

6.4 Will Retirement Accounts Have Access?

Selection findings are mixed. Retail vehicles skew toward larger funds, and within-investor comparisons suggest some negative selection on fund quality (Table 9, Panel A). Yet fund IRRs are statistically indistinguishable from same-vintage peers (Panel B), so these frictions do not currently translate into performance drag. The pattern points to structural rather than adverse selection: retail vehicles favor funds that distribute cash on predictable schedules. These selection frictions, while not yet affecting returns, suggest challenges in deploying capital at a larger scale.

Retirement-scale vehicles would likely change the selection dynamic. The 17d-1 exemption framework already permits 35% of current funds to co-invest alongside affiliated drawdown vehicles, thereby providing access to the parent firm's deal pipeline. At 401(k) scale, the bargaining dynamics shift further (see Sensoy, Wang, and Weisbach, 2014, on how LP experience and scale improve fund access and terms). Large retirement platforms writing checks in the hundreds of millions or billions would command access to top-tier managers and negotiate more favorable terms, including fee concessions, co-investment rights, and governance protections. To the extent that current selection patterns reflect the limited bargaining power of sub-institutional vehicles, scale may partially resolve the problem. The structural selection toward distribution-friendly assets may also align with retirement needs: participants approaching retirement age benefit from holdings that generate regular cash flows.

6.5 Are There Offsetting Benefits?

Registered funds offer two structural advantages over drawdown vehicles: immediate capital deployment and stronger governance protections. Retirement investors with multi-decade horizons benefit disproportionately from the former. A 25-year-old contributing to a 401(k) maintains continuous private market exposure for 40 years; even a modest compounding advantage accumulates meaningfully over that horizon. In terms of governance, registered funds

provide independent boards, annual shareholder votes, and SEC oversight, which are absent from traditional LP structures. At the retirement scale, large platforms would also command bargaining power typical of institutional LPs, enabling the negotiation of fee concessions and co-investment rights that would offset any remaining structural limitations.

6.6 Implications for Institutional Investors and Market Structure

Retail expansion also affects institutional investors and the structure of private markets. As registered retail vehicles grow, they may reshape portfolio construction and deal allocation in ways that respond to liquidity-sensitive demand. The Institutional Limited Partners Association has raised related concerns (Institutional Limited Partners Association, 2025), and our evidence highlights two channels.

First, Section 5.4 shows that retail vehicles select underlying funds with higher distributions to paid-in capital, consistent with a preference for earlier, more predictable cash generation that helps meet periodic repurchases. If retail capital becomes an important source of AUM growth, this demand could tilt manager behavior toward distribution-friendly strategies—shorter-duration deals, dividend recapitalizations, or other approaches that accelerate cash flows—potentially at the expense of longer-horizon value creation.

Second, institutional limited partners have historically provided oversight by negotiating side letters, serving on advisory committees, and monitoring managers, which is easier when they hold meaningful stakes. The 17(d)-1 exemption data in Section 5.4 indicate that 35% of retail vehicles can co-invest alongside affiliated drawdown funds. To the extent that this channels more capital into the same funds and deals, it can mechanically dilute institutional ownership stakes and potentially weaken monitoring incentives, echoing the free-rider logic in the blockholder literature (Edmans, 2014).

At present, the crowding-out concern remains largely prospective. Co-investments account for only 4–7% of retail fund NAV and 2–4% of portfolio positions, with quarterly deal volume of $100–$600 million. By comparison, the StepStone Co-Investment Survey reports over $340 billion in buyout co-investment volume from 2005–2023, or roughly $5 billion per quarter on average, implying that retail vehicles currently represent a small share of capacity. The concern is that this share could rise materially if retirement expansion channels much larger flows through vehicles with 17(d)-1 rights.

Whether these shifts reduce welfare is ultimately ambiguous. Retail vehicles may dilute institutional monitoring but also introduce discipline through repurchase pressure, regulatory

disclosure, and a governance structure more intensive than that of traditional drawdown funds. The net effect depends on whether these mechanisms substitute for, or complement, institutional oversight.

7 Conclusion

Registered interval and tender offer funds are the closest analogs to expanded 401(k) access to private markets. This paper documents how these vehicles manage the tension between illiquid assets and a retail investor base with preferences and constraints that differ from those of traditional limited partners. A factor model decomposes the performance gap between retail vehicles and drawdown funds into imperfect asset-class exposure, fees, cash drag, and residual alpha. The decomposition reveals meaningful fee drag and some public-market exposure, whereas cash holdings contribute less. Any return premium these funds generate above drawdown benchmarks is absorbed by their fee structures. The analysis explores heterogeneity across funds, investor types, and time, linked to the trade-offs of market expansion.

The results inform rather than resolve the policy debate. Fees are large but show signs of compression as industry scale and experience grow. Retail investors demand liquidity, especially during uncertain economic conditions, establishing baseline parameters for retirement vehicles experiencing redemption pressure. The underperformance relative to drawdown alternatives reflects providing liquid access to illiquid securities, not mismanagement or exploitation. These findings guide policymakers and market participants in designing vehicles that can withstand broader retail access pressures.

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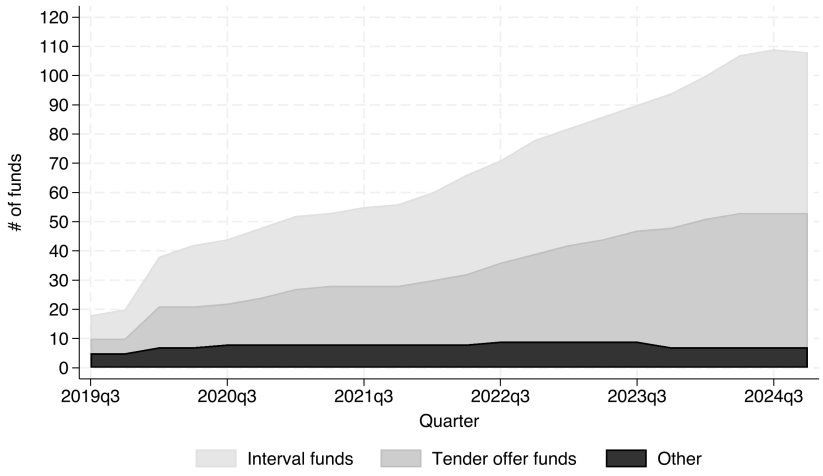
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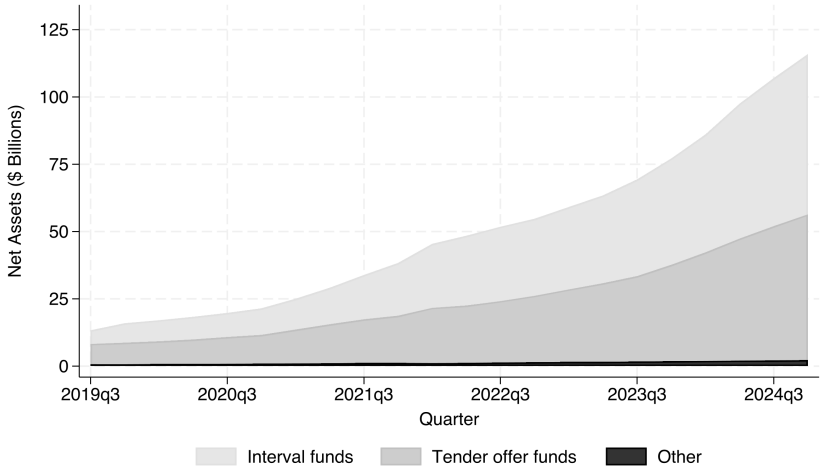
Figures and Tables

Figure 1: Fund universe and market size

Panel A reports the number of active funds in our sample from 2019 to 2024Q4, split by fund structure: interval funds, tender offer funds, and other types. Panel B reports the total net asset value over the same period, split by fund structure. Both panels document the rapid growth of registered private-asset wrappers.



(a) Number of active funds by fund structure



(b) Net asset value by fund structure

Figure 2: Individual investors in traditional, unregistered PE funds

This figure reports the fraction of capital in private equity funds provided by U.S. individuals, using data from the SEC 2024 report. The data is sourced from Form PF filings that are aggregated and analyzed by SEC staff. Form PF includes a checkbox indicating investor type and the fraction of assets held by each investor type. This figure reports the individual investor category.

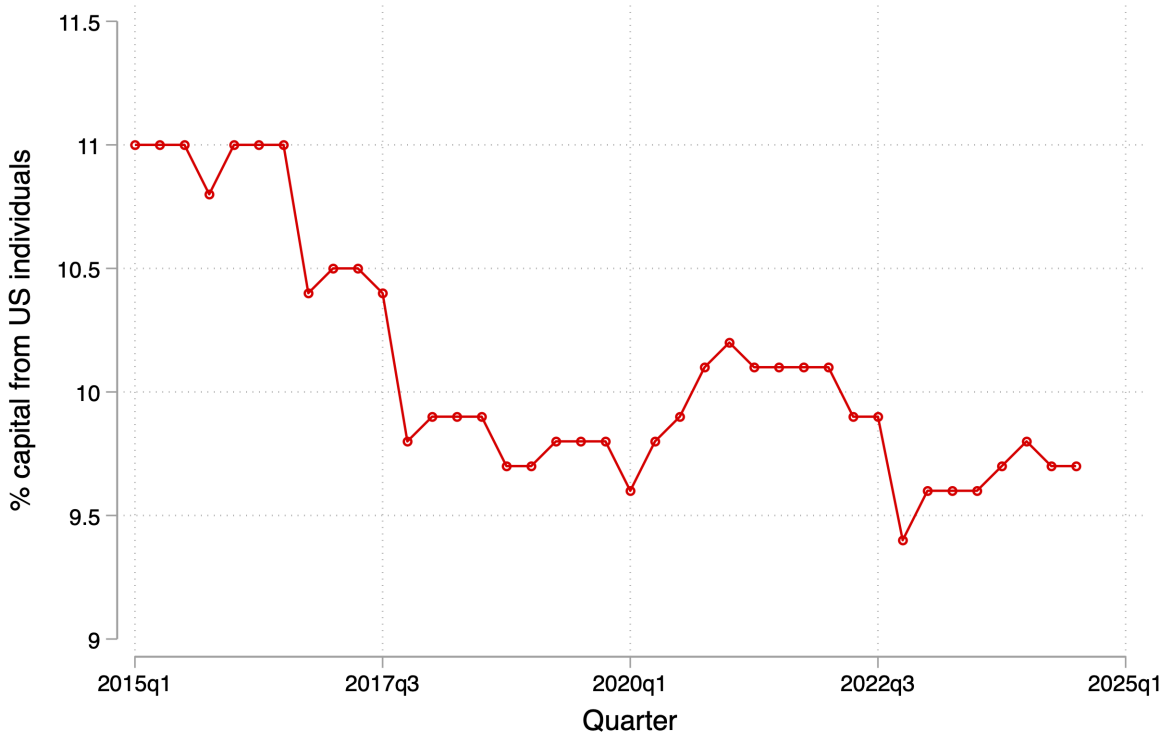
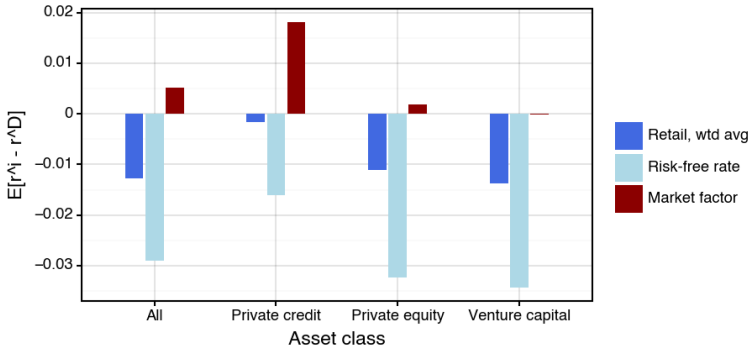
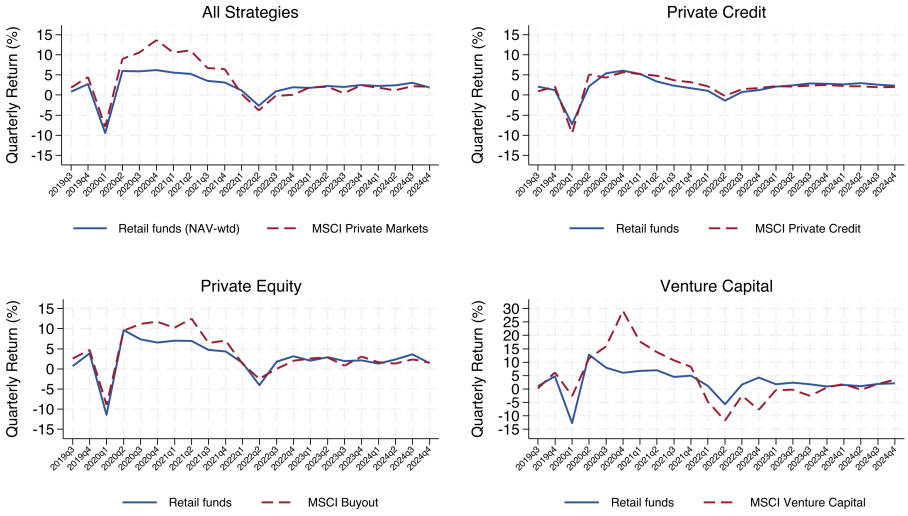


Figure 3: Retail fund returns vs. MSCI benchmarks

Panel A plots the average difference in quarterly returns between a reference series and the MSCI index by asset category. The dark blue, light blue, and red bars correspond to the average difference between the MSCI index and the following series respectively: NAV-weighted average retail returns for each strategy, the risk-free rate, and the market factor (gross of the risk-free rate). Panel B plots quarterly returns for retail private market funds (solid blue line) against MSCI private market benchmarks (dashed red line) from 2019Q3 to 2024Q4. Retail fund returns are NAV-weighted averages within each strategy category. The four subpanels show: all strategies combined versus the MSCI Private Markets Index, private credit versus MSCI Private Credit, private equity versus MSCI Buyout, and venture capital versus MSCI Venture Capital. Private credit funds track their benchmark closely. Private equity and venture capital funds show persistent underperformance relative to MSCI, with venture capital exhibiting the largest gap during the 2020–21 period.



(a) Difference in returns with the MSCI benchmark, by strategy



(b) Quarterly returns vs. MSCI benchmarks

Figure 4: Returns by investor qualification

This figure reports returns over time for funds split by investor qualification. The comparison shows funds open to any investor versus funds requiring accreditation or higher qualification. Returns are NAV-weighted averages within each investor qualification category.

