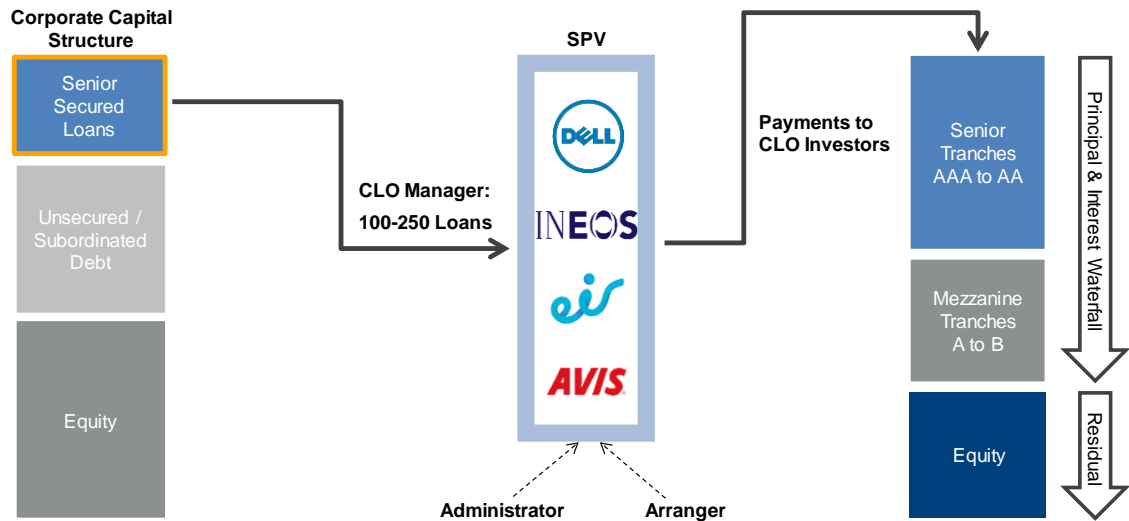


CLOs: Facts vs Fiction

February 2020

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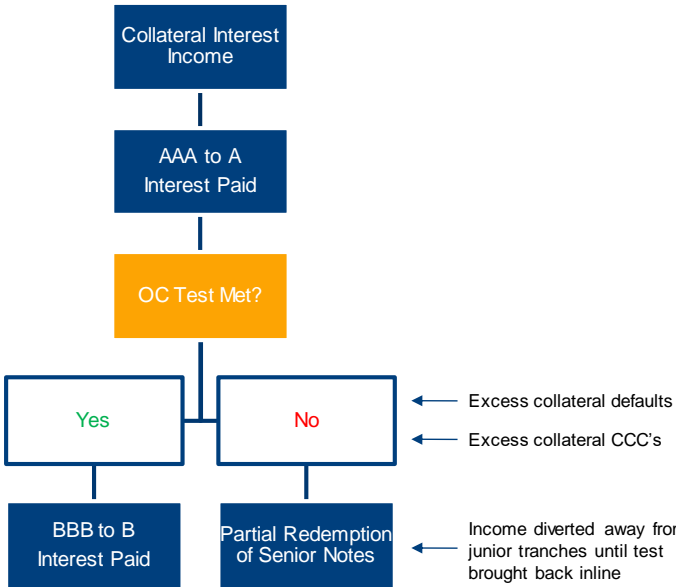
What is a Collateralised Loan Obligation (“CLO”)?



A CLO is a special purpose vehicle (“SPV”) whose assets are a pool of corporate loans. Its liabilities are debt instruments issued in different tranches, much like a corporate capital structure. CLOs are not synthetic credit derivatives, instead the CLO is a lender of record for the loans it owns. The average CLO owns about 130 names in Europe and 250 names in the US¹. The loans are mostly rated BB+ to B- with the average rating currently around B/B-. The capital structure is typically split into tranches rated from AAA down to BB or even B with an unrated “equity” tranche at the bottom.

