Invesco

White Paper | Invesco Private Credit

The Case for AAA-rated CLO notes

With the global CLO market having grown to over $1.3 trillion, AAA CLO debt can be an attractive option to complement a traditional fixed income portfolio.

Summary:

The case for AAA-rated CLO notes

Structured product backed by a pool of actively managed, broadly syndicated loans, and divided into different risk tranches

Key features:

- **High income with high quality:** offering one of the highest yields among investment grade credit
- **Floating rate feature:** could help reduce volatility during times of interest rate uncertainty
- **Structual advantages:** focus on the most senior AAA-rated tranche, which has historically never experienced a default
- **Diversification:** low correlation to other asset classes could help improve risk-adjusted returns

Increasing liquidity

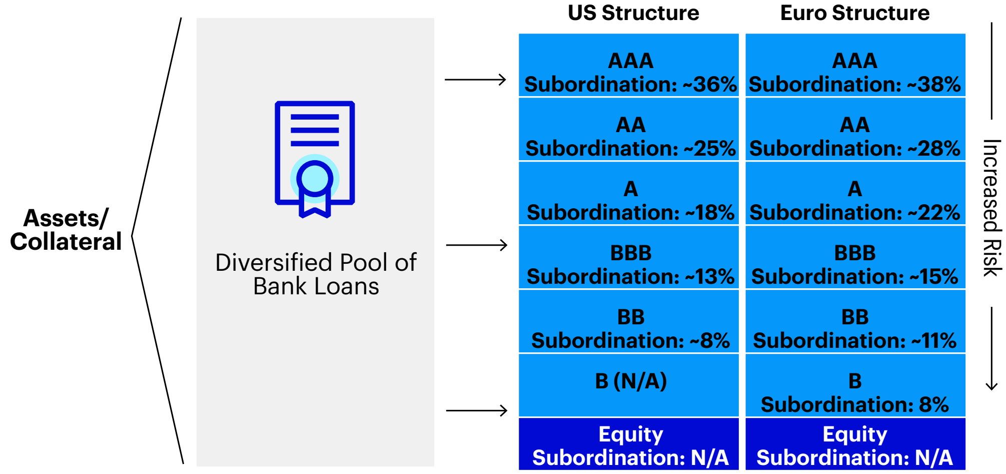
Growing secondary markets, active to provide liquidity during both stable and distressed market enviroments

The case for AAA-rated CLO notes

Collateralized Loan Obligations Notes (CLO Notes) are debt securities backed by an actively-managed portfolio of broadly syndicated bank loans primarily issued by BB and single-B rated borrowers (the CLO vehicle). The portfolio typically consists of 150-350 different issuers and loans (varies on region), with many diversification requirements in place to ensure the portfolio manager adheres to strict quality standards and investment guidelines. CLO notes are typically floating-rate and issued to take advantage of the difference between the spread earned on assets (i.e. loan spreads to Secured Overnight Financing Rate/Euribor) and the coupon paid on liabilities (i.e. CLO Note interest payments over SOFR/Euribor).

CLO Notes are offered in various tranches, each with its own rating depending on its priority in payment and claim on the portfolio. The senior-most tranches typically receive ratings of AAA then AA, while the junior tranches receive A, BBB, and BB, (potentially B) and finally the most subordinated tranche, the equity, is unrated but receives all excess interest and principal proceeds once the rated tranches have been paid. While very similar to the US structure, European CLOs follow a slightly different waterfall/subordination scheme and thus different spread levels.

