

Seeing Beyond the Complexity: An Introduction to Collateralized Loan Obligations

Collateralized loan obligations (CLOs) are robust, opportunity-rich debt instruments that have been around for more than 30 years. And while they're well established, they're also complex enough that even sophisticated investors may hesitate to dig into the details – and end up avoiding them instead.



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CLOs have been gaining wider prominence in markets in recent years, and it's no surprise why. They have historically offered a compelling combination of above-average yield and potential appreciation. But for many investors, the basics of how they work, the benefits they can provide, and the risks they pose are wrapped in complication, which is why they're also often misconstrued by the financial media and some market participants.

In spite of this, we believe CLOs are attractive investments and well worth the time and effort required to understand them.

What is a CLO?

Put simply, a CLO is a portfolio of predominantly leveraged loans that is securitized and managed as a fund. The assets are typically senior secured loans, which benefit from priority of payment over other claimants in the event of an insolvency. Each CLO is structured as a series of tranches that are interest-paying bonds, along with a small portion of equity.

CLOs originated in the late 1980s, similar to other types of securitizations, as a way for banks to package leveraged loans together to provide investors with an investment vehicle with varied degrees of risk and return to best suit their investment objectives. The first vintage of "modern" CLOs – which focused on generating income via cash flows – was issued starting in the mid- to late-1990s. Commonly known as "CLO 1.0," this vintage included some high yield bonds, as well as loans, and were the standard CLO structure until the financial crisis struck in 2008.

The next vintage, CLO 2.0, began in 2010 and changed in response to the financial crisis by strengthening credit support and shortening the period in which loan interest and proceeds could be reinvested into additional loans.

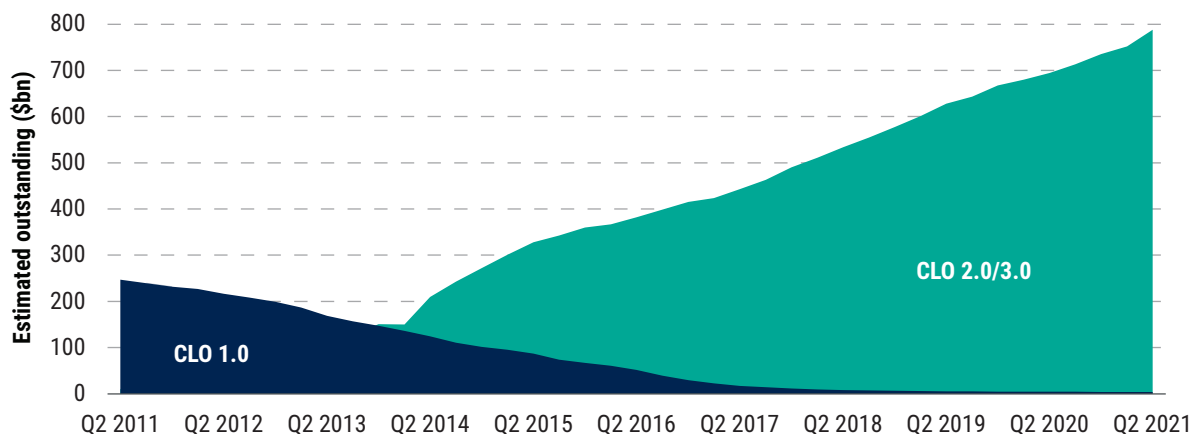
The current vintage, CLO 3.0, began in 2014 and aimed to further reduce risk by eliminating high yield bonds and adhering to the Volcker Rule and other new regulations. In 2020, the Volcker Rule was further amended, and high yield bonds are now allowed back into CLOs. Currently, few CLOs allow for investments into high yield, and those that do generally limit the exposure to 5%-10%. To compensate for the exposure to high yield, these CLOs have increased levels of subordination to better protect debt tranches. Vintages 2.0 and 3.0 represent the biggest chunk of the market, with about \$800 billion in principal outstanding, while less than 1% of the market remains in CLO 1.0 vintages.¹

¹Source: Bank of America Global Research as of 31 July 2021.

The vast majority of CLOs are called “arbitrage CLOs” because they aim to capture the excess spread between the portfolio of leveraged bank loans (assets) and the classes of CLO debt (liabilities), with the equity investors receiving any excess cash flows after the debt investors are paid in full. The market for arbitrage CLOs is valued at \$959 billion globally, with about 83% issued in the US and 17% in Europe.²

CLOs Get Better With Age

US CLO vintages 2.0 and 3.0 represent the biggest share of the market today



Source: BofA Merrill Lynch Global Research. As of 30 June 2021.

Leveraged loans: more than just collateral

Leveraged loans are more than simply the underlying collateral for CLOs: They’re the fuel that powers CLOs’ attractive income streams and the first of several levels of potential risk mitigation built into the CLO structure.

Standard & Poor’s defines leveraged loans as senior secured bank loans rated BB+ or lower (i.e., below investment grade) or yielding at least 125 basis points above a benchmark interest rate (typically Libor³ or SOFR in the US and Euribor in Europe) and secured by a first or second lien.⁴ Several characteristics make leveraged loans particularly suitable for securitizations. They:

- Pay interest on a **consistent monthly or quarterly basis**;
- Trade in a **highly liquid secondary market**;
- Have a **historically high recovery rate** in the event of default; and
- Originate from a **large, diversified group of issuers**.

As of 30 June 2021, the amount of leveraged bank loans outstanding was \$1.26 trillion in the US and €252 billion in Europe.⁵

² Source: Bank of America Global Research as of 31 July 2021.

