

Corporate Credit Risk Aggregation

This study aggregates corporate credit metrics. It spans investment grade, high yield and private loans. We observe returns and borrower attributes across these distinct markets, noting persistent measurement differences between public pricing and private valuations. The data does not isolate specific causes of rate sensitivity.

SUBJECT

U.S. corporate credit

EVIDENCE

Returns and borrower metrics

DOCUMENT TYPE

Private research

Investment grade and high yield return covariance

A hypothetical 50:50 monthly rebalanced portfolio shows a 2.7% relative annual volatility reduction against the weighted average component volatility.^{[01] [02]} The sample includes 35 matched returns from Nov 2023 to Sep 2026.^{[01] [02]}

Relative volatility reduction

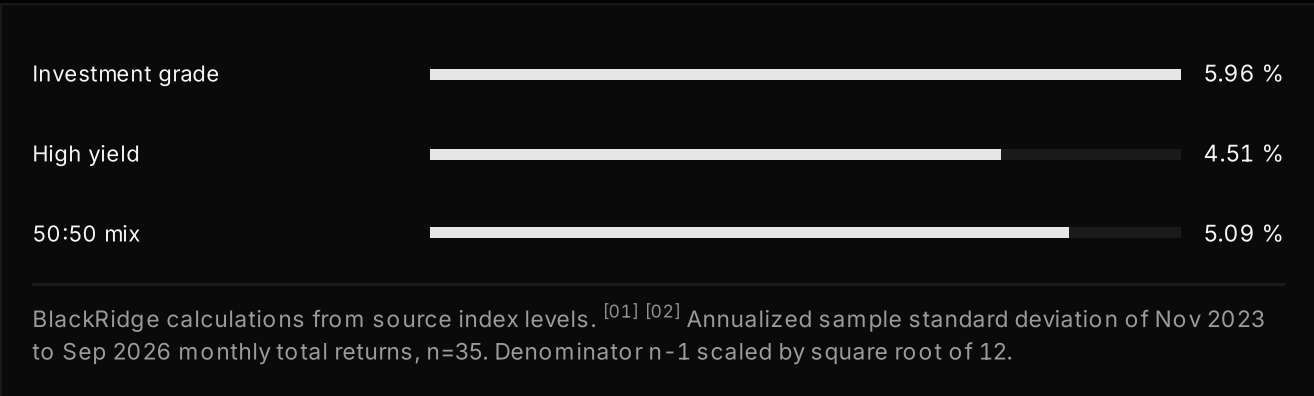
2.7%

Difference versus a counterfactual +1 correlation benchmark with identical weights and component volatilities, not an alternative invested portfolio or weighted variance.

Return correlation

0.89

Pearson coefficient across matched monthly observations. A Jan to Dec 2025 subwindow measures 0.47 across 12 months.^{[01] [02]}



Asset allocation

Observation

Investment grade annual volatility reached 5.96%.^[01] High yield registered lower.^[02] Its risk measured 4.51%.^[02] A theoretical equally weighted monthly rebalanced portfolio generated 5.09% realized standard deviation.^{[01] [02]}

Practical Meaning

Risk persists. Total portfolio volatility stays above the high yield baseline only within this observed window.^{[01] [02]} This measured relationship provides no future guarantees.

Inference

The standalone weighted average equals 5.23%.^[01] Realized mix volatility falls 2.73% below this theoretical mark.^{[01] [02]} Returns correlate at 0.89.^[01] The volatility ratio follows the covariance formula.^[02] It provides no independent evidence of economic causes or default diversification.

Limitation

Our hypothetical equal-weight monthly mix does not model trading costs.^{[01] [02]} Scaling omits serial autocovariance adjustment.^{[01] [02]} We perform no duration normalization or fixed-issuer basket comparisons.^{[01] [02]} Rebalancing represents a model rule without demonstrated causal effects versus buy-and-hold investing.^{[01] [02]} Actual default correlation and tail dependence remain unestimated.^{[01] [02]}

IG and HY spread changes show positive correlation

Monthly option-adjusted spread first differences correlate at 0.81^{[03] [04]}. Daily available changes yield a 0.74 correlation across a larger sample^{[03] [04]}. Charted levels offer context.