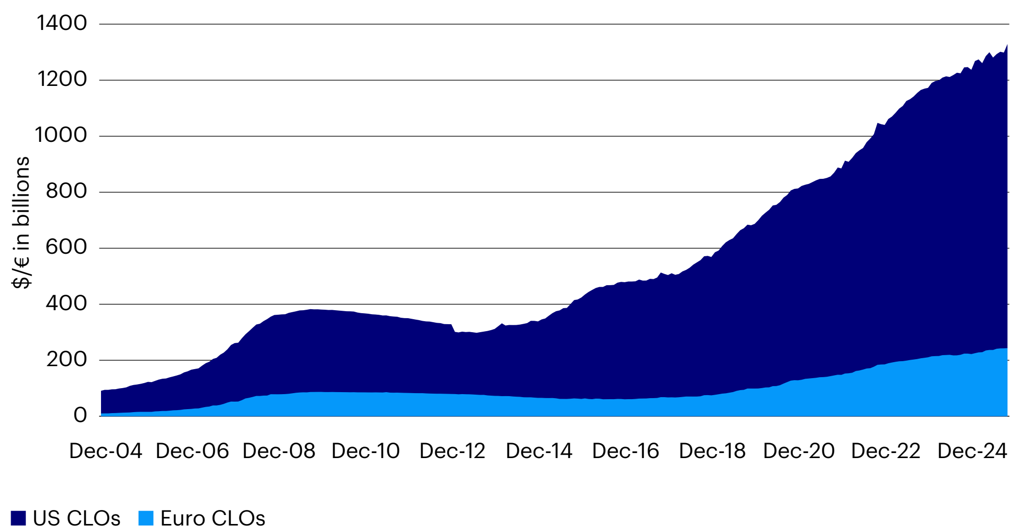
Illustrative CLO waterfall structure



Source: Invesco December 2024. For illustrative purposes only.

Although smaller than other debt or securitized markets, the global CLO market has grown as global demand has increased, almost tripling in size over the last 10 years.

Estimated CLOs outstanding



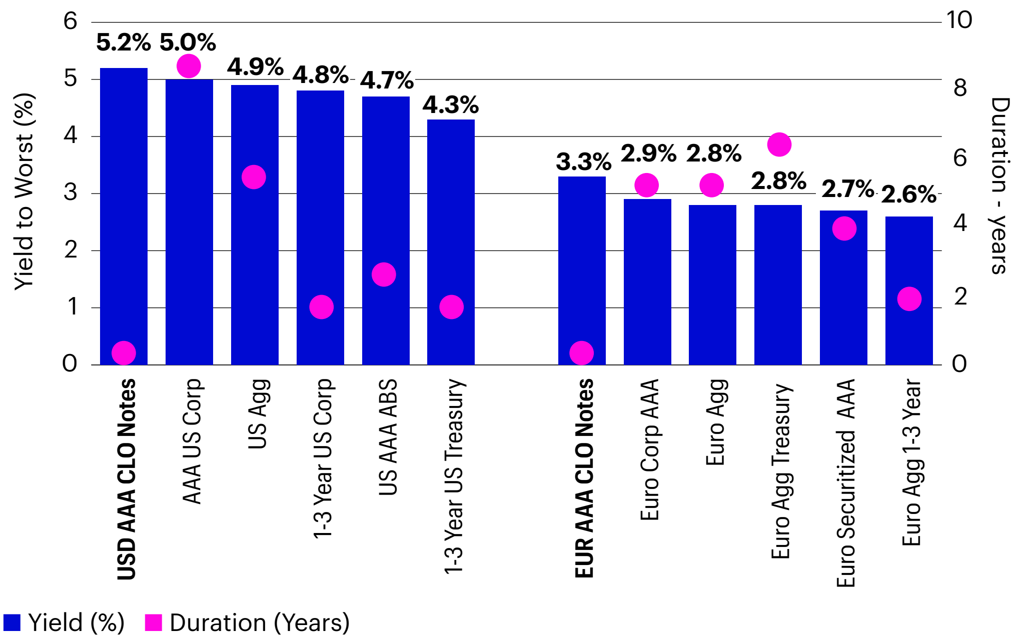
Source: BofA Global Research, Intex, as of December 31, 2024.

