Credit

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CLO Equity – Performing as Marketed

- Investors would be hard-pressed to find another asset class that exhibited as strong a performance in 2010 as did CLO equity. From an average price of mid-20s in January 2010, well-performing CLO equity finished the year in the mid-80s.
- We analyze the performance of equity tranches from 524 US and 186 European CLO transactions, spanning across 130 and 53 managers, respectively. Both sets represent roughly 90 percent of outstanding transactions.
- CLO transactions performed exactly as marketed, trimming payments to equity as defaults rose during the credit crisis, and restoring distributions (often at a higher rate) once the transactions came back into compliance.
- Through the end of 2010, average quarterly distribution was 3.95 percent for US and 2.54 percent for European CLO equity, respectively. For 4Q 2010, the respective figures were 4.78 and 1.22 percent.
- Currently, roughly 85 percent of CLO transactions receive full equity distributions in the US. The number is 45 percent for Europe and is rapidly growing.
- Vintage, structure and manager, have a profound effect on equity performance. Some managers have consistently outperformed their peers in terms of CLO equity distributions. Structural features, too, have a significant effect on equity performance.
- An investment in CLO equity in 2005, with or without reinvesting equity dividends in new equity, outperformed loans, but was more volatile.
- We project the future performance of CLO transactions using long-term average default and recovery assumptions. The forecasted median equity IRR is 12 percent and 5 percent for the outstanding US and European CLO universe, respectively.
- Even when subjecting future cashflows to another spike in defaults (double-dip scenario), US CLO equity investors can, on average, expect to get returns in high-singles.

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See Appendix A-1 for Analyst Certification, Important Disclosures and non-US research analyst disclosures.

Laying out the Analysis

The improved pipeline of CLO primary issuance, along with the first signs of purchase of new-issue equity by non-manager investors, has refocused investors' attention on the performance of CLO equity. Our follow-up study to the one done in March 2010 doesn't just show that CLO equity had a robust performance during 2010. The greater lesson for new and returning structured credit investors is that CLO equity performed just as it was meant to do in the majority of deal marketing materials. For structured credit skeptics, we also show that, CLO equity has outperformed direct investment in loans, though volatility was higher as well.

Our study shows that cashflows to equity declined as default rates spiked during the recent credit cycle, and then rose substantially as defaults dropped and loan spreads widened. Moreover, managers were able to differentiate their performance, and the best consistently outperformed, irrespective of the year they chose to issue their CLOs, The market has, of course, noticed the strong performance. The secondary CLO equity market staged a remarkable comeback, with average prices rallying over the past 12 months from the mid-20s to the mid-80s. Some are questioning the justification of these levels. The study also looks at the merit of current valuations.

As in our earlier studies, we base our study on data available from Intex. The study focuses exclusively on deals that were modeled, had a complete payment history, and were recently updated. In our analysis, we explore historical returns of 524 US and 186 European CLO transactions, spanning 130 and 53 managers, respectively. Both sets represent roughly 90 percent of their respective CLO universe. We investigate the effect that vintage, structure and managers had on the transactions. Further, we analyze differences in performance of CLO equity between the US and Europe.

Attractive Cash-on-Cash Returns

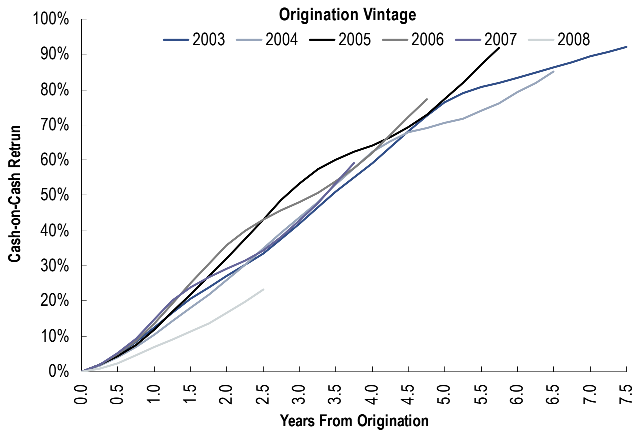
Through the third quarter of 2008, CLO equity tranches provided strong cash flows for their holders, generating an average annual dividend stream in the mid to high teens. However, as the credit crisis unfolded and companies either defaulted or were downgraded (depleting CLO tranche overcollateralization ratios), nearly two-thirds of transactions in the US and in Europe were forced to shut cash flows to CLO equity for at least one period. Yet, as the old saying goes, a lot of water has passed under the bridge since then.