Monthly OAS change correlation

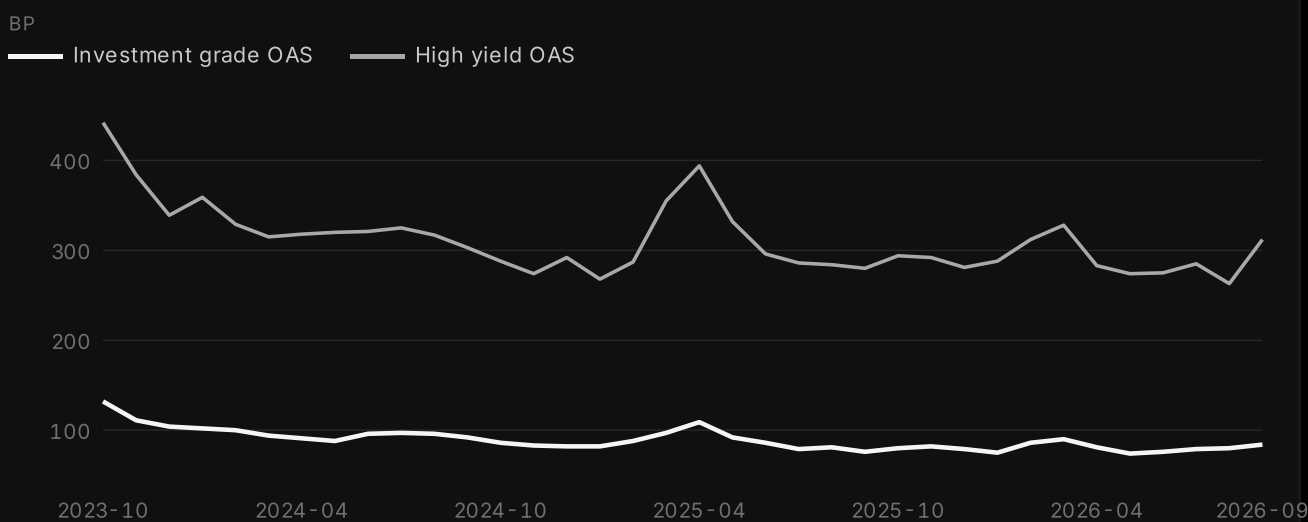
0.81

First differences, n=35 Nov 2023-Sep 2026

Daily OAS change correlation

0.74

Available changes, n=784 Oct 4 2023-Oct 1 2026



Lines show 36 month-end spread levels from October 2023 to September 2026^{[03] [04]}. Correlation derives from successive differences. Missing values receive no zero imputation.

Month

Observation

Monthly spread differences produce a 0.81 correlation over 35 periods^{[03] [04]}. Daily aligned changes measure 0.74 across 784 observations from October 4, 2023 to October 1, 2026^{[03] [04]}. Both metrics capture shared movement.

Practical Meaning

We measure aggregate repricing alignment using available paired observations. No regression controls apply. This metric tracks a spread component separate from effective yield.

Inference

These figures quantify shared repricing behavior. Daily gaps can span dates. Missing values remain empty. Charted levels show distinct magnitudes, demonstrating that different spreads do not mean independent changes.

Limitation

Option-adjusted spread differs from total return and default frequency. Covariance establishes no structural cause. We document an observed sample relationship lacking isolated risk factors and offering no guarantee of future hedging performance.

IG and HY Drawdowns, Oct 2023–Sep 2026

Between October 2023 and September 2026, investment-grade corporate bonds recorded a maximum month-end drawdown of -4.34% ^[01]. High-yield corporate bonds reached a -2.49% maximum drawdown over the same period^[02]. Both segments experienced overlapping declines ending in September 2026.

