

Credit

17 April 2012 | 15 pages

Global Structured Credit Strategy

Life after reinvestment – CLO 1.0 resurrected

- **CLOs becoming static important for tranche and loans** — Since the amortization speed of CLOs determine equity and debt returns, and CLOs' role as loan buyers, we looked at the indentures of 13 deals that ended their revolving period last quarter.
- **Differences initially look significant but upgrades and prepayments dilute effect** — Upgrades of previously downgraded tranches and high loan prepayment speeds have eroded the advantage of deals which gave managers more flexibility to reinvest.
- **Managers differ in repayment speeds** — There is significant dispersion in the amortization rate of senior tranches within the universe of CLOs that are now out of their revolving period.
- **We modify our 2012 issuance projection** — On a pro-rated basis the \$7.6bn of new issue is at the top end of our \$15-20bn annual issuance forecast; despite possible summer worries, we think 2012 will end up in a \$20-25bn issuance year.
- **US insurers continue their strong involvement with CLOs** — Insurance companies continue to be actively involved with CLOs, as in 2011 when the 5 largest investors collectively bought more than \$3bn of CLO debt.
- **Secondary supply complements primary issuance growth** — After a quiet start to the year, secondary BWIC volumes have picked up significantly. February and March showed as much volume as the peak in 2011.

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With thanks to

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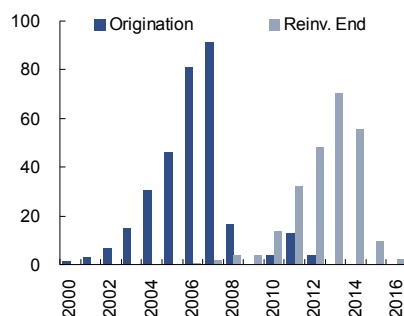
See Appendix A-1 for Analyst Certification, Important Disclosures and non-US research analyst disclosures.

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CLO 1.0 – life after reinvestment

Differences welcome, but less common than hoped

Figure 1. CLO origination year with original notional; reinvestment end with current notional



Source: Citi Investment Research and Analysis

Given the resurrection theme of this month's holidays, we thought it was only fitting to test how CLOs are faring as their active revolving periods are drawing to a close. Loan investors have been bemoaning for some time the decline of their biggest buyer segment, namely, vintage CLOs, as more members of the CLO universe exit their reinvestment period. At the same time, the high dollar prices of some vintage CLO equity pieces (see [CLO Equity – Strong Cashflows Continue](#)) are implying that CLOs can stay reinvested for a considerable period, and likely well beyond their reinvestment period. To test how easily can CLOs stay invested, we looked at the indentures of 13 deals that just exited their reinvestment period in Q1 2012.

Our conclusion is that deals differ in their reinvestment opportunities after the reinvestment period as well as the constraints they have to satisfy. However, the volume of anticipated unscheduled repayments and upgrades of previously downgraded CLO bonds mean that some of those differences are not as important. Therefore, deals that appear superficially different in their rating constraints and re-investable collateral conditions may not be that different in reality. The most powerful factor, in our opinion, for any deal to stay reinvested is the flexibility of its collateral life test. However, a few deals have managed to get the test changed. As an aside, the study of the indentures also reminded us of the importance of tracking indenture definitions closely as certain deals, for example, defined unscheduled payments to include certain discretionary sales. The principal waterfall of many deals, moreover, was not explicit as others in the deal's ability to continue reinvesting even after the reinvestment period.

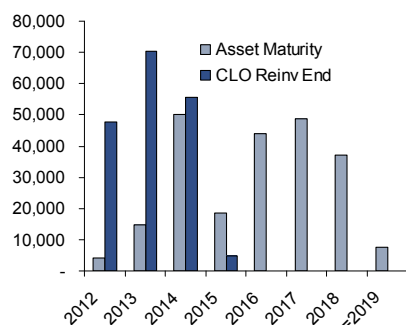
Figure 2. Reinvestment conditions of 13 deals whose reinvestment period ended Q1 2012

Deal	Re-invest	Rating Constraint	Maturity Constraint	Collateral Constraint	Coverage Test Constraint
A	None				
B	U, CR, CI	Only CR and CI more restrictive	WAL test (soft); same or earlier maturity	CQT (incl WARF) satisfied; Asset rating same or better	Satisfied (soft).
C	None				
D	U; CR; CI	Senior at original; more junior 1 notch	WAL test (soft); same or earlier maturity	WARF(hard); Asset rating same or better only if S&P Monitor not satisfied	Satisfied (soft); OC satisfied (hard)
E	U; CR; CI	Senior at original; more junior 1 notch	WAL schedule (hard)	WARF (hard); Asset rating same or better for CR	Satisfied (hard)
F	U; CR; CI	Only CR and CI more restrictive	Average Maturity (soft); same or earlier maturity	WARF (hard); S&P asset rating same or better	OC satisfied (hard)
G	U; CR; CI	Senior at original; junior 1 or 2 notch	WAL test (hard)	WARF (hard)	Class E OC satisfied (hard)
H	U; CR; CI	Only CR and CI more restrictive	WAL test (hard); Same or earlier maturity	WARF test (hard); S&P asset rating same or better	Satisfied (hard)
I	U; CR; CI	Only CR and CI more restrictive	WAL test (soft); same or earlier asset maturity	All CQT satisfied; S&P asset rating same or better	Class E OC (hard)
J	U, CR, CI	Senior at original; more junior 1 notch	WAL test (soft); same or earlier asset maturity	WARF (hard); both ratings same or better	Class D OC (hard)
K	Only U	No rating reduction	WAL test (soft); same or earlier asset maturity	WARF (hard); both ratings same or better	Satisfied (hard)
L	U, CR, CI	Senior at original; more junior 1 notch	WAL test (soft); same or earlier asset maturity	WARF (hard)	Senior Test (hard)
M	Only U	No rating reduction	WAL test (soft); same or earlier asset maturity	WARF (hard); both ratings same or better	Satisfied (hard)

U=unscheduled prepayments; CR=credit risk sales; CI=credit improved sales; WAL=weighted average maturity of collateral pool; CQT=collateral quality tests; WARF=Moody's weighted average rating factor of pool. 'Soft' denotes need to just maintain test at current level or improve; 'hard' denotes need to meet test level