Amid a broad improvement in credit, as of January 1, 2011 more than 90 percent of US CLOs were making some, and close to 85 percent of US CLO transactions have been paying full, payments to equity, with average quarterly distribution of 4.78 percent in 4Q10. For those transactions that were making payments, the average quarterly payment in 4Q10 was 5.6 percent.

In Europe the figures are less impressive. However we have seen improvement there too, with about 60 percent making some distributions to equity and about half making full distributions. For those transactions that made payment in 4Q10, the average quarterly distribution in 4Q10 rate was 2.77 percent (for that quarter), while the average quarterly distribution rate for Q4 across all transactions was 1.22 percent.

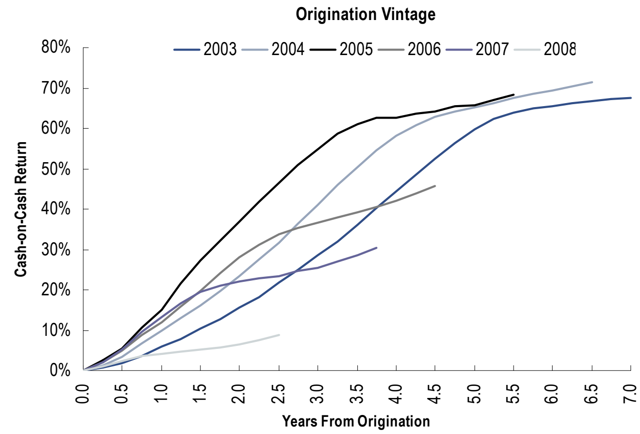
Figure 1 and Figure 2 show cumulative cash flows of CLO Equity in US and Europe.

Figure 1. Cumulative Cash-on-Cash Returns of US CLO Equity



Source: Citi Investment Research and Analysis and Intex

Figure 2. Cumulative Cash-on-Cash Returns of Euro CLO Equity



Source: Citi Investment Research and Analysis and Intex

One of the more obvious observations to be derived from the charts above is the outperformance of US CLO equity compared to its European counterpart. There are several reasons for this – the most obvious of which are higher excess spread in US CLOs and the somewhat higher leverage in the US CLOs. Post the credit turmoil, as a result of higher prepayment speeds and amend-to-extend activity, average spread in US CLO portfolios was 325bps compared to just 250bps in mid 2007. Other reasons for US CLO equity outperformance include the presence of LIBOR floors in newly-originated US loans, higher amendment fees and absence of underperforming mezz loans in the US collateral mix.

Figure 3. Statistics for Cash-on-Cash Returns for US CLO Equity

Origination Year	Deal Count	Average	Median	StDev	75 Percentile	25 Percentile
2001	6	3.9%	3.9%	2.7%	5.8%	2%
2002	13	4.3%	4.2%	3.1%	5.8%	3%
2003	31	3.3%	3.5%	2.5%	4.6%	2%
2004	56	3.4%	3.7%	2.4%	5.0%	2%
2005	87	4.1%	4.6%	2.5%	5.9%	3%
2006	155	4.2%	4.7%	3.0%	6.1%	2%
2007	155	4.1%	4.7%	3.1%	6.3%	1%
2008	19	2.7%	2.6%	1.8%	3.8%	2%

