ICG

Capital Market Strategies

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An Introduction to Collateralized Loan Obligations (CLOs)

Executive summary

- CLOs are securitizations backed predominantly by a portfolio of senior secured loans diversified across borrowers, industries and segments of the economy
- Risk to investors is mitigated by performance tests, credit enhancement and active portfolio management
- CLOs are long-term investment vehicles with no mark-to-market triggers, which could otherwise force the sale of assets in a distressed market
- Pre-crisis CLOs proved to be resilient, with generally strong credit performance through the financial crisis
- Post-crisis CLOs are characterized by more robust structures than their pre-crisis predecessors, intending to protect both CLO debt and equity investors
- CLOs are an established institutional asset class with an investor base that includes banks, insurance companies and large asset managers
- CLOs offer investors access to the senior secured loan market with tailored risk-adjusted return profiles while benefitting from structural protections and favourable capital treatment

Although CLOs sound complex and elicit a measure of trepidation among those not actively involved in the financial industry, CLOs are relatively simple financing structures. At its most basic level, a CLO is a portfolio of senior secured loans against which a series of debt obligations are issued. The cash flows generated from the portfolio of senior secured loans are used to pay principal and interest on the CLO's debt obligations. The debt obligations are "tranched" into various classes with different priorities in the CLO's cash flow waterfall. Residual cash flows are paid to the CLO equity investors.

What is a CLO?

Institutional investors access the senior secured loan market by investing in CLOs. CLOs are securitizations backed by a diverse portfolio of senior secured loans to businesses that are rated below investment grade. The CLO portfolio is comprised primarily of first lien senior secured loans, although there may be small allowances for second lien loans and unsecured debt.

CLOs are funded by layers of debt of varying seniority and equity. The principal and interest received from the portfolio of senior secured loans is distributed according to a cash flow waterfall. The debt obligations have varying seniority in the cash flow waterfall, with residual cash flows being distributed to the CLO's equity. For the economics of a CLO transaction to work, the interest income from the loan portfolio must exceed the interest expense of the CLO debt obligations, with the CLO's equity investors receiving the excess interest.

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The resilience and stability of a CLO is enhanced by the features detailed below:

Active portfolio management

CLOs are not index funds; they are actively managed investment vehicles. Although CLOs have strict covenants regarding portfolio diversification, credit quality and other metrics by which CLO managers must abide, managers have substantial discretion to reinvest collateral proceeds. A CLO manager can, among other things, buy, sell and substitute loans in the underlying asset portfolio. A CLO manager's ability to assess credit and quickly respond to changes in credits or markets can significantly impact the performance of a CLO's portfolio.

Diversification

Specific covenants are incorporated into the transaction documents to regulate the type of loans that CLO managers may acquire, including covenants requiring managers to construct a diversified portfolio. The typical CLO is diversified across a wide range of industries and borrowers. It is common to have more than 175 individual companies in a US CLO, and while diversification is lower in Europe, it is generally increasing as the European loan market has expanded significantly in recent years. Generally, only a small percentage of the assets (typically 2%) may be invested in the loans of any individual borrower. These limitations on portfolio composition mitigate outsized exposure to any single borrower or industry and restrict the purchase of lower credit quality loans.

No mark-to-market triggers

Nearly all CLOs have no mark-to-market triggers or other similar provisions and have high hurdles to meet before a collateral liquidation is triggered, making them better equipped to withstand market volatility.

What is a Senior Secured Loan?

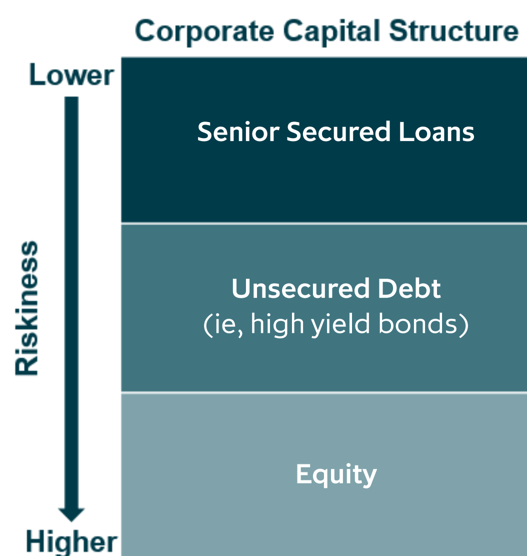
As previously mentioned, CLOs are securitizations backed by a diverse portfolio of senior secured loans. The global loan market represents approximately €1.3 trillion across almost 1,500 borrowers. CLO portfolios hold more than half of the institutional senior secured loan market as collateral.[1]

