Credit

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CLO Equity – Strong Cashflows Continue

Stronger prices limit upside

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With thanks to
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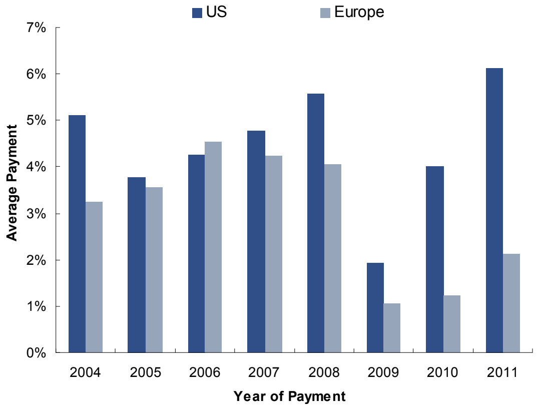
- **Cashflows during 2011 remained high** — Our analysis of 492 US and 180 European CLO transactions shows average quarterly payments to-date across all US and European CLO equity were an impressive 4.4% and 2.5% respectively.
- **More European CLOs paying equity** — Currently 60% (and falling) of deals are passing their diversion tests compared to 25% of deals at end-2009.
- **Manager differentiation resists market upturn** — The difference between best and worst performing deals is less than during the credit downturn, but still significant.
- **Difficult to beat the "vintage" effect** — The low liability costs of 2005-2007 deals have led to their equity tranches being paid full notional, unlike those from older deals.
- **IRR of 12-15% on US CLO equity** — After accounting for historical and projected cashflows, US CLO equity will have a median 12-15% IRR, in line with marketed levels.
- **Lower dollar prices and payback time boost seasoned equity appeal** — Investors need to consider the risks to longer-dated cashflows in high-dollar price equity.
- **Equity performance validates CLOs** — The cashflow performance of CLO equity during and after the credit downturn, together with manager differentiation, is evidence that CLOs have performed in line with how they were marketed.

Figure 1. Average quarterly distributions to CLO Equity



Source: Citi Investment Research and Analysis

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

Attractive cash-on-cash returns continue

Low returns in many traditional asset classes have led many investors to look at alternative assets for meeting their yield targets. As we argued in CLO Equity as an Alternative Asset Class, leveraging senior secured bank loans through the CLO Equity product has been a rewarding investment for the last two years. We think the relative value should continue, albeit at a lower pace than the last two years. This is all the more important since expectations of a long period of low growth and tight credit are leading many investors to lower their public and private equity — the bedrock of pension fund portfolios — valuations.

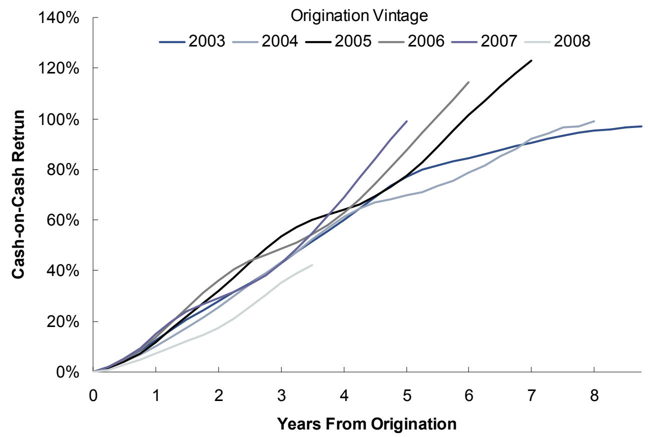
At the same time, there has been a resurgence of CLO primary issuance. The improved pipeline, along with the first signs of purchase of new-issue equity by non-manager investors, has refocused investors' attention on the performance of CLO equity. Our follow-up study to the one done in January 2011 doesn't just show that CLO equity had a robust performance during 2010-2011. 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.

As in our earlier studies, we base our research 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 492 US and 180 European CLO transactions, spanning 130 and 53 managers, respectively. Each set represents roughly 90 percent of its respective CLO universe.

Average realized quarterly payments across all US and European CLO equity have been an impressive 4.4% for US and 2.5% for Europe. As shown in Figure 1 on the cover page, 2011 provided especially high returns in the US.