Source: Citi Investment Research and Analysis and Intex

Figure 4. Statistics for Cash-on-Cash Returns for Euro CLO Equity

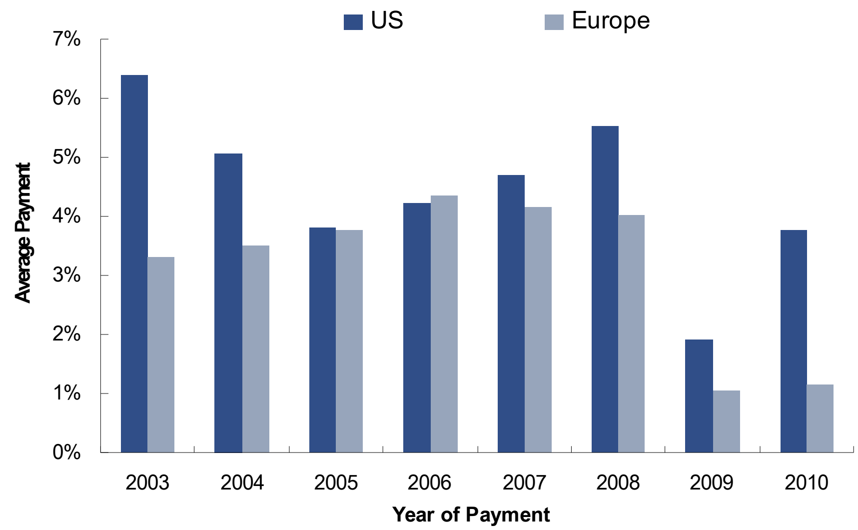
Origination Year	Deal Count	Average	Median	StDev	75 Percentile	25 Percentile
2001	5	2.1%	1.9%	2.0%	3.6%	0%
2002	5	3.2%	2.9%	1.6%	4.1%	2%
2003	5	2.6%	2.8%	2.1%	4.0%	0%
2004	15	2.8%	3.0%	2.1%	4.1%	1%
2005	20	3.3%	3.7%	4.2%	4.9%	0%
2006	60	2.6%	3.0%	2.1%	4.2%	0%
2007	60	2.0%	1.6%	2.0%	3.8%	0%
2008	15	0.8%	0.0%	1.2%	1.2%	0%

Source: Citi Investment Research and Analysis and Intex

Overall, CLO transactions performed just as marketed – delivering attractive dividends to the equity holders, trimming payments as transactions came under stress and restoring payments to equity once the cash diversion tests based on overcollateralization levels were cured.

Assuming that equity has been bought at par (in fact in many cases investors have bought equity at discount), average realized quarterly payments for US and European CLO equity are 3.95% for US and 2.54% for Europe. Figure 5 aggregates all the data and shows average annual distributions for US and European CLO equity.

Figure 5. Average Quarterly Payments to CLO Equity in US and Europe

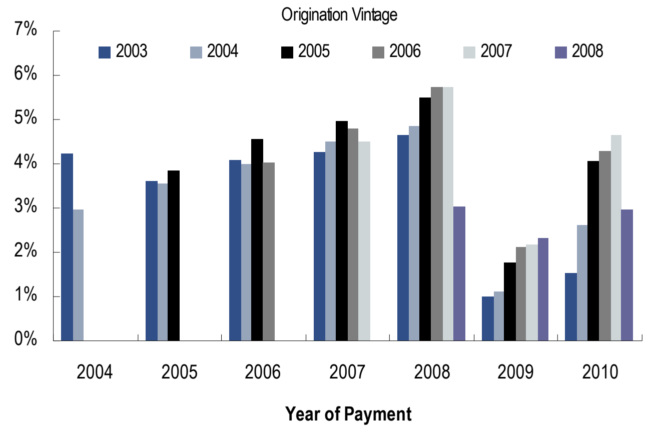


Source: Citi Investment Research and Analysis and Intex

Impact of Vintage

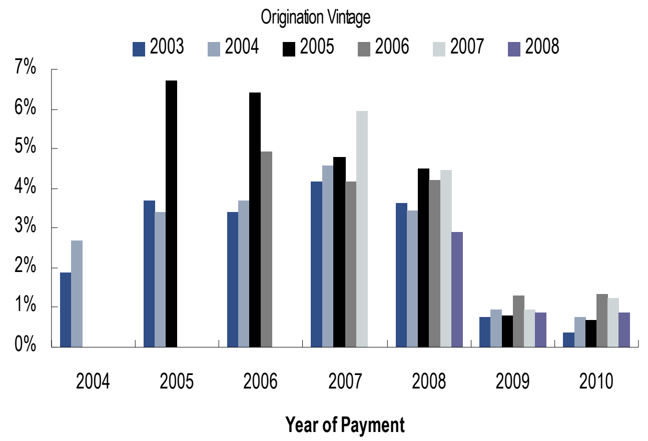
As we noticed in our previous study, origination year has a significant impact on equity performance. Equity from deals originated in 2003-2004 exhibited significantly lower returns than their later counterparts (with the exception of 2008 originated deals). For most investors though this should come as little surprise. The earlier 2003-2004 deals had wider liability spreads. With most of the original collateral refinanced at tighter spreads, "arbitrage" in these deals has been significantly dented. Furthermore, most of these deals are beyond their reinvestment period and can't take advantage of today's wide collateral loan spreads.

