Invesco

CLO equity: Not your average asset class

Authors

Ian Gilbertson
M.D., Co-Head of US CLOs
Sr. P.M. and CLO Note Sr. P.M.

Elizabeth Clark, CFA®
M.D., Co-Head of US CLOs / Sr. P.M.

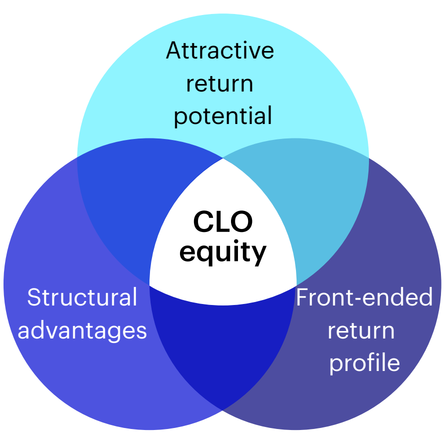
Nuno Caetano, CFA®
M.D., Head of European Trading and CLOs / Sr. P.M

Drew Thornton, CFA®
Director, Head of Solutions and Alternatives Thought Leadership

Why CLO equity?

Investing in collateralized loan obligation (CLO) equity can be a compelling option for portfolio diversification. Not only does the asset class have the potential to generate attractive absolute and risk-adjusted returns, its quarterly dividends have been consistently high. CLO equity distributions start from relatively early in the investment's lifecycle creating a front-ended return profile that can act as a natural complement to private equity investments. Further, there are potential benefits of the structure itself, including the demonstration of skill by active management and that the financing is both long-term and locked-in in nature.

Figure 1: Key highlights of CLO equity



Why CLO equity?

Historically higher income potential	• Potential for competitive quarterly income and **strong risk-adjusted returns.** - Long-term quarterly distributions typically range between 3-4%.* - **US:** 3.4% - most recent quarterly median equity distribution and est. 15.7% 2024 equity distributions.* - **Euro:** 4.1% - most recent quarterly median equity distribution and est. 18.7% 2024 equity distributions.*
Front-ended return profile	• CLO equity **begins distributing dividends to investors from six months after the structure closes** and quarterly thereafter. • This return profile can serve as an **effective complement to private equity**, which has a more back-ended return profile. • **Low correlations with other traditional asset classes.****
Structural advantages	• Long-term, locked-in financing fosters a long-term investment strategy. • High diversity requirements for CLOs to mitigate issuer or industry concentration. • The **time-tested structure, which proved effective during the global financial crisis, differs from a collateralized debt obligation.** • The indentures outline various asset coverage and investment quality tests which, if breached, self-correct and automatically redirect cash flow and reduce leverage. • Pure credit arbitrage exposure: **Hedge against spread volatility.**

Sources: *Deutsche Bank & Intex, as of Nov. 8, 2024. Includes 1,686 US CLOs and 523 Euro CLOs. Excludes US CLOs with less than 2 cash flows to equity and Euro CLOs with less than 3. Distributions are computed assuming equity issued at par, net of fees. Deal universe includes reinvesting and amortizing deals. 2024 payments are annualized based on reported deals as of 8 November 2024. Median annual distribution based on US 2011-2024, median quarterly distribution based on 2017-2024. Median annual distribution for Euro based on 2013-2024, median quarterly distribution based on 2017-2024 2 Citi Research based on Citi internal tracking/reporting, January 2013 – September 2024. Used with permission. **Details provided in Figure 6. Diversification does not guarantee a profit or eliminate a loss. **Past performance is not indicative of future results.**

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CLO equity represents 12% of the $1.3 trillion CLO market.

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A CLO issues debt and equity to fund the acquisition of a diversified pool of bank loans.