³ Libor references should be considered illustrative, as this rate is effectively ceasing by the end of 2021. Please review “Risks Related to the Discontinuance of the London Interbank Offered Rate (“Libor”)” found at the end of this presentation for more information regarding this transition.

⁴ Source: S&P Global Market Intelligence, Leveraged Commentary & Data (LCD): Leveraged Loan Primer, as of 30 September 2021.

⁵ Source: Morgan Stanley research, “Global CLOs: CLO Tracker July 2021 – Milestone,” and S&P/LCD as of 9 July 2021.

Who issues, manages, and owns CLOs?

CLOs are issued and managed by asset managers. Of the approximately 175 CLO managers⁶ with post-crisis deals under management worldwide, PineBridge has found about two-thirds are in the US and the remaining third are in Europe.

Ownership of CLOs varies by tranche. The least risky, senior-most tranches are mainly owned by insurance companies (which favor income-producing investments) as well as banks (which need high-quality capital to meet regulatory requirements). The equity tranche is the riskiest, offers potential upside and a degree of control, and appeals to a wider universe of investors.

Many Types of Investors Own CLOs

Largest CLO owners by tranche type

Tranche	Investor Type
Senior tranches (Rated AAA and AA)	<ul style="list-style-type: none"> • Banks • Institutional asset managers • Insurance companies • Pension funds and endowments
Mezzanine tranches (Rated A/BBB/BB)	<ul style="list-style-type: none"> • Insurance companies • Institutional asset managers • Banks • Hedge funds • Pension funds and endowments • Structured credit funds • Permanent-capital vehicles*
Equity tranche	<ul style="list-style-type: none"> • CLO managers • Institutional asset managers • Structured credit funds • Insurance companies • Hedge funds • Pension funds and endowments • Banks • Sovereign wealth funds/family offices • Private equity funds • Permanent-capital vehicles*

Source: Morgan Stanley Research, Citi Research, Nomura as of 30 June 2019. *Permanent-capital vehicles are real estate investment trusts, business development companies, and funds.

⁶ Source: Intex as of 2 December 2020.

How CLOs work

CLOs are complicated structures that combine multiple elements with the goal of generating an above-average return via income and capital appreciation. They consist of tranches that hold the underlying loans, which typically account for about 90% of total assets, and a sliver of equity. The tranches are ranked highest to lowest in order of credit quality, asset size, and income stream – and, thus, lowest to highest in order of riskiness.

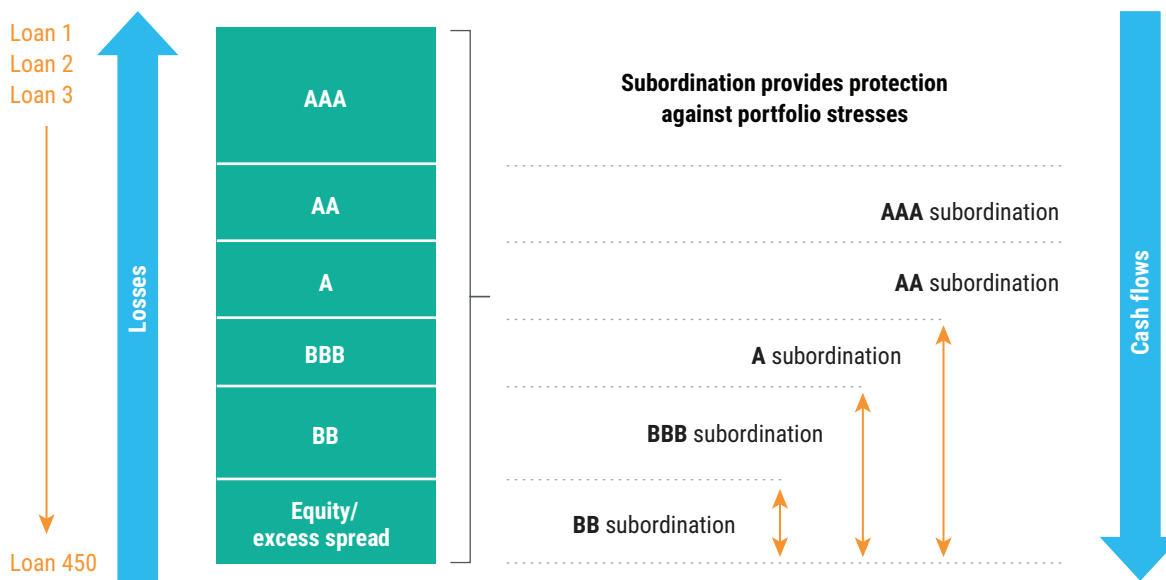
Although leveraged loans themselves are rated below investment grade, most tranches are rated investment grade, benefiting from diversification, credit enhancements, and subordination of cash flows.

Each CLO has a defined lifecycle in which collateral is purchased, managed, redeemed, and returned to investors. The standard lifecycle includes five stages:

- 1. Warehousing (3-6 months):** The manager purchases the initial collateral before the closing date.
- 2. Ramp-up (1-6 months):** Following the closing date, the manager purchases the remaining collateral to complete the original portfolio. After the ramp-up is complete, the manager also performs monthly tests to ensure the portfolio's ability to cover its interest and principal payments.
- 3. Reinvestment (1-5 years):** Following the ramp-up period, the manager can reinvest all loan proceeds, either purchasing or selling bank loans to improve the portfolio's credit quality.
- 4. Non-call (first 0.5 to 2 years of reinvestment):** Loan-tranche holders earn a per-tranche yield spread specified at closing, after which the majority equity-tranche holder can call or refinance the loan tranches.
- 5. Repayment and deleveraging (1-4 years):** As underlying loans are paid off, the manager pays down the loan tranches in order of seniority and distributes the remaining proceeds to the equity-tranche holders.