How does the most senior tranche achieve a AAA rating when the assets are rated B? The key is the priority of payments i.e. the payment “waterfall” which determines the order in which the tranches get paid. The cashflows received from the loans are passed down the CLO capital structure in accordance with the payment waterfalls quarterly, with the equity receiving whatever is left at the bottom of the waterfall. Effectively the AAA tranche is secured against the first interest and principal cashflows generated by the portfolio, and because it represents 60% - 65% of the capital structure it is over-collateralised. In addition, at each rated/debt tranche of the waterfall there are over-collateralisation tests “OC tests” which indicate whether the amount of overcollateralisation has fallen below pre-set levels. This is typically driven by a deterioration in the underlying loan collateral pool, for example an increase in the level of CCCs above the allowed threshold. If the OC test does fall below the pre-set level, then excess interest is diverted away from junior tranches to repay the senior most tranche. The rated tranches therefore benefit from asset subordination and structural protection which helps achieve their credit rating. The figure below illustrates how this mechanism works.

$$OC = \frac{\text{adjusted asset balance}}{\text{par balance of liabilities at or above the test tranche}}$$



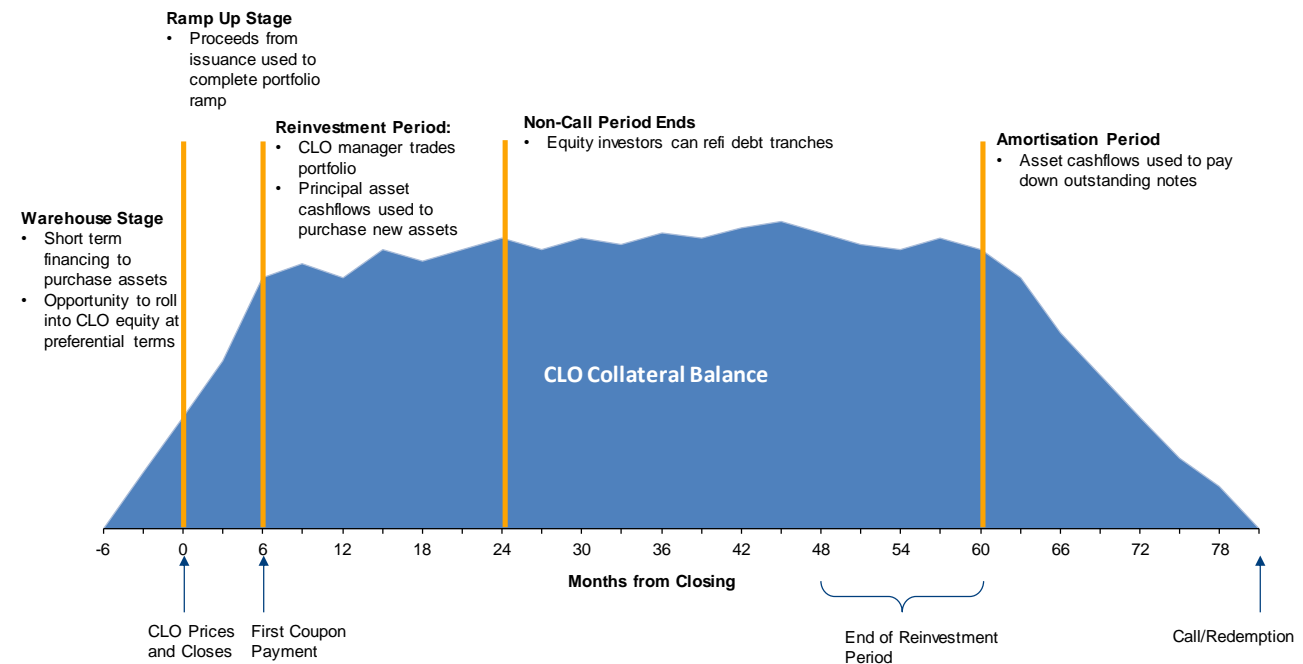
¹Average of all 2.0 (post crisis) CLO deals reporting into Intex as of January 2020

CLO LifeCycle

The CLO capital structure is effectively term/locked in financing for the CLO equity tranche. The manager is typically able to replace loans in the portfolio for the first 4 - 5 years of the CLOs life, the “reinvestment period”, and as a consequence the weighted average life (“WAL”) of CLO debt tranches can be quite long. The WAL of senior tranches (AAA to A) being 5 years or so and junior tranches (BBB to B) being about 8 - 9 years.