Figure 6. Quarterly Distributions of US CLO Equity by Year of Origination



Source: Citi Investment Research and Analysis and Intex

Figure 7. Quarterly Distributions of Euro CLO Equity by Year of Origination

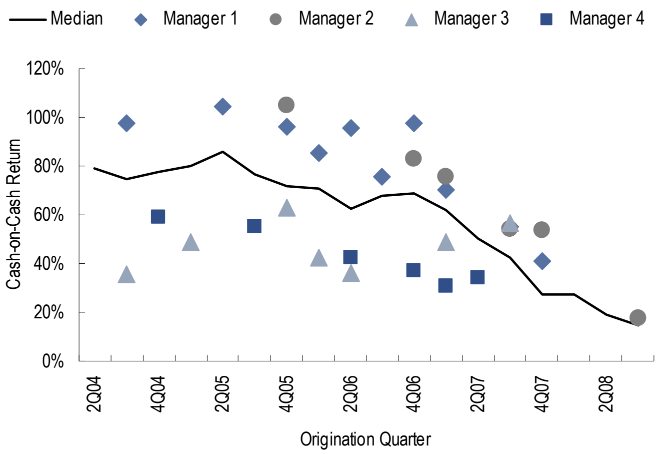


Source: Citi Investment Research and Analysis and Intex

Assessing a Manager's Alpha

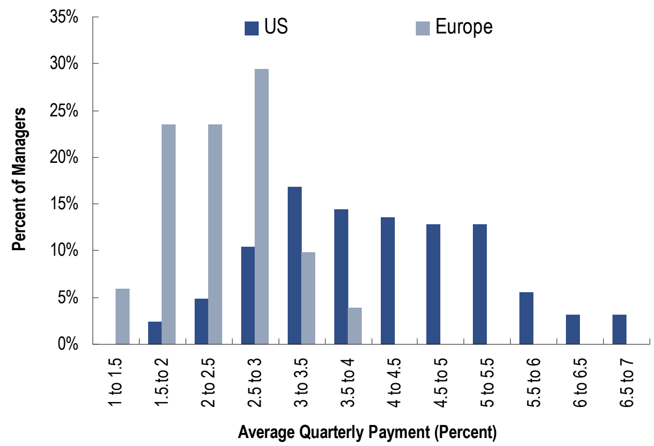
A rising tide lifts all boats, and thus the effect of good management is hardly visible in the good times, such as during 2006-2008. Conversely, the treacherous waters of the past credit debacle have once again highlighted the importance of selecting the right captain. Figure 8 provides probably the best evidence of this claim. Managers, denoted on this figure as Manager 1 and Manager 2 consistently delivered above average returns in their transactions, irrespective of the vintage, whereas the two other managers in the graph exhibited subpar performance across all their deals. Manager outperformance is also evidenced by the heavy right tail (excess returns) for US CLO equity in Figure 9.

Figure 8. Select US Managers Compared to Median



Source: Citi Investment Research and Analysis and Intex

Figure 9. Average Quarterly Payments 2007-2010 – Percent of Managers



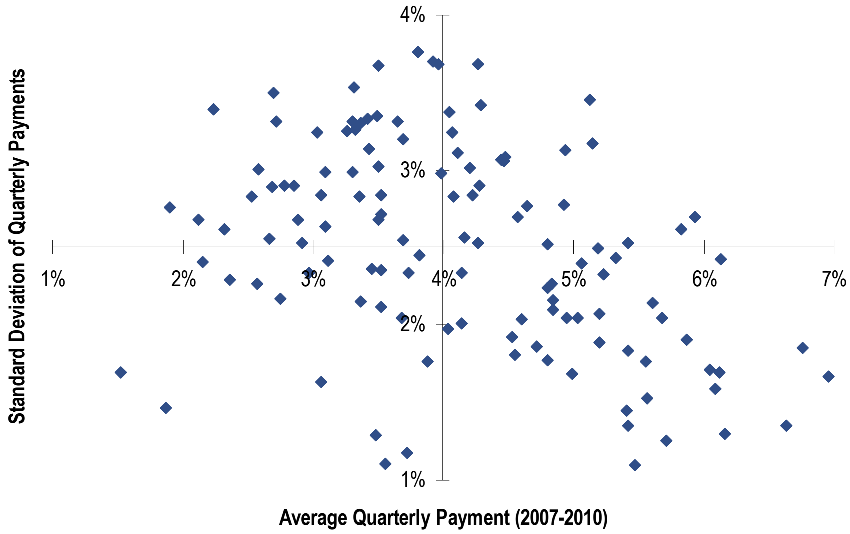
Source: Citi Investment Research and Analysis and Intex