Tranches Allocate Assets, Income, and Risk

Typical CLO tranche structure



Source: Citibank as of 30 September 2021.

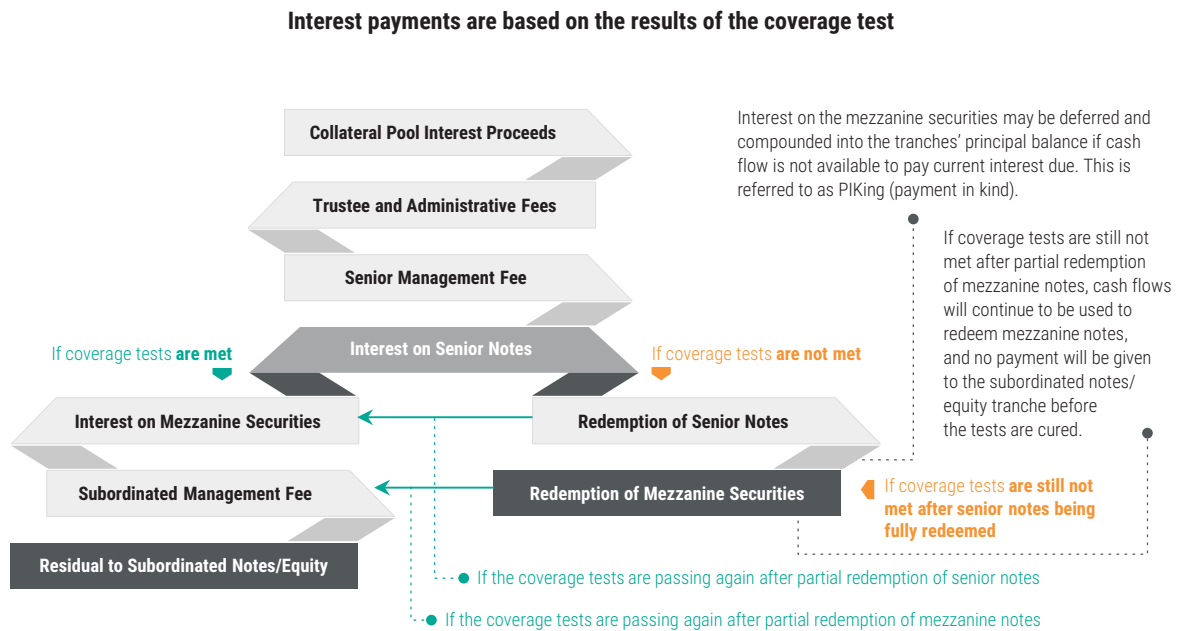
All about the cash flows

Cash flows are the lifeblood of a CLO: They determine the distribution of income and principal, which determines the return on investment. The key concept is that distributions are paid sequentially starting with the senior-most tranche until each loan tranche has been paid its full distribution. Equity-tranche holders absorb costs and receive the residual distributions once the costs have been paid.

Coverage tests are a vital mechanism to detect and correct collateral deterioration, which directly affects the allocation of cash flows. All CLOs have covenants that require the manager to test the portfolio's ability to cover its interest and principal payments monthly. Among the many such tests, the most common are the interest coverage⁷ and over-collateralization⁸ tests. Covenants specify baseline values for each test.

If the tests come up short, the manager must take cash flows from the lowest debt and equity-tranche holders and divert them to retire the loan tranches in order of seniority. The diagram below provides a general illustration of the "waterfall" process in which cash flows are paid when the portfolio passes and doesn't pass its interest coverage tests.

The Cash Flow Waterfall Has Two Streams



Source: Morgan Stanley Research, "A Primer on Global Collateralized Loan Obligations (CLOs)," as of 20 September 2021.

⁷ The income generated by the underlying pool of loans must be greater than the interest due on the outstanding debt in the CLO.

⁸ The principal amount of the underlying pool of loans must be greater than the principal amount of outstanding CLO tranches.

Built-in risk protections

Coverage tests are one of several risk protections built into the CLO structure. Others include:

- **Collateral concentration limits.** Many deals mandate that at least 90% of the portfolio be invested in senior secured loans.
- **Borrower diversification.** The pool of loans typically must be diversified across 150-450 distinct borrowers in 20-30 industries, with a small percentage of the assets (e.g., 2%) invested in the loans of any single borrower.
- **Borrower size requirements.** Deals often restrict managers from purchasing loans to small companies, whose trading liquidity is low.

The equity tranche: the highest risk could mean the highest return

The equity tranche occupies a distinct place in the CLO structure. It's essentially a highly leveraged play on the strength of the underlying collateral. Because the equity tranche's success depends on the success of the loan tranches – it's last in line to receive cash flows and first to realize loan losses – its owners take the most risk of any CLO investors. Their goal, then, is to maximize the value of the equity.

As compensation for providing the majority of equity capital, the majority equity-tranche holder is given potential control over the entire CLO in the form of options, as highlighted below:

- **Call option.** The majority equity investor can direct a refinancing in some or all CLO debt after the non-call period expires to take advantage of potentially accretive opportunities for the equity returns, such as:
 - **Refi scenario.** CLO debt is refinanced into lower-cost debt with the same maturity and minimal changes to other deal terms.
 - **Reset scenario.** All CLO debt is refinanced, and the legal maturity of the debt is extended. Resets typically extend the reinvestment period of the CLO and the period during which the CLO equity can potentially capture value under volatile leveraged loan market conditions.