IG Maximum Drawdown

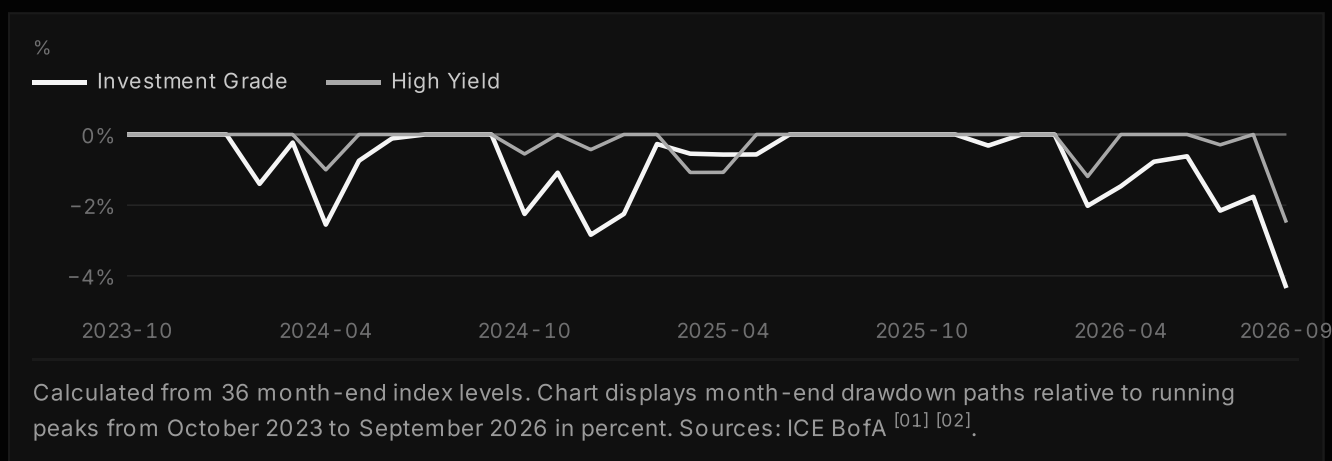
-4.34%

Month-end peak Feb 2026 to Sep 2026 trough

HY Maximum Drawdown

-2.49%

Month-end peak Aug 2026 to Sep 2026 trough



Date

Observation

In September 2026, investment-grade returns were -2.63% ^[01]. High-yield returns were -2.49% ^[02]. IG experienced a -4.34% drawdown from its February 28, 2026 peak to its September 30, 2026 trough^[01]. HY experienced a -2.49% drawdown from its August 31, 2026 peak to its September 30, 2026 trough^[02].

Practical Meaning

Ratings alone cannot rule out an observed shared negative month. Separate asset categories can experience concurrent negative monthly performance.

Inference

Distinct rating categories posted simultaneous negative returns in September 2026. Overlapping monthly declines occur across different credit tiers. This shared negative month provides a bounded example of concurrent historical losses.

Limitation

Observed co-losses do not estimate future tail dependence or default correlation^[01] ^[02]. Monthly data frequency does not resolve within-month drawdowns. This recent 36-month window does not represent a full credit cycle.

Private credit and high yield annual returns

The published annual panel for 2005–2022 includes pre-launch observations; its 18 annual points show a 0.68 correlation^[07]. Across the seven full post-launch calendar years, 2016–2022, the correlation is 0.48^[07].