The equity can call or refinance the CLO capital structure after 2 years and because of the sequential pay down feature, the equity’s cost of capital increases quite significantly after the reinvestment period. The cost of capital is the average spread paid to the debt tranches. This means that in practice most tranches end up being much shorter than this theoretical WAL.

Most CLOs start life as a CLO warehouse, which is a temporary financing structure which enables the CLO manager to acquire loans on behalf of the CLO SPV. Most investors like to see a CLO portfolio 40% - 50% ramped when the CLO tranches are being sold. The CLO warehouse phase typically lasts 6 - 9 months with a simpler capital structure than a priced CLO. The arranging bank provides a senior facility to the warehouse (an advance rate of 75% - 80%) whilst the CLO manager and/or a third party investor provides the junior capital.



CLO Performance, Facts vs Fiction

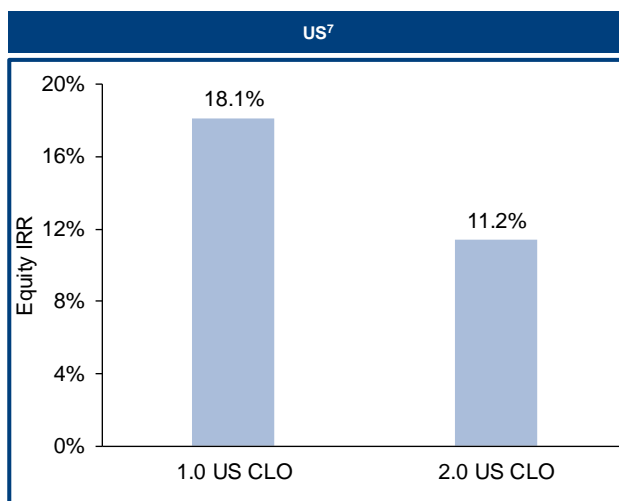
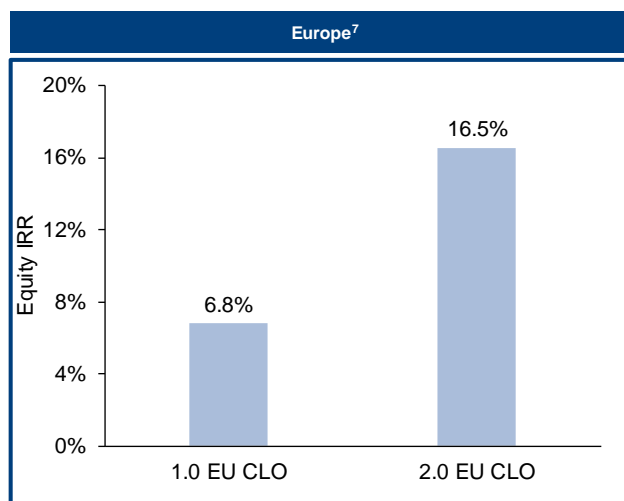
So what happened to CLOs through the Global Financial Crisis (“GFC”) and how did they perform in the end? The crucial factor in this story are the OC tests mentioned earlier. Many OC tests did breach due to high levels of CCCs and the subsequent spike in defaults. In the US over 50% of CLOs tripped their OC tests and in Europe the majority did¹. The capital structures of those CLOs de-levered and equity cash flows were cut off for a period of time. Depending on how far up the capital structure the OC test breach was, some debt tranches deferred and capitalised interest for a period of time. This structural protection along with asset subordination meant that sub-investment grade CLO debt tranches outperformed sub-investment grade corporate credit through the credit crisis. In the table overleaf we highlight the cumulative defaults on CLO tranches over the history of the asset class. This encompasses nearly all of the pre-crisis “1.0” CLO universe and some post-crisis “2.0” CLOs.

You might expect that in this scenario that CLO equity will have performed badly. It is certainly the case that in some CLOs the portfolio losses led to equity cash flows being cut off for a long period of time and losses for equity investors. Nevertheless the average CLO equity returns were positive both in Europe and the US. How did this happen? CLO managers were able to rotate and reinvest their portfolios, buying loans at low prices to rebuild par, and loan spreads typically reset wider as lenders granted borrowers maturity extensions or agreed covenant resets. This increased excess cash flows which eventually flowed to the CLO equity holders and led to some very high cash on cash payments. So whilst some CLO equity investors lost money, many made healthy returns.