Senior secured loans, also known as "leveraged loans" and "bank loans", are loans to companies rated below investment grade. Senior secured loans are typically secured by a first-priority security interest in a borrower's assets, ahead of unsecured debt. However, certain assets may not be pledged as collateral, and some loans have junior-lien positions.

The typical loan in a CLO portfolio has the following characteristics:

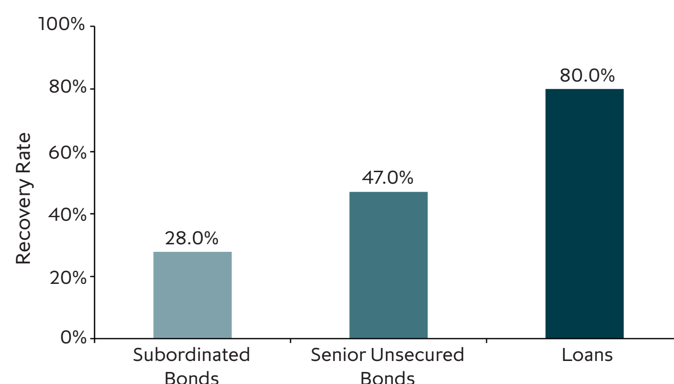
- An issuer credit rating between Ba1/BB+ and B3/B-
- Status as a senior secured loan facility
- Original maturity of approximately five to seven years
- Generally, floating-rate interest payments indexed to LIBOR or EURIBOR

Exhibit 1: Illustrative obligor capital structure



As the term "senior secured" implies, these loans have a first-priority security interest in virtually all of a borrower's assets in the event of a bankruptcy. Defaulted senior secured loans have historically had higher recovery rates than defaulted high yield bonds.

Exhibit 2: Senior secured loans have historically higher recovery rates than other corporate credit instruments, 1987 to 2019



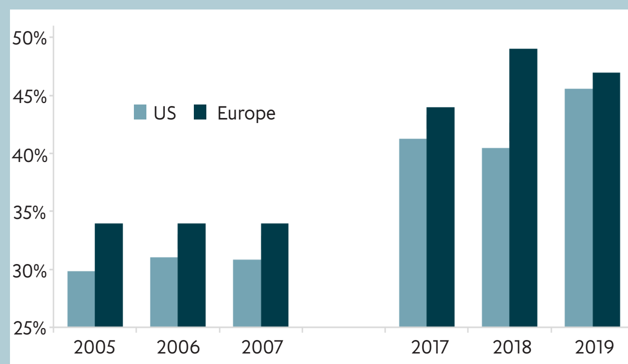
Source: Moody's Investors Service, "Moody's Corporate Default & Recovery Rates Study 2019"

[1] Source: S&P Global Market Intelligence, Wells Fargo, March 31, 2020

Average equity contribution to LBOs

We believe the market is failing to price in the significant equity contributions that private equity sponsors have made to LBOs, especially when compared to the run-up to the financial crisis. The average contributions for LBOs during the 2005-2007 and 2017-2019 periods demonstrate that private equity sponsors now have substantially more "skin in the game", which acts to protect debt in the capital structure. These sponsors also have record levels of dry powder to defend investments where they believe the business has significant intrinsic value once the COVID-19 pandemic subsides.

Equity contribution as a percentage of total sources



Source: S&P Global Market Intelligence

Understanding the typical CLO structure

CLOs use the net proceeds from the issuance of CLO debt obligations and equity to purchase the collateral backing the CLO debt obligations.