Both options could potentially increase prospective equity returns over the life of the CLO by roughly 50 to 150 bps.

- **Redemption** occurs when the assets are sold, the proceeds are used to pay off the debt, and the residual amount is paid to the equity, resulting in a final internal rate of return (IRR) calculation. Redemption allows the majority equity holder to optimize the value of the underlying collateral by controlling the point in time that the loan assets are liquidated.

Keeping up with regulatory changes

In the wake of securitized investments' difficulties during the financial crisis, US and European regulators took steps to mitigate CLOs' structural risks and make CLOs more attractive for investors.

European regulation is concentrated in several rules governing the capital requirements for banks and insurance companies. Risk retention, commonly known as "skin in the game," has been a requirement in Europe since 2010. It holds that CLO managers must retain 5% of the original value of the assets in their CLOs to align their interests more closely with those of investors. The US required CLOs to be risk-retention compliant from December 2016 to May 2018. A court case brought by the LSTA reversed the decision, as it was deemed that CLO managers do not "originate" the loans; rather, they buy them. As a result, risk retention is no longer required for US CLO issuers.

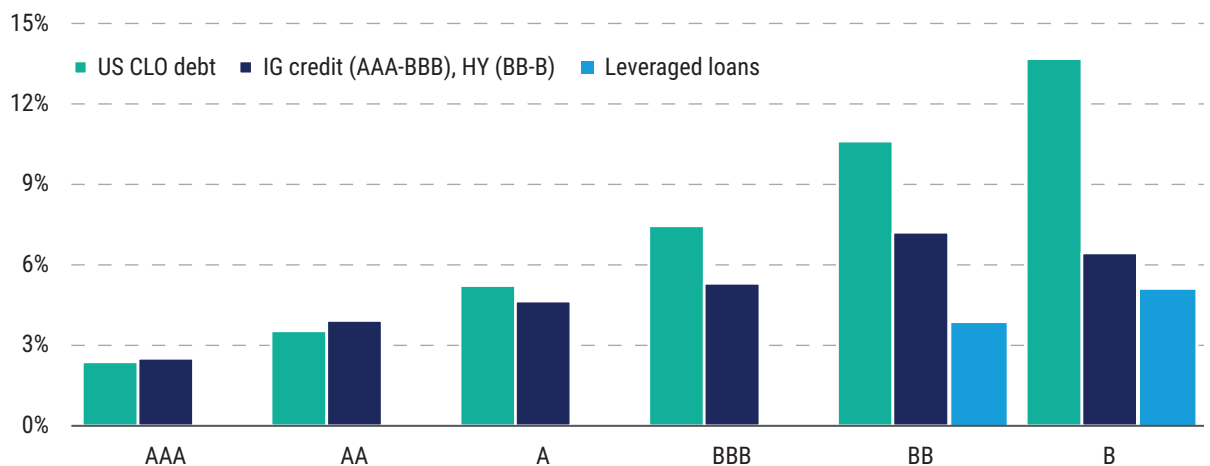
A prominent US regulatory development was the implementation of the Volcker Rule, which became effective in 2014. To be in compliance, most vintage 2.0 CLOs issued starting in 2014 are collateralized only with loans, and many 1.0 CLOs were "Volckerized" to eliminate non-loan collateral (where previously CLOs had 5%-10% exposure to bonds). While the Volcker rule has since been amended to allow high yield bonds, few CLOs include these investments, and exposure is generally limited to 5%-10% and compensated for by increased levels of subordination.

A wealth of potential benefits ...

CLOs can offer investors multiple benefits, both on their own and versus other fixed income sectors.

Strong returns. Over the long term, CLO tranches have performed well relative to other corporate debt categories, including bank loans, high yield bonds, and investment grade bonds, and significantly outperformed at lower rating tiers.