Correlation 2005–2022

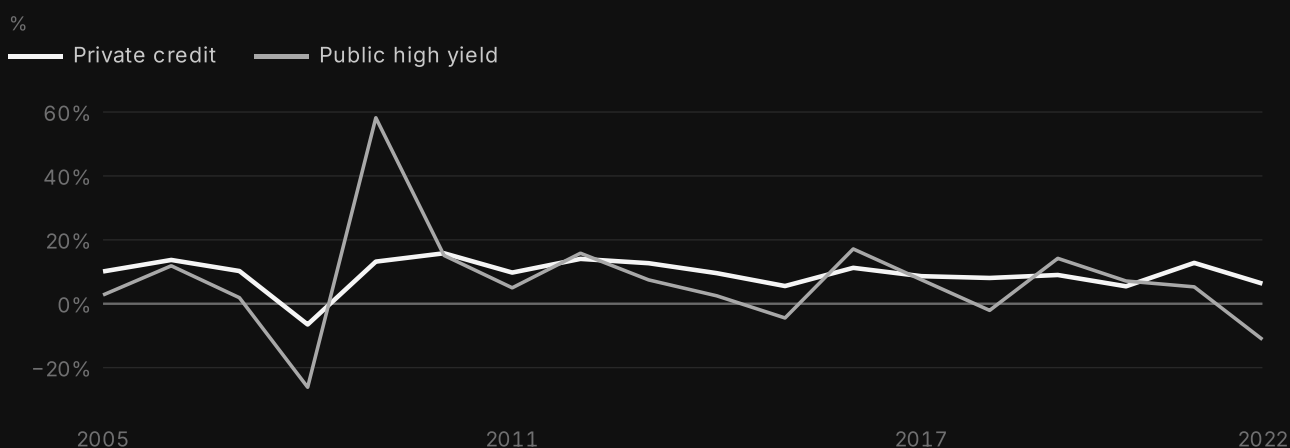
0.68

Published panel, including pre-launch observations

Correlation 2016–2022

0.48

Post-launch full calendar years



Calendar year

Observation

The Cliffwater and Bloomberg indices shared a 0.68 annual return correlation from 2005 through 2022^[07]. The post-launch period differs. Seven full calendar years from 2016 through 2022 yield a 0.48 correlation^[07].

Practical Meaning

The data tracks gross unlevered eligible underlying loan returns. Structures differ. This index profile diverges from net leveraged private fund shares. Annual frequency does not reveal within-year paths.

Inference

No cause of the observed correlations is identified. Variables shift. Different dates and macroeconomic regimes change alongside pre-launch coverage differences. These combined effects cannot be isolated.

Limitation

The index aggregates gross unlevered loans from listed and unlisted lenders^[07]. It excludes fund leverage. Annual observation masks intra-year paths. Pre-launch history is backtested; 2015 partly so (CDLI launched 2015-09-30), and 2016 was the first full post-launch year^[07].

Asset class performance in stress periods

The direct lending index returned 6.29% in 2022 ^[07]. Returns exceeded high yield by 17.48 percentage points during that year ^[07]. This performance diverged from broad public fixed income.

Return gap (pp)

17.48

Index outperformance over high yield in 2022

Direct lending return (%)

6.29%

Calendar year 2022 index performance

%	CDLI	Bloomberg HY	Bloomberg Aggregate
2008	-6.50%	-26.15%	5.24%
2022	6.29%	-11.19%	-13.01%

Annual returns for 2008 and 2022. The 2008 direct lending return is a retrospective pre-launch calculation. The 2022 figure represents live index data. Source: Cliffwater ^[07].

Asset class

Observation

In 2022, direct lending returned 6.29% ^[07]. High yield declined 11.19% ^[07]. The Aggregate index fell 13.01% ^[07]. During 2008, direct lending fell 6.50% and high yield dropped 26.15% ^[07]. The Aggregate index gained 5.24% ^[07].

Practical Meaning

The 2022 data provides a clear counterexample to identical return exposure. Direct lending remained positive. Public fixed income declined. Different asset classes demonstrate distinct observed annual returns.