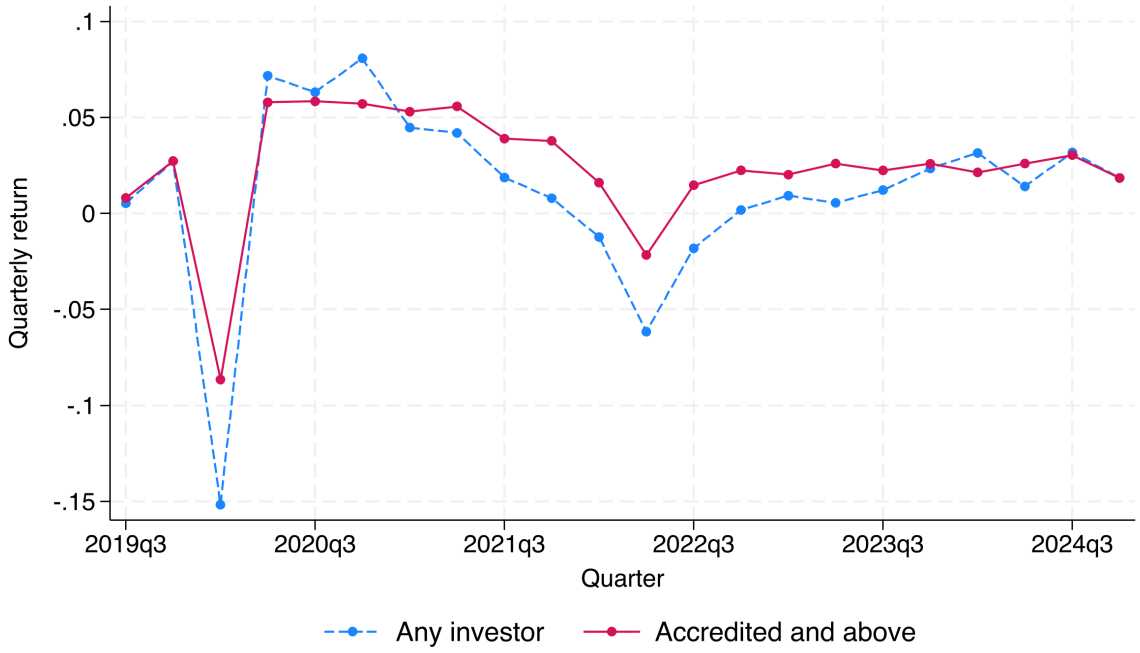


Figure 5: Excess retail returns bridge

This figure plots the decomposition of the average excess retail return over the sample period. The height of each bar corresponds to the average return of the component over the sample period. Blue and red bars represent positive and negative returns respectively. The cumulative sum of the bars corresponds to the average excess retail return over the period of 1.64%.

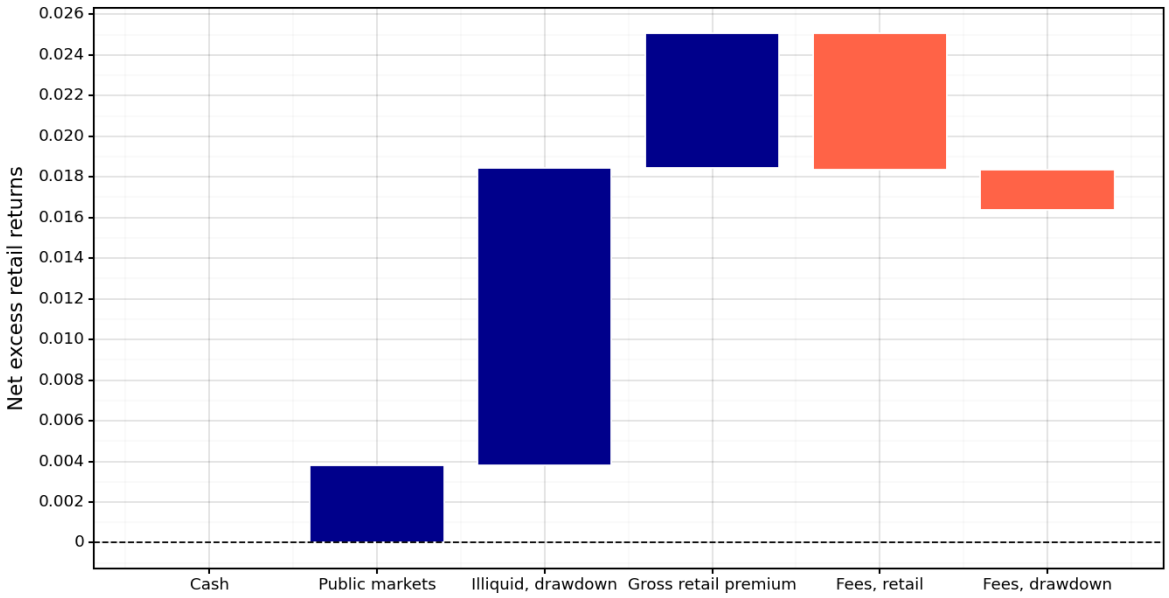


Figure 6: Performance gap decomposition

This figure plots the decomposition of the average difference in quarterly returns between excess retail returns net of fees and and the MSCI index (net of fees). The bars correspond to the average difference between the return contribution on the retail component and the excess return on the MSCI index. In order, bars are computed as: Gross retail premium: $\mathbb{E}[\frac{(1-w^c)}{W}(W(\hat{\alpha} + f^R) - (r_t^D - r_t^f)]$, Fees, retail: $-\mathbb{E}[f^R]$, Cash: $\mathbb{E}[w^c((r_t^c - r_t^f) - (r_t^D - f_t^f)]$, Public markets: $\mathbb{E}[\frac{(1-w^c)}{W}(W\hat{\beta}_1(R_t^{Mkt} - r_t^f) - (r_t^D - r_t^f)]$, Illiquid, drawdown: $\mathbb{E}[\frac{(1-w^c)}{W}(W\hat{\beta}_2(r_t^D - r_t^f) - (r_t^D - r_t^f)]$, where $W = (1 - w^c)^{-1}(1 + \hat{\beta}_1 + \beta_2)$. By construction, bars sum to the average difference in quarterly returns between excess retail returns net of fees and the MSCI index (net of fees), which is -1.27%.

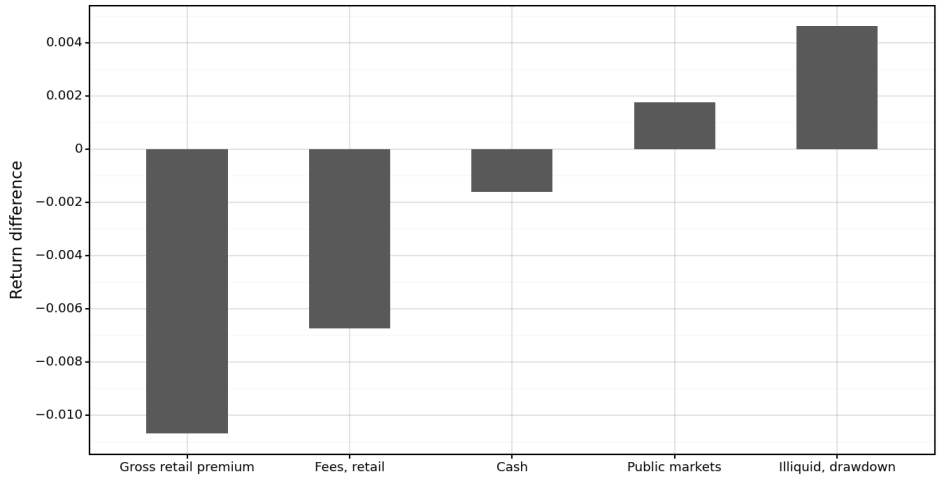


Figure 7: Management fees and expenses over time

This figure reports the average fund fees by year weighted by NAV for our fund sample from 2019 to 2024. The blue bar reports the fraction of NAV that are net operating expenses, while the remainder of the bar in gray is management fee. The numbers on the top of the bar are the total sum of expenses plus management fee.

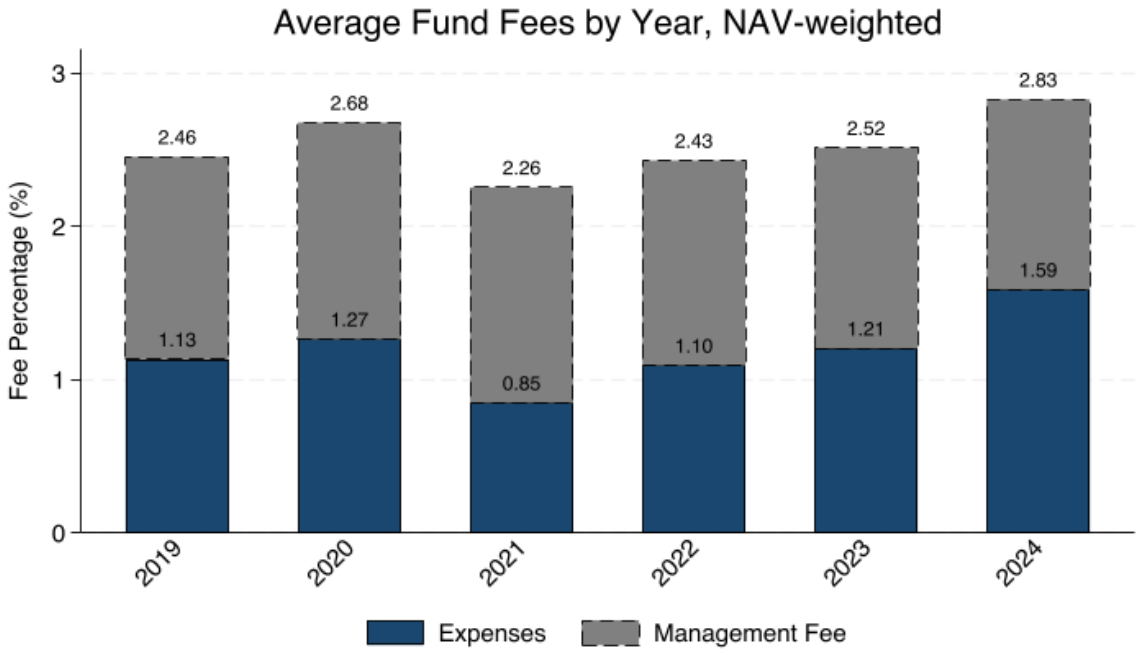
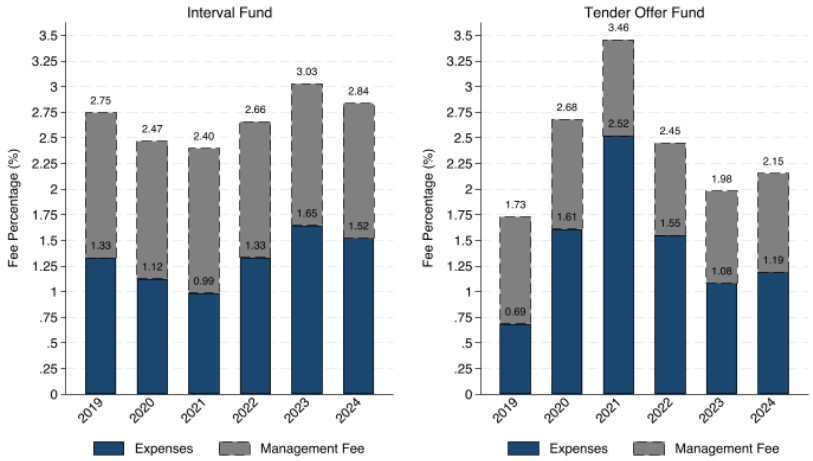
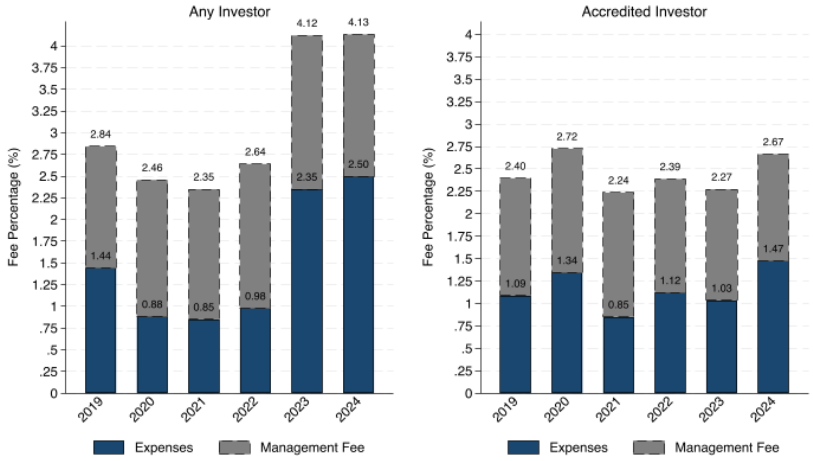


Figure 8: Fees by fund structure and investor qualification

Panel A reports equal-weighted average fees split by fund structure: interval funds vs. tender offer funds (other funds are ignored). As in the earlier figure, the lower part of the bar represents expenses and the total bar is total fees, where the gray portion is management fees. Panel B reports the NAV-weighted average total fees and expenses for two types of funds. The left panel shows funds that allow any investor to buy shares. The right panel shows funds that require accreditation or other higher investor qualification status.



(a) Equal-weighted average fees by fund structure (interval vs. tender offer)



(b) NAV-weighted average fees by investor qualification

Figure 9: Fund expenses as a percent of NAV

This figure reports the time series of fund expenses over NAV for four categories of expenses: administrative and servicing, distribution and transfer, custodian and legal, accounting and auditing. Each year is the NAV-weighted average of the ratio of the expense to NAV. The solid line reports the linear fit over the sample period.

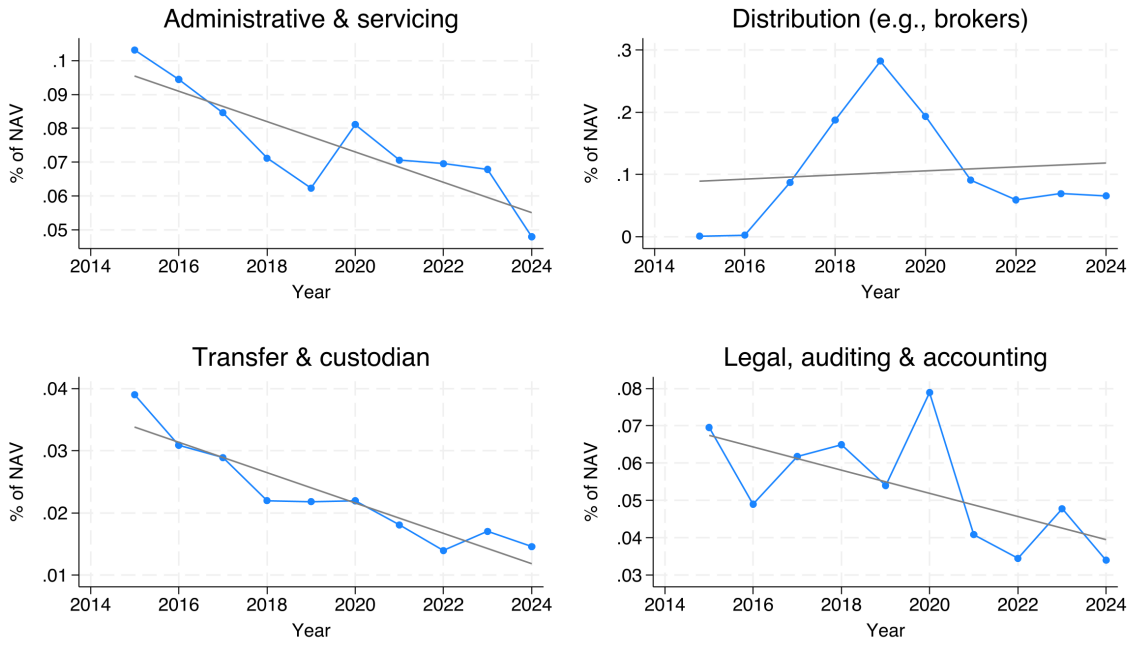


Figure 10: Asset composition by fund age

This figure reports the fraction of each fair value level held by funds over the fund age life cycle. Level 3 (illiquid, private assets) is shown at the bottom, with Level 2 and Level 1 (liquid assets) stacked above. The left panel reports interval funds; the right panel reports tender offer funds. The sample excludes other funds. Within a fund, holdings are weighted by their value when calculating the percentage of each level.