Though a few European managers handsomely outperformed the pack (giving investors 3.5-4% per quarter, compared to the 2.8% average), most were not able to create quite as much alpha in European CLOs, Cash-on-cash payments are more tightly banded in Europe. We believe that amidst the scarcity of available collateral, CLO managers in Europe had to buy the "market" to achieve the required level of diversity in their deals, potentially eating into their ability to outperform. We do believe, however, that major differences could emerge later. First, deals did differ in their choice of higher-yielding collateral buckets (such as mezz, second-lien and high yield bond buckets). Second, if amend-to-extend activity has just pushed European default problems down the road, managers' ability to maximize recovery values within a diversity of bankruptcy regimes should differentiate the outperformers from the rest of the pack.

Another way to compare manager performance is to look at the manager's Sharpe Ratio. For a manager the Sharpe Ratio is defined as ratio of (1) average of quarterly payments for that manager less average of quarterly payments for the CLO universe over (2) standard deviation of quarterly payments for the manager. Indeed, some managers had high average returns in the early years because of high yielding, high-risk collateral but they also exhibited a high volatility of cashflows as many of their deals broke tests and saw their equity cashflows interrupted. Moreover, some managers that currently

generate the highest payments to equity are also the ones that had pretty poor performance in the midst of the crisis. This last feature may not necessarily be all bad, however. Some managers actively chose to trade into what they perceived as deeply discounted loans in the middle of the loan price collapse during 2008. The discount purchase haircut would have depleted their cash diversion test cushions, but their investments fortunately turned out to generate above average returns as loan prices recovered.

Figure 10. US CLO Managers – Average Quarterly Payment vs. Volatility



2006-2010 Payments for deals originated between 2005 and 2007

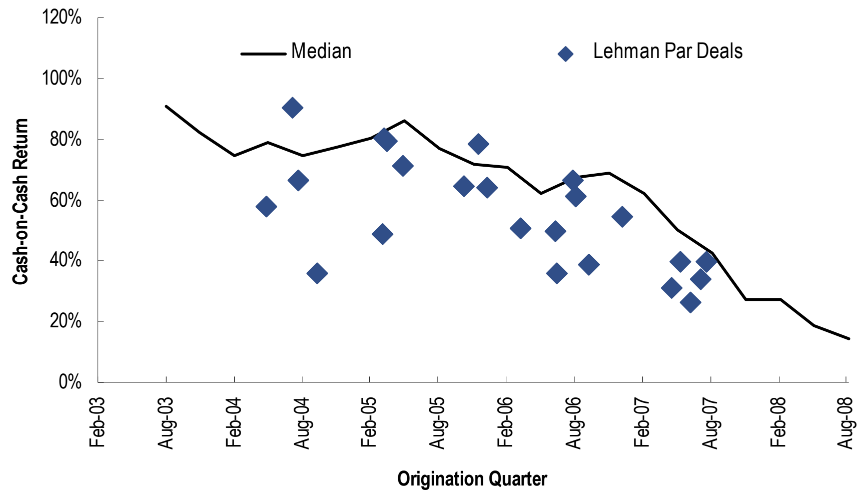
Source: Citi Investment Research and Analysis and Intex

In our view, Sharpe Ratio is a better overall performance metric and we use this metric later in our analysis when we talk about relative performance. We plot the performance of different managers in Figure 10 and feel those present in the bottom right quartile gave their investors the best risk-adjusted returns.

Structural Features as Drivers of Performance

CLO transactions have come in many shapes and colors. In some cases, transactional features have direct impact on the equity performance. Take for example, so-called, Lehman par structure. In this structure, there is just a single OC test and no double-B rated tranches, allowing for higher leverage. Yet, if the structure comes under stress, it is harder to bring it into compliance and more interest is diverted from equity to cover principal losses. Figure 11 below vividly shows that deals that have been originated using this structure have clearly underperformed the broad CLO universe.

