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CLO EQUITY: POOLS OF OPPORTUNITY AT THE BOTTOM OF THE CLO CASH-FLOW WATERFALL

- Investors in the equity tranches of Collateralised Loan Obligations (CLOs)[1] assume the highest share of risk of all CLO tranche holders. They also stand to achieve the highest returns. CLO Equity has outperformed most other asset classes over the past decade.
- CLO equity tranches are at the bottom of the CLO structure and receive the excess cash flows only after the satisfaction of the coupon or principal payments to the CLO debt tranches. Despite this, investors have typically enjoyed robust, high front-loaded cash flows associated with a moderate duration.
- Adding to the asset class's appeal to credit investors, CLO equity tranches may provide potential diversification benefits resulting from a positive mid-term response to a rising credit spread environment.

Why take a look beneath the surface?

The annualised performance of CLO Equity in the 10 years to the end of 2016 (16.7% on 2005-2007 vintages) surpasses that of most other asset classes including private equity (10.0%), equities (6.9%), and high yield (7.1%) by a considerable margin.[2]

The CLO market has evolved substantially over the past decade, while maintaining a set of core characteristics that underpin its investment case, as noted in our paper, "Collateralised Loan Obligations: Rebooted". The same holds true for the equity tranches of CLOs, which represent approximately 10% of the €500bn CLO market[3], but which may be less well understood than the debt tranches of the CLO capital structure.

CLO equity tranches sit within the credit universe but have characteristics – including cash flows and return drivers as well as behaviours in a rising spread or in a crisis environment – that present opportunities and risks that may differ from other credit investments and which we investigate here.

Characteristics of CLO equity tranches

First risk loss

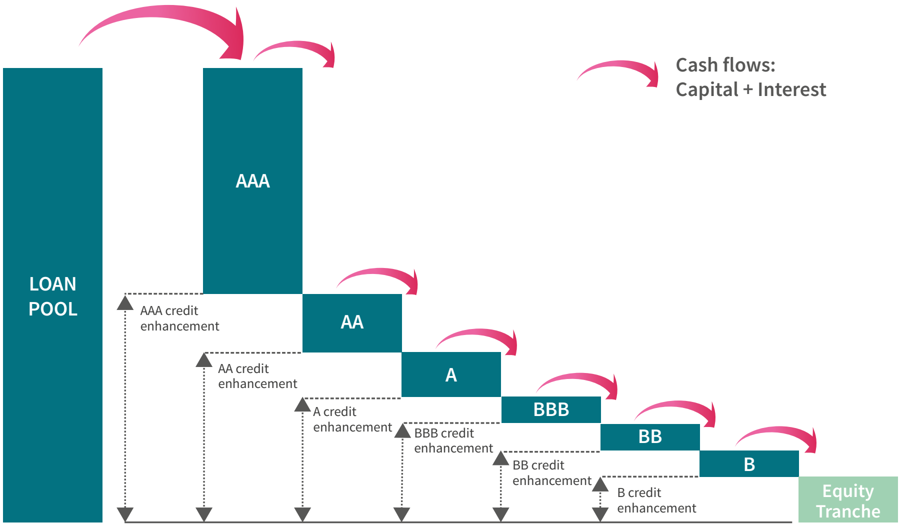
CLO tranches form a range of securities backed by a diversified and managed pool of corporate loans: these securities are credit securities spanning from senior AAA-rated debt to equity. The equity tranche of a CLO bears the first loss that could occur at the underlying loan pool level. It acts as an insurer for the CLO debt tranches.

[1] A collateralised loan obligation (CLO) is a range of securities backed by a diversified and managed pool of corporate loans. [2] 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. [3] Source: Wells Fargo Securities, estimate as of December 2016.

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 from the most senior to the most junior according to the CLO waterfall (Figure 1).

“Overall returns for most vintages were remarkably resilient through the Global Financial Crisis.”

Figure 1: CLO waterfall structure and cash flows

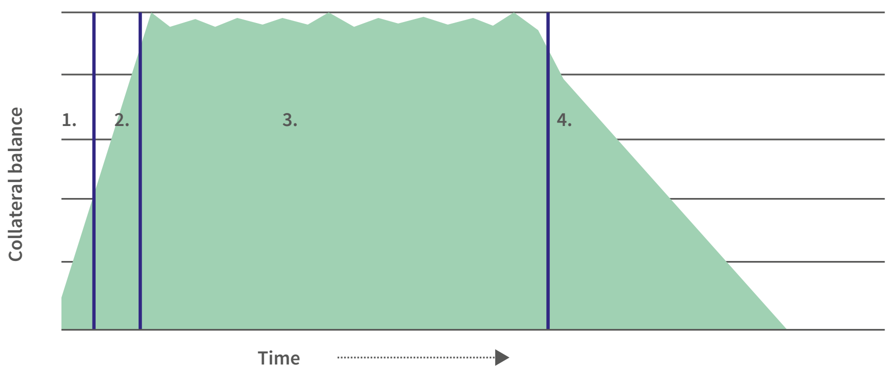


Source: AXA Investment Managers, 2018. For illustrative purposes only.