Inference

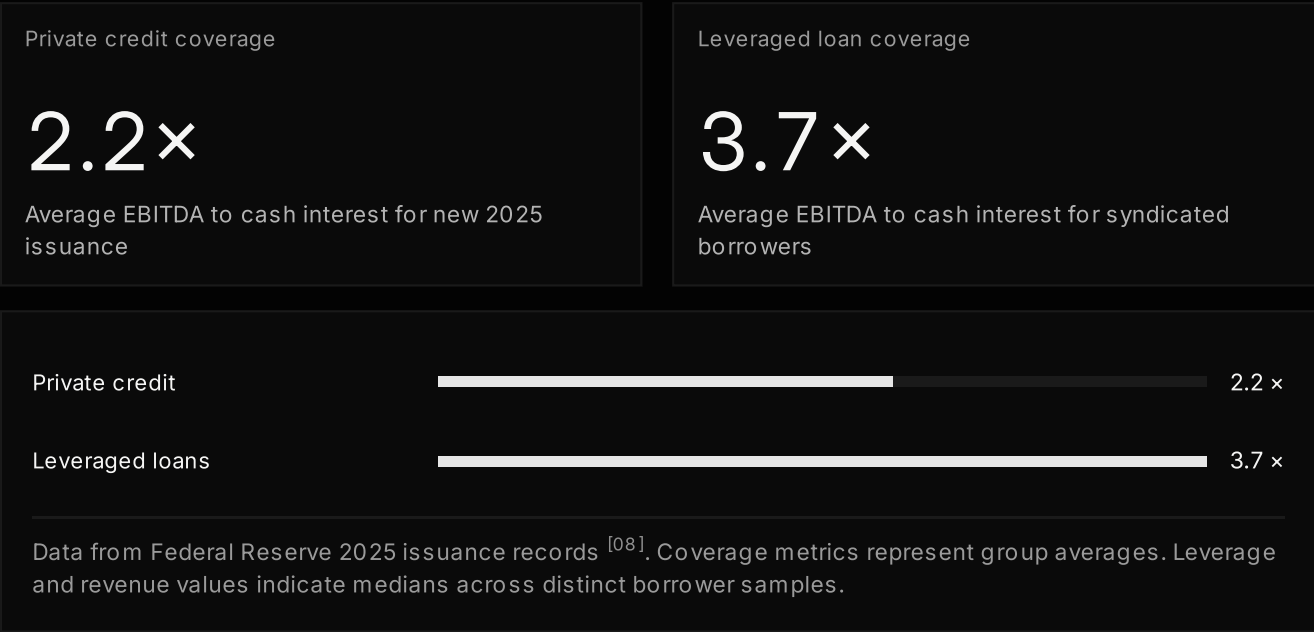
Private loans predominantly feature floating interest rates ^[10]. Rate mechanics offer a plausible explanation for the 2022 gap. We did not control duration. We lack causal regressions.

Limitation

Positive annual returns cannot exclude intra-year defaults. Outcomes vary. One calendar outcome does not guarantee a hedge against credit losses. We lack causal measurements. The 2008 direct lending figure is a retrospective pre-launch calculation ^[07].

Private credit and syndicated loan 2025 borrower metrics

The 2025 cross-section captures specific group averages ^[08]. Private credit issuance records 2.2x average EBITDA to cash interest coverage ^[08]. Syndicated leveraged loans average 3.7x ^[08].



Average EBITDA to cash interest

Observation

Borrower groups remain separate. Private credit cohorts carry 5.0x median leverage alongside \$223 million median revenue ^[08]. Syndicated leveraged loans report 3.2x median leverage and \$902 million median revenue ^[08].

Practical Meaning

Valuations track different variables. Cash interest metrics define present operational constraints separate from secondary market price returns. Valid cross-asset comparisons require precise alignment of metric definitions and distinct borrower populations.

Inference

The EBITDA numerator measures operating earnings rather than free cash flow. The observed 2025 issuance cohort records lower average EBITDA per unit of cash interest at 2.2x versus 3.7x ^[08]. This metric identifies no default threshold or forecast ^[08].

Limitation

The study covers private-credit and leveraged-loan borrowers; its metrics must not be extrapolated to bonds ^[08]. Coverage is an average, while leverage and revenue are medians ^[08]. These figures are not an individual default forecast ^[08].

PIK loan prevalence increases among BDCs

The share of BDC loans featuring payment-in-kind terms rose by approximately four percentage points between early 2022 and early 2026^[09]. This metric tracks loan counts. PIK provisions capitalize interest into the principal balance instead of requiring cash payments.

Count share shift

≈4

Percentage point increase in PIK loan-count share between measured endpoints

Sample base

168

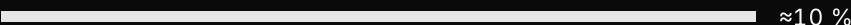
Business development companies analyzed within the underlying Boston Fed dataset

Early 2022



≈6 %

Early 2026



≈10 %

August 2026 Boston Fed study of 168 BDCs spanning nearly 890,000 loan-company-quarter observations^[09]. Chart displays two endpoint estimates of PIK count share.

Measurement endpoint

Observation

The observed frequency of PIK loans increased from approximately 6 percent in early 2022 to approximately 10 percent in early 2026^[09]. This tracks loan counts.