¹Average of all 2.0 (post crisis) CLO deals reporting into Intex as of January 2020

CLO Performance, Facts vs Fiction continued

US CLOs (1996-2018) ¹					Leveraged Loans (2003-2018)	European CLOs (1997-2018) ¹					Leveraged Loans (2003-2018)
Original Rating	Total Tranches ²	Defaulted Tranches	Cumulative Default Rate ³	Average Annual Default Rate ⁴		Original Rating	Total Tranches ⁴	Defaulted Tranches	Cumulative Default Rate ³	Average Annual Default Rate ⁴	
AAA	3,341	0	0.00%			AAA	702	0	0.00%		
AA	2,004	0	0.00%			AA	468	0	0.00%		
A	1,969	5	0.30%			A	405	0	0.00%		
BBB	1,790	9	0.50%			BBB	445	3	0.70%		
BB	1,468	20	1.40%	2.26% ⁶		BB	347	16	4.60%	2.37% ⁶	
B	322	3	0.90%			B	136	1	0.70%		
Total	10,894	37	0.35%⁵			Total	2,503	20	0.80%⁵		



1.0 vs 2.0 CLOs

The main differences between pre-crisis (1.0) and post-crisis (2.0) CLOs are:

- More subordination at each rating level due to tighter rating agency criteria
- Shorter reinvestment periods
- Shorter non-call periods
- Ability for equity to refinance debt post non-call explicit in documentation
- More diverse portfolios
- Higher cost of debt financing for CLO equity and in turn higher spread for rated tranches
- Broader investor base
- Tightened deal extension terms, however there is still significant variance across CLO managers and vintages

¹Standard and Poor's Ratings Services, Ratings Direct, 2018 Annual Global Leveraged Loan CLO Default Study and Rating Transitions as of June 2019

²Includes all U.S. cash flow CLO tranches ever rated from 1996 to 2018

³Default rate = number of ratings that had ratings lowered to D/total number of ratings

⁴Includes all European cash flow CLO tranches ever rated from 1997 to 2018

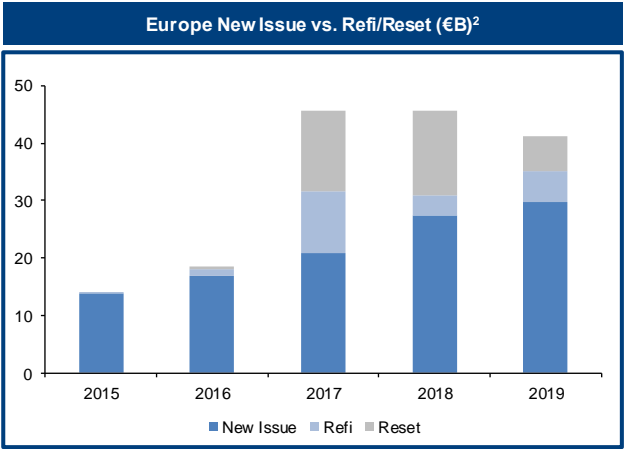
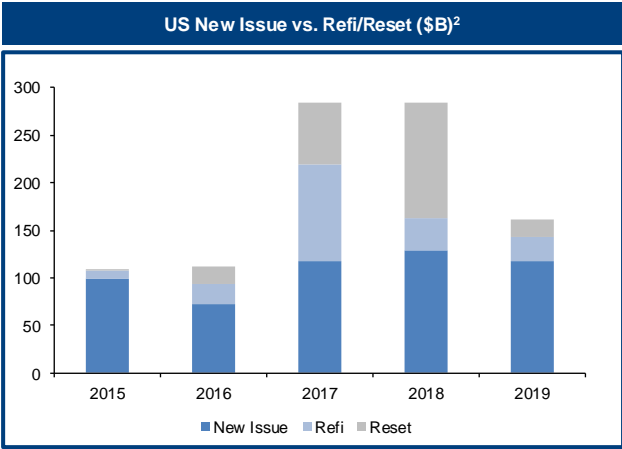
⁵Weighted average based on total tranches