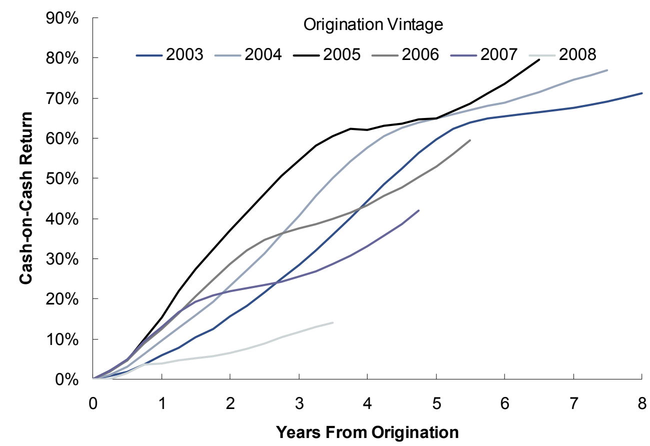
After the credit improvement over the last two years, more than 93 percent of US CLOs are making payments to equity, with average quarterly distribution of 6.1% in the last reporting quarter. In Europe the figures are less impressive. However, we have seen improvement there too, with about 74 percent making some distributions to equity. For those transactions that made payment in the last quarter, the average distribution was 2.5%.

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



Source: Citi Investment Research and Analysis

Figure 3. Cumulative Cash-on-Cash Returns of European CLO Equity



Source: Citi Investment Research and Analysis

Europe underperforms, though improving

For a number of reasons, elaborated in US vs. Euro CLO Equity – Return Attribution, cash-on-cash returns on European CLO Equity have been significantly lower than for US CLOs. Reasons include the higher proportion of European deals that are failing their cash diversion triggers, the lower coupons on European loans, the benefit of LIBOR floors and amendment fees for US loans, and the slightly higher leverage for US deals. This difference in performance is evident in Figure 2 and Figure 3 above, as well as in Figures 4-5.

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

Origination Year	Deal Count	Average	Median	StDev	75 Percentile	25 Percentile
2002	7	4.7%	4.5%	3.6%	6.3%	3%
2003	27	3.1%	3.4%	2.3%	4.5%	1%
2004	51	3.4%	3.6%	2.3%	4.9%	2%
2005	82	4.5%	4.8%	2.7%	6.2%	3%
2006	154	4.8%	5.2%	3.2%	6.7%	3%
2007	155	5.0%	5.5%	3.4%	7.3%	2%
2008	16	3.5%	3.5%	1.9%	4.8%	2%

Source: Citi Investment Research and Analysis and Intex

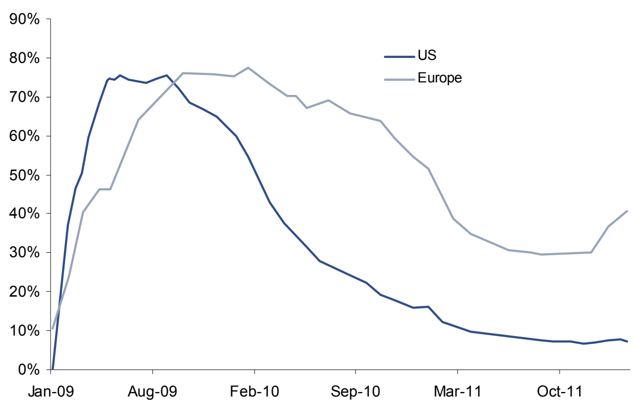
Figure 5. Statistics for Cash-on-Cash Returns for Euro CLO Equity

Origination Year	Deal Count	Average	Median	StDev	75 Percentile	25 Percentile
2002	5	2.7%	2.6%	1.7%	3.8%	1.7%
2003	5	2.3%	2.4%	2.1%	3.7%	0.2%
2004	15	2.5%	2.6%	2.1%	3.9%	0.2%
2005	20	3.1%	3.4%	3.9%	4.7%	0.3%
2006	60	2.7%	3.1%	2.1%	4.3%	0.0%
2007	60	2.1%	1.8%	2.1%	3.9%	0.0%
2008	15	1.0%	0.8%	1.2%	1.4%	0.0%