Practical Meaning

Investors distinguish accrued interest claims from actual cash receipts. Capitalizing interest defers specific current cash interest payments by adding them to the principal balance, altering the near-term cash profile.

Inference

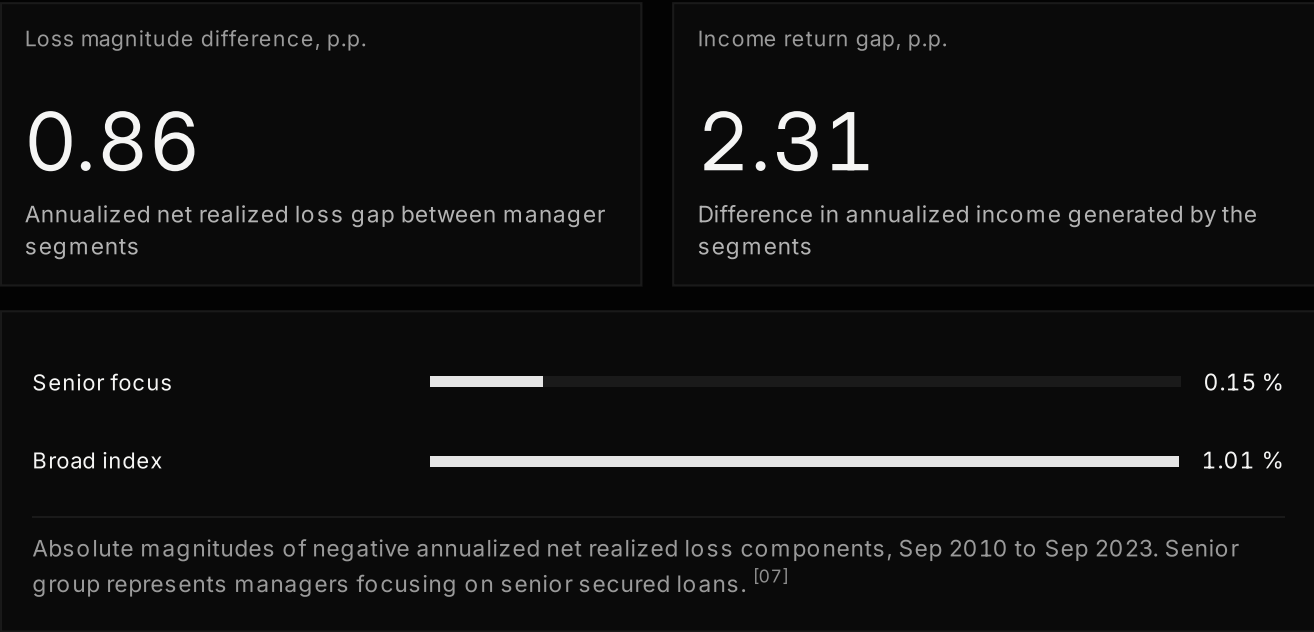
PIK can let growth companies reinvest cash instead of servicing debt with cash. Across a lender's portfolio, rising use often signals pressure on borrowers' cash flows^[09].

Limitation

Our two-endpoint comparison of BDC loans cannot distinguish changes in borrower composition^[09]. The full Boston Fed paper finds that PIK growth occurs across nearly every industry and is not largely explained by the addition of companies in growth industries^[09].

Manager focus and realized loss magnitude

Losses differ by strategy. The senior segment recorded a 0.15% annualized loss magnitude ^[07]. The broad index realized a 1.01% loss magnitude ^[07].



Manager orientation

Observation

Income differences emerged. The senior group generated an 8.39% annualized income return, trailing the 10.70% income return observed in the broad index ^[07]. Total gross return reached 8.15% against 9.71% broadly ^[07].

Practical Meaning

Selected populations alter outcomes. The aggregate performance data illustrates a historical tradeoff between realized loss magnitude and income return across distinct manager orientations. Investors must evaluate actual underwriting practices.

Inference

Loss metrics incorporate recoveries. They do not specify default frequencies. The index design tracks broad manager focus. It lacks a controlled sample of identical borrowers to isolate causal debt priority effects.