Figure 11. Equity Returns of Lehman Par CLO Structures Compared to Universe Median



Source: Citi Investment Research and Analysis and Intex

There are other structural nuances that might have tarnished CLO equity performance, such as, for example, inability to reinvest principal proceeds due to transaction documentation, resulting in faster amortization and lower excess spread. Lower allowed triple-C basket, and its definition, could also make a difference in making payment to the equity. Finally, a significant presence of originally-rated double and triple-B CLO tranches, which were downgraded into triple-C and below category, cut into OC ratios and had a devastating effect on CLO equity cashflows.

On the other hand, structures that used loan facility rating rather than corporate family rating, allowed for higher triple-C balances without haircuts, used triple-C haircuts only in calculating most junior OC cushion (Bear structures), and permitted managers to buy unlimited amounts of discounted obligations to build par, are the ones that delivered excess returns.

Small vs. Big – Does the Size Matter?

One of the questions that investors often ask is whether managers with fewer deals outperform relative to those with more deals and, possibly, better infrastructure but who, one assumes, are forced into buying the market. Well, the answer to this question is inconclusive, as there is no statistically significant evidence that smaller managers have outperformed the larger ones. In our analysis, we have seen a significant number of managers with just one or two transactions under management who were able to comfortably beat the performance benchmark. But we also saw mega managers, with 10 or more deals under management who were comfortably on the top of the performance list. On the other hand, we also saw both large and small managers at the bottom of our ranking list.

Is Middle-Market All That Bad?

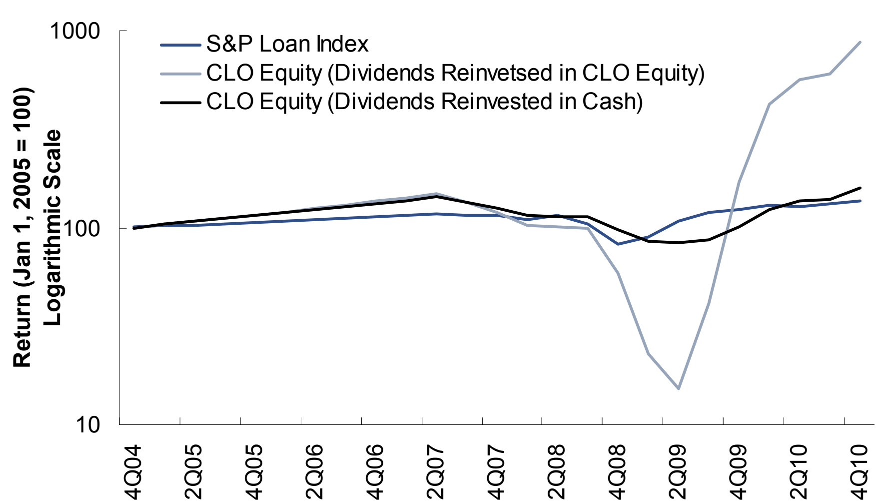
Another question that investors often ask is how the performance of CLOs backed by middle-market loans compares to those backed by more traditional, broadly syndicated loans. True, defaults for middle-market loans tend to run higher, recoveries are lower and there is little transparency. But the market,

assuming it is efficient, prices all these risks and middle-market loans come with a much wider spread. Moreover, CLO structures require more subordination for rated tranches – hence less leverage for equity. Overall, the answer to the question whether middle-market CLOs have out or under performed is inconclusive as well. On one hand, the bottom of our manager ranking table is full of middle-market transactions that, even now, fail to make equity distributions. On the other, though, in our ranking of historical equity cash-on-cash returns, we find many deals and managers that have experienced significantly lower defaults than those implied by the high WARF of middle-market loans and, as a result, delivered superior returns to the equity. In fact, at least half of the managers among the top 10 had significant exposure to middle-market loans.

Did CLO Equity Outperform Loans?

Investors often question whether it is worth making an unlevered investment in loans versus a levered investment such as CLO equity. While CLO equity is not the only way to get leveraged exposure to loans, it is worth comparing the unlevered and levered routes. As Figure 12 below shows, equity has outperformed loans, both when CLO Equity dividends are reinvested in cash, and when CLO Equity dividends are reinvested into CLO equity.