Source: Citi Investment Research and Analysis and Intex

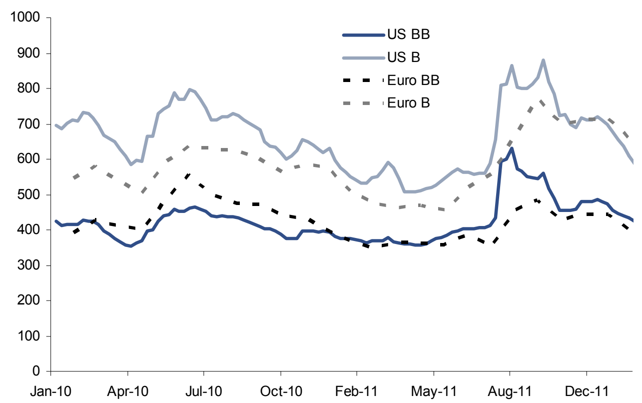
Nonetheless, until recently, there have been some signs that the fortunes of Euro CLO equity were improving. The most visible factor was the sharp decline in the number of deals that were failing their cash diversion tests (Figure 6). Recent European loan downgrades to triple-C category have, however, reversed some of this improvement. European loan spreads in the secondary market are not substantially below those of the US, though they lack the high LIBOR floors. Euro CLO equity is also generally significantly cheaper than those of many US deals. Against all that, however, the increasing difficulties faced by European loan borrowers to pay off their loans in a weak capital market are not helped by the lack of CLO issuance or retail loan funds.

Figure 6. Percentage of deals failing cash diversion tests



Source: Citi Investment Research and Analysis and Intex

Figure 7. Loan spreads, bps



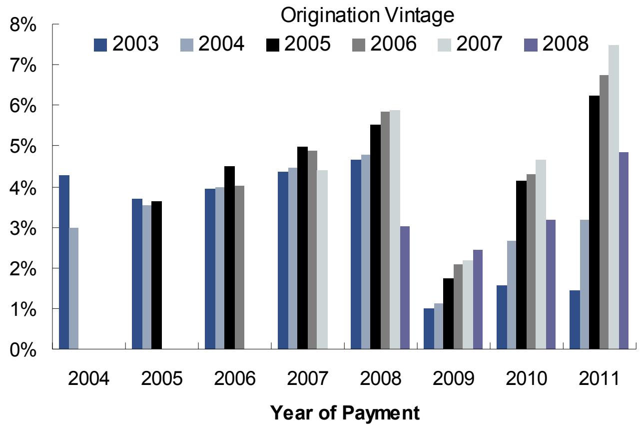
Source: LCD, Citi Investment Research and Analysis

Vintage effect hard to beat

As we noticed in our previous study, origination year has a significant impact on 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-

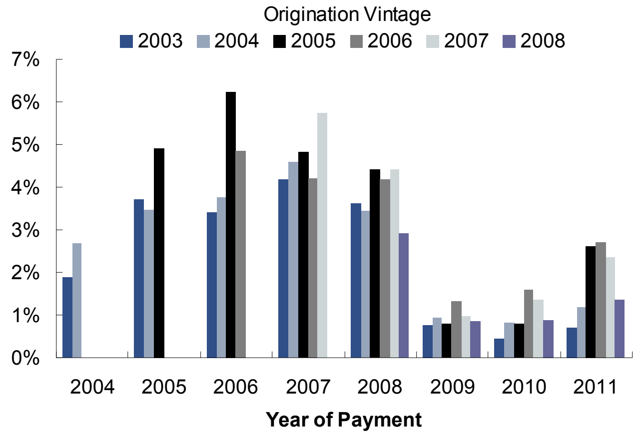
2004 deals had wider liability spreads. With most of the original collateral refinanced at tighter spreads, "arbitrage" in these deals has been significantly dented. Furthermore, most of these deals are beyond their reinvestment period and can't take advantage of today's wide collateral loan spreads.

Figure 8. Quarterly US Distributions by Year of Origination



Source: Citi Investment Research and Analysis and Intex

Figure 9. Quarterly Euro Distributions by Year of Origination



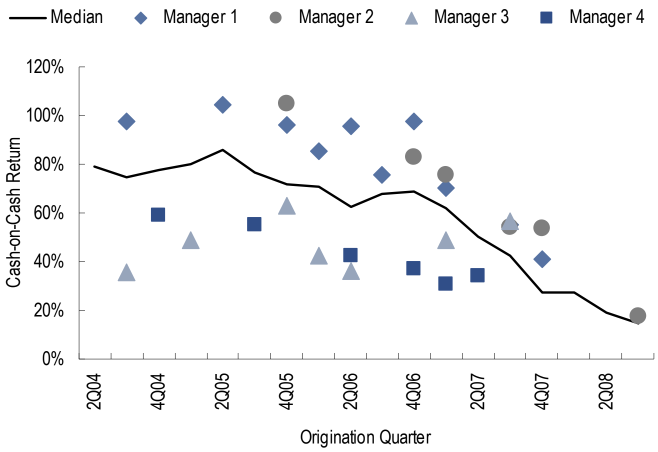
Source: Citi Investment Research and Analysis and Intex