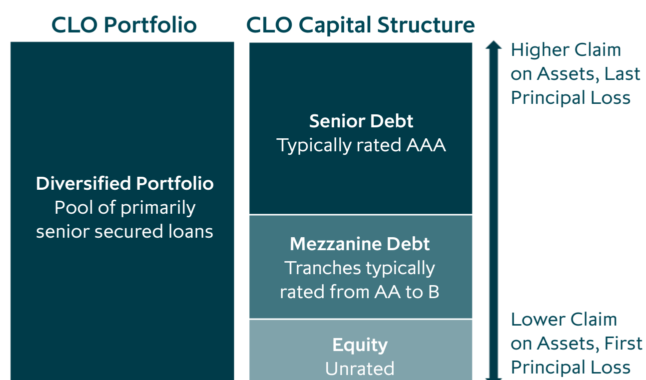
As mentioned earlier, CLOs consist of different classes of CLO debt obligations in the form of different classes of rated debt (often AAA, AA, A, BBB, BB and B) and a class of unrated equity. Each class of CLO debt has a different priority on the cash flow distributions and exposure to risk of loss from the collateral pool. Cash flow distributions begin with the senior-most class of CLO debt and flow down to the equity.

Senior debt: Senior debt obligations are the least risky (most protected) debt obligations with the lowest interest rates. They are typically rated AAA or AA and make up the bulk of total CLO debt issued. They are usually not deferrable (meaning missing an interest payment would lead to an event of default). In most CLO transactions, the AAA-rated debt is the controlling class, meaning that its holders are given greater control over changes to the CLO indenture.

Mezzanine debt: Mezzanine debt obligations are riskier than the senior debt obligations. As a result, they offer higher rates of interest but may provide considerable protection against collateral defaults. They are typically rated from A to B.

Equity: The equity represents a claim on all excess cash flows once the obligations for each debt tranche have been met. The equity returns benefit from the contractual cash flows of the underlying portfolio and are not directly impacted by market fluctuations of the portfolio.

Exhibit 3: Illustrative CLO capital structure



Note: Mezzanine debt and equity (collectively, "junior tranches")

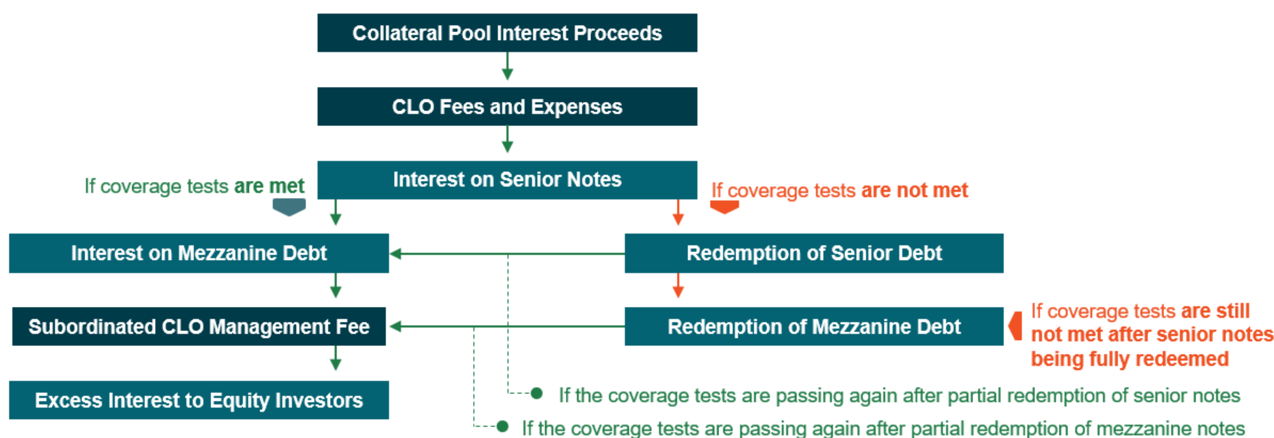
With debt obligations that match the tenor of the senior secured loans in which CLOs invest, the structures allow a manager to focus on the long-term creditworthiness of the underlying portfolio, and not short-term fluctuations in the market value of the portfolio.