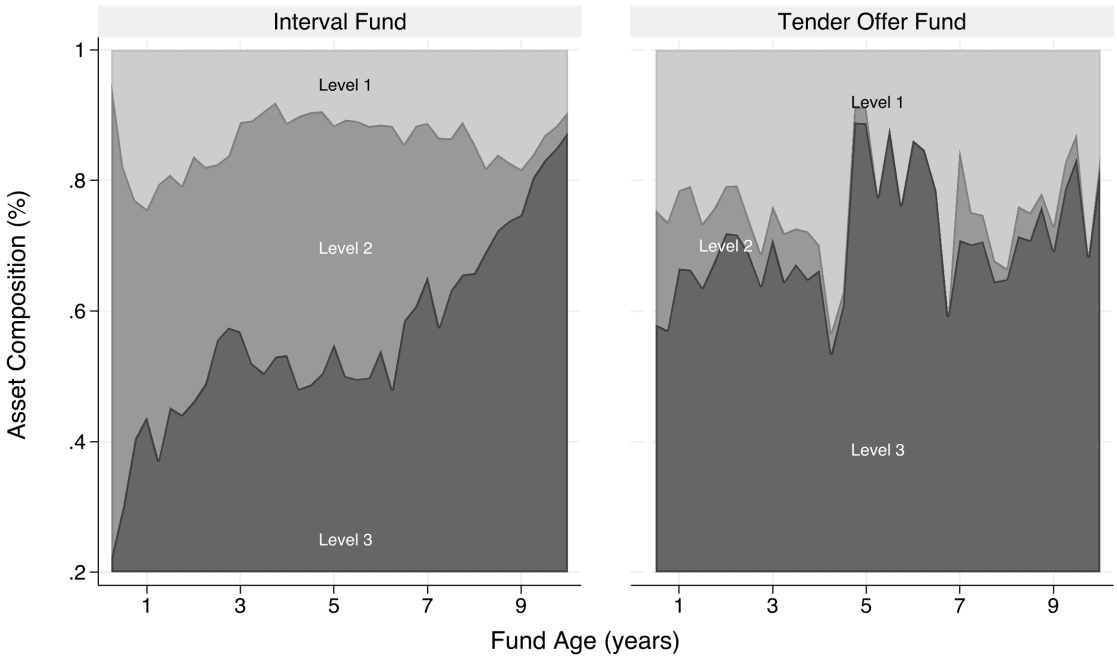


Figure 11: Liquid asset holdings by fund type

The first panel of the figure reports the NAV-weighted fraction of NAV held in liquid assets by year, split by interval funds and tender offer funds. Liquid asset holdings are cash and short-term investment vehicles. The second panel reports equal-weighted averages of the same measure. The final panel splits the set of interval funds into those that allow any investor to invest vs. accredited or above. Table 7 presents regression analysis formalizing these patterns and testing whether the differences persist after controlling for fund size, age, and strategy.

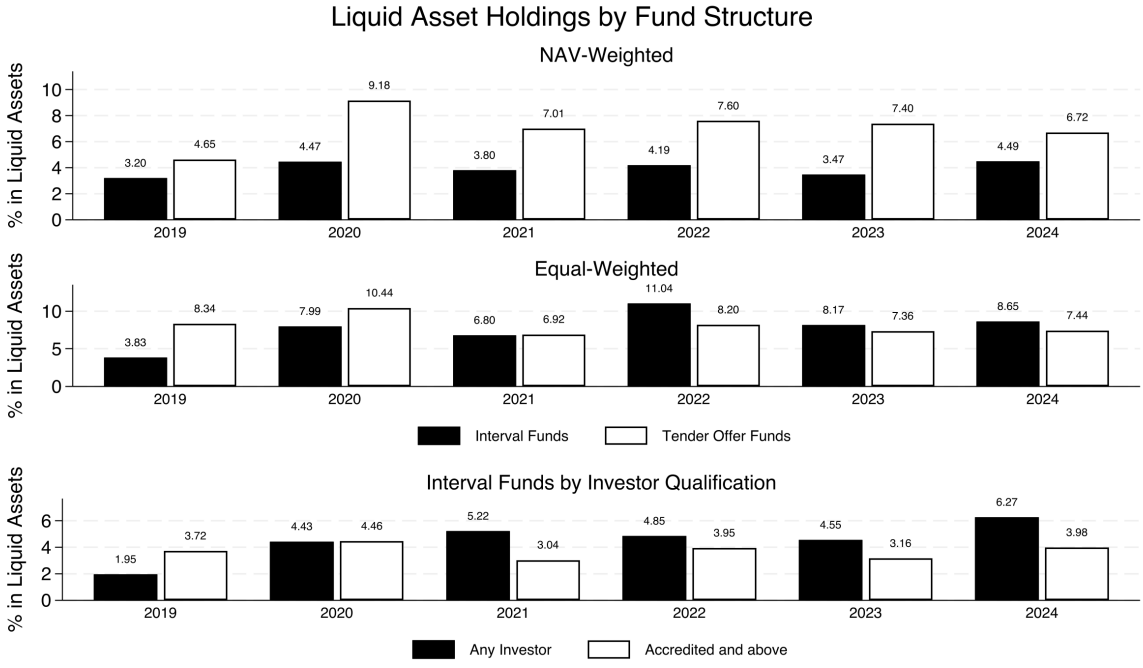
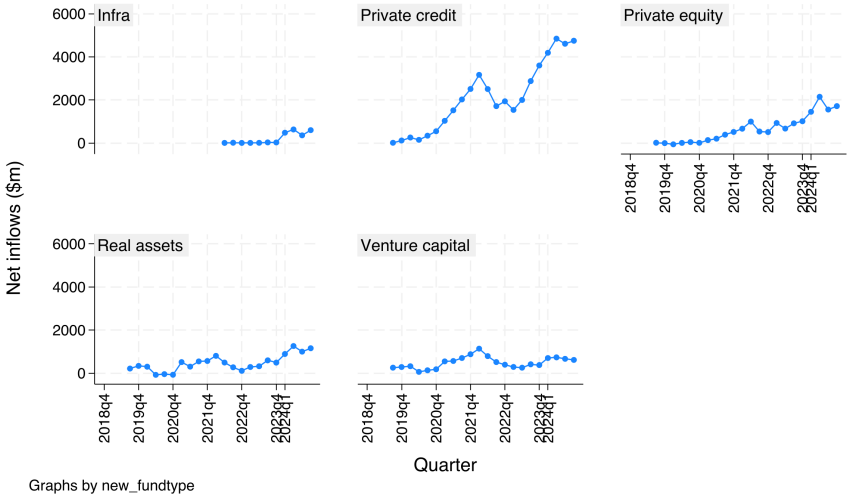
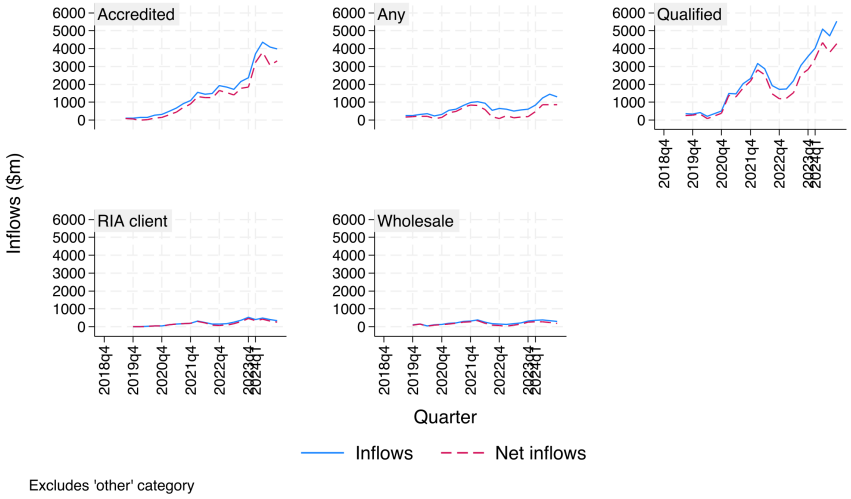


Figure 12: Net inflows by fund strategy and investor qualification

In the first panel we show net inflows (total inflows net of outflows) in each quarter for five asset strategies: infrastructure, private credit, private equity, real assets, and venture capital. In the second panel we report inflows and net inflows for funds split by investor qualification: accredited, any investor, qualified purchaser, institutional client, RIA, and wholesale.



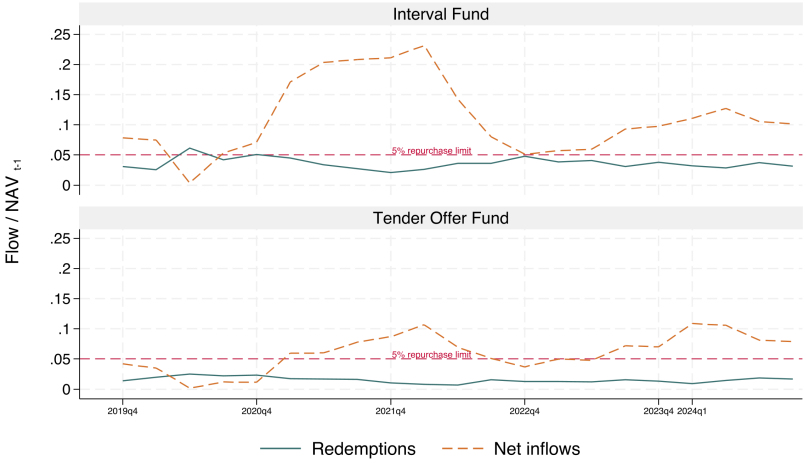
(a) Net inflows by fund strategy



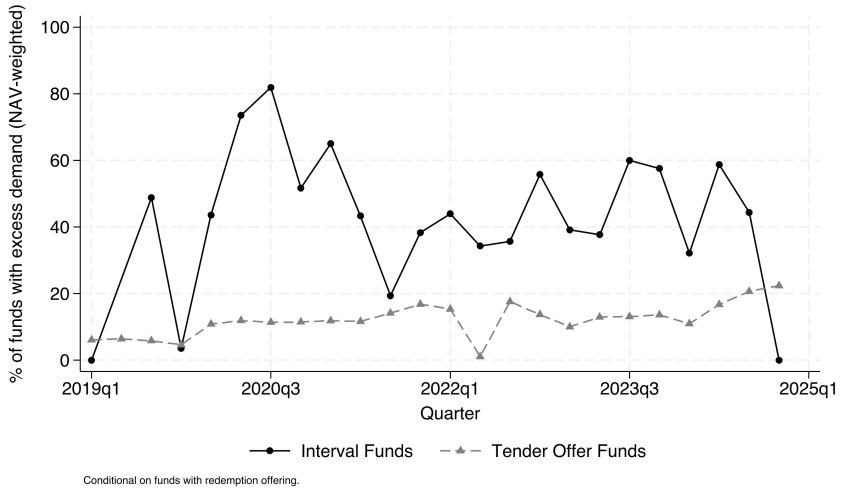
(b) Inflows by investor qualification

Figure 13: Repurchases, net inflows, and excess demand

Panel A reports the time series of repurchases scaled by lagged NAV for both interval funds and tender offer funds, where the averages are weighted by NAV. The dashed orange line reports the net inflows for the same sample of funds, again weighted by NAV. Panel B reports an estimate of excess demand, where we compare the shares offered for sale (for interval funds this is typically 5%) to the shares requested for sale as a percentage of shares. This is split by tender offers and interval funds. The solid line reports the percentage of funds in every quarter that had demand exceed supply. The dashed gray line is the percentage of funds weighted by NAV. The light gray bars report the count of funds every quarter.



(a) Sales (outflows) and net inflows to lagged NAV



(b) Excess demand by fund structure

Figure 14: Portfolio manager ownership

This figure reports manager ownership patterns over time. The left axis shows the fraction of funds with non-zero manager ownership, split by fund structure: interval funds (solid red) and tender offer funds (dashed blue). The right axis shows the average ownership stake as a percent of NAV across all funds (gray dotted line). Manager ownership is extracted from Statements of Additional Information (SAI) filed with the SEC.

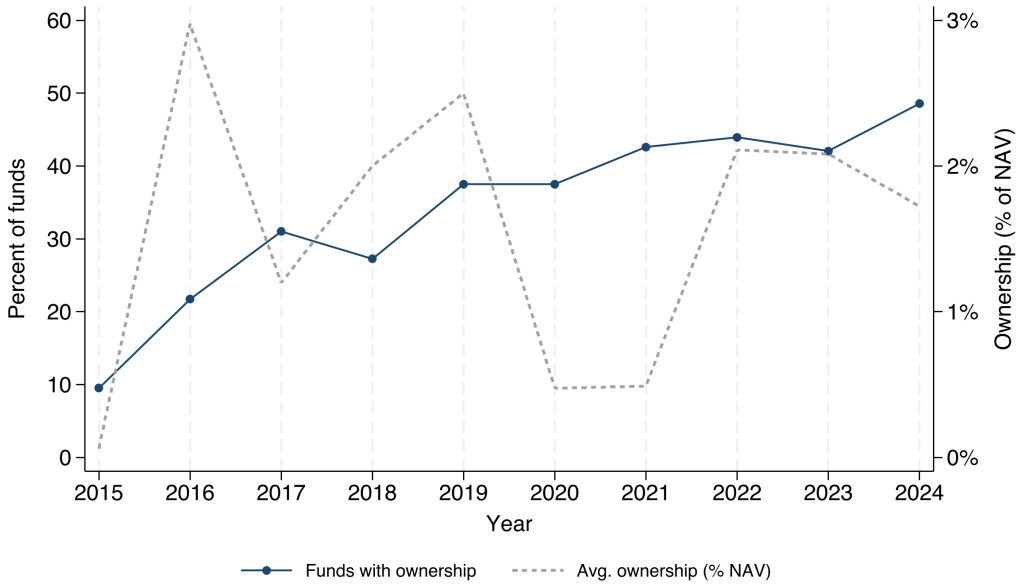


Table 1: Fund-Level Summary Statistics

This table reports summary statistics for fund-level characteristics for all funds in the sample. The unit of observation is the last observed fund quarter. The variables are defined as follows: NAV is Net Asset Value in millions of dollars. Management Fee is the percentage of NAV that is management fee. Net operating expense percent is the percentage of NAV that are net operating expenses. Expense waiver cap is a 0-1 variable equal to 1 if in this quarter the fund has waivers for expenses. Any investor is a 0-1 variable equal to 1 if any investor can invest in the fund. Similarly we have variables Accredited investor and Qualified investor. Min investment in dollars is the minimum initial investment amount required to enter the fund. Interval fund is a 0-1 variable if the fund is structured as an interval fund. Similarly for Tender offer fund. Private equity is a 0-1 variable if the fund's primary strategy invests in private equity-like investments. Similarly for Venture capital and Private credit. Early redemption fee is a 0-1 variable if the fund charges a fee (typically 2%) if the shareholder tries to sell shares less than a year from its initial investment. Incentive pay is a 0-1 if there's any indication the managers of the fund earn incentive pay. Div reinvest is a 0-1 variable for whether the fund reinvests dividends or pays them out. Auto div reinvest is a 0-1 variable for whether the fund defaults to automatic reinvestment for investors when they start investing. 17D1 exemption is a 0-1 variable if the fund has received an exemption from this part of the Investment Company Act.