US CLO Returns Versus IG Credit, High Yield, and Leveraged Loans

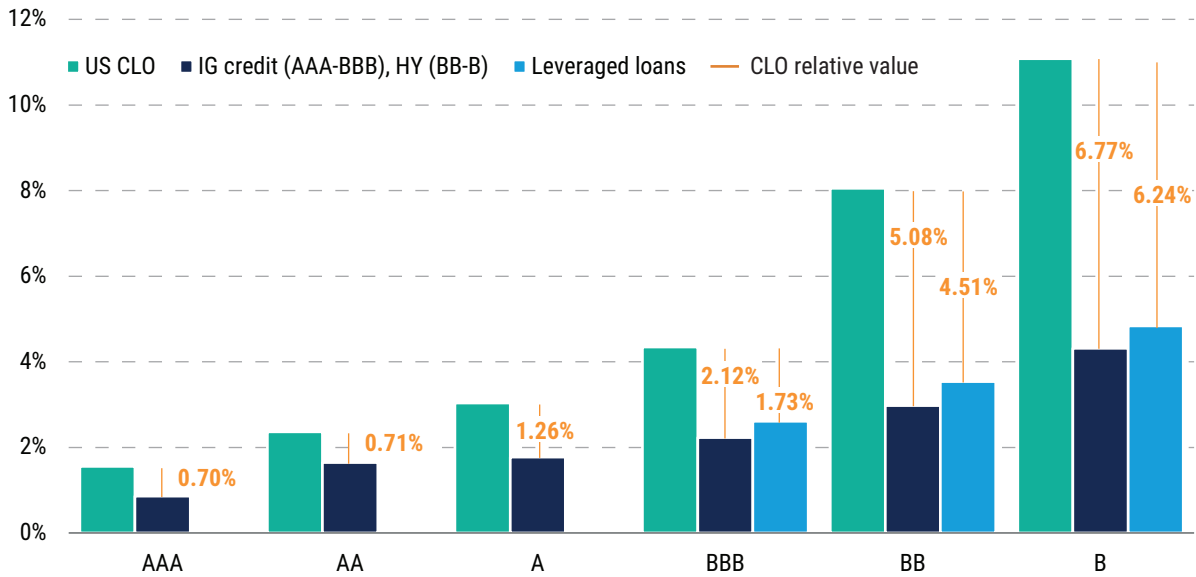


9.5-year annualized returns as of 30 June 2021. Sources: JP Morgan, Bloomberg, and S&P/LCD. US CLO debt represented by the JP Morgan CLOIE Index; IG credit: Bloomberg US Credit Index; High yield bonds: Bloomberg US Corporate High Yield Bond Index; Leveraged loans: S&P/LSTA Leveraged Loan Index.

Wider yield spreads. CLO spreads typically are wider than those of other debt instruments, reflecting CLOs' greater complexity, lower liquidity, and regulatory requirements. Compared with investment grade corporates, as well as other higher-yielding debt sectors – notably high yield and bank loans – CLO spreads are especially compelling.

CLO Spreads Are Compelling Versus Other Debt Sectors

CLO spreads versus comparably rated corporate bonds



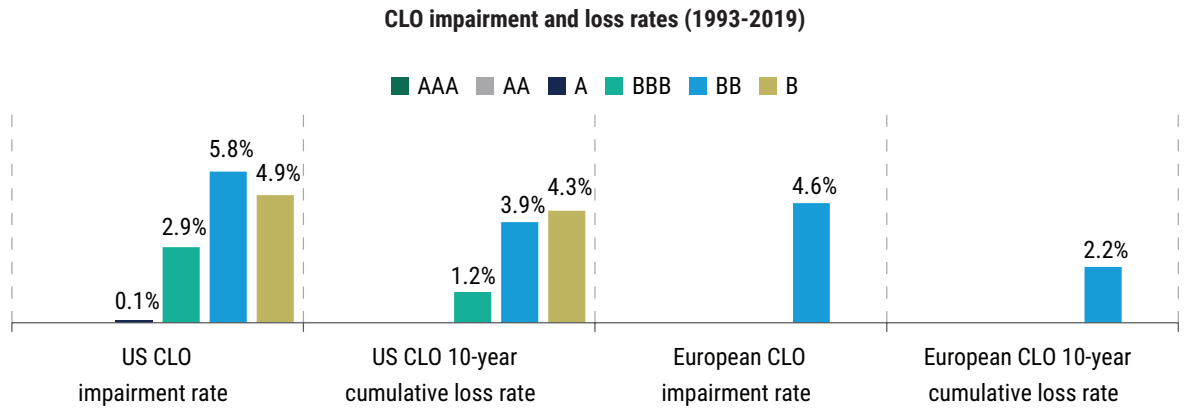
Source: JP Morgan, Bloomberg, and S&P/LCD, as of 31 August 2021. US CLO debt represented by the JP Morgan CLOIE Index; IG credit: Bloomberg US Credit Index; High yield bonds: Bloomberg US Corporate High Yield Bond Index; Leveraged loans: S&P/LSTA Leveraged Loan Index.

Low interest-rate sensitivity. Leveraged loans and their CLO tranches are floating-rate instruments, priced at a spread above a benchmark rate (such as Libor,⁹ Euribor, and SOFR). As interest rates rise or fall, CLO yields will move accordingly, and their prices have historically moved less than those of fixed-rate instruments. These characteristics can be advantageous to investors in diversified fixed income portfolios.

⁹ Libor references should be considered illustrative, as this rate is effectively ceasing by the end of 2021. Please review "Risks Related to the Discontinuance of the London Interbank Offered Rate ("Libor")" found at the end of this presentation for more information regarding this transition.

Attractive risk profile. As demonstrated by a variety of key metrics, with impairment rates the most notable example, CLOs have historically presented lower levels of principal loss when compared with corporate debt and other securitized products.

