AXA Investment Managers

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Investor Thinking

Harnessing the unique characteristics of CLO Equities for a credit portfolio

- **CLO equity tranches, that receive excess cash flows after coupon and principal payments to the CLO debt tranches, bear the highest risk and exhibit the highest return potential in the CLO structure.**
- **Outperformance vs other high yielding assets classes over the past decade, a possible positive response over the mid term to a rising credit spread environment, high front-loaded cash flows and moderate duration, are compelling potential characteristics of this asset class.**
- **Institutional investors familiar with CLO debt would do well to consider the distinctive nature of CLO equities and how CLO equity exposure can improve the risk-return profile of their portfolios.**

Incorporating CLO equities' high potential cash flows into institutional portfolios

The annualised performance of CLO equity in the 10 years to the end of 2016 (16.7% on 2005-2007 vintages) surpasses that of many other asset classes including private equity (10.0%), equities (6.9%), and high yield (7.1%) by a considerable margin.[1]

CLO equity tranches sit within the credit universe but have characteristics including high potential cash flows and behaviours that may differ from other credit investments. Their incorporation in portfolios, which we investigate here, could offer attractive diversification benefits to institutional investors.

Characteristics of CLO equity tranches

First risk loss

The equity tranche of a CLO bears the first loss that could occur at the underlying loan pool level. In return, CLO equity tranche investors are given significant control over the length of the life of the overall CLO structure (equity and debt tranches) and are entitled to **receive the excess cash flows** after payments to the CLO debt tranches.

High front-loaded cash flows

The potential cash flows of a CLO equity investment display a unique front-loaded pattern which generally makes CLO equity tranches **moderate duration instruments** – typically close to four years in the absence of any severe market dislocation.

During the reinvestment period (see Table 1: CLO management throughout the structure lifecycle), a CLO equity holder typically receives **annual cash flows of between 16%**

[1] Source: Standard & Poor's (S&P 500 Index – US Equity), Citi Research (Citi US High Yield Bond Index), Wells Fargo (Equity CLOs) and Cambridge Associates (US Private Equity) as of December 2016, AXA IM analysis. CLO Equity 1.0 and 2.0 returns correspond to the average return between US and European samples. Past performance is not a reliable indicator of current or future performance. Historical market trends are not reliable indicators of future market behaviour. Actual results may vary and the variations may be material.

and 20% of the value of their initial investment in the CLO equity tranche[2]. These cash flows are the result of the spread arbitrage between the yield of the underlying loan pool and the cost of funding of the CLO[3] (Figure 1).

Table 1: CLO management throughout the structure lifecycle

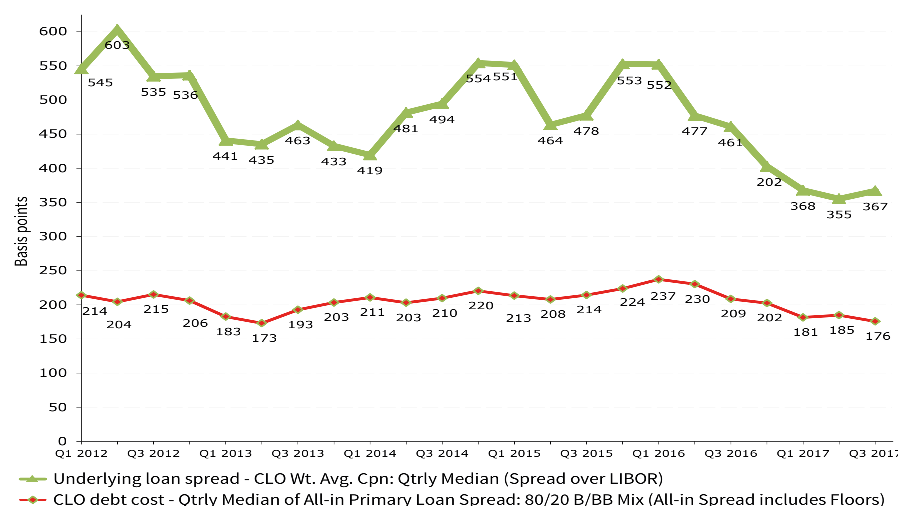
CLO Timeline			
1.	Warehouse period	Warehouse bank provides CLO manager financing to acquire assets.	**0-18 months**
2.	Ramp-up period	Proceeds from CLO Issuance used to purchase additional assets.	
3.	Reinvestment period	Collateral manager permitted to actively trade underlying assets. Principal cash flows from underlying assets can be used by the collateral manager to purchase new assets.	**Old Issuance: 5-7 years New issuances: 2-4 years**
4.	Amortisation period	Cash flows from assets are used to pay down the outstanding notes.	**2-4 years or stated maturity**

Source: Wells Fargo- NEPC LLC. For illustrative purposes only.