Figure 12. Investment in CLO Equity Compared to Investment in Loans



Source: S&P and Citi Investment Research and Analysis

The outperformance in the case of reinvestment in CLO equity is particularly striking. The reason is that when equity prices dropped to low single digits in 2008-2009, average equity dividend would allow a brave investor to buy a significant amount of secondary equity in single-digits that now rebounded to close to 80 cents. A more conservative investor, choosing to reinvest CLO equity dividends in cash, would have also outperformed a direct investment in loans most of the time.

On the downside, though, the volatility of equity prices is significantly higher than that of loans. Likewise an investor who obtained leveraged exposure to loans on a mark-to-market format with margin (using, for example, a total return swap) would have also seen significant price volatility. The practical benefit of CLO equity over such a route would be the absence of ongoing margin posting.

Looking into the Future

From the discussion of historical returns, we move on to project future cashflows for equity. We do so for two scenarios – the base case scenario for a benign credit environment, and a stressed case scenario for a less likely double-dip scenario. Below we outline assumptions for our base case and stressed case.

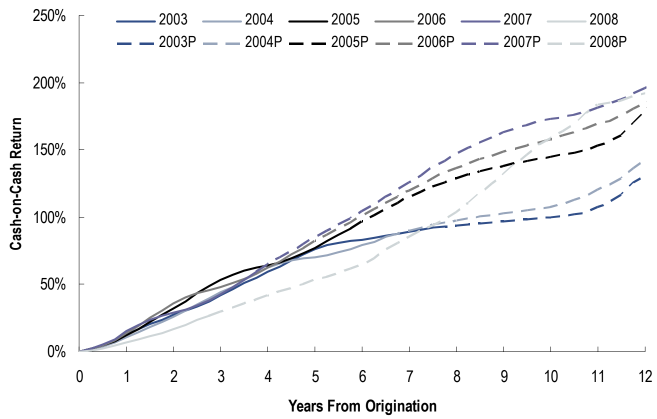
Figure 13. Assumptions Used to Generate Future Cashflows

	US		Europe	
	Base Case	Stressed Case	Base Case	Stressed Case
Prepayment	25	20	20	15
Defaults	3	3 for 24, 12 for 12, 3	3	3 for 24, 12 for 12, 3
Recovery	70	65	65	60
Recovery Lag	12	12	12	12
Reinv Spread	400	400	400	400

Source: Citi Investment Research and Analysis

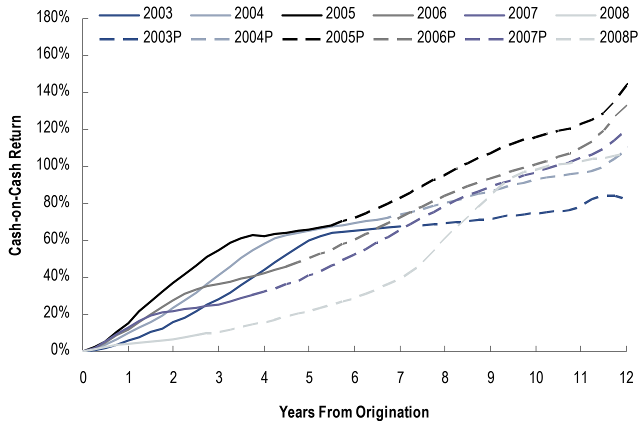
As can be seen from the Figure 14, based on the assumption of a reasonably benign credit environment, equity from all vintages provides total cash-on-cash returns above par suggesting that, despite one of the most severe credit dislocations in recent history and the inherent leverage in the product, investors in equity tranches are likely to recoup their initial investment (assuming CLO equity was bought at par). In fact, most investors in earlier vintage CLOs (and, in some cases, deals as late as 2006) have already been paid at least 100 percent of par. Furthermore, consistent with our earlier observations of higher payments to later vintage CLO equity tranches, most of later vintage CLOs are expected to enjoy close to 200 percent cash-on-cash return in our base case scenario. For Europe too, the base case scenario suggests investors in most deals are likely to recoup their initial investments, though lower recoveries and slower reinvestment speeds take their toll on cash flows. Later-vintage deals can expect cash-on-cash payout of about 150 percent in our base-case scenario.