Key features

High income to risk

CLO Notes are structured with a "cashflow waterfall", which provides the opportunity for relatively consistent monthly income and yields that are currently higher than other similarly rated fixed income. Furthermore, AAA-rated CLO notes have continued to offer relatively large spread pickup to comparable fixed-rate investments, leading to relatively higher yields.

Yield to Worst and Duration Comparison

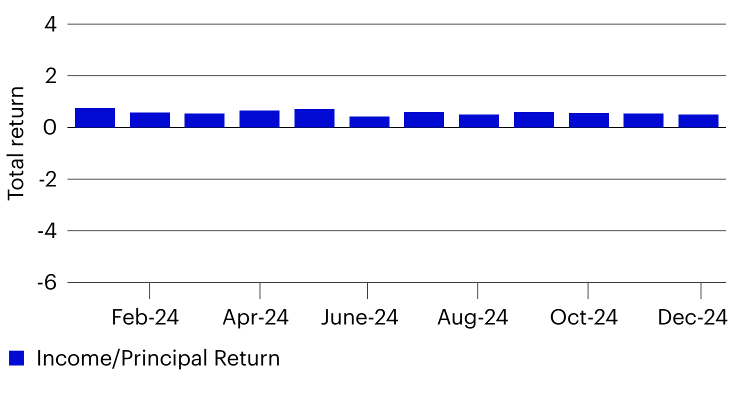


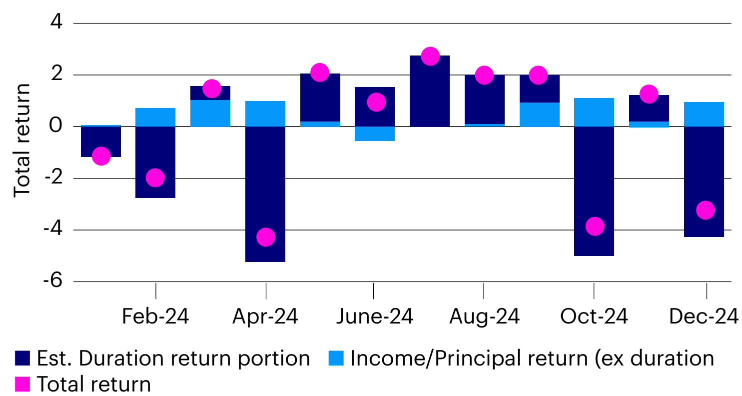
Source: Yield represented by Yield to Worst (YTW). US CLO AAA Notes represented by J.P. Morgan CLOIE AAA Index, AAA US Corporates by Bloomberg U.S. Aaa Corporate Index, AAA US ABS by Bloomberg US Agg. ABS AAA Index, Bloomberg US Aggregate Bond Index by US Agg, 1-3 Yr Treasuries by U.S. Treasury: 1-3 Year Index and 1-3 year U.S. Corp by component of the US Agg index. Euro CLO AAA Notes represented by represented by J.P. Morgan Euro CLOIE Index. Euro Agg 1-3yr by Euro-Aggregate: 1-3 Year Index. Euro Securitized AAA by Bloomberg Euro-Aggregate: Securitized - AAA Index. Euro Agg by Bloomberg Euro-Aggregate Index. Euro Corp IG by Bloomberg Euro-Aggregate: Corporate Index. Euro Corp AAA by Bloomberg Euro-Aggregate Corporate Aaa Index and Euro Agg Treasury by Euro-Aggregate: Treasury Index. All Euro indices are hedged to Euro.
An investment cannot be made directly in an index. Past performance does not predict future returns. All data as of December 31, 2024

Floating rate feature - enabaling historically stable prices

CLO debt is typically floating-rate and tied to 3-month SOFR or Euribor (US vs Euro). The floating-rate feature of CLO debt helps protect investors against interest-rate volatility and duration risk, reducing price volatility compared to other asset classes, while also providing investors with a hedge against inflation with income potential increasing as interest rates rise.