> CLO managers are said to **build spread** when they generate return by increasing the **spread arbitrage** between the yield of the underlying loan pool and the cost of funding of the CLO.
>
> CLO managers are said to **build par** when they generate return by purchasing discounted loans which are callable at par.
>
> CLO managers in accordance with CLO equity tranche holders may decide to **call a CLO** (unwind the CLO structure and terminate the deal) or to proceed to a refinancing of the debt tranches or a reset of the overall structure, after a **non-call period** of typically two years from its inception.

> “CLO equity performance in the 10 years to the end of 2016 (16.7% on 2005-2007 vintages) surpasses that of many other asset classes including private equity (10.0%), equities (6.9%), and high yield (7.1%).”

Figure 1: Illustration of the arbitrage between underlying loan spread and CLO debt



Source: Intex, LCD, Wells Fargo Securities as of Q2 2017. For illustrative purposes only. The figures relate to previous months or years and past performance is not a reliable indicator of current or future performance.

[2] Source: AXA IM estimate in the absence of any severe market dislocation. For illustrative purposes only. This is not a reliable indicator of current or future performance.

[3] Cost of the CLO debt, minus the CLO manager fees and other structuring fees/cost (e.g.: trustee)

At the end of the amortisation period, the **final cash flow would typically represent 45% to 65%** of the initial value of the CLO equity tranche, in the absence of any severe market dislocation[4]. The final cash flows to the equity tranche depend directly on the ability of the CLO manager to avoid defaults in the underlying loan pool and to build par.

Leveraged exposure

Leverage is embedded in the performance of the CLO equity tranches as this tranche, representing a small stake of the CLO structure (at around 9 to 10%), is allocated the result of the arbitrage for the whole structure as well as the full impact of any defaults.

The typical leverage – close to 10-fold during the reinvestment period before declining in the amortisation period – may increase the risk of loss associated with credit impairment. It could also reduce the arbitrage spread available to the equity tranche in case of a tightening of loan spreads during the ramp-up period.

Alignment of interest between CLO managers and CLO equity holders

CLO managers actively manage and trade the loan collateral to help assure full payment of debt tranches and to enhance equity returns.[5] This entails managing the quality of the spread arbitrage, reducing the cost of financing (refinancing/reset) in order to deliver a higher stream of quarterly distributions to CLO equity holders.

Performance-linked fees and the risk-retention rules requiring CLO managers to keep 'skin in the game', combine to **encourage CLO managers to maximise the return on equity tranches.**

Potential diversification benefits in a rising spread environment

The performance of the CLO equity tranche benefits from locking in low funding costs at inception and high loan spreads during the ramp-up period but also greatly depends on the future path of underlying loan spreads.

In the very short term, the valuation of CLO equity tranches tends to react similarly to any credit instrument, i.e. positively to spread tightening and negatively to spread widening. However this immediate impact is generally mitigated by an opposite effect at the level of the cash flow received over time by the CLO equity holder:

- in case of spread widening in the loan market, the CLO manager would have the opportunity during the reinvestment period to replace maturing loans by higher yielding ones and/or purchase loans at discount and build par, which could increase the level of excess cash flows and improve the valuation of the CLO equity tranches;
- in case of a tightening of loan spreads, the issuers of the underlying loans would rapidly call their loans at par and the CLO manager would have to reinvest the underlying portfolio with lower yielding loans, thus weakening the spread arbitrage. But CLO equity holders can, after a minimum period of typically two years from the CLO's inception, refinance part of the CLO debt and/or reset a new CLO with the same assets and a lower cost of debt, which could restore a profitable level of excess cash flow to the equity tranche and sustain its valuation.

All else being equal, **CLO equity tranches can benefit over the mid term from a rising spread environment**, which makes them unique instruments in the 'credit universe'.

Performance resilience in the face of cash flow interruptions

Losses and defaults on the underlying collateral do occur, and have the effect of reducing the total interest payment to equity tranches. However, their impact would remain relatively limited when only a few loans default.