Limitation

Early years use reconstructed history. The 87% senior -asset share describes flagship CDLI at the December 31, 2025 snapshot, not CDLI-S ^[11]. Measurement windows differ.

Corporate Yield and Premium Rankings

As of October 1 2026, the weak 96.0% investment grade yield rank ^[05] diverges from the 53.1% option-adjusted spread rank ^[03]. This covers the available October 3 2023 to October 1 2026 weekday window.



Metric

Observation

The investment grade effective yield is 5.99% ^[05]. High yield is 8.22% ^[06]. These sit 45 and 123 basis points below recent maximums of 6.44% ^[05] and 9.45% ^[06]. Against weekday observations since October 2023, the investment grade yield ranks at 96.0% ^[05]. High yield ranks at 93.9% ^[06]. Option-adjusted spreads rank lower. The 86-basis-point investment grade spread ranks at 53.1% ^[03]. The 324-basis-point high yield spread ranks at 75.1% ^[04].

Practical Meaning

Analysts reviewing fresh 2026 data must separate yield from credit premium. The quantitative adequacy of the pure spread component is not calculated.

Inference

Yield ranks diverge from spread ranks. Elevated yield percentiles do not mean the credit premium prices default risk richer. Yield involves components beyond the pure option-adjusted spread.

Limitation

Ranks show the share of valid weekday observations at or below current levels. The window covers three years, not full history since 1997. Differences between yield and spread ranks do not measure rate causality. This data does not determine fair value or adequate default pay.

Private credit signs diverge during high yield negative years

The CDLI posted a negative return in one of four Bloomberg High Yield negative calendar years between 2005 and 2022 ^[07]. Private credit supply did not dry up during March 2020 while high yield and leveraged loan issuance contracted ^[10]. These distinct metrics demonstrate divergent behaviors.

Joint negative frequency

1/4

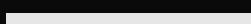
High yield down years with negative CDLI returns

Observation window

18

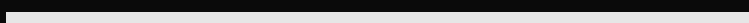
Total annual periods evaluated

Both negative



1 years

Private positive



3 years

Count of years by annual sign, showing four high yield negative years within an 18 -year period ^[07].

CDLI performance during high yield negative years

Observation

Bloomberg High Yield recorded four negative returns between 2005 and 2022 ^[07]. The CDLI fell once ^[07]. It posted positive returns three times during those high yield negative years ^[07]. Private credit supply stayed active during March 2020 while high yield and leveraged loan issuance contracted ^[10].

Practical Meaning

Public return correlation remains positive ^[01] ^[02], while historical private annual signs deviate ^[07]. Joint annual signs cannot identify within-year stress. Fully aligned three-sleeve covariance and matched borrower default data remain absent from our retained files.

Inference

Annual sign divergence does not measure default correlation, tail dependence or intrayear maximum drawdown protection. Four limited observations cannot establish structural behavior. Asset category count alone does not establish portfolio diversification.

Limitation

The sample captures seven full post-launch calendar years between 2016 and 2022, alongside retrospective calculations prior to September 2015 ^[07]. Annual frequencies cannot resolve within-year return paths. This pre-launch historical data does not reflect real fund execution.

Primary data

We processed a snapshot downloaded October 5, 2026. Public FRED ICE historical access has been limited to three years since April 2026 ^[01] ^[02]. This represents a data restriction, not index inception in 2023.

[01] ICE BofA US Corporate Index Total Return Index Value

The observed series spans October 3, 2023 to October 1, 2026. Monthly returns use the last common valid published date each month. We retained published weekend month-end values including provider accrued interest without rolling back to weekdays. No additional manual interest adjustment occurs. Returns equal level ratios minus one. Hypothetical mix calculations exclude trading costs.

<https://fred.stlouisfed.org/series/BAMLCC0A0CMTRIV>

[02] ICE BofA US High Yield Index Total Return Index Value

The observed series covers October 3, 2023 to October 1, 2026. Monthly returns use the last common valid published date each month. We retained published weekend month-end values including provider accrued interest without rolling back to weekdays. No additional manual interest adjustment occurs. Returns equal level ratios minus one. Hypothetical mix calculations exclude trading costs.