Cash flow waterfall

The cash flows generated by a CLO's portfolio are used to make payments to the different classes of CLO debt and equity, according to their seniority. The cash flow waterfall provides varying degrees of protection to the CLO debt obligations in connection with performance tests. In general, cash flows from the CLO portfolio are paid to the CLO debt by seniority from the top-down and losses on the collateral accrue from the bottom up, creating the different risk profiles described above.

For principal and interest proceeds to flow down the structure, starting from the top, each debt obligation must be paid in full. The senior CLO debt obligation must receive its full principal and interest due before any proceeds can flow down the waterfall and begin to repay the next debt obligation.

Exhibit 4: Illustrative cash flow waterfall



Source: Morgan Stanley, ICG

Structural protections of CLOs

Credit enhancements

Several structural features of CLOs reduce risk and protect the classes of CLO debt, commonly referred to as "credit enhancements."

Subordination

Although all CLO debt and equity investors rely on the same collateral pool to service the principal and interest due on their debt obligations, the senior-most class has the first claim to those cash flows, followed by the next most-senior class. The junior tranches absorb losses before the senior tranches. Because of the varying priorities, the senior-most debt obligations have substantial over-collateralization.

In addition, the par value of a CLO's assets is greater than the par value of its debt obligations. This is a result of the equity contributed to the CLO's capital structure. This additional collateral serves to protect all of the CLO debt obligations.

Excess interest

Excess interest refers to the excess interest income received from the CLO portfolio over the amount of interest due on the CLO's debt obligations. If a CLO is passing all performance tests, the excess interest is distributed to the equity.

Performance tests

CLOs are self-correcting structures that incorporate performance tests that are measured regularly to detect warning signs of collateral quality erosion. By way of design, the performance tests penalize CLO managers for carrying excessive low-quality assets by applying haircuts to the excess par value. For example, a typical CLO has a pre-defined threshold for CCC-rated assets set at 7.5%. However, if the CLO portfolio carries more CCC assets than this threshold, the amount above the threshold will be carried at a discount to its par value. Regardless of the extent to which CLOs exceed this threshold they are not required to sell CCC assets.

If collateral performance deteriorates enough, the CLO structures redirect cash flows from junior tranches to purchase additional collateral and repay the most-senior tranche. The reinvestment of cash flows to purchase new collateral during the CLO's reinvestment period may be accretive to the long-term value of CLO equity. With strong structural protections and historically low default rates, CLO debt obligations and equity can present attractive opportunities without assuming undue credit risk.

Exhibit 5: Structural protections of CLOs

Credit Enhancement	Performance Tests
Risk-reduction technique that increases the credit profile of securitized products	**Redirect cash flows from junior tranches to acquire additional collateral and repay the most-senior debt, if collateral performance deteriorates**
Subordination: CLOs are structured so junior tranches absorb losses before senior debt	**Overcollateralization test**: Par value of assets / Par value of CLO liabilities more or equally senior to the tranche being tested
Excess interest: The interest income from the loan portfolio exceeds the interest expense paid to investors to create an additional cash cushion	**Interest coverage test**: Interest expected to be collected / Interest due on CLO liabilities more or equally senior to the tranche being tested

Historical CLO performance showcases this product's resilience

Pre-crisis CLOs (CLO 1.0)

CLOs performed well through the financial crisis, with low default rates and attractive risk-adjusted equity returns. Even through the financial crisis, defaults on pre-crisis CLOs were minimal across all rating categories, and no CLO debt that was initially rated AAA has ever defaulted. This strong credit performance can be attributed to the resilient CLO structure previously discussed. The following table provides details of defaults on CLO debt obligations across global CLOs and vintages rated by S&P.