Similarly, the wider liability levels of new issue deals, compared to 2006-2007 vintage deals, result in less front-ended cashflows than the older deals. On the plus side, new issue equity is somewhat thicker, which should lead to a more stable return profile during a credit cycle downturn. Moreover, as we discuss later, the high dollar prices of some vintage equity in current markets means a longer investment payback time.

Manager's Alpha, but consolidation will cloud history

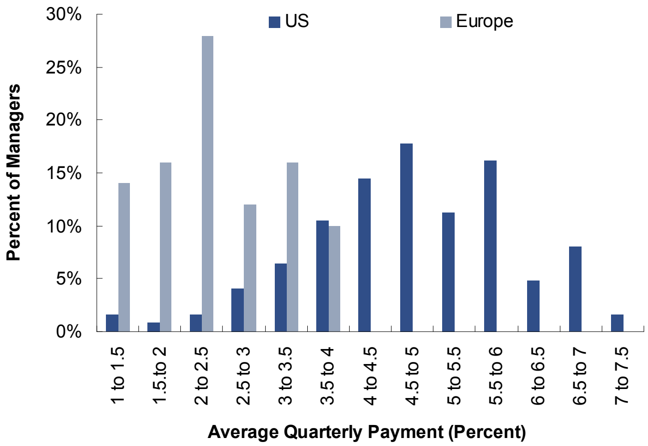
Our last two annual studies amply showed that managers (and deal structure) can contribute significantly to CLO Equity performance, and this year is no different. Figure 10 provides probably the best evidence of this claim. Managers, denoted on this figure as Manager 1 and Manager 2, consistently delivered 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 11.

Figure 10. Select US Managers Compared to Median



Source: Citi Investment Research and Analysis and Intex

Figure 11. Average Quarterly Payments 2007-2011: Percent of Managers

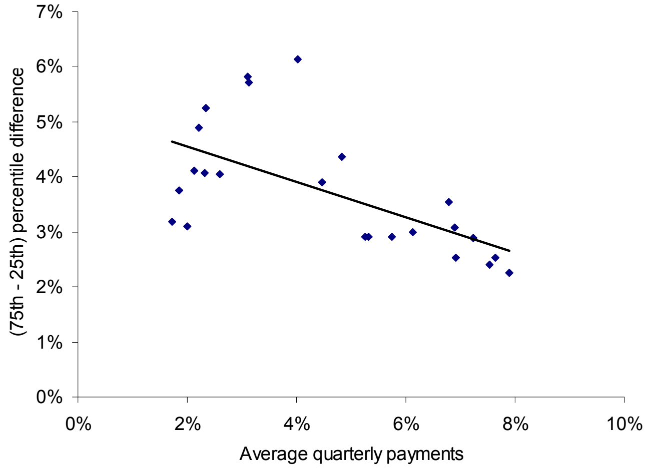


Source: Citi Investment Research and Analysis and Intex

Though a few European managers handsomely outperformed the pack (giving investors 3.5-4% per quarter, compared to the 2.5% 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 amid 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.

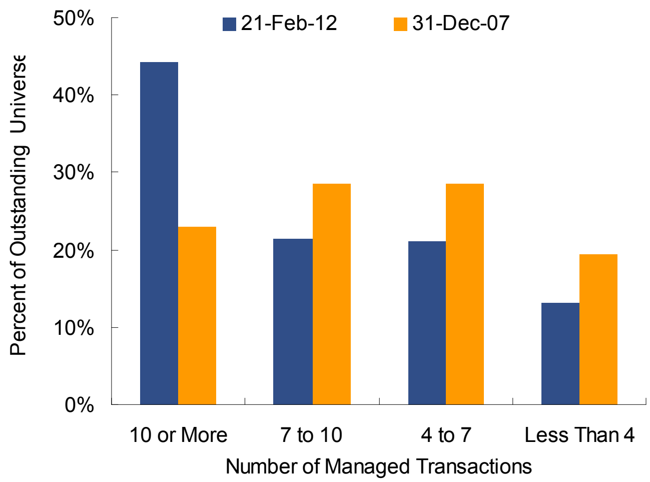
As one might expect, the difference between the best and worst managers stands out the most during stressful times. The data (Figure 12) show this – for example, dispersion was higher during 2009, when low average quarterly payments were typical. However, even now, with an improvement of equity performance and high cash payments of 6-8% per quarter, the rising tide has not lifted all boats equally. Dispersion is down, but there is still a 3% difference in quarterly payments between the 25th and 75th percentiles.