Figure 14. Realized and Projected Cashflows for US CLOs for Base Case Scenario



Source: Citi Investment Research and Analysis

Figure 15. Realized and Projected Cashflows for European CLOs for Base Case Scenario

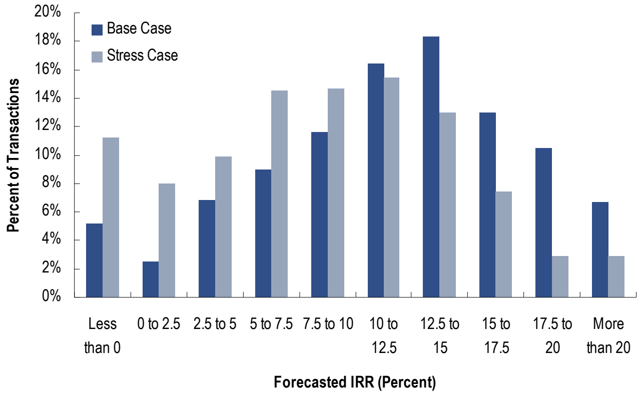


Source: Citi Investment Research and Analysis

From the IRR prospective, in our base case scenario median US CLOs equity IRR is expected to be around 12 percent. Interestingly, the product was initially marketed to investors with low-teen returns. Furthermore, later vintage deals, with the benefit of cheap funding and longer reinvestment period significantly outperform earlier vintage and static deals. Even in the stress case scenario, which assumes defaults will spike into the teens again and will stay at that level for a whole year (loan defaults were well below HY defaults and stayed in the teens for just a couple of months in 2008-2009) CLO equity performance looks robust with median IRR for US CLOs around eight percent. Given that many equity tranches were bought below par, the returns are even more attractive.

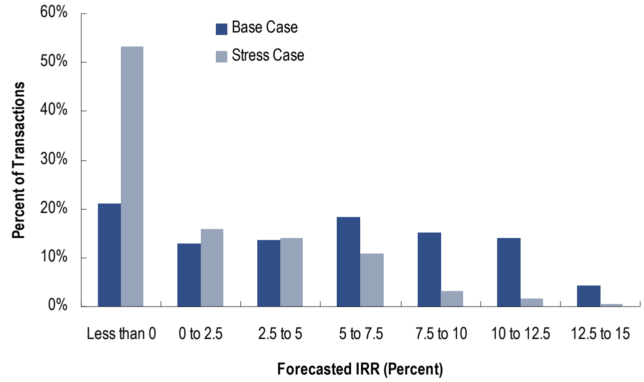
For European CLOs the expected median IRR is 5 percent in our base case reflecting lower recoveries in European loans, lower reinvestment speeds and lower leverage. However, as mentioned above, a significant amount of equity was bought below par, thus boosting returns. Also, should Europe see even a milder version of the US's burgeoning capital markets, European CLOs will see higher prepayments, wider collateral spread and higher recoveries.

Figure 16. Distribution of Projected IRRs for US CLOs – Base and Stress Case Scenario



Source: Citi Investment Research and Analysis

Figure 17. Distribution of Projected IRRs for European CLOs – Base and Stress case Scenario



Source: Citi Investment Research and Analysis

Is Equity Expensive Now?

One question that remains to be addressed is whether equity is fairly priced now, particularly given the recent rally across the capital structure. Just to remind readers, US CLO equity was in 20s in the beginning of 2010 and ended the year, on average, in the low 80s, in the US. The answer of course depends on the assumptions and the discount rate each market participant uses. Under our base case scenario and applying a discount rate of 15%, the median price of equity is 75 in the US and 53 in Europe. Both are in the ballpark of current market prices; though, in case of US, somewhat on the lower side, and, in Europe, on the higher side of the trading range. Overall, though, at current prices, and for a benign default environment, equity is priced fairly though not without risks. Higher interest rates leading to disappearance of LIBOR floors and further tightening of credits spreads are the risks investors should keep in mind when doing their due diligence.

Performed as Marketed

CLO equity has experienced a lot of turbulence in the past couple of years, but so did a lot of other risky assets and leveraged instruments. Despite the credit turmoil, CLO equity, on average has delivered attractive cashflows to investors, and, when all the dust settles, will, on average, provide returns consistent with those marketed to investors several years ago. Yet, as follows from the discussion above, there are many factors that can lead to variations in performance across deals, such as manager, structure, and collateral buckets. Potential equity buyers would do well to evaluate all of the above factors when making their investment choices.

Appendix A-1

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