If defaults and loan downgrades occur at a pace that result in breaching some of the mechanisms built to protect the CLO debt holders, the cash flow to the equity tranche could be temporarily interrupted and reinvested into loans to safeguard the overall structure of the CLO. In this context loans bought at discount or with a higher coupon during the reinvestment period would benefit CLO equity tranches later on. It is important to note that **missed equity payments do not necessarily imply a lower final return.**

Of course investors could lose a substantial portion of their investment in the case where multiple loans of the underlying pool default at a rate significantly exceeding levels anticipated at CLO inception. In the worst case scenario, i.e. the event of default of the CLO, the holders off the AAA tranche can decide to liquidate the loan pool to repay note holders in order of seniority. While possible, the scenario where a CLO structure has been unwound due to an event of default, with no cash flows left to allocate to the equity tranche holders, has never occurred in the more than 20-year history of CLO issuance, even in the worst years of 2008-2009[6].

Varied return patterns during the 2008 Global Financial Crisis (GFC)

Returns to CLO equity holders can be particularly sensitive to a crisis. The return of some vintages over a crisis could display a certain resilience whereas others could even benefit from it. The maturity of the CLO structure, which relies on the particular phase in the collateral management cycle, goes a long way to explaining the potential difference in performance behaviour.

[4] Source: AXA IM estimate assuming the absence of any severe market dislocation. For illustrative purposes only. This is not a reliable indicator of current or future performance.
[5] According to analysis by Roberto Liebscher and Thomas Mählmann of the Catholic University of Eichstätt-Ingolstadt, skilled CLO managers successfully serve both debt tranche investors with lower downgrade probabilities and higher over-collateralisation ratios (ie ratio between the principal value of the CLO structures' underlying corporate loan pool and the total principal value of the notes issued by the various CLO debt tranches) and equity tranche investors with higher cash flows. Source: Creditflux, January 2015.
[6] Source: AXA IM analysis of market information and industry research papers.

In a salient example, the dislocation of the loan market during the GFC had various impacts on the CLO equity performance of different CLO issuances/vintages (see Table 2 below).

Table 2: Median Internal Rate of Return (IRR) of CLO equity tranches by vintage - Impact of GFC on performance

Vintage	IRR	Comments regarding the impact of the Global Financial Crisis on performance
2001	7.6%	Many CLOs issued in 2001/2002 were called by 2006/2007 for the benefit of the CLO equity holders and thus avoided the consequences of the GFC[7].
2002	10.5%	
2003	3.6%	The 2003 vintage suffered losses when the loan default rate reached its peak in 2009, after the end of the reinvestment period, and was thus unable to benefit from the high spreads . Despite the turmoil in the market, the return of the worst vintage remained relatively resilient.
2004	8.1%	Some CLOs issued in 2004 were impacted by the GFC similarly to CLOs from the 2003 vintage and others similarly to CLOs from the 2005 vintage.
2005	14.0%	Although CLOs suffered losses during the early reinvestment period[9] and temporary shutoff of equity distributions, most CLO managers generated strong returns by buying distressed loans whose value often returned to par.
2006	15.9%	
2007	16.7%	
2008	6.1%	The performance was mostly impacted by the higher cost of initial funding caused by the GFC.
2009	Not Available	At the nadir of the GFC, CLO issuance was largely closed. Several deals were aborted that year before launch, potentially subjecting 'warehousing' investors to total capital losses[10].
2010	12.1%	When issuance resumed, CLOs benefitted from high spreads at ramp-up, bringing median returns of CLO equity tranches back into double digits.
2011	14.3%	

Source: Intex, Wells Fargo Securities as of Q2 2017; AXA IM analysis. For illustrative purposes only. The figures relate to previous months or years and past performance is not a reliable indicator of current or future performance.

> "Certain CLO vintages benefitted from the GFC despite suffering losses during early reinvestment period and temporary shutoff of equity distributions."

Some risk factors to be aware of before investing

The potential benefits of CLO equity investing present a compelling case for investors. As with all investments, however, investing in CLO equity tranches entails several risks that should be considered carefully before adding to an investor's portfolio.