High front-loaded cash flows

The potential cash flows of a CLO equity investment are closely associated with the different phases in the collateral management cycle (Figure 2).

Figure 2: Main collateral management phases of a CLO

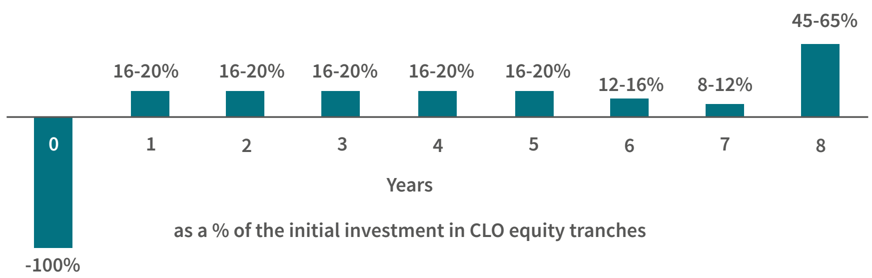


CLO Timeline			
1.	Warehouse period	Warehouse bank provides CLO manager financing to acquire assets.	0-18 months
2.	Ramp-up period	Proceeds from CLO Issuance used to purchase additional assets.	
3.	Reinvestment period	Collateral manager permitted to actively trade underlying assets. Principal cash flows from underlying assets can be used by the collateral manager to purchase new assets.	Old Issuance: 5-7 years New issuances: 4-6 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.

They display a unique front-loaded pattern (Figure 3) which generally makes equity tranches **moderate duration instruments** in the credit universe – typically close to four years in the absence of any severe market dislocation.

Figure 3: Pattern of potential cash flows of a CLO investment



Source: AXA Investment Managers' estimate considering defaults in line with levels expected at inception. For illustrative purposes only. This is not a reliable indicator of current or future performance.

Outside the ramp-up and the amortisation periods, a CLO equity holder typically receives **annual cash flows of between 16% and 20%** of the value of their initial investment in the CLO equity tranche[4]. 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, i.e. cost of the CLO debt minus the CLO manager fees and other structuring fees/costs (e.g.: trustee). Depending on market conditions, this arbitrage typically represents around 200bps[5].

During the amortisation period at the end of the life of the overall CLO's structure, in addition to the above, the CLO equity investor receives, the excess cash flows after the principal of all debt tranches has been refunded. These final cash flows depend directly upon the ability of the CLO manager to avoid defaults in the underlying loan pool and to build par. As shown in Figure 3, these **final cash flows would typically represent 45% to 65% of the initial value** of the CLO equity tranche in the absence of any severe market dislocation[6].

"a CLO equity holder typically receives annual cash flows of between 16% and 20% during the reinvestment period[4] and final cash flows of between 45% and 65%[6]."

Leveraged exposure

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

The typical leverage of 9 to 11 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.

[4] 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. [5] Source: Intex, Wells Fargo Securities (Q1 2012-Q2 2017). For illustrative purposes only. Past performance is not a reliable indicator of current or future performance.[6] Source: AXA IM estimate. For illustrative purposes only. This is not a reliable indicator of current or future performance.

The role of CLO managers

During the **reinvestment period**, after the **ramp-up** and before the **amortisation** of the CLO structure, the CLO manager is allowed to purchase new assets with the principal cash flows of the underlying loan pool.

CLO managers are said to **build spread** when they generate return by increasing the **spread arbitrage** between the yield of the underlying loan portfolio 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.

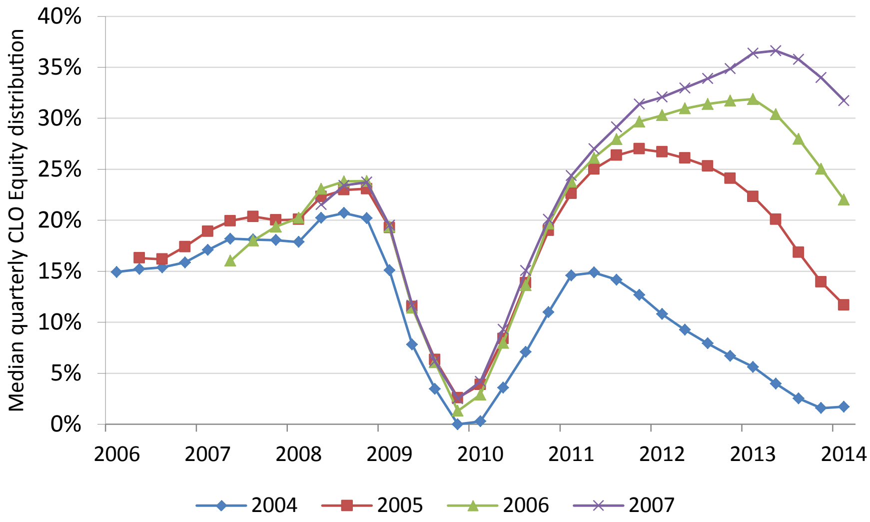
CLO managers may suggest CLO equity tranche holders to decide to **call the CLO**, i.e. unwind the CLO structure and terminate the deal, after a non-call period of typically two years from its inception.