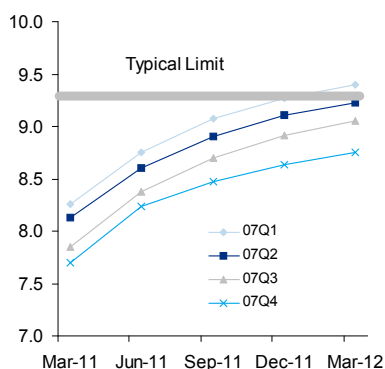
Source: Citi Investment Research and Analysis

Figure 3. Collateral maturity of current CLO universe



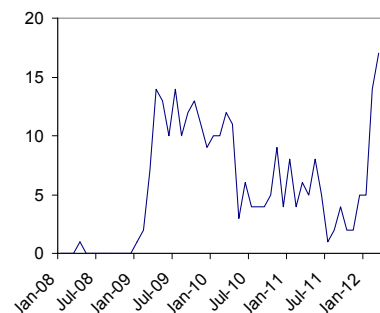
Source: Citi Investment Research and Analysis

Figure 4. Collateral maturity (years from close) versus time for 2007 deals



Source: Citi Investment Research and Analysis

Figure 5. Monthly amend-to-extend requests



Source: S&P, Citi Investment Research and Analysis

Deals whose only rating constraint leads to credit improved/risk asset sales being more restrictive in the definition of what can be reinvested should, in theory, find it easier to carry on reinvesting than other deals (such as E and K) which stop reinvestment altogether if there's high downgrades. However, with the recent flow of upgrades (and expected upgrades of seasoned deals as they start to delever), this is not a difficult restriction to beat. The few deals that are still constrained because of tranche downgrades are only a notch or two away (typically on the triple- and double-B) from being able to reinvest again – it is possible, however, that even when these tranches get upgraded, the remaining life of the CLO may be too short to be useful. Equally, deals which can reinvest only unscheduled principal should, in theory, have a harder time reinvesting than those which can do that in addition to reinvesting proceeds from credit risk and improved sales. However given the very high loan prepayment rates we expect, this should not be a problem.

Ultimately deals and managers which can exploit any flexibility in their ability to reinvest sale proceeds as well as unscheduled prepayments, and to match original asset and new asset maturities, will be best placed to stay reinvested. Deals with hard WAL tests combined with matching the maturities of old and new asset will have the least breathing room – for them, resurrection, as it were, is impossible unless they can convince noteholders and trustees to change their tests. We suspect many of these deals will get called as equity investors start seeing declining returns from the fall in leverage coupled with rise in liability costs.

Current collateral means some room for reinvestment

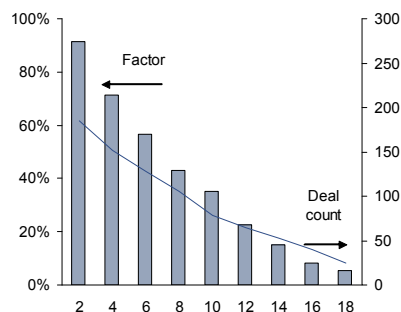
The difficulty in investing means different things for different stakeholders. Triple-A investors stuck with low coupon CLO 1.0 senior debt would like their principal returned as soon as possible, especially if purchased at discount. Equity investors would like the low cost of leverage to be available for the longest possible period. On the loan side, borrowers would like CLOs to continue to be able to reinvest, even if some of the reinvestment is for shorter loans than borrowers would like.

Many loan and CLO investors first look at the reinvestment-end profile of CLOs and see that as the period of loan cut-offs. The reality is just a little different. A majority of loans in CLOs matures much later than the reinvestment profile implies (Figure 3). Since the WAL tests are generally soft, some deals can still do some management so long as newer loans are shorter or similar maturity. Moreover, even though many CLOs are hitting their WAL limits after using the last few quarters to lengthen their collateral lives (Figure 4), some still have a little room.

Amend-to-extend requests, which have recently increased (Figure 5) may be the way that CLO 1.0 copes with keeping portfolios reinvested for a longer period, as well as giving stressed borrowers some breathing room. Unlike CLO 2.0, the older deals are usually silent on whether extended loans should be classified as new investments. In fact, one of the deals in our list goes so far as to explicitly state that the deal may enter into any amendment of any underlying instrument without noteholder consent if the amendment is required, among other things, to make any change deemed beneficial by the issuer.

We think deal structure and manager will play a significant part in how the collateral lives of CLO 1.0 deals shape. We are already seeing substantial dispersion among deals as we see below.

Figure 6. Median senior bond factor, and deal count, by quarters after end of reinv period



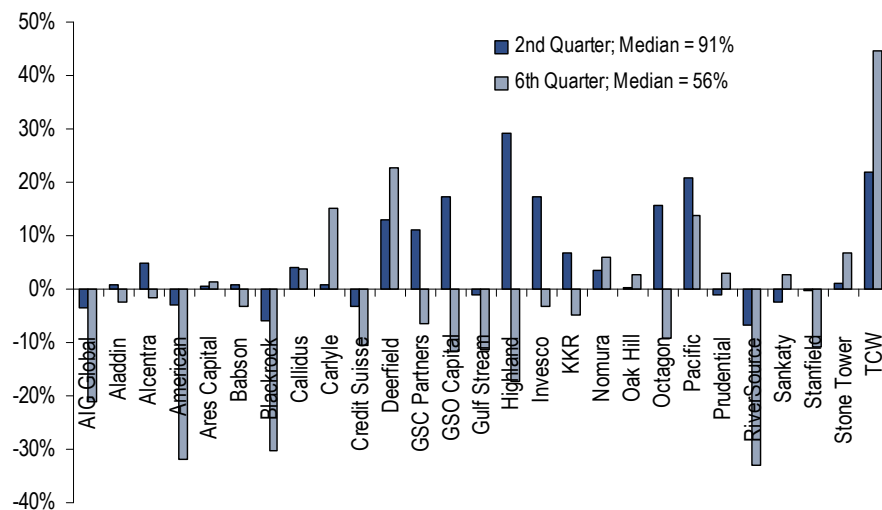
Source: Citi Investment Research and Analysis

Structure and manager differences in CLO amortization

It will not surprise any investor that CLO senior bonds start amortizing at the end of their reinvestment period (Figure 6) but the increasing number of data points of deals exiting their revolving period is making the analysis of differences among deals easier.