⁶This is an annual rate, vs cumulative rate for CLOs. No investment strategy or risk management technique can guarantee returns or eliminate risk in any market environment

⁷As of Q3 2019, Wells Fargo US CLO Equity Performance Report August 2019; Median CLO Equity Performance assuming purchase price of 90. IRR information represents the gross annual compounded pre-tax internal rate of return based on cash flows from date of investment. It does not account for management fees, expenses and carried interest, the effect of which could be material. **Past performance is not a guide to future performance**

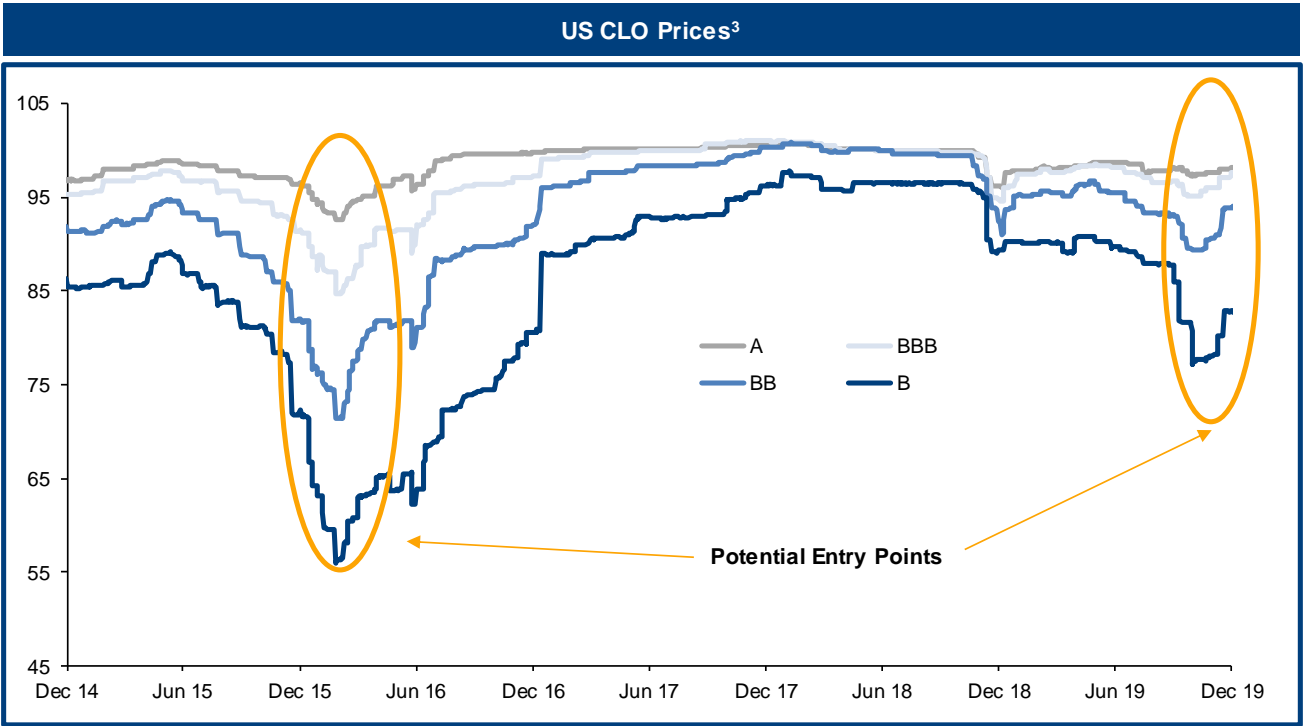
1.0 vs 2.0 CLOs continued

The CLO market has grown significantly since the GFC, with plenty of new CLO managers launching franchises and most major banks getting in on the act of arranging CLOs. Following rapid growth, US new deal issuance peaked at over \$100bn in 2018. The European market continues to grow each year and with current issuance of over €30bn. Overall, the total market stands at more than \$585bn of US CLO deals outstanding and over €112bn of European CLO deal outstanding, a significantly deep and tradeable market¹.