Figure 12. Dispersion versus average quarterly payment for 2006 and 2007 CLOs from Jan 2009 to now



Source: Citi Investment Research and Analysis

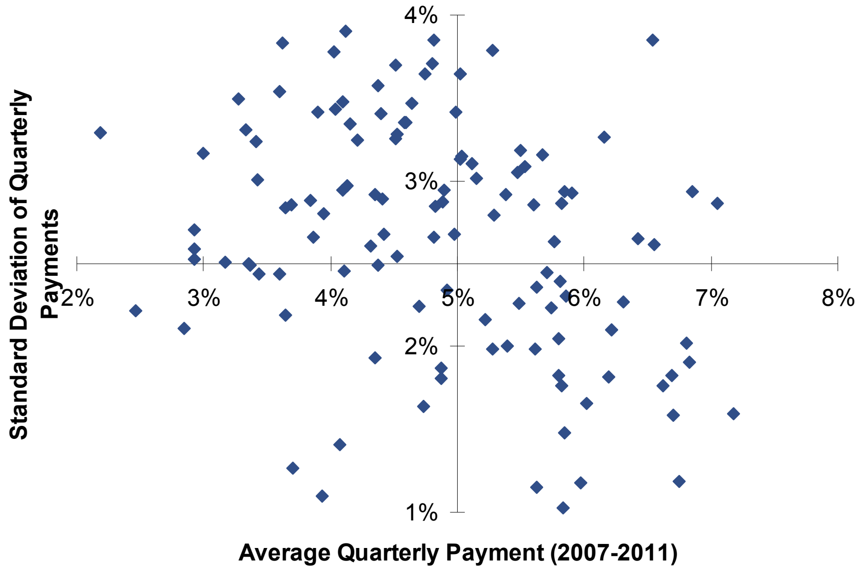
Figure 13. Consolidation in manager universe: Number of deals per manager



Source: Citi Investment Research and Analysis

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. 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 14. 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 14 and feel those present in the bottom right quartile gave their investors the best risk-adjusted returns.

Attractive realized returns including projected cashflows

Even for those who historically bought new issue equity at par, returns have been very attractive. First, previous cashflows may have been interrupted during the 2009 credit downturn and pick-up in default and downgrade rates, but cashflows have recovered and subsequently increased since then. How about the future? To project future cashflows, we chose 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 15. Assumptions Used to Generate Future Cashflows

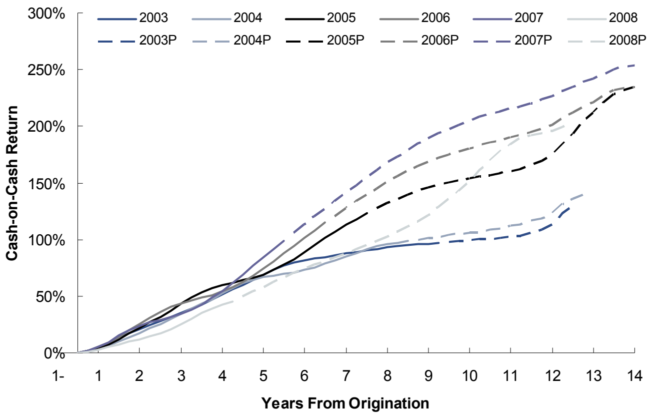
	US		Europe	
	Base Case	Stressed Case	Base Case	Stressed Case
Prepayment	20	15	20	15
Defaults	3	4 for 12, 10 for 12, 4	3	4 for 12, 10 for 12, 4
Recovery	70	60	70	55
Recovery Lag	12	12	12	12
Reinv Price	100	98	100	97
Reinv Spread	500	550	500	600

Source: Citi Investment Research and Analysis

As can be seen from the Figure 16, 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