The analysis shows that there are distinct dispersions from the median amortization numbers in the figure. In Figure 7 we show the deviation from the median of the bond factor of the senior tranche from the universe of deals that are post their reinvestment period. The data is grouped by the original deal manager (thus ignoring the recent consolidation in the manager universe) and is averaged across their deals that form part of the universe. We have cleaned the data for specific structures subject to volatile notional changes such as pro-rata structures and revolving tranches. We feel that structure and manager behavior (we would argue that the two are somewhat linked as the original manager would have been involved with the creation of the structure) are behind the differences. If anything, the wave of downgrades may have muted differences in manager behavior as many managers, even if they were willing to rotate into longer-dated collateral, would have been unable to invest. We also feel that in the future, differences will emerge in how managers respond to the amend-to-extend requests borrowers will likely make as they see difficulties in refinancing. Some will be conservative, others may take a more aggressive stance in interpreting extension requests.

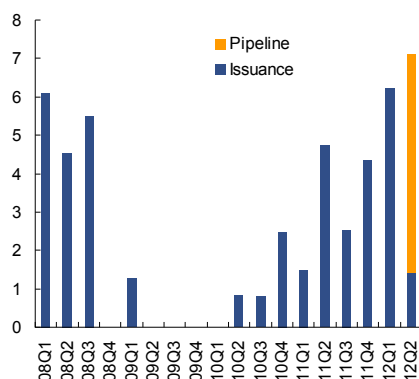
Figure 7. Deviation from median of senior bond factor across CLO universe of deals post-reinvestment period by selected original deal manager. Positive signifies faster amortization.



Source: Citi Investment Research and Analysis

US insurers boost CLO market

Figure 8. Primary CLO Issuance (\$bn)



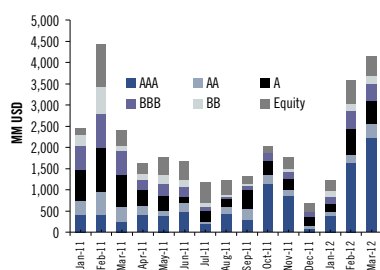
Source: Citi Investment Research and Analysis

Figure 9. CLO purchases by some US insurers (\$'000)

	YE 2011	Q4 2011
Sammons	773,999	78,426
Metlife	528,827	34,896
NY Life	462,027	122,396
Mass Mutual	442,271	213,218
AIG	412,451	96,949
Pru	226,927	82,877
American Financial	161,973	98,320
CNO Financial/Conseco	157,228	86,694
AEL	90,927	12,134
Jefferson National	75,374	2,153
Genworth	67,266	48,866
Principal	50,215	-
Mutual of Omaha	40,000	15,000
Allstate	34,987	-
AXA Equitable	20,956	20,956
AEGON	19,044	16,789
Phoenix	15,760	15,760
CUNA	12,228	-

Source: NAIC, Citi Investment Research and Analysis

Figure 10. BWIC Volumes (\$mn)



Source: Citi Investment Research and Analysis

Issuance already at \$7.6bn, we increase issuance forecast

With two weeks just after the first quarter, the volume of CLOs that have closed or priced to date is already at \$7.6bn. On a pro-rated basis this is more than a little ahead of even the higher-end of our \$15-20bn annual issuance forecast we made in January. Though making annual forecasts based on Q1 issuance can be over-optimistic – the summer approaches and investors have painful memories of last year – we think 2012 issuance will likely end up in a \$20-25bn range. Refinancings of older deals with higher liability costs will continue to be a theme for this year, as we recently witnessed in the refinancing of Babson 2008-2 into the new Babson CLO 2012 – I CLO.

Along with the burst of primary issuance, we have also seen a compression in spreads in the primary market (arguably, the compression has made much of the increased issuance possible). The triple-A of the first deal of the year priced at 155bp, and the tightest we have seen so far is 130bp.

Relative value keeps demand from US insurers intact

Despite the spread tightening, we feel that insurance companies continue to be actively involved with CLOs, as they did in 2011 (Figure 9). The reasons are relative value – CLO senior bonds with their high subordination and low regulatory capital are looking attractive to corporate bonds and many other securitized assets. It is true that there is an uptick in the Moody's 12-month trailing default rate, but the overall outlook is still benign for credit. Moreover, inflows have boosted the need to put money to work. Other than insurance companies, the market is seeing greater interest emerge from Asian banks and newer real-money accounts in the US such as smaller banks, insurance and pension accounts.

Given the outperformance of the investment grade market, which enjoyed its best first quarter (as measured by spread tightening) on record, investors are looking at alternative ways of earning spread on low-risk, high-quality assets. Issuance has also been helped by the fact that high-yield and loan spreads have not tightened as much as CLO liability spreads – a slowdown in high yield fund inflows and a supply boost have led high yield to underperform relative to IG on a beta-adjusted basis.

Active Secondary Market – AAA flow noteworthy

After a quiet start to the year, secondary BWIC volumes have picked up significantly. February and March showed as much volume as the peak in 2011 (Feb 2011). The total volume to date is a very respectable \$8.9bn approximately, just a little higher than the new issue market.

Two flows look especially interesting. As a share of total BWIC volumes, the proportion of triple-As are higher than in 2011. This is in line with the steady deleveraging of banks globally, and the declared intention of many banks and vehicles (such as Maiden Lane) to reduce the size of their structured finance holdings. It may also be a sign that legacy owners of CLO 1.0 are rotating into other structured finance assets including CLO 2.0 or CMBS 2.0 given the better structure and higher coupon in some of these newer deals. We are also seeing more equity in BWICs. It may be that some of the possible risk factors in the longer-term cashflows of high dollar price equity are starting to concern some investors, who are deciding to sell. On the other hand, the attractive yield (and high current cashflows) of the product have appeal to many other investors – we think there will be a balanced market.