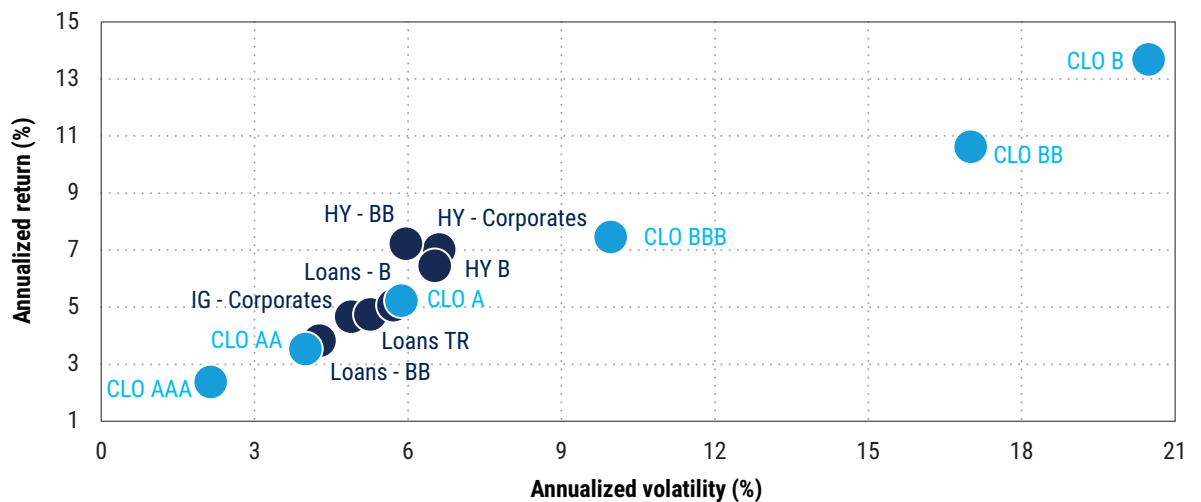
Low Cumulative Impairment Rates



“Impairment rate” is the terminology used by Moody’s for CLOs, which is most easily understood as the default rate for CLOs. A CLO has the ability to “cure” itself, and it is only upon final maturity that a tranche is recognized as “defaulted.” The “loss rate” is the eventual loss recognized on the tranche at maturity.

As of 22 January 2021. Source: Moody’s, Barclays Research. CLO impairment and loss given default (LGD) rates by original rating and based on 10-year cumulative data over 1993-2019. Impairments split by principal (outstanding principal write-down or loss >50bp of the original tranche balance or security carrying Ca or C rating, even if not yet experienced an interest shortfall or principal write-down) and interest (outstanding interest shortfall >50bp of original tranche balance).

A Competitive Risk/Return Profile



Source: Bloomberg, JP Morgan, S&P LSTA, Barclays. 9.5-year annualized returns and volatility as of 30 June 2021.

Lower default rates. Of the approximately \$500 billion of US CLOs issued from 1994-2009 and rated by S&P (vintage 1.0 CLOs), only 0.88% experienced defaults, and an even smaller percentage of those, 0.35%, were originally rated BBB or higher (see table below). If we consider those deals rated by Moody's, there have been zero defaults on the AAA and AA CLO tranches across all vintages (1.0 through 3.0).¹⁰

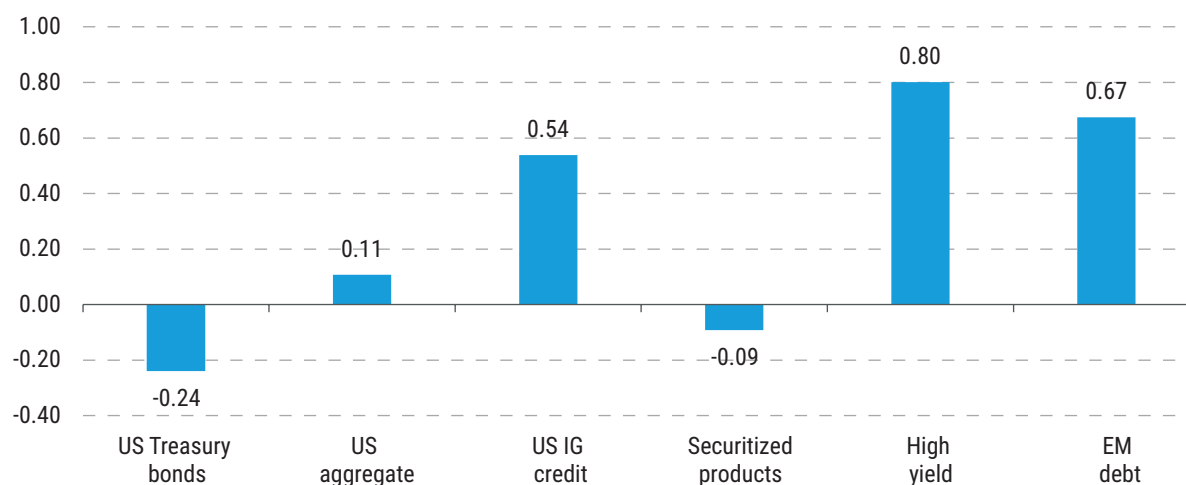
Even Vintage 1.0 CLOs Experienced Minimal Defaults

Original rating category	Original rating count	No. of defaults
AAA	1,540	0
AA	616	1
A	790	5
BBB	783	9
BB	565	20
B	28	3
Total	4,322	38

Source: S&P Global Ratings as of 2 August 2018.

Diversification. CLO correlations versus other fixed income categories are relatively low, meaning that many CLOs have historically increased the effective diversification to a broader portfolio.

CLO Correlations to Other Fixed Income Asset Classes



Source: JP Morgan, Bloomberg, 9.5-year correlations as of 30 June 2021. CLOs represented by the JP Morgan CLO Post-Crisis Index. US Treasury bonds represented by the Bloomberg Long Treasury Index. US aggregate represented by the Bloomberg US Aggregate Index. US IG credit represented by the Bloomberg US Credit Index. Securitized products represented by the Bloomberg US Securitized: MBS/ABS/CMBS and Covered TR Index. High yield represented by the Bloomberg US Corporate High Yield Index. EM debt represented by the JP Morgan EMBI Global Diversified Composite Index.

¹⁰ Source: Morgan Stanley Research, "A Primer on Global Collateralized Loan Obligations (CLOs)," as of 20 September 2021.

Inflation hedge. CLOs' floating-rate yields make them an effective hedge against inflation.

Strong credit quality. Unlike most corporate bonds, leveraged loans are both secured and backed by first-lien collateral.

... and important risks to consider¹¹

The complexity of CLOs comes with a number of risks that investors should consider carefully.