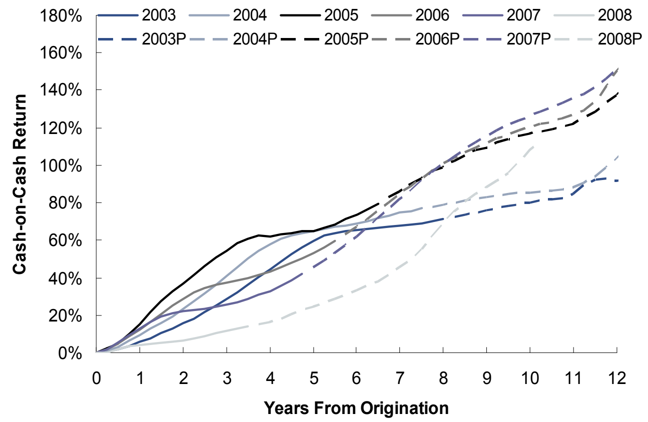
cases, deals as late as 2006) have already been paid at least 100 percent of par. Furthermore, consistent with our earlier observations of higher payments to later vintage CLO equity tranches, most of later vintage CLOs are expected to enjoy above 200 percent cash-on-cash return in our base case scenario. 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 16. Realized and Projected Cashflows for US CLOs for Base Case Scenario



Source: Citi Investment Research and Analysis

Figure 17. Realized and Projected Cashflows for European CLOs for Base Case Scenario

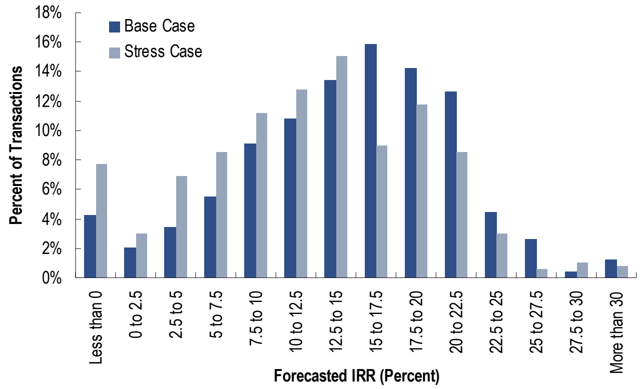


Source: Citi Investment Research and Analysis

In our base case scenario, median US CLOs equity IRR is expected to be around the mid-teens (Figure 18). 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 9-10 percent. Given that many equity tranches were bought below par, the returns are even more attractive.

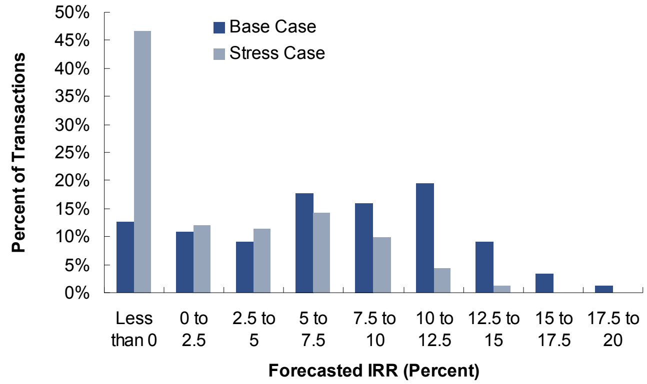
For European CLOs the expected median IRR is 5 percent in our base case, reflecting lower recoveries in European loans, lower reinvestment speeds, and lower leverage. However, as mentioned above, a significant amount of equity was bought below par, thus boosting returns. Also, should Europe see even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

Figure 18. Distribution of Projected IRRs for US CLOs: Base and Stress Case Scenario



Source: Citi Investment Research and Analysis

Figure 19. Distribution of Projected IRRs for European CLOs: Base and Stress case Scenario



Source: Citi Investment Research and Analysis

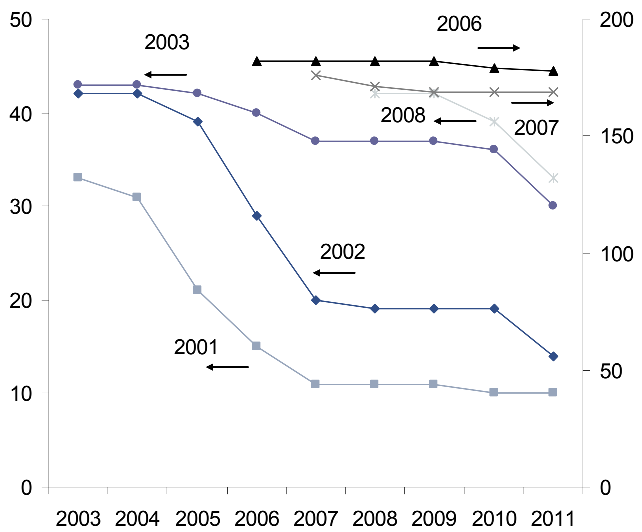
Is equity attractive at these prices?