Appendix

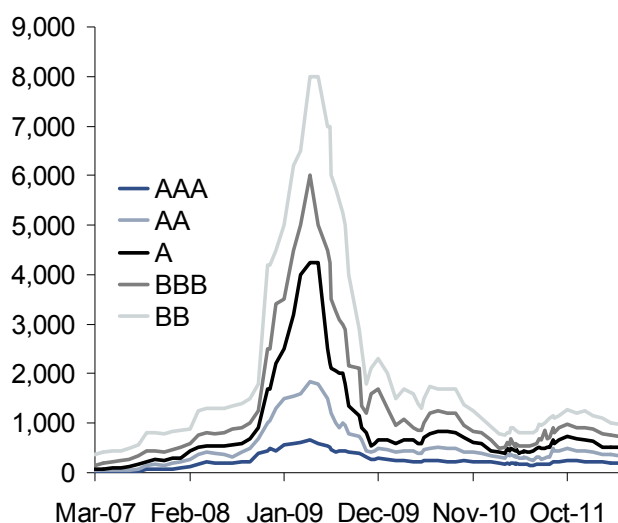
Cash Flow CDO Market

Figure 11. Secondary Cash Flow CDO Spreads/Prices

Collateral Type	AAA	AA	A	BBB	BB
US HY CLO (Spreads) – 1-April-12	190	350	515	725	975
US HY CLO (Prices) – 1-April-12	Low 90s – Mid 90s	Mid 80s – High 80s	Mid 70s – Low 80s	Low 70s – Mid 70s	High 60s – Mid 70s
Euro HY CLO (Spreads) – 1-April-12	335	700	945	1550	2080
Euro HY CLO (Prices) – 1-April-12	Low 90s – Mid 90s	Mid 70s – Mid 80s	Mid 60s – Mid 70s	Low 50s – Low 60s	High 40s – High 50s

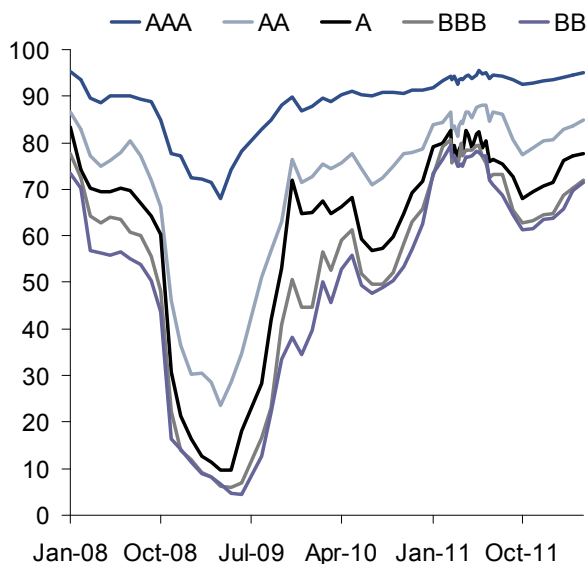
Source: Citi Investment Research and Analysis

Figure 12. US CLO Tranche Spreads



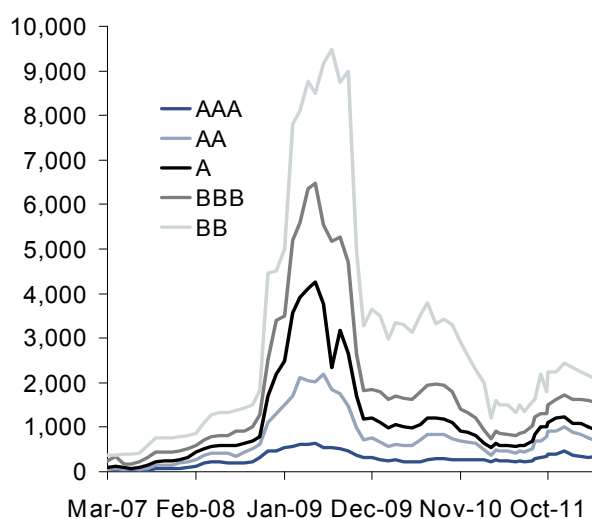
Source: Citi Investment Research and Analysis

Figure 14. US CLO Tranche Prices



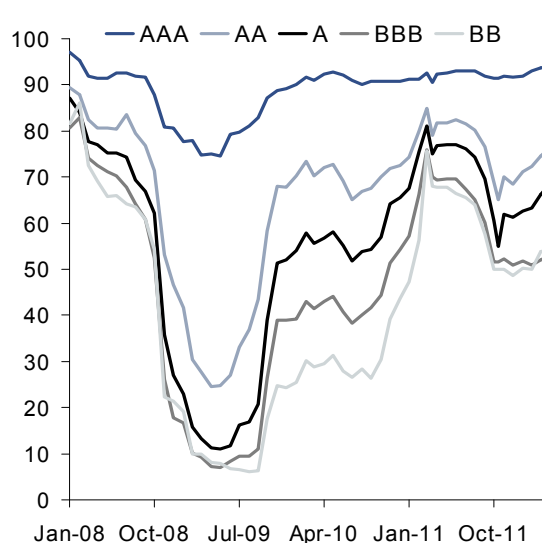
Source: Citi Investment Research and Analysis