	Min.	25%	50%	Mean	75%	95%	N
NAV ($m)	0.1	68.8	216.7	1024.46	851.2	4304.8	114
Mgmt fee (%)	0.0	0.7	1.2	1.12	1.5	2.0	114
Net operating exp. %	0.0	1.6	2.2	3.31	3.5	8.8	114
Expense waiver/cap	0.0	0.0	1.0	0.63	1.0	1.0	114
Any investor	0.0	0.0	0.0	0.33	1.0	1.0	114
Accredited investor	0.0	0.0	0.0	0.44	1.0	1.0	114
Qualified investor	0.0	0.0	0.0	0.17	0.0	1.0	114
Min. investment ($)	0.0	2500.0	25000.0	120596.49	50000.0	1000000.0	114
Interval fund	0.0	0.0	0.0	0.49	1.0	1.0	114
Tender offer	0.0	0.0	0.0	0.42	1.0	1.0	114
Private equity	0.0	0.0	0.0	0.18	0.0	1.0	114
Venture capital	0.0	0.0	0.0	0.11	0.0	1.0	114
Private credit	0.0	0.0	0.0	0.42	1.0	1.0	114
Early redemption fee	0.0	0.0	0.0	0.35	1.0	1.0	114
Incentive pay	0.0	0.0	0.0	0.33	1.0	1.0	114
Div. reinvest	0.0	1.0	1.0	0.79	1.0	1.0	114
Auto div. reinvest	0.0	0.0	1.0	0.75	1.0	1.0	114
17d1 exemption	0.0	0.0	0.0	0.35	1.0	1.0	114

Table 2: Fund-Quarter Panel Summary Statistics

This table reports the fund-by-quarter characteristics of our fund sample. Variables not already found in Table 1: Number of positions reports the total positions of all types in that quarter. Number of private positions is the count of positions that we have flagged as private assets. Inflows ($ million) are in that quarter the reported capital inflows. Outflows are the equivalent but for outflow capital. Inflow/lagged NAV is the inflow scaled by previous quarters' NAV; similarly for Outflow/lagged NAV. Reinvestment/lagged NAV is the total reinvested capital divided by lagged net asset value; similarly for Net inflow over lagged NAV. The remaining variables report the fraction of NAV of each type. Percent private assets covers all non-public assets and cash assets. Levels 1, 2, and 3 fair values are each of the fair value measures. N/A fair value reports the percentage of NAV that does not have a Level 1, 2, or 3 characterization. The remaining variables cover: direct investment, fund investment, government securities, non-classified or other, debt instruments, equity instruments of any type, asset-backed securities, and short-term investment vehicles.

	Min.	25%	50%	Mean	75%	95%	Max.	N
NAV ($m)	0.1	67.9	180.5	798.34	614.1	2994.1	24568.4	1353
# of positions	1.0	28.0	81.0	368.85	263.0	1204.0	16452.0	1353
# private positions	0.0	14.0	52.0	314.63	201.0	917.0	16436.0	1353
Inflow ($)	0.0	0.6	10.7	77.66	54.3	354.6	3116.8	1353
Outflow ($)	0.0	0.0	1.8	19.34	13.3	92.9	695.3	1353
Inflow / Lagged NAV	0.0	0.0	0.1	0.28	0.2	0.5	151.4	1353
Outflow / Lagged NAV	0.0	0.0	0.0	0.03	0.0	0.1	1.0	1353
Reinvestment / Lagged NAV	0.0	0.0	0.0	0.01	0.0	0.0	0.1	1353
Net inflow / Lagged NAV	-0.9	0.0	0.0	0.24	0.1	0.5	151.4	1353
% private assets	-0.0	0.7	0.9	0.79	1.0	1.0	1.5	1353
% Level 1 fair value	-1.2	0.0	0.0	0.12	0.2	0.5	1.0	1353
% Level 2 fair value	-0.0	0.0	0.0	0.19	0.3	0.9	2.2	1353
% Level 3 fair value	0.0	0.0	0.2	0.34	0.7	1.0	1.1	1353
% N/A fair value	-0.1	0.0	0.0	0.35	0.8	1.0	1.0	1353
% direct	-0.1	0.0	0.3	0.46	0.9	1.0	1.1	1353
% funds	-0.1	0.0	0.3	0.46	1.0	1.0	1.0	1353
% gov't	0.0	0.0	0.0	0.02	0.0	0.1	1.2	1353
% other	-0.4	0.0	0.0	0.06	0.0	0.8	1.1	1353
% debt	-0.1	0.0	0.1	0.29	0.6	0.9	1.4	1353
% equity	-0.2	0.0	0.1	0.24	0.3	1.0	1.0	1353
% ABS	-0.0	0.0	0.0	0.11	0.1	0.7	2.3	1353
% STIV	-0.5	0.0	0.0	0.07	0.1	0.2	0.9	1353

Table 3: Private Holdings Composition

This table considers all the positions of our fund sample that we label as private. Holding value is the dollar value (in millions) reported in the holding quarter for the position; negative values represent short derivative positions such as interest rate swaps and hedges. Position size decline is a 0/1 variable if since the previous quarter the quantity of the position fell. Similarly Position size increase if the quantity increased over the last quarter. Holding sold/matured is a 0/1 variable if the holding is no longer available on the holding document suggesting a sold or maturity event. Holding added is a 0/1 if this is the first quarter that the private holding shows up in the N-PORT filing. Level 1, 2, and 3 represent 0/1 variables for each fair value level. Debt, equity, other, real estate are categories for each private holding: 0/1 variables for each. Direct position is a 0/1 variable if the position is directly held as opposed to a fund. Fund position is a 0/1 variable if it is explicitly labeled as an asset that is a fund. The other two position types are "other" and "government," both 0/1 variables.

	Min.	25%	50%	Mean	75%	95%	N
Holding value (USD m)	-242.55	0.00	0.07	2.78	1.49	11.65	313741
Position size declined	0.00	0.00	0.00	0.48	1.00	1.00	313741
Position size increased	0.00	0.00	0.00	0.24	0.00	1.00	313741
Holding sold/matured	0.00	0.00	0.00	0.20	0.00	1.00	313741
Holding added	0.00	0.00	0.00	0.19	0.00	1.00	313741
Fair value level							
Level 1	0.00	0.00	0.00	0.01	0.00	0.00	313741
Level 2	0.00	0.00	0.00	0.21	0.00	1.00	313741
Level 3	0.00	1.00	1.00	0.78	1.00	1.00	313741
Asset type							
Debt	0.00	1.00	1.00	0.79	1.00	1.00	313741
Equity	0.00	0.00	0.00	0.08	0.00	1.00	313741
Other	0.00	0.00	0.00	0.07	0.00	1.00	313741
Real estate	0.00	0.00	0.00	0.01	0.00	0.00	313741
Position type							
Direct position	0.00	0.00	1.00	0.63	1.00	1.00	313741
Fund position	0.00	0.00	0.00	0.09	0.00	1.00	313741
Other position	0.00	0.00	0.00	0.28	1.00	1.00	313741
Gov't position	0.00	0.00	0.00	0.00	0.00	0.00	313741

Table 4: Factor Model Estimation Results

This table reports regressions of quarterly excess retail returns net of fees ($r_t^R - r_t^f$) on the market factor and drawdown factor. $R_t^{Mkt} - r_t^f$ is the CAPM market factor. r_t^D is the return on MSCI private markets indices. Columns 1–2 report results for NAV-weighted average returns across all strategies: column 1 includes only the market factor; column 2 adds the drawdown factor, defined as the asset-weighted return on US Buyout, US Private Credit, and US Venture Capital indices. Columns 3–5 report results by strategy, where the drawdown factor corresponds to the strategy-specific MSCI index. Robust standard errors are shown in parentheses. *, **, and *** denote statistical significance at the 5%, 1%, and 0.1% level, respectively.

	All strategies		Private credit	Private equity	Venture capital
	(1)	(2)	(3)	(4)	(5)
$R_t^{Mkt} - r_t^f$	0.289***	0.112*	0.019	0.135**	0.358**
	(0.066)	(0.049)	(0.040)	(0.046)	(0.117)
$r_t^D - r_t^f$		0.435***	0.751***	0.589***	0.135
		(0.049)	(0.075)	(0.079)	(0.093)
α	0.006	-0.000	0.002	-0.002	0.004
	(0.006)	(0.005)	(0.002)	(0.005)	(0.007)
Observations	22	22	22	22	22
Adj. R^2	0.646	0.869	0.858	0.891	0.710

Table 5: Fee Determinants

This table reports regressions of management fees and total fees on fund characteristics. The dependent variables are in percentage points (e.g., a mean of 1.20 corresponds to 1.20% of NAV). The sample includes all fund-year observations where management fees and net operating expenses are each less than 250% to exclude outliers. Total fees are defined as the sum of management fees and operating expenses. Columns 1–2 regress fees on an indicator for interval fund structure (omitting fund structure fixed effects since the indicator captures this variation). Columns 3–4 regress fees on an indicator for whether any investor type can invest (with fund structure fixed effects). Columns 5–6 regress fees on the log of minimum investment required. Columns 7–8 add a quadratic term for log NAV to test for non-linear scale effects. All specifications include log NAV as a control and year fixed effects. Fund structure fixed effects are indicators for interval funds, tender offer funds, and other fund structures. Year fixed effects are indicators for the year of the observation.

	Interval vs. tender		Retail vs. others		Investment min.			
	Mgmt fee	Total	Mgmt fee	Total	Mgmt fee	Total	Mgmt fee	Total
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Interval fund	0.32***	0.11						
	(0.11)	(0.36)						
Any investor			0.075	-0.20				
			(0.13)	(0.50)				
Log min. investment					-0.046**	-0.062		
					(0.018)	(0.079)		
Log net assets	0.058**	-0.13	0.070***	-0.12	0.058**	-0.12	0.39*	-1.43
	(0.025)	(0.15)	(0.026)	(0.15)	(0.025)	(0.14)	(0.21)	(2.00)
Log net assets sq.							-0.0089	0.035
							(0.0058)	(0.051)
Observations	362	362	362	362	362	362	362	362
Mean dep. var.	1.20	2.68	1.20	2.68	1.20	2.68	1.20	2.68
R^2	0.08	-0.00	0.15	0.03	0.19	0.04	0.02	0.01
Fund structure FE?	N	N	Y	Y	Y	Y	Y	Y
Year FE?	Y	Y	Y	Y	Y	Y	Y	Y

Table 6: Expense Categories by Fund Structure

This table reports regressions of expense categories (each scaled by NAV and multiplied by 100) on an indicator for interval fund structure. Each column represents a separate regression where the dependent variable is the expense type as a percentage of NAV. The expense categories are: (1) Transfer/Custodian, fees for shareholder recordkeeping, transaction processing, and safekeeping of fund assets; (2) Legal/Audit, external legal counsel and audit services; (3) Distribution, marketing, broker compensation, and sales materials (including 12b-1 fees); (4) Pricing/Valuation, fees for valuing portfolio holdings and investment due diligence; (5) Offering, costs of registering and issuing new fund shares; (6) Compliance, chief compliance officer and regulatory compliance costs; (7) Trustee, compensation for board of trustees; (8) Professional fees, other professional services. The main explanatory variable is Interval fund, an indicator equal to one for interval funds; tender offer funds are the omitted category. The sample includes fund-year observations from 2015 onward when the expense is reported and greater than zero. Expenses are Winsorized at the 1% and 99% tails. Mean dep. var. reports the sample average of the dependent variable; % interval reports the fraction of observations that are interval funds. All specifications include year fixed effects.

	Expense type							
	Transfer/ Custodian	Legal/ Audit	Distr.	Pricing/ Val.	Offering	Compliance	Trustee	Prof. fees
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Interval fund	0.090***	0.029	-0.12***	0.020	0.29**	0.052*	-0.037**	-0.51
	(0.022)	(0.12)	(0.022)	(0.048)	(0.13)	(0.027)	(0.015)	(0.47)
Observations	479	376	198	52	147	218	347	285
# funds	109	91	53	18	70	57	85	66
Mean dep. var.	0.38	0.45	0.49	0.46	0.45	0.46	0.53	0.15
% interval	0.11	0.45	0.09	0.09	0.27	0.07	0.08	0.68
R^2	0.07	0.04	0.24	-0.03	0.16	0.03	0.07	0.01
Year FE?	Y	Y	Y	Y	Y	Y	Y	Y

Table 7: Determinants of Liquid Asset Holdings

This table reports regressions of liquid asset holdings on fund characteristics. In columns 1–5, the dependent variable is liquid assets as a percentage of NAV, where liquid assets include cash and short-term investment vehicles. Column 6 uses an expanded measure that also includes public equities. The main explanatory variables are: Interval fund, an indicator equal to one for interval funds (tender offer funds are the omitted category); Any investor, an indicator equal to one for funds open to any investor type (funds restricted to accredited or qualified investors are the omitted category); Log NAV, the natural log of net asset value in millions; and Fund age, years since fund inception. The unit of observation is fund-quarter. The sample includes interval and tender offer funds from 2019–2024. Figure 11 presents the underlying patterns visually. Standard errors are clustered by fund. Fund strategy fixed effects are indicators for investment strategies such as private equity, private credit, venture capital, and real assets. Year-quarter fixed effects are indicators for the year-quarter of the observation.

	Liquid assets					Liquid + pub.
	(1)	(2)	(3)	(4)	(5)	(6)
Interval fund	1.01	-1.03	-0.44	-0.78	0.15	5.08
	(1.46)	(1.57)	(1.63)	(1.61)	(2.13)	(3.40)
Any investor		3.62**	2.24	2.48	4.31**	2.88
		(1.70)	(1.70)	(1.80)	(1.72)	(3.04)
Log NAV			-1.10**	-0.83*	-0.53	-1.27**
			(0.42)	(0.43)	(0.45)	(0.54)
Fund age				-0.47***	-0.43***	-0.53***
				(0.12)	(0.13)	(0.18)
Observations	1,297	1,297	1,297	1,226	1,226	1,226
R^2	0.01	0.03	0.07	0.11	0.23	0.29
Year-qtr FE?	Y	Y	Y	Y	Y	Y
Strategy FE?	N	N	N	N	Y	Y

Table 8: Performance-Flow Sensitivity: Net Inflows / NAV_{t-1}

This table investigates how fund performance correlates with net inflows. The dependent variable is net inflows (inflows minus outflows) scaled by lagged NAV. Returns are annualized compound returns, computed as the quarterly return compounded over four quarters: $(1+r_q)^4-1$. Return $t-1$, $t-2$, and $t-3$ denote returns lagged by one, two, and three quarters, respectively. Negative return $t-k$ is an indicator equal to one if the return in quarter $t-k$ was negative. Panel A columns 1–3 report full sample results: column 1 includes only the first lag; column 2 adds lags 2 and 3; column 3 uses negative return indicators instead of continuous returns. Columns 4–6 report results separately for interval funds, tender offer funds, and other fund structures. Panel B reports results by investor qualification: columns 1–3 use continuous returns; columns 4–6 use negative return indicators. Panel B includes fund strategy and year-quarter fixed effects but not fund structure fixed effects. Standard errors clustered by fund are reported in parentheses. Figure A4 in the Appendix visualizes this relationship. The fixed effects footer refers to Panel A.

	Panel A: Full sample and by fund structure					
	Full sample			Interval	Tender	Other
	(1)	(2)	(3)	(4)	(5)	(6)
Return t-1	0.067	0.090*		0.011	0.17***	0.14**
	(0.059)	(0.046)		(0.072)	(0.053)	(0.039)
Return t-2		0.091**		0.059	0.11	0.11
		(0.036)		(0.051)	(0.071)	(0.090)
Return t-3		0.052		0.055	0.071	-0.097
		(0.058)		(0.090)	(0.079)	(0.074)
Negative return t-1			-0.024			
			(0.015)			
Negative return t-2			-0.036**			
			(0.015)			
Negative return t-3			-0.033**			
			(0.016)			
Observations	1,266	1,050	1,050	546	409	93
R^2	0.06	0.09	0.07	0.04	0.08	0.37
	Panel B: By investor qualification					
	Any	Accred.	Qual.	Any	Accred.	Qual.
	(1)	(2)	(3)	(4)	(5)	(6)
Return t-1	-0.061	0.18**	0.18**			
	(0.055)	(0.083)	(0.064)			
Return t-2	0.016	0.099	0.19**			
	(0.046)	(0.065)	(0.066)			
Return t-3	0.083	-0.10	0.16**			
	(0.12)	(0.075)	(0.069)			
Negative return t-1				0.021	-0.025	-0.053**
				(0.026)	(0.017)	(0.025)
Negative return t-2				-0.0069	-0.030	-0.062**
				(0.028)	(0.019)	(0.023)
Negative return t-3				-0.043	0.011	-0.037
				(0.032)	(0.020)	(0.029)
Observations	401	414	235	401	414	235
R^2	0.03	0.10	0.34	0.03	0.07	0.30
Fund strategy FE?	Y	Y	Y	Y	Y	Y
Fund structure FE?	Y	Y	N	N	N	N
Year-quarter FE?	Y	Y	Y	Y	Y	Y

Table 9: Selection Analysis: Fund Positions in Retail Vehicles

This table compares drawdown funds held by retail vehicles to funds of similar vintage and strategy that are not held by retail vehicles. We match holdings from N-PORT filings to PitchBook using fuzzy name matching and unique identifiers. The main explanatory variable is In retail, an indicator equal to one if the fund is held by at least one retail vehicle in our sample. Panel A examines ex-ante fund characteristics at fund closing: log fund size (columns 1–3), an indicator for first-time funds (columns 4–6), and log years from fundraising to close (columns 7–9). Panel B reports internal rate of return (IRR) at years 3, 4, and 5 from fund inception, controlling for log fund size. Panel C reports distributions to paid-in capital (DPI) at the same horizons. Within each outcome, we progressively add controls: the first column includes Vintage × Category fixed effects; the second adds Investor fixed effects (GP-level, e.g., KKR); the third further excludes secondary purchases where the retail fund acquired the position after the fund's vintage year. The performance sample (Panels B–C) restricts to holdings acquired before the performance measurement date to avoid evaluating funds purchased on secondary markets after performance was known. Standard errors clustered by fund are reported in parentheses.