The pace of market growth hasn't always been matched with growing investor demand, which at times has led to excess supply. This in turn has led to wider debt spreads and equity yields at times, particularly during 2019. Volatility in US loan prices, probably due to rate actions by the Fed, and an increase in downgrades in the underlying collateral contributed further to widening at the bottom of the CLO capital structure.

Volatility can create opportunities for investors who can quickly reallocate portfolios or commit additional capital. US BB/B CLO prices have moved dramatically at various points over the past few years. Equity yields have widened and secondary prices have fallen making cash on cash invested yields of 15% likely achievable.

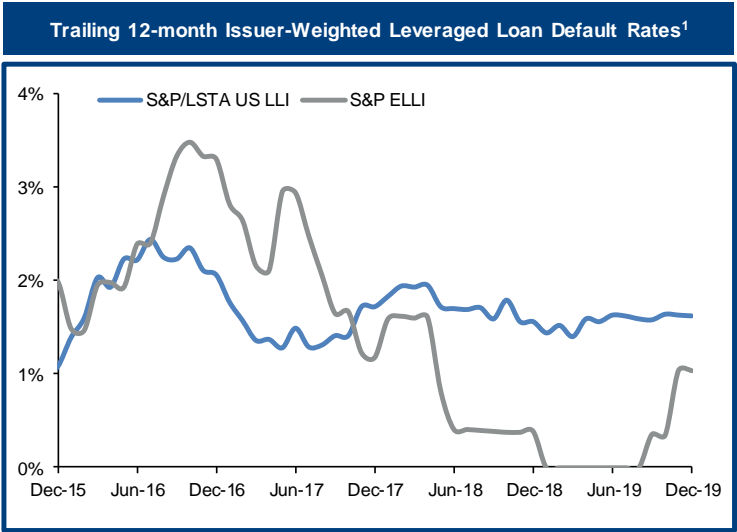


¹Barclays CLO Primer as of January 2020
²S&P Global Market Intelligence, as of 31 December 2019
³JPM CLOIE index tranche prices as of 31 December 2019

CLO Collateral Quality

There have been plenty of articles published about CLOs and leveraged loans, many focusing on the prevalence of cov-lite loans. It is a fact that most loans do not have covenants on the term loan itself, but there may be an revolving credit facility (“RCF”) or other facility with a covenant elsewhere in the capital structure. Loans with true covenants are generally weaker companies, smaller companies or companies in more challenging industries. This shift means that companies will likely default later, but with potentially fewer defaults overall. Albeit when they do default the recovery will likely be lower. This in turn makes OC test breaches due to defaults less likely; which is bad for debt investors and perhaps positive for equity investors. On balance, when a company breaches a covenant and has to negotiate with lenders, lenders are often able to secure a margin increase. This was very beneficial to CLO equity through the GFC as it meant that spreads on existing CLO portfolios increased despite relatively low prepayments in the pool. CLO equity investors might need to wait for loan extensions or liquidity events for loan spread increases in the next crisis!

The average rating quality of CLO loan pools has been decreasing - weighted average rating factor has been increasing (“WARFs”, a higher number is worse); CCCs have been increasing, as well as the proportion of loans trading below 85%. The ‘tail end’ of the average US CLO portfolio (captured in the market value subordination metric below) is worse than in Europe, and has been for some time. Despite US CLO portfolios containing more names than European CLOs, they have a higher percentage of assets trading at stressed levels. This implies that name diversity isn’t that helpful once you get above a certain threshold. Because of this higher portfolio diversity, US BBs start out with less subordination than EU BBs, so this fatter tail can start to make weaker USD BBs look less attractive.