Figure 13. European CLO Tranche Spreads



Source: Citi Investment Research and Analysis

Figure 15. European CLO Tranche Prices



Source: Citi Investment Research and Analysis

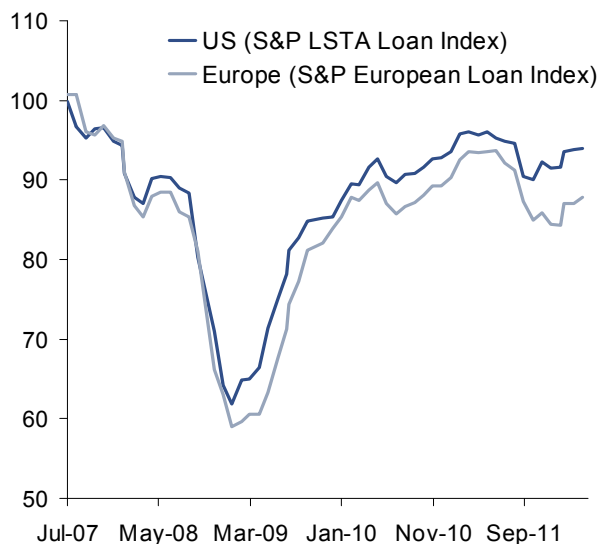
CLO Collateral

Figure 16. Avg First and Second-Lien Secondary Spreads to Maturity



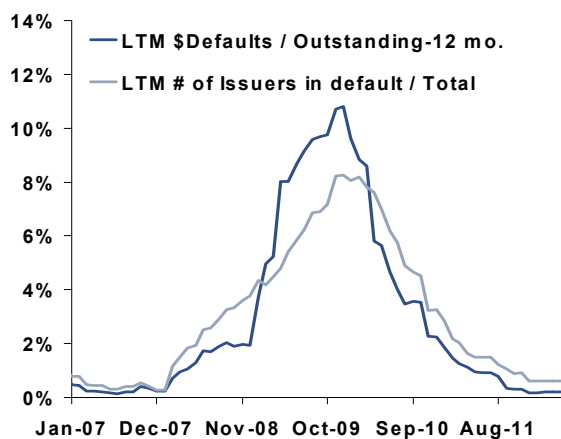
Source: Citi Investment Research and Analysis

Figure 17. Weighted Average Bid



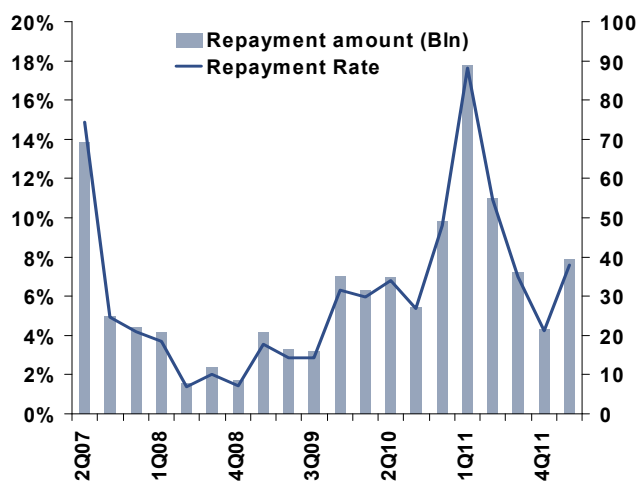
Source: Citi Investment Research and Analysis

Figure 18. Lagging 12mo. Default Rate by Principal Amount and # of Issuers



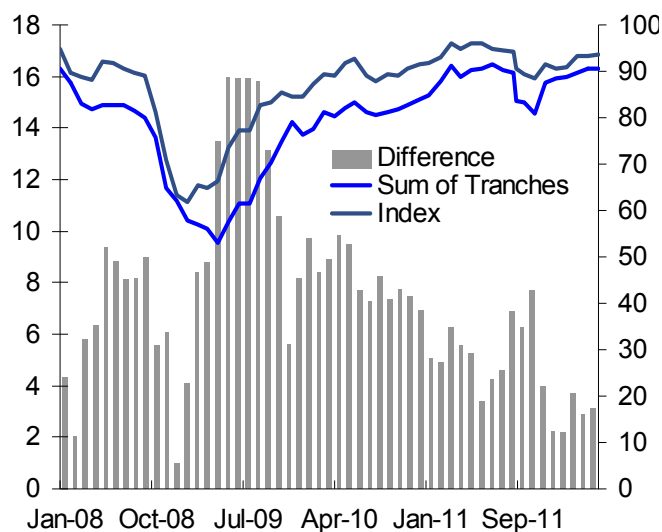
Source: Citi Investment Research and Analysis

Figure 19. Quarterly Repayment Rate and Repayment Amount



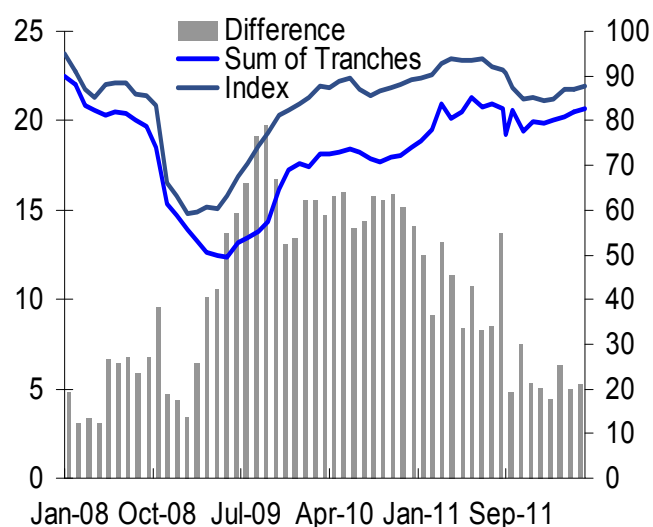
Source: Citi Investment Research and Analysis

Figure 20. Collateral/Tranche Arbitrage (US Deals)



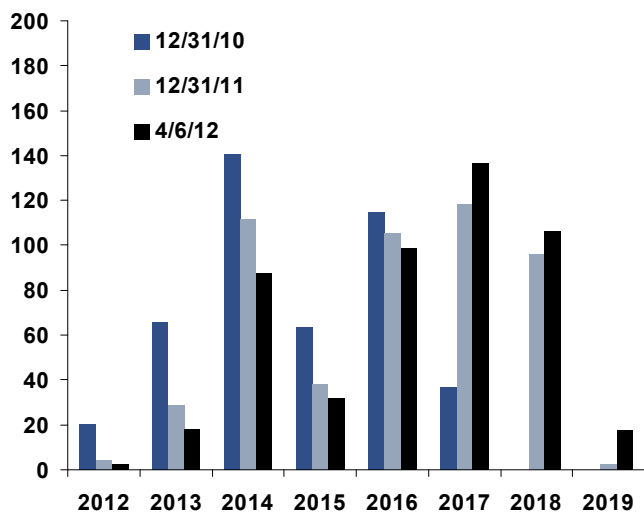
Source: Citi Investment Research and Analysis

Figure 21. Collateral/Tranche Arbitrage (EUR Deals)