Resilience through the Global Financial Crisis

As with any credit investment, CLO Equity tranches were impacted during the 2008 Global Financial Crisis. However, despite a peak in the loan defaults and temporary shutoff of equity distributions, **overall returns for most vintages were remarkably resilient through this crisis** as illustrated in Figure 4.

The average annual Internal Rate of Return (IRR) of for the worst vintage (2003) was 3.6% and for the best vintages (2006 and 2007) the IRR was 16.4% and 17.6% respectively[7]. The best vintages benefited from the opportunity to replace maturing loans acquired before the crisis with loans offering higher yields or discounted prices.

Figure 4: Dispersion by vintage of the median quarterly equity distributions of US CLO Equity



Source: Wells Fargo Securities, December 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.

[7] Source: Intex, 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.

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. Spread movements impact performance both in the very short term and over the medium term.

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 to replace maturing loans by higher yielding ones and/or purchase loans at discount and build par during the reinvestment period, which could increase the level of excess cash flow 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 since 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 and sustain the valuation of the CLO equity tranches.

"CLO equity tranches can benefit over the medium term from a rising spread environment which makes them unique credit instruments"

All else being equal, **CLO equity tranches can benefit over the medium term from a rising spread environment:** this feature makes CLO equity tranches unique instruments in the credit universe and enables them to offer some diversification to an investor's existing credit portfolio.

Impact of potential losses in the underlying loan collateral

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

For example, should loans representing 1% of the underlying collateral default, the typical annual cash flows would be impacted by close to 0.13% and the typical final cash flow by close to 0.33%[8].

In a severe scenario the cash flow to the equity tranche could be temporarily interrupted. It is important to note that missed equity payments do not necessarily imply a lower final return as they usually occur in a context where loans bought at discount or with higher coupons during the reinvestment period would benefit CLO equity tranches later on. 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.

[8] Source: AXA IM. Assumptions include a default four years after inception and a 67% recovery rate corresponding to the level observed since 1990 on the loan market (Source: JP Morgan as of December 2015). For illustrative purposes only. This is not a reliable indicator of current or future performance.

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In the worst case scenario, i.e. the event of default of the CLO, all cash flows would be used to repay note holders in order of seniority. While possible, the scenario where a CLO structure has been unwound 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[9].

Some risk factors to be aware of before diving in

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.

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 due to the very high level of transparency on CLOs: broker dealers would typically offer a bid/ask spread of close to 1% in normal market conditions and up to 5% during market turbulence[10].

Performance risk

CLO equity tranches are traded in non-regulated markets and their 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.[11] A large part of these drawdowns pertained to the investor base of the CLO structures being excessively leveraged at the time and thus forced to sell. Structural changes to the CLO market structure[12] 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.

"CLO managers are encouraged to maximise the return on equity tranches."

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** according to the CLO manager's ability to continue make the underlying loan pool profitable to the CLO equity position.

[9] Source: AXA IM analysis of market information and industry research papers. [10] Source: AXA IM based on market experience. [11] Source: Credit Suisse, The CDO Strategist, February 2012. [12] 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'

Not all CLO managers are created equal

CLO managers actively manage and trade the loan collateral to help assure full payment of debt tranches and to enhance equity returns. Performance-linked fees and the risk-retention rules requiring CLO managers to keep 'skin in the game', **combine to help encourage CLO managers to maximise the return on equity tranches.** However **CLO managers can perform very differently in similar market conditions.** For example vintages 2003 to 2011 display on average a wide gap of 12.5% in CLO Equity IRR between the top 80th percentile and the bottom 20th percentile[13].

With close to 1,200 different CLO equity tranches available in the market, institutional investors looking to gain exposure to CLO Equity may wish to partner with a specialist portfolio manager to help properly assess CLO managers' credit research capabilities and their experience in handling various credit situations, as well as to select and monitor a well-balanced portfolio of CLO equity tranches.

Ready to dip a toe in the water?

CLO equity instruments demonstrate a set of characteristics and behaviours unique in the credit universe. High front-loaded cash flows, moderate duration, performance resilience in the face of cash-flow interruptions, and a positive mid-term response to a rising credit spread environment, all serve as potential attractions of investing in the asset class.

For those institutional investors, perhaps already familiar with CLOs, willing to look deeper than the structural complexities of investing in CLO Equity, we believe it is well worth dedicating the time and resources to better understanding the risks and opportunities involved.

The wide range of returns observed across CLO equity tranches of a similar vintage also suggests that investors need to pay careful attention to selecting and monitoring CLO managers and possibly to engage experienced specialists with the insights and governance infrastructure in place to perform these tasks to help achieve the full potential benefits of the asset class.

[13] Data on terminated Broadly Syndicated Loans CLOs. Source: Intex, Wells Fargo Securities as of Q2 2017. Past performance is not a reliable indicator of current or future performance.

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