<https://fred.stlouisfed.org/series/BAMLHYH0A0HYM2TRIV>

[03] ICE BofA US Corporate Index Option - Adjusted Spread

The data publishes option-adjusted corporate spread as a percentage. Original values convert at 100 basis points per one percent. We computed paired daily change correlations rather than extracting a published statistic. Valid daily observations span October 2023 to October 2026.

<https://fred.stlouisfed.org/series/BAMLC0A0CM>

[04] ICE BofA US High Yield Index Option - Adjusted Spread

This metric reports high yield option-adjusted spread as a percentage. Values convert to basis points at 100 units per one percent. We calculated our own paired daily change correlations. Valid daily observations cover October 2023 to October 2026.

<https://fred.stlouisfed.org/series/BAMLH0A0HYM2>

[05] ICE BofA US Corporate Index Effective Yield

The series captures effective yield as an annualized percentage. It includes credit components but differs from realized cash income and total return. We calculated weak ranks using valid weekday at-or-below observations. The available October 2023 to October 2026 window lacks a full five-year history.

<https://fred.stlouisfed.org/series/BAMLC0A0CMEY>

[06] ICE BofA US High Yield Index Effective Yield

This variable measures high yield effective yield as an annualized percentage. It incorporates credit components, differing from realized cash income and total return. We generated weak ranks from valid weekday at-or-below observations within the available October 2023 to October 2026 window, lacking a full five-year history.

<https://fred.stlouisfed.org/series/BAMLH0A0HYM2EY>

Private Credit Research Literature and Metric Definitions

This catalog documents the selected source literature. Each entry details the published scope, dates, and exact variable definitions. We extract concrete metrics. These referenced studies provide the historical index returns and structural borrower statistics used to baseline the analysis.

[07] **Cliffwater 2023 Q3 Report on U.S. Direct Lending**

This document details historical returns. It provides 2005 to 2022 annual data across CDLI, Bloomberg High Yield, and the Bloomberg Aggregate, while Exhibit 19 isolates income and realized loss from September 2010 to September 2023. The gross unlevered framework targets CDLI underlying assets exclusively. Pre-2015 index records remain retrospective.

<https://www.bdcsl.com/docs/Cliffwater2023Q3ReportonUSDirectLending.pdf>

[08] **Federal Reserve Note: Private Credit and Leveraged Loan Markets**

This August 2026 note evaluates issuance. Table 1 contrasts the 2025 average EBITDA-to-cash interest coverage against median leverage and revenue. These statistics characterize distinct borrower groups. They measure separate private credit and syndicated leveraged loan populations. They do not track identical matched companies.

<https://www.federalreserve.gov/econres/notes/feds-notes/private-credit-and-leveraged-loan-markets-similarities-differences-and-substitution-20260811.html>

[09] **Early Warning Signals in Private Credit? What BDC Portfolios Reveal about Emerging Risks (Current Policy Perspectives 26-6)**

This August 2026 paper examines BDC loan characteristics. The sample includes 168 lenders across nearly 890,000 quarterly observations. We extract the PIK count share growth from roughly 6% in early 2022 to approximately 10% by early 2026. This metric identifies interest capitalization, distinguishing it from current cash receipt.

<https://www.bostonfed.org/-/media/Documents/Workingpapers/PDF/2026/CP2606.pdf>

[10] **IMF Global Financial Stability Report, April 2024, Chapter 2**

This IMF report examines early pandemic lending. Private credit funding supply persisted through March 2020, even as high-yield bond and syndicated leveraged loan issuance contracted sharply. We record this divergence. The document also evaluates predominantly floating-rate loans.

<https://www.imf.org/-/media/files/publications/gfsr/2024/april/english/ch2.pdf>

[11] **CDLI Fact Page**

This December 2025 snapshot defines the index methodology. Senior assets constituted 87% of CDLI assets as of December 31, 2025. Eligibility rules govern the underlying loans. The index solely measures gross unlevered asset performance, making no assertions about absolute borrower resilience.

https://www.cliffwaterdirectlendingindex.com/files/cdli/docs/CDLI_Fact_Page.pdf

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