Panel A: Fund Characteristics

	Log fund size			First-time fund			Log years to close		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
In retail	2.48***	0.62***	0.66***	-0.24***	-0.018*	0.023	-0.12**	0.14**	0.27***
	(0.057)	(0.041)	(0.067)	(0.0090)	(0.010)	(0.014)	(0.052)	(0.057)	(0.082)
Observations	63,266	16,264	8,105	69,465	16,284	8,125	38,475	12,311	5,962
Adj. R^2	0.48	0.82	0.81	0.09	0.48	0.44	0.05	0.59	0.60

Panel B: IRR at Years 3, 4, 5

	IRR Year 3			IRR Year 4			IRR Year 5		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
In retail	-0.85	2.28	2.85	-1.38	1.61	1.04	-0.036	1.68	2.86*
	(1.90)	(2.36)	(2.69)	(1.40)	(1.63)	(1.90)	(1.03)	(1.40)	(1.56)
Log fund size	-0.34	-1.97***	-1.82***	-0.22	-1.43***	-1.33***	0.22	-0.82*	-0.98**
	(0.34)	(0.62)	(0.60)	(0.32)	(0.50)	(0.51)	(0.25)	(0.42)	(0.41)
Observations	5,191	4,324	4,172	5,090	4,250	3,948	5,012	4,254	3,794
Adj. R^2	0.23	0.37	0.36	0.26	0.37	0.35	0.27	0.42	0.40

Panel C: DPI at Years 3, 4, 5

	DPI Year 3			DPI Year 4			DPI Year 5		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
In retail	0.11***	0.12***	0.13***	-0.11	0.055	0.056	0.096**	0.10**	0.13***
	(0.035)	(0.031)	(0.034)	(0.18)	(0.042)	(0.046)	(0.040)	(0.048)	(0.050)
Log fund size	-0.077***	-0.10***	-0.10***	-0.041	-0.11***	-0.11***	-0.075***	-0.11***	-0.11***
	(0.0088)	(0.013)	(0.013)	(0.035)	(0.016)	(0.017)	(0.011)	(0.015)	(0.016)
Observations	5,260	4,419	4,281	5,021	4,212	3,963	4,823	4,081	3,700
Adj. R^2	0.26	0.47	0.47	0.02	0.47	0.46	0.29	0.52	0.51
Vintage × Category FE	Y	Y	Y	Y	Y	Y	Y	Y	Y
Investor FE	N	Y	Y	N	Y	Y	N	Y	Y
Excl. secondary	N	N	Y	N	N	Y	N	N	Y

Appendix

A Additional Figures

Figure A1: Fund marketing claims

This figure summarizes how retail private market funds market themselves to investors based on text analysis of fund fact sheet pitches. Panel A reports the percentage of funds (N=65) emphasizing each marketing theme. Themes are identified using natural language processing (unigram and bigram frequency analysis) applied to fund fact sheets. Dominant themes include private markets exposure (51%), diversification benefits (48%), and direct lending/credit strategies (38%). Low volatility claims are notably rare (12%) despite smoothed NAVs mechanically reducing measured volatility. Panel B reports pairwise correlations between theme mentions. Strong positive correlations exist between diversification and private markets messaging (0.39) and between income/yield and credit strategies (0.34).

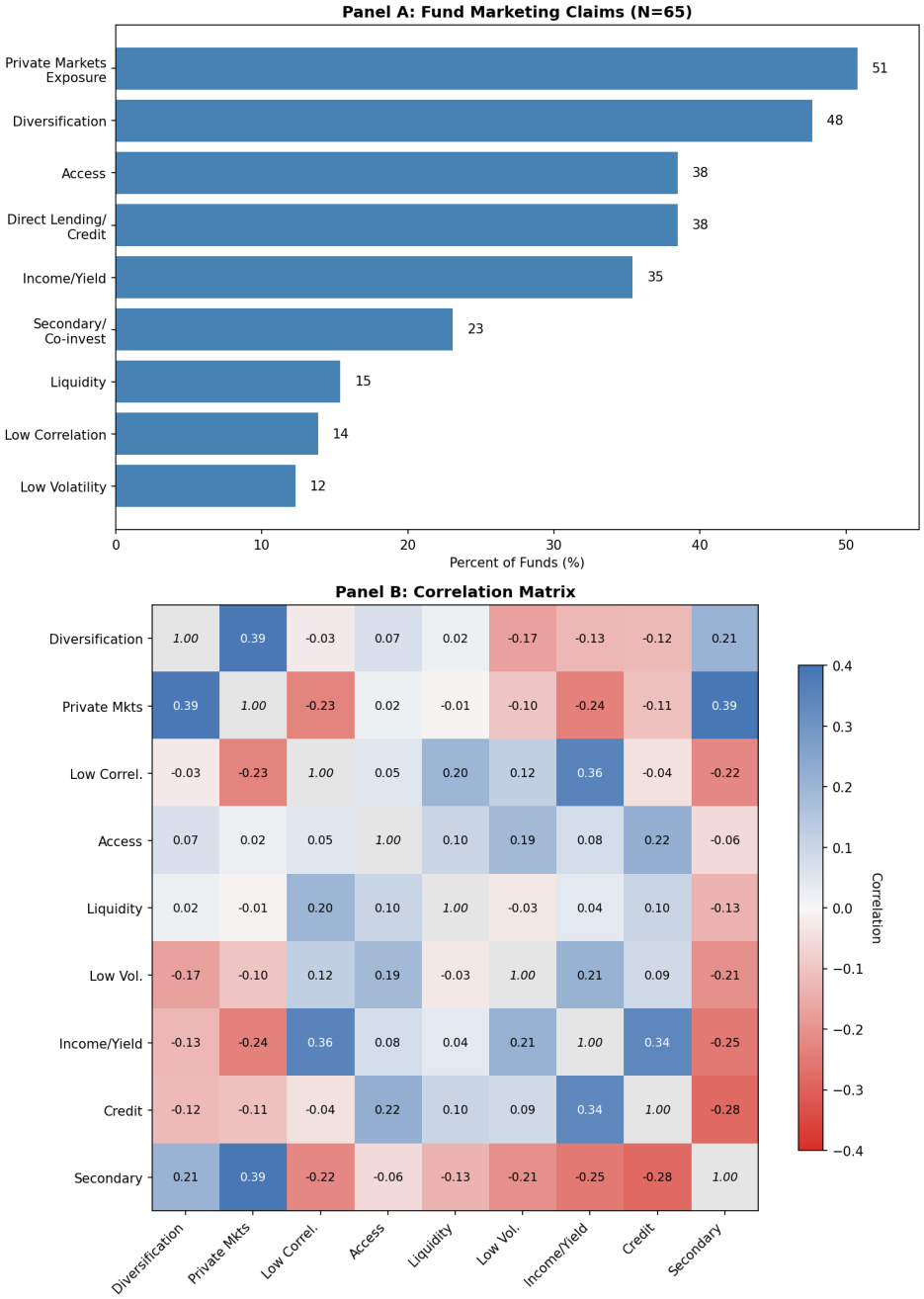


Figure A2: Fee waivers by fund age

This figure reports the fraction of funds with active fee waivers or expense caps by fund age. The x-axis shows years since fund inception. Young funds commonly subsidize investors through expense waivers to attract capital, with waiver prevalence declining as funds mature and reach scale.

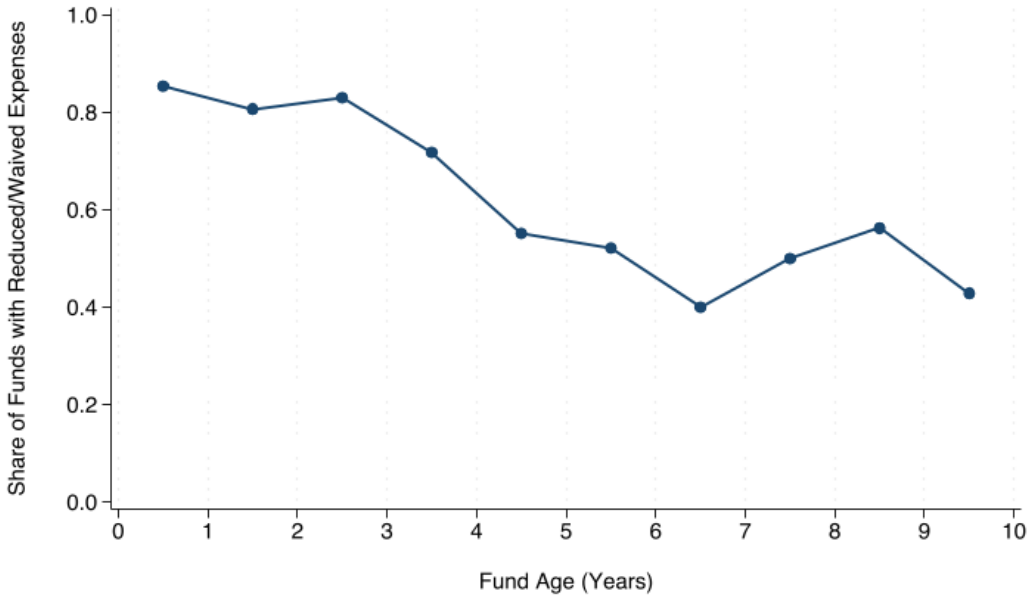


Figure A3: Tender offer funds: liquidity offerings

Panel A reports the fraction of tender offer funds in every quarter that are offered. The green bars report the number of funds. Panel B reports the lifecycle of liquidity availability. The x-axis is the age of the fund. The y-axis reports for each age category what percent of funds are offering liquidity among tender offers.

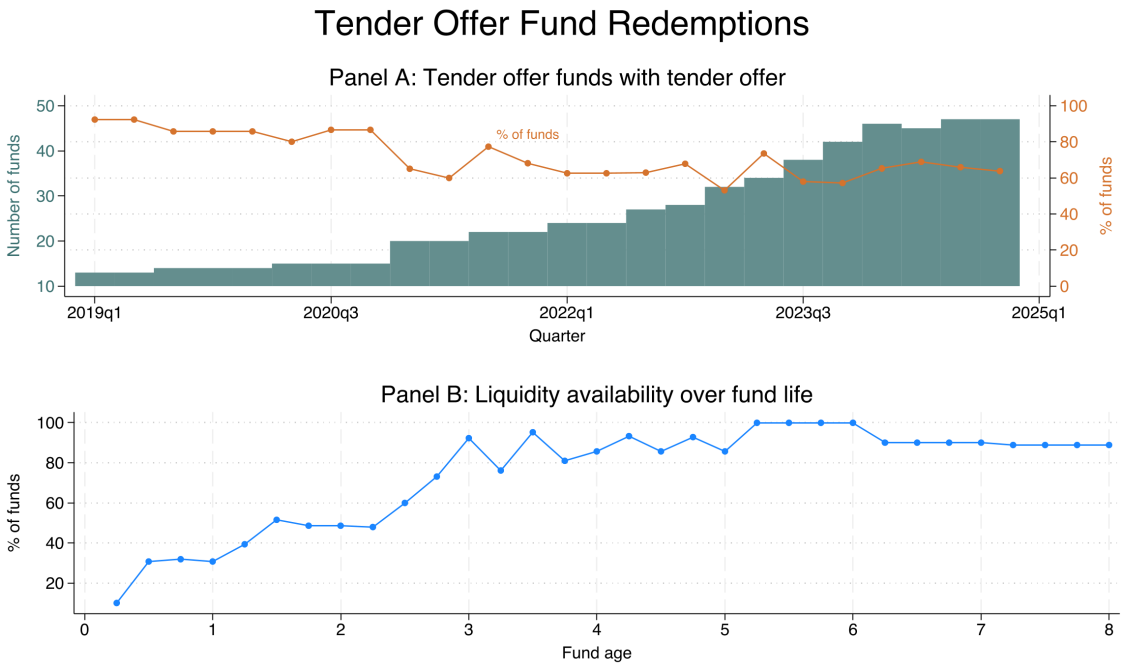


Figure A4: Flow-performance relationship

This figure plots mean net inflows (as percent of lagged NAV) across deciles of lagged quarterly returns following Chevalier and Ellison (1997). Performance decile 1 represents the worst-performing funds; decile 10 represents the best performers. Error bars show 95% confidence intervals. The lowess fit (solid line) shows a generally positive relationship between past performance and subsequent flows, consistent with return-chasing behavior documented in mutual funds (Sirri and Tufano, 1998; Berk and Green, 2004). However, the pattern is notably weaker than in mutual funds—the lowest-performing decile does not experience the sharpest outflows, and the slope is relatively flat through the middle deciles. This attenuated sensitivity may reflect the illiquid nature of holdings (Goldstein, Jiang, and Ng, 2017) or investor self-selection into long-horizon vehicles.