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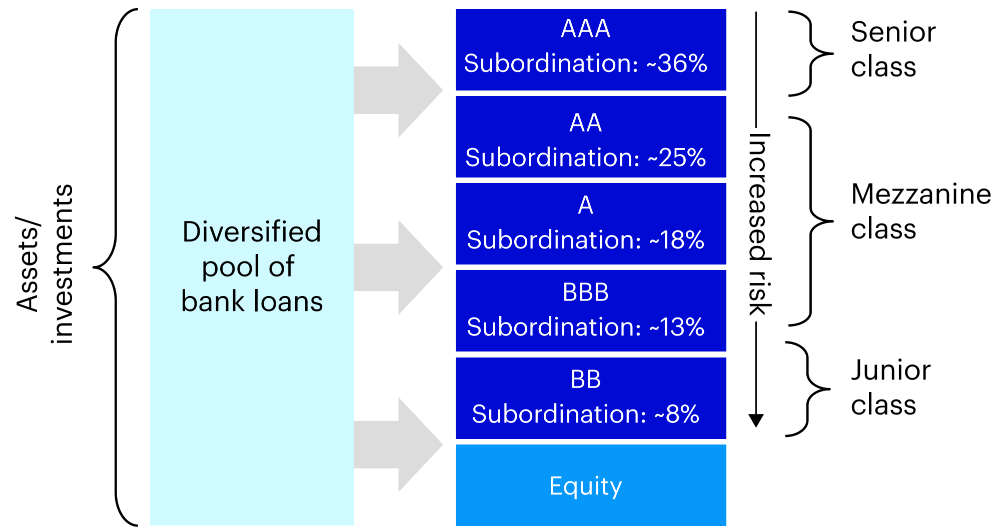
The potential for credit losses is also a consideration when evaluating potential returns.

Historically higher income potential: The source of CLO equity returns

Investors are taking notice of this unique asset class, having grown to $160 billion in global CLO equity assets outstanding, around 12% of the $1.3 trillion CLO market.[1] **Figure 2** draws the essential structure of the CLO special purpose vehicle (SPV) and illustrates the SPV issuing debt and equity to fund the acquisition of a diversified pool of bank loans. Investors take exposure to the underlying pool by investing in the debt or equity financing of the CLO. Each CLO debt tranche (note) has its own risk and return profile with the lowest risk-carrying (AAA-rated) tranche being the largest source of funding — an important point later for optionality considerations. Overseeing the structure sits an active manager who handles the assets and ensures they remain within specified tolerance bands.

Figure 2: CLO SPV structure



Source: Invesco, as of Nov. 30, 2024.

There are several features that can contribute to the overall return for a CLO equity investor:

1) Asset spreads. **Figure 3** illustrates how the excess spread from the interest payments is generated and transformed by the built-in leverage of the CLO structure once the structure has closed. The CLO collects the floating rate interest payments from the underlying pool of loans, pays the necessary fees (admin, trustee), and then pays its financing liabilities (CLO notes), distributing the requisite interest payments down the capital stack, first to the senior notes followed by the mezzanine debt tranches and then the equity holders.

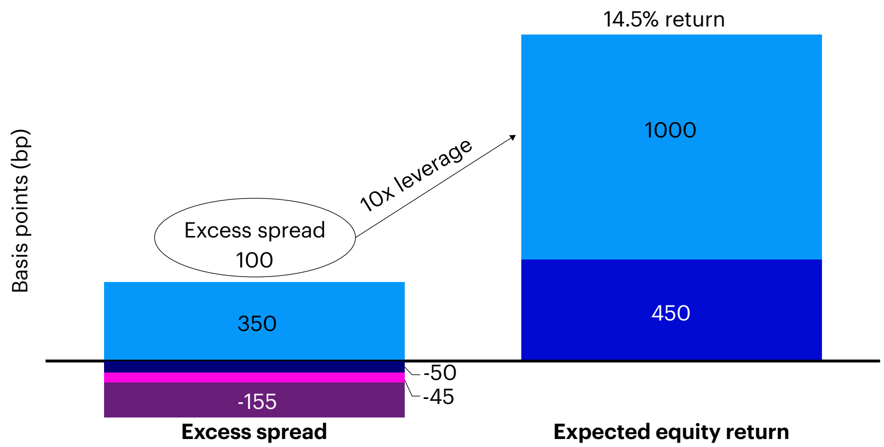
   Note that expectations of credit losses are a prudent concept (included in **Figure 3**), but with skilled active management, realized credit losses could be lower – another feature to potentially enhance the equity return profile. For a more accurate representation of the potential returns, the reference rate (typically, SOFR in the US or Euribor in the case of Euro CLOs) is added to reflect the economic cost of funding conditions. This gives a truer view of the expected return for the asset class and could, in total, add up to the mid-teens for an expected return, as shown in **Figure 3**.