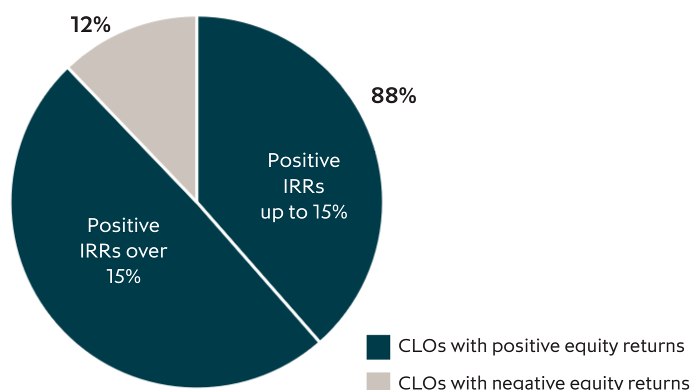
Exhibit 6: Only 0.4% of CLO tranches have defaulted since 1994

Original Rating	CLO 1.0 (issued 1994-2009)		CLO 2.0 (issued 2010-2019)		Total (CLO 1.0 + CLO 2.0)	
	Tranches	Defaulted	Tranches	Defaulted	Tranches	Defaulted
AAA	2,012	0	2,040	0	4,052	0
AA	841	1	1,637	0	2,478	1
A	1,029	5	1,352	0	2,381	5
BBB	1,073	12	1,167	0	2,240	12
BB	770	36	1,050	0	1,820	36
B	39	4	420	0	459	4
Total	**5,764**	**58**	**7,666**	**0**	**13,430**	**58**

Note: CLO tranche defaults by original rating
Source: S&P Global Ratings, September 2019

Similarly, pre-crisis CLO equity has exhibited strong performance. As shown below, nearly half of all terminated CLOs issued from 2003-2011 had internal rates of return (IRR) of 15%, while the percentage of CLOs realizing negative IRRs remained low. CLO equity has historically generated strong absolute returns with a low loss rate.

Exhibit 7: Distribution of global CLO equity IRRs (2003 – 2011 vintages)



Source: Wells Fargo, Intex

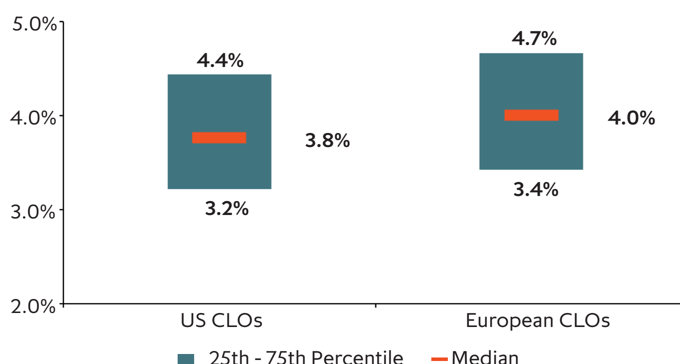
Post-crisis CLOs (CLO 2.0)

Although pre-crisis CLO performance was strong through the financial crisis, post-crisis CLOs are characterized by even more robust structures. Structural improvements relative to their pre-crisis counterparts include: (i) substantially more credit enhancement for each rated debt tranche resulting in lower leverage, (ii) stricter limits on the portfolio composition, and (iii) more restrictive covenants protecting CLO investors.

- A possible benefit of stronger credit enhancement of CLO 2.0 may be more cushion on the overcollateralization tests (*see Structural Protections of CLOs*), so that CLO 2.0 equity has a lower likelihood of cash flows being redirected from junior tranches. In the event of such a diversion, the amount of loss that equity would need to offset to cure the overcollateralization tests would also be lower.
- Pre-crisis CLOs could invest in high yield bonds and structured products, while post-crisis CLOs are backed almost entirely by senior secured loans. The CLO 2.0 structural enhancements limit the risk profile of a CLO's loan portfolio, reducing volatility for both CLO debt and equity investors. The performance of post-crisis CLOs is expected to be more consistent.

Since most post-crisis CLOs are still outstanding, quarterly equity distributions, which have been sizeable and stable across vintages, are a key metric for evaluating CLO 2.0 performance. The median post-crisis quarterly equity distributions in the US and Europe are 3.8% and 4.0%, respectively. These quarterly equity distributions imply median annual cash-on-cash returns in the US and Europe of 15.2% and 16.0%, respectively.