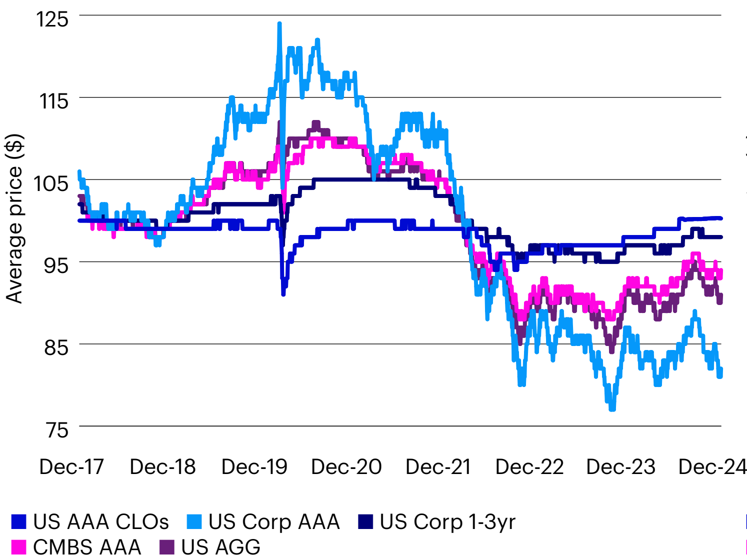
Impact of rate expectations on total returns

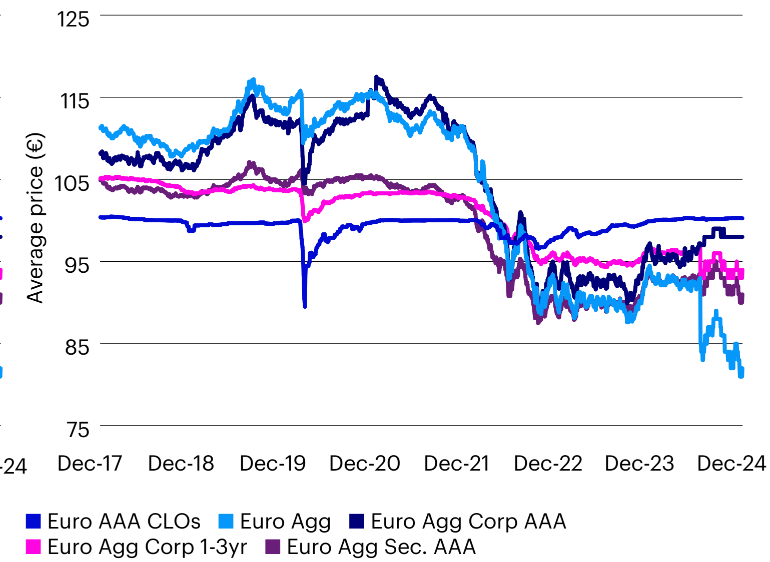




Source: JPM CLOIE AAA Index & Bloomberg Aaa component of the U.S. Corporate Investment Grade index. data through December 31, 2024. An investment cannot be made in an index. Past performance is not a guarantee of future results. Estimated duration return based on modified duration as of prior month end and basis point change in yields of 10-year treasuries.

Price volatility of US /Euro AAAs CLO notes and comparable asset classes





Source: JPM CLOIE AAA Index & Bloomberg Aaa component of the U.S. Corporate Investment Grade index. data through December 31, 2024. An investment cannot be made in an index. Past performance is not a guarantee of future results. Estimated duration return based on modified duration as of prior month end and basis point change in yields of 10-year treasuries.

Structual advantages enabaling zero historical losses

The CLO structure incorporates various coverage tests and collateral quality tests that are measured regularly to "detect" warning signs of collateral quality erosion. If such tests are breached, the CLO structure 1) redirects cashflows to best cushion senior note holders; and 2) puts further restrictions on CLO managers' reinvestment flexibilities. These features can create a rather counter-intuitive situation where AAA CLO notes become more attractive in periods of dislocation. With cash redirected away from equity distributions to amortize down the senior or AAA notes, the overall structure de-levers and the weighted average life of AAA notes can materially decline.