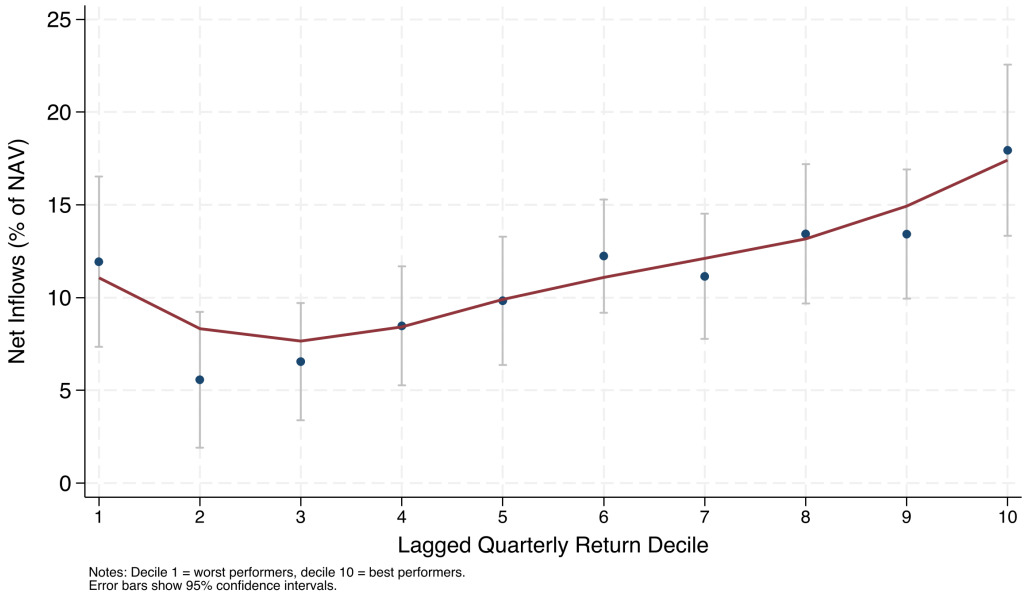
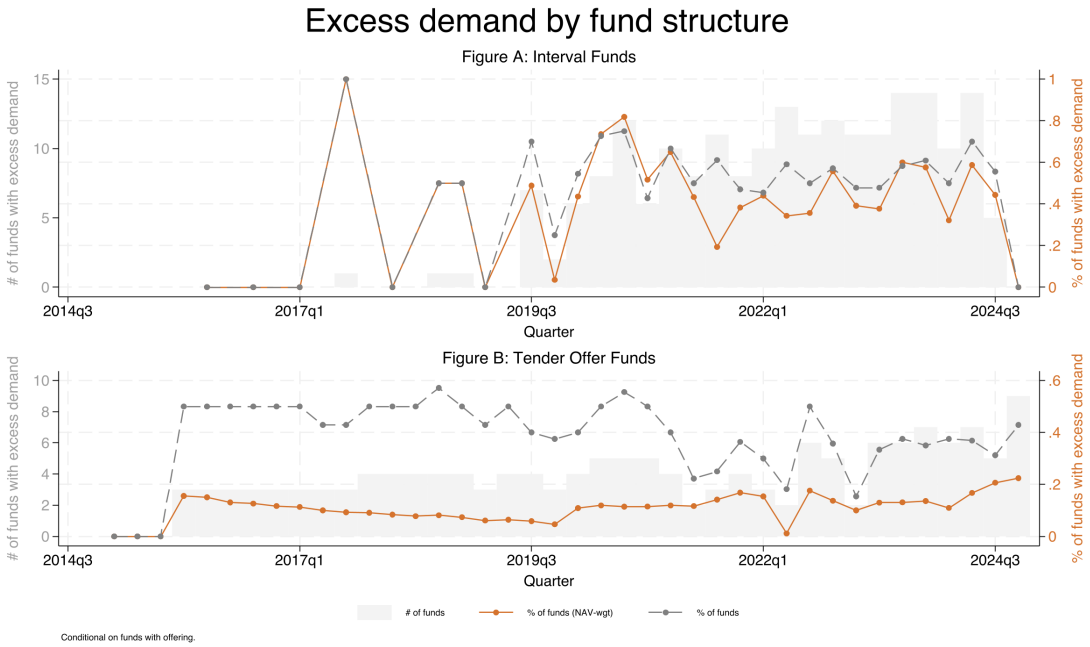


Figure A5: Excess demand by fund structure (detailed)

This figure provides a detailed view of excess repurchase demand for interval funds (Panel A) and tender offer funds (Panel B). Each panel shows the number of funds (gray bars), the NAV-weighted percentage of funds with excess demand (orange line), and the equal-weighted percentage (gray dashed line). Excess demand occurs when repurchase requests exceed the shares offered for repurchase (typically 5% for interval funds). Conditional on funds with active repurchase offerings.



B Additional Tables

Table A1: Quick reference: Drawdown funds vs. registered wrappers (interval and tender offer funds)

Dimension	Drawdown fund (LP)	Registered wrapper (interval / tender offer)
Information (initial)	Blind pool at commitment; strategy governed by LPA and GP track record.	Blind pool at subscription; prospectus provides standardized SEC-format parameters and risk factors.
Information (ongoing disclosure)	Quarterly letters to LPs (private; detail varies by GP); quarterly NAV reporting based on GP assessments.	Form N-PORT filings with security-level holdings disclosure (public transparency, subject to SEC timing rules).
Incentive alignment (fees)	"2 and 20": ∼2% on committed capital + 20% carry over a hurdle; carry paid after return of capital + preferred return.	Typically 1–2% of net assets (AUM-based); some incentive fees possible but restricted by SEC rules (generally to qualified clients).
Incentive alignment (manager capital at risk)	GP typically commits 1–5% of fund capital, tying GP wealth to outcomes.	Portfolio manager ownership disclosed but typically far below GP commitment norms.
Liquidity (structure-specific)		
Liquidity (baseline mechanism)	Distributions only when GP exits/refinances; timing at GP discretion; early liquidity mainly via secondary sales at negotiated discounts.	**Interval (Rule 23c-3):** periodic repurchase offers required (typically quarterly) for ≥5% of outstanding shares; pro rata if oversubscribed. **Tender offer (Rule 13e-4):** offers at manager discretion; often quarterly around ∼5% of NAV, but manager can skip offers entirely.
Liquidity (fees)	Secondary sales can clear at negotiated discounts.	May charge repurchase fees up to 2% to reduce dilution to remaining shareholders.
Liquidity / portfolio constraints	Illiquidity is intrinsic; fund life typically 10–12 years (extensions possible).	**Both:** exempt from SEC Liquidity Rule (Rule 22e-4), permitting predominantly illiquid holdings. **Interval only:** must hold liquid assets sufficient to cover 100% of the upcoming repurchase amount.
Governance and other structural features		
Governance	LP advisory committee with narrow authority (conflict waivers, key-person events); no fiduciary duty to broader LP base; no mechanism to remove GP or renegotiate fees during fund life.	Majority-independent board of directors elected by shareholders; board hires and can terminate adviser, auditor, and counsel; Section 15(c) requires annual review of advisory contract including comparative fee analysis; SEC can intervene if directors fail fiduciary duties.
Leverage constraint	Not described here; generally less constrained than registered funds.	Investment Company Act asset coverage: 300% (borrowing limited to one-third of total assets).
Valuation frequency and governance	NAV reported quarterly based on GP marks (ILPA guidance; auditor review); interim returns largely driven by unrealized marks (J-curve early years).	NAV calculated daily for subscription/repurchase pricing; interval funds value holdings at least weekly (daily during repurchase windows); both follow SEC fair valuation guidance with board oversight.
Capital deployment timing	Investor commits at inception but funds capital via calls over time; uncalled capital remains in investor outside option; deployment often 3–5 years.	Investor capital deployed immediately at subscription (shares purchased at NAV); capital works in portfolio from day one.
Tax reporting / structure	Schedule K-1 (complex; often late).	RIC-style Form 1099; must distribute ≥90% of net investment income annually (often paired with dividend reinvestment).
Investor eligibility (practical/structural)	Retail possible in principle but rare in practice (fixed costs per LP, capital calls, long illiquid horizon favor institutions/HNW).	In principle open to retail; performance fees based on gains/appreciation trigger qualified client limits (Rule 205-3); fund-of-funds layering constraints have evolved.

Table A2: NAV Staleness Analysis

This table summarizes NAV staleness patterns across retail interval and tender offer funds. Panel A reports descriptive statistics on pricing frequency: zero return days measures the fraction of trading days with no NAV change; max zero streak is the longest consecutive run of unchanged NAVs; quarter-end jumps is the fraction of absolute returns occurring in quarter-end months (benchmark for uniform distribution = 0.333). Panel B reports AR(1) coefficients from monthly return regressions, split by median Level 3 (illiquid) asset share. Panel C reports AR(1) coefficients from daily return regressions by fund structure. Standard errors clustered by fund. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Metric	**Sample**	**Value**	**Interpretation**
Panel A: Baseline Staleness Measures			
% Zero return days (week)	All funds	40%	NAV unchanged on 2 of 5 trading days
Max zero streak (median)	All funds	7 days	Staleness persists over a week
Quarter-End moves	Monthly funds	0.42	27% above benchmark (0.33)
Panel B: AR(1) by Illiquidity (Monthly Returns)			
Low Level 3 Share	Below median	0.058	Lower staleness
High Level 3 Share	Above median	0.127*	More illiquid → more staleness
Panel C: AR(1) by Fund Structure (Daily Returns)			
Interval Funds	$N = 52$ funds	0.064***	Mandatory liquidity → lower staleness
Tender Offer Funds	$N = 13$ funds	0.183	Discretionary liquidity → higher staleness

C Institutional Background: Detailed Comparison

This appendix provides comprehensive institutional detail on the structural differences between traditional drawdown funds and registered private-asset wrappers. Section 1 in the main text summarizes the key economic distinctions; this appendix documents the full regulatory and operational framework.

C.1 Information Environment

Drawdown funds are blind pools: investors commit capital before the GP has identified specific deals and remain unable to observe the full portfolio throughout the fund's life. They rely on the strategy outlined in the limited partnership agreement and the GP's track record, supplemented by private quarterly letters that vary in detail across managers. Registered wrappers begin as blind pools at inception, but ongoing disclosure changes the information environment for subsequent investors. These funds file Form N-PORT with the SEC, disclosing complete holdings at the security level quarterly (monthly beginning late 2027; see Appendix F). An investor purchasing shares in an existing registered fund can therefore observe the current portfolio and make an informed decision about the assets they are buying into—a stark contrast to the drawdown model where future investments remain unknown. This transparency may constrain investment strategies or reveal proprietary positions to competitors, but it fundamentally alters the information asymmetry between managers and investors.

C.2 Incentive Alignment

Compensation structures create different incentive dynamics. Drawdown funds follow the "2 and 20" model: approximately 2% annually on committed capital plus 20% carried interest on profits exceeding a hurdle rate. GPs typically commit 1–5% of fund capital alongside their limited partners, so the GP's wealth rises and falls with fund performance; carry is earned only after returning committed capital plus preferred return, concentrating incentives on absolute performance. Registered wrappers charge asset-based fees, typically 1–2% of net assets annually. Some funds layer incentive fees resembling carried interest, but SEC rules restrict such arrangements to funds limited to qualified clients. The asset-based model creates incentives to grow AUM rather than maximize returns per dollar invested. Fund manager ownership in registered funds is disclosed in annual reports but rarely approaches the GP commitment levels standard in drawdown vehicles, though it is partially increased by

unobserved equity in the advisor firm.

C.3 Liquidity Mechanisms

Drawdown investors receive distributions at GP discretion when positions are exited; they cannot accelerate liquidity except through secondary sales at negotiated discounts, typically at meaningful haircuts to reported NAV. Registered wrappers provide periodic liquidity through two mechanisms. Interval funds must offer quarterly repurchases of at least 5% of shares under Rule 23c-3; if repurchase requests exceed the offer amount, shares are repurchased pro rata. Tender offer funds provide discretionary liquidity under Rule 13e-4, typically quarterly at approximately 5% of NAV, though they retain flexibility to skip or suspend offers entirely. Both structures may charge repurchase fees up to 2% to protect remaining shareholders from dilution. How investors use these liquidity windows likely depends on market conditions: Gabaix, Koijen, Mainardi, Oh, and Yogo (2024) find that average households sell risky assets procyclically during downturns, with cash serving as the primary substitute—a pattern that could generate correlated repurchase demand precisely when fund liquidity is most constrained.

The liquidity mandate shapes portfolio construction. Because these funds are evergreen with no terminal distribution date, managers must perpetually balance illiquid investment opportunities against repurchase capacity. Both interval and tender offer funds are exempt from the SEC's Liquidity Rule (Rule 22e-4), permitting predominantly illiquid holdings, but interval funds must maintain liquid assets sufficient to cover 100% of the upcoming repurchase amount. Leverage faces the Investment Company Act's 300% asset coverage requirement, limiting borrowing to one-third of total assets—more restrictive than drawdown fund norms.

C.4 Valuation Requirements

Drawdown funds report NAV quarterly based on GP assessments and auditor review. Because interim private equity performance is largely driven by unrealized marks—especially in early fund years when the J-curve dominates—valuation frequency and governance matter for inference. Registered wrappers face different requirements depending on structure. Interval funds must calculate NAV at least weekly, with daily valuations required during the five business days preceding each repurchase deadline. Tender offer funds need only strike NAV periodically as required for share sales and repurchases—there is no weekly or daily mandate.

In practice, many funds calculate NAV more frequently than required because intermediary platforms demand daily pricing for distribution. SEC fair valuation guidance under Rule 2a-5 requires security-level marks with documented methodologies and board oversight.

C.5 Capital Deployment

Drawdown fund investors commit capital at fund inception but invest over 3–7 years as deals are sourced. Uncalled capital sits in whatever outside option the investor chooses, which may earn lower returns than the private market exposure they sought. In contrast, registered wrappers deploy capital immediately at subscription. New money may sit in cash temporarily, but the advertised proposition is immediate exposure to alternative assets. This offers a potential compounding advantage—capital earns the fund's return from day one rather than waiting years in a lower-yielding outside option.

C.6 Tax Treatment

Tax treatment for drawdown funds is significantly more complicated than for the registered wrappers we study. Drawdown funds issue Schedule K-1 forms—lengthy, multi-page documents that often arrive late and lead to delayed tax filings for investors. Registered wrappers qualifying as RICs issue Form 1099s, standard mutual fund treatment that makes tax filing straightforward. RIC status requires distributing 90% of net investment income annually, though most funds default to automatic dividend reinvestment.

C.7 Investor Eligibility

Drawdown funds can technically accept some retail (accredited) capital, but market economics make this rare. Fixed costs per LP, such as due diligence, documentation, and ongoing reporting, favor large commitments. Funds also require investors who can meet capital calls over multi-year investment periods and hold illiquid positions for 10–12 years. Registered wrappers face no regulatory barrier to retail distribution when investing directly in private assets. Two choices trigger restrictions: (1) performance fees on capital gains require limiting investors to qualified clients under Advisers Act Rule 205-3; (2) fund-of-funds layering into vehicles with performance fees historically required qualified clients, though this restriction was rescinded in August 2025 (ADI 2025-16).

C.8 Distribution Channels

Drawdown funds raise capital through placement agents and direct GP relationships. Limited partners typically emerge from institutional networks—endowments, pension funds, sovereign wealth funds—or through wealth management platforms catering to family offices and ultra-high-net-worth individuals. These advisor structures shape investor behavior: Gabaix, Koijen, Mainardi, Oh, and Yogo (2024) document that ultra-high-net-worth households predominantly match with single-family offices, and that advisor professionalization increases rebalancing frequency. Minimum commitments often exceed $1 million, and fund terms require multi-year capital call obligations that demand ongoing engagement.

Registered wrappers use mutual fund distribution infrastructure. Some funds permit direct purchase through the fund sponsor's website with minimums as low as $2,500. Others require intermediaries—broker-dealers, registered investment advisors, or wirehouse platforms—and maintain approved distributor lists that restrict where shares can be purchased. Aggregation platforms such as iCapital and CAIS package multiple alternative offerings for wealth advisors, handling subscription paperwork and providing consolidated reporting. This infrastructure lowers search costs for investors but introduces distribution expenses that flow through to fund expense ratios.

C.9 Historical Context: Retail Access Before These Vehicles

The vehicles studied in this paper are not the first mechanism for retail participation in private markets. Regulatory changes over the past 15–20 years opened limited pathways: equity crowdfunding under the JOBS Act (2012) allows individuals to invest in early-stage firms through registered funding portals; Regulation D amendments permitting general solicitation (Rule 506(c)) made it easier for individuals to learn about private placements; and broadened accredited investor definitions added credentials-based pathways for holders of certain professional certifications. The income thresholds ($200,000 individual, $300,000 joint) have not adjusted for inflation since 1982, steadily expanding the pool of qualifying households. Yet these mechanisms remain fragmented—crowdfunding focuses on early-stage companies, Regulation D offerings require active sourcing, and accredited pathways still exclude most households. Building a diversified portfolio of alternative assets through these channels is difficult for any individual investor. The registered vehicles studied here offer a different model: a single investment providing diversified private market exposure with periodic liquidity and

standardized disclosure.

D Data Construction and Variable Definitions

Table A3: Mapping to Private Holdings.