[7] CLO equity holders have the power to unwind the entire CLO, triggering reimbursement of debt tranches and receiving the excess proceeds from the sale of the underlying loan pool. This opportunity might be implemented for example in case of a major rally in the loan market.
[8] During the amortisation period, CLO managers cannot benefit from higher spreads and could be impacted if collateral default levels exceed expectations. However equity tranche holders can be better off than holders of lower mezzanine tranches in high default scenarios during the amortisation period, as most of the equity tranche's value comes from excess cash flows generated during the reinvestment period rather than at the end of life of the CLO.
[9] The median 2007 CLO vintage missed 5.1% of scheduled equity distributions and the median 2005 CLO vintage 28.3%. Though equity distributions was interrupted for two to four quarters during the down cycle, distributions generally met or exceeded pre-crisis levels upon the recovery of the loan market in 2010. Source: Wells Fargo Securities, 2017.
[10] Investors that provide financing before the CLO inception are particularly vulnerable during the warehouse period as they would bear full losses if the deal aborts.

These risks include the subordination of cash flows to CLO debt tranches, the leveraged exposure and the risks associated with the underlying loans as we have discussed but also low liquidity, performance risks, and undefined maturity.

Low liquidity
The frequency of trading of a CLO equity tranche is irregular – some tranches have never traded during their life. However this does not mean that these instruments are illiquid: broker dealers, due to the very high level of transparency on CLOs, would typically offer a bid/ ask spread of close to 1% in normal market conditions and up to 5% during market turbulence[11].

Performance risk
Although CLO tranches are traded in non-regulated markets, they are extremely transparent financial instruments in the sense that trustee reports publish every month the full list of the CLO's holdings enabling investors to estimate the fair value of any equity tranche available in the market at any time. Investors can also rely on independent cash-flow forecasts and valuation estimates from industry providers[12] that integrate observable and public measures on the most recent trades of CLO tranches, loans and other credit asset classes.

Valuation can be quite volatile – especially in the face of a dislocation of the underlying loan market. For example in the Autumn of 2008, monthly CLO equity valuations fell by as much as 50% from one month to the next, and rebounded by a similar level in mid-2009[13]. A large part of these drawdowns pertained to an investor base of the CLO structures being excessively leveraged at the time and thus forced to sell. Structural changes to the CLO market structure[14] make it difficult to imagine the same levels of forced selling as 2008 recurring. However investors would need to allow for a potential drawdown of typically 30% to 40% for this asset class.

Undefined maturity
The maturity of the equity tranche and that of the CLO structure usually range from six to nine years, though the final maturity is undefined at launch. The termination of the overall CLO structure is usually decided by the CLO equity tranche holders in conjunction with the CLO manager and in accordance with the CLO manager's ability to continue make the underlying loan pool profitable to the CLO equity position:

- when loan spreads have widened excessively with regards to future potential defaults, the CLO manager will build a loan pool with the longest expected life in order to maximise the length of the arbitrage; the equity tranche holders will decide on extending the investment period of the CLO;
- in case of a tightening of loan spreads, a refinancing of the debt tranches or a reset of the deal CLO could be executed as explained previously;
- when the level of future potential defaults is deemed too high with regards to the current arbitrage between the collateral spread and the cost of funding, the CLO equity tranche holders might prefer to liquidate the CLO structure.

Potential attractiveness of incorporating CLO equity tranches in an institutional portfolio

Investors have several options when deciding where to position CLO equity exposure. For example, it could reside within the investor's credit opportunities bucket, making it more of a risk budgeting decision than a part of the asset allocation process. Given the level of expected return, CLO equity exposure could also be positioned in a growth portfolio, e.g. with the aim of helping to close funding gaps.

For some institutional investors, a barbell strategy can be of interest. The most frequent example consists of replacing a 100% high yield portfolio with the barbell portfolio: 75% investment grade bonds and 25% CLO equity tranches. This barbell portfolio would enjoy an improved risk-return profile as illustrated in Table 3.

In addition, in the event of an uptick in high yield spreads that the investor would consider excessive in regard to underlying risks, the barbell portfolio would also enable the investor to reallocate some investment grade to high yield securities and further increase the potential return of the portfolio.