1. Source: BofA Securities, as of Dec. 6, 2024. Data is net of fees.

Leverage transforms the excess spread, contributing to the overall CLO equity tranche's return.

Fee-sharing arrangements, as well as the unique optionality of the structure, are other sources of return.

Figure 3: Hypothetical CLO equity return



Source: Assumptions for the expected equity return are sourced from the JP Morgan CLO Primer, as of Nov. 21, 2024, based on a 90% debt capital structure. Excess spread is the difference between interest received, less costs. This is transformed into the expected equity return by multiplying the excess return by the leverage and adding the reference rate, here SOFR. For illustrative purposes only. Forecasts are not reliable indicators of future performance.

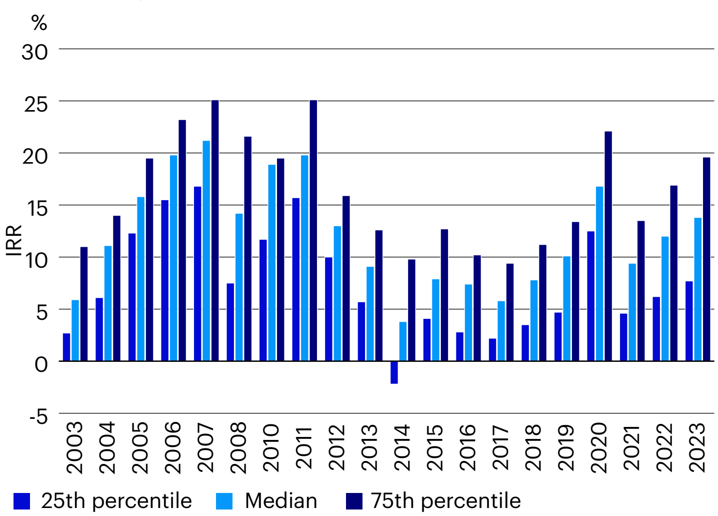
2) Any potential fee-sharing arrangement. Often, a captive CLO equity portfolio will have an arrangement with the asset manager to share in some of the underlying CLO portfolio management fees.

3) The majority equity holder typically benefits from sources of optionality: Refinancing the debt, resetting the debt, and redeeming the structure in its entirety.

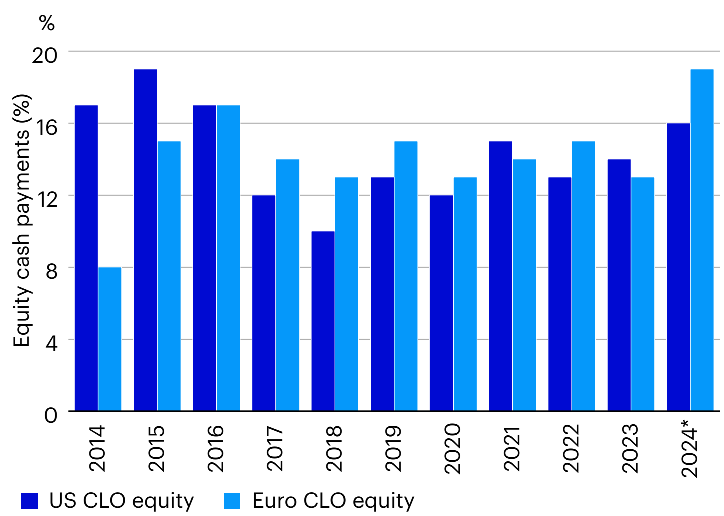
The chart on the left of **Figure 4** substantiates the impact of active management. Agnostic of the interest rate cycle, the variation in quartile performance highlights the value of manager skill in generating outperformance. The clearest example of this is in 2014, when the bottom quartile of managers delivered a negative internal rate of return (IRR), as the top quartile returned close to 10%. The fact that the median observation lies closer to the top quartile indicates the performance of the product universe incorporates left tail observations as some strategies have notably underperformed.

Figure 4: Strong median cash flows, though wide dispersion driven by manager skill

US CLO vintage IRR dispersion by quartile



US/Euro CLO median calendar year equity payments



Sources: With permission from (US) Deutsche Bank, Intex as of May 8, 2024. (Euro) Deutsche Bank, Intex as of May 13, 2024. *Annualized, assuming YTD distributions are sustained for remainder of 2024. Past performance does not predict future returns. Data is net of fees.