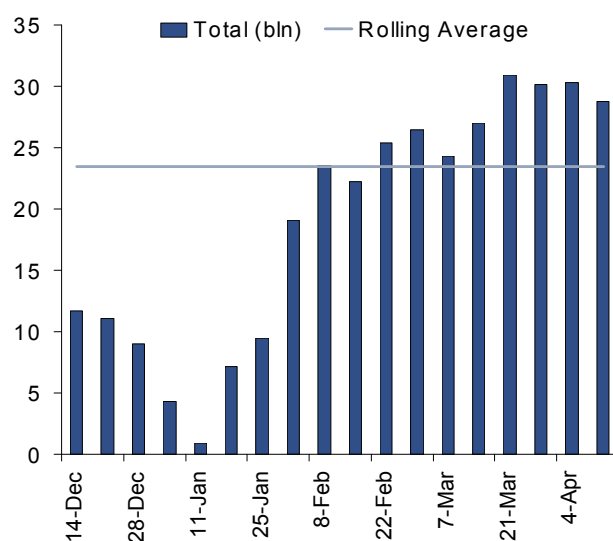
Source: Citi Investment Research and Analysis

Figure 22. Loan Distribution by Year of Maturity



Source: S&P

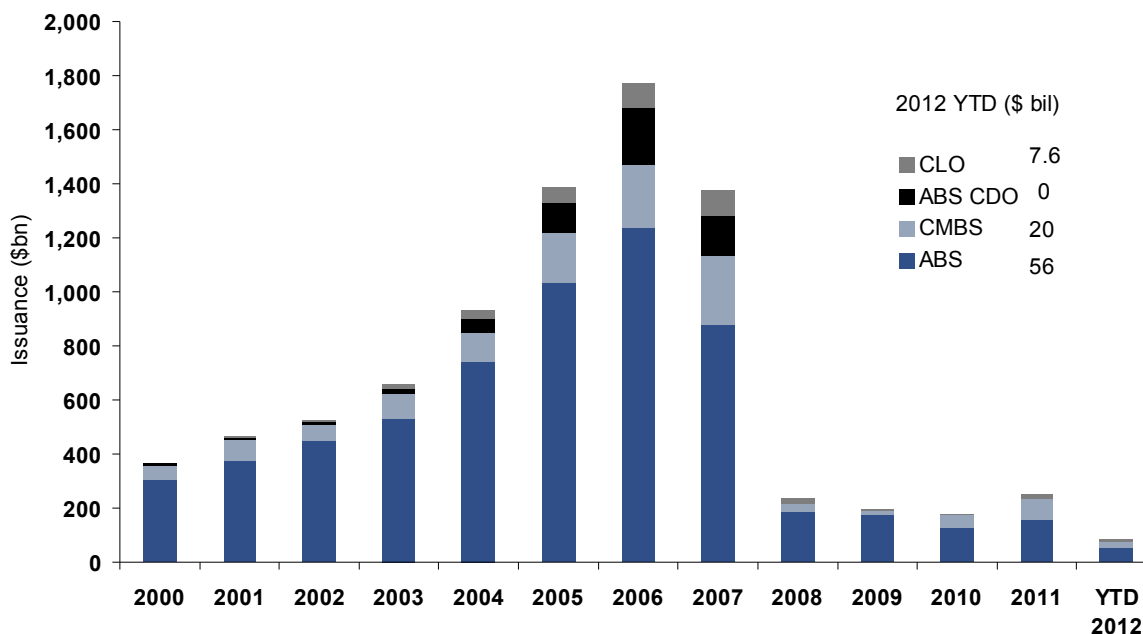
Figure 23. Institutional Loans Launched to Market (Rolling 30-Days)



Source: S&P

Securitized Products Issuance

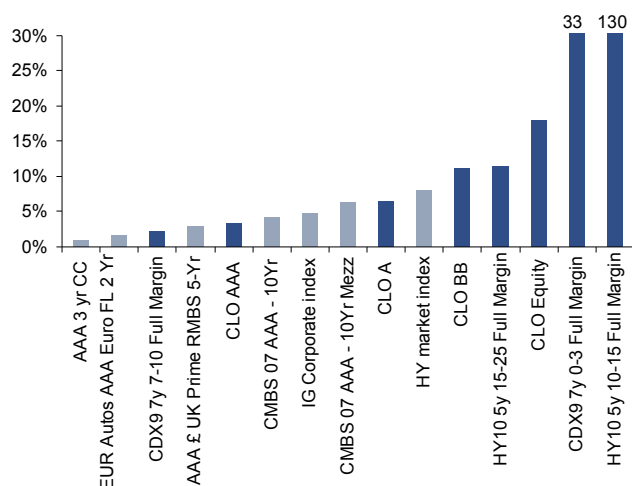
Figure 24. Year-to-Date CDO Issuance and Securitization Market Historical Issuance (\$bn)



Source: Citi Investment Research and Analysis

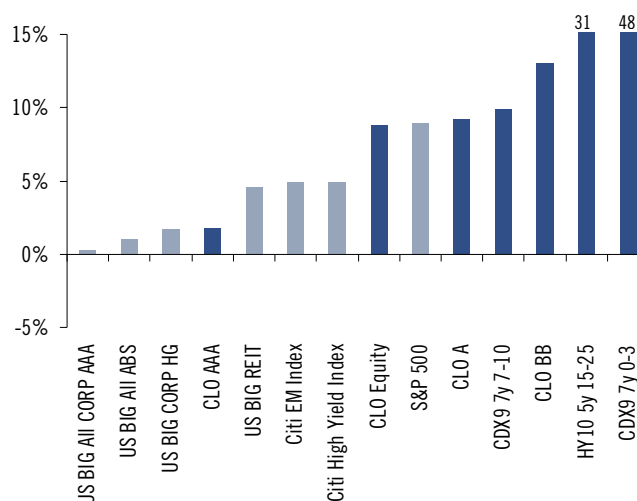
Securitized and Non-securitized Products Returns

Figure 25. Simple Yield



Source: Citi Investment Research and Analysis

Figure 26. Total Returns, 2011 (through 1-October-2011)