Of the US and Euro CLO tranches rated by Moody's and S&P respectively in the 10 years ended 2022/2024 respectively, no AAA or AA tranches have ever experienced material principal impairment:

US	10 years
US CLO AAA	0.0%
US CLO AA	0.0%
US CLO A	0.1%
US ABS (IG)	4.6%
US ABS (SG)	40.4%
US RMBS/HEL (IG)	48.3%
US RMBS/HEL (SG)	82.8%
US CMBS (IG)	12.5%
US CMBS (IG)	57.5%

Citi Research, Moody's as of 12/31/2022 (most recent data available)

Euro	10 years
Euro CLO AAA	0.0%
Euro CLO AA	0.0%
Euro CLO A	0.0%
Euro CLO BBB	0.5%
Euro CLO BB	2.7%
Euro CLO B	1.5%
Euro CLO investment grade	0.1%

S&P Global Ratings Credit Research & Insights & A&P Global Market Intelligence CreditPro as of 9/30/2024

Despite lower default rates of CLOs versus comparable securitize products during the Global Financial Crisis of 2008-2009 ("GFC"), the structure of CLOs became more conservative primarily through increasing the par-subordination required to achieve a desired rating. For example, the par-subordination for a single-A rated CLO note today is very close to the par-subordination of AA-rated CLO notes pre-GFC. The par-subordination of a CLO note is the required par-loss before the CLO note experiences a principal impairment, as shown on the table below. Other changes which increased the security of post-GFC CLO notes include:

- Less structural leverage (more credit enhancement)
- Lower thresholds against defaults and losses which trigger amortization of the most senior tranche
- Shorter reinvestment periods (less chance for par erosion)
- Stricter diversification and collateral quality requirements on the underlying pool of assets
- Significant reduction in fixed-rate assets (i.e. bonds) and increased incentives to avoid assets with irregular cash-flows

Credit enhancement increased post-GFC

Original rating	1.0 US BSL	2.0 US BSL	1.0 European	2.0 European
AAA	28%	36%	30%	38%
AA	21%	25%	23%	29%
A	15%	20%	17%	22%
BBB	11%	14%	11%	16%
BB	8%	9%	7%	10%

Source: Pitchbook Data Inc, Intex, Barclays Research as of July 21, 2010, following the implementation of the Dodd-Frank Wall Street Reform and Consumer Protection Act in the United States.

Diversification

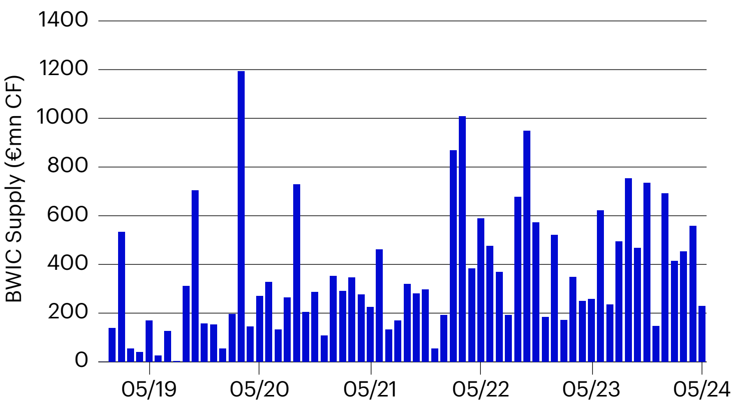
The relatively high income, coupled with its floating rate feature, enable CLO notes to have relatively lower correlation to traditional asset classes. The price stability, leading to lower volatiltiy, means that a hypothetical portfolio combinations of AAA CLO notes and traditional fixed income has the potential to improve risk adjusted returns.

Increasing liquidity

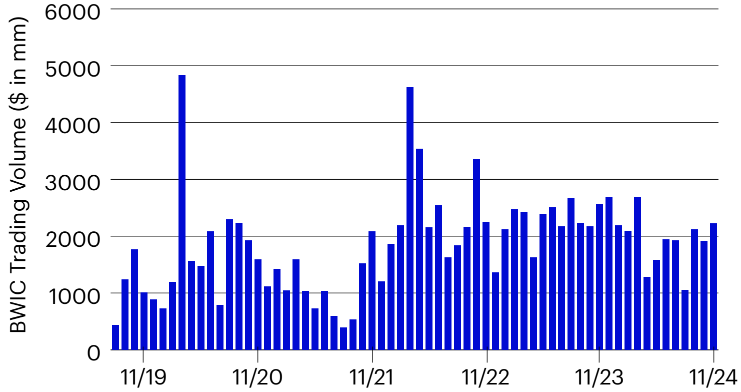
Secondary-market liquidity of CLO debt has increased significantly over time, easing the most common concern of potential investors in the CLO asset class. US CLO note trading volume has more than doubled since 2018 and both the US and European CLO Note markets shows continued signs of liquidity even under the most distressed market environments, such as the onset of Covid in 2020. Throughout the continued sell-off of risk-assets and fixed-rate assets in 2022 and 2023 in particular, AAA-rated CLOs were a primary source of liquidity for institutional investors in these times of market dislocation, highlighting the relative price stability and attractive income provided by AAA-rated CLOs.

Monthly US and Euro AAA CLO note market-wide trading volumes

Euro



US



Source: Euro - Morgan Stanley volume and Invesco estimate as of June 10, 2024. : US - BofA Global Research, Intex through November 30, 2024.

The Invesco edge to active management of AAA CLO notes

Invesco's experience in investing in bank loans, issuing and managing CLOs, and investing in CLO notes offers our investors diversified access to the CLO market.

As a perennial CLO issuer as well as CLO Note manager, Invesco has a comprehensive perspective of the CLO landscape, providing insight into supply and demand drivers, constraints and opportunities. This allows the team to properly evaluate market conditions, assess manager performance, and understand the complexities of individually tailored CLO indentures. Invesco's CLO Note investment process comprises of a proprietary evaluation of all holdings which includes, but is not limited to, manager evaluation, portfolio stress testing, documentation review, and relative value analysis.

As of December 31, 2024, Invesco's management team has an average of 30 years of experience and currently manages ~$48B of private credit with ~$2B of CLO notes.

Our investment style is on focused exposure to Top Tier CLO Managers, as selected through our investment process, rather than broad manager allocation, with the experience that these CLO Notes have exhibited less volatility during credit stress events. While the investment process and top tier manager selection strategy reduces the total number of managers available for investment, this does not force the strategy to "toss all eggs in one basket", but rather to focus our investment on the most capable managers.

The process

1. Manager evaluation

- Historically, a leading contributor to deal performance dispersion is the manager.
- Evaluating the style and behavior of managers is the cornerstone to successful capital deployment.

2. Portfolio stress testing

- Invesco uses a basket of dynamic scenarios to stress test CLO Notes.
- Invesco uses both top-down and bottom-up approaches to the team's stress test analysis.

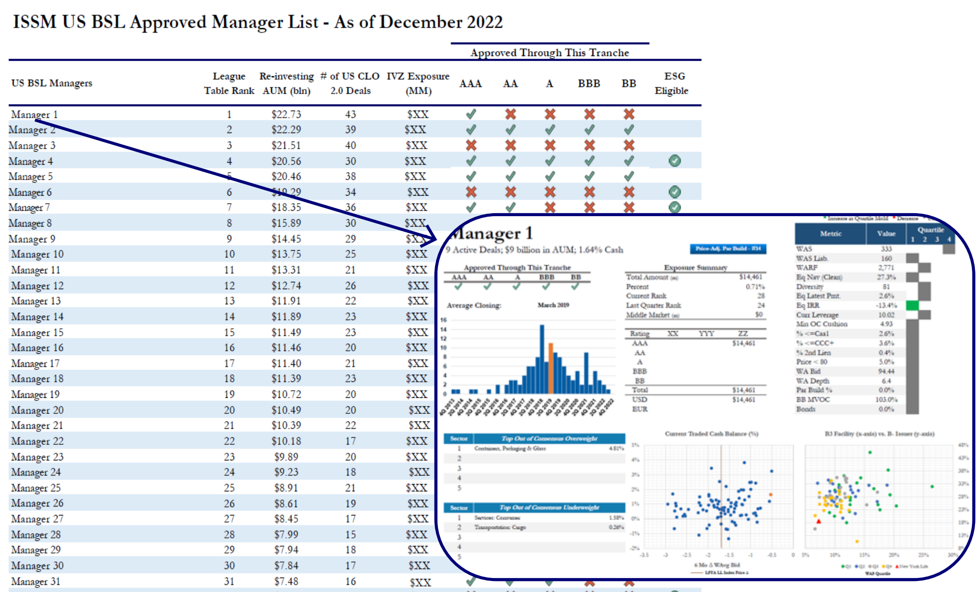
3. Documentation review

- Offering Memorandum and Indenture review to understand risks within:
  - Key Transaction Terms
  - Portfolio Characteristics and Concentration Limits
  - Collateral Quality
  - Coverage Ratios
  - Post-reinvestment criteria, terms and definitions, discount purchases and trading plans

4. Relative value

- By investing across the entire CLO capital stack in both primary and secondary, combined with the data received as an active CLO manager, Invesco is well positioned to determine best value.

The result



Source for the trading volume charts: Euro - Morgan Stanley volume and Invesco estimate as of June 10, 2024. : US - BofA Global Research, Intex through November 30, 2024. For illustrative purposes only.

Consider the following risks

Higher Credit Risk: CLOs are exposed to credit risk associated with the underlying loans. These loans are typically made to non-investment grade borrowers, which means they are more likely to default. A sudden increase in loan defaults could cause significant losses for investors.

Residual Liquidity Risk: Although CLO securities are generally more liquid than the underlying loans, they are still subject to liquidity risk. During times of market stress, it may be difficult to find a buyer for CLO securities, which could make it challenging for investors to sell their holdings or exit their positions.

Higher Interest Rate Risk: CLOs are typically structured as fixed-income securities with a set interest rate. If interest rates rise, the value of these securities may decline.

Prepayment Risk: The underlying loans in CLOs can be prepaid, which means the borrower pays off the loan earlier than expected. This can negatively impact the returns of CLO investors, particularly if they were counting on a certain level of interest income over a longer period.

Complexity: CLOs can be complex investment vehicles, with multiple tranches, different levels of credit risk, and varying payment structures. This complexity can make it difficult for investors to fully understand the risks involved and make informed investment decisions.

About risk

The value of investments and any income will fluctuate (this may partly be the result of exchange rate fluctuations) and investors may not get back the full amount invested.

Many senior loans are illiquid, meaning that the investors may not be able to sell them quickly at a fair price and/or that the redemptions may be delayed due to illiquidity of the senior loans. The market for illiquid securities is more volatile than the market for liquid securities. The market for senior loans could be disrupted in the event of an economic downturn or a substantial increase or decrease in interest rates. Senior loans, like most other debt obligations, are subject to the risk of default.

Highly rated tranches of CLO Debt Securities may be downgraded, and in stressed market environments even highly rated tranches of CLO Debt Securities may experience losses due to defaults in the underlying loan collateral, the disappearance of the subordinated/equity tranches, market anticipation of defaults, as well as negative market sentiment with respect to CLO securities as an asset class.

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