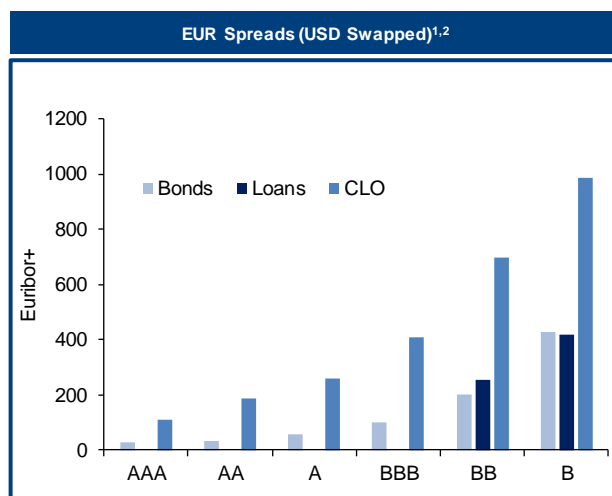
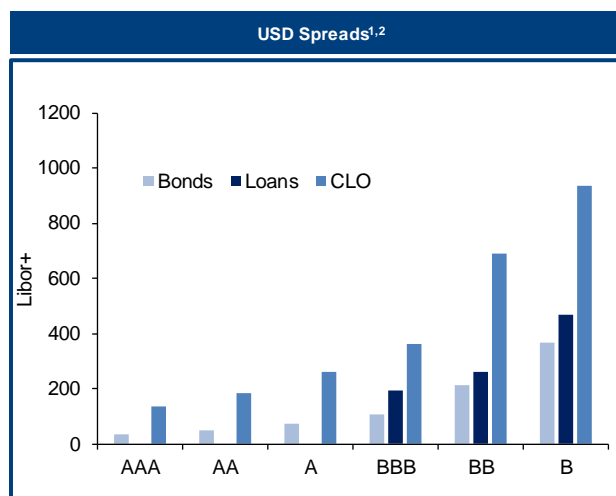
Key metrics for average 2.0 CLOs	US	EUR
Weighted Average Price of Assets	96.33%	98.16%
BB Tranche Market Value Subordination	4.65%	8.66%
% Assets Priced < 85	8.48%	3.96%
CCC & Below ²	7.13%	4.23%
Defaulted %	0.62%	0.16%
Weighted Average Rating Factor	2878	2946
Calculated Weighted Average Spread ³	3.56%	3.68%

¹S&P Global Market Intelligence, as of 31 December 2019
2.0 CLO represents CLOs issued after the credit crisis. Alcentra, Intex, as of 13 December 2019. Average of metrics across the 2.0 US CLO universe reporting into Intex. Excludes deals issued in last nine months. Excludes deals where the AAA has amortised to less than 70%. Excludes deals where <75% of the assets are mapped
²Any asset rated CCC or below by either Moody's or S&P is included in the CCC bucket for either column. Defaulted securities are included within the figures
³Calculated using the gross spread on floating rate assets. Calculation does not include the impact of floors or the coupon on fixed rate assets

Approaches to Investing in CLOs

It is important to look through to the underlying portfolio when investing in CLO tranches, particularly when investing in junior tranches. The fortunes of CLO equity is heavily dependent on the outcome of the worst performing names in the portfolio. Nuances in CLO documentation, structure and manager behaviour are also very important.

Ultimately, CLOs offer higher yields than other similarly rated credit assets but the price is less liquidity and higher volatility. This volatility is not necessarily negative, it can present opportunities for investors to add value - the market sell off in Autumn of 2019 was an excellent example of this. Despite worsening underlying credit quality, tranche prices have rallied rapidly since December. The level of defaults is still relatively low compared to historic averages, and tightening credit spreads have made CLO yields look attractive. At the same time the new issue CLO machine is still going strong... we will likely continue to see volatility and opportunity in the CLO market in 2020.



Key Takeaways

CLOs are:

- An SPV portfolio of loans with underlying credit risk redistributed into tranches

CLOs benefit from:

- Higher return potential than similarly rated corporate credit
- Structural protections and asset subordination
- Robust performance through the credit cycle

But these are not without some risks:

- Lower liquidity vs similarly rated corporate credit
- Potentially more volatile vs similarly rated corporate credit

Leading to interesting opportunities:

- Value extraction during market dislocations such as Q4 2019 CLO volatility

¹CLO Spreads: JPMorgan Primary spreads as of 17 January 2019; Corporate Spreads: ICE BofAML 5-7 Year US Corporate Indices, ICE BofAML 5-7 Year Euro Corporate Indices as of 24 January 2019; Loan Spreads: Credit Suisse Leveraged Loan Index, Credit Suisse Western European Loan Index as of 31 December 2019

²Cross-currency basis spreads from CitiVelocity

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