Source: Citi Investment Research and Analysis

Appendix II. Recent Publications

Figure 27. Recent Features

Date	Title	Description	Location on FI Direct
29-Mar 12	CLO Debt Management	Good for equity does not mean bad for debt; reverse can be true	Credit >> Global CDO
06 Mar 12	CLO Equity – Strong Cashflows Continue	Our annual piece that provides an extensive study on CLO equity performance.	Credit >> Global CDO
26 Jan 12	CLO Debt 2012 Update: Relative value remains amidst diminishing supply.	We look at relative value opportunities between CLO debt and other similarly rated corporate and structured assets.	Credit >> Global CDO
19 Jan 12	CLO Equity as an Alternative Asset Class	We look at relative value opportunities between CLO equity and other alternative asset classes such as private equity.	Credit >> Global CDO
05 Dec 11	Strong Finish to an Impressive Year	We look at the impressive results from primary as well as the pick up in secondary trading.	Credit >> Global CDO
10 Nov 11	Inflows may dominate Europe to help CLO Mezz	Despite European turmoil, fund inflows, low dealer inventory, and current investor positioning may lead to a year-end rally.	Credit >> Global CDO
20 Oct 11	Juicy Yields but Hedge Vol	Euro CLO Seniors look cheap but tactically hedge market risk. CLO Equity to benefit from slowing prepayments.	Credit >> Global CDO
4 Oct 11	Opportunities in CLO Senior Mezz	Following the recent selloff, CLO Senior Mezz have the best value among CLO tranches.	Credit >> Global CDO
9 Sep 11	Ideas for Hedging CLO Tranches	We look at a menu of hedging options for a volatile market.	Credit >> Global CDO
18-Aug 11	Loan Jitters, But Not for 2008 CLOs	Weaker technicals and outlook for CLOs but it's much better than 2008	Credit >> Global CDO
26 July 11	CLO AAAs	With a downgrade of US debt likely, investors who need AAA ratings should consider CLOs.	Credit >> Global CDO
14 July 11	CLO Seniors Should Remain Resilient	Despite choppy markets, CLO AAAs should remain at their current levels	Credit >> Global CDO
14 July 11	Manager Consolidation Continues	In 2011 close to 40 CLOs have changed hands in 5 separate transactions.	Credit >> Global CDO
24 June 11	Should CLO Equity be Nervous of Call	CLO equity holders with a non-controlling stake may take significant losses if the deal is called.	Credit >> Global CDO
24 June 11	Impact of Lehman Portfolio Unwind	We look at the Lehman portfolio unwind and its effect on MCDS spreads.	Credit >> Global CDO
26 May 11	US vs Euro CLO Equity	We look at 5 key components explaining why Euro equity has underperformed US equity	Credit >> Global CDO
26 May 11	New Issue close to 2010 volumes	Primary volume for the year is currently at 3.7bil with several deals in the pipeline.	Credit >> Global CDO
5 May 11	Mav Note Update	We recommend buying class B (mezz) or A1,A2 (senior).	Credit >> Global CDO
5 May 11	CLO New Issue Restarts	Two new deals price with tighter AAA spreads and more deals to come.	Credit >> Global CDO
12 Apr 11	CLO Retention Rule	We analyze the effects of a rule requiring managers to retain pieces of their CLOs	Credit >> Global CDO
6 Apr 11	US Struc Credit Conference Survey 2011	We ask 100 firms to fill out a survey on the future of the CLO market.	Credit >> Global CDO
18 Mar 11	Selloff May Provide an Entry Point	CLOs have given up most of their 2011 gains, will they recover?	Credit >> Global CDO
18 Mar 11	Will the Earthquake Have an Impact on Structured Credit	To what extent will the earthquake cause Japanese banks to sell CLO holdings.	Credit >> Global CDO
18 Mar 11	CLO Monitor	More euro equity has restored cashflows and WARF and CCC baskets remain in check	Credit >> Global CDO
18 Mar 11	Using Loans for CLO Hedging	We highlight how to hedge AAA CLOs with TRS	Credit >> Global CDO
28 Feb 11	CLOs Bracing for Calls	Many 2008 transactions might be called for financing, also old CLOs where NAV exceeds valuations are at risk	Credit >> Global CDO
26 Jan 11	CLO Equity – Performing as Marketed	A review of CLO equity performance as well as future predictions on returns	Credit >> Global CDO
12 Jan 11	Structured Credit Outlook 2011	2010 saw CLOs rally and expect the trend to continue into 2011 at a slower pace.	Credit >> Global CDO
10 Nov 10	TruPS Deferrals to Defaults: Is S&P Looking Backward	Many TruPS have resumed interest payments despite obligations that are deferring.	Credit >> Global CDO
27 Oct 10	Floating Rate Advantage of CLO Seniors	Interest rate risk makes CLO's attractive compared to corporates due to a floating rate.	Credit >> Global CDO
27 Oct 10	Defaults to Fall in 2011	Our econometric models anticipate a fall in default rates to 2% in January 2011.	Credit >> Global CDO
27 Oct 10	CRE CDOs Revisited	CRE CDOs, while not suitable for all, offer a CMBS like investment with higher risk-adjusted yield.	Credit >> Global CDO
12 Oct 10	CLO and Loan Market Update	September brought \$2.5 billion of BWICs, and there was increased demand for mezz.	Credit >> Global CDO
12 Oct 10	Synthetic Markets Update	We are now seeing a burst of demand for IG15 mezz.	Credit >> Global CDO
12 Oct 10	CLO Collateral Extensions	We analyze the likelihood of managers reinvesting and using "amend and extends" to lengthen the life of the deal.	Credit >> Global CDO
20 Sep 10	Hedging Tail Risk	Market turbulence has increased investors' fears about the pace of economic recovery and increased interest in hedging tail- or extreme risk.	Credit >> Global CDO
1 Jul 10	Structured Credit Market Update	While there is fresh supply for CLO secondary, investors are still mostly in the sidelines. Meanwhile, we expect higher prepayments speeds to translate to upgrades.	Credit >> Global CDO
1 Jul 10	Bank TruPS CDOs – A Recovery Play?	Given the signs of stabilization in the banking sector, second priority tranches (usually A2 tranche) of bank TruPS CDO seem to us to be an interesting way to benefit from an upcoming recovery.	Credit >> Global CDO
8 Jun 10	CLO Market and Trading Color	The widening spreads in CLO's provide an opportunity to buy, and Moody's follows S&P's lead in beginning to upgrade CLO tranches.	Credit >> Global CDO
8 Jun 10	CLO Monitor	An updated snapshot of the most relevant statistics for the CLO universe such as WARF, WAS, and triple-C Basket Size.	Credit >> Global CDO
8 Jun 10	Sovereign Quanto Mechanics	We think that the quanto levels are too high and recommend selling protection, more so for the high-beta corporates and sovereigns.	Credit >> Global CDO
13 May 10	Structured Credit Market Update	We analyze the trend in CLO spreads and liquidity and loan prepayment rates, the first upgrades of CLO tranches, and opportunities in synthetic IG Mezz tranches.	Credit >> Global CDO
21 Apr 10	Credit Derivatives – Sovereign Basket Focus	Investors should use high implied correlations in the sovereign FTD market to create a cheap short (or senior long) by playing baskets against single names.	Credit >> Global CDO
21 Apr 10	LCDX – Loan Prepayment Probability	The new bullet LCDS and LCDX14 contracts allow investors to ignore loan cancellation. Comparing LCDX13 to 14, we think the implied cancellation probability is too high.	Credit >> Global CDO
21 Apr 10	Saddle-up with Zero Coupon Tranches	POs offer a zero coupon bond-like structure on junior index and bespoke tranches. Their low initial prices and access to leverage with no credit line make them attractive.	Credit >> Global CDO
21 Apr 10	CLO Managers Buy More CLOs	Over the last year, CLO managers added \$650MM of mostly senior CLO debt to their deals.	Credit >> Global CDO