The chart on the right in **Figure 4** compares the median cash equity payments of US vintages to those of their European counterparts. This chart verifies the clear advantages of investing in CLO equity tranches, irrespective of jurisdiction, as both evidence similar performance outcomes. Investing in a US or European structure, long-term quarterly distributions have ranged between 3-4%.[2] Estimates for 2024 annual equity distributions are at 15.7% for the median US strategy and 18.7% for a median European strategy – both definitively offering the potential for strong risk-adjusted returns.*

Front-ended return profile

An equity tranche investor receives two streams of cash flows: From interest payments and from the principal investment. In some cases, the equity tranche investor provides financing to the warehouse facility, and, from this, can start to accumulate returns even ahead of the debt tranches accumulating their returns. The warehouse facility is a temporary holding facility where the loan portfolio is built prior to the final CLO structure being created and marketed to investors. This can start the equity tranches' "front-ended" return profile with significant early payments directly followed by the more traditional excess spread/interest income.

As the CLO structure closes the investments are transferred to the SPV from the warehouse facility, and the CLO fund manager continues to purchase assets. The portfolio then enters its re-investment period when there is a relatively steady stream of positive cash flows. Quarter-to-quarter fluctuations occur due to changes in prepayment rates and default rates as the fund manager looks to "build par", a term for increasing the value of the underlying investment pool by reinvesting the principal, ideally by buying loans at a discount to redeem at face value or be sold at a profit.

Note that the first 12-24 months of the reinvestment phase are assigned the "non-call" period. Once the non-call period has expired, the debt tranches within the structure can be **refinanced, reset, or redeemed** in their entirety, depending on the prevailing economic conditions. This is discussed in more detail in the following section.

As the end of the life cycle approaches, the CLO will begin deleveraging by paying down its debt tranches, beginning with its largest and lowest-cost source of financing. With this, the majority equity investor will be evaluating an optimal time to redeem the structure as it comes to its final maturity. At this time, the assets will be sold to pay down the outstanding debt tranches, and the remainder of the principal proceeds flow to the equity tranche.

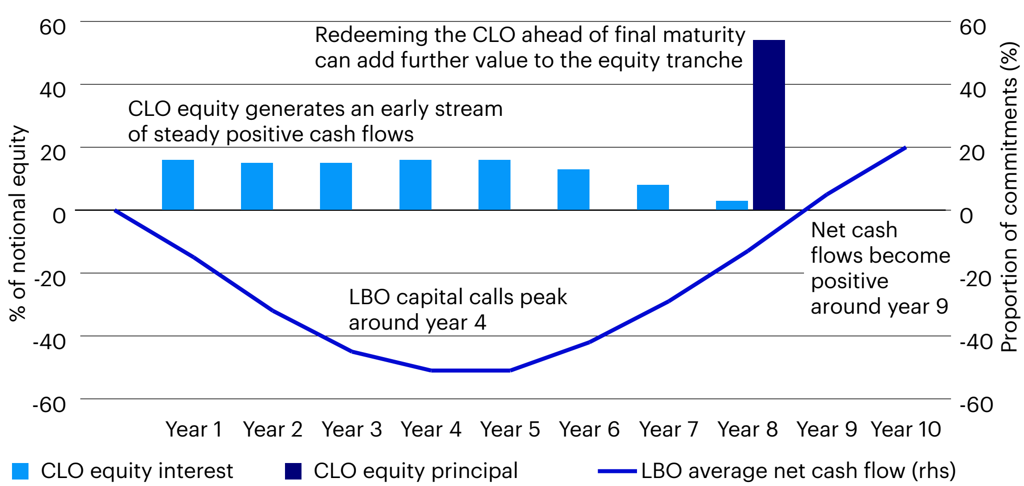
The early distributions (from six months after the structure has closed and then quarterly) can provide an excellent complement to the cash flows of private equity (PE) strategies. This is because PE strategies typically exhibit a J-curve since they draw down capital in the early stages of the vintage, using committed capital in the form of dry powder to source equity investments, only becoming cash flow positive years later after exiting their multi-year investments in portfolio companies. PE strategies can, therefore, be thought of as "back-ended." The comparison is shown in **Figure 5**.

> There are two streams of cash flows to the equity tranche investor: From interest payments and from the principal investment.

> The CLO follows a distinct path of phases through its lifecycle.