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 2011, on average, in the low 80s, in the US. In the interim two years, they also had substantial cash distributions as the above analysis has shown.

However equity, especially the ones from 2006 and 2007 with low locked-in liability costs, is a depreciating asset. For a start, liability costs will rise as the CLOs start amortizing and paying off their cheapest (triple-A) funding source. Second, unpaid (or partly paid) manager incentive fees will be diverted from the cash paid to equity holders. In the medium term there are other risks to consider. There will be an increasing likelihood that deals will get called by majority equity holders who agree to refinance the portfolio. History provides sufficient evidence of this (Figure 20). Higher interest rates leading to disappearance of LIBOR floors and further tightening of credits spreads are also factors that investors should keep in mind when doing their due diligence. Finally, manager behavior is critical in justifying high dollar-price equity. Many managers will be more aggressive in keeping their deals outstanding for a longer period, and benefiting from the low locked-in liability costs. Others will be conservative and payoff their liabilities much more readily.

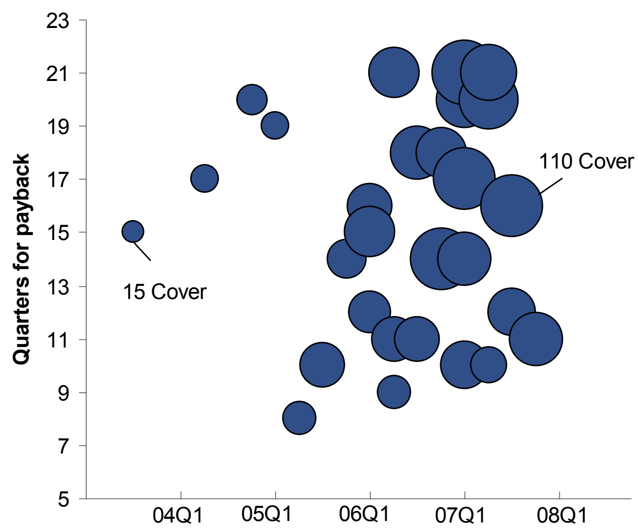
In view of the high dollar prices (Figure 21) that we see in BWICs for many high cash-flow equity and potential risks to future cashflows, we would consider lower dollar-price more seasoned equity quite seriously. Even though the payback time may not be much shorter than for high cashflow equity from 2006-2007 deals, total dollars at risk are also lower. It also looks like the market is using the same discount rate for longer-duration, higher dollar price equity as for shorter, seasoned deals which also looks like an anomaly to us.

Figure 20. Number of CLOs outstanding by vintage and year (horizontal axis)



Source: Citi Investment Research and Analysis

Figure 21. Recent CLO equity cover by payback time (number of quarters) and vintage (Bubble size is in proportion to cover level)



Source: Citi Investment Research and Analysis

Despite the above risks, equity, in the new issue and secondary markets, is still attractive relative to other available opportunities. Projected returns will of course depend 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 in the 70s in the US and 50s in Europe. Both are in the ballpark of current market prices; though, in the US's case prices are somewhat on the lower side, and, in Europe, on the higher side of the trading range. Overall, at current prices, and for a benign default environment, equity is priced fairly though not without risks.

Equity performance validates CLO product

The performance of CLO equity over the last two years serves as a reminder that the CLO product has performed exactly as marketed. Despite the credit turmoil of 2008-2009, CLO equity, on average has delivered attractive cashflows to investors and has provided returns consistent with those marketed to investors several years ago. Moreover, the fact that cashflows were shut off during the default cycle but then were boosted by higher loan spreads as the economy came out of the credit cycle is again in line with expectations. Finally, variations in performance across managers vindicates the notion that the CLO story is as much as about the strength of the senior secured loan collateral, as it is about the value of managers.

Appendix A-1

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