Source: Citi Investment Research and Analysis

Figure 18. Recent Primers

Date	Title	Description	Location on FI Direct
28 Mar 11	Bank Loan Total Return Swaps	A primer on Total Return Swaps.	Credit >> Global CDO
13 May 10	MAV Senior Notes – Valuable Though Complex	A primer on CAD-Denominated MAV notes created from the restructuring of Canadian CP liabilities backed by leveraged corporate super-senior risk.	Credit >> Global CDO
13 Apr 07	A Simple Guide to Subprime Mortgages, CDO, and Securitization	A primer on how securitization transforms home loans into bonds and bonds into CDOs.	Credit >> Global CDO
8 Feb 07	Credit Default Swaps	A simple primer for credit default swaps.	Credit >> Global Derivatives
6 Sep 06	The CDO of CDOs Handbook	A primer on the increasingly popular CDO squared products.	Credit >> Global CDO
20 Jun 06	Credit Default Swaps on CDOs	ISDA recently published a template for CDS on CDO debt tranches with ongoing pay-as-you-go settlement and with physical settlement following a credit event. The article explores key features of the confirmation.	Credit >> Global CDO
23 May 06	Mezzanine ABS CDOs	An in-depth look at mezz ABS CDO equity and junior debt.	Credit >> Global CDO
20 Apr 06	Risky PV01 of a CDS Contract	Discussion of the calculation and the importance of Risky PV01.	Credit >> Global Derivatives
7 Feb 05	Hedging Credit Portfolios and Tranches with Payers	Crossover payer options can offer a cheap and liquid hedge against spread widening, especially in a low volatility environment.	Credit >> Global Derivatives
19 Jan 06	Credit Derivatives Indexes	A primer on the credit derivatives index market.	Credit >> Global Derivatives
31 Oct 05	Understanding Tranches Today	A guide to our daily tranche report and P&L attribution methodology.	Credit >> Global Derivatives
31 Oct 05	An Introduction to Commercial Real Estate CDOs	An introduction to commercial real estate (CRE) CDOs.	Credit >> Global CDO
30 Sep 05	High-Grade ABS CDOs	Analyzing the performance of the HG CDOs through a bottom-up analysis.	Credit >> Global CDO
27 Jun 05	Leveraged Loan Handbook	A guide to the corporate loan market.	Credit >> Global CDO
27 May 05	Credit CPPI	A primer on constant proportion portfolio insurance (CPPI).	Credit >> Global Derivatives
7 Apr 05	Trading Tranches On CDX.EM Diversified: Hedging and Leverage	An intro to trading tranches on CDX.EM Diversified.	Credit >> Global Derivatives
23 Mar 05	Understanding CDO-Squareds	A primer on how CDO-squareds work, and helpful hints on how to find value.	Credit >> Global CDO
22 Nov 04	The CMCDS Handbook	Introduction to and trading strategies for constant maturity credit default swaps.	Credit >> Global Derivatives
3 Nov 04	Middle-Market CLO Handbook	Primer on middle-market CLOs.	Credit >> Global CDO
22 Sep 04	Traxxing the Dragons — Investment Strategies With iTraxx Asia Indexes and Tranches	A guide to investment strategies with iTraxx Asia indexes and tranches.	Credit >> Global Derivatives
16 Sep 04	Trading Credit Tranches — Taking Default Correlation out of the Black Box	A guide to investing and trading in credit tranches.	Credit >> Global Derivatives
28 Apr 04	The Structured Credit Handbook	Compilation of all Citi structured credit handbooks and primers.	Credit >> Global CDO
27 Apr 04	A Primer on Single-Tranche CDOs	A primer on single-tranche CDOs.	Credit >> Global Derivatives
14 Apr 04	Citigroup's Primer on Credit Default Swaptions	All you needed to know about credit default swaptions.	Credit >> Global Derivatives
22 Mar 04	Trading the CDX.EM iBoxx	The new CDS benchmark for emerging markets.	Credit >> Global Derivatives
19 Mar 04	Excerpt from the BMRS: New Roll of the iBoxx CDX Indexes	Overview of iBoxx roll on March 20, 2004, and its implication for investors.	Credit >> Global Derivatives
1 Mar 04	High-Yield iBoxx Indexes — New Benchmarks for the High-Yield Market	Using iBoxx as a key instrument for positioning in the high-yield market.	Credit >> Global Derivatives
4 Feb 04	The CDO of ABS Handbook	A primer on CDOs backed by structured finance securities.	Credit >> Global CDO
3 Feb 04	The CLO Handbook	A primer on collateralized loan obligations.	Credit >> Global CDO
23 Jun 03	Synthetic Arbitrage CDOs	Discussion of recent improvements in synthetic arbitrage CDOs.	Credit >> Global Derivatives
31 Dec 02	Single Name Credit Default Swaps — A Users Guide	A guide to single-name CDS.	Credit >> Global Derivatives
20 Aug 01	First-to-Default (FTD) Baskets	A primer on FTD basket swaps.	Credit >> Global Derivatives

Source: Citi Investment Research and Analysis

Appendix A-1

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