Credit strength. While CLOs enjoy strong credit quality due to the senior secured status of leveraged loans, it's important to keep in mind that leveraged loans carry inherent credit risk: They're issued to below-investment-grade companies whose revenue streams are sensitive to fluctuations in the economic cycle.

Collateral deterioration. If a CLO's loans experience losses, cash flows are allocated to tranches in order of seniority. Depending on the severity of the losses, the value of the equity tranche could be wiped out and junior loan tranches could lose principal.

Non-recourse and not guaranteed. Leveraged loans are senior obligations and, as such, have full recourse to the borrower and its assets in the event of default. A CLO, however, has recourse only to the principal and interest payments of the loans in the portfolio.

Loan prepayments. Leveraged loan borrowers may choose to prepay their loans in pieces or completely. While experienced CLO managers may anticipate prepayments, they're nonetheless unpredictable. The size, timing, and frequency of prepayments could potentially disrupt cash flows and challenge managers' ability to maximize portfolio value.

Trading liquidity. CLOs generally enjoy healthy trading liquidity – but that could change very quickly if market conditions turn. A prime example is the financial crisis, when trading activity for even the most liquid debt instruments slowed to a trickle.

Timing of issuance. While market conditions could be strong when a CLO is issued, they might not be during its reinvestment period. That's what happened to the 2003 vintages, whose reinvestment period coincided with the onset of the financial crisis and its resulting drop-off in trading volume.

Manager selection. Historical performance of CLO managers encompasses a wide spectrum of returns, underscoring the importance of choosing seasoned managers with solid long-term track records.

Spread duration. While interest rate duration is low due to the floating-rate nature of CLO tranches (indexed off three-month Libor,¹² Euribor, or SOFR), spread duration is a consideration that should be taken into account. Due to a typical reinvestment period of four to five years, spread duration is usually between 3.5 and seven years. The higher up the capital stack, the lower the spread duration, as each CLO is redeemed sequentially, making the lower-rated tranches longer in spread duration.

¹¹ This should not be considered an exhaustive list of potential risk factors related to CLOs, rather an illustrative description of some potential factors affecting a CLO investment.

¹² Libor references should be considered illustrative as this rate is effectively ceasing by the end of 2021. Please review "Risks Related to the Discontinuance of the London Interbank Offered Rate ("Libor")" found at the end of this presentation for more information regarding this transition.

Corporate Credit Asset Classes Versus CLO Tranches

	Senior secured loans	High yield bonds and distressed debt	Emerging market debt	CLO tranches
Issuer	Syndicated loans issued primarily by companies in the US and Western Europe	Corporate bonds issued primarily in the developed markets (US & Europe)	Corporate bonds issued primarily in Latin America, Europe, Asia, and the Middle East and Africa	Securitization trust (loans issued primarily by companies in the US and Western Europe serve as collateral)
Ranking	Typically senior secured	1 st & 2 nd loss	1 st loss	1 st , 2 nd , 3 rd , 4 th , 5 th , 6 th & 7 th loss
Maturity	Typically issued with a 5- to 9-year maturity	5-10 years	5-10 years	Typically Issued with a legal maturity of 12-13 years; weighted average life of 6-10 years
Interest rate duration	0.25 years	0-6 years	0-6 years	0.25 years
Coupon type	Floating rate	Fixed rate	Fixed rate	Floating rate
Spread/OAS	Libor + 417 bps	264 bps	249 bps	<ul style="list-style-type: none"> • Libor + 103 bps (AAA) • Libor + 151 bps (AA) • Libor + 187 bps (A) • Libor + 293 bps (BBB) • Libor + 620 bps (BB) • Libor + 905 bps (B)
Yield to worst	4.23%	4.23%	3.63%	<ul style="list-style-type: none"> • 1.72% (AAA) • 2.59% (AA) • 3.26% (A) • 4.48% (BBB) • 8.23% (BB) • 11.30% (B) • 12-16% (Equity)
Credit rating	BB-CCC	BB-CCC	BBB-B	AAA-B; Not Rated for Equity
Historical default rate	~3% p.a.	~3% p.a.	~2.5%*	0.3%**
Historical recovery rate	~75%	~35%	~35%	23%**
Additional notes	Limited call protection. Extended trade settlement times (T+7)	Higher price volatility	Higher price volatility	Can be less liquid when compared to underlying bank loans (T+2)

As of 30 June 2021. Sources: S&P/LSTA Leveraged Loan Index; Bloomberg Indices; JP Morgan CEMBI Broad Diversified; JP Morgan CLOIE. *1-year speculative default rate. **10-year geometric mean for all CLO tranches. Sources: Bank of America Merrill Lynch High Yield Strategy Default Rates/Issues 5 July 2017; Moody's: Structured Finance: CLOs - Global Impairment and Loss Rates of US and European CLOs: 1993-2017, 25 June 2018. **Past performance is not indicative of future results. There can be no assurance that the target will be achieved.**

Note: Libor references above should be considered illustrative as this rate is effectively ceasing by the end of 2021. Please review "Risks Related to the Discontinuance of the London Interbank Offered Rate ("Libor")" found at the end of this presentation for more information regarding this transition.

PineBridge has a long history in CLOs

PineBridge Investments has extensive experience in leveraged finance, not only as a manager, but also as an issuer: Since 1999, we've issued 35 CLOs in the US and Europe, with a par value of \$14.2 billion. In addition, we've reissued, reset, or refinanced 22 transactions worth \$10.2 billion.*

Our team of professionals includes senior leadership that has been in place for over 20 years, as well as a deep bench of credit analysts, most of whom have been with us for at least 10 years.