Table 3: CLO equity exposure can improve the risk-return profile of a credit portfolio

	Allocation A	Allocation B
High Yield	100%	0%
Investment Grade	0%	75%
CLO Equity	0%	25%
Expected spread (after defaults)	2.6%	3.8%
Drawdown 2015-2016 market event scenario	-13%	-7% [15]
Expected spread (after defaults) and High Yield repositioning		4.5%

Source: AXA IM. For illustrative purposes only. This is not a reliable indicator of current or future performance. Based on prospective analysis over an eight-year horizon considering initial market conditions of mid-Dec 2017 and a market event similar to the 2015-2016 US High Yield crisis: for HY, an initial spread of 3.6% and a 1.68% default per year with 40% recovery; for IG, an initial spread of 1% and no default; for CLO equity tranches, an IRR before default of 17.5% and 12% post default; a drawdown at end of year four of -13% for HY, -4% for IG and -16% on CLO equity tranches; a 250 bps increase in high yield spread captured at high yield repositioning[16]

[11] Source: AXA IM based on market experience
[12] E.g.: JP Morgan Direct, Markit, etc
[13] Source: Credit Suisse, The CDO Strategist, February 2012
[14] E.g.: better diversification and lower leverage of the investor base of the CLO structure, regulatory changes that ensure the originator of the CLO have some 'skin in the game'
[15] A -40% instead of -16% drawdown on the CLO equity tranches would be required to align drawdowns of allocations A & B.
[16] Sources: Bank of America Merrill Lynch US Corp Master and Bank of America Merrill Lynch US High Yield (spreads of mid-Dec 2017 and drawdown in 2015-2016); Standard and Poor's (default rates over 2015-2016: global corporate AAA-BBB, average global B and BB); Wells Fargo Securities - The US CLO Equity Performance Report.

Where a specialist portfolio manager of CLO equity tranches can add value beyond fees

For investors looking to gain exposure to CLO equity, a strategy managed by a specialist portfolio manager that pools CLO equity tranches may be of interest for several reasons.

- First, a wide skill gap between the top and bottom performing CLO managers exists. Looking at vintages 2003 to 2011, the average difference in CLO equity IRR between the top 80th and the bottom 20th percentiles was 12.5%[17]. A specialist portfolio manager should be able to select CLO managers by properly assessing their credit research capabilities and their experience in handling various credit situations.

- Second, a specialist portfolio manager may add value through portfolio construction by conducting style allocation between CLO managers that are stronger at par building and those that are stronger at spread building. Such a manager would make key decisions especially at the beginning and end of the vehicle's lifespan, e.g. the timing of each investment as it relates to the credit cycle, and whether to redeem or maintain each investment during the amortisation period.

- Third, a specialist portfolio manager would be able to analyse the CLO documentations in order to focus on documentation that are the most favourable to the Equity position.

- Fourth, ongoing monitoring by a specialist portfolio manager would include analysing tail risks to identify and mitigate build up in risk concentrations in underlying loan pools, spotting drifts in credit strategies and taking decisions related to the overall CLO structures. Here, a specialist portfolio manager with a solid track record in managing equity pools and a controlling position in the CLO structures can help investors better understand the complexity embedded in their CLO equity investments and improve the management of the associated risks.

- Fifth, a specialist portfolio manager with solid market presence would be expected to obtain fee rebates from the CLO manager and/or the arranging bank.

- Sixth, a closed-end structure of CLO equity tranches set up by a specialist portfolio manager may afford investors some respite from stakeholders pressure for having to sell at low points during market turmoil. It may thus help investors capture the benefits from the recovery features unique to the asset class.

“A specialist portfolio manager can help investors better understand the complexity embedded in their CLO equity investments and improve the management of the associated risks.”

[17] Data on terminated Broadly Syndicated Loans CLOs. Source: Intex, Wells Fargo Securities as of Q2 2017.

Helping institutional investors make the most of investing in CLO equity

The potential high front-loaded cash flows, moderate duration, maturity at the hand of the CLO equity tranche holders and performance resilience in the face of cash-flow interruptions, make such investments worth considering for institutional investors already familiar with CLO debt tranches and aware of the underlying risks. This holds especially true in a rising rate environment.

Selecting CLO managers that are able to use the leverage efficiently and to maximise the difference between the yield of the underlying loan pool and the cost of funding, can make a significant difference in the overall return.

While engaging the support of a specialist portfolio manager to select and monitor CLO managers does not guarantee a certain outcome, institutional investors may appreciate the insight and governance benefits of working with a knowledgeable and experienced partner capable of taking a 360° view on the asset class by managing loans, CLOs and portfolios of CLOs.

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