Condition	Private
No identifier	Yes
By identifier	
Direct equity or equity fund not in Compustat/Refinitiv	Yes
Debt not in TRACE/Refinitiv	Yes
Fund not in Refinitiv/CRSP mutual funds	Yes
Direct equity identified only by ticker exceeding six digits	Yes
By asset/issuer type	
Asset is loan	Yes
Issuer is private fund	Yes
Issuer is fund or other and name matches private markets keywords[†]	Yes
Asset is short-term investment vehicle	No
Issuer is government (U.S. GSE, Treasury, or government agency; Municipal; Non-U.S. sovereign)	No
Issuer is non-public and asset is 144A bond[*]	Yes
Issuer is public and asset is 144A bond[*]	No
Issuer is public and asset is direct equity[*]	No

[†]Keywords include "private equity","direct lending", "private credit", "venture capital".

[*]A public issuer is any 6-digit CUSIP that is associated with at least one public holding as identified by all previous conditions.

E Interval Fund Repurchase Mechanics and Investor Information Sets

For interval funds operating under Rule 23c-3, the repurchase process involves three distinct timing points: the repurchase request deadline, the valuation (pricing) date, and the payment date. Understanding this timeline is essential for interpreting how investor repurchase decisions relate to past performance.

E.1 Repurchase Timeline

Step 1: Repurchase Offer Notice. The fund must send shareholders a written repurchase offer notice at least 21 days before the repurchase request deadline. Each notice specifies the request deadline, pricing date, payment date, and the percentage of outstanding shares the fund will repurchase (typically 5%).

Step 2: Shareholder Requests. Shareholders submit repurchase requests from the notice date until the repurchase request deadline. The deadline is typically 4:00 p.m. Eastern, aligned with NYSE close. Investors who miss the deadline must wait for the next scheduled offer.

Step 3: Pricing. The repurchase pricing date—when the fund calculates the NAV per share for tendered shares—must fall on or within 14 days after the request deadline. Many funds set the pricing date equal to the request deadline.

Step 4: Payment. The fund must pay repurchase proceeds within 7 days after the pricing date. Many funds target payment 1–3 business days after pricing but retain the 7-day regulatory maximum.

E.2 Information Set at Decision Time

A critical question for interpreting flow-performance sensitivity is: what performance information do investors actually have when deciding whether to redeem?

Consider a quarterly interval fund with a March 31 repurchase deadline (end of calendar Q1). The notice is mailed at least 21 days prior, meaning investors receive it by approximately March 10 at the latest.

SEC filing deadlines create an information lag. Form N-PORT, which contains portfolio holdings and NAV data, is due 60 days after quarter-end. For a fund with a December 31 fiscal year-end:

- Q4 (Oct–Dec) N-PORT is due approximately March 1
- Q3 (Jul–Sep) N-PORT was due approximately November 29

When investors receive the Q1 repurchase notice in mid-February, the Q4 N-PORT has *not yet been filed*. Investors relying on SEC filings would be making decisions based on Q3 returns (two quarters prior), not Q4 returns (one quarter prior).

Implications for performance-flow regressions. This timing friction may explain why lagged returns from two quarters prior (Return $t-2$) show stronger significance than the most recent quarter (Return $t-1$) in some specifications. Investors evaluating official SEC disclosures have a more complete and longer-observed record of performance from earlier periods.

Sophisticated investors who monitor daily NAV postings on fund websites can access more current information. However, retail investors—particularly those investing through intermediaries or 401(k) platforms—may rely primarily on formal SEC disclosures, creating a systematic lag in their information set.

F Form N-PORT Disclosure Regime

Form N-PORT requires registered funds to report portfolio holdings, including position-level detail on securities, valuations, and liquidity classifications. The disclosure regime changed substantially between our sample period and the post-2027 environment.

F.1 Sample Period Regime (Through 2024)

During our sample period, funds generated month-end portfolio data each month but filed Form N-PORT with the SEC only quarterly, within 60 days after quarter-end. Only the third month of each quarter was made public; the first two months remained confidential. Investors relying on SEC filings thus observed four portfolio snapshots per year with a 60-day lag.

F.2 August 2024 Amendments

In August 2024, the SEC adopted amendments to Form N-PORT and Rule 30b1-9 that shift disclosure from quarterly to monthly filing.[28] Under the new regime, funds must file Form N-PORT within 30 days after each month-end, and each month's report becomes public 60 days after that month. Investors will have access to twelve public portfolio snapshots per year instead of four.

The amendments apply to all funds currently reporting on N-PORT, including interval and tender offer funds structured as registered closed-end funds. The rule also amended Form N-CEN and provided guidance on liquidity risk management under Rule 22e-4.

F.3 Compliance Timeline and 2025 Extension

The original compliance dates were November 17, 2025 for fund groups with net assets of $1 billion or more, and May 18, 2026 for smaller fund groups. In April 2025, the SEC issued a separate final rule (Investment Company Act Release No. IC-35538) delaying the N-PORT amendments by approximately two years:[29]

- Large fund groups ($\geq$ $1 billion net assets): compliance date of November 17, 2027
- Smaller fund groups ($<$ $1 billion net assets): compliance date of May 18, 2028

[28] Investment Company Act Release No. IC-35308 (Aug. 27, 2024), published at 89 FR 73764 (Sept. 11, 2024). See SEC Press Release 2024-110.

[29] SEC Press Release 2025-64, "SEC Extends Effective and Compliance Dates for Amendments to Investment Company Reporting Requirements" (Apr. 2025); 90 Fed. Reg. 2025-06861 (Apr. 22, 2025).

The N-CEN amendments and Rule 22e-4 liquidity guidance were not delayed; their effective date remains November 17, 2025.

F.4 Implications for This Study

All data in this paper reflect the legacy quarterly N-PORT framework. Funds submitted quarterly filings within 60 days of quarter-end, with only one month per quarter made public. The transition to monthly filing will substantially increase the information available to investors in registered private-asset wrappers, potentially affecting flow-performance dynamics and the competitive landscape for these vehicles. Future research can exploit this regulatory shift to examine how disclosure frequency affects investor behavior and fund management.

G Incentive Compensation and Investor Access

Registered interval and tender offer funds can in principle distribute shares to any investor. However, funds that charge performance-based compensation face regulatory constraints under the Investment Advisers Act that may require restricting investor eligibility. This appendix details how incentive fee structures affect retail access.

G.1 The Qualified Client Requirement

Under Rule 205-3 of the Advisers Act, a registered adviser generally cannot charge fees based on capital gains or capital appreciation unless each client is a "qualified client."[30] Qualified client thresholds—currently $1.1 million in assets under management with the adviser or $2.2 million in net worth—exceed the accredited investor standard.[31]

The look-through treatment depends on fund structure. For private funds relying on the Section 3(c)(1) exemption from the Investment Company Act, each investor is considered a "client" for Rule 205-3 purposes, so all beneficial owners bearing the performance fee must be qualified clients.[32] However, funds relying on Section 3(c)(7) are themselves treated as a single client, so the look-through requirement does not apply. Registered interval and tender offer funds—which do not rely on either 3(c)(1) or 3(c)(7)—face the look-through requirement for any share class charging performance fees on capital appreciation.

G.2 Income-Based vs. Capital Gains-Based Fees

A critical distinction determines whether retail access is preserved:

- **Performance fees based on capital gains or appreciation.** Fees tied to realized or unrealized gains trigger Rule 205-3, requiring funds to limit investors to qualified clients. This is the classic private equity "20% of profits" structure.[33]

- **Performance fees based on income only.** Because Section 205(a)(1) prohibits fees based on "capital gains" or "capital appreciation," fees structured as a percentage of

[30] 17 CFR § 275.205-3; see also SEC Release No. IA-5904 (June 2021).

[31] These thresholds were set effective August 16, 2021 and are adjusted for inflation approximately every five years. See SEC Release No. IA-5756 (June 2021).

[32] See Paul Weiss Client Memorandum, "SEC Increases Qualified Client Dollar Amount Thresholds" (Aug. 2021).

[33] Section 205(a)(1) of the Advisers Act prohibits compensation "based on a share of capital gains upon or capital appreciation of" client funds.

net investment income (e.g., interest and dividends above a hurdle rate) may fall outside the statutory prohibition and thus avoid the qualified client requirement.[34] However, advisers must ensure that the fee calculation does not implicate unrealized appreciation; the SEC reads "capital appreciation" broadly, and income metrics that incorporate NAV changes or mark-to-market adjustments may still trigger Rule 205-3.

Funds seeking broad retail distribution while maintaining manager incentive alignment typically use income-based incentive fees or "fulcrum fees" that adjust management fees based on performance relative to a benchmark, rather than PE-style carried interest on capital appreciation.[35]

G.3 Structural Choices That Restrict Access

Several fund design choices can trigger qualified client requirements:

- **Carry on realized/unrealized gains.** Any compensation sharing in capital appreciation falls under Rule 205-3.
- **Performance allocation in LP/LLC structure.** The classic "2 and 20" model requires qualified clients for registered advisers.
- **Fund-of-funds investing in underlying vehicles with carry.** Layering into performance-fee vehicles raises complexity; some sponsors restrict investors to qualified cohorts to align with underlying fee regimes.
- **Multi-class structures.** Funds can offer performance-fee share classes to qualified clients and non-performance classes to retail, subject to disclosure requirements and operational controls.[36]

[34] See SEC Release IA-1731 (July 15, 1998), which clarified that Section 205(a)(1) targets fees based on capital gains and appreciation. Industry practice reflects this interpretation: interval funds and BDCs routinely charge income-based incentive fees to retail investors while restricting capital gains fees to qualified clients. See EisnerAmper, "Are Investment Advisors Sleeping on Interval Funds?" (Mar. 2021).

[35] Section 205(b)(2) of the Advisers Act permits fulcrum fees for registered investment companies without restricting investors to qualified clients. See Dechert LLP, "Fulcrum Fees: A Registered Fund's Alternative Fee Structure," The Investment Lawyer (Sept. 2014).

[36] See Interval Fund Tracker, "Fee Structures for Unlisted Closed-End Funds" (2021), noting that "incentive fees on realized capital gains are permitted only if all investors are qualified clients... which is one reason why most of these funds rely on SEC exemptive relief to issue multiple share classes."

G.4 Implications for Retail Private Markets Access

Interval funds distributed broadly to retail typically do not charge PE-style incentive fees. Instead, they rely on higher management fees and distribution fees. Funds wanting true performance-based compensation on NAV appreciation must either restrict their investor base to qualified clients—materially reducing the addressable market—or restructure incentives to fit within income-based carve-outs.

This regulatory framework helps explain the fee structures observed in Section 5.1: retail-accessible funds charge asset-based fees rather than carried interest, contributing to the fee wedge relative to institutional vehicles where performance alignment mechanisms are more common.

H Alternative Model: KKR Private Equity Conglomerate

The registered interval and tender offer funds studied in this paper operate within the Investment Company Act of 1940, accepting the regulatory constraints—liquidity requirements, co-investment restrictions, disclosure obligations—that accompany registration. An alternative model sidesteps this framework entirely. KKR Private Equity Conglomerate LLC ("K-PEC"), formed in December 2022 as a Delaware limited liability company, seeks to deliver private equity exposure to a broader investor base while maintaining an exclusion from the definition of "investment company" under the 1940 Act. This appendix describes K-PEC's structure and contrasts it with the registered wrappers in the sample.

H.1 Structure and Regulatory Status

K-PEC is a holding company, not a registered fund. It reports under the Securities Exchange Act (filing Form 10-K and 10-Q) rather than the Investment Company Act framework (N-PORT, N-CEN). It operates in a manner that preserves its exclusion from the definition of "investment company," primarily by maintaining controlling interests in portfolio companies through joint ventures rather than holding passive investment positions. The entity is treated as a partnership for U.S. federal income tax purposes, issuing Schedule K-1s to investors rather than the Form 1099s issued by RIC-qualifying registered funds.

K-PEC conducts a continuous private offering of shares on a monthly basis to accredited investors under Regulation D and non-U.S. persons under Regulation S. It does not list shares on any exchange, and no secondary market exists. Multiple share classes are offered (Class S, D, U, I, and formerly R-series classes), with KKR holding a separate Class E interest.

H.2 Joint Venture Model and Portfolio Access

The central structural innovation is K-PEC's mechanism for accessing private equity deals. Rather than sourcing and executing transactions independently—as interval and tender offer funds must do, subject to co-investment restrictions under Section 17(d) of the 1940 Act and Rule 17d-1—K-PEC forms joint ventures with existing KKR drawdown vehicles. In a typical transaction, K-PEC and one or more KKR funds become co-general partners of a joint venture entity that acquires a controlling stake in a portfolio company. The relative economic interests vary by deal.

This structure provides K-PEC with access to KKR's full private equity platform, spanning

traditional buyout, middle market, growth equity, core equity, next-generation technology, and impact strategies. The joint venture approach effectively allows K-PEC investors to participate in the same deals as KKR's institutional limited partners. Because K-PEC is not registered under the 1940 Act, it faces no Section 17(d) co-investment restrictions or the need for 17D-1 exemptive relief that constrains affiliated transactions among registered funds.

The holding company structure introduces a governance dependency: if the management agreement with KKR is terminated, K-PEC must forfeit its controlling interest in joint ventures, which would likely require registration as an investment company. This creates a structural lock-in with the KKR platform that has no analog in the registered fund space.

H.3 Fee Structure

K-PEC's fee structure more closely resembles traditional private equity than the registered wrappers in the sample:

- **Management Fee:** 1.25% per annum of NAV for standard investor share classes (1.00% for certain classes during the initial 60-month offering period, rising to 1.25% thereafter). The management fee is subject to reduction by transaction and monitoring fees earned by KKR from portfolio companies.
- **Performance Participation Allocation:** 15.0% of total return attributable to investor shares, subject to a 5.0% annual hurdle rate, a high water mark, and 100% catch-up. This PE-style incentive compensation contrasts sharply with the registered wrappers in the sample, where SEC rules generally restrict performance fees on capital gains to funds limited to qualified purchasers.
- **Distribution and Servicing Fees:** Up to 0.85% of NAV per annum (0.60% distribution fee plus 0.25% servicing fee) for certain share classes, paid to KKR Capital Markets LLC.
- **Early Repurchase Fee:** 5.0% of NAV for shares repurchased within 24 months of issuance.

For the year ended December 31, 2024, the manager earned $27.3 million in gross management fees and a performance participation allocation of $52.9 million on a total asset base that deployed approximately $2.8 billion in portfolio company acquisitions during the year.

H.4 Liquidity Mechanisms

K-PEC provides liquidity through a quarterly share repurchase plan, limited to 5.0% of aggregate NAV per calendar quarter. If repurchase requests exceed the quarterly limit, shares are repurchased pro rata, and the board may conduct a tender offer for the excess at approximately a 10% discount to the most recent NAV. The fund does not expect to make regular distributions.

This liquidity structure resembles the tender offer funds in the sample—discretionary, quarterly, capped at 5% of NAV—but with two differences. First, the tender offer for excess shares at a 10% discount creates a penalty for liquidity demand that exceeds the quarterly budget, discouraging large-scale redemptions. Second, K-PEC is not bound by Rule 22e-4 liquidity requirements or the interval fund mandate to hold liquid assets covering 100% of the upcoming repurchase amount. Instead, the fund targets approximately 20% of assets in a liquidity portfolio (cash, Treasuries, investment-grade credit) and may borrow to fund repurchases.

During the year ended December 31, 2024, K-PEC redeemed only 85,900 shares, all from R-series classes, at an average price of approximately $27 per share. As of December 31, 2024, the company held $601.5 million in cash and cash equivalents.

H.5 Comparison with Registered Wrappers

Table A4 summarizes the structural differences between K-PEC and the registered interval and tender offer funds studied in this paper.