In fixed income, our experience extends across the spectrum of developed and emerging markets, investment grade debt, leveraged finance, and multi-sector strategies.

Our investment process is informed by rigorous, proprietary credit analysis across sectors and regions.

Our leveraged finance portfolios total \$22.3 billion, including \$5.3 billion in US CLOs, \$2.2 billion in European CLOs, and \$2.5 billion in CLO tranches.**

* As of 31 July 2021. Includes all CLOs managed by PineBridge (or an affiliate).

** As of 30 June 2021. Includes all leveraged finance portfolios managed by PineBridge (or an affiliate).

Choosing the right manager

The most critical decision a CLO investor can make is the selection of a manager. It isn't easy: There are approximately 175 managers¹³ with post-crisis CLOs to choose from, and each creates its own portfolios using its own investment style. And it's worth repeating that historical performance among managers greatly varies. That said, successful managers tend to share several key traits.

Extensive experience

There's no substitute for deep CLO management experience, which provides the combination of skills, practice, tactical and strategic savvy, adjustment-making, and chronological perspective needed to generate strong returns in such a complicated asset class.

Chronological perspective may be the most important aspect of experience in the CLO world, as the benefit of having managed portfolios before, during, and after the financial crisis is incalculable.

Excellence of execution

Managers should show strong abilities in the vital competencies that collectively define best-practice portfolio management. These begin with loan selection, as creating a strong collateral base lays the foundation for potential success. Trading skill enables the manager to know when to take gains, avoid losses, and adjust the portfolio as market conditions evolve. Effective management of deteriorating credits affects not just the specific credits involved, but also the entire CLO due to the way cash flows are distributed through the tranche structure. And the reinvestment of principal proceeds in new collateral can make the difference between good and great performance.

Expertise in handling risk

Sound risk management is both a cause and effect of these best practices: It informs everything the manager does and is reflected in the results. In addition to oversight of the portfolio, it includes skillful execution of coverage tests; the ability to understand the nuances and idiosyncrasies of CLO documentation, which is nonstandard and complex; and a talent for balancing the numerous portfolio metrics by optimizing as many as possible while taking a hit on as few as possible.

¹³ Source: Intex as of 2 December 2020.

Risks Related to the Discontinuance of the London Interbank Offered Rate ("Libor")

Libor an estimate of the rate at which a sub-set of banks (known as the panel banks) could borrow money on an uncollateralized basis from other banks. The United Kingdom (the "UK")'s Financial Conduct Authority (the "FCA"), which regulates Libor, has announced that it will not compel banks to contribute to Libor after 2021; the panel banks will still be required to submit the USD 1-month, 3-month, 6-month and 12-month Libor settings until 30 June 2023. As that date approaches the FCA could decide to require the continued publication of these settings on a synthetic basis, which would represent an approximation of each setting, in order to reduce disruption in the market. On 3 April 2018, the New York Federal Reserve Bank began publishing its alternative rate, the Secured Overnight Financing Rate ("SOFR"). The Bank of England followed suit on 23 April 2018 by publishing its proposed alternative rate, the Sterling Overnight Index Average ("SONIA"). Each of SOFR and SONIA significantly differ from Libor, both in the actual rate and how it is calculated, and therefore it is unclear whether and when markets will adopt either of these rates as a widely accepted replacement for Libor. If no widely accepted conventions develop, it is uncertain what effect broadly divergent interest rate calculation methodologies in the markets will have on the price and liquidity of loans and debt obligations held by the funds, securities issued by the funds and our ability to effectively mitigate interest rate risks.

The Alternative Reference Rate Committee confirmed that the 5 March 2021 announcements by the ICE Benchmark Administration Limited and the FCA on the future cessation and loss of the representativeness of the Libor benchmark rates constitutes a "benchmark transition event" with respect to all U.S. dollar Libor settings. A "benchmark transition event" may cause, or allow for, certain contracts to replace Libor with an alternative reference rate and such replacement could have a material and adverse effect on Libor-linked financial instruments.

As of the date of this presentation, no specific alternative rates have been selected in the market, although the Alternative Reference Rates Committee convened by the Board of Governors of the Federal Reserve System has made recommendations regarding a specified alternative rate based on a priority waterfall of alternative rates and certain bank regulators and the SEC are encouraging the adoption of such specified alternative rate.

It is uncertain whether or for how long Libor will continue to be viewed as an acceptable market benchmark, what rate or rates could become accepted alternatives to Libor, or what the effect any such changes could have on the financial markets for Libor-linked financial instruments. Similar statements have been made by regulators with respect to the other Inter-Bank Offered Rates ("IBORs"). Certain products / strategies can undertake transactions in instruments that are valued using Libor or other IBOR rates or enter into contracts which determine payment obligations by reference to Libor or one of the other IBORs. Until their discontinuance, the products / strategies could continue to invest in instruments that reference Libor or the other IBORs. In advance of 2021, regulators and market participants are working to develop successor rates and transition mechanisms to amend existing instruments and contracts to replace an IBOR with a new rate. Nonetheless, the termination of Libor and the other IBORs presents risks to product / strategies investing in Libor-linked financial instruments. It is not possible at this point to identify those risks exhaustively, but they include the risk that an acceptable transition mechanism might not be found or might not be suitable for those products / strategies (as applicable). In addition, any alternative reference rate and any pricing adjustments required in connection with the transition from Libor or another IBOR could impose costs on, or might not be suitable for applicable products / strategies, resulting in costs incurred to close out positions and enter into replacement trades.

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Last updated 28 October 2021.