Exhibit 8: Range of post-crisis CLO equity quarterly distributions (2013 – 2019 vintages)



Source: Wells Fargo, Intex

Valuation assumptions and drivers

Financial models contain detailed information on the characteristics of a CLO, including recent information about assets and liabilities, and are used to project future cash flows to evaluate CLO debt and equity. Model inputs, among other assumptions, include future loan default rates, recovery rates, prepayment rates, reinvestment rates, and discount rates. From this list, the most impactful assumptions are:

Default rate: A default occurs when (i) a principal or interest payment is missed, called a "payment default" or (ii) a borrower files for bankruptcy (or another type of insolvency proceeding). This is measured as an annual rate. The historical global loan default rate from 2001 to 2020 is 3.0% per annum.[2]

Recovery rate: Upon default, the company undergoes a restructuring during which the loan may remain outstanding (with no impact to the principal amount) or may be partially repaid at a price known as the recovery rate.

Default-loss rate: The annual default-loss rate is the amount of CLO portfolio principal that a CLO will lose per year due to the underlying CLO portfolio's defaults and losses. For example, an annual default rate of 3.0% and a recovery rate of 75%, will result in an annual default-loss rate of 75 bps on the underlying CLO portfolio. A CLO with higher average recoveries can sustain more defaults because the total collateral pool loss will be lower. Performance generally declines as the default-loss rate increases.

Discount rate: The discount rate is used to determine the present value of future expected cash flows to the equity. While the default-loss rate is a vital assumption for determining the profile of expected cash flows, for CLO equity valuations, the cash flows need to be discounted at an effective yield-to-maturity, called the discount rate. In March 2020, the discount rate for US and European CLO equity published by Citi Velocity was 10%-14%.

Conclusion: CLOs can deliver value

CLOs offer advantages to investors

CLOs offer institutional investors access to the senior secured loan market with tailored risk-adjusted return profiles. By purchasing CLOs, banks and insurance companies can obtain exposure to the senior secured loan market while benefitting from structural protections and favourable capital treatment. CLO equity affords investors the opportunity to own a senior secured loan portfolio with term financing and no mark-to-market triggers, offering the potential for strong absolute and risk-adjusted returns. CLOs additionally feature low-to-moderate correlation over the long-term with fixed income and equity.

In his May 2019 speech, “Business Debt and Our Dynamic Financial System”, Jerome Powell, Chairman of the Federal Reserve, highlighted the benefits of stable term financing provided by the CLO structure: “CLOs have stable funding given investors commit funds for lengthy periods, so they cannot, through withdrawals, force CLOs to sell assets at distressed prices.”

Pre-crisis CLOs proved to be resilient

The CLO structure was tested during the financial crisis and proved to be more resilient than corporate debt. In Mr. Powell’s May 2019 speech referenced above, he stated that “... CLO structures are much sounder than the structures that were in use during the mortgage credit bubble.” At the peak of the financial crisis over 50% of CLOs failed a performance test, however only 12% of global CLO equity IRRs for 2003 – 2011 vintages were negative.[3] The historical performance of pre-crisis CLOs demonstrates that redirecting cash flows from equity can be effective in preserving the long-term value of CLO equity.

CLOs are essential for a well-functioning credit market

The Federal Reserve Bank of New York recently highlighted in its “FAQs: Term Asset-Backed Securities Loan Facility” publication (26 May 2020) that securitization markets provide a substantial portion of credit to corporations and consumers. In this respect CLOs are a crucial contributor to the non-investment grade corporate credit market, providing funding for over half of the €1.3 trillion of outstanding institutional senior secured loans. They also contribute to liquidity in the active secondary market for senior secured loans.

[2] Source: Moody's Investors Service

[3] Source: Wells Fargo, Intex

Appendix: The CLO lifecycle

Timelines for newly issued CLOs vary by transaction. However, nearly all CLO transactions include a specified series of stages in their lifecycle.