The K-PEC model illustrates a design frontier for retail private equity access. By operating outside the 1940 Act, K-PEC avoids the structural tensions at the center of this paper—the tradeoff between liquidity provision and illiquid investment, and between broad retail access and PE-style incentive alignment. The joint venture structure provides direct access to institutional-quality deal flow without the co-investment frictions that registered funds face. In exchange, investors accept less regulatory protection (no 1940 Act oversight or N-PORT transparency), restriction to accredited purchasers, and partnership tax complexity.

Whether this model delivers superior net-of-fee returns relative to the registered wrappers studied here—and whether it can scale to serve a broader investor base—remains an empirical question. K-PEC's short operating history (launched mid-2023) precludes performance comparison at this stage. The performance evidence in this paper, documenting the costs of the

Table A4: K-PEC vs. registered private-asset wrappers

Dimension	**Registered wrappers (this paper)**	**K-PEC**
Regulatory status	Registered under Investment Company Act of 1940; subject to SEC rules on liquidity, leverage, co-investment, and disclosure.	Excluded from "investment company" definition; reports under Exchange Act (10-K/10-Q).
Portfolio access	Must source deals independently or obtain 17D-1 exemptive relief for affiliated co-investment.	Forms joint ventures with KKR drawdown funds as co-general partner; no 17D-1 constraints.
Fee structure	Asset-based fees (1–2% of NAV); performance fees on capital gains restricted to qualified purchasers.	1.25% management fee plus 15% performance participation (5% hurdle, high water mark).
Investor eligibility	In principle open to retail; performance fees trigger qualified client limits.	Limited to accredited investors (Reg D) and non-U.S. persons (Reg S).
Liquidity	Interval: mandatory quarterly repurchase $\geq$5%. Tender offer: discretionary quarterly offers.	Discretionary quarterly repurchase capped at 5% of NAV; tender for excess at $\sim$10% discount.
Disclosure	Form N-PORT (quarterly security-level holdings); daily/weekly NAV.	Form 10-K/10-Q (quarterly financial statements); monthly NAV for transactions.
Tax treatment	RIC: Form 1099; must distribute $\geq$90% of net investment income.	Partnership: Schedule K-1; no distribution requirement.

registered fund model (cash drag, fee structures, selection frictions), provides a benchmark against which alternative structures like K-PEC can eventually be evaluated.

I Co-Investment Exemptive Relief: April 2025 Modernization

Section 5.4 describes how Section 17(d) of the Investment Company Act and Rule 17d-1 restrict co-investment between registered funds and their affiliates. For decades, the SEC addressed these restrictions through individualized exemptive orders with prescriptive conditions. In April 2025, the SEC issued a notice of intent to grant substantially revised co-investment relief, establishing a new template that applies to closed-end management investment companies and business development companies.[37]

The prior regime imposed several constraints on co-investment transactions. First, all participants in a co-investment had to invest on the same terms, at the same price, and in the same class of security. This prevented registered funds from participating in transactions where affiliates received warrants, equity co-investments alongside debt, or other structured arrangements common in private credit and PE deals. Second, a "propping up" prohibition prevented a registered fund from co-investing in any issuer where an affiliate already held a position, even if the fund held different or no securities in that issuer. Third, the fund's board of directors had to approve each individual co-investment transaction before execution, along with every follow-on investment and every disposition.

The April 2025 order relaxes each of these constraints. The same-terms requirement is eliminated, allowing registered funds to invest in different tranches or security classes within the same transaction as affiliates. The propping up prohibition is removed; a registered fund may now participate in transactions where affiliates hold existing positions, subject to independent board approval and specific findings regarding fairness. The per-transaction board approval requirement is replaced with a principles-based approach: advisers adopt co-investment allocation policies "reasonably designed to ensure fair and equitable" distribution of opportunities, and report to the board quarterly rather than seeking approval for each deal. The order also expands the categories of eligible affiliates to include adviser subsidiaries, sub-advised funds with unaffiliated primary advisers, and entities relying on any Section 3(c) exemption, including collective investment trusts offered through 401(k) plans.

The new relief applies to closed-end management investment companies, the category that includes both interval funds and tender offer funds in the sample. It does not extend to open-end mutual funds or exchange-traded funds. The Investment Company Institute has argued that this exclusion lacks a policy rationale and has petitioned the SEC to extend the

[37] Simpson Thacher provides a detailed summary at `https://www.stblaw.com/about-us/publications/view/2025/04/21/up-next-from-the-sec-increased-co-investment-flexibility`.

principles-based framework to open-end funds as well.

Since April 2025, over 170 applications have been filed under the new template. For the funds in the sample, the practical effect is to reduce the regulatory friction associated with co-investing alongside affiliated drawdown vehicles. The elimination of the propping up prohibition is particularly relevant: fund sponsors operating both registered and drawdown vehicles can now offer their retail funds access to follow-on rounds and add-on acquisitions that were previously off-limits. Whether this expanded access translates to different portfolio composition or improved selection outcomes is an empirical question that future research, with post-2025 holdings data, can address.

J IRR and DPI Can Diverge at Intermediate Horizons

Section 5.4 documents that funds held by retail vehicles have statistically indistinguishable IRRs from same-vintage peers but significantly higher distributions to paid-in capital (DPI) at years 3–5. A natural concern is whether this pattern is internally consistent: if a fund distributes more cash at intermediate horizons, should it not also exhibit a higher IRR? This appendix shows that the answer is no, and that the pattern arises from a basic property of the IRR calculation.

Setup. Consider two funds, each receiving \$100 of paid-in capital at time zero and operating over a five-year horizon.

- **Growth fund.** No interim distributions. At year 5, the fund distributes \$180. Cash flows: $\{-100, 0, 0, 0, 0, 180\}$.
- **Yield fund.** Distributes \$15 per year for five years, plus a terminal payment calibrated so that the Yield fund's IRR exactly equals the Growth fund's IRR. The terminal payment solves $\sum_{t=1}^{5} 15/(1+r)^t + X/(1+r)^5 = 100$, where r is the Growth fund's IRR.

Results. Table A5 reports the outcomes. Both funds deliver a 12.5% annual IRR, but their DPI paths and terminal multiples differ. At year 3, the Yield fund has returned 45 cents per dollar of paid-in capital; the Growth fund has returned nothing. At year 5, total value reverses: the Growth fund's TVPI is 1.80× versus 1.59× for the Yield fund.

Table A5: Two funds with identical IRRs but different DPI paths

	Growth Fund	Yield Fund
Annual IRR	12.5%	12.5%
DPI at Year 1	0.00×	0.15×
DPI at Year 3	0.00×	0.45×
DPI at Year 5	1.80×	0.75×
TVPI (lifetime)	1.80×	1.59×

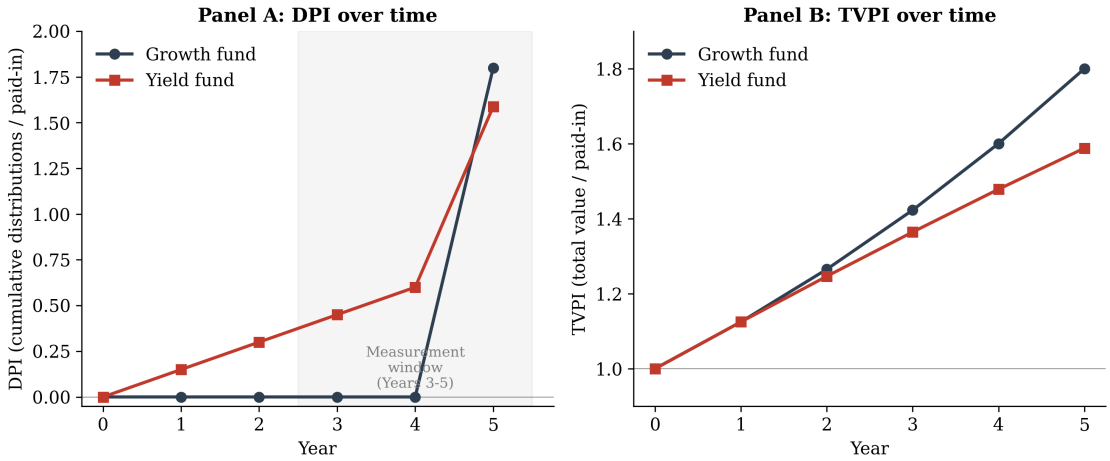
This table reports outcomes for two stylized funds with identical annual IRRs of 12.5%. The Growth fund makes no interim distributions and returns \$180 at year 5. The Yield fund distributes \$15 per year and a terminal payment of \$83.96 at year 5, calibrated to match the Growth fund's IRR. DPI is cumulative distributions divided by paid-in capital. TVPI is total value (cumulative distributions plus residual NAV) divided by paid-in capital.

Figure A6 illustrates these dynamics. Panel A plots DPI over time: the Yield fund accumulates distributions steadily while the Growth fund remains at zero through year 4.

In the measurement window relevant to Table 9 (years 3–5, shaded), the DPI gap is large. Panel B plots TVPI: both funds accumulate value on similar trajectories, but the Growth fund ends higher because retained capital compounds inside the fund.

Figure A6: IRR and DPI can diverge: two funds with identical IRRs

This figure plots DPI (Panel A) and TVPI (Panel B) for two stylized funds with identical annual IRRs of 12.5%. The Growth fund makes no interim distributions and returns $180 at year 5. The Yield fund distributes $15 per year and a calibrated terminal payment at year 5. The shaded region in Panel A marks the measurement window (years 3–5) used in Table 9. Despite identical IRRs, DPI paths diverge because the Yield fund returns cash earlier, while the Growth fund retains and compounds capital, producing a higher TVPI.



Both funds: IRR = 12.5%

Mechanism. IRR is a discount rate, not a level. It equates the present value of inflows to the initial outflow. Distributions received earlier carry less discounting and therefore "cost" less in present-value terms. However, each dollar distributed early is a dollar removed from the fund's compounding base. The $15 annual distribution from the Yield fund, if left invested at the fund's 12.5% IRR, would grow to a combined $21 more by year 5. This forgone compounding accounts for virtually the entire TVPI gap between the two funds (0.21×, or $21 on a $100 base). The Yield fund creates less total value but achieves the same rate of return because cash arrives sooner.

Economic interpretation. The stylized example maps onto several real strategies, and the empirical pattern in Table 9 helps narrow the set. Because the regressions include vintage-year-by-category fixed effects, the higher DPI of retail-held funds is not driven by strategy

tilts (e.g., choosing credit over equity). The difference emerges *within* private equity in a given vintage year and *within* infrastructure in a given vintage year. This points to within-category selection on cash-flow timing rather than across-category selection on asset class.

Several channels can produce this pattern. First, retail vehicles may acquire secondary positions in funds that are already past the deployment phase and have begun distributing. A secondaries position enters partway through the J-curve, so distributions begin immediately even though the underlying fund pursues the same strategy as a primary commitment of the same vintage. Second, within a strategy and vintage, funds differ in hold periods. Some buyout funds pursue operational turnarounds with two- to three-year exits; others hold platform companies for five or more years while executing add-on acquisitions. Both are buyout, same vintage, but the shorter-hold fund distributes earlier. Third, dividend recapitalizations allow a fund to return capital to LPs by levering up a portfolio company, generating distributions without exiting the investment. Funds that use recaps more aggressively will show higher intermediate DPI at similar IRRs, because the early cash return offsets the reduced equity cushion in terminal value. Fourth, for fund-of-funds structures that characterize most tender offer vehicles in the sample (Section 5.3), the allocator can select across managers within a strategy based on expected distribution pace, favoring GPs with track records of faster realization.

The common thread is that none of these channels require the retail vehicle to hold worse funds. The selection is on the timing of cash conversion, not on the quality of underlying investments. For a vehicle facing quarterly repurchase obligations, this is a rational portfolio construction response: predictable distributions reduce the need to sell illiquid positions or draw on credit facilities to meet redemptions.

Implications for the selection results. The pattern in Table 9 is consistent with retail vehicles selecting funds that distribute on predictable schedules rather than funds that maximize terminal multiples. At intermediate measurement horizons, before most funds have fully exited, this timing difference produces large DPI gaps with negligible IRR differences. Two caveats apply. First, equal IRR with higher interim DPI implies lower TVPI. Whether this tradeoff is costly to investors depends on their reinvestment opportunities: if distributed cash can be redeployed at comparable returns, the investor is no worse off; if not, the lower TVPI represents a real cost (the standard reinvestment-rate critique of IRR; see Phalippou and Gottschalg, 2009; Kaplan and Schoar, 2005). Second, when IRR is measured at intermediate

horizons using residual NAV as a terminal cash flow, differences in appraisal frequency or marking conventions across fund types can compress measured IRR gaps even when underlying economics differ.

K Performance Gap Decomposition

The retail performance gap is defined as $\mathbb{E}[r_t^R - r_t^D]$. Applying the retail returns decomposition in Section 4.2 Equation 5 and letting $\bar{r}_t^D = r_t^D - r_t^f$ denote excess drawdown returns, we have:

$$\begin{aligned}
\mathbb{E}[r_t^R - r_t^D] &= \mathbb{E}\left[(r_t^R - r_t^f) - (r_t^D - r_t^f)\right] \\
&= \mathbb{E}\left[\left((1-w^c)\left(\hat{\alpha} + \hat{\beta}_1\left(R_t^{Mkt} - r_t^f\right) + \hat{\beta}_2\left(R_t^D - f^D - r_t^f\right) + \hat{\varepsilon}_t\right) + w^c\left(r_t^c - r_t^f\right) - f^R\right) - (r_t^D - r_t^f)\right] \\
&= \mathbb{E}\left[\left((1-w^c)\left(\hat{\alpha} + \hat{\beta}_1\left(R_t^{Mkt} - r_t^f\right) + \hat{\beta}_2\left(R_t^D - f^D - r_t^f\right) + \hat{\varepsilon}_t\right) + w^c\left(r_t^c - r_t^f\right) - f^R\right) - \bar{r}_t^D\right] \\
&= \mathbb{E}\left[(1-w^c)\left(\hat{\alpha} + \hat{\beta}_1\left(R_t^{Mkt} - r_t^f\right) + \hat{\beta}_2\left(R_t^D - f^D - r_t^f\right) + \hat{\varepsilon}_t - \bar{r}_t^D\right) + w^c\left(r_t^c - r_t^f - \bar{r}_t^D\right)\right] - f^R \\
&= \mathbb{E}\left[W(1-w^c)\left(a_0(\hat{\alpha} + \hat{\varepsilon}_t) + a_1\left(R_t^{Mkt} - r_t^f\right) + a_2\left(R_t^D - f^D - r_t^f\right) - W^{-1}\bar{r}_t^D\right) + w^c\left(r_t^c - r_t^f - \bar{r}_t^D\right)\right] - f^R,
\end{aligned}$$

where

$$W = 1 + \hat{\beta}_1 + \hat{\beta}_2; \quad a_0 = \frac{1}{W}; \quad a_1 = \frac{\hat{\beta}_1}{W}; \quad a_2 = \frac{\hat{\beta}_2}{W};$$

Then:

$$\begin{aligned}
\mathbb{E}[r_t^R - r_t^D] = {} & (1-w^c)W \times \mathbb{E}\left[a_0\left(\hat{\alpha} + \hat{\varepsilon}_t - W^{-1}\bar{r}_t^D\right)\right] + && \text{(Gross retail premium)} \\
& (1-w^c)W \times \mathbb{E}\left[a_1\left(R_t^{Mkt} - r_t^f - W^{-1}\bar{r}_t^D\right)\right] + && \text{(Public markets)} \\
& (1-w^c)W \times \mathbb{E}\left[a_2\left(\bar{r}_t^D - W^{-1}\bar{r}_t^D\right)\right] + && \text{(Illiquid, drawdown)} \\
& w^c \times \mathbb{E}\left[\left(r_t^c - r_t^f - \bar{r}_t^D\right)\right] - && \text{(Cash)} \\
& f^R && \text{(Retail fees)}
\end{aligned}$$