> The front-ended return profile can serve as an effective complement to private equity.

Figure 5: Magnitude and direction of cash flows complement those of private equity



Sources: PitchBook and Invesco, as at 30 November 2024. Using average net buyout cash flows 1997-2013 and a hypothetical example of a CLO equity payment schedule using a 2% CDR (constant default rate) priced at 99 with a 60% recovery rate and a 340 bps spread. For illustrative purposes only.

* Deutsche Bank & Intex, as of Nov. 8, 2024. Includes 1,686 US CLOs and 523 Euro CLOs. Excludes US CLOs with less than 2 cash flows to equity and Euro CLOs with less than 3. Distributions are computed assuming equity issued at par. Deal universe includes reinvesting and amortizing deals. 2024 payments are annualized based on reported deals as of 8 November 2024. Median annual distribution based on US 2011-2024, median quarterly distribution based on 2017-2024. Median annual distribution for Euro based on 2013-2024, median quarterly distribution based on 2017-2024 2 Citi Research based on Citi internal tracking/reporting, January 2013 – September 2024. Used with permission.

The relatively high liquidity of the underlying assets means the CLO has a deeper opportunity set to source investments for the structure and provides more opportunities to exit underlying exposures, an additional contrast to the uncertain cash flows and illiquid investments within most PE strategies.

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> The standout feature of the CLO is the stability brought by its longer-term financing.

Structural advantages

The standout feature of the CLO is how it is financed. More than just the combination of debt and equity, it is that the financing is locked in for the longer term that allows the fund manager to focus on sourcing the most appealing investments without being concerned of needing to meet exit requests of investors and put downward pressure on the underlying assets.

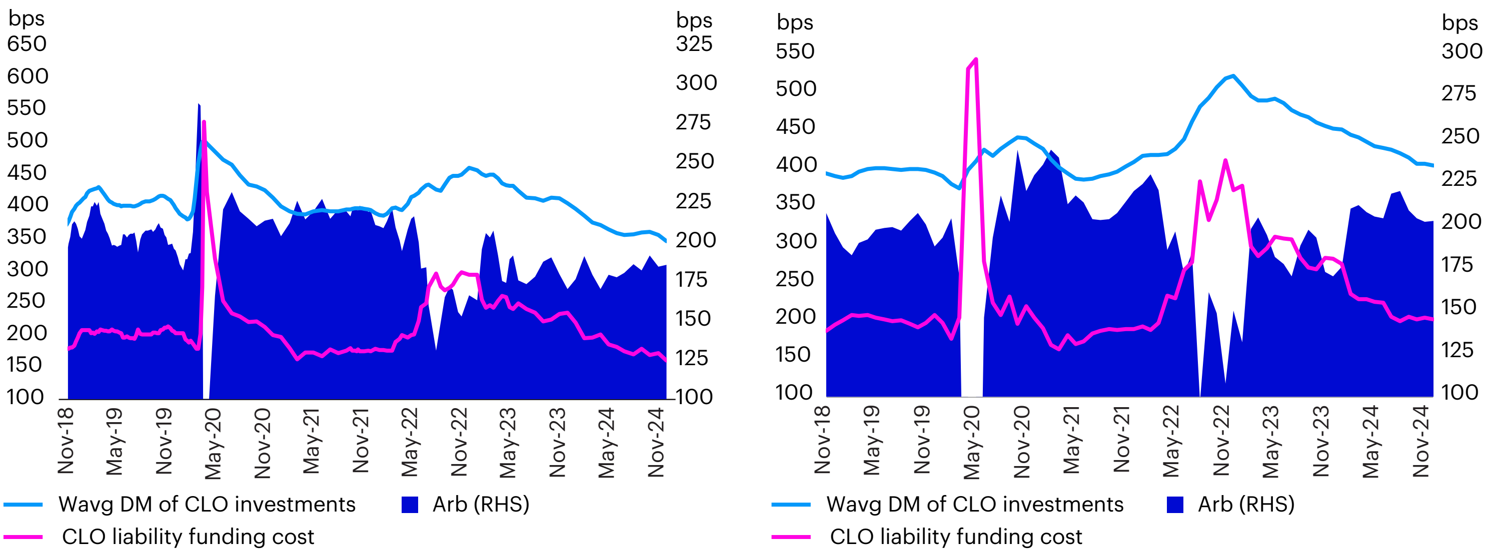
This permits the manager to focus on improving the value of the structure without sacrificing performance to meet liquidity issues. The manager actively seeks to improve returns for the equity holder through distinct channels including:

- **Investment screening.** Selecting loans to include in the principal pool is an unambiguous way to potentially generate outperformance.
- **Trading to build par and mitigate losses.** Constant monitoring navigates the risk of the underlying investments as well as potentially adding strategic opportunities to the pool.
- **Active refinancing.** There is skill in choosing when to use the call options of the strategy, specifically as there are optimal circumstances to enact these types of restructurings.
- **Unique relationships with sponsors and arrangers.** This allows for favorable allocations, which are markedly important in the warehousing phase.

Although US and European structures do have some specific differences (see **Appendix**), overall, the structures operate in much the same way. This is demonstrated by **Figure 6,** which shows the stable excess spreads delivered by both structures side-by-side. This structure seeks to isolate credit risk for equity investors by arbitraging the interest rate received on the underlying investments and the interest paid out on the liability funding cost.

Figure 6: Equity arbitrage (arb) has demonstrated to be stable through time

US | **European**



Sources: Morgan Stanley Research, PitchBook | LCD, as at 18 December 2024.

Both US and European structures have enhanced returns through the call optionality of the generic structure. This refers to three discrete actions: **Refinancing, resetting,** or **redeeming** the structure entirely. The majority equity holder can elect to take these actions once the non-call period has expired – typically two years into the lifecycle of the CLO.

The optionality of the structure encompasses three routes: Refinancing, resetting, and redeeming.

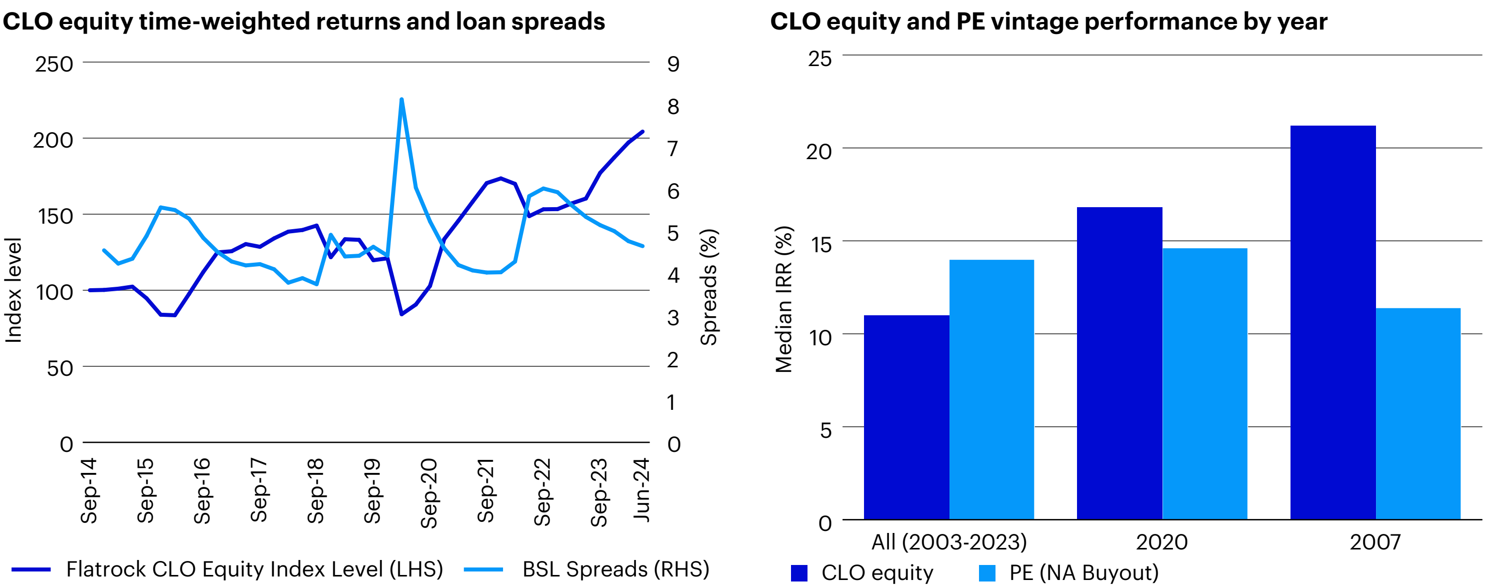
Loan spreads have been seen to be a key determinant of CLO equity returns in the past.

Note the redeeming option is usually exercised 2-3 years after the reinvestment period.[2]

- With **refinancing,** the equity tranche is looking to reduce the financing cost of the debt tranches, thereby improving the excess spread. There will be fees associated with this, which the equity tranche will need to evaluate before refinancing.
- **Resetting** the debt also takes advantage of lower spreads but alters the CLO's structure to a greater degree by extending the reinvestment window as well. Due to potential credit losses, a reset typically involves restoring subordination to new issue levels, most often through an equity investment. In some cases, par has been built into the structure by purchasing investments at a discount and can be allocated to equity holders. Opting for a reset allows for cost-effective way to extend the stream of equity distributions by keeping the existing structure, rather than initiating a new deal and transferring assets to a new CLO structure.
- The final action the equity holder can execute is **redeeming** - or calling the CLO. This permits the fund manager to liquidate the structure in its entirety before its final maturity date. The decision path for this is if the current value of the underlying asset pool net of principal and unpaid interest to debt tranches is greater than the discounted future cash flows to equity.

In the past, loan spreads have been a key determinant of CLO equity returns. The chart on the left of **Figure 7** demonstrates the inverse relationship between the performance of CLO equity tranches and spreads on broadly syndicated loans. Over time, the data shows that as spreads tighten, CLO equity returns improve for reasons we have already detailed: Tighter spreads give rise to the opportunity to refinance the debt and increase the equity arbitrage, and tighter spreads also improve the pricing of the underlying investments, helping to build par.

Figure 7: Active management utilizes volatility to the portfolio's advantage



Sources: Bloomberg L.P., Flatrock, as of Nov. 30, 2024. Pitchbook, as of March 31, 2024. **Past performance does not predict future returns.** For illustrative purposes only.

CLO equity can take advantage of periods of dislocation in the credit markets.

CLO equity allows the investor to be "long volatility", taking advantage of dislocations in credit markets by locking in higher spreads during periods of market stress. The chart on the right of **Figure 7** has isolated specific vintages for peak volatility. The median IRR for all CLO equity vintages 2003-2023 is 11%, while the median 2020 vintage IRR was 17% during COVID -19 and 21% in 2007 during the GFC. This compares favorably to PE strategies, which had lower IRRs in these same periods of volatility.

Further, these periods were characterized by large central bank interventions, slashing interest rates to stimulate the economy. We argue that the benefits of a lower debt burden for the underlying debtors of the floating rate CLO debt more than outweighed the reduction in base rates for the total returns of these vintages, as you can see in the outsized performance relative to the average vintage.

2. Invesco Senior Secured Management, Understanding CLOs in Today's Dynamic Financial Landscape, Inc. 2024.

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With the structure’s financing, the investor should be prepared to commit their capital for an extended period.

Additional considerations

While CLO equity tranches offer many potential benefits, it is important to acknowledge certain risks related to the asset class. A key point is that a CLO equity tranche may be subject to liquidity constraints as their investor pool is more specialized, and investors should be prepared to commit their capital for an extended time period. As noted above, within the CLO SPV in **Figure 2**, the equity tranche will be the first to absorb losses from the underlying portfolio of loans and rank behind the debt tranches in order of cash flow priorities. The portfolio of a single CLO equity tranche may have a concentrated exposure to non-investment grade loans, which could give rise to specific liquidity, market, credit, and interest rate risk. This is mitigated to a degree by the number of loans in the SPV, regulation, and the diversification expected by a fund structure holding several equity tranches.

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The CLO equity asset class can blend high return potential with structural advantages to bring diversification benefits.

Conclusion

Investing in CLO equity can present a compelling opportunity for portfolio diversification and attractive returns. With their front-ended return profile and ability to leverage active management, CLOs can offer significant advantages. The potential for high returns, driven by the excess spread from interest payments and the strategic use of leverage, makes CLO equity a valuable addition to an investment portfolio.

Moreover, the optionality inherent in CLO structures, such as refinancing, resetting, and redeeming, provides additional avenues for enhancing returns. The resilience of CLOs during periods of market stress, as evidenced by their performance during the global financial crisis and the pandemic, further underscores their robustness compared to other structured finance products.

In conclusion, CLO equity stands out as a strategic investment choice, offering a blend of high return potential, diversification benefits, and structural advantages that can complement traditional and alternative assets within a portfolio.

Appendix:

CLOs vs CDOs

CLOs have fundamental structural differences, which sets them apart from CDOs (collateralized debt obligations) and have proven to be far more resilient during the the global financial crisis (GFC). The key difference is in the underlying investments. CLOs offer access to a regulatory-required diverse pool of bank loans, usually 200-300 loans, and each loan is first- or second-lien secured. CDOs were large purchasers of mortgage-backed securities, leaving them highly exposed to subprime securities in 2007. CDOs also held credit default swaps, high yield bonds, and other CDOs.

The CLO is transparent (unlike a CDO) and allows investors to independently assess the loan pool, which has significant amounts of historical data for analysis. As discussed above, an advantage of holding the equity tranche in a CLO may be the enhanced returns an active manager can achieve. There was no active management of CDOs, another failure spotlighted by the GFC.

Figure 8: CLOs have seen additional credit enhancements 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%

Sources: 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.

Though CLOs have proven to be resilient investments in times of stress, the lessons learned from the GFC have been incorporated to further strengthen the time-tested structure (**Figure 8**). Overall, credit quality has been improved by raising the weightings of the higher rated debt tranches; CLOs cannot invest in other CLOs, and the reinvestment window is now shorter.

Stricter credit standards have been appeased with greater flexibility in that US CLOs are now able to invest a limited amount in high yield bonds. This is different from European structures which can hold up to 30% of their assets in bonds, although their financing tends to be more conservative with an additional single B-rated debt tranche and more stress testing. The primary stress tests shared by both US and European structures do have the same consequence should they be breached — redirected cash flows and reduced leverage are self-correcting features protecting the overall structure of the CLO.

Other differences with European CLOs are that European portfolios will have Euribor as their reference rate and be euro denominated. The European universe is more focused, and the underlying exposures tend to be more specialized than US CLOs, although both have high diversity requirements to mitigate concentration risk in the asset pool. Note that it's not uncommon for European CLOs to feature US names as their investments (US products are mostly exposed to US issuers).

Authors

Ian Gilbertson
Managing Director
Co-Head of US CLOs /
Senior Portfolio Manager and
CLO Note Senior Portfolio Manager

Elizabeth Clark, CFA®
Managing Director
Co-Head of US CLOs
Senior Portfolio Manager

Nuno Caetano, CFA®
Managing Director
Head of European Trading and CLOs
Senior Portfolio Manager

Drew Thornton, CFA®
Director, Head of Solutions and
Alternatives Thought Leadership

Contributors

Derek Fin
Senior Client Portfolio Manager
Private Credit

Jonathan Brichkin
Product Associate
Private Credit

Emma McHugh, CFA®
Analyst Solutions and
Alternatives Thought Leadership

Contact

Kevin Petrovcik
Managing Director
Senior Client Portfolio Manger
Private Credit
Kevin.petrovcik@invesco.com
+1.212.278.9611

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Structured finance securities such as CLOs entail a variety of unique risks. The performance of a CLO is affected by a variety of factors, including its priority in the capital structure of the issuer thereof, the availability of any credit enhancement, the level and timing of payments and recoveries on and the characteristics of the underlying receivables, loans or other assets that are being securitized, remoteness of those assets from the originator or transferor, the adequacy of and ability to realize upon any related collateral and the capability of the servicer of the securitized assets. 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.

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. The market for senior loans remains less developed in Europe than in the US Accordingly, and despite the development of this market in Europe, the European Senior Loans secondary market is usually not considered as liquid as in the US The value of investments, and any income from them, will fluctuate. This may partly be the result of changes in exchange rates. Investors may not get back the full amount invested.

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The Flat Rock CLO Equity Returns Index seeks to measure the unlevered, gross of fee performance of US CLO equity tranches as represented by the market-weighted performance of the underlying assets of funds that publicly disclose their holdings and fair market values to the U.S. Securities and Exchange commission. The reporting funds satisfy certain eligibility criteria. The index inception date is September 30, 2014. The index is calculated quarterly on a 75-day lag. There were 490 CLO's reporting as of Sept. 30, 2024.

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