Warehouse period: Several months (typically six to 12 months) before the CLO transaction closes, many collateral managers will open a warehouse with an arranger and begin acquiring loans. The rationale is to allow the collateral manager to buy loans to construct a portfolio over time opportunistically. The warehouse is expected to be paid off with the proceeds from the CLO's issuance.

Ramp-up period: After the CLO closing date, the collateral manager is allowed additional time to make further purchases (typically about six months). The ramp-up period ends when the collateral pool has been acquired. Once the portfolio has been fully purchased, the CLO will "go effective," and the collateral manager shifts its focus from building the portfolio to managing the portfolio.

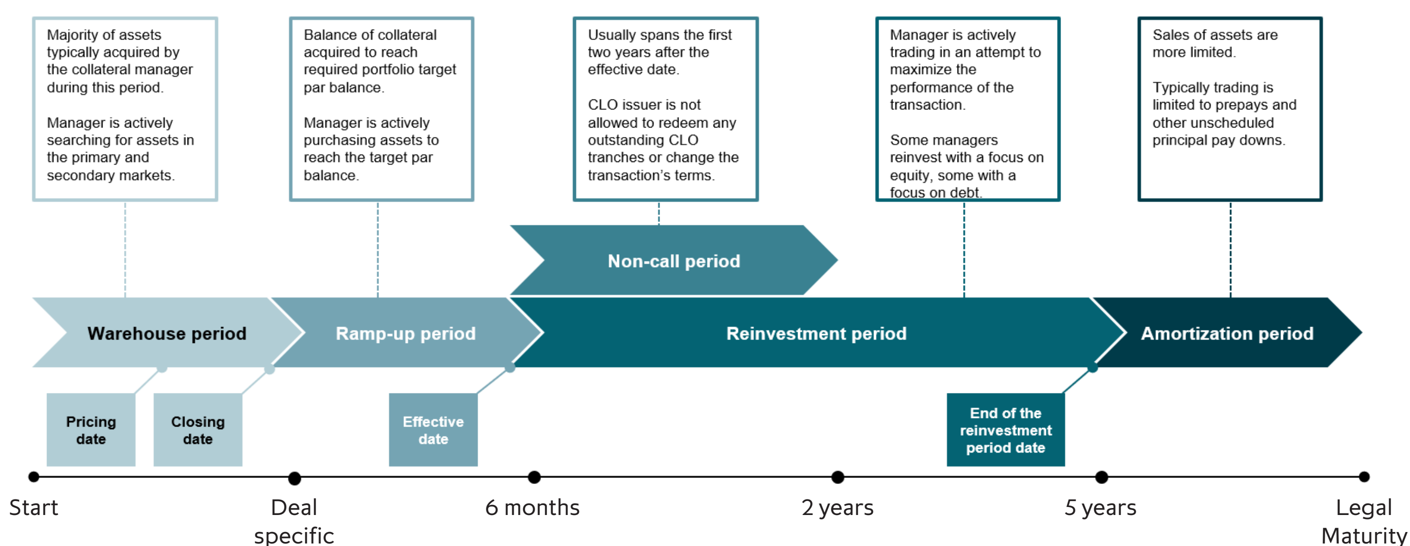
Reinvestment period: After the ramp-up period, the CLO enters the reinvestment period, and the collateral manager is permitted to trade the portfolio actively and reinvest principal cash flows. The reinvestment period may last up to five years.

Non-call period: During the non-call period, the outstanding CLO notes may not be called or refinanced. The non-call period may last six months to two years. Following this period, the equity noteholders may call or refinance the CLO notes.

Amortization period: After the reinvestment period ends, the CLO enters the amortization period, and the collateral manager is no longer allowed to reinvest principal cash flows. Instead, the collateral manager must use principal cash flows to pay down the outstanding CLO notes. There is one caveat here: most CLO transactions permit the reinvestment of proceeds from unscheduled prepayments and sales of certain at-risk assets. However, there are further limitations on the assets that can be purchased during the amortization period.

A successful CLO transaction fully repays the balance of all classes such that their investors receive not only the regular, promised interest payments but also their full initial investment.

Exhibit 9: Illustrative CLO lifecycle



Source: